PTO/AIA/14 (02-18)
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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	PU090108
	Application Number	13/389,872
Title of Invention	METHODS AND APPARATUS FOR IMPROVED INTRA CHROMA ENCODING AND DECODING	

The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76.
This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.

Secrecy Order 37 CFR 5.2:

☐ Portions or all of the application associated with this Application Data Sheet may fall under a Secrecy Order pursuant to 37 CFR 5.2 (Paper filers only. Applications that fall under Secrecy Order may not be filed electronically.)

Inventor Information:

Inventor 1 — Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix

Residence Information (Select One) ◉ US Residency ○ Non US Residency ○ Active US Military Service

City		State/Province		Country of Residence	

Mailing Address of Inventor:

Address 1	
Address 2	

City		State/Province	
Postal Code		Country	

All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the **Add** button. Add

Correspondence Information:

Enter either Customer Number or complete the Correspondence Information section below.
For further information see 37 CFR 1.33(a).

☐ **An Address is being provided for the correspondence Information of this application.**

Customer Number	~~24498~~ 157363	
Email Address		Add Email / Remove Email

Application Information:

Title of the Invention	METHODS AND APPARATUS FOR IMPROVED INTRA CHROMA ENCODING AND DECODING		
Attorney Docket Number	PU090108	Small Entity Status Claimed	☐
Application Type	Nonprovisional		
Subject Matter	Utility		
Total Number of Drawing Sheets (if any)		Suggested Figure for Publication (if any)	

InterDigital EX2012 (5 of 5)
Amazon.com v. InterDigital
IPR2026-00192

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	PU090108
	Application Number	13/389,872
Title of Invention	METHODS AND APPARATUS FOR IMPROVED INTRA CHROMA ENCODING AND DECODING	

Filing By Reference:

Only complete this section when filing an application by reference under 35 U.S.C. 111(c) and 37 CFR 1.57(a). Do not complete this section if application papers including a specification and any drawings are being filed. Any domestic benefit or foreign priority information must be provided in the appropriate section(s) below (i.e., "Domestic Benefit/National Stage Information" and "Foreign Priority Information").

For the purposes of a filing date under 37 CFR 1.53(b), the description and any drawings of the present application are replaced by this reference to the previously filed application, subject to conditions and requirements of 37 CFR 1.57(a).

Application number of the previously filed application	Filing date (YYYY-MM-DD)	Intellectual Property Authority or Country

Publication Information:

☐ Request Early Publication (Fee required at time of Request 37 CFR 1.219)

☐ **Request Not to Publish.** I hereby request that the attached application not be published under 35 U.S.C. 122(b) and certify that the invention disclosed in the attached application **has not and will not** be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing.

Representative Information:

Representative information should be provided for all practitioners having a power of attorney in the application. Providing this information in the Application Data Sheet does not constitute a power of attorney in the application (see 37 CFR 1.32).
Either enter Customer Number or complete the Representative Name section below. If both sections are completed the customer Number will be used for the Representative Information during processing.

Please Select One:	◉ Customer Number	○ US Patent Practitioner	○ Limited Recognition (37 CFR 11.9)
Customer Number	~~24498~~ 157363		

Domestic Benefit/National Stage Information:

This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, 365(c), or 386(c) or indicate National Stage entry from a PCT application. Providing benefit claim information in the Application Data Sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78.
When referring to the current application, please leave the "Application Number" field blank.

Prior Application Status			Remove
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)

Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the **Add** button.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	PU090108
	Application Number	13/389,872
Title of Invention	METHODS AND APPARATUS FOR IMPROVED INTRA CHROMA ENCODING AND DECODING	

Foreign Priority Information:

This section allows for the applicant to claim priority to a foreign application. Providing this information in the application data sheet constitutes the claim for priority as required by 35 U.S.C. 119(b) and 37 CFR 1.55. When priority is claimed to a foreign application that is eligible for retrieval under the priority document exchange program (PDX)[i] the information will be used by the Office to automatically attempt retrieval pursuant to 37 CFR 1.55(i)(1) and (2). Under the PDX program, applicant bears the ultimate responsibility for ensuring that a copy of the foreign application is received by the Office from the participating foreign intellectual property office, or a certified copy of the foreign priority application is filed, within the time period specified in 37 CFR 1.55(g)(1).

Remove

Application Number	Country[i]	Filing Date (YYYY-MM-DD)	Access Code[i] (if applicable)

Additional Foreign Priority Data may be generated within this form by selecting the **Add** button.

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications

☐ This application (1) claims priority to or the benefit of an application filed before March 16, 2013 and (2) also contains, or contained at any time, a claim to a claimed invention that has an effective filing date on or after March 16, 2013.
NOTE: By providing this statement under 37 CFR 1.55 or 1.78, this application, with a filing date on or after March 16, 2013, will be examined under the first inventor to file provisions of the AIA.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	PU090108
	Application Number	13/389,872
Title of Invention	METHODS AND APPARATUS FOR IMPROVED INTRA CHROMA ENCODING AND DECODING	

Authorization or Opt-Out of Authorization to Permit Access:

When this Application Data Sheet is properly signed and filed with the application, applicant has provided written authority to permit a participating foreign intellectual property (IP) office access to the instant application-as-filed (see paragraph A in subsection 1 below) and the European Patent Office (EPO) access to any search results from the instant application (see paragraph B in subsection 1 below).

Should applicant choose not to provide an authorization identified in subsection 1 below, applicant **must opt-out** of the authorization by checking the corresponding box A or B or both in subsection 2 below.

NOTE: This section of the Application Data Sheet is **ONLY** reviewed and processed with the **INITIAL** filing of an application. After the initial filing of an application, an Application Data Sheet cannot be used to provide or rescind authorization for access by a foreign IP office(s). Instead, Form PTO/SB/39 or PTO/SB/69 must be used as appropriate.

1. Authorization to Permit Access by a Foreign Intellectual Property Office(s)

A. Priority Document Exchange (PDX) - Unless box A in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the European Patent Office (EPO), the Japan Patent Office (JPO), the Korean Intellectual Property Office (KIPO), the State Intellectual Property Office of the People's Republic of China (SIPO), the World Intellectual Property Organization (WIPO), and any other foreign intellectual property office participating with the USPTO in a bilateral or multilateral priority document exchange agreement in which a foreign application claiming priority to the instant patent application is filed, access to: (1) the instant patent application-as-filed and its related bibliographic data, (2) any foreign or domestic application to which priority or benefit is claimed by the instant application and its related bibliographic data, and (3) the date of filing of this Authorization. See 37 CFR 1.14(h)(1).

B. Search Results from U.S. Application to EPO - Unless box B in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the EPO access to the bibliographic data and search results from the instant patent application when a European patent application claiming priority to the instant patent application is filed. See 37 CFR 1.14(h)(2).

The applicant is reminded that the EPO's Rule 141(1) EPC (European Patent Convention) requires applicants to submit a copy of search results from the instant application without delay in a European patent application that claims priority to the instant application.

2. Opt-Out of Authorizations to Permit Access by a Foreign Intellectual Property Office(s)

☐ A. Applicant **DOES NOT** authorize the USPTO to permit a participating foreign IP office access to the instant application-as-filed. If this box is checked, the USPTO will not be providing a participating foreign IP office with any documents and information identified in subsection 1A above.

☐ B. Applicant **DOES NOT** authorize the USPTO to transmit to the EPO any search results from the instant patent application. If this box is checked, the USPTO will not be providing the EPO with search results from the instant application.

NOTE: Once the application has published or is otherwise publicly available, the USPTO may provide access to the application in accordance with 37 CFR 1.14.

PTO/AIA/14 (02-18)
Approved for use through 11/30/2020. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	PU090108
	Application Number	13/389,872
Title of Invention	METHODS AND APPARATUS FOR IMPROVED INTRA CHROMA ENCODING AND DECODING	

Applicant Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

Applicant 1

If the applicant is the inventor (or the remaining joint inventor or inventors under 37 CFR 1.45), this section should not be completed. The information to be provided in this section is the name and address of the legal representative who is the applicant under 37 CFR 1.43; or the name and address of the assignee, person to whom the inventor is under an obligation to assign the invention, or person who otherwise shows sufficient proprietary interest in the matter who is the applicant under 37 CFR 1.46. If the applicant is an applicant under 37 CFR 1.46 (assignee, person to whom the inventor is obligated to assign, or person who otherwise shows sufficient proprietary interest) together with one or more joint inventors, then the joint inventor or inventors who are also the applicant should be identified in this section.

Clear

(•) Assignee	( ) Legal Representative under 35 U.S.C. 117	( ) Joint Inventor
( ) Person to whom the inventor is obligated to assign.	( ) Person who shows sufficient proprietary interest	

If applicant is the legal representative, indicate the authority to file the patent application, the inventor is:

Name of the Deceased or Legally Incapacitated Inventor:	
If the Applicant is an Organization check here.	☒
Organization Name	~~THOMSON LICENSING~~ INTERDIGITAL VC HOLDINGS, INC.

Mailing Address Information For Applicant:

Address 1	~~1-5, rue Jeanne D'Arc~~ 1209 Orange Street		
Address 2			
City	~~Issy-les-Moulineaux~~ Wilmington	**State/Province**	DE
Country	~~FR~~ US	Postal Code	~~92130~~ 19801
Phone Number		Fax Number	
Email Address			

Additional Applicant Data may be generated within this form by selecting the Add button.

Assignee Information including Non-Applicant Assignee Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

PTO/AIA/14 (02-18)
Approved for use through 11/30/2020. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	PU090108
	Application Number	13/389,872
Title of Invention	METHODS AND APPARATUS FOR IMPROVED INTRA CHROMA ENCODING AND DECODING	

Assignee 1

Complete this section if assignee information, including non-applicant assignee information, is desired to be included on the patent application publication. An assignee-applicant identified in the "Applicant Information" section will appear on the patent application publication as an applicant. For an assignee-applicant, complete this section only if identification as an assignee is also desired on the patent application publication.

If the Assignee or Non-Applicant Assignee is an Organization check here. ☐

Prefix	**Given Name**	Middle Name	**Family Name**	Suffix

Mailing Address Information For Assignee including Non-Applicant Assignee:

Address 1			
Address 2			
City		**State/Province**	
Country[i]		Postal Code	
Phone Number		Fax Number	
Email Address			

Additional Assignee or Non-Applicant Assignee Data may be generated within this form by selecting the Add button.

Signature:

NOTE: This Application Data Sheet must be signed in accordance with 37 CFR 1.33(b). **However, if this Application Data Sheet is submitted with the INITIAL filing of the application and either box A or B is not checked in subsection 2 of the "Authorization or Opt-Out of Authorization to Permit Access" section, then this form must also be signed in accordance with 37 CFR 1.14(c).**

This Application Data Sheet **must** be signed by a patent practitioner if one or more of the applicants is a **juristic entity** (e.g., corporation or association). If the applicant is two or more joint inventors, this form must be signed by a patent practitioner, **all** joint inventors who are the applicant, or one or more joint inventor-applicants who have been given power of attorney (e.g., see USPTO Form PTO/AIA/81) on behalf of **all** joint inventor-applicants.

See 37 CFR 1.4(d) for the manner of making signatures and certifications.

Signature	/Ronald Kolczynski/			Date (YYYY-MM-DD)	2019-01-09
First Name	Ronald	Last Name	Kolczynski	Registration Number	57,177

Additional Signature may be generated within this form by selecting the Add button.

Electronic Acknowledgement Receipt

EFS ID:	34813030
Application Number:	13389872
International Application Number:	
Confirmation Number:	7293
Title of Invention:	METHODS AND APPARATUS FOR IMPROVED INTRA CHROMA ENCODING AND DECODING
First Named Inventor/Applicant Name:	Qian Xu
Customer Number:	24498
Filer:	Ronald J. Kolczynski/Brian Pritchett
Filer Authorized By:	Ronald J. Kolczynski
Attorney Docket Number:	PU090108
Receipt Date:	10-JAN-2019
Filing Date:	10-FEB-2012
Time Stamp:	07:29:29
Application Type:	U.S. National Stage under 35 USC 371

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Power of Attorney	PU090108_US_PCT_POA_signed.pdf	452469 81bfba62cd5f6ee92ac040d198c046d10dc83234	no	2
Warnings:					

Information:					
2	Applicant Response to Pre-Exam Formalities Notice	PU090108_US_PCT_REQUEST_FOR_CORRECTED_FILING_RECEIPT_signed.pdf	60895 71aa382f1a8eb37dd5b8fcd3689f6d4fb6b3c4f6	no	1
Warnings:					
Information:					
3	Assignee showing of ownership per 37 CFR 3.73	PU090108_US_PCT_STATEMENT_373C_signed.pdf	120772 9e3d40461e3b31493c3b6c6e5b9f5c6887921d77	no	3
Warnings:					
Information:					
4	Application Data Sheet	PU090108_US_PCT_CORRECTED_ADS_signed_use.pdf	1066019 1868452fbdfd3a43b389bc429a0a6f5bed503511	no	6
Warnings:					
Information:					
This is not an USPTO supplied ADS fillable form					
			Total Files Size (in bytes):	1700155	

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
13/389,872	02/10/2012	Qian Xu	PU090108

CONFIRMATION NO. 7293

POA ACCEPTANCE LETTER

157363
Brian J. Dorini
InterDigital VC Holdings
4 Research Way
3rd Floor
Princeton, NJ 08543

OC00000105089112

Date Mailed: 01/16/2019

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 01/10/2019.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at **(571) 272-4000** or **(571) 272-4200** or **1-888-786-0101**.

/zabraha/

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
13/389,872	02/10/2012	Qian Xu	PU090108

CONFIRMATION NO. 7293

POWER OF ATTORNEY NOTICE

24498
Vincent E. Duffy
THOMSON Licensing
19868 Collins Road
CANYON COUNTRY, CA 91351

OC000000105089060

Date Mailed: 01/16/2019

NOTICE REGARDING CHANGE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 01/10/2019.

- The Power of Attorney to you in this application has been revoked by the assignee who has intervened as provided by 37 CFR 3.71. Future correspondence will be mailed to the new address of record(37 CFR 1.33).

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at **(571) 272-4000** or **(571) 272-4200** or **1-888-786-0101**.

/zabraha/

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
13/389,872	02/10/2012	Qian Xu	PU090108

CONFIRMATION NO. 7293

IMPROPER CFR REQUEST

157363
Brian J. Dorini
InterDigital VC Holdings
4 Research Way
3rd Floor
Princeton, NJ 08543

OC00000105089191

Date Mailed: 01/16/2019

RESPONSE TO REQUEST FOR CORRECTED FILING RECEIPT

Power of Attorney, Claims, Fees, System Limitations, and Miscellaneous

In response to your request for a corrected Filing Receipt, the Office is unable to comply with your request because:

- The correction that was requested cannot be made because the application was filed before the rule became effective.

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at **(571) 272-4000** or **(571) 272-4200** or **1-888-786-0101**.

/zabraha/

Doc code: RCEX
Doc description: Request for Continued Examination (RCE)

PTO/SB/30EFS (07-09)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

REQUEST FOR CONTINUED EXAMINATION(RCE)TRANSMITTAL
(Submitted Only via EFS-Web)

Application Number	13389872	Filing Date	2012-02-10	Docket Number (if applicable)	PU090108	Art Unit	2483
First Named Inventor	XU et al.			Examiner Name	Maryam A. Nasri		

This is a Request for Continued Examination (RCE) under 37 CFR 1.114 of the above-identified application.
Request for Continued Examination (RCE) practice under 37 CFR 1.114 does not apply to any utility or plant application filed prior to June 8, 1995, or to any design application. The Instruction Sheet for this form is located at WWW.USPTO.GOV

SUBMISSION REQUIRED UNDER 37 CFR 1.114

Note: If the RCE is proper, any previously filed unentered amendments and amendments enclosed with the RCE will be entered in the order in which they were filed unless applicant instructs otherwise. If applicant does not wish to have any previously filed unentered amendment(s) entered, applicant must request non-entry of such amendment(s).

☐ Previously submitted. If a final Office action is outstanding, any amendments filed after the final Office action may be considered as a submission even if this box is not checked.

- ☐ Consider the arguments in the Appeal Brief or Reply Brief previously filed on _____
- ☐ Other _____

☒ Enclosed

- ☒ Amendment/Reply
- ☐ Information Disclosure Statement (IDS)
- ☐ Affidavit(s)/ Declaration(s)
- ☐ Other _____

MISCELLANEOUS

☐ Suspension of action on the above-identified application is requested under 37 CFR 1.103(c) for a period of months _____ (Period of suspension shall not exceed 3 months; Fee under 37 CFR 1.17(i) required)

☐ Other _____

FEES

☒ **The RCE fee under 37 CFR 1.17(e) is required by 37 CFR 1.114 when the RCE is filed.**
The Director is hereby authorized to charge any underpayment of fees, or credit any overpayments, to Deposit Account No 602390

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT REQUIRED

☒ Patent Practitioner Signature

Applicant Signature

PTO/SB/30EFS (07-09)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Signature of Registered U.S. Patent Practitioner			
Signature	/Ronald Kolczynski/	Date (YYYY-MM-DD)	2019-02-18
Name	Ronald Kolczynski	Registration Number	57177

This collection of information is required by 37 CFR 1.114. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these records.

2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Qian Xu et al. Serial No.: 13/389,872 Filed: February 10, 2012 For: METHODS AND APPARATUS FOR IMPROVED INTRA CHROMA ENCODING AND DECODING	Examiner: Nasri, Maryam Group Art: 2483

AMENDMENT UNDER 37 C.F.R. §1.114

Mail Stop RCE
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Please enter and consider the following amendments and remarks.

Amendments to, and Listing of, the Claims begins on page **2** of this paper.

Remarks/Arguments begin on page **8** of this paper.

Amendments to, and Listing of, the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) An apparatus, comprising:

an encoder for encoding picture data for at least a block in a picture, wherein multiple partition types are supported for intra prediction chroma coding of the block, the multiple partition types including a set of multiple chroma partition types of sizes 16x16, 8x8, 4x4 and a set of multiple luma partition types, wherein a particular chroma partition type using a single chroma intra prediction mode for coding the partitioned block is determined from the set of multiple chroma partition types[[,]] independently from a particular luma partition type used to code the block and the particular luma type being determined from the set of luma partition types, and wherein chroma uses a same entropy coding engine as luma, or a particular chroma partition type using a single chroma intra prediction mode for coding the partitioned block is determined from the set of chroma partition types in response to a luma partition type utilized to code the block or the blocks of one or more neighboring blocks, the luma partition type being included in the set of luma partition types, and wherein intra luma partition type and chroma partition type are independently coded inside a macroblock on a macroblock basis, and luma and chroma can have different intra prediction modes.

2. (Currently Amended) In a video encoder, a method, comprising:

encoding picture data for at least a block in a picture, wherein multiple partition types are supported for intra prediction chroma coding of the block, the multiple partition types including a set of multiple chroma partition types of sizes 16x16, 8x8, 4x4 and a set of multiple luma partition types, wherein a particular chroma partition type using a single chroma intra prediction mode for coding the partitioned block is determined from the set of multiple chroma partition types[[,]] independently from a particular luma partition type used to code the block and the particular luma type being determined from the set of luma partition types, and wherein chroma uses a same entropy coding engine as luma, or a particular chroma partition type using a single

chroma intra prediction mode for coding the partitioned block is determined from the set of chroma partition types in response to a luma partition type utilized to code the block or the blocks of one or more neighboring blocks, the luma partition type being included in the set of luma partition types, and wherein intra luma partition type and chroma partition type are independently coded inside a macroblock on a macroblock basis, and luma and chroma can have different intra prediction modes.

3. (Previously Presented) The method of claim 2, wherein a particular chroma partition type for coding the block is determined from the set of chroma partition types responsive to a luma partition type utilized to code the block or one or more neighboring blocks, the luma partition type being included in the set of luma partition types.

4. (Original) The method of claim 3, wherein for the particular chroma partition type, a largest-size available transform matching the particular chroma partition type is selected from a set of transforms.

5. (Previously Presented) The method of claim 3, wherein from among a particular luma partition type and a particular chroma partition type selected to code the block only the particular luma partition type is signaled, the particular luma partition type being selected from the set of luma partition types and the particular chroma partition type being selected from the set of chroma partition types.

6. (Previously Presented) The method of claim 5, wherein the particular luma partition type is absolutely coded or differentially coded from one or more neighboring blocks.

7. (Previously Presented) The method of claim 2, wherein a particular chroma partition type used to code the block is determined independently from a particular luma partition type used to code the block, the particular chroma partition type being determined from the set of chroma partition types and the particular luma partition type being determined from the set of luma partition types.

8. (Previously Presented) The method of claim 7, wherein the particular chroma partition type and the particular luma partition types are both signaled.

9. (Previously Presented) The method of claim 8, wherein the particular luma partition type and the particular chroma partition type are absolutely coded or differentially coded from one or more neighboring blocks.

10. (Previously Presented) The method of claim 8, wherein the particular chroma partition type is differentially coded from the particular luma partition type.

11. (Original) The method of claim 2, wherein a chroma entropy coding engine used to code the block is different from a luma entropy coding engine used to code the block.

12. (Currently Amended) An apparatus, comprising:

a decoder for decoding picture data for at least a block in a picture, wherein multiple partition types are supported for intra prediction chroma decoding of the block, the multiple partition types including a set of multiple chroma partition types of sizes 16x16, 8x8, 4x4 and a set of multiple luma partition types, wherein a particular chroma partition type using a single chroma intra prediction mode for coding the partitioned block is determined from the set of multiple chroma partition types[[,]] independently from a particular luma partition type used to code the block and the particular luma type being determined from the set of luma partition types, and wherein chroma uses a same entropy coding engine as luma, or a particular chroma partition type using a single chroma intra prediction mode for coding the partitioned block is determined from the set of chroma partition types in response to a luma partition type utilized to code the block or the blocks of one or more neighboring blocks, the luma partition type being included in the set of luma partition types, and wherein intra luma partition type and chroma partition type are independently coded inside a macroblock on a macroblock basis, and luma and chroma can have different intra prediction modes.

13. (Currently Amended) In a video decoder, a method, comprising:

decoding picture data for at least a block in a picture, wherein multiple partition types are supported for intra prediction chroma decoding of the block, the multiple partition types including a set of multiple chroma partition types of sizes 16x16, 8x8, 4x4 and a set of multiple luma partition types, wherein a particular chroma partition type using a single chroma intra prediction mode for coding the partitioned block is determined from the set of multiple chroma partition types[[,]] independently from a particular luma partition type used to code the block and the particular luma type being determined from the set of luma partition types, and wherein chroma uses a same entropy coding engine as luma, or a particular chroma partition type using a single chroma intra prediction mode for coding the partitioned block is determined from the set of chroma partition types in response to a luma partition type utilized to code the block or the blocks of one or more neighboring blocks, the luma partition type being included in the set of luma partition types, and wherein intra luma partition type and chroma partition type are independently coded inside a macroblock on a macroblock basis, and luma and chroma can have different intra prediction modes.

14. (Previously Presented) The method of claim 13, wherein a particular chroma partition type for decoding the block is determined from the set of chroma partition types responsive to a luma partition type utilized to decode the block or one or more neighboring blocks, the luma partition type being included in the set of luma partition types.

15. (Original) The method of claim 14, wherein for the particular chroma partition type, a largest-size available transform matching the particular chroma partition type is selected from a set of transforms.

16. (Previously Presented) The method of claim 14, wherein from among a particular luma partition type and a particular chroma partition type selected to code the block only information indicating the particular luma partition type is received from a corresponding encoder for use in decoding the block, the particular luma partition type being selected from the

set of luma partition types and the particular chroma partition type being selected from the set of chroma partition types.

17. (Previously Presented) The method of claim 16, wherein the particular luma partition type is absolutely decoded or differentially decoded from one or more neighboring blocks.

18. (Previously Presented) The method of claim 13, wherein a particular chroma partition type used to code the block is determined independently from a particular luma partition type used to code the block, the particular chroma partition type being determined from the set of chroma partition types and the particular luma partition type being determined from the set of luma partition types.

19. (Previously Presented) The method of claim 18, wherein information indicating both the particular chroma partition type and the particular luma partition types is received from a corresponding encoder for use in decoding the block.

20. (Previously Presented) The method of claim 19, wherein the particular luma partition type and the particular chroma partition type are absolutely decoded or differentially decoded from one or more neighboring blocks.

21. (Previously Presented) The method of claim 19, wherein the particular chroma partition type is differentially decoded from the particular luma partition type.

22. (Original) The method of claim 13, wherein a chroma entropy decoding engine used to decode the block is different from a luma entropy decoding engine used to decode the block.

23. (Currently Amended) A non-transitory computer-readable storage media having video signal data encoded thereupon, comprising:

picture data encoded for at least a block in a picture, wherein multiple partition types are supported for intra prediction chroma coding of the block, the multiple partition types including

a set of multiple chroma partition types of sizes 16x16, 8x8, 4x4 and a set of multiple luma partition types, wherein a particular chroma partition type using a single chroma intra prediction mode for coding the partitioned block is determined from the set of multiple chroma partition types[[,]] independently from a particular luma partition type used to code the block and the particular luma type being determined from the set of luma partition types, and wherein chroma uses a same entropy coding engine as luma, or a particular chroma partition type using a single chroma intra prediction mode for coding the partitioned block is determined from the set of chroma partition types in response to a luma partition type utilized to code the block or the blocks of one or more neighboring blocks, the luma partition type being included in the set of luma partition types, and wherein intra luma partition type and chroma partition type are independently coded inside a macroblock on a macroblock basis, and luma and chroma can have different intra prediction modes.

REMARKS

This communication is being submitted in response to the Final Office Action mailed November 16, 2018, for which a shortened statutory period of three months ending February 16, 2019 was set. The Office Action has been reviewed and carefully considered. A Request for Continued Examination under 37 C.F.R. 1.114 is submitted herein. Reconsideration of the prior rejections in light of the timely filing of the instant remarks, and the filing of an RCE is respectfully requested. Please charge any necessary fees to deposit account 60-2390.

Claims 1-23 are pending.

Rejection of Claims 1-23 under 35 U.S.C. §103

Claims 1-23 are rejected under 35 U.S.C. §103(a) as being unpatentable over Wang (US 2007/0121728 a1) in view of U.S. Pat. App. Pub. No 2008/0219350 to Guo (hereinafter "Guo").

The independent claims currently pending are Claims 1, 2, 12, 13, and 23.

Applicant has amended the independent claims to include the feature, "and wherein chroma uses a same entropy coding engine as luma."

Amended Claim 1 recites, *inter alia*, "an encoder for encoding picture data for at least a block in a picture, wherein multiple partition types are supported for intra prediction chroma coding of the block, the multiple partition types including a set of multiple chroma partition types of sizes 16x16, 8x8, 4x4 and a set of multiple luma partition types, wherein a particular chroma partition type using a single chroma intra prediction mode for coding the partitioned block is determined from the set of multiple chroma partition types independently from a particular luma partition type used to code the block and the particular luma type being determined from the set of luma partition types, and wherein chroma uses a same entropy coding engine as luma, or a particular chroma partition type using a single chroma intra prediction mode for coding the partitioned block is determined from the set of chroma partition types in response to a luma partition type utilized to code the block or the blocks of one or more neighboring blocks, the luma partition type being included in the set of luma partition types, and wherein intra luma partition type and chroma partition type are independently coded inside a macroblock on a macroblock basis, and luma and chroma can have different intra prediction modes."

Claims 2, 12, 13 and 23 have similar features.

Wang discloses a method of optimizing decoding of MPEG4 compliant coded signals. The method disables processing for non-main profile sections, performs reference frame padding and adaptive motion compensation. The method further performs fast inverse DCT, but not on areas based on whether a 4x4 block may be all zero or only the DC transform coefficient is non-zero, and including CAVLC encoding of residual data. The reference frame padding comprises compensating for motion vectors extending beyond a reference frame by adding to at least the length and width of the reference frame. Adaptive motion compensation includes original blocks size compensation processing for chroma up to block sizes of 16x16.

The Examiner cites paragraphs 11, 13, and 77 of Wang as disclosing "wherein a particular chroma partition type is determined from the set of multiple chroma partition types, independently from a particular luma partition type used to code the block".

Applicant respectfully disagrees with the Examiner's interpretation of Wang because the cited portions do not disclose chroma partition type being independently determined from a luma partition type. Applicant has emphasized that it is the independent determination of chroma partition type relative to luma partition type that is recited in the claims by removing the comma after "from the set of multiple chroma partition types".

The Examiner uses the statement in paragraph 77, "Adaptive motion compensation includes original block size compensation processing for chroma up to block sizes of 16x16" as disclosing the recited feature, but this sentence does not teach or suggest independent determination of chroma partition type from luma partition type. The cited sentence means that the chroma block sizes (of 8x8, 8x16, and up to 16x16, as recited in paragraph 13 of Wang) are used in the adaptive motion compensation process. "Original block size" means that the chroma block sizes are the same as in the original format's coding block size, as described in paragraph 13.

The Examiner concedes that Wang does not disclose using a single intra prediction mode for coding the partitioned block or intra luma partition type and chroma partition type are independently coded inside a macroblock on a macroblock basis.

Applicant respectfully submits that Wang neither teaches nor suggests, "wherein a particular chroma partition type using a single chroma intra prediction mode for decoding the partitioned block is determined from the set of multiple chroma partition types independently

from a particular luma partition type used to code the block and the particular luma type being determined from the set of luma partition types, and wherein chroma uses a same entropy coding engine as luma, or a particular chroma partition type using a single chroma intra prediction mode for coding the partitioned block is determined from the set of chroma partition types in response to a luma partition type utilized to code the block or the blocks of one or more neighboring blocks, the luma partition type being included in the set of luma partition types, and wherein intra luma partition type and chroma partition type are independently coded inside a macroblock on a macroblock basis, and luma and chroma can have different intra prediction modes" as in the amended claims.

The Examiner then uses Guo as allegedly disclosing "using a single chroma intra prediction mode for coding the partitioned block" and "wherein intra luma partition type and chroma partition type are independently coded inside a macroblock on a macroblock basis."

However, Applicant respectfully maintains that Guo does not disclose these features. Figure 1 of Guo shows "luma mode decision" and "chroma mode decision". Then, block 14 of Figure 1 is labelled "Luma and Chroma Texture coding" and paragraph 34 describes this as "Then texture coding is processed to the best luma predicted modes and the best chroma predicted". But texture coding is not selection of a partition type.

This paragraph or Figure 1 do not disclose "wherein intra luma partition type and chroma partition type are independently coded inside a macroblock on a macroblock basis". Although Guo only considers chroma *macroblocks*, the invention of Guo is based on the AVC coding standard. In this standard, the size of the chroma macroblocks are dependent on the size of the luma blocks. For example, when 4:2:0 format is being used, the chroma blocks are half the size of the luma blocks horizontally and vertically. Therefore, because chroma block size is dependent and necessarily relies on luma block size, there is no need in the system of Guo to independently code luma partition type and chroma partition type inside a macroblock. It is derivable by knowing the coding mode and the luma block/partition type.

Paragraph [0030] of Guo, cited by the Examiner, states "luma mode decisions [12] are processed to intra 4x4 macroblocks and intra 16x16 macroblocks and a chroma *mode* decision [13] is processed to chroma macroblocks" (emphasis added). As cited above, paragraph [0030]

considers two block sizes, 4x4 and 16x16, for luma. There is no coding of chroma partition type in the system of Guo. The chroma block size results from knowledge of the luma block size and the coding format (4:2:2, 4:2:0, etc.). This is in contrast to the pending claims, in which "a particular chroma partition type using a single chroma intra prediction mode for coding the partitioned block is determined from the set of multiple chroma partition types *independently* from a particular luma partition type used to code the block" (emphasis added).

Guo does not disclose independent coding of an intra luma and chroma partition types as in the instant claims.

Therefore, Guo, either alone or in combination with Wang, does not disclose "multiple partition types including a set of multiple chroma partition types of sizes 16x16, 8x8, 4x4 and a set of multiple luma partition types, wherein a particular chroma partition type using a single chroma intra prediction mode for coding the partitioned block is determined from the set of multiple chroma partition types independently from a particular luma partition type used to code the block and the particular luma type being determined from the set of luma partition types, and wherein chroma uses a same entropy coding engine as luma, or a particular chroma partition type using a single chroma intra prediction mode for coding the partitioned block is determined from the set of chroma partition types in response to a luma partition type utilized to code the block or the blocks of one or more neighboring blocks, the luma partition type being included in the set of luma partition types, and wherein intra luma partition type and chroma partition type are independently coded inside a macroblock on a macroblock basis, and luma and chroma can have different intra prediction modes." So, Applicant respectfully submits that neither Wang nor Guo, in any combination, discloses the features of the independent claims.

Applicant respectfully submits that none of the cited references, singly or in any combination, teach or suggest the features of the amended independent claims.

For at least the same reasons, the dependent claims are also respectfully submitted to be non-obvious over any combination of Wang and Guo.

Reconsideration of the rejections is respectfully requested.

In view of the foregoing, and the timely filing of the instant remarks, and the filing of a Request for Continued Examination, Applicants respectfully request that the rejections of the claims

set forth in the Office Action of November 16, 2018 be withdrawn, that the pending claims be allowed, and that the case proceed to early issuance of Letters Patent in due course.

It is believed that a fee for filing of a Request for Continued Examination under 37 CFR 1.114 is currently due. However, in the event that any fees or charges are required at this time in connection with the application, they may be charged to applicants' Deposit Account No. 60-2390.

Respectfully submitted,

By: /Ronald Kolczynski/

Ronald Kolczynski, Attorney for Applicants
Registration No.: 57,177

InterDigital VC Holdings, Inc.
(formerly Thomson Licensing LLC)
Patent Operations
4 Research Way, 3rd Floor
Princeton, NJ 08540
(609) 436-5071

Dated: February 15, 2019

Electronic Patent Application Fee Transmittal

Application Number:	13389872
Filing Date:	10-Feb-2012
Title of Invention:	METHODS AND APPARATUS FOR IMPROVED INTRA CHROMA ENCODING AND DECODING
First Named Inventor/Applicant Name:	Qian Xu
Filer:	Ronald J. Kolczynski/Brian Pritchett
Attorney Docket Number:	PU090108

Filed as Large Entity

Filing Fees for U.S. National Stage under 35 USC 371

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
RCE- 2ND AND SUBSEQUENT REQUEST	1820	1	1900	1900
		Total in USD ($)		**1900**

Electronic Acknowledgement Receipt

EFS ID:	35175048
Application Number:	13389872
International Application Number:	
Confirmation Number:	7293
Title of Invention:	METHODS AND APPARATUS FOR IMPROVED INTRA CHROMA ENCODING AND DECODING
First Named Inventor/Applicant Name:	Qian Xu
Customer Number:	157363
Filer:	Ronald J. Kolczynski/Brian Pritchett
Filer Authorized By:	Ronald J. Kolczynski
Attorney Docket Number:	PU090108
Receipt Date:	18-FEB-2019
Filing Date:	10-FEB-2012
Time Stamp:	09:58:14
Application Type:	U.S. National Stage under 35 USC 371

Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	$1900
RAM confirmation Number	021919INTEFSW00009298602390
Deposit Account	
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The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Request for Continued Examination (RCE)	PU090108_US_PCT_RCE_signed.pdf	697603 608b99f40dc4348fd461ed5e2a1f43770cda0086	no	3
Warnings:					
Information:					
2		PU090108_US_PCT_RCE_AMENDMENT.pdf	151132 040ca850f17927f0d052f631027264d5d9f097b2	yes	12

Multipart Description/PDF files in .zip description

Document Description	Start	End
Amendment Submitted/Entered with Filing of CPA/RCE	1	1
Claims	2	7
Applicant Arguments/Remarks Made in an Amendment	8	12

Warnings:					
Information:					
3	Fee Worksheet (SB06)	fee-info.pdf	30717 36d8036bcc08f557bcbf30c0a4b87a74504642a2	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	879452		

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New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/SB/06 (09-11)
Approved for use through 1/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 13/389,872	Filing Date 02/10/2012	☐ To be Mailed

ENTITY: ☑ LARGE ☐ SMALL ☐ MICRO

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA		RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A		N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A		N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	23 minus 20 =	* 3		x $60 =	180
INDEPENDENT CLAIMS (37 CFR 1.16(h))	5 minus 3 =	* 2		x $250 =	500
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).				
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))					
* If the difference in column 1 is less than zero, enter "0" in column 2.				TOTAL	680

APPLICATION AS AMENDED - PART II

AMENDMENT	02/18/2019	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 23	Minus	** 23	= 0		x $100 =	0
	Independent (37 CFR 1.16(h))	* 5	Minus	*** 5	= 0		x $460 =	0
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	0

AMENDMENT		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=		x $0 =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=		x $0 =	
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.	LIE
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".	/PEGGY S YARBOROUGH/
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".	
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.	

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/389,872	02/10/2012	Qian Xu	PU090108	7293

157363 7590 03/21/2019

Brian J. Dorini
InterDigital VC Holdings
4 Research Way
3rd Floor
Princeton, NJ 08543

EXAMINER
NASRI, MARYAM A

ART UNIT	PAPER NUMBER
2483	

NOTIFICATION DATE	DELIVERY MODE
03/21/2019	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

USPTO@interdigital.com
donna.foligno@interdigital.com
patricia.verlangieri@interdigital.com

Office Action Summary	Application No. 13/389,872	Applicant(s) Xu et al.	
	Examiner MARYAM A NASRI	Art Unit 2483	AIA (FITF) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☑ Responsive to communication(s) filed on 18 February 2019.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2a)☑ This action is **FINAL.** 2b) ☐ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5) ☑ Claim(s) 1-23 is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6) ☐ Claim(s) _____ is/are allowed.

7) ☑ Claim(s) 1-23 is/are rejected.

8) ☐ Claim(s) _____ is/are objected to.

9) ☐ Claim(s) _____ are subject to restriction and/or election requirement

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to **PPHfeedback@uspto.gov.**

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a)☐ All b)☐ Some** c)☐ None of the:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date _____.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date _____.

4) ☐ Other: _____.

DETAILED ACTION

1. This Office Action is a response to an RCE filed on 02/18/2019, in which claims 1-23 are pending and ready for examination.

Notice of Pre-AIA or AIA Status

2. The present application is being examined under the pre-AIA first to invent provisions.

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 02/18/2019 has been entered.

Response to Arguments

3. Applicant's arguments with respect to claims **1, 2, 12, 13, and 23** have been considered but are not persuasive.

4. In regards to claims 1, 2, 12, 13, and 23 applicant argues that:

a. Applicant submits that Wang neither teaches nor suggests, "wherein a particular chroma partition type is determined from the set of multiple chroma partition types independently from a particular luma partition type used to code the block" as in pending Claims 12 and 13.

b. Applicant submits that Guo fails to disclose "wherein intra luma partition type and chroma partition type are independently coded inside a macroblock on a macroblock basis".

5. However, examiner respectfully disagrees.

a. As mentioned in the Final Rejection action dated 06/30/2017, Wang discloses that original block size compensation processing is performed for chroma blocks up to block sizes of 16x16 (see paragraph 77 and claim 6). Additionally, Wang discloses that partitions can have 7 different sizes (see paragraph 11), and size and number of chroma blocks varies in different formats (paragraph 13). As one can see, the size and number of the chroma blocks are determined using block size compensation processing, which is not dependent on the luma block size. In other words, nowhere in the Wang reference it is mentioned that Chroma block sizes are determined based on the Luma block sizes. Thus, examiner believes that the chroma partitioning of Wang is performed independent from the luma partition sizes and numbers.

b. As admitted by the applicant (page 10 of the remarks, paragraph 4), in AVC coding standard, the size of the chroma macroblocks are dependent on the size of the luma blocks. As recited in the independent claims, "a particular

chroma partition type using a single chroma intra prediction mode for coding the partitioned block is determined from the set of chroma partition types in response to a luma partition type utilized to code the block or the blocks of one or more neighboring blocks". Thus, this statement suggests that the size of the chroma blocks are determined based on the luma block sizes, which is the same techniques used in AVC coding standard. Furthermore, claim 1 mentions: "wherein intra luma partition type and chroma partition type are independently ***coded*** inside a macroblock on a macroblock basis, and luma and chroma can have different intra prediction modes." As mentioned in paragraph 2 of Guo, "H.264/AVC coding systems has a luma coding and a chroma coding." This statement shows that the luma partition types and chroma partition types are coded independently inside a macro block. Also, Fig. 1, and paragraph 30 shows that the Luma mode and the Chroma modes are determined separately. Thus, the argued limitation has been disclosed by the prior art references. Examiner also draws the Applicant's attention to the "or" statement in the independent claims. Claim 1 recites: "Furthermore, claim 1 recites "wherein a particular chroma partition type using a single chroma intra prediction mode for decoding the partitioned block is determined from the set of multiple chroma partition types independently from a particular luma partition type used to code the block and the particular luma type being determined from the set of luma partition types, wherein chroma uses a same entropy coding engine as luma, ***or*** (emphasis added) a particular chroma partition type using a single chroma intra prediction mode for coding the partitioned block is determined from the set of chroma

partition types in response to a luma partition type utilized to code the block or the blocks of one or more neighboring blocks, the luma partition type being included in the set of luma partition types, and wherein intra luma partition type and chroma partition type are independently coded inside a macroblock on a macroblock basis, and luma and chroma can have different intra prediction modes." On page 11 of the Remarks filed on 02/18/2019, it is mentioned that Guo does not teach the limitation of "a particular chroma partition type using a single chroma intra prediction mode for decoding the partitioned block is determined from the set of multiple chroma partition types independently from a particular luma partition type used to code the block". However, this limitation belongs to the first "or" statement, which has been disclosed by Wang, and Examiner merely relies on Guo to teach the limitation of "a single chroma intra prediction mode for coding the partitioned block" in the first "or" statement, which is related to the mode decisions of the blocks.

6. Claims 1-23 remain rejected since the system disclosed by the applicant is taught by the prior arts.

Claim Rejections - 35 USC § 112

The following is a quotation of 35 U.S.C. 112(b):
(b) CONCLUSION.—The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the inventor or a joint inventor regards as the invention.

The following is a quotation of 35 U.S.C. 112 (pre-AIA), second paragraph:
The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claim 11 and 22 are rejected under 35 U.S.C. 112(b) or 35 U.S.C. 112 (pre-AIA), second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. The omitted structural cooperative relationships are: Claims 11 and 22 mention that coding engine used for coding the chroma blocks is different than the coding engine used for coding the luma blocks, however, claim 11 is dependent on independent claim 2 and claim 22 is dependent on independent claim 13, and the independent claims require the coding engine of the chroma blocks and luma blocks to be the same. These limitations are contradicting each other and it is unclear how the same coding engine used for coding the luma and chroma blocks splits in two independent coding engines for coding the chroma blocks and luma blocks separately. Further clarification is required.

Claim Rejections - 35 USC § 103

The following is a quotation of pre-AIA 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 1-23 is rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Wang (US 2007/0121728 A1) in view of Guo (US 2008/0219350 A1).

9. **Regarding claim 1**, Wang discloses: An apparatus, comprising:

an encoder for encoding **(see paragraph 87)** picture data for at least a block in a picture **(see paragraph 56 and 87)**, wherein multiple partition types **(see paragraph 11, partitions can have 7 different sizes, and paragraph 77, chroma block sizes up to 16x16)** are supported for intra prediction chroma coding of the block **(see paragraph 211, bit-stream of intra coded macroblock has chroma prediction mode information)**, the multiple partition types including a set of multiple chroma partition types **(see paragraph 13, i.e. two chroma samples of size 8x8)** of size 16x16, 8x8, 4x4 **(see paragraph 11, partitions can have 7 different sizes, paragraph 77, chroma block sizes up to 16x16, and paragraph 13, size and number of chroma blocks varies in different formats)** and a set of multiple luma partition types **(see paragraph 13)**, wherein a particular chroma partition type is determined from the set of multiple chroma partition types **(see paragraph 11, partitions can have 7 different sizes, paragraph 77, chroma block sizes up to 16x16)**, independently from a particular luma partition type used to code the block **(see paragraph 77 and claim 16, original block size compensation processing is performed for chroma blocks up to block sizes of 16x16, and paragraph 13, size and number of chroma blocks varies in different formats. As one can see, the size and number of the chroma blocks are determined using block size compensation processing, which is not dependent on the luma blocks)** and the particular luma type being determined from the set of luma partition types **(see paragraph 17, 8x8 or 4x4 luma prediction)**, or a particular chroma partition type is determined from the set of chroma partition types **(see**

paragraph 11, partitions can have 7 different sizes, paragraph 77, chroma block sizes up to 16x16) in response to a luma partition type utilized to code the block or the blocks of one or more neighboring blocks **(see paragraph 125, real chroma blocks should be half of luma block)**, the luma partition type being included in the set of luma partition types **(see paragraph 17, 8x8 or 4x4 luma prediction)**, and luma and chroma can have different intra prediction modes **(see paragraph 15-16 and paragraph 221, bitstream of intra coded macroblock has luma prediction mode and chroma prediction mode)**.

Wang does not explicitly disclose: using a single chroma intra prediction mode for coding the partitioned block, wherein chroma uses a same entropy coding engine as luma, and

wherein intra luma partition type and chroma partition type are independently coded inside a macroblock on a macroblock basis.

However, Guo from the same or similar endeavor discloses: using a single chroma intra prediction mode for coding the partitioned block **(see Guo, Fig. 1 and paragraph 30 and 34, obtaining best predicted mode, texture coding using best chroma predicted mode)**, wherein chroma uses a same entropy coding engine as luma **(see Guo, Fig. 1, block 14, Luma and Chroma Texture coding)**,

and wherein intra luma partition type and chroma partition type are independently coded inside a macroblock on a macroblock basis **(see Guo, paragraph 30)**.

It would have been obvious to the person of ordinary skill in the art at the time of the invention to use “a single chroma intra prediction mode for coding the partitioned block, and wherein intra luma partition type and chroma partition type are independently

coded inside a macroblock on a macroblock basis" as taught by Guo in the encoder taught by Wang to reduce calculations on obtaining predicted modes and to improve coding efficiencies, where a low-cost hardware is practiced with a high efficiency, a high picture quality and a low power consumption **(see Guo, paragraph 6)**.

10. **Regarding claim 2**, claim 2 is drawn to a method having limitations similar to the apparatus claimed in claim 1 treated in the above rejections. Therefore, method claim 2 correspond to apparatus claim 1 and is rejected for the same reasons of anticipation as used above.

11. **Regarding claim 3**, the combination of Guo and Wang discloses: The method of claim 2, wherein a particular chroma partition type for coding the block is determined from the set of chroma partition types responsive to a luma partition type utilized to code the block or one or more neighboring blocks, the luma partition type being included in the set of luma partition types **(see Guo, Fig. 1 and paragraph 40-41, referring to Fig. 1, chroma mode is selected based on the Luma mode and as mentioned in paragraph 40, luma mode is selected by searching the neighboring blocks)**.

12. **Regarding claim 4**, the combination of Guo and Wang discloses: The method of claim 3, wherein for the particular chroma partition type, a largest-size available transform matching the particular chroma partition type is selected from a set of transforms **(see Guo, paragraph 2, 41 and 43, a Hadamard transformation is performed [41] on the macroblocks and the macroblocks are divided into 4x4**

blocks. The chroma blocks are selected 4x4 as well. According to the specification of this application, Hadamard transformation is used to determine the transform size).

13. **Regarding claim 5**, the combination of Guo and Wang discloses: The method of claim 3, wherein from among a particular luma partition type and a particular chroma partition type selected to code the block only the particular luma partition type is signaled **(see Guo, paragraph 41, only luma blocks are used to obtain the best prediction mode)**, the particular luma partition type being selected from the set of luma partition types and the particular chroma partition type being selected from the set of chroma partition types **(see Wang, paragraph 14 and 54, selecting color format. Also see paragraph 11, partitions can have 7 different sizes, and paragraph 77, chroma block sizes up to 16x16)**.

14. **Regarding claim 6**, the combination of Guo and Wang discloses: The method of claim 5, wherein the particular luma partition type is absolutely coded or differentially coded from one or more neighboring blocks **(see Gou, paragraph 41)**.

15. **Regarding claim 7**, the combination of Guo and Wang discloses: The method of claim 2, wherein a particular chroma partition type used to code the block is determined independently from a particular luma partition type used to code the block **(see Wang, paragraph 77 and claim 6, original block size compensation processing for chroma up to block sizes of 16x16)**, the particular chroma partition type being

determined from the set of chroma partition types and the particular luma partition type being determined from the set of luma partition types **(see Guo, paragraph 43)**.

16. **Regarding claim 8**, the combination of Guo and Wang discloses: The method of claim 7, wherein the particular chroma partition type and the particular luma partition types are both signaled **(see Wang, paragraph 211, bit-stream of intra coded macroblock has the following information: macroblock type, luma prediction mode, chroma prediction mode)**.

17. **Regarding claim 9**, the combination of Guo and Wang discloses: The method of claim 8, wherein the particular luma partition type and the particular chroma partition type are absolutely coded or differentially coded from one or more neighboring blocks **(see Gou, paragraph 37)**.

18. **Regarding claim 10**, the combination of Guo and Wang discloses: The method of claim 8, wherein the particular chroma partition type is differentially coded from the particular luma partition type **(see Guo, Fig. 1)**.

19. **Regarding claim 11**, the combination of Guo and Wang discloses: The method of claim 2, wherein a chroma entropy coding engine used to code the block is different from a luma entropy ceding engine used to code the block **(see Guo, paragraph 2, coding system has a luma coding and a chroma coding)**.

20. **Regarding claim 12**, claim 12 is drawn to an apparatus having limitations similar to the method claimed in claim 2 treated in the above rejections. Therefore, method claims 12 correspond to apparatus and method claim 2 and are rejected for the same reasons of anticipation as used above. Furthermore, Wang discloses a decoder **(see Wang, paragraph 87)**.

21. **Regarding claim 13**, claim 13 is drawn to a method having limitations similar to the apparatus claimed in claim 1 treated in the above rejections. Therefore, method claim 13 correspond to apparatus claim 1 and is rejected for the same reasons of anticipation as used above. Furthermore, Wang discloses a decoder **(see Wang, paragraph 87)**.

22. **Regarding claims 14 and 15**, claims 14 and15 are drawn to a method having limitations similar to the method claimed in claims 3 and 4 treated in the above rejections. Therefore, method claims 14 and 15 correspond to apparatus and method claims 3 and 4 and are rejected for the same reasons of anticipation as used above.

23. **Regarding claim 16**, the combination of Guo and Wang discloses: The method of claim 14, wherein from among a particular luma partition type and a particular chroma partition type selected to code the block only information indicating the particular luma partition type is received from a corresponding encoder for use in decoding the block **(see Guo, paragraph 41, only luma blocks are used to obtain the best prediction mode, also see Wang, paragraph 129)**, the particular luma partition type being

selected from the set of luma partition types and the particular chroma partition type being selected from the set of chroma partition types **(see Wang, paragraph 14 and 54, selecting color format. Also see paragraph 11, partitions can have 7 different sizes, and paragraph 77, chroma block sizes up to 16x16)**.

24. **Regarding claims 17 and 18**, claims 17 and 18 are drawn to a method having limitations similar to the method claimed in claims 6 and 7 treated in the above rejections. Therefore, method claims 17 and 18 correspond to apparatus and method claims 6 and 7 and are rejected for the same reasons of anticipation as used above.

25. **Regarding claim 19**, the combination of Guo and Wang discloses: The method of claim 18, wherein information indicating both the particular chroma partition type and the particular luma partition types is received from a corresponding encoder for use in decoding the block **(see Wang, paragraph 129)**.

26. **Regarding claims 20-22**, claims 20-22 are drawn to a method having limitations similar to the method claimed in claims 9-11 treated in the above rejections. Therefore, method claims 20-22 correspond to apparatus and method claims 9-11 and are rejected for the same reasons of anticipation as used above.

27. **Regarding claim 23**, claim 23 is drawn to a computer readable storage medium having limitations similar to the apparatus claimed in claim 1 treated in the above

rejections. Therefore, computer readable storage medium claim 23 corresponds to apparatus claim 1 and is rejected for the same reasons of anticipation as used above.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MARYAM A NASRI whose telephone number is (571)270-7158. The examiner can normally be reached on 10:00-8:00 M-T.

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at http://www.uspto.gov/interviewpractice.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Ustaris can be reached on 5712727383. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/MARYAM A NASRI/
Primary Examiner, Art Unit 2483

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13/389,872	Xu et al.
	Examiner	Art Unit
	MARYAM A NASRI	2483

CPC - Searched*		
Symbol	Date	Examiner
H04N 7/12 and H04N 7/26	5/13/2014	MN

CPC Combination Sets - Searched*		
Symbol	Date	Examiner

US Classification - Searched*			
Class	Subclass	Date	Examiner

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

/MARYAM A NASRI/ Primary Examiner, Art Unit 2483	

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13/389,872	Xu et al.
	Examiner	Art Unit
	MARYAM A NASRI	2483

Search Notes		
Search Notes	**Date**	**Examiner**
Inventor and assignee search	1/9/2014	MN
EAST search, history attached	1/9/2014	MN
Updated EAST and NPL search	5/13/2014	MN
Consulted David Czekaj and Young Lee regarding claim 1	5/8/2014	MN
Consulted David Czekaj and Joe Ustaris regaring first action final	10/28/2014	MN
Updated NPL and EAST search.	10/28/2014	MN
Updated EAST and NPL search. EAST history attached.	4/21/2015	MN
Consulted Joe Ustaris and Andy Rao regarding rejection of claim 1.	4/23/2015	MN
Updated NPL and EAST search.	8/24/2015	MN
Updated NPL and EAST search. History attached.	3/4/2016	MN
Updated EAST and NPL search.	9/13/2016	MN
Updated NPL and EAST search.	3/6/2017	MN
Updated EAST and NPL search.	6/22/2017	MN
Updaed EAST and NPL search.	12/4/2017	MN
Updated EAST and NPL search.	03/30/2018	MN
Updated EAST and NPL search.	07/19/2018	MN
Updated EAST and NPL search.	11/13/2018	MN
Updated EAST and NPL search.	03/17/2019	MN

Interference Search			
US Class/CPC Symbol	**US Subclass/CPC Group**	**Date**	**Examiner**

/MARYAM A NASRI/ Primary Examiner, Art Unit 2483	

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13/389,872	Xu et al.
	Examiner	Art Unit
	MARYAM A NASRI	2483

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

CLAIMS

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	04/02/2018	07/19/2018	11/13/2018	03/17/2019					
	1	✓	✓	✓	✓					
	2	✓	✓	✓	✓					
	3	✓	✓	✓	✓					
	4	✓	✓	✓	✓					
	5	✓	✓	✓	✓					
	6	✓	✓	✓	✓					
	7	✓	✓	✓	✓					
	8	✓	✓	✓	✓					
	9	✓	✓	✓	✓					
	10	✓	✓	✓	✓					
	11	✓	✓	✓	✓					
	12	✓	✓	✓	✓					
	13	✓	✓	✓	✓					
	14	✓	✓	✓	✓					
	15	✓	✓	✓	✓					
	16	✓	✓	✓	✓					
	17	✓	✓	✓	✓					
	18	✓	✓	✓	✓					
	19	✓	✓	✓	✓					
	20	✓	✓	✓	✓					
	21	✓	✓	✓	✓					
	22	✓	✓	✓	✓					
	23	✓	✓	✓	✓					

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	1607	(intra with chroma) same luma same cod$4	US-PGPUB; USPAT; USOCR	OR	ON	2019/03/17 11:24
L2	9778	h04n7/12 or h04n7/26 and L1	US-PGPUB; USPAT; USOCR	OR	ON	2019/03/17 11:24
L3	500	(h04n7/12 or h04n7/26) and L1	US-PGPUB; USPAT; USOCR	OR	ON	2019/03/17 11:24
L4	129	@py<="2009" and (intra with chroma) same luma same cod$4	US-PGPUB; USPAT; USOCR	OR	ON	2019/03/17 11:25
L5	54	l4 and l3	US-PGPUB; USPAT; USOCR	OR	ON	2019/03/17 11:25
L6	72	@py<="2009" and (intra with chroma) same luma same cod$4 same3 (block with size)	US-PGPUB; USPAT; USOCR	OR	ON	2019/03/17 11:25
L7	861	(intra with chroma) same luma same cod$4 same3 (block with size)	US-PGPUB; USPAT; USOCR	OR	ON	2019/03/17 11:25
L8	258	(intra with chroma) same luma same cod$4 same block with size and ((macro-block or macroblock or (macro adj block)) same divid$3)	US-PGPUB; USPAT; USOCR	OR	ON	2019/03/17 11:26
L9	641	chroma same luma same block with size and ((macro-block or macroblock or (macro adj block)) same divid$3)	US-PGPUB; USPAT; USOCR	OR	ON	2019/03/17 11:26
L10	425	chroma same luma same block adj size and ((macro-block or macroblock or (macro adj block)) same divid$3)	US-PGPUB; USPAT; USOCR	OR	ON	2019/03/17 11:26
L11	235	((chroma with block adj size) same (luma with block adj size)) and ((macro-block or macroblock or (macro adj block)) same divid$3)	US-PGPUB; USPAT; USOCR	OR	ON	2019/03/17 11:26
L12	249	((chroma with block with size) same (luma with block with size) same intra) and ((macro-block or macroblock or (macro adj block)) same divid$3)	US-PGPUB; USPAT; USOCR	OR	ON	2019/03/17 11:26

L13	717	((chroma with block with size) same (luma with block with size) same intra) and (macro-block or macroblock or (macro adj block))	US-PGPUB; USPAT; USOCR	OR	ON	2019/03/17 11:26
L14	692	((chroma with block near3 size) same (luma with block mear3 size) same intra) and (macro-block or macroblock or (macro adj block))	US-PGPUB; USPAT; USOCR	OR	ON	2019/03/17 11:27

EAST Search History (Interference)

< This search history is empty>

3/ 17/ 2019 11:27:43 AM
C:\ Users\ mnasri\ Documents\ EAST\ Workspaces\ 13389872.wsp

Doc code: RCEX
Doc description: Request for Continued Examination (RCE)

PTO/SB/30EFS (07-09)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

REQUEST FOR CONTINUED EXAMINATION(RCE)TRANSMITTAL
(Submitted Only via EFS-Web)

Application Number	13/389,872	Filing Date	2012-10-02	Docket Number (if applicable)	PU090108	Art Unit	2483
First Named Inventor	XU et al.			Examiner Name	Maryam A. Nasri		

This is a Request for Continued Examination (RCE) under 37 CFR 1.114 of the above-identified application.
Request for Continued Examination (RCE) practice under 37 CFR 1.114 does not apply to any utility or plant application filed prior to June 8, 1995, or to any design application. The Instruction Sheet for this form is located at WWW.USPTO.GOV

SUBMISSION REQUIRED UNDER 37 CFR 1.114

Note: If the RCE is proper, any previously filed unentered amendments and amendments enclosed with the RCE will be entered in the order in which they were filed unless applicant instructs otherwise. If applicant does not wish to have any previously filed unentered amendment(s) entered, applicant must request non-entry of such amendment(s).

☐ Previously submitted. If a final Office action is outstanding, any amendments filed after the final Office action may be considered as a submission even if this box is not checked.

- ☐ Consider the arguments in the Appeal Brief or Reply Brief previously filed on _____
- ☐ Other _____

☒ Enclosed

- ☒ Amendment/Reply
- ☐ Information Disclosure Statement (IDS)
- ☐ Affidavit(s)/ Declaration(s)
- ☐ Other _____

MISCELLANEOUS

☐ Suspension of action on the above-identified application is requested under 37 CFR 1.103(c) for a period of months _____ (Period of suspension shall not exceed 3 months; Fee under 37 CFR 1.17(i) required)

☐ Other _____

FEES

☒ **The RCE fee under 37 CFR 1.17(e) is required by 37 CFR 1.114 when the RCE is filed.**
The Director is hereby authorized to charge any underpayment of fees, or credit any overpayments, to Deposit Account No 602390

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT REQUIRED

☒ Patent Practitioner Signature

Applicant Signature

PTO/SB/30EFS (07-09)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Signature of Registered U.S. Patent Practitioner			
Signature	/Ronald Kolczynski/	Date (YYYY-MM-DD)	2019-06-21
Name	Ronald Kolczynski	Registration Number	57177

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Qian Xu et al. Serial No.: 13/389,872 Filed: February 10, 2012 For: METHODS AND APPARATUS FOR IMPROVED INTRA CHROMA ENCODING AND DECODING	Examiner: Nasri, Maryam Group Art: 2483

AMENDMENT UNDER 37 C.F.R. §1.114

Mail Stop RCE
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Please enter and consider the following amendments and remarks.

Amendments to, and Listing of, the Claims begins on page **2** of this paper.

Remarks/Arguments begin on page **8** of this paper.

Amendments to, and Listing of, the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) An apparatus, comprising:

an encoder for encoding picture data for at least a block in a picture, wherein multiple partition types are supported for intra prediction chroma coding of the block, the multiple partition types including a set of multiple chroma partition types of sizes 16x16, 8x8, 4x4 and a set of multiple luma partition types, wherein a particular chroma partition type using a single chroma intra prediction mode for coding the partitioned block is determined from the set of multiple chroma partition types independently from a particular luma partition type used to code the block and the particular luma type being determined from the set of luma partition types, and wherein chroma uses a same entropy coding engine as luma, or a particular chroma partition type using a single chroma intra prediction mode for coding the partitioned block is determined from the set of chroma partition types in response to a luma partition type utilized to code the block or the blocks of one or more neighboring blocks, the luma partition type being included in the set of luma partition types, and wherein intra luma partition type and chroma partition type are independently coded inside a macroblock on a macroblock basis, and luma and chroma can have different intra prediction modes, wherein said encoder selects a best luma mode, a best luma partition, a best chroma mode and encodes luma partition, luma mode and chroma mode.

2. (Currently Amended) In a video encoder, a method, comprising:

encoding picture data for at least a block in a picture, wherein multiple partition types are supported for intra prediction chroma coding of the block, the multiple partition types including a set of multiple chroma partition types of sizes 16x16, 8x8, 4x4 and a set of multiple luma partition types, wherein a particular chroma partition type using a single chroma intra prediction mode for coding the partitioned block is determined from the set of multiple chroma partition types independently from a particular luma partition type used to code the block and the particular luma type being determined from the set of luma partition types, and wherein chroma

uses a same entropy coding engine as luma, or a particular chroma partition type using a single chroma intra prediction mode for coding the partitioned block is determined from the set of chroma partition types in response to a luma partition type utilized to code the block or the blocks of one or more neighboring blocks, the luma partition type being included in the set of luma partition types, and wherein intra luma partition type and chroma partition type are independently coded inside a macroblock on a macroblock basis, and luma and chroma can have different intra prediction modes, wherein said encoding comprises selecting a best luma mode, a best luma partition, a best chroma mode and encodes luma partition, luma mode and chroma mode.

3. (Previously Presented) The method of claim 2, wherein a particular chroma partition type for coding the block is determined from the set of chroma partition types responsive to a luma partition type utilized to code the block or one or more neighboring blocks, the luma partition type being included in the set of luma partition types.

4. (Original) The method of claim 3, wherein for the particular chroma partition type, a largest-size available transform matching the particular chroma partition type is selected from a set of transforms.

5. (Previously Presented) The method of claim 3, wherein from among a particular luma partition type and a particular chroma partition type selected to code the block only the particular luma partition type is signaled, the particular luma partition type being selected from the set of luma partition types and the particular chroma partition type being selected from the set of chroma partition types.

6. (Previously Presented) The method of claim 5, wherein the particular luma partition type is absolutely coded or differentially coded from one or more neighboring blocks.

7. (Previously Presented) The method of claim 2, wherein a particular chroma partition type used to code the block is determined independently from a particular luma partition type

used to code the block, the particular chroma partition type being determined from the set of chroma partition types and the particular luma partition type being determined from the set of luma partition types.

8. (Previously Presented) The method of claim 7, wherein the particular chroma partition type and the particular luma partition types are both signaled.

9. (Previously Presented) The method of claim 8, wherein the particular luma partition type and the particular chroma partition type are absolutely coded or differentially coded from one or more neighboring blocks.

10. (Previously Presented) The method of claim 8, wherein the particular chroma partition type is differentially coded from the particular luma partition type.

11. (Cancelled)

12. (Currently Amended) An apparatus, comprising:

a decoder for decoding picture data for at least a block in a picture, wherein multiple partition types are supported for intra prediction chroma decoding of the block, the multiple partition types including a set of multiple chroma partition types of sizes 16x16, 8x8, 4x4 and a set of multiple luma partition types, wherein a particular chroma partition type using a single chroma intra prediction mode for coding the partitioned block is determined from the set of multiple chroma partition types independently from a particular luma partition type used to code the block and the particular luma type being determined from the set of luma partition types, and wherein chroma uses a same entropy coding engine as luma, or a particular chroma partition type using a single chroma intra prediction mode for coding the partitioned block is determined from the set of chroma partition types in response to a luma partition type utilized to code the block or the blocks of one or more neighboring blocks, the luma partition type being included in the set of luma partition types, and wherein intra luma partition type and chroma partition type are independently coded inside a macroblock on a macroblock basis, and luma and chroma can have

different intra prediction modes, wherein said decoder selects a best luma mode, a best luma partition, a best chroma mode and decodes luma partition, luma mode and chroma mode.

13. (Currently Amended) In a video decoder, a method, comprising:

decoding picture data for at least a block in a picture, wherein multiple partition types are supported for intra prediction chroma decoding of the block, the multiple partition types including a set of multiple chroma partition types of sizes 16x16, 8x8, 4x4 and a set of multiple luma partition types, wherein a particular chroma partition type using a single chroma intra prediction mode for coding the partitioned block is determined from the set of multiple chroma partition types independently from a particular luma partition type used to code the block and the particular luma type being determined from the set of luma partition types, and wherein chroma uses a same entropy coding engine as luma, or a particular chroma partition type using a single chroma intra prediction mode for coding the partitioned block is determined from the set of chroma partition types in response to a luma partition type utilized to code the block or the blocks of one or more neighboring blocks, the luma partition type being included in the set of luma partition types, and wherein intra luma partition type and chroma partition type are independently coded inside a macroblock on a macroblock basis, and luma and chroma can have different intra prediction modes, wherein said decoding comprises selecting a best luma mode, a best luma partition, a best chroma mode and decodes luma partition, luma mode and chroma mode.

14. (Previously Presented) The method of claim 13, wherein a particular chroma partition type for decoding the block is determined from the set of chroma partition types responsive to a luma partition type utilized to decode the block or one or more neighboring blocks, the luma partition type being included in the set of luma partition types.

15. (Original) The method of claim 14, wherein for the particular chroma partition type, a largest-size available transform matching the particular chroma partition type is selected from a set of transforms.

16. (Previously Presented) The method of claim 14, wherein from among a particular luma partition type and a particular chroma partition type selected to code the block only information indicating the particular luma partition type is received from a corresponding encoder for use in decoding the block, the particular luma partition type being selected from the set of luma partition types and the particular chroma partition type being selected from the set of chroma partition types.

17. (Previously Presented) The method of claim 16, wherein the particular luma partition type is absolutely decoded or differentially decoded from one or more neighboring blocks.

18. (Previously Presented) The method of claim 13, wherein a particular chroma partition type used to code the block is determined independently from a particular luma partition type used to code the block, the particular chroma partition type being determined from the set of chroma partition types and the particular luma partition type being determined from the set of luma partition types.

19. (Previously Presented) The method of claim 18, wherein information indicating both the particular chroma partition type and the particular luma partition types is received from a corresponding encoder for use in decoding the block.

20. (Previously Presented) The method of claim 19, wherein the particular luma partition type and the particular chroma partition type are absolutely decoded or differentially decoded from one or more neighboring blocks.

21. (Previously Presented) The method of claim 19, wherein the particular chroma partition type is differentially decoded from the particular luma partition type.

22. (Cancelled)

23. (Currently Amended) A non-transitory computer-readable storage media having video signal data encoded thereupon, comprising:

picture data encoded for at least a block in a picture, wherein multiple partition types are supported for intra prediction chroma coding of the block, the multiple partition types including a set of multiple chroma partition types of sizes 16x16, 8x8, 4x4 and a set of multiple luma partition types, wherein a particular chroma partition type using a single chroma intra prediction mode for coding the partitioned block is determined from the set of multiple chroma partition types independently from a particular luma partition type used to code the block and the particular luma type being determined from the set of luma partition types, and wherein chroma uses a same entropy coding engine as luma, or a particular chroma partition type using a single chroma intra prediction mode for coding the partitioned block is determined from the set of chroma partition types in response to a luma partition type utilized to code the block or the blocks of one or more neighboring blocks, the luma partition type being included in the set of luma partition types, and wherein intra luma partition type and chroma partition type are independently coded inside a macroblock on a macroblock basis, and luma and chroma can have different intra prediction modes, wherein said encoded data comprises data encoded by selecting a best luma mode, a best luma partition, a best chroma mode and decodes luma partition, luma mode and chroma mode.

REMARKS

This communication is being submitted in response to the Final Office Action mailed March 21, 2019, for which a shortened statutory period of three months ending June 21, 2019 was set. The Office Action has been reviewed and carefully considered. A Request for Continued Examination under 37 C.F.R. 1.114 is submitted herein. Reconsideration of the prior rejections in light of the timely filing of the instant remarks, and the filing of an RCE is respectfully requested. Please charge any necessary fees to deposit account 60-2390.

Claims 1-23 are pending.

Rejection of Claims 1-23 under 35 U.S.C. §112

Claims 11 and 22 are rejected under 35 U.S.C. 112(b) or 35 U.S.C. 112 (pre-AIA), second paragraph, as being incomplete for omitting essential structure cooperative relationships of elements.

Claims 11 and 22 are cancelled in response.

Rejection of Claims 1-23 under 35 U.S.C. §103

Claims 1-23 are rejected under 35 U.S.C. §103(a) as being unpatentable over Wang (US 2007/0121728 a1) in view of U.S. Pat. App. Pub. No 2008/0219350 to Guo (hereinafter "Guo").

The independent claims currently pending are Claims 1, 2, 12, 13, and 23.

Applicant has amended the independent claims. Claim 1 includes the feature, "said encoder selects a best luma mode, a best luma partition, a best chroma mode and encodes luma partition, luma mode and chroma mode." Claims 2, 12, 13, and 23 have been similarly amended.

Neither Wang nor Guo discloses or suggests that an encoder selects the best luma mode, selects the best luma partition, selects a best chroma mode and encoding luma partition, luma mode and chroma mode, as in present amended claim 1.

The remaining claims depend on Claim 1 and are also respectfully submitted to be novel and inventive over the cited references, alone or in combination, for at least the same reasons as for the independent claims.

Wang discloses a method of optimizing decoding of MPEG4 compliant coded signals. The method disables processing for non-main profile sections, performs reference frame padding

and adaptive motion compensation. The method further performs fast inverse DCT, but not on areas based on whether a 4x4 block may be all zero or only the DC transform coefficient is non-zero, and including CAVLC encoding of residual data. The reference frame padding comprises compensating for motion vectors extending beyond a reference frame by adding to at least the length and width of the reference frame. Adaptive motion compensation includes original blocks size compensation processing for chroma up to block sizes of 16x16.

Applicant respectfully submits that Wang neither teaches nor suggests the features of the amended claims.

Guo also does not disclose these features. Figure 1 of Guo shows "luma mode decision" and "chroma mode decision" but does not disclose "an encoder selects the best luma mode, selects the best luma partition, selects a best chroma mode and encoding luma partition, luma mode and chroma mode" in any way. So, Applicant respectfully submits that Guo also does not disclose this feature.

Applicant disagrees with Examiner's reading of Guo, which is directed to reducing the calculation complexities when determining the intra prediction mode to be used in H.264/AVC coding (see, e.g., Guo, Abstract, paras. [0001], [0006], [0007], and [0046]). We note, as also disclosed at page 12, lines 12-14, that the prior art such as H.264/AVC uses only one partition type for intra chroma coding. However, Guo never discloses multiple partition types for intra chroma coding. Accordingly, Guo is similar to the prior art described in the Applicants' specification.

To that end, cited paragraph [0030] of Guo is reproduced in its entirety as follows:

(a) When a static coding starts [11], luma mode decisions [12] are processed to intra 4x4 macroblocks and intra 16x16 macroblocks and a chroma mode decision [13] is processed to chroma macroblocks. All three macroblocks are processed for mode predictions to obtain best predicted modes separately. Therein, in the intra coding of H.264/AVC, near 70 percents (%) of calculation is processed for intra predictor generation and mode decision, which are the most complex parts. Hence, the present invention provides three coding levels [211] for optimizing the mode decision. Corresponding intra mode decision algorithms 212 for the three coding levels 211 are as follows:

Paragraphs [0031-[0033] of Guo specifically describe the three coding levels 211 referred to in cited paragraph [0030] of Guo. However, none of these paragraphs, including cited paragraph [0030], even remotely suggest the use of multiple partition types for intra chroma coding as recited in the claims or the use of multiple partition types for intra chroma decoding as recited.

Moreover, none of the paragraphs disclose that the multiple partition types supported for intra chroma coding or intra chroma decoding include a set of chroma partition types AND a set of luma partition types. Regarding the immediately preceding, to be clear, the multiple partition types supported for intra chroma coding and the multiple partition types supported for intra chroma decoding include a set of chroma partition types and a set of luma partition types. Stated yet another way, according to the limitations recited in the claims, intra chroma coding or intra chroma decoding can be performed with respect to multiple partition types, where the multiple partition types for such intra chroma coding or intra chroma decoding include luma partition types as well as chroma partition types. It is quite clear from cited paragraph [0030] of Guo that luma and chroma are treated separately (Guo, para. [0030], disclosing "a chroma mode decision [13] is processed to chroma macroblocks"). Thus, this feature is not even remotely suggested in any portion of Guo.

We note that various levels of calculation complexity as disclosed in paragraphs [0030]-[0033] in and of themselves do NOT at all implicate multiple partitions for intra chroma coding or intra chroma decoding. Moreover, we note the outright omission of different partition types for intra chroma coding and intra chroma decoding being explicitly (or implicitly for that matter) set forth in cited paragraph [0030] of Guo as well as the entirety of Guo. Hence, the Examiner's citation of paragraph [0030] seems misplaced.

In fact, a further reading of Guo reveals that not only does Guo fail to teach or suggest the limitations of the claims, but also reveals that the disclosure of Guo actually teaches away from the explicit limitations of the independent claims. For example, regarding the invention in claim 1 of Guo, the same is recited as being performed "in a standard H.264/AVC intra coding", where such standard H.264/AVC intra coding has been clearly established (see, e.g., instant application, p. 12, lines 12-14) as being constrained to a single partition type. Moreover, paragraph [0031] of Guo explicitly discloses that at least level 0 (as described, e.g., in paragraph

[0030] of Guo) is "conformed to international standards". As such, the disclosure of Wang is directly contrary to the above emphasized limitations.

For example, cited paragraph [0040] of Guo fails to even mention luma or chroma, and therefore cannot teach or suggest the limitations of the claims reciting both luma and chroma and detailed limitations relating thereto. Regarding cited paragraph [0041] of Guo, the same is strictly directed to luma, and fails to mention chroma. As such, it clearly cannot teach or suggest the detailed limitations relating to both luma and chroma recited in the claims.

Lastly, we note that searching one or more neighboring blocks is NOT the same as determining a particular chroma type for coding the block responsive to a luma partition type utilized to code the one or more neighboring blocks. This is particularly true when the cited paragraph [0040] of Guo does NOT even mention luma or chroma, let alone the further detailed limitations of the claims.

Hence, Guo fails to teach or suggest all of the above reproduced limitations of the amended claims. Moreover, Wang does not cure the aforementioned deficiencies of Guo, instead being silent regarding the same.

Thus, Guo fails to teach or suggest all of the above reproduced limitations of the independent claims, instead teaching away from the same.

Applicant respectfully submits that the amended claims are novel and non-obvious over Wang or Guo, alone or in combination.

For at least the same reasons, the dependent claims are also respectfully submitted to be non-obvious over any combination of Wang and Guo.

Reconsideration of the rejections is respectfully requested.

In view of the foregoing, and the timely filing of the instant remarks, and the filing of a Request for Continued Examination, Applicants respectfully request that the rejections of the claims set forth in the Office Action of March 21, 2019 be withdrawn, that the pending claims be allowed, and that the case proceed to early issuance of Letters Patent in due course.

It is believed that a fee for filing of a Request for Continued Examination under 37 CFR 1.114 is currently due. However, in the event that any fees or charges are required at this time in connection with the application, they may be charged to applicants' Deposit Account No. 60-2390.

Respectfully submitted,

By: /Ronald Kolczynski/

Ronald Kolczynski, Attorney for Applicants
Registration No.: 57,177

InterDigital VC Holdings, Inc.
(formerly Thomson Licensing LLC)
Patent Operations
4 Research Way, 3rd Floor
Princeton, NJ 08540
(609) 436-5071

Dated: June 20, 2019

Electronic Patent Application Fee Transmittal

Application Number:	13389872
Filing Date:	10-Feb-2012
Title of Invention:	METHODS AND APPARATUS FOR IMPROVED INTRA CHROMA ENCODING AND DECODING
First Named Inventor/Applicant Name:	Qian Xu
Filer:	Ronald J. Kolczynski/Brian Pritchett
Attorney Docket Number:	PU090108

Filed as Large Entity

Filing Fees for U.S. National Stage under 35 USC 371

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
RCE- 2ND AND SUBSEQUENT REQUEST	1820	1	1900	1900
		Total in USD ($)		**1900**

Electronic Acknowledgement Receipt

EFS ID:	36369162
Application Number:	13389872
International Application Number:	
Confirmation Number:	7293
Title of Invention:	METHODS AND APPARATUS FOR IMPROVED INTRA CHROMA ENCODING AND DECODING
First Named Inventor/Applicant Name:	Qian Xu
Customer Number:	157363
Filer:	Ronald J. Kolczynski/Brian Pritchett
Filer Authorized By:	Ronald J. Kolczynski
Attorney Docket Number:	PU090108
Receipt Date:	21-JUN-2019
Filing Date:	10-FEB-2012
Time Stamp:	10:01:54
Application Type:	U.S. National Stage under 35 USC 371

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Payment Type	DA
Payment was successfully received in RAM	$1900
RAM confirmation Number	062119INTEFSW00008414602390
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Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Request for Continued Examination (RCE)	PU090108_US_PCT_RCE_signed.pdf	697603 ca2f74a65efc74f169e92bdd56986bf03f621d91	no	3
Warnings:					
Information:					
2		PU090108_US_PCT_RFOA_signed.pdf	149229 7a0a6909e2d20ab842e54f7dcad9ca07ad999eeb	yes	12

Multipart Description/PDF files in .zip description

Document Description	Start	End
Amendment Submitted/Entered with Filing of CPA/RCE	1	1
Claims	2	7
Applicant Arguments/Remarks Made in an Amendment	8	12

Warnings:					
Information:					
3	Fee Worksheet (SB06)	fee-info.pdf	30717 a490153d492c29ce3b8061a3f0ad4301c211afe8	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	877549		

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If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/SB/06 (09-11)
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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 13/389,872	Filing Date 02/10/2012	☐ To be Mailed

ENTITY: ☑ LARGE ☐ SMALL ☐ MICRO

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA		RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A		N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A		N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*		x $60 =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*		x $250 =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).				
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))					
* If the difference in column 1 is less than zero, enter "0" in column 2.				TOTAL	

APPLICATION AS AMENDED - PART II

		(Column 1)		(Column 2)	(Column 3)			
AMENDMENT	06/21/2019	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 21	Minus	** 23	= 0		x $100 =	0
	Independent (37 CFR 1.16(h))	* 5	Minus	*** 5	= 0		x $460 =	0
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	0

		(Column 1)		(Column 2)	(Column 3)			
AMENDMENT		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=		x $0 =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=		x $0 =	
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.	LIE
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".	/VERNON A TOWLER/
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".	
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.	

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/389,872	02/10/2012	Qian Xu	PU090108	7293

157363 7590 06/28/2019

Brian J. Dorini
InterDigital VC Holdings
4 Research Way
3rd Floor
Princeton, NJ 08543

EXAMINER	
NASRI, MARYAM A	

ART UNIT	PAPER NUMBER
2483	

NOTIFICATION DATE	DELIVERY MODE
06/28/2019	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

USPTO@interdigital.com
donna.foligno@interdigital.com
patricia.verlangieri@interdigital.com

Office Action Summary	Application No. 13/389,872	Applicant(s) Xu et al.	
	Examiner MARYAM A NASRI	Art Unit 2483	AIA (FITF) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☑ Responsive to communication(s) filed on 21 June 2019.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2a)☑ This action is **FINAL.** 2b) ☐ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5) ☑ Claim(s) 1-23 is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6) ☐ Claim(s) _____ is/are allowed.

7) ☑ Claim(s) 1-23 is/are rejected.

8) ☐ Claim(s) _____ is/are objected to.

9) ☐ Claim(s) _____ are subject to restriction and/or election requirement

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to **PPHfeedback@uspto.gov.**

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a)☐ All b)☐ Some** c)☐ None of the:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date _____.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date _____.

4) ☐ Other: _____.

DETAILED ACTION

1. This Office Action is a response to an RCE filed on 06/21/2019, in which claims 1-23 are pending and ready for examination.

Notice of Pre-AIA or AIA Status

2. The present application is being examined under the pre-AIA first to invent provisions.

Continued Examination Under 37 CFR 1.114

3. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 06/21/2019 has been entered.

Response to Arguments

4. Applicant's arguments with respect to claims **1, 2, 12, 13, and 23** have been considered but are not persuasive.

5. In regards to claims 1, 2, 12, 13, and 23 applicant argues that:

a. Guo never discloses multiple partition types for intra chroma coding.

b. Not only does Guo fail to teach or suggest the limitations of the claims, but also reveals that the disclosure of Guo actually teaches away from the explicit limitations of the independent claims.

c. Searching one or more neighboring blocks is NOT the same as determining a particular chroma type for coding the block responsive to a luma partition type utilized to code the one or more neighboring blocks. This is particularly true when the cited paragraph [0040] of Guo does NOT even mention luma or chroma, let alone the further detailed limitations of the claims.

6. However, examiner respectfully disagrees.

a. Examiner is relying on Wang reference to teach this limitation. Please see rejection bellow. As mentioned in the Final Rejection action dated 06/30/2017, Wang discloses that original block size compensation processing is performed for chroma blocks up to block sizes of 16x16 (see paragraph 77 and claim 6). Additionally, Wang discloses that partitions can have 7 different sizes (see paragraph 11), and size and number of chroma blocks varies in different formats (paragraph 13). As one can see, the size and number of the chroma blocks are determined using block size compensation processing, which is not dependent on the luma block size. In other words, nowhere in the Wang reference it is mentioned that Chroma block sizes are determined based on the Luma block

sizes. Thus, examiner believes that the chroma partitioning of Wang is performed independent from the luma partition sizes and numbers.

b. Guo does not mention anything about the size of the chroma partitions and nowhere in the Guo reference, it is mentioned that the chroma blocks are constrained to a single type or block size. Thus, Examiner believes that Guo is not teaching away from the limitation of the independent claims.

c. Again, as mentioned above, Examiner is relying on Wang reference to teach this limitation of the independent claims. Please see rejection bellow.

7. Claims 1-23 remain rejected since the system disclosed by the applicant is taught by the prior arts.

Claim Rejections - 35 USC § 112

The following is a quotation of 35 U.S.C. 112(b):
(b) CONCLUSION.—The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the inventor or a joint inventor regards as the invention.

The following is a quotation of 35 U.S.C. 112 (pre-AIA), second paragraph:
The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claim 11 and 22 are rejected under 35 U.S.C. 112(b) or 35 U.S.C. 112 (pre-AIA), second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. The omitted structural cooperative relationships are: Claims 11 and 22 mention that coding engine used for coding the

chroma blocks is different than the coding engine used for coding the luma blocks, however, claim 11 is dependent on independent claim 2 and claim 22 is dependent on independent claim 13, and the independent claims require the coding engine of the chroma blocks and luma blocks to be the same. These limitations are contradicting each other and it is unclear how the same coding engine used for coding the luma and chroma blocks splits in two independent coding engines for coding the chroma blocks and luma blocks separately. Further clarification is required.

Claim Rejections - 35 USC § 103

The following is a quotation of pre-AIA 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. Claims 1-23 is rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Wang (US 2007/0121728 A1) in view of Guo (US 2008/0219350 A1).

10. **Regarding claim 1**, Wang discloses: An apparatus, comprising:

an encoder for encoding **(see paragraph 87)** picture data for at least a block in a picture **(see paragraph 56 and 87)**, wherein multiple partition types **(see paragraph 11, partitions can have 7 different sizes, and paragraph 77, chroma block sizes up to 16x16)** are supported for intra prediction chroma coding of the block **(see paragraph**

211, bit-stream of intra coded macroblock has chroma prediction mode information), the multiple partition types including a set of multiple chroma partition types **(see paragraph 13, i.e. two chroma samples of size 8x8)** of size 16x16, 8x8, 4x4 **(see paragraph 11, partitions can have 7 different sizes, paragraph 77, chroma block sizes up to 16x16, and paragraph 13, size and number of chroma blocks varies in different formats)** and a set of multiple luma partition types **(see paragraph 13)**, wherein a particular chroma partition type is determined from the set of multiple chroma partition types **(see paragraph 11, partitions can have 7 different sizes, paragraph 77, chroma block sizes up to 16x16)**, independently from a particular luma partition type used to code the block **(see paragraph 77 and claim 16, original block size compensation processing is performed for chroma blocks up to block sizes of 16x16, and paragraph 13, size and number of chroma blocks varies in different formats. As one can see, the size and number of the chroma blocks are determined using block size compensation processing, which is not dependent on the luma blocks)** and the particular luma type being determined from the set of luma partition types **(see paragraph 17, 8x8 or 4x4 luma prediction)**, or a particular chroma partition type is determined from the set of chroma partition types **(see paragraph 11, partitions can have 7 different sizes, paragraph 77, chroma block sizes up to 16x16)** in response to a luma partition type utilized to code the block or the blocks of one or more neighboring blocks **(see paragraph 125, real chroma blocks should be half of luma block)**, the luma partition type being included in the set of luma partition types **(see paragraph 17, 8x8 or 4x4 luma prediction)**, and luma and chroma can have different intra prediction modes **(see paragraph 15-16 and**

paragraph 221, bitstream of intra coded macroblock has luma prediction mode and chroma prediction mode).

Wang does not explicitly disclose: using a single chroma intra prediction mode for coding the partitioned block, wherein chroma uses a same entropy coding engine as luma, and

wherein intra luma partition type and chroma partition type are independently coded inside a macroblock on a macroblock basis,

wherein said encoder selects a best luma mode, a best luma partition, a best chroma mode and encodes luma partition, luma mode and chroma mode.

However, Guo from the same or similar endeavor discloses: using a single chroma intra prediction mode for coding the partitioned block **(see Guo, Fig. 1 and paragraph 30 and 34, obtaining best predicted mode, texture coding using best chroma predicted mode)**, wherein chroma uses a same entropy coding engine as luma **(see Guo, Fig. 1, block 14, Luma and Chroma Texture coding)**,

and wherein intra luma partition type and chroma partition type are independently coded inside a macroblock on a macroblock basis **(see Guo, paragraph 30)**,

wherein said encoder selects a best luma mode **(see Guo, paragraph 30, luma mode decision)**, a best luma partition **(see Guo, paragraph 30, luma mode decision is processed to intra 4x4 and 16x16 macroblocks)**, a best chroma mode **(see Guo, paragraph 30, a chroma mode decision is processed)** and encodes luma partition, luma mode and chroma mode **(see Guo, Fig. 1, box 14)**.

It would have been obvious to the person of ordinary skill in the art at the time of the invention to use “a single chroma intra prediction mode for coding the partitioned

block, and wherein intra luma partition type and chroma partition type are independently coded inside a macroblock on a macroblock basis, wherein said encoder selects a best luma mode, a best luma partition, a best chroma mode and encodes luma partition, luma mode and chroma mode" as taught by Guo in the encoder taught by Wang to reduce calculations on obtaining predicted modes and to improve coding efficiencies, where a low-cost hardware is practiced with a high efficiency, a high picture quality and a low power consumption **(see Guo, paragraph 6)**.

11. **Regarding claim 2**, claim 2 is drawn to a method having limitations similar to the apparatus claimed in claim 1 treated in the above rejections. Therefore, method claim 2 correspond to apparatus claim 1 and is rejected for the same reasons of anticipation as used above.

12. **Regarding claim 3**, the combination of Guo and Wang discloses: The method of claim 2, wherein a particular chroma partition type for coding the block is determined from the set of chroma partition types responsive to a luma partition type utilized to code the block or one or more neighboring blocks, the luma partition type being included in the set of luma partition types **(see Guo, Fig. 1 and paragraph 40-41, referring to Fig. 1, chroma mode is selected based on the Luma mode and as mentioned in paragraph 40, luma mode is selected by searching the neighboring blocks)**.

13. **Regarding claim 4**, the combination of Guo and Wang discloses: The method of claim 3, wherein for the particular chroma partition type, a largest-size available

transform matching the particular chroma partition type is selected from a set of transforms **(see Guo, paragraph 2, 41 and 43, a Hadamard transformation is performed [41] on the macroblocks and the macroblocks are divided into 4x4 blocks. The chroma blocks are selected 4x4 as well. According to the specification of this application, Hadamard transformation is used to determine the transform size)**.

14. **Regarding claim 5**, the combination of Guo and Wang discloses: The method of claim 3, wherein from among a particular luma partition type and a particular chroma partition type selected to code the block only the particular luma partition type is signaled **(see Guo, paragraph 41, only luma blocks are used to obtain the best prediction mode)**, the particular luma partition type being selected from the set of luma partition types and the particular chroma partition type being selected from the set of chroma partition types **(see Wang, paragraph 14 and 54, selecting color format. Also see paragraph 11, partitions can have 7 different sizes, and paragraph 77, chroma block sizes up to 16x16)**.

15. **Regarding claim 6**, the combination of Guo and Wang discloses: The method of claim 5, wherein the particular luma partition type is absolutely coded or differentially coded from one or more neighboring blocks **(see Gou, paragraph 41)**.

16. **Regarding claim 7**, the combination of Guo and Wang discloses: The method of claim 2, wherein a particular chroma partition type used to code the block is determined

independently from a particular luma partition type used to code the block **(see Wang, paragraph 77 and claim 6, original block size compensation processing for chroma up to block sizes of 16x16)**, the particular chroma partition type being determined from the set of chroma partition types and the particular luma partition type being determined from the set of luma partition types **(see Guo, paragraph 43)**.

17. **Regarding claim 8**, the combination of Guo and Wang discloses: The method of claim 7, wherein the particular chroma partition type and the particular luma partition types are both signaled **(see Wang, paragraph 211, bit-stream of intra coded macroblock has the following information: macroblock type, luma prediction mode, chroma prediction mode)**.

18. **Regarding claim 9**, the combination of Guo and Wang discloses: The method of claim 8, wherein the particular luma partition type and the particular chroma partition type are absolutely coded or differentially coded from one or more neighboring blocks **(see Gou, paragraph 37)**.

19. **Regarding claim 10**, the combination of Guo and Wang discloses: The method of claim 8, wherein the particular chroma partition type is differentially coded from the particular luma partition type **(see Guo, Fig. 1)**.

20. **Regarding claim 11**, the combination of Guo and Wang discloses: The method of claim 2, wherein a chroma entropy coding engine used to code the block is different

from a luma entropy ceding engine used to code the block **(see Guo, paragraph 2, coding system has a luma coding and a chroma coding)**.

21. **Regarding claim 12**, claim 12 is drawn to an apparatus having limitations similar to the method claimed in claim 2 treated in the above rejections. Therefore, method claims 12 correspond to apparatus and method claim 2 and are rejected for the same reasons of anticipation as used above. Furthermore, Wang discloses a decoder **(see Wang, paragraph 87)**.

22. **Regarding claim 13**, claim 13 is drawn to a method having limitations similar to the apparatus claimed in claim 1 treated in the above rejections. Therefore, method claim 13 correspond to apparatus claim 1 and is rejected for the same reasons of anticipation as used above. Furthermore, Wang discloses a decoder **(see Wang, paragraph 87)**.

23. **Regarding claims 14 and 15**, claims 14 and15 are drawn to a method having limitations similar to the method claimed in claims 3 and 4 treated in the above rejections. Therefore, method claims 14 and 15 correspond to apparatus and method claims 3 and 4 and are rejected for the same reasons of anticipation as used above.

24. **Regarding claim 16**, the combination of Guo and Wang discloses: The method of claim 14, wherein from among a particular luma partition type and a particular chroma partition type selected to code the block only information indicating the particular luma

partition type is received from a corresponding encoder for use in decoding the block **(see Guo, paragraph 41, only luma blocks are used to obtain the best prediction mode, also see Wang, paragraph 129)**, the particular luma partition type being selected from the set of luma partition types and the particular chroma partition type being selected from the set of chroma partition types **(see Wang, paragraph 14 and 54, selecting color format. Also see paragraph 11, partitions can have 7 different sizes, and paragraph 77, chroma block sizes up to 16x16)**.

25. **Regarding claims 17 and 18**, claims 17 and 18 are drawn to a method having limitations similar to the method claimed in claims 6 and 7 treated in the above rejections. Therefore, method claims 17 and 18 correspond to apparatus and method claims 6 and 7 and are rejected for the same reasons of anticipation as used above.

26. **Regarding claim 19**, the combination of Guo and Wang discloses: The method of claim 18, wherein information indicating both the particular chroma partition type and the particular luma partition types is received from a corresponding encoder for use in decoding the block **(see Wang, paragraph 129)**.

27. **Regarding claims 20-22**, claims 20-22 are drawn to a method having limitations similar to the method claimed in claims 9-11 treated in the above rejections. Therefore, method claims 20-22 correspond to apparatus and method claims 9-11 and are rejected for the same reasons of anticipation as used above.

28. **Regarding claim 23**, claim 23 is drawn to a computer readable storage medium having limitations similar to the apparatus claimed in claim 1 treated in the above rejections. Therefore, computer readable storage medium claim 23 corresponds to apparatus claim 1 and is rejected for the same reasons of anticipation as used above.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MARYAM A NASRI whose telephone number is (571)270-7158. The examiner can normally be reached on 10:00-8:00 M-T.

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an

interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at http://www.uspto.gov/interviewpractice.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Ustaris can be reached on 5712727383. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/MARYAM A NASRI/
Primary Examiner, Art Unit 2483

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13/389,872	Xu et al.
	Examiner	Art Unit
	MARYAM A NASRI	2483

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

CLAIMS

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	04/02/2018	07/19/2018	11/13/2018	03/17/2019	06/24/2019				
	1	✓	✓	✓	✓	✓				
	2	✓	✓	✓	✓	✓				
	3	✓	✓	✓	✓	✓				
	4	✓	✓	✓	✓	✓				
	5	✓	✓	✓	✓	✓				
	6	✓	✓	✓	✓	✓				
	7	✓	✓	✓	✓	✓				
	8	✓	✓	✓	✓	✓				
	9	✓	✓	✓	✓	✓				
	10	✓	✓	✓	✓	✓				
	11	✓	✓	✓	✓	✓				
	12	✓	✓	✓	✓	✓				
	13	✓	✓	✓	✓	✓				
	14	✓	✓	✓	✓	✓				
	15	✓	✓	✓	✓	✓				
	16	✓	✓	✓	✓	✓				
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	18	✓	✓	✓	✓	✓				
	19	✓	✓	✓	✓	✓				
	20	✓	✓	✓	✓	✓				
	21	✓	✓	✓	✓	✓				
	22	✓	✓	✓	✓	✓				
	23	✓	✓	✓	✓	✓				

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13/389,872	Xu et al.
	Examiner	Art Unit
	MARYAM A NASRI	2483

CPC - Searched*		
Symbol	Date	Examiner
H04N 7/12 and H04N 7/26	5/13/2014	MN
H04N 7/12 and H04N 7/26	06/24/2019	MN

CPC Combination Sets - Searched*		
Symbol	Date	Examiner

US Classification - Searched*			
Class	Subclass	Date	Examiner

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

/MARYAM A NASRI/ Primary Examiner, Art Unit 2483	

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13/389,872	Xu et al.
	Examiner	Art Unit
	MARYAM A NASRI	2483

Search Notes		
Search Notes	**Date**	**Examiner**
Inventor and assignee search	1/9/2014	MN
EAST search, history attached	1/9/2014	MN
Updated EAST and NPL search	5/13/2014	MN
Consulted David Czekaj and Young Lee regarding claim 1	5/8/2014	MN
Consulted David Czekaj and Joe Ustaris regaring first action final	10/28/2014	MN
Updated NPL and EAST search.	10/28/2014	MN
Updated EAST and NPL search. EAST history attached.	4/21/2015	MN
Consulted Joe Ustaris and Andy Rao regarding rejection of claim 1.	4/23/2015	MN
Updated NPL and EAST search.	8/24/2015	MN
Updated NPL and EAST search. History attached.	3/4/2016	MN
Updated EAST and NPL search.	9/13/2016	MN
Updated NPL and EAST search.	3/6/2017	MN
Updated EAST and NPL search.	6/22/2017	MN
Updaed EAST and NPL search.	12/4/2017	MN
Updated EAST and NPL search.	03/30/2018	MN
Updated EAST and NPL search.	07/19/2018	MN
Updated EAST and NPL search.	11/13/2018	MN
Updated EAST and NPL search.	03/17/2019	MN
Updated EAST and NPL search.	06/24/2019	MN

Interference Search			
US Class/CPC Symbol	**US Subclass/CPC Group**	**Date**	**Examiner**

/MARYAM A NASRI/ Primary Examiner, Art Unit 2483	

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L4	129	@py<="2009" and (intra with chroma) same luma same cod$4	US-PGPUB; USPAT; USOCR	OR	ON	2019/06/24 11:50
L5	54	(h04n7/12 or h04n7/26) and L4	US-PGPUB; USPAT; USOCR	OR	ON	2019/06/24 11:50
L6	1670	(intra with chroma) same luma same cod$4	US-PGPUB; USPAT; USOCR	OR	ON	2019/06/24 11:50
L7	16012	h04n7/12 or h04n7/26	US-PGPUB; USPAT; USOCR	OR	ON	2019/06/24 11:52
L8	502	6 and 7	US-PGPUB; USPAT; USOCR	OR	ON	2019/06/24 11:52
L9	129	@py<="2009" and (intra with chroma) same luma same cod$4	US-PGPUB; USPAT; USOCR	OR	ON	2019/06/24 11:52
L10	885	(intra with chroma) same luma same cod$4 same3 (block with size)	US-PGPUB; USPAT; USOCR	OR	ON	2019/06/24 11:52
L11	261	(intra with chroma) same luma same cod$4 same block with size and ((macro-block or macroblock or (macro adj block)) same divid$3)	US-PGPUB; USPAT; USOCR	OR	ON	2019/06/24 11:52
L12	658	chroma same luma same block with size and ((macro-block or macroblock or (macro adj block)) same divid$3)	US-PGPUB; USPAT; USOCR	OR	ON	2019/06/24 11:53
L13	236	((chroma with block adj size) same (luma with block adj size)) and ((macro-block or macroblock or (macro adj block)) same divid$3)	US-PGPUB; USPAT; USOCR	OR	ON	2019/06/24 11:53
L14	251	((chroma with block with size) same (luma with block with size) same intra) and ((macro-block or macroblock or (macro adj block)) same divid$3)	US-PGPUB; USPAT; USOCR	OR	ON	2019/06/24 11:53
L15	712	((chroma with block near3 size) same (luma with block mear3 size) same intra) and (macro-block or macroblock or (macro adj block))	US-PGPUB; USPAT; USOCR	OR	ON	2019/06/24 11:53

L16	509	((chroma with block near3 size) same ("8.times.8" or "4.times.4")same (luma with block mear3 size) same intra) and (macro-block or macroblock or (macro adj block))	US-PGPUB; USPAT; USOCR	OR	ON	2019/06/24 11:53
L17	83	(((chroma with block near3 size) near3 ("8.times.8" near3 "4.times.4"))same (luma with block mear3 size) same intra) and (macro-block or macroblock or (macro adj block))	US-PGPUB; USPAT; USOCR	OR	ON	2019/06/24 11:53
L18	83	(((chroma with block near3 size) near3 ("8.times.8" near3 "4.times.4"))same (luma with block mear3 size) same intra)	US-PGPUB; USPAT; USOCR	OR	ON	2019/06/24 11:55

EAST Search History (Interference)

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PTO/SB/06 (09-11)
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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 13/389,872	Filing Date 02/10/2012	☐ To be Mailed

ENTITY: ☑ LARGE ☐ SMALL ☐ MICRO

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA		RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A		N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A		N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*		x $60 =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*		x $250 =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).				
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))					
* If the difference in column 1 is less than zero, enter "0" in column 2.				TOTAL	

APPLICATION AS AMENDED - PART II

		(Column 1)		(Column 2)	(Column 3)			
AMENDMENT	10/28/2019	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 21	Minus	** 23	= 0		x $100 =	0
	Independent (37 CFR 1.16(h))	* 5	Minus	*** 5	= 0		x $460 =	0
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	0

		(Column 1)		(Column 2)	(Column 3)			
AMENDMENT		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=		x $0 =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=		x $0 =	
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.	LIE
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".	/LAMONT N MCLAUCHLIN/
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".	
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.	

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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Doc code: RCEX
Doc description: Request for Continued Examination (RCE)

PTO/SB/30EFS (02-18)
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REQUEST FOR CONTINUED EXAMINATION(RCE)TRANSMITTAL
(Submitted Only via EFS-Web)

Application Number	13389872	Filing Date	2012-02-10	Docket Number (if applicable)	2009P00083WOUS	Art Unit	2483
First Named Inventor	Qian Xu			Examiner Name	NASRI, MARYAM A.		

This is a Request for Continued Examination (RCE) under 37 CFR 1.114 of the above-identified application.
Request for Continued Examination (RCE) practice under 37 CFR 1.114 does not apply to any utility or plant application filed prior to June 8, 1995, or to any design application. The Instruction Sheet for this form is located at WWW.USPTO.GOV

SUBMISSION REQUIRED UNDER 37 CFR 1.114

Note: If the RCE is proper, any previously filed unentered amendments and amendments enclosed with the RCE will be entered in the order in which they were filed unless applicant instructs otherwise. If applicant does not wish to have any previously filed unentered amendment(s) entered, applicant must request non-entry of such amendment(s).

☐ Previously submitted. If a final Office action is outstanding, any amendments filed after the final Office action may be considered as a submission even if this box is not checked.

- ☐ Consider the arguments in the Appeal Brief or Reply Brief previously filed on _____
- ☐ Other _____

☒ Enclosed

- ☒ Amendment/Reply
- ☐ Information Disclosure Statement (IDS)
- ☐ Affidavit(s)/ Declaration(s)
- ☐ Other _____

MISCELLANEOUS

☐ Suspension of action on the above-identified application is requested under 37 CFR 1.103(c) for a period of months _____ (Period of suspension shall not exceed 3 months; Fee under 37 CFR 1.17(i) required)

☐ Other _____

FEES

☒ **The RCE fee under 37 CFR 1.17(e) is required by 37 CFR 1.114 when the RCE is filed.**
The Director is hereby authorized to charge any underpayment of fees, or credit any overpayments, to Deposit Account No 602390

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT REQUIRED

☒ Patent Practitioner Signature

Applicant Signature

PTO/SB/30EFS (02-18)
Approved for use through 11/30/2020. OMB 0651-0031
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Signature of Registered U.S. Patent Practitioner			
Signature	/RONALD KOLCZYNSKI/	Date (YYYY-MM-DD)	2019-10-28
Name	Ronald Kolczynski	Registration Number	57177

This collection of information is required by 37 CFR 1.114. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these records.

2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Qian Xu et al. Serial No.: 13/389,872 Filed: February 10, 2012 For: METHODS AND APPARATUS FOR IMPROVED INTRA CHROMA ENCODING AND DECODING	Examiner: Nasri, Maryam Group Art: 2483

AMENDMENT UNDER 37 C.F.R. §1.114

Mail Stop RCE
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Please enter and consider the following amendments and remarks.

Amendments to, and Listing of, the Claims begins on page **2** of this paper.

Remarks/Arguments begin on page **9** of this paper.

Amendments to, and Listing of, the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) An apparatus, comprising:

an encoder for encoding picture data for at least a block in a picture, wherein multiple partition types are supported for intra prediction chroma coding of the block, the multiple partition types including a set of multiple chroma partition types of sizes 16x16, 8x8, 4x4 and a set of multiple luma partition types, wherein a particular chroma partition type using a single chroma intra prediction mode, that can be different than luma intra prediction mode, for coding the partitioned block is determined from the set of multiple chroma partition types independently from a particular luma partition type used to code the block and the particular luma type being determined from the set of luma partition types, and wherein intra luma partition type and chroma partition type are independently coded inside a macroblock on a macroblock basis, and wherein chroma uses a same entropy coding engine as luma, or a particular chroma partition type using a single chroma intra prediction mode for coding the partitioned block is determined from the set of chroma partition types in response to a luma partition type utilized to code the block or the blocks of one or more neighboring blocks, the chroma partition type being aligned with luma partition type for a set of partition types and luma partition type is signaled but not chroma partition type, the luma partition type being included in the set of luma partition types~~, and wherein intra luma partition type and chroma partition type are independently coded inside a macroblock on a macroblock basis, and luma and chroma can have different intra prediction modes, wherein said encoder selects a best luma mode, a best luma partition, a best chroma mode and encodes luma partition, luma mode and chroma mode~~.

2. (Currently Amended) In a video encoder, a method, comprising:

encoding picture data for at least a block in a picture, wherein multiple partition types are supported for intra prediction chroma coding of the block, the multiple partition types including a set of multiple chroma partition types of sizes 16x16, 8x8, 4x4 and a set of multiple luma

partition types, wherein a particular chroma partition type using a single chroma intra prediction mode, that can be different than luma intra prediction mode, for coding the partitioned block is determined from the set of multiple chroma partition types independently from a particular luma partition type used to code the block and the particular luma type being determined from the set of luma partition types, and wherein intra luma partition type and chroma partition type are independently coded inside a macroblock on a macroblock basis, and wherein chroma uses a same entropy coding engine as luma, or a particular chroma partition type using a single chroma intra prediction mode for coding the partitioned block is determined from the set of chroma partition types in response to a luma partition type utilized to code the block or the blocks of one or more neighboring blocks, the chroma partition type being aligned with luma partition type for a set of partition types and luma partition type is signaled but not chroma partition type, the luma partition type being included in the set of luma partition types~~, and wherein intra luma partition type and chroma partition type are independently coded inside a macroblock on a macroblock basis, and luma and chroma can have different intra prediction modes, wherein said encoder selects a best luma mode, a best luma partition, a best chroma mode and encodes luma partition, luma mode and chroma mode~~.

3. (Previously Presented) The method of claim 2, wherein a particular chroma partition type for coding the block is determined from the set of chroma partition types responsive to a luma partition type utilized to code the block or one or more neighboring blocks, the luma partition type being included in the set of luma partition types.

4. (Original) The method of claim 3, wherein for the particular chroma partition type, a largest-size available transform matching the particular chroma partition type is selected from a set of transforms.

5. (Previously Presented) The method of claim 3, wherein from among a particular luma partition type and a particular chroma partition type selected to code the block only the particular luma partition type is signaled, the particular luma partition type being selected from the set of

luma partition types and the particular chroma partition type being selected from the set of chroma partition types.

6. (Previously Presented) The method of claim 5, wherein the particular luma partition type is absolutely coded or differentially coded from one or more neighboring blocks.

7. (Previously Presented) The method of claim 2, wherein a particular chroma partition type used to code the block is determined independently from a particular luma partition type used to code the block, the particular chroma partition type being determined from the set of chroma partition types and the particular luma partition type being determined from the set of luma partition types.

8. (Previously Presented) The method of claim 7, wherein the particular chroma partition type and the particular luma partition types are both signaled.

9. (Previously Presented) The method of claim 8, wherein the particular luma partition type and the particular chroma partition type are absolutely coded or differentially coded from one or more neighboring blocks.

10. (Previously Presented) The method of claim 8, wherein the particular chroma partition type is differentially coded from the particular luma partition type.

11. (Cancelled)

12. (Currently Amended) An apparatus, comprising:

a decoder for decoding picture data for at least a block in a picture, wherein multiple partition types are supported for intra prediction chroma decoding of the block, the multiple partition types including a set of multiple chroma partition types of sizes 16x16, 8x8, 4x4 and a set of multiple luma partition types, wherein a particular chroma partition type using a single chroma intra prediction mode, that can be different than luma intra prediction mode, for

decoding the partitioned block is determined from the set of multiple chroma partition types independently from a particular luma partition type used to decode the block and the particular luma type being determined from the set of luma partition types, and wherein intra luma partition type and chroma partition type are independently decoded inside a macroblock on a macroblock basis, and wherein chroma uses a same entropy decoding engine as luma, or a particular chroma partition type using a single chroma intra prediction mode for decoding the partitioned block is determined from the set of chroma partition types in response to a luma partition type utilized to decode the block or the blocks of one or more neighboring blocks, the chroma partition type being aligned with luma partition type for a set of partition types and luma partition type is signaled but not chroma partition type, the luma partition type being included in the set of luma partition types~~, and wherein intra luma partition type and chroma partition type are independently coded inside a macroblock on a macroblock basis, and luma and chroma can have different intra prediction modes, wherein said encoder selects a best luma mode, a best luma partition, a best chroma mode and encodes luma partition, luma mode and chroma mode~~.

13. (Currently Amended) In a video decoder, a method, comprising:

decoding picture data for at least a block in a picture, wherein multiple partition types are supported for intra prediction chroma decoding of the block, the multiple partition types including a set of multiple chroma partition types of sizes 16x16, 8x8, 4x4 and a set of multiple luma partition types, wherein a particular chroma partition type using a single chroma intra prediction mode, that can be different than luma intra prediction mode, for decoding the partitioned block is determined from the set of multiple chroma partition types independently from a particular luma partition type used to decode the block and the particular luma type being determined from the set of luma partition types, and wherein intra luma partition type and chroma partition type are independently decoded inside a macroblock on a macroblock basis, and wherein chroma uses a same entropy decoding engine as luma, or a particular chroma partition type using a single chroma intra prediction mode for decoding the partitioned block is determined from the set of chroma partition types in response to a luma partition type utilized to decode the block or the blocks of one or more neighboring blocks, the chroma partition type being aligned with luma partition type for a set of partition types and luma partition type is

signaled but not chroma partition type, the luma partition type being included in the set of luma partition types~~, and wherein intra luma partition type and chroma partition type are independently coded inside a macroblock on a macroblock basis, and luma and chroma can have different intra prediction modes, wherein said encoder selects a best luma mode, a best luma partition, a best chroma mode and encodes luma partition, luma mode and chroma mode~~.

14. (Previously Presented) The method of claim 13, wherein a particular chroma partition type for decoding the block is determined from the set of chroma partition types responsive to a luma partition type utilized to decode the block or one or more neighboring blocks, the luma partition type being included in the set of luma partition types.

15. (Original) The method of claim 14, wherein for the particular chroma partition type, a largest-size available transform matching the particular chroma partition type is selected from a set of transforms.

16. (Previously Presented) The method of claim 14, wherein from among a particular luma partition type and a particular chroma partition type selected to code the block only information indicating the particular luma partition type is received from a corresponding encoder for use in decoding the block, the particular luma partition type being selected from the set of luma partition types and the particular chroma partition type being selected from the set of chroma partition types.

17. (Previously Presented) The method of claim 16, wherein the particular luma partition type is absolutely decoded or differentially decoded from one or more neighboring blocks.

18. (Previously Presented) The method of claim 13, wherein a particular chroma partition type used to code the block is determined independently from a particular luma partition type used to code the block, the particular chroma partition type being determined from the set of chroma partition types and the particular luma partition type being determined from the set of luma partition types.

19. (Previously Presented) The method of claim 18, wherein information indicating both the particular chroma partition type and the particular luma partition types is received from a corresponding encoder for use in decoding the block.

20. (Previously Presented) The method of claim 19, wherein the particular luma partition type and the particular chroma partition type are absolutely decoded or differentially decoded from one or more neighboring blocks.

21. (Previously Presented) The method of claim 19, wherein the particular chroma partition type is differentially decoded from the particular luma partition type.

22. (Cancelled)

23. (Currently Amended) A non-transitory computer-readable storage media having video signal data encoded thereupon, comprising:

picture data encoded for at least a block in a picture, wherein multiple partition types are supported for intra prediction chroma coding of the block, the multiple partition types including a set of multiple chroma partition types of sizes 16x16, 8x8, 4x4 and a set of multiple luma partition types, wherein a particular chroma partition type using a single chroma intra prediction mode , that can be different than luma intra prediction mode, for coding the partitioned block is determined from the set of multiple chroma partition types independently from a particular luma partition type used to code the block and the particular luma type being determined from the set of luma partition types, and wherein intra luma partition type and chroma partition type are independently coded inside a macroblock on a macroblock basis, and wherein chroma uses a same entropy coding engine as luma, or a particular chroma partition type using a single chroma intra prediction mode for coding the partitioned block is determined from the set of chroma partition types in response to a luma partition type utilized to code the block or the blocks of one or more neighboring blocks, the chroma partition type being aligned with luma partition type for a set of partition types and luma partition type is signaled but not chroma partition type, the luma

partition type being included in the set of luma partition types~~, and wherein intra luma partition type and chroma partition type are independently coded inside a macroblock on a macroblock basis, and luma and chroma can have different intra prediction modes, , wherein said encoded data comprises data encoded by selecting a best luma mode, a best luma partition, a best chroma mode and decodes luma partition, luma mode and chroma mode~~..

REMARKS

This communication is being submitted in response to the Final Office Action mailed June 28, 2019, for which a shortened statutory period of three months ending September 28, 2019 was set, and for which a one month extension of time is hereby requested. The Office Action has been reviewed and carefully considered. A Request for Continued Examination under 37 C.F.R. 1.114 is submitted herein. The claims have been amended. No new matter has been added. Reconsideration of the prior rejections in light of the timely filing of the instant remarks, and the filing of an RCE is respectfully requested. Please charge any necessary fees to deposit account 60-2390.

Claims 1-23 are pending.

Rejection of Claims 1-23 under 35 U.S.C. §112

Claims 11 and 22 are rejected under 35 U.S.C. 112(b) or 35 U.S.C. 112 (pre-AIA), second paragraph, as being incomplete for omitting essential structure cooperative relationships of elements.

Claims 11 and 22 are cancelled in response.

Rejection of Claims 1-23 under 35 U.S.C. §103

Claims 1-23 are rejected under 35 U.S.C. §103(a) as being unpatentable over Wang (US 2007/0121728 a1) in view of U.S. Pat. App. Pub. No 2008/0219350 to Guo (hereinafter "Guo").

The independent claims currently pending are Claims 1, 2, 12, 13, and 23.

Applicant has amended the independent claims. Claim 1 includes the feature, "encoding picture data for at least a block in a picture, wherein multiple partition types are supported for intra prediction chroma coding of the block, the multiple partition types including a set of multiple chroma partition types of sizes 16x16, 8x8, 4x4 and a set of multiple luma partition types, wherein a particular chroma partition type using a single chroma intra prediction mode, that can be different than luma intra prediction mode, for coding the partitioned block is determined from the set of multiple chroma partition types independently from a particular luma partition type used to code the block and the particular luma type being determined from the set of luma partition types, and wherein intra luma partition type and chroma partition type are

independently coded inside a macroblock on a macroblock basis, and wherein chroma uses a same entropy coding engine as luma, or a particular chroma partition type using a single chroma intra prediction mode for coding the partitioned block is determined from the set of chroma partition types in response to a luma partition type utilized to code the block or the blocks of one or more neighboring blocks, the chroma partition type being aligned with luma partition type for a set of partition types and luma partition type is signaled but not chroma partition type, the luma partition type being included in the set of luma partition types." Claims 2, 12, 13, and 23 have been similarly amended.

The Examiner concedes that Wang does not disclose "using a single chroma prediction mode for coding the partitioned block, wherein chroma uses a same entropy coding engine as luma, and wherein intra luma partition type and chroma partition type are independently coded inside a macroblock on a macroblock basis, wherein said encoder selects a best luma mode, a best luma partition, a best chroma mode and encodes luma partition, luma mode and chroma mode."

Wang discloses a method of optimizing decoding of MPEG4 compliant coded signals. The method disables processing for non-main profile sections, performs reference frame padding and adaptive motion compensation. The method further performs fast inverse DCT, but not on areas based on whether a 4x4 block may be all zero or only the DC transform coefficient is non-zero and including CAVLC encoding of residual data. The reference frame padding comprises compensating for motion vectors extending beyond a reference frame by adding to at least the length and width of the reference frame. Adaptive motion compensation includes original blocks size compensation processing for chroma up to block sizes of 16x16.

Applicant respectfully submits that Wang neither teaches nor suggests the features of the amended claims, such as "a single chroma intra prediction mode, that can be different than luma intra prediction mode" and "the chroma partition type being aligned with luma partition type for a set of partition types and luma partition type is signaled but not chroma partition type" as recited.

The Examiner then relies on Guo to allegedly disclose these features.

Guo discloses reducing the calculation complexities when determining the intra prediction mode to be used in H.264/AVC coding (see, e.g., Guo, Abstract, paras. [0001],

[0006], [0007], and [0046]). We note, as also disclosed at page 12, lines 12-14, that the prior art such as H.264/AVC uses only one partition type for intra chroma coding. However, Guo never discloses multiple partition types for intra chroma coding. Accordingly, Guo is similar to the prior art described in the Applicants' specification.

Nowhere does Guo even remotely "a single chroma intra prediction mode, that can be different than luma intra prediction mode" and "the chroma partition type being aligned with luma partition type for a set of partition types and luma partition type is signaled but not chroma partition type" as recited.

To reiterate, Guo fails to teach or suggest the limitations of the claims, but also reveals that the disclosure of Guo actually teaches away from the explicit limitations of the independent claims. For example, regarding the invention in claim 1 of Guo, the same is recited as being performed "in a standard H.264/AVC intra coding", where such standard H.264/AVC intra coding has been clearly established (see, e.g., instant application, p. 12, lines 12-14) as being constrained to a single partition type. Moreover, paragraph [0031] of Guo explicitly discloses that at least level 0 (as described, e.g., in paragraph [0030] of Guo) is "conformed to international standards". As such, the disclosure of Wang is directly contrary to the above emphasized limitations.

For example, cited paragraph [0040] of Guo fails to even mention luma or chroma, and therefore cannot teach or suggest the limitations of the claims reciting both luma and chroma and detailed limitations relating thereto. Regarding cited paragraph [0041] of Guo, the same is strictly directed to luma, and fails to mention chroma. As such, it clearly cannot teach or suggest the detailed limitations relating to both luma and chroma recited in the claims.

Applicant respectfully submits that neither Wang nor Guo discloses or suggests "a single chroma intra prediction mode, that can be different than luma intra prediction mode" and "the chroma partition type being aligned with luma partition type for a set of partition types and luma partition type is signaled but not chroma partition type" in combination with the rest of the claim features.

The remaining claims depend on claims 1, 2, 12 or 13 and are also respectfully submitted to be novel and non-obvious over the cited references, alone or in combination, for at least the same reasons as for the independent claims.

Reconsideration of the rejections is respectfully requested.

In view of the foregoing, and the timely filing of the instant remarks, and the filing of a Request for Continued Examination, Applicants respectfully request that the rejections of the claims set forth in the Office Action of June 28, 2019 be withdrawn, that the pending claims be allowed, and that the case proceed to early issuance of Letters Patent in due course.

It is believed that a fee for filing of a Request for Continued Examination under 37 CFR 1.114, as well as a fee for a one month extension of time, are currently due. However, in the event that any fees or charges are required at this time in connection with the application, they may be charged to applicants' Deposit Account No. 60-2390.

Respectfully submitted,

By: /Ronald Kolczynski/

Ronald Kolczynski, Attorney for Applicants
Registration No.: 57,177

InterDigital VC Holdings, Inc.
(formerly Thomson Licensing LLC)
Patent Operations
4 Research Way, 3rd Floor
Princeton, NJ 08540
(609) 436-5071

Dated: October 28, 2019

Electronic Patent Application Fee Transmittal

Application Number:	13389872
Filing Date:	10-Feb-2012
Title of Invention:	METHODS AND APPARATUS FOR IMPROVED INTRA CHROMA ENCODING AND DECODING
First Named Inventor/Applicant Name:	Qian Xu
Filer:	Ronald J. Kolczynski/Brian Pritchett
Attorney Docket Number:	2009P00083WOUS

Filed as Large Entity

Filing Fees for U.S. National Stage under 35 USC 371

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension - 1 month with $0 paid	1251	1	200	200
Miscellaneous:				
RCE- 2ND AND SUBSEQUENT REQUEST	1820	1	1900	1900
		Total in USD ($)		**2100**

Electronic Acknowledgement Receipt

EFS ID:	37577278
Application Number:	13389872
International Application Number:	
Confirmation Number:	7293
Title of Invention:	METHODS AND APPARATUS FOR IMPROVED INTRA CHROMA ENCODING AND DECODING
First Named Inventor/Applicant Name:	Qian Xu
Customer Number:	157363
Filer:	Ronald J. Kolczynski/Brian Pritchett
Filer Authorized By:	Ronald J. Kolczynski
Attorney Docket Number:	2009P00083WOUS
Receipt Date:	28-OCT-2019
Filing Date:	10-FEB-2012
Time Stamp:	13:43:36
Application Type:	U.S. National Stage under 35 USC 371

Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	$2100
RAM confirmation Number	E20190RD44070506
Deposit Account	
Authorized User	

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Request for Continued Examination (RCE)	2009P00083WOUS_RCE_EXECUTED.pdf	1366689 f4d423fcc10b0677d3288c6ad5162dfa2b73a85e	no	3
Warnings:					
Information:					
2		2009P00083WOUS_RCE_AMENDMENT.pdf	142592 554a88a88844774aba1e56aeff41fc0629b2f181	yes	12

Multipart Description/PDF files in .zip description

Document Description	Start	End
Amendment Submitted/Entered with Filing of CPA/RCE	1	1
Claims	2	8
Applicant Arguments/Remarks Made in an Amendment	9	12

Warnings:					
Information:					
3	Fee Worksheet (SB06)	fee-info.pdf	33029 ad1ba6b233a50bb581f9dd554e0fa5c15c2c9355	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	1542310		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

UNITED STATES PATENT AND TRADEMARK OFFICE

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www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/389,872	02/10/2012	Qian Xu	2009P00083WOUS	7293

157363 7590 11/18/2019

Brian J. Dorini
InterDigital VC Holdings
4 Research Way
3rd Floor
Princeton, NJ 08543

EXAMINER	
NASRI, MARYAM A	

ART UNIT	PAPER NUMBER
2483	

NOTIFICATION DATE	DELIVERY MODE
11/18/2019	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

PatentOPs.US@interdigital.com
donna.foligno@interdigital.com
patricia.verlangieri@interdigital.com

Office Action Summary	Application No. 13/389,872	Applicant(s) Xu et al.	
	Examiner MARYAM A NASRI	Art Unit 2483	AIA (FITF) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☑ Responsive to communication(s) filed on 28 October 2019.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2a)☐ This action is **FINAL.** 2b) ☑ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5) ☑ Claim(s) 1-10,12-21 and 23 is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6) ☐ Claim(s) _____ is/are allowed.

7) ☑ Claim(s) 1-10,12-21 and 23 is/are rejected.

8) ☐ Claim(s) _____ is/are objected to.

9) ☐ Claim(s) _____ are subject to restriction and/or election requirement

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to **PPHfeedback@uspto.gov.**

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a)☐ All b)☐ Some** c)☐ None of the:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date _____.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date _____.

4) ☐ Other: _____.

DETAILED ACTION

1. This Office Action is a response to an RCE filed on 10/28/2019, in which claims 1-10, 12-21, and 23 are pending and ready for examination.

Notice of Pre-AIA or AIA Status

2. The present application is being examined under the pre-AIA first to invent provisions.

Continued Examination Under 37 CFR 1.114

3. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 10/28/2019 has been entered.

Response to Arguments

4. Applicant's arguments with respect to claims **1, 2, 12, 13, and 23** have been considered but are not persuasive.

5. In regards to claims 1, 2, 12, 13, and 23 applicant argues that:

a. The combination of Wang and Guo never discloses the limitation of: "a single chroma intra prediction mode, that can be different than luma intra prediction mode" and "the chroma partition type being aligned with luma partition type for a set of partition types and luma partition type is signaled but not chroma partition type" as recited.

b. Not only does Guo fail to teach or suggest the limitations of the claims, but also reveals that the disclosure of Guo actually teaches away from the explicit limitations of the independent claims.

6. However, examiner respectfully disagrees.

a. In paragraph 30, Guo mentions that when a static coding starts, luma mode decisions are processed to intra 4x4 macroblocks and intra 16x16 macroblocks and a chroma mode decision is processed to chroma macroblocks. All three macroblocks are processed for mode predictions to obtain best predicted modes separately. In paragraphs 32-34 of Guo, it is explained how the best mode is obtained. Furthermore, as mentioned in paragraph 15-16 and paragraph 221 of Wang, bitstream of intra coded macroblock has luma prediction mode and chroma prediction mode. As one can see, Wang mentions "mode" and not modes, thus, a single luma mode and a single chroma mode is signaled. Furthermore, paragraph 58 of the publication of the current application mentions: "the chroma partition type is aligned with the luma partition type for a predefined set of partition types. For example, if the luma partition type is 8x8, then the chroma partition type for the 4:2:0 format will be 4x4 instead of 8x8 chroma as is

done in the second prior art approach. This is because the size of chroma is 1/2 of luma." And "The luma and chroma intra prediction modes can be the same or different. As for the signaling, we only signal the luma partition type, but not the chroma partition type, since the chroma partition type is decided based on the luma partition type." As one can see, the size of the chroma partition size is determined based on the format of coding and the size of the luma partition type. Similarly, Wang discloses the 4:2:0 chroma sampling coding format (paragraph 10 and 13) and mentions that real chroma motion compensation blocks should be half of luma prediction block (see paragraph 125). Thus Examiner believes that the argued limitation has been disclosed by the currently on file references.

b. As mentioned in the final Office Action mailed on 06/28/2019, Guo does not mention anything about the size of the chroma partitions and nowhere in the Guo reference, it is mentioned that the chroma blocks are constrained to a single type or block size. Thus, Examiner believes that Guo is not teaching away from the limitation of the independent claims.

7. Claims 1-10, 12-21, and 23 remain rejected since the system disclosed by the applicant is taught by the prior arts.

Claim Rejections - 35 USC § 112

The following is a quotation of 35 U.S.C. 112(b):
(b) CONCLUSION.—The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the inventor or a joint inventor regards as the invention.

The following is a quotation of 35 U.S.C. 112 (pre-AIA), second paragraph:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claim 1, 2, 12, 13, and 23 are rejected under 35 U.S.C. 112(b) or 35 U.S.C. 112 (pre-AIA), second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. The omitted structural cooperative relationships are: the independent claims mention "wherein a particular chroma partition type ... for coding the partitioned block is determined from the set of multiple chroma partition types independently from a particular luma partition type used to code the block and the particular luma type being determined from the set of luma partition types, and wherein intra luma partition type and chroma partition type are independently coded inside a macroblock on a macroblock basis", "the chroma partition type being aligned with luma partition type for a set of partition types and luma partition type is signaled but not chroma partition type". A review of the specification of the current application shows that paragraph 58 of the specification of the current application provides support for the limitation of "the chroma partition type being aligned with luma partition type for a set of partition types and luma partition type is signaled but not chroma partition type." Thus, the claims require the chroma partition type to be independent from the luma partition type, and at the same time require the chroma partition type to be determined based on the luma partition type. These limitations are contradicting each other and it is unclear how the chroma partition types are determined independently from the luma partition type, when the chroma partition type has to be set

based on the size of the luma partition type and the coding format. Further clarification is required.

Claim Rejections - 35 USC § 103

The following is a quotation of pre-AIA 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. Claims 1-23 is rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Wang (US 2007/0121728 A1) in view of Guo (US 2008/0219350 A1).

10. **Regarding claim 1**, Wang discloses: An apparatus, comprising:

an encoder for encoding **(see paragraph 87)** picture data for at least a block in a picture **(see paragraph 56 and 87)**, wherein multiple partition types **(see paragraph 11, partitions can have 7 different sizes, and paragraph 77, chroma block sizes up to 16x16)** are supported for intra prediction chroma coding of the block **(see paragraph 211, bit-stream of intra coded macroblock has chroma prediction mode information)**, the multiple partition types including a set of multiple chroma partition types **(see paragraph 13, i.e. two chroma samples of size 8x8)** of size 16x16, 8x8, 4x4 **(see paragraph 11, partitions can have 7 different sizes, paragraph 77, chroma block sizes up to 16x16, and paragraph 13, size and number of chroma blocks**

varies in different formats) and a set of multiple luma partition types **(see paragraph 13)**, wherein a particular chroma partition type is determined from the set of multiple chroma partition types **(see paragraph 11, partitions can have 7 different sizes, paragraph 77, chroma block sizes up to 16x16)**, independently from a particular luma partition type used to code the block **(see paragraph 77 and claim 16, original block size compensation processing is performed for chroma blocks up to block sizes of 16x16, and paragraph 13, size and number of chroma blocks varies in different formats. As one can see, the size and number of the chroma blocks are determined using block size compensation processing, which is not dependent on the luma blocks)** and the particular luma type being determined from the set of luma partition types **(see paragraph 17, 8x8 or 4x4 luma prediction)**, or a particular chroma partition type is determined from the set of chroma partition types **(see paragraph 11, partitions can have 7 different sizes, paragraph 77, chroma block sizes up to 16x16)** in response to a luma partition type utilized to code the block or the blocks of one or more neighboring blocks **(see paragraph 125, real chroma blocks should be half of luma block)** , the chroma partition type being aligned with luma partition type for a set of partition types **(see paragraph 10 and 13, using different chroma sampling formats)** and luma partition type is signaled but not chroma partition type **(see paragraph 125, chroma blocks should be half of luma blocks)**, the luma partition type being included in the set of luma partition types **(see paragraph 17, 8x8 or 4x4 luma prediction)**, and luma and chroma can have different intra prediction modes **(see paragraph 15-16 and paragraph 221, bitstream of intra coded macroblock has luma prediction mode and chroma prediction mode)**.

Wang does not explicitly disclose: using a single chroma intra prediction mode, that can be different than luma inter prediction mode, for coding the partitioned block, wherein chroma uses a same entropy coding engine as luma, and wherein intra luma partition type and chroma partition type are independently coded inside a macroblock on a macroblock basis.

However, Guo from the same or similar endeavor discloses: using a single chroma intra prediction mode, that can be different than luma inter prediction mode, for coding the partitioned block **(see Guo, Fig. 1 and paragraph 30 and 34, obtaining best predicted mode separately, and texture coding using best luma prediction mode and best chroma predicted mode)**, wherein chroma uses a same entropy coding engine as luma **(see Guo, Fig. 1, block 14, Luma and Chroma Texture coding)**, and wherein intra luma partition type and chroma partition type are independently coded inside a macroblock on a macroblock basis **(see Guo, paragraph 30)**.

It would have been obvious to the person of ordinary skill in the art at the time of the invention to use “using a single chroma intra prediction mode, that can be different than luma inter prediction mode, for coding the partitioned block, wherein chroma uses a same entropy coding engine as luma, and wherein intra luma partition type and chroma partition type are independently coded inside a macroblock on a macroblock basis” as taught by Guo in the encoder taught by Wang to reduce calculations on obtaining predicted modes and to improve coding efficiencies, where a low-cost hardware is practiced with a high efficiency, a high picture quality and a low power consumption **(see Guo, paragraph 6)**.

11. **Regarding claim 2**, claim 2 is drawn to a method having limitations similar to the apparatus claimed in claim 1 treated in the above rejections. Therefore, method claim 2 correspond to apparatus claim 1 and is rejected for the same reasons of anticipation as used above.

12. **Regarding claim 3**, the combination of Guo and Wang discloses: The method of claim 2, wherein a particular chroma partition type for coding the block is determined from the set of chroma partition types responsive to a luma partition type utilized to code the block or one or more neighboring blocks, the luma partition type being included in the set of luma partition types **(see Guo, Fig. 1 and paragraph 40-41, referring to Fig. 1, chroma mode is selected based on the Luma mode and as mentioned in paragraph 40, luma mode is selected by searching the neighboring blocks)**.

13. **Regarding claim 4**, the combination of Guo and Wang discloses: The method of claim 3, wherein for the particular chroma partition type, a largest-size available transform matching the particular chroma partition type is selected from a set of transforms **(see Guo, paragraph 2, 41 and 43, a Hadamard transformation is performed [41] on the macroblocks and the macroblocks are divided into 4x4 blocks. The chroma blocks are selected 4x4 as well. According to the specification of this application, Hadamard transformation is used to determine the transform size)**.

14. **Regarding claim 5**, the combination of Guo and Wang discloses: The method of claim 3, wherein from among a particular luma partition type and a particular chroma partition type selected to code the block only the particular luma partition type is signaled **(see Guo, paragraph 41, only luma blocks are used to obtain the best prediction mode)**, the particular luma partition type being selected from the set of luma partition types and the particular chroma partition type being selected from the set of chroma partition types **(see Wang, paragraph 14 and 54, selecting color format. Also see paragraph 11, partitions can have 7 different sizes, and paragraph 77, chroma block sizes up to 16x16)**.

15. **Regarding claim 6**, the combination of Guo and Wang discloses: The method of claim 5, wherein the particular luma partition type is absolutely coded or differentially coded from one or more neighboring blocks **(see Gou, paragraph 41)**.

16. **Regarding claim 7**, the combination of Guo and Wang discloses: The method of claim 2, wherein a particular chroma partition type used to code the block is determined independently from a particular luma partition type used to code the block **(see Wang, paragraph 77 and claim 6, original block size compensation processing for chroma up to block sizes of 16x16)**, the particular chroma partition type being determined from the set of chroma partition types and the particular luma partition type being determined from the set of luma partition types **(see Guo, paragraph 43)**.

17. **Regarding claim 8**, the combination of Guo and Wang discloses: The method of claim 7, wherein the particular chroma partition type and the particular luma partition types are both signaled **(see Wang, paragraph 211, bit-stream of intra coded macroblock has the following information: macroblock type, luma prediction mode, chroma prediction mode)**.

18. **Regarding claim 9**, the combination of Guo and Wang discloses: The method of claim 8, wherein the particular luma partition type and the particular chroma partition type are absolutely coded or differentially coded from one or more neighboring blocks **(see Gou, paragraph 37)**.

19. **Regarding claim 10**, the combination of Guo and Wang discloses: The method of claim 8, wherein the particular chroma partition type is differentially coded from the particular luma partition type **(see Guo, Fig. 1)**.

20. **Regarding claim 11**, the combination of Guo and Wang discloses: The method of claim 2, wherein a chroma entropy coding engine used to code the block is different from a luma entropy ceding engine used to code the block **(see Guo, paragraph 2, coding system has a luma coding and a chroma coding)**.

21. **Regarding claim 12**, claim 12 is drawn to an apparatus having limitations similar to the method claimed in claim 2 treated in the above rejections. Therefore, method claims 12 correspond to apparatus and method claim 2 and are rejected for the same

reasons of anticipation as used above. Furthermore, Wang discloses a decoder **(see Wang, paragraph 87)**.

22. **Regarding claim 13**, claim 13 is drawn to a method having limitations similar to the apparatus claimed in claim 1 treated in the above rejections. Therefore, method claim 13 correspond to apparatus claim 1 and is rejected for the same reasons of anticipation as used above. Furthermore, Wang discloses a decoder **(see Wang, paragraph 87)**.

23. **Regarding claims 14 and 15**, claims 14 and15 are drawn to a method having limitations similar to the method claimed in claims 3 and 4 treated in the above rejections. Therefore, method claims 14 and 15 correspond to apparatus and method claims 3 and 4 and are rejected for the same reasons of anticipation as used above.

24. **Regarding claim 16**, the combination of Guo and Wang discloses: The method of claim 14, wherein from among a particular luma partition type and a particular chroma partition type selected to code the block only information indicating the particular luma partition type is received from a corresponding encoder for use in decoding the block **(see Guo, paragraph 41, only luma blocks are used to obtain the best prediction mode, also see Wang, paragraph 129)**, the particular luma partition type being selected from the set of luma partition types and the particular chroma partition type being selected from the set of chroma partition types **(see Wang, paragraph 14 and**

54, selecting color format. Also see paragraph 11, partitions can have 7 different sizes, and paragraph 77, chroma block sizes up to 16x16).

25. **Regarding claims 17 and 18**, claims 17 and 18 are drawn to a method having limitations similar to the method claimed in claims 6 and 7 treated in the above rejections. Therefore, method claims 17 and 18 correspond to apparatus and method claims 6 and 7 and are rejected for the same reasons of anticipation as used above.

26. **Regarding claim 19**, the combination of Guo and Wang discloses: The method of claim 18, wherein information indicating both the particular chroma partition type and the particular luma partition types is received from a corresponding encoder for use in decoding the block **(see Wang, paragraph 129)**.

27. **Regarding claims 20-22**, claims 20-22 are drawn to a method having limitations similar to the method claimed in claims 9-11 treated in the above rejections. Therefore, method claims 20-22 correspond to apparatus and method claims 9-11 and are rejected for the same reasons of anticipation as used above.

28. **Regarding claim 23**, claim 23 is drawn to a computer readable storage medium having limitations similar to the apparatus claimed in claim 1 treated in the above rejections. Therefore, computer readable storage medium claim 23 corresponds to apparatus claim 1 and is rejected for the same reasons of anticipation as used above.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MARYAM A NASRI whose telephone number is (571)270-7158. The examiner can normally be reached on 10:00-8:00 M-T.

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at http://www.uspto.gov/interviewpractice.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Ustaris can be reached on 5712727383. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/MARYAM A NASRI/
Primary Examiner, Art Unit 2483

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13/389,872	Xu et al.
	Examiner	Art Unit
	MARYAM A NASRI	2483

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

CLAIMS

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	04/02/2018	07/19/2018	11/13/2018	03/17/2019	06/24/2019	11/12/2019			
	1	✓	✓	✓	✓	✓	✓			
	2	✓	✓	✓	✓	✓	✓			
	3	✓	✓	✓	✓	✓	✓			
	4	✓	✓	✓	✓	✓	✓			
	5	✓	✓	✓	✓	✓	✓			
	6	✓	✓	✓	✓	✓	✓			
	7	✓	✓	✓	✓	✓	✓			
	8	✓	✓	✓	✓	✓	✓			
	9	✓	✓	✓	✓	✓	✓			
	10	✓	✓	✓	✓	✓	✓			
	11	✓	✓	✓	✓	✓	-			
	12	✓	✓	✓	✓	✓	✓			
	13	✓	✓	✓	✓	✓	✓			
	14	✓	✓	✓	✓	✓	✓			
	15	✓	✓	✓	✓	✓	✓			
	16	✓	✓	✓	✓	✓	✓			
	17	✓	✓	✓	✓	✓	✓			
	18	✓	✓	✓	✓	✓	✓			
	19	✓	✓	✓	✓	✓	✓			
	20	✓	✓	✓	✓	✓	✓			
	21	✓	✓	✓	✓	✓	✓			
	22	✓	✓	✓	✓	✓	-			
	23	✓	✓	✓	✓	✓	✓			

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13/389,872	Xu et al.
	Examiner	Art Unit
	MARYAM A NASRI	2483

CPC - Searched*		
Symbol	Date	Examiner
H04N 7/12 and H04N 7/26	5/13/2014	MN
H04N 7/12 and H04N 7/26	06/24/2019	MN

CPC Combination Sets - Searched*		
Symbol	Date	Examiner

US Classification - Searched*			
Class	Subclass	Date	Examiner

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

/MARYAM A NASRI/ Primary Examiner, Art Unit 2483	

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13/389,872	Xu et al.
	Examiner	Art Unit
	MARYAM A NASRI	2483

Search Notes		
Search Notes	**Date**	**Examiner**
Inventor and assignee search	1/9/2014	MN
EAST search, history attached	1/9/2014	MN
Updated EAST and NPL search	5/13/2014	MN
Consulted David Czekaj and Young Lee regarding claim 1	5/8/2014	MN
Consulted David Czekaj and Joe Ustaris regaring first action final	10/28/2014	MN
Updated NPL and EAST search.	10/28/2014	MN
Updated EAST and NPL search. EAST history attached.	4/21/2015	MN
Consulted Joe Ustaris and Andy Rao regarding rejection of claim 1.	4/23/2015	MN
Updated NPL and EAST search.	8/24/2015	MN
Updated NPL and EAST search. History attached.	3/4/2016	MN
Updated EAST and NPL search.	9/13/2016	MN
Updated NPL and EAST search.	3/6/2017	MN
Updated EAST and NPL search.	6/22/2017	MN
Updaed EAST and NPL search.	12/4/2017	MN
Updated EAST and NPL search.	03/30/2018	MN
Updated EAST and NPL search.	07/19/2018	MN
Updated EAST and NPL search.	11/13/2018	MN
Updated EAST and NPL search.	03/17/2019	MN
Updated EAST and NPL search.	06/24/2019	MN
Updated EAST and NPL search.	11/12/2019	MN

Interference Search			
US Class/CPC Symbol	**US Subclass/CPC Group**	**Date**	**Examiner**

/MARYAM A NASRI/ Primary Examiner, Art Unit 2483	

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L7	1822	(intra with chroma) same luma same cod$4	US-PGPUB; USPAT; USOCR	OR	ON	2019/11/12 12:07
L8	9945	h04n7/12 or h04n7/26 and L7	US-PGPUB; USPAT; USOCR	OR	ON	2019/11/12 12:07
L9	507	(h04n7/12 or h04n7/26) and L7	US-PGPUB; USPAT; USOCR	OR	ON	2019/11/12 12:07
L10	129	@py<="2009" and (intra with chroma) same luma same cod$4	US-PGPUB; USPAT; USOCR	OR	ON	2019/11/12 12:07
L11	507	(h04n7/12 or h04n7/26) and L7	US-PGPUB; USPAT; USOCR	OR	ON	2019/11/12 12:08
L12	129	@py<="2009" and (intra with chroma) same luma same cod$4	US-PGPUB; USPAT; USOCR	OR	ON	2019/11/12 12:08
L13	54	L12 and L11	US-PGPUB; USPAT; USOCR	OR	ON	2019/11/12 12:08
L14	72	@py<="2009" and (intra with chroma) same luma same cod$4 same3 (block with size)	US-PGPUB; USPAT; USOCR	OR	ON	2019/11/12 12:08
L15	958	(intra with chroma) same luma same cod$4 same3 (block with size)	US-PGPUB; USPAT; USOCR	OR	ON	2019/11/12 12:08
L16	958	(intra with chroma) same luma same cod$4 same3 (block with size)	US-PGPUB; USPAT; USOCR	OR	ON	2019/11/12 12:08
L17	271	(intra with chroma) same luma same cod$4 same block with size and ((macro-block or macroblock or (macro adj block)) same divid$3)	US-PGPUB; USPAT; USOCR	OR	ON	2019/11/12 12:08
L18	697	chroma same luma same block with size and ((macro-block or macroblock or (macro adj block)) same divid$3)	US-PGPUB; USPAT; USOCR	OR	ON	2019/11/12 12:08

L19	443	chroma same luma same block adj size and ((macro-block or macroblock or (macro adj block)) same divid$3)	US-PGPUB; USPAT; USOCR	OR	ON	2019/11/12 12:08
L20	245	((chroma with block adj size) same (luma with block adj size)) and ((macro-block or macroblock or (macro adj block)) same divid$3)	US-PGPUB; USPAT; USOCR	OR	ON	2019/11/12 12:08
L21	260	((chroma with block with size) same (luma with block with size) same intra) and ((macro-block or macroblock or (macro adj block)) same divid$3)	US-PGPUB; USPAT; USOCR	OR	ON	2019/11/12 12:08
L22	781	((chroma with block with size) same (luma with block with size) same intra) and (macro-block or macroblock or (macro adj block))	US-PGPUB; USPAT; USOCR	OR	ON	2019/11/12 12:08
L23	755	((chroma with block near3 size) same (luma with block mear3 size) same intra) and (macro-block or macroblock or (macro adj block))	US-PGPUB; USPAT; USOCR	OR	ON	2019/11/12 12:08

EAST Search History (Interference)

< This search history is empty>

11/ 12/ 2019 1:13:59 PM
C:\ Users\ mnasri\ Documents\ EAST\ Workspaces\ 13389872.wsp

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Qian Xu et al. Serial No.: 13/389,872 Filed: February 10, 2012 For: METHODS AND APPARATUS FOR IMPROVED INTRA CHROMA ENCODING AND DECODING	Examiner: Nasri, Maryam Group Art: 2483

AMENDMENT UNDER 37 C.F.R. §1.111

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Please enter and consider the following amendments and remarks.

Amendments to, and Listing of, the Claims begins on page **2** of this paper.

Remarks/Arguments begin on page **8** of this paper.

Amendments to, and Listing of, the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) An apparatus, comprising:

an encoder for encoding picture data for at least a block in a picture, wherein multiple partition types are supported for intra prediction chroma coding of the block, the multiple partition types including a set of multiple chroma partition types of sizes 16x16, 8x8, 4x4 and a set of multiple luma partition types, wherein a particular chroma partition type using a single chroma intra prediction mode, that can be different than luma intra prediction mode, for coding the partitioned block is determined from the set of multiple chroma partition types ~~independently~~ from a particular luma partition type used to code the block and the particular luma type being determined from the set of luma partition types, and wherein intra luma partition type and chroma partition type are independently coded inside a macroblock on a macroblock basis wherein the luma partition type and chroma partition type are differentially coded from a neighboring block, and wherein chroma uses a same entropy coding engine as luma, **or** a particular chroma partition type using a single chroma intra prediction mode for coding the partitioned block is determined from the set of chroma partition types in response to a luma partition type utilized to code the block or the blocks of one or more neighboring blocks, the chroma partition type being aligned with luma partition type for a set of partition types and luma partition type is signaled but not chroma partition type, the luma partition type being included in the set of luma partition types.

2. (Currently Amended) In a video encoder, a method, comprising:

encoding picture data for at least a block in a picture, wherein multiple partition types are supported for intra prediction chroma coding of the block, the multiple partition types including a set of multiple chroma partition types of sizes 16x16, 8x8, 4x4 and a set of multiple luma partition types, wherein a particular chroma partition type using a single chroma intra prediction mode, that can be different than luma intra prediction mode, for coding the partitioned block is

determined from the set of multiple chroma partition types ~~independently~~ from a particular luma partition type used to code the block and the particular luma type being determined from the set of luma partition types, and wherein intra luma partition type and chroma partition type are independently coded inside a macroblock on a macroblock basis wherein the luma partition type and chroma partition type are differentially coded from a neighboring block, and wherein chroma uses a same entropy coding engine as luma, or a particular chroma partition type using a single chroma intra prediction mode for coding the partitioned block is determined from the set of chroma partition types in response to a luma partition type utilized to code the block or the blocks of one or more neighboring blocks, the chroma partition type being aligned with luma partition type for a set of partition types and luma partition type is signaled but not chroma partition type, the luma partition type being included in the set of luma partition types.

3. (Previously Presented) The method of claim 2, wherein a particular chroma partition type for coding the block is determined from the set of chroma partition types responsive to a luma partition type utilized to code the block or one or more neighboring blocks, the luma partition type being included in the set of luma partition types.

4. (Original) The method of claim 3, wherein for the particular chroma partition type, a largest-size available transform matching the particular chroma partition type is selected from a set of transforms.

5. (Previously Presented) The method of claim 3, wherein from among a particular luma partition type and a particular chroma partition type selected to code the block only the particular luma partition type is signaled, the particular luma partition type being selected from the set of luma partition types and the particular chroma partition type being selected from the set of chroma partition types.

6. (Previously Presented) The method of claim 5, wherein the particular luma partition type is absolutely coded or differentially coded from one or more neighboring blocks.

7. (Previously Presented) The method of claim 2, wherein a particular chroma partition type used to code the block is determined independently from a particular luma partition type used to code the block, the particular chroma partition type being determined from the set of chroma partition types and the particular luma partition type being determined from the set of luma partition types.

8. (Previously Presented) The method of claim 7, wherein the particular chroma partition type and the particular luma partition types are both signaled.

9. (Previously Presented) The method of claim 8, wherein the particular luma partition type and the particular chroma partition type are absolutely coded or differentially coded from one or more neighboring blocks.

10. (Previously Presented) The method of claim 8, wherein the particular chroma partition type is differentially coded from the particular luma partition type.

11. (Cancelled)

12. (Currently Amended) An apparatus, comprising:

a decoder for decoding picture data for at least a block in a picture, wherein multiple partition types are supported for intra prediction chroma decoding of the block, the multiple partition types including a set of multiple chroma partition types of sizes 16x16, 8x8, 4x4 and a set of multiple luma partition types, wherein a particular chroma partition type using a single chroma intra prediction mode, that can be different than luma intra prediction mode, for decoding the partitioned block is determined from the set of multiple chroma partition types ~~independently~~ from a particular luma partition type used to decode the block and the particular luma type being determined from the set of luma partition types, and wherein intra luma partition type and chroma partition type are independently decoded inside a macroblock on a macroblock basis wherein the luma partition type and chroma partition type are differentially coded from a neighboring block, and wherein chroma uses a same entropy decoding engine as luma, or a

particular chroma partition type using a single chroma intra prediction mode for decoding the partitioned block is determined from the set of chroma partition types in response to a luma partition type utilized to decode the block or the blocks of one or more neighboring blocks, the chroma partition type being aligned with luma partition type for a set of partition types and luma partition type is signaled but not chroma partition type, the luma partition type being included in the set of luma partition types.

13. (Currently Amended) In a video decoder, a method, comprising:

decoding picture data for at least a block in a picture, wherein multiple partition types are supported for intra prediction chroma decoding of the block, the multiple partition types including a set of multiple chroma partition types of sizes 16x16, 8x8, 4x4 and a set of multiple luma partition types, wherein a particular chroma partition type using a single chroma intra prediction mode, that can be different than luma intra prediction mode, for decoding the partitioned block is determined from the set of multiple chroma partition types ~~independently~~ from a particular luma partition type used to decode the block and the particular luma type being determined from the set of luma partition types, and wherein intra luma partition type and chroma partition type are independently decoded inside a macroblock on a macroblock basis wherein the luma partition type and chroma partition type are differentially coded from a neighboring block, and wherein chroma uses a same entropy decoding engine as luma, or a particular chroma partition type using a single chroma intra prediction mode for decoding the partitioned block is determined from the set of chroma partition types in response to a luma partition type utilized to decode the block or the blocks of one or more neighboring blocks, the chroma partition type being aligned with luma partition type for a set of partition types and luma partition type is signaled but not chroma partition type, the luma partition type being included in the set of luma partition types.

14. (Previously Presented) The method of claim 13, wherein a particular chroma partition type for decoding the block is determined from the set of chroma partition types responsive to a luma partition type utilized to decode the block or one or more neighboring blocks, the luma partition type being included in the set of luma partition types.

15. (Original) The method of claim 14, wherein for the particular chroma partition type, a largest-size available transform matching the particular chroma partition type is selected from a set of transforms.

16. (Previously Presented) The method of claim 14, wherein from among a particular luma partition type and a particular chroma partition type selected to code the block only information indicating the particular luma partition type is received from a corresponding encoder for use in decoding the block, the particular luma partition type being selected from the set of luma partition types and the particular chroma partition type being selected from the set of chroma partition types.

17. (Previously Presented) The method of claim 16, wherein the particular luma partition type is absolutely decoded or differentially decoded from one or more neighboring blocks.

18. (Previously Presented) The method of claim 13, wherein a particular chroma partition type used to code the block is determined independently from a particular luma partition type used to code the block, the particular chroma partition type being determined from the set of chroma partition types and the particular luma partition type being determined from the set of luma partition types.

19. (Previously Presented) The method of claim 18, wherein information indicating both the particular chroma partition type and the particular luma partition types is received from a corresponding encoder for use in decoding the block.

20. (Previously Presented) The method of claim 19, wherein the particular luma partition type and the particular chroma partition type are absolutely decoded or differentially decoded from one or more neighboring blocks.

21. (Previously Presented) The method of claim 19, wherein the particular chroma partition type is differentially decoded from the particular luma partition type.

22. (Cancelled)

23. (Currently Amended) A non-transitory computer-readable storage media having video signal data encoded thereupon, comprising:

picture data encoded for at least a block in a picture, wherein multiple partition types are supported for intra prediction chroma coding of the block, the multiple partition types including a set of multiple chroma partition types of sizes 16x16, 8x8, 4x4 and a set of multiple luma partition types, wherein a particular chroma partition type using a single chroma intra prediction mode, that can be different than luma intra prediction mode, for coding the partitioned block is determined from the set of multiple chroma partition types ~~independently~~ from a particular luma partition type used to code the block and the particular luma type being determined from the set of luma partition types, and wherein intra luma partition type and chroma partition type are independently coded inside a macroblock on a macroblock basis wherein the luma partition type and chroma partition type are differentially coded from a neighboring block, and wherein chroma uses a same entropy coding engine as luma, or a particular chroma partition type using a single chroma intra prediction mode for coding the partitioned block is determined from the set of chroma partition types in response to a luma partition type utilized to code the block or the blocks of one or more neighboring blocks, the chroma partition type being aligned with luma partition type for a set of partition types and luma partition type is signaled but not chroma partition type, the luma partition type being included in the set of luma partition types.

REMARKS

This communication is being submitted in response to the Office Action mailed November 18, 2019, for which a shortened statutory period of three months ending February 18, 2020 was set. The Office Action has been reviewed and carefully considered. The claims have been amended. No new matter has been added. Reconsideration of the prior rejections in light of the timely filing of the instant remarks and amendments is respectfully requested. Please charge any necessary fees to deposit account 60-2390.

Claims 1-23 are pending.

Rejection of Claims 1-23 under 35 U.S.C. §112

Claims 1, 2, 12, 13, and 23 are rejected under 35 U.S.C. 112(b) or 35 U.S.C. 112 (pre-AIA), second paragraph, as being incomplete for omitting essential structure cooperative relationships of elements.

Claims 1, 2, 12, 13, and 23 have been amended by removing the word "independently" in the feature "determined from the set of multiple chroma partition types ~~independently~~ from a particular luma partition type", as detailed below, in response, and are respectfully submitted to be complete.

Rejection of Claims 1-23 under 35 U.S.C. §103

Claims 1-23 are rejected under 35 U.S.C. §103(a) as being unpatentable over Wang (US 2007/0121728 a1) in view of U.S. Pat. App. Pub. No 2008/0219350 to Guo (hereinafter "Guo").

The independent claims currently pending are Claims 1, 2, 12, 13, and 23. ****

Applicant has amended the independent claims. Claim 1 includes the feature, "encoding picture data for at least a block in a picture, wherein multiple partition types are supported for intra prediction chroma coding of the block, the multiple partition types including a set of multiple chroma partition types of sizes 16x16, 8x8, 4x4 and a set of multiple luma partition types, wherein a particular chroma partition type using a single chroma intra prediction mode, that can be different than luma intra prediction mode, for coding the partitioned block is determined from the set of multiple chroma partition types ~~independently~~ from a particular luma partition type used to code the block and the particular luma type being determined from the set

of luma partition types, and wherein intra luma partition type and chroma partition type are independently coded inside a macroblock on a macroblock basis wherein the luma partition type and chroma partition type are differentially coded from a neighboring block, and wherein chroma uses a same entropy coding engine as luma, or a particular chroma partition type using a single chroma intra prediction mode for coding the partitioned block is determined from the set of chroma partition types in response to a luma partition type utilized to code the block or the blocks of one or more neighboring blocks, the chroma partition type being aligned with luma partition type for a set of partition types and luma partition type is signaled but not chroma partition type, the luma partition type being included in the set of luma partition types."

Claims 2, 12, 13, and 23 have been similarly amended. Support for this amendment can be found, for example, in the specification on page 18, lines 13-14.

The Examiner concedes that Wang does not disclose "using a single chroma prediction mode for coding the partitioned block, wherein chroma uses a same entropy coding engine as luma, and wherein intra luma partition type and chroma partition type are independently coded inside a macroblock on a macroblock basis".

Wang discloses a method of optimizing decoding of MPEG4 compliant coded signals. The method disables processing for non-main profile sections, performs reference frame padding and adaptive motion compensation. The method further performs fast inverse DCT, but not on areas based on whether a 4x4 block may be all zero or only the DC transform coefficient is non-zero and including CAVLC encoding of residual data. The reference frame padding comprises compensating for motion vectors extending beyond a reference frame by adding to at least the length and width of the reference frame. Adaptive motion compensation includes original blocks size compensation processing for chroma up to block sizes of 16x16.

Applicant respectfully submits that Wang neither teaches nor suggests the features of the amended claims, such as "wherein the luma partition type and chroma partition type are differentially coded from a neighboring block" as recited.

The Examiner then relies on Guo to allegedly disclose deficiencies of Wang.

Guo discloses reducing the calculation complexities when determining the intra prediction mode to be used in H.264/AVC coding (see, e.g., Guo, Abstract, paras. [0001], [0006], [0007], and [0046]). We note, as also disclosed at page 12, lines 12-14, that the prior art

such as H.264/AVC uses only one partition type for intra chroma coding. However, Guo never discloses multiple partition types for intra chroma coding. Accordingly, Guo is similar to the prior art described in the Applicants' specification.

Nowhere does Guo teach or suggest "wherein the luma partition type and chroma partition type are differentially coded from a neighboring block" as recited.

Applicant respectfully submits that neither Wang nor Guo discloses or suggests "wherein the luma partition type and chroma partition type are differentially coded from a neighboring block" in combination with the rest of the claim features.

The remaining claims depend on claims 1, 2, 12 or 13 and are also respectfully submitted to be novel and non-obvious over the cited references, alone or in combination, for at least the same reasons as for the independent claims.

Reconsideration of the rejections is respectfully requested.

In view of the foregoing, and the timely filing of the instant remarks and Amendments, Applicants respectfully request that the rejections of the claims set forth in the Office Action of November 18, 2019 be withdrawn, that the pending claims be allowed, and that the case proceed to early issuance of Letters Patent in due course.

It is believed that no fees are currently due. However, in the event that any fees or charges are required at this time in connection with the application, they may be charged to applicants' Deposit Account No. 60-2390.

Respectfully submitted,

By: /Ronald Kolczynski/

Ronald Kolczynski, Attorney for Applicants
Registration No.: 57,177

InterDigital VC Holdings, Inc.
Patent Operations
4 Research Way, 3rd Floor
Princeton, NJ 08540
(609) 436-5071

Dated: February 18, 2020

Electronic Acknowledgement Receipt

EFS ID:	38614869
Application Number:	13389872
International Application Number:	
Confirmation Number:	7293
Title of Invention:	METHODS AND APPARATUS FOR IMPROVED INTRA CHROMA ENCODING AND DECODING
First Named Inventor/Applicant Name:	Qian Xu
Customer Number:	157363
Filer:	Ronald J. Kolczynski/Brian Pritchett
Filer Authorized By:	Ronald J. Kolczynski
Attorney Docket Number:	2009P00083WOUS
Receipt Date:	18-FEB-2020
Filing Date:	10-FEB-2012
Time Stamp:	14:45:48
Application Type:	U.S. National Stage under 35 USC 371

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		2009P00083WOUS_ROA.pdf	136541 d2b8878db52cb6c31ff8f7ea34be3b3be1fe616b	yes	10

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Amendment/Req. Reconsideration-After Non-Final Reject	1	1
	Claims	2	7
	Applicant Arguments/Remarks Made in an Amendment	8	10
Warnings:			
Information:			
	Total Files Size (in bytes):	136541	

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/389,872	02/10/2012	Qian Xu	2009P00083WOUS	7293

157363 7590 03/19/2020

Brian J. Dorini
InterDigital VC Holdings
4 Research Way
3rd Floor
Princeton, NJ 08543

EXAMINER	
NASRI, MARYAM A	

ART UNIT	PAPER NUMBER
2483	

NOTIFICATION DATE	DELIVERY MODE
03/19/2020	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

PatentOPs.US@interdigital.com
donna.foligno@interdigital.com
patricia.verlangieri@interdigital.com

Office Action Summary	Application No. 13/389,872	Applicant(s) Xu et al.	
	Examiner MARYAM A NASRI	Art Unit 2483	AIA (FITF) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☑ Responsive to communication(s) filed on 18 February 2020.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2a)☑ This action is **FINAL.** 2b) ☐ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5) ☑ Claim(s) 1-10,12-21 and 23 is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6) ☐ Claim(s) _____ is/are allowed.

7) ☑ Claim(s) 1-10,12-21 and 23 is/are rejected.

8) ☐ Claim(s) _____ is/are objected to.

9) ☐ Claim(s) _____ are subject to restriction and/or election requirement

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to **PPHfeedback@uspto.gov.**

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a)☐ All b)☐ Some** c)☐ None of the:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date _____.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date _____.

4) ☐ Other: _____.

DETAILED ACTION

1. This Office Action is a response to an amendment filed on 02/18/2020, in which claims 1-10, 12-21, and 23 are pending and ready for examination.

Notice of Pre-AIA or AIA Status

2. The present application is being examined under the pre-AIA first to invent provisions.

Response to Arguments

3. Applicant's arguments with respect to claims 1, 2, 12, 13, and 23 have been considered but are not persuasive.

4. In regards to claims 1, 2, 12, 13, and 23 applicant argues that:

   a. Claims 1, 2, 12, 13, and 23 have been amended by removing the word "independently" in the feature "determined from the set of multiple chroma partition types ~~independently~~ from a particular luma partition type", as detailed below, in response, and are respectfully submitted to be complete.

   b. Neither Wang nor Guo discloses or suggests "wherein the luma partition type and chroma partition type are differentially coded from a neighboring block" in combination with the rest of the claim features.

5. However, examiner respectfully disagrees.

a. Applicant's arguments, see page 8 of Remarks, filed on 02/18/2020, with respect to 35 U.S.C. 112(b) or 35 U.S.C. 112 (pre-AIA), second paragraph, have been fully considered and are persuasive. The rejection of 1, 2, 12, 13, and 23 has been withdrawn.

b. Fig. 3 and paragraph 124 of Wang reference shows the interpolation of luma samples, and Fig. 4 and paragraph 125 shows the interpolation of chroma samples based on the neighboring blocks. As one can see the coding of the luma partitions is different than the coding of chroma partitions. Therefore, Examiner believes that the currently on file references disclose the argued limitation.

6. Claims 1-10, 12-21, and 23 remain rejected since the system disclosed by the applicant is taught by the prior arts.

Claim Rejections - 35 USC § 103

The following is a quotation of pre-AIA 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 1-23 is rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Wang (US 2007/0121728 A1) in view of Guo (US 2008/0219350 A1).

8. **Regarding claim 1**, Wang discloses: An apparatus, comprising:

an encoder for encoding **(see paragraph 87)** picture data for at least a block in a picture **(see paragraph 56 and 87)**, wherein multiple partition types **(see paragraph 11, partitions can have 7 different sizes, and paragraph 77, chroma block sizes up to 16x16)** are supported for intra prediction chroma coding of the block **(see paragraph 211, bit-stream of intra coded macroblock has chroma prediction mode information)**, the multiple partition types including a set of multiple chroma partition types **(see paragraph 13, i.e. two chroma samples of size 8x8)** of size 16x16, 8x8, 4x4 **(see paragraph 11, partitions can have 7 different sizes, paragraph 77, chroma block sizes up to 16x16, and paragraph 13, size and number of chroma blocks varies in different formats)** and a set of multiple luma partition types **(see paragraph 13)**, wherein a particular chroma partition type is determined from the set of multiple chroma partition types **(see paragraph 11, partitions can have 7 different sizes, paragraph 77, chroma block sizes up to 16x16)**, from a particular luma partition type used to code the block **(see paragraph 77 and claim 16, original block size compensation processing is performed for chroma blocks up to block sizes of 16x16, and paragraph 13, size and number of chroma blocks varies in different formats)** and the particular luma type being determined from the set of luma partition types **(see paragraph 17, 8x8 or 4x4 luma prediction)**, wherein the luma partition type and chroma partition type are differentially coded from a neighboring block **(see Fig.3 and 4, and paragraphs 124 and 125)** or a particular chroma partition type is determined from the set of chroma partition types **(see paragraph 11, partitions can have 7 different sizes, paragraph 77, chroma block sizes up to 16x16)** in response to a luma partition type utilized to code the block or the blocks of one or more

neighboring blocks **(see paragraph 125, real chroma blocks should be half of luma block)** , the chroma partition type being aligned with luma partition type for a set of partition types **(see paragraph 10 and 13, using different chroma sampling formats)** and luma partition type is signaled but not chroma partition type **(see paragraph 125, chroma blocks should be half of luma blocks)**, the luma partition type being included in the set of luma partition types **(see paragraph 17, 8x8 or 4x4 luma prediction)**, and luma and chroma can have different intra prediction modes **(see paragraph 15-16 and paragraph 221, bitstream of intra coded macroblock has luma prediction mode and chroma prediction mode)**.

Wang does not explicitly disclose: using a single chroma intra prediction mode, that can be different than luma inter prediction mode, for coding the partitioned block, wherein chroma uses a same entropy coding engine as luma, and wherein intra luma partition type and chroma partition type are independently coded inside a macroblock on a macroblock basis.

However, Guo from the same or similar endeavor discloses: using a single chroma intra prediction mode, that can be different than luma inter prediction mode, for coding the partitioned block **(see Guo, Fig. 1 and paragraph 30 and 34, obtaining best predicted mode separately, and texture coding using best luma prediction mode and best chroma predicted mode)**, wherein chroma uses a same entropy coding engine as luma **(see Guo, Fig. 1, block 14, Luma and Chroma Texture coding)**, and wherein intra luma partition type and chroma partition type are independently coded inside a macroblock on a macroblock basis **(see Guo, paragraph 30)**.

It would have been obvious to the person of ordinary skill in the art at the time of the invention to use "using a single chroma intra prediction mode, that can be different than luma inter prediction mode, for coding the partitioned block, wherein chroma uses a same entropy coding engine as luma, and wherein intra luma partition type and chroma partition type are independently coded inside a macroblock on a macroblock basis" as taught by Guo in the encoder taught by Wang to reduce calculations on obtaining predicted modes and to improve coding efficiencies, where a low-cost hardware is practiced with a high efficiency, a high picture quality and a low power consumption **(see Guo, paragraph 6)**.

9. **Regarding claim 2**, claim 2 is drawn to a method having limitations similar to the apparatus claimed in claim 1 treated in the above rejections. Therefore, method claim 2 correspond to apparatus claim 1 and is rejected for the same reasons of anticipation as used above.

10. **Regarding claim 3**, the combination of Guo and Wang discloses: The method of claim 2, wherein a particular chroma partition type for coding the block is determined from the set of chroma partition types responsive to a luma partition type utilized to code the block or one or more neighboring blocks, the luma partition type being included in the set of luma partition types **(see Guo, Fig. 1 and paragraph 40-41, referring to Fig. 1, chroma mode is selected based on the Luma mode and as mentioned in paragraph 40, luma mode is selected by searching the neighboring blocks)**.

11. **Regarding claim 4**, the combination of Guo and Wang discloses: The method of claim 3, wherein for the particular chroma partition type, a largest-size available transform matching the particular chroma partition type is selected from a set of transforms **(see Guo, paragraph 2, 41 and 43, a Hadamard transformation is performed [41] on the macroblocks and the macroblocks are divided into 4x4 blocks. The chroma blocks are selected 4x4 as well. According to the specification of this application, Hadamard transformation is used to determine the transform size)**.

12. **Regarding claim 5**, the combination of Guo and Wang discloses: The method of claim 3, wherein from among a particular luma partition type and a particular chroma partition type selected to code the block only the particular luma partition type is signaled **(see Guo, paragraph 41, only luma blocks are used to obtain the best prediction mode)**, the particular luma partition type being selected from the set of luma partition types and the particular chroma partition type being selected from the set of chroma partition types **(see Wang, paragraph 14 and 54, selecting color format. Also see paragraph 11, partitions can have 7 different sizes, and paragraph 77, chroma block sizes up to 16x16)**.

13. **Regarding claim 6**, the combination of Guo and Wang discloses: The method of claim 5, wherein the particular luma partition type is absolutely coded or differentially coded from one or more neighboring blocks **(see Gou, paragraph 41)**.

14. **Regarding claim 7**, the combination of Guo and Wang discloses: The method of claim 2, wherein a particular chroma partition type used to code the block is determined independently from a particular luma partition type used to code the block **(see Wang, paragraph 77 and claim 6, original block size compensation processing for chroma up to block sizes of 16x16)**, the particular chroma partition type being determined from the set of chroma partition types and the particular luma partition type being determined from the set of luma partition types **(see Guo, paragraph 43)**.

15. **Regarding claim 8**, the combination of Guo and Wang discloses: The method of claim 7, wherein the particular chroma partition type and the particular luma partition types are both signaled **(see Wang, paragraph 211, bit-stream of intra coded macroblock has the following information: macroblock type, luma prediction mode, chroma prediction mode)**.

16. **Regarding claim 9**, the combination of Guo and Wang discloses: The method of claim 8, wherein the particular luma partition type and the particular chroma partition type are absolutely coded or differentially coded from one or more neighboring blocks **(see Gou, paragraph 37)**.

17. **Regarding claim 10**, the combination of Guo and Wang discloses: The method of claim 8, wherein the particular chroma partition type is differentially coded from the particular luma partition type **(see Guo, Fig. 1)**.

18. **Regarding claim 11**, the combination of Guo and Wang discloses: The method of claim 2, wherein a chroma entropy coding engine used to code the block is different from a luma entropy ceding engine used to code the block **(see Guo, paragraph 2, coding system has a luma coding and a chroma coding)**.

19. **Regarding claim 12**, claim 12 is drawn to an apparatus having limitations similar to the method claimed in claim 2 treated in the above rejections. Therefore, method claims 12 correspond to apparatus and method claim 2 and are rejected for the same reasons of anticipation as used above. Furthermore, Wang discloses a decoder **(see Wang, paragraph 87)**.

20. **Regarding claim 13**, claim 13 is drawn to a method having limitations similar to the apparatus claimed in claim 1 treated in the above rejections. Therefore, method claim 13 correspond to apparatus claim 1 and is rejected for the same reasons of anticipation as used above. Furthermore, Wang discloses a decoder **(see Wang, paragraph 87)**.

21. **Regarding claims 14 and 15**, claims 14 and15 are drawn to a method having limitations similar to the method claimed in claims 3 and 4 treated in the above rejections. Therefore, method claims 14 and 15 correspond to apparatus and method claims 3 and 4 and are rejected for the same reasons of anticipation as used above.

22. **Regarding claim 16**, the combination of Guo and Wang discloses: The method of claim 14, wherein from among a particular luma partition type and a particular chroma partition type selected to code the block only information indicating the particular luma partition type is received from a corresponding encoder for use in decoding the block **(see Guo, paragraph 41, only luma blocks are used to obtain the best prediction mode, also see Wang, paragraph 129)**, the particular luma partition type being selected from the set of luma partition types and the particular chroma partition type being selected from the set of chroma partition types **(see Wang, paragraph 14 and 54, selecting color format. Also see paragraph 11, partitions can have 7 different sizes, and paragraph 77, chroma block sizes up to 16x16)**.

23. **Regarding claims 17 and 18**, claims 17 and 18 are drawn to a method having limitations similar to the method claimed in claims 6 and 7 treated in the above rejections. Therefore, method claims 17 and 18 correspond to apparatus and method claims 6 and 7 and are rejected for the same reasons of anticipation as used above.

24. **Regarding claim 19**, the combination of Guo and Wang discloses: The method of claim 18, wherein information indicating both the particular chroma partition type and the particular luma partition types is received from a corresponding encoder for use in decoding the block **(see Wang, paragraph 129)**.

25. **Regarding claims 20-22**, claims 20-22 are drawn to a method having limitations similar to the method claimed in claims 9-11 treated in the above rejections. Therefore,

method claims 20-22 correspond to apparatus and method claims 9-11 and are rejected for the same reasons of anticipation as used above.

26. **Regarding claim 23**, claim 23 is drawn to a computer readable storage medium having limitations similar to the apparatus claimed in claim 1 treated in the above rejections. Therefore, computer readable storage medium claim 23 corresponds to apparatus claim 1 and is rejected for the same reasons of anticipation as used above.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MARYAM A NASRI whose telephone number is (571)270-7158. The examiner can normally be reached on 10:00-8:00 M-T.

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at http://www.uspto.gov/interviewpractice.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Ustaris can be reached on 5712727383. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/MARYAM A NASRI/
Primary Examiner, Art Unit 2483

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13/389,872	Xu et al.
	Examiner	Art Unit
	MARYAM A NASRI	2483

CPC - Searched*		
Symbol	**Date**	**Examiner**
H04N 7/12 and H04N 7/26	5/13/2014	MN
H04N 7/12 and H04N 7/26	06/24/2019	MN

CPC Combination Sets - Searched*		
Symbol	**Date**	**Examiner**

US Classification - Searched*			
Class	**Subclass**	**Date**	**Examiner**

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

/MARYAM A NASRI/ Primary Examiner, Art Unit 2483	

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13/389,872	Xu et al.
	Examiner	Art Unit
	MARYAM A NASRI	2483

Search Notes		
Search Notes	**Date**	**Examiner**
Inventor and assignee search	1/9/2014	MN
EAST search, history attached	1/9/2014	MN
Updated EAST and NPL search	5/13/2014	MN
Consulted David Czekaj and Young Lee regarding claim 1	5/8/2014	MN
Consulted David Czekaj and Joe Ustaris regaring first action final	10/28/2014	MN
Updated NPL and EAST search.	10/28/2014	MN
Updated EAST and NPL search. EAST history attached.	4/21/2015	MN
Consulted Joe Ustaris and Andy Rao regarding rejection of claim 1.	4/23/2015	MN
Updated NPL and EAST search.	8/24/2015	MN
Updated NPL and EAST search. History attached.	3/4/2016	MN
Updated EAST and NPL search.	9/13/2016	MN
Updated NPL and EAST search.	3/6/2017	MN
Updated EAST and NPL search.	6/22/2017	MN
Updaed EAST and NPL search.	12/4/2017	MN
Updated EAST and NPL search.	03/30/2018	MN
Updated EAST and NPL search.	07/19/2018	MN
Updated EAST and NPL search.	11/13/2018	MN
Updated EAST and NPL search.	03/17/2019	MN
Updated EAST and NPL search.	06/24/2019	MN
Updated EAST and NPL search.	11/12/2019	MN
Updated EAST and NPL search.	03/15/2020	MN

Interference Search			
US Class/CPC Symbol	**US Subclass/CPC Group**	**Date**	**Examiner**

/MARYAM A NASRI/ Primary Examiner, Art Unit 2483	