2023-02-02 16:23 UTC | Marker

17468509

Content: Patents + NPL (192)

US Patents | US Designs | US Applications | EPO Patents | EPO Applications | China Patents | China Applications | Japan Patents | Japan Applications | Korea Patents | Korea Applications | WIPO Applications | Argentina Patents | Argentina Applications | Brazil Patents | Brazil Applications | Canada Patents | Canada Applications | Chile Patents | Chile Applications | Colombia Applications | Costa Rica Applications | Cuba Patents | Cuba Applications | Dominican Republic Applications | Ecuador Patents | Ecuador Applications | El Salvador Applications | Guatemala Applications | Honduras Applications | Mexico Patents | Mexico Applications | Nicaragua Patents | Panama Applications | Peru Applications | Trinidad & Tobago Patents | Uruguay Applications | Austria Patents | Austria Applications | Belarus Patents | Belgium Patents | Belgium Applications | Bosnia & Herzegovina Patents | Bosnia & Herzegovina Applications | Bulgaria Patents | Bulgaria Applications | Croatia Patents | Croatia Applications | Czech Republic Patents | Czech Republic Applications | Czechoslovakia Patents | Czechoslovakia Applications | Denmark Patents | Denmark Applications | Estonia Patents | Estonia Applications | EUIPO Patents | Finland Patents | Finland Applications | France Patents | France Applications | Germany Patents | Germany Applications | Great Britain Patents | Great Britain Applications | Greece Patents | Greece Applications | Hungary Patents | Hungary Applications | Iceland Patents | Iceland Applications | Ireland Patents | Ireland Applications | Italy Patents | Italy Applications | Latvia Patents | Latvia Applications | Lithuania Patents | Lithuania Applications | Luxembourg Patents | Luxembourg Applications | Malta Patents | Monaco Patents | Montenegro Patents | Montenegro Applications | Netherlands Patents | Netherlands Applications | Norway Patents | Norway Applications | Poland Patents | Poland Applications | Portugal Patents | Portugal Applications | Republic of Moldova Patents | Republic of Moldova Applications | Romania Patents | Romania Applications | San Marino Patents | San Marino Applications | Serbia Patents | Serbia Applications | Slovakia Patents | Slovakia Applications | Slovenia Patents | Spain Patents | Spain Applications | Sweden Patents | Sweden Applications | Switzerland Patents | Switzerland Applications | Ukraine Patents | Yugoslavia/Serbia and Montenegro Patents | Yugoslavia/Serbia and Montenegro Applications | Armenia Patents | Australia Patents | Australia Applications | Cyprus Patents | Gulf Cooperation Council Patents | Hong Kong Patents | India Patents | India Applications | Indonesia Patents | Indonesia Applications | Israel Patents | Israel Applications | Jordan Patents | Jordan Applications | Kyrgyzstan Patents | Macao Applications | Malaysia Patents | Mongolia Patents | New Zealand Patents | Philippines Patents | Philippines Applications | Saudi Arabia Patents | Saudi Arabia Applications | Singapore Patents | Singapore Applications | Taiwan Patents | Taiwan Applications | Tajikistan Patents | Tajikistan Applications | Thailand Patents | Thailand Applications | Uzbekistan Patents | Vietnam Patents | Algeria Patents | ARIPO Patents | ARIPO Applications | Egypt Patents | Kenya Patents | Malawi Patents | Morocco Patents | Morocco Applications | OAPI Patents | South Africa Patents | Tunisia Applications | Zambia Patents | Zimbabwe Patents | EAPO Patents | EAPO Applications | Georgia Patents | Georgia Applications | Kazakhstan Patents | Kazakhstan Applications | Russia Patents | Russia Applications | Turkey Patents | Turkey Applications | IEEE Xplore Publications: IEEE Periodicals | IEEE Xplore Publications: IEEE Conferences | IEEE Xplore Publications: IEEE Standards | IEEE Xplore Publications: IEEE Early Access | IEEE Xplore Publications: SMPTE Periodicals | IEEE Xplore Publications: SMPTE Conferences | IEEE Xplore Publications: SMPTE Standards | IEEE Xplore Publications: MIT Press eBooks | IEEE Xplore Publications: Wiley-IEEE eBooks | IEEE Xplore Publications: IBM Periodicals | IEEE Xplore Publications: URSI Periodicals | IEEE Xplore Publications: VDE Conferences | IEEE Xplore Publications: Periodicals from China | IP.com Prior Art Database: The IP.com Journal | IP.com Prior Art Database: Internet Society RFC | IP.com Prior Art Database: IBM TDB Archive | IP.com Prior Art Database: Legacy Journals | IP.com Prior Art Database: Software Patent Institute | OnePetro.org: Periodicals at OnePetro.org | OnePetro.org: Conferences at OnePetro.org | Other Literature: IBM Redbooks | Other Literature: PubMed Central | Other Literature: arXiv.org

1 **2023-02-02 16:24 UTC | ~14,399,077 results from**

De-Dup: Extended Family Numbers (PAT only) | **Relevance Cut-off:** None | **Sort:** Relevance

Main Concept: Text

A WiFi wireless access point, comprising: wireless transceiver circuitry, configured to (1) establish a WiFi wireless link to a wireless local area network, (2) provide wireless access to the WiFi wireless link within a first coverage area, and (3) establish a second wireless link to a second WiFi wireless access point; processing logic that cooperates with second processing logic of the second WiFi wireless access point to define distributed processing logic, the distributed processing logic configured to control the wireless transceiver circuitry; wherein the first processing logic is configured to grant a user access to the wireless local area network via a virtual link based on network resource availability; and wherein the wireless transceiver circuitry includes multiple access transceivers that each provide a given bandwidth and that are aggregated to define the virtual link with an available bandwidth greater than the given bandwidth.

Concept Modifiers: None

Filters: None

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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
17/468,509	09/07/2021	Sai C. Manapragada	PSYC.P102C2

CONFIRMATION NO. 3839

122222
Peninsula Patent Group
2644 Placer St.
Santa Cruz, CA 95062

PUBLICATION NOTICE

OC000000133816215

Title:SYSTEM AND METHOD FOR EXTENDING RANGE AND COVERAGE OF BANDWIDTH INTENSIVE WIRELESS DATA STREAMS

Publication No.US-2022-0150716-A1
Publication Date:05/12/2022

NOTICE OF PUBLICATION OF APPLICATION

The above-identified application will be electronically published as a patent application publication pursuant to 37 CFR 1.211, et seq. The patent application publication number and publication date are set forth above.

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Further assistance in electronically accessing the publication, or about PAIR, is available by calling the Patent Electronic Business Center at 1-866-217-9197.

Office of Data Managment, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

Electronic Acknowledgement Receipt

EFS ID:	44910061
Application Number:	17468509
International Application Number:	
Confirmation Number:	3839
Title of Invention:	SYSTEM AND METHOD FOR EXTENDING RANGE AND COVERAGE OF BANDWIDTH INTENSIVE WIRELESS DATA STREAMS
First Named Inventor/Applicant Name:	Sai C. Manapragada
Customer Number:	122222
Filer:	Lance Martel Kreisman
Filer Authorized By:	
Attorney Docket Number:	PSYC.P102C2
Receipt Date:	03-FEB-2022
Filing Date:	07-SEP-2021
Time Stamp:	14:10:51
Application Type:	Utility under 35 USC 111(a)

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	Preliminary Amendment	PSYC_P102C2_Suppl_Prelim.pdf	156041 36a92725a147c8fb8a46f838c4583e7998822df9	no	7

Warnings:

Information:	
Total Files Size (in bytes):	156041

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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
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IN THE UNITED STATES PATENT OFFICE

In Re Patent Application of	Confirmation No: 3839
First Named Inventor: Sai C. Manapragada	Examiner: Not Assigned
Application No.: 17/468,509	Art Unit: Not Assigned
Filed: 09/07/2021	
For: SYSTEM AND METHOD FOR EXTENDING RANGE AND COVERAGE OF BANDWIDTH INTENSIVE WIRELESS DATA STREAMS	

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

SUPPLEMENTAL PRELIMINARY AMENDMENT

Dear Sir/Madam:

Prior to examination in the instant case, Applicant presents the following Amendments for consideration.

Amendments to the Claims begin on Page 2.

Remarks begin on Page 7.

IN THE CLAIMS:

1. (Canceled)

2. (Currently Amended) A WiFi wireless access point, comprising:

wireless transceiver circuitry, configured to (1) establish a WiFi wireless link to a wireless local area network, (2) provide wireless access to the WiFi wireless link within a first coverage area, and (3) establish a second wireless link to a second WiFi wireless access point;

processing logic that cooperates with second processing logic of the second WiFi wireless access point to define distributed processing logic, the distributed processing logic configured to control the wireless transceiver circuitry;

wherein the first processing logic is configured to grant a user access to the wireless local area network via a virtual link based on ~~an indicator of wireless transceiver~~network resource availability; and

wherein the wireless transceiver circuitry includes multiple access transceivers that each provide a given bandwidth and that are aggregated to define the virtual link with an available bandwidth greater than the given bandwidth.

3. (Previously Presented) The WiFi wireless access point according to claim 2, wherein the network resource availability comprises:

an indicator of wireless transceiver availability.

4. (Previously Presented) The WiFi wireless access point according to claim 3, wherein the indicator of wireless transceiver availability comprises:

an indicator of wireless transceiver availability among the multiple access

transceivers of the WiFi wireless access point.

5. (Previously Presented) The WiFi wireless access point according to claim 4, wherein:

the indicator of wireless transceiver availability is fed back from the wireless transceiver circuitry to the distributed processing logic.

6. (Previously Presented) The WiFi wireless access point according to claim 2, wherein the network resource availability comprises:

an indicator of internet connectivity availability.

7. (Previously Presented) The WiFi wireless access point according to claim 2, wherein the network resource availability comprises:

an indicator of bandwidth availability.

8. (Previously Presented) The WiFi wireless access point according to claim 2, wherein:

the distributed processing logic is further configured to grant a user access to the wireless local area network based on prior access decisions.

9. (Previously Presented) A WiFi wireless local area networking system, comprising:

a first WiFi wireless access point having first processing logic, the first WiFi wireless access point including first wireless transceiver circuitry, to (1) establish a WiFi wireless link to a wireless local area network, and (2) provide wireless access to the wireless link within a first coverage area;

a second WiFi wireless access point having second processing logic that cooperates with the first processing logic to define distributed processing logic, the second WiFi wireless access point including second wireless transceiver circuitry to establish a

second wireless link with the first wireless transceiver circuitry, the second wireless transceiver circuitry including multiple access transceivers to provide a first user access to the WiFi wireless link to the wireless local area network via the second wireless link, wherein the multiple access transceivers each provide a given bandwidth and are aggregated by the second processing logic to define a single virtual link with an available bandwidth greater than the given bandwidth; and

wherein the second processing logic is configured to grant the user access to the wireless local area network via the virtual link based on network resource availability.

10. (Previously Presented) The WiFi wireless local area networking system according to claim 9, wherein the network resource availability comprises:

an indicator of wireless transceiver availability.

11. (Previously Presented) The WiFi wireless local area networking system according to claim 10, wherein the indicator of wireless transceiver availability comprises:

an indicator of wireless transceiver availability among the multiple access transceivers of the second WiFi wireless access point.

12. (Previously Presented) The WiFi wireless local area networking system according to claim 11, wherein:

the indicator of wireless transceiver availability is fed back from the second wireless transceiver circuitry to the distributed processing logic.

13. (Previously Presented) The WiFi wireless local area networking system according to claim 9, wherein the network resource availability comprises:

an indicator of internet connectivity availability.

14. (Previously Presented) The WiFi wireless local area networking system according to claim 9, wherein the network resource availability comprises:

an indicator of bandwidth availability.

15. (Previously Presented) The WiFi wireless local area networking system according to claim 9, wherein:

the distributed processing logic is further configured to grant a user access to the wireless local area network based on prior access decisions.

16. (Previously Presented) A method of providing WiFi wireless local area network access to a user, the method comprising:

communicating with a wireless local area network using first wireless transceiver circuitry associated with a first WiFi wireless access point, the first WiFi wireless access point having a first coverage area;

establishing a wireless link between the first WiFi wireless access point and second wireless transceiver circuitry associated with a second WiFi wireless access point, the second WiFi wireless access point having a second coverage area;

granting a user access to the wireless local area network via a virtual link based on network resource availability; and

configuring the first wireless transceiver circuitry and the second wireless transceiver circuitry with distributed logic associated with the first WiFi wireless access point and the second WiFi wireless access point, wherein the configuring includes, for each WiFi wireless access point, aggregating at least two access transceivers to define the virtual link with an available bandwidth greater than a given bandwidth associated with each access transceiver.

17. (Previously Presented) The method according to claim 16, wherein the granting comprises:

granting a user access to the wireless local area network via the virtual link based on an indicator of wireless transceiver availability.

18. (Previously Presented) The method according to claim 17, wherein the granting comprises:

granting the user access to the wireless local area network via the virtual link based on an indicator of wireless transceiver availability among the multiple access transceivers of the WiFi wireless access point.

19. (Previously Presented) The method according to claim 16, wherein the granting comprises:

granting a user access to the wireless local area network via the virtual link based on an indicator of internet connectivity availability.

20. (Previously Presented) The method according to claim 16, wherein the granting comprises:

granting a user access to the wireless local area network via the virtual link based on an indicator of bandwidth availability.

21. (Previously Presented) The method according to claim 16, wherein the granting further comprises:

granting a user access to the wireless local area network based on prior access decisions.

REMARKS

Claims 2-21 are pending. Applicant hereby amends claim 2 to correct a minor informality. No new matter has been entered.

Throughout the pendency of this application, please charge any additional fees, including any required extension of time fees, and credit all overpayments to deposit account 506388.

Respectfully submitted,

PENINSULA PATENT GROUP

Date: February 3, 2022 /Lance M. Kreisman/

Lance M. Kreisman, Reg. No. 39,256
Peninsula Patent Group
2644 Placer St.
Santa Cruz, CA 95062
Tel. 650-468-9654

PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number: 17/468,509

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY FEE($)
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A	80
SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A			N/A	175
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A	200
TOTAL CLAIMS (37 CFR 1.16(i))	20 minus 20 =	*			OR	x 25 =	0.00
INDEPENDENT CLAIMS (37 CFR 1.16(h))	3 minus 3 =	*				x 120 =	0.00
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).						0.00
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))							0.00
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL			TOTAL	455

APPLICATION AS AMENDED - PART II

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

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

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
*** 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 found in the appropriate box in column 1.

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APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
17/468,509	09/07/2021	2414	495	PSYC.P102C2	20	3

CONFIRMATION NO. 3839

UPDATED FILING RECEIPT

122222
Peninsula Patent Group
2644 Placer St.
Santa Cruz, CA 95062

OC000000131359542

Date Mailed: 02/03/2022

Receipt is acknowledged of this non-provisional utility patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF FIRST INVENTOR, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection.

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Inventor(s)

Sai C. Manapragada, Hayward, CA;

Applicant(s)

Sai C. Manapragada, Hayward, CA;

Power of Attorney: The patent practitioners associated with Customer Number 122222

Domestic Priority data as claimed by applicant

This application is a CON of 16/039,660 07/19/2018 PAT 11115834
which is a CON of 14/526,799 10/29/2014 PAT 10034179
which claims benefit of 61/897,219 10/30/2013
and claims benefit of 61/897,216 10/30/2013

Foreign Applications for which priority is claimed (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see http://www.uspto.gov for more information.) - None.
Foreign application information must be provided in an Application Data Sheet in order to constitute a claim to foreign priority. See 37 CFR 1.55 and 1.76.

Permission to Access Application via Priority Document Exchange: Yes

Permission to Access Search Results: No

Applicant may provide or rescind an authorization for access using Form PTO/SB/39 or Form PTO/SB/69 as appropriate.

If Required, Foreign Filing License Granted: 09/29/2021
The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 17/468,509**
Projected Publication Date: 05/12/2022
Non-Publication Request: No
Early Publication Request: No
**** MICRO ENTITY ****
Title

SYSTEM AND METHOD FOR EXTENDING RANGE AND COVERAGE OF BANDWIDTH INTENSIVE WIRELESS DATA STREAMS

Preliminary Class

370

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications: No

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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 17/468,509	Filing Date 09/07/2021	☐ 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 $25 =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*		x $ 120 =	
☐ 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		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	

		(Column 1)		(Column 2)	(Column 3)			
AMENDMENT	02/03/2022	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 20	Minus	** 20	= 0		x $25 =	0
	Independent (37 CFR 1.16(h))	* 3	Minus	*** 3	= 0		x $120 =	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

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.	LDRC
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".	/EVA V GILLIS/
*** 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.	

Atty. Docket No. PSYC.P102C2 *PATENT*

IN THE UNITED STATES PATENT OFFICE

In Re Patent Application of	
Inventors: Sai C. Manapragada	Examiner: Unassigned
Application No.: 17/468,509	Art Unit: Unassigned
Filed: September 7, 2021	Confirmation No.: 3839
For: SYSTEM AND METHOD FOR EXTENDING RANGE AND COVERAGE OF BANDWIDTH INTENSIVE WIRELESS DATA STREAMS	

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

RESPONSE TO NOTICE TO FILE MISSING PARTS

This is in response to a Notice to File Missing Parts of Application under 37 CFR 1.53(b) dated October 1, 2021. Enclosed are the following fees to avoid abandonment of the above-identified application:

(x) Total amount submitted herewith is **$655.00**

(x) Statutory basic filing fee, search fee and examination fee **$455.00**
(x) Applicant Claims Micro Entity status
( ) Additional claim fees of **$0.00**
(x) Missing Parts Surcharge = **$40.00**

(x) Two-month extension fee = **$160.00**

CONCLUSION

Throughout the pendency of this application, please charge any additional fees, including any required extension of time fees, and credit all overpayments to deposit account 506388.

Respectfully submitted,

PENINSULA PATENT GROUP

Date: February 1, 2021

/Lance M. Kreisman/

Lance M. Kreisman, Reg. No. 39,256
Peninsula Patent Group
2644 Placer St.
Santa Cruz, CA 95062
Tel. 650-468-9654

Electronic Patent Application Fee Transmittal

Application Number:	17468509
Filing Date:	07-Sep-2021
Title of Invention:	SYSTEM AND METHOD FOR EXTENDING RANGE AND COVERAGE OF BANDWIDTH INTENSIVE WIRELESS DATA STREAMS
First Named Inventor/Applicant Name:	Sai C. Manapragada
Filer:	Lance Martel Kreisman
Attorney Docket Number:	PSYC.P102C2

Filed as Micro Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
BASIC FILING FEE-UTILITY	3011	1	80	80
UTILITY SEARCH FEE	3111	1	175	175
UTILITY EXAMINATION FEE	3311	1	200	200
Pages:				
Claims:				
Miscellaneous-Filing:				
LATE FILING FEE FOR OATH OR DECLARATION	3051	1	40	40
Petition:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Extension - 2 months with $0 paid	3252	1	160	160
Miscellaneous:				
		Total in USD ($)		**655**

Electronic Acknowledgement Receipt

EFS ID:	44894753
Application Number:	17468509
International Application Number:	
Confirmation Number:	3839
Title of Invention:	SYSTEM AND METHOD FOR EXTENDING RANGE AND COVERAGE OF BANDWIDTH INTENSIVE WIRELESS DATA STREAMS
First Named Inventor/Applicant Name:	Sai C. Manapragada
Customer Number:	122222
Filer:	Lance Martel Kreisman
Filer Authorized By:	
Attorney Docket Number:	PSYC.P102C2
Receipt Date:	01-FEB-2022
Filing Date:	07-SEP-2021
Time Stamp:	21:26:38
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	$655
RAM confirmation Number	E202221L27481439
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	Preliminary Amendment	PSYC_P102C2_Prelim.pdf	155039 5a21a76523578919e0310b12ae5d2b90d4459d53	no	7
Warnings:					
Information:					
2	Applicant Response to Pre-Exam Formalities Notice	PSYC_P102C2_RMP.pdf	76121 9757e0c1a001656a55342446f99a40851fb02cc3	no	2
Warnings:					
Information:					
3	Fee Worksheet (SB06)	fee-info.pdf	49267 a17cffcd870b3ce92e15139e29964b1cb7c3b1a5	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	280427		

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.

IN THE UNITED STATES PATENT OFFICE

In Re Patent Application of	Confirmation No: 3839
First Named Inventor: Sai C. Manapragada	Examiner: Not Assigned
Application No.: 17/468,509	Art Unit: Not Assigned
Filed: 09/07/2021	
For: SYSTEM AND METHOD FOR EXTENDING RANGE AND COVERAGE OF BANDWIDTH INTENSIVE WIRELESS DATA STREAMS	

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

PRELIMINARY AMENDMENT

Dear Sir/Madam:

Prior to examination in the instant case, Applicant presents the following Amendments for consideration.

Amendments to the Claims begin on Page 2.

Remarks begin on Page 7.

IN THE CLAIMS:

1. (Canceled)

2. (New) A WiFi wireless access point, comprising:

wireless transceiver circuitry, configured to (1) establish a WiFi wireless link to a wireless local area network, (2) provide wireless access to the WiFi wireless link within a first coverage area, and (3) establish a second wireless link to a second WiFi wireless access point;

processing logic that cooperates with second processing logic of the second WiFi wireless access point to define distributed processing logic, the distributed processing logic configured to control the wireless transceiver circuitry;

wherein the first processing logic is configured to grant a user access to the wireless local area network via a virtual link based on an indicator of wireless transceiver availability; and

wherein the wireless transceiver circuitry includes multiple access transceivers that each provide a given bandwidth and that are aggregated to define the virtual link with an available bandwidth greater than the given bandwidth.

3. (New) The WiFi wireless access point according to claim 2, wherein the network resource availability comprises:

an indicator of wireless transceiver availability.

4. (New) The WiFi wireless access point according to claim 3, wherein the indicator of wireless transceiver availability comprises:

an indicator of wireless transceiver availability among the multiple access

transceivers of the WiFi wireless access point.

5. (New) The WiFi wireless access point according to claim 4, wherein:

the indicator of wireless transceiver availability is fed back from the wireless transceiver circuitry to the distributed processing logic.

6. (New) The WiFi wireless access point according to claim 2, wherein the network resource availability comprises:

an indicator of internet connectivity availability.

7. (New) The WiFi wireless access point according to claim 2, wherein the network resource availability comprises:

an indicator of bandwidth availability.

8. (New) The WiFi wireless access point according to claim 2, wherein:

the distributed processing logic is further configured to grant a user access to the wireless local area network based on prior access decisions.

9. (New) A WiFi wireless local area networking system, comprising:

a first WiFi wireless access point having first processing logic, the first WiFi wireless access point including first wireless transceiver circuitry, to (1) establish a WiFi wireless link to a wireless local area network, and (2) provide wireless access to the wireless link within a first coverage area;

a second WiFi wireless access point having second processing logic that cooperates with the first processing logic to define distributed processing logic, the second WiFi wireless access point including second wireless transceiver circuitry to establish a

second wireless link with the first wireless transceiver circuitry, the second wireless transceiver circuitry including multiple access transceivers to provide a first user access to the WiFi wireless link to the wireless local area network via the second wireless link, wherein the multiple access transceivers each provide a given bandwidth and are aggregated by the second processing logic to define a single virtual link with an available bandwidth greater than the given bandwidth; and

wherein the second processing logic is configured to grant the user access to the wireless local area network via the virtual link based on network resource availability.

10. (New) The WiFi wireless local area networking system according to claim 9, wherein the network resource availability comprises:

an indicator of wireless transceiver availability.

11. (New) The WiFi wireless local area networking system according to claim 10, wherein the indicator of wireless transceiver availability comprises:

an indicator of wireless transceiver availability among the multiple access transceivers of the second WiFi wireless access point.

12. (New) The WiFi wireless local area networking system according to claim 11, wherein:

the indicator of wireless transceiver availability is fed back from the second wireless transceiver circuitry to the distributed processing logic.

13. (New) The WiFi wireless local area networking system according to claim 9, wherein the network resource availability comprises:

an indicator of internet connectivity availability.

14. (New) The WiFi wireless local area networking system according to claim 9, wherein the network resource availability comprises:

an indicator of bandwidth availability.

15. (New) The WiFi wireless local area networking system according to claim 9, wherein:

the distributed processing logic is further configured to grant a user access to the wireless local area network based on prior access decisions.

16. (New) A method of providing WiFi wireless local area network access to a user, the method comprising:

communicating with a wireless local area network using first wireless transceiver circuitry associated with a first WiFi wireless access point, the first WiFi wireless access point having a first coverage area;

establishing a wireless link between the first WiFi wireless access point and second wireless transceiver circuitry associated with a second WiFi wireless access point, the second WiFi wireless access point having a second coverage area;

granting a user access to the wireless local area network via a virtual link based on network resource availability; and

configuring the first wireless transceiver circuitry and the second wireless transceiver circuitry with distributed logic associated with the first WiFi wireless access point and the second WiFi wireless access point, wherein the configuring includes, for each WiFi wireless access point, aggregating at least two access transceivers to define the virtual link with an available bandwidth greater than a given bandwidth associated with each access transceiver.

17. (New) The method according to claim 16, wherein the granting comprises:

granting a user access to the wireless local area network via the virtual link based on an indicator of wireless transceiver availability.

18. (New) The method according to claim 17, wherein the granting comprises:

granting the user access to the wireless local area network via the virtual link based on an indicator of wireless transceiver availability among the multiple access transceivers of the WiFi wireless access point.

19. (New) The method according to claim 16, wherein the granting comprises:

granting a user access to the wireless local area network via the virtual link based on an indicator of internet connectivity availability.

20. (New) The method according to claim 16, wherein the granting comprises:

granting a user access to the wireless local area network via the virtual link based on an indicator of bandwidth availability.

21. (New) The method according to claim 16, wherein the granting further comprises:

granting a user access to the wireless local area network based on prior access decisions.

REMARKS

Applicant hereby cancels claim 1 and presents new claims 2 - 21 for examination. No new matter has been entered.

Throughout the pendency of this application, please charge any additional fees, including any required extension of time fees, and credit all overpayments to deposit account 506388.

Respectfully submitted,

PENINSULA PATENT GROUP

Date: February 1, 2022 /Lance M. Kreisman/

Lance M. Kreisman, Reg. No. 39,256
Peninsula Patent Group
2644 Placer St.
Santa Cruz, CA 95062
Tel. 650-468-9654

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
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 17/468,509	Filing Date 09/07/2021	☐ 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 $25 =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*		x $120 =	
☐ 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	02/01/2022	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 20	Minus	** 20	= 0		x $25 =	0
	Independent (37 CFR 1.16(h))	* 3	Minus	*** 3	= 0		x $120 =	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.	LDRC
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".	/EVA V GILLIS/
*** 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.	

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
17/468,509	09/07/2021	Sai C. Manapragada	PSYC.P102C2

CONFIRMATION NO. 3839

122222
Peninsula Patent Group
2644 Placer St.
Santa Cruz, CA 95062

FORMALITIES LETTER

OC000000128760409

Date Mailed: 10/01/2021

NOTICE TO FILE MISSING PARTS OF NONPROVISIONAL APPLICATION

FILED UNDER 37 CFR 1.53(b)

Filing Date Granted

Items Required To Avoid Abandonment:

An application number and filing date have been accorded to this application. The item(s) indicated below, however, are missing. Applicant is given **TWO MONTHS** from the date of this Notice within which to file all required items below to avoid abandonment. Extensions of time may be obtained by filing a petition accompanied by the extension fee under the provisions of 37 CFR 1.136(a).

- The statutory basic filing fee is missing.
- The application search fee must be submitted.
- The application examination fee must be submitted.
- Surcharge as set forth in 37 CFR 1.16(f) must be submitted.
  The surcharge is due for any one of:
  - late submission of the basic filing fee, search fee, or examination fee,
  - late submission of inventor's oath or declaration,
  - filing an application that does not contain at least one claim on filing, or
  - submission of an application filed by reference to a previously filed application.

SUMMARY OF FEES DUE:

The fee(s) required within **TWO MONTHS** from the date of this Notice to avoid abandonment is/are itemized below. Micro entity discount is in effect.

- $ **80** basic filing fee.
- $ **40** surcharge.
- $ **175** search fee.
- $ **200** examination fee.
- $(**0**) previous unapplied payment amount.
- $ **495** TOTAL FEE BALANCE DUE.

Replies must be received in the USPTO within the set time period or must include a proper Certificate of Mailing or Transmission under 37 CFR 1.8 with a mailing or transmission date within the set time period. For more information and a suggested format, see Form PTO/SB/92 and MPEP 512.

Replies should be mailed to:

Mail Stop Missing Parts
Commissioner for Patents
P.O. Box 1450
Alexandria VA 22313-1450

Registered users of EFS-Web may alternatively submit their reply to this notice via EFS-Web, including a copy of this Notice and selecting the document description "Applicant response to Pre-Exam Formalities Notice". https://sportal.uspto.gov/authenticate/AuthenticateUserLocalEPF.html

For more information about EFS-Web please call the USPTO Electronic Business Center at 1-866-217-9197 or visit our website at http://www.uspto.gov/ebc.

If you are not using EFS-Web to submit your reply, you must include a copy of this notice.

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**.

/cnguyen/

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	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
17/468,509	09/07/2021	2414	0.00	PSYC.P102C2	1	1

CONFIRMATION NO. 3839

122222
Peninsula Patent Group
2644 Placer St.
Santa Cruz, CA 95062

FILING RECEIPT

OC000000128760408

Date Mailed: 10/01/2021

Receipt is acknowledged of this non-provisional utility patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF FIRST INVENTOR, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection.

Please verify the accuracy of the data presented on this receipt. If an error is noted on this Filing Receipt, please submit a written request for a corrected Filing Receipt, including a properly marked-up ADS showing the changes with strike-through for deletions and underlining for additions. If you received a "Notice to File Missing Parts" or other Notice requiring a response for this application, please submit any request for correction to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections provided that the request is grantable.

Inventor(s)

Sai C. Manapragada, Hayward, CA;

Applicant(s)

Sai C. Manapragada, Hayward, CA;

Power of Attorney: The patent practitioners associated with Customer Number 122222

Domestic Priority data as claimed by applicant

This application is a CON of 16/039,660 07/19/2018 PAT 11115834
which is a CON of 14/526,799 10/29/2014 PAT 10034179
which claims benefit of 61/897,219 10/30/2013
and claims benefit of 61/897,216 10/30/2013

Foreign Applications for which priority is claimed (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see http://www.uspto.gov for more information.) - None.
Foreign application information must be provided in an Application Data Sheet in order to constitute a claim to foreign priority. See 37 CFR 1.55 and 1.76.

Permission to Access Application via Priority Document Exchange: Yes

Permission to Access Search Results: No

Applicant may provide or rescind an authorization for access using Form PTO/SB/39 or Form PTO/SB/69 as appropriate.

If Required, Foreign Filing License Granted: 09/29/2021
The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 17/468,509**
Projected Publication Date: To Be Determined - pending completion of Missing Parts
Non-Publication Request: No
Early Publication Request: No
**** MICRO ENTITY ****
Title

SYSTEM AND METHOD FOR EXTENDING RANGE AND COVERAGE OF BANDWIDTH INTENSIVE WIRELESS DATA STREAMS

Preliminary Class

370

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications: No

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at http://www.uspto.gov/web/offices/pac/doc/general/index.html.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, http://www.stopfakes.gov. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific

countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4258).

LICENSE FOR FOREIGN FILING UNDER

Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

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NOT GRANTED

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SelectUSA

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technology, manufacture products, deliver services, and grow your business, visit http://www.SelectUSA.gov or call +1-202-482-6800.

PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number: 17/468,509

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY FEE($)
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A	80
SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A			N/A	175
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A	200
TOTAL CLAIMS (37 CFR 1.16(i))	1 minus 20 =	*			OR	x 25 =	0.00
INDEPENDENT CLAIMS (37 CFR 1.16(h))	1 minus 3 =	*				x 120 =	0.00
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).						0.00
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))							0.00
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL			TOTAL	455

APPLICATION AS AMENDED - PART II

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

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

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.

** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".

*** 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 found in the appropriate box in column 1.

PTO/SB/81 (01-09)
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POWER OF ATTORNEY OR REVOCATION OF POWER OF ATTORNEY WITH A NEW POWER OF ATTORNEY AND CHANGE OF CORRESPONDENCE ADDRESS

Application Number	
Filing Date	October 28, 2014
First Named Inventor	Sai C. Manapragada
Title	SYSTEM AND METHOD FOR EXTENDING RANGE AND C
Art Unit	Not Assigned
Examiner Name	Not Assigned
Attorney Docket Number	PSYC.P102

I hereby revoke all previous powers of attorney given in the above-identified application.

☐ A Power of Attorney is submitted herewith.

OR

☒ I hereby appoint Practitioner(s) associated with the following Customer Number as my/our attorney(s) or agent(s) to prosecute the application identified above, and to transact all business in the United States Patent and Trademark Office connected therewith: **122222**

OR

☐ I hereby appoint Practitioner(s) named below as my/our attorney(s) or agent(s) to prosecute the application identified above, and to transact all business in the United States Patent and Trademark Office connected therewith:

Practitioner(s) Name	Registration Number

Please recognize or change the correspondence address for the above-identified application to:

☒ The address associated with the above-mentioned Customer Number.

OR

☐ The address associated with Customer Number:

OR

☐ Firm or Individual Name					
Address					
City		State		Zip	
Country					
Telephone		Email			

I am the:

☒ Applicant/Inventor.

OR

☐ Assignee of record of the entire interest. See 37 CFR 3.71.
Statement under 37 CFR 3.73(b) (Form PTO/SB/96) submitted herewith or filed on ____________.

SIGNATURE of Applicant or Assignee of Record

Signature	[signature]	Date	10/28/2014
Name	Sai C. Manapragada	Telephone	(510) 543-9655
Title and Company	N/A		

NOTE: *Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below*.*

☐ *Total of ________ forms are submitted.

This collection of information is required by 37 CFR 1.31, 1.32 and 1.33. 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 3 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.**

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

Electronic Acknowledgement Receipt

EFS ID:	43702517
Application Number:	17468509
International Application Number:	
Confirmation Number:	3839
Title of Invention:	SYSTEM AND METHOD FOR EXTENDING RANGE AND COVERAGE OF BANDWIDTH INTENSIVE WIRELESS DATA STREAMS
First Named Inventor/Applicant Name:	Sai C. Manapragada
Customer Number:	122222
Filer:	Lance Martel Kreisman
Filer Authorized By:	
Attorney Docket Number:	PSYC.P102C2
Receipt Date:	07-SEP-2021
Filing Date:	
Time Stamp:	19:44:45
Application Type:	Utility under 35 USC 111(a)

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	Application Data Sheet	PSYC_P102C2_ADS.pdf	1503589 e80018cd8255c3d82e83ae6e8e0ec6a834d8967a	no	6

Warnings:

Information:					
2	Oath or Declaration filed	PSYC_P102C2_Declaration.pdf	74542 51b2163c58c4009b5fb0745f7292261084ef9b3d	no	1
Warnings:					
Information:					
3	Drawings-only black and white line drawings	PSYC_P102C2_Figs_nonembed.pdf	255274 0b8f479a7dcaf239f6387f61f330a9a08f6ab6f8	no	5
Warnings:					
Information:					
4	Transmittal of New Application	PSYC_P102C2_Filing_Transmittal.pdf	276899 6e6d1f727df8d81c32946dbebf03d9d9540b8802	no	2
Warnings:					
Information:					
5	Certification of Micro Entity (Gross Income Basis)	PSYC_P102C2_Micro.pdf	120651 adcce15f66ce694b6559ce5bc04cdd741929e781	no	2
Warnings:					
Information:					
6	Power of Attorney	PSYC_P102C2_POA_Signed.pdf	939879 e0db771395bc718db17c71a0d6a75cc755fa712e	no	1
Warnings:					
Information:					
7	Specification	PSYC_P102C2_Spec.pdf	154677 5142a408a7ed713ec4a4f2b55838fbf366d2c843	no	18
Warnings:					
Information:					
		Total Files Size (in bytes):	3325511		

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.

PTO/AIA/14 (03-13)
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U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	PSYC.P102C2
	Application Number	
Title of Invention	SYSTEM AND METHOD FOR EXTENDING RANGE AND COVERAGE OF BANDWIDTH INTENSIVE WIRELESS DATA STREAMS	

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
	Sai	C.	Manapragada	

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

City	State/Province	Country of Residence
Hayward	CA	US

Mailing Address of Inventor:

Address 1	9619 Camassia Way
Address 2	

City	State/Province	Postal Code	Country
San Ramon	CA	94582	US

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	122222		
Email Address		Add Email	Remove Email

Application Information:

Title of the Invention	SYSTEM AND METHOD FOR EXTENDING RANGE AND COVERAGE OF BANDWIDTH INTENSIVE WIRELESS DATA STREAMS		
Attorney Docket Number	PSYC.P102C2	**Small Entity Status Claimed**	☐
Application Type	Nonprovisional		
Subject Matter	Utility		
Total Number of Drawing Sheets (if any)	6	**Suggested Figure for Publication (if any)**	

PTO/AIA/14 (03-13)
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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	PSYC.P102C2
	Application Number	
Title of Invention	SYSTEM AND METHOD FOR EXTENDING RANGE AND COVERAGE OF BANDWIDTH INTENSIVE WIRELESS DATA STREAMS	

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	122222		

Domestic Benefit/National Stage Information:

This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, or 365(c) or indicate National Stage entry from a PCT application. Providing this 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.

Prior Application Status	Pending		Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
	Continuation of	16/039660	2018-07-19
Prior Application Status	Patented		Remove

Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
16/039660	Continuation of	14/526799	2014-10-29	10034179	2018-07-24

Prior Application Status	Expired		Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
14/526799	non provisional of	61897219	2013-10-30
Prior Application Status	Expired		Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
14/526799	non provisional of	61897216	2013-10-30

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

Foreign Priority Information:

PTO/AIA/14 (03-13)
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U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	PSYC.P102C2
	Application Number	
Title of Invention	SYSTEM AND METHOD FOR EXTENDING RANGE AND COVERAGE OF BANDWIDTH INTENSIVE WIRELESS DATA STREAMS	

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(d). 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(h)(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. Add

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.

Authorization to Permit Access:

X Authorization to Permit Access to the Instant Application by the Participating Offices

If 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 World Intellectual Property Office (WIPO), and any other intellectual property offices in which a foreign application claiming priority to the instant patent application is filed access to the instant patent application. See 37 CFR 1.14(c) and (h). This box should not be checked if the applicant does not wish the EPO, JPO, KIPO, WIPO, or other intellectual property office in which a foreign application claiming priority to the instant patent application is filed to have access to the instant patent application.

In accordance with 37 CFR 1.14(h)(3), access will be provided to a copy of the instant patent application with respect to: 1) the instant patent application-as-filed; 2) any foreign application to which the instant patent application claims priority under 35 U.S.C. 119(a)-(d) if a copy of the foreign application that satisfies the certified copy requirement of 37 CFR 1.55 has been filed in the instant patent application; and 3) any U.S. application-as-filed from which benefit is sought in the instant patent application.

In accordance with 37 CFR 1.14(c), access may be provided to information concerning the date o f filing this Authorization.

PTO/AIA/14 (03-13)
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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	PSYC.P102C2
	Application Number	
Title of Invention	SYSTEM AND METHOD FOR EXTENDING RANGE AND COVERAGE OF BANDWIDTH INTENSIVE WIRELESS DATA STREAMS	

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 — Remove

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. ☐

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

Mailing Address Information For Applicant:

Address 1	9619 Camassia Way		
Address 2			
City	San Ramon	**State/Province**	CA
Country	US	Postal Code	94582
Phone Number		Fax Number	
Email Address			

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

Non-Applicant Assignee Information:

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

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	PSYC.P102C2
	Application Number	
Title of Invention	SYSTEM AND METHOD FOR EXTENDING RANGE AND COVERAGE OF BANDWIDTH INTENSIVE WIRELESS DATA STREAMS	

Assignee 1

Complete this section only if non-applicant assignee information is desired to be included on the patent application publication in accordance with 37 CFR 1.215(b). Do not include in this section 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), as the patent application publication will include the name of the applicant(s).

Remove

If the Assignee is an Organization check here. ☐

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

Mailing Address Information For Non-Applicant Assignee:

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

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

Signature:

Remove

NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Signature	/Lance M. Kreisman/			Date (YYYY-MM-DD)	2021-09-07
First Name	Lance M.	Last Name	Kreisman	Registration Number	39256

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

This collection of information is required by 37 CFR 1.76. 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 23 minutes to complete, including gathering, preparing, and submitting the completed application data sheet 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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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 Co o p eration 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.

Attorney Docket No.: <PSYC.P101>

DECLARATION (37 CFR 1.63) FOR PROVISIONAL, UTILITY, DESIGN, OR NATIONAL STAGE OF PCT APPLICATION USING AN APPLICATION DATA SHEET (37 CFR 1.76)

Title of Invention: **SYSTEM AND METHOD FOR EXTENDING RANGE AND COVERAGE OF BANDWIDTH INTENSIVE WIRELESS DATA STREAMS**

As a below named inventor, I hereby declare that:

This declaration is directed to:

___X__ The attached application, or

_____ United States Provisional Application Number **[Enter App** #] filed on **[Enter Date]**, or

_____United States Application Number _____, filed on _____.

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

I have authorized and/or hereby do authorize my assignee to file patent applications claiming priority from the application referenced above, including provisional, non-provisional, design, divisional, continuation, continued prosecution, continuation-in-part, substitute, supplemental examination application, and other applications related to the subject matter of the application referenced above. I have authorized and/or hereby do authorize my assignee to make changes to the application for matters of formality.

I believe I am the original inventor or an original joint inventor of a claimed invention in the application.

I hereby acknowledge that any willful false statement made in this declaration is punishable under Section 1001 of Title 18 of the United States Code by fine or imprisonment of not more than five (5) years, or both.

Warning: Declarant is advised that the record of a patent application is available to the public after publication of the application (unless a non-publication request in compliance with 37 CFR 1.213(a) is made in the application) or issuance of a patent.

Legal Name of Inventor:

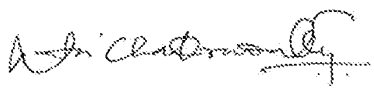
Inventor: Sai C. Manapragada	Date: 10/28/2014
Signature: 	

FIG. 1

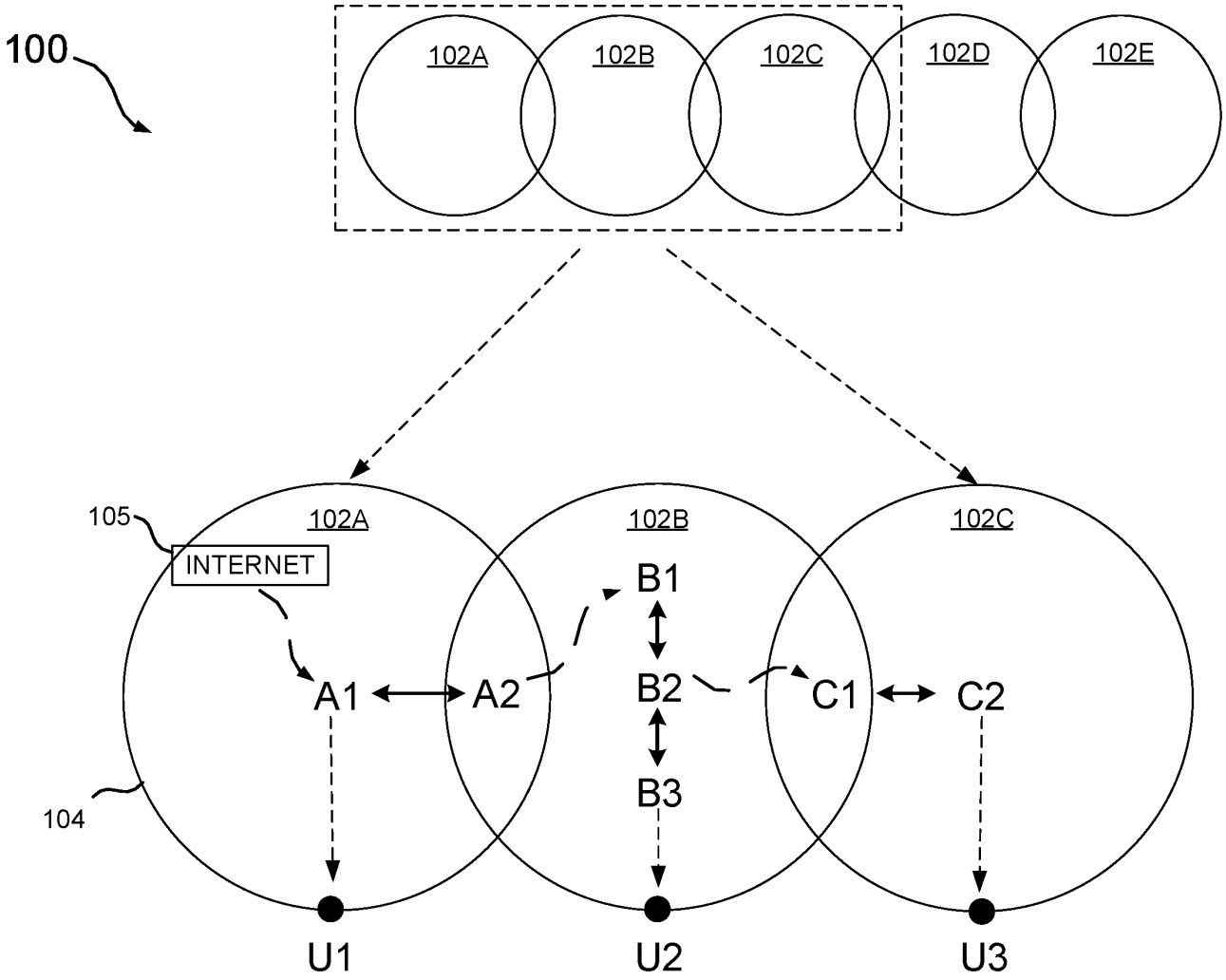

100
102A
102B
102C
102D
102E
105
INTERNET
102A
102B
102C
A1
A2
B1
B2
B3
C1
C2
104
U1
U2
U3

FIG. 2

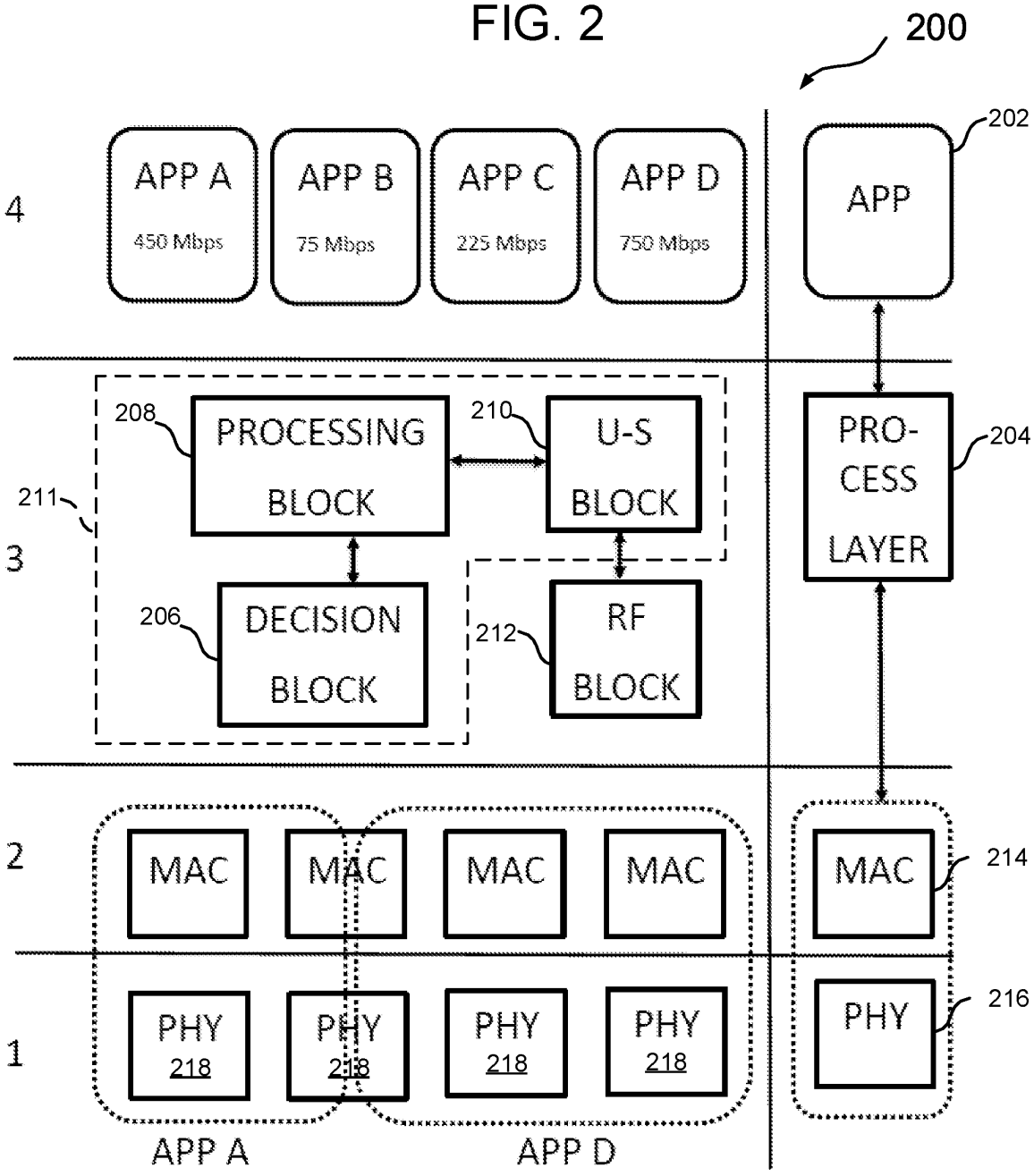

200
202
APP A
450 Mbps
APP B
75 Mbps
APP C
225 Mbps
APP D
750 Mbps
APP
4
208
PROCESSING BLOCK
210
U-S BLOCK
211
3
PRO-CESS LAYER
204
206
DECISION BLOCK
212
RF BLOCK
2
MAC
MAC
MAC
MAC
MAC
214
1
PHY 218
PHY 218
PHY 218
PHY 218
PHY
216
APP A
APP D

FIG. 3

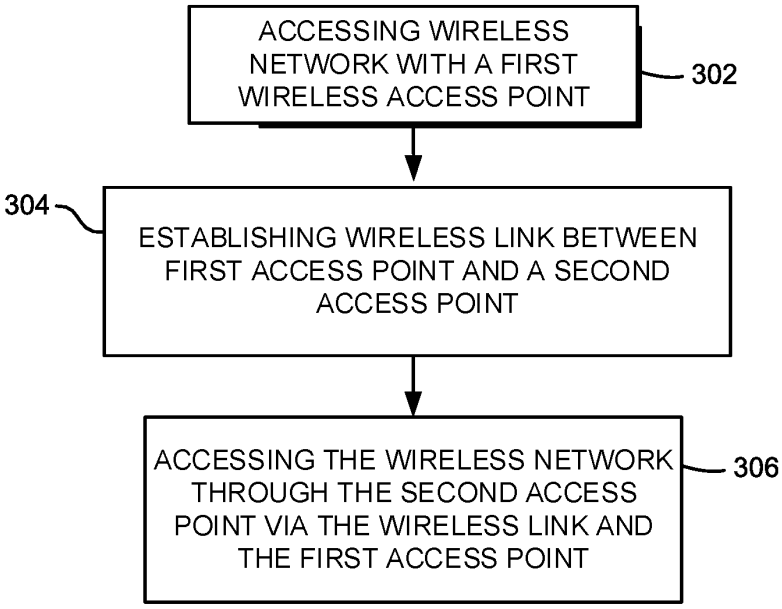

ACCESSING WIRELESS NETWORK WITH A FIRST WIRELESS ACCESS POINT
302
304
ESTABLISHING WIRELESS LINK BETWEEN FIRST ACCESS POINT AND A SECOND ACCESS POINT
ACCESSING THE WIRELESS NETWORK THROUGH THE SECOND ACCESS POINT VIA THE WIRELESS LINK AND THE FIRST ACCESS POINT
306

FIG. 4A

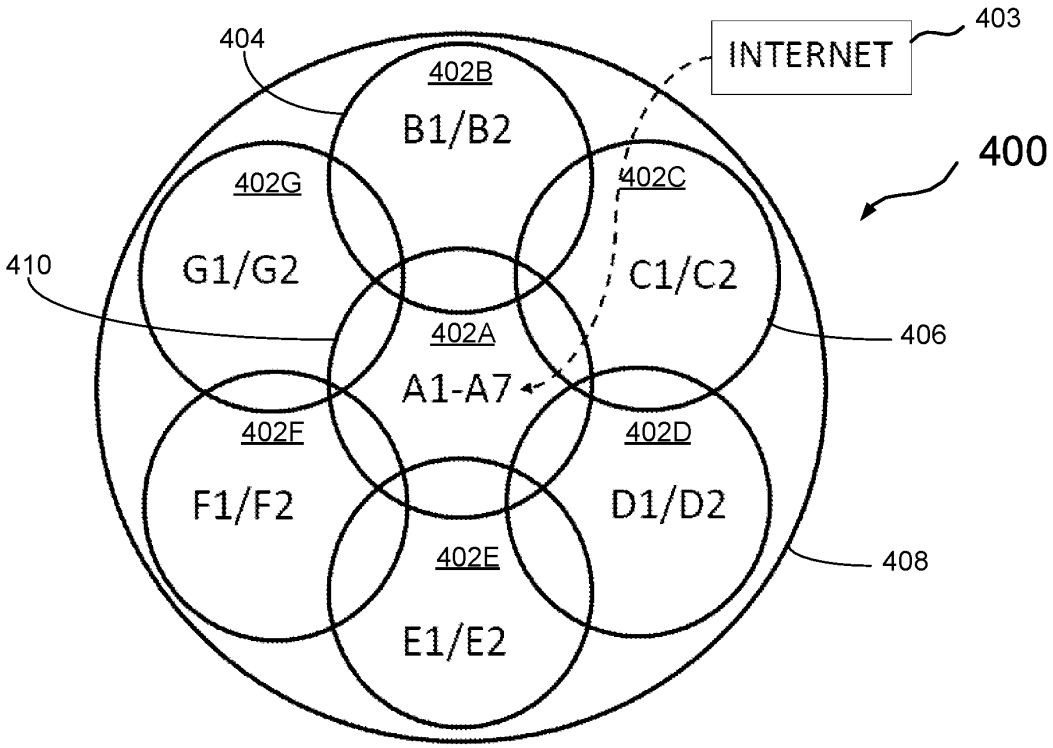


FIG. 4B

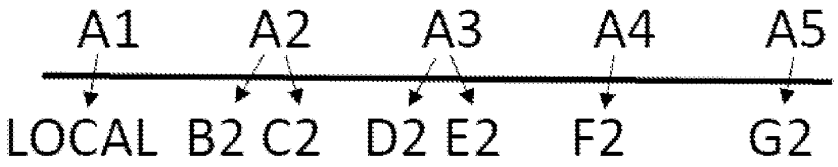


FIG. 4C

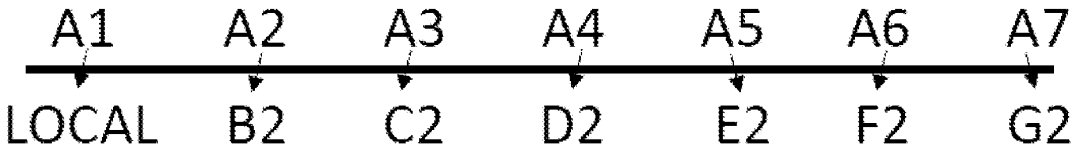
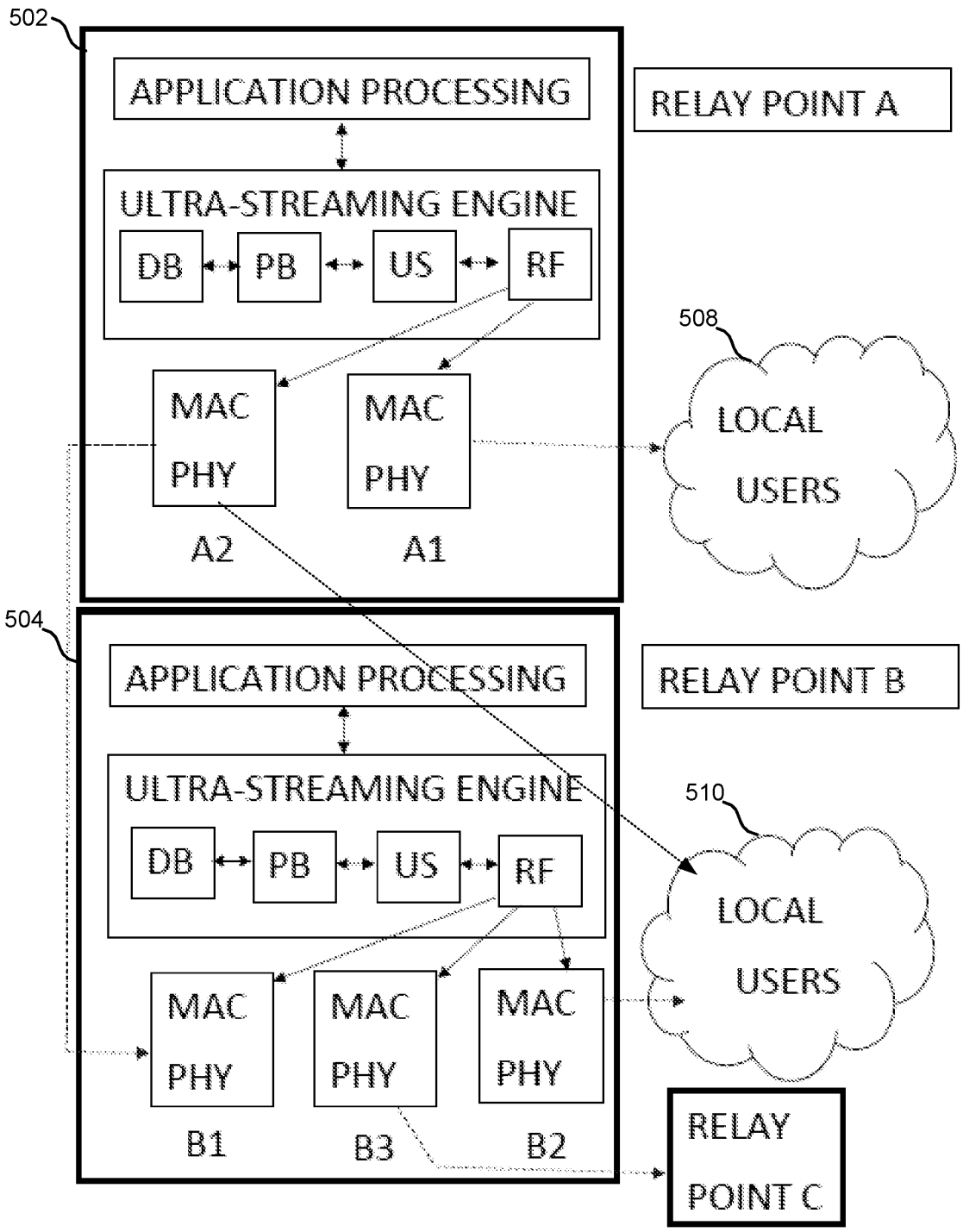


FIG. 5


502
APPLICATION PROCESSING
RELAY POINT A
ULTRA-STREAMING ENGINE
DB
PB
US
RF
508
MAC
PHY
MAC
PHY
LOCAL
USERS
A2
A1
504
APPLICATION PROCESSING
RELAY POINT B
ULTRA-STREAMING ENGINE
510
DB
PB
US
RF
LOCAL
USERS
MAC
PHY
MAC
PHY
MAC
PHY
RELAY
POINT C
B1
B3
B2

UNITED STATES PATENT APPLICATION

FOR

SYSTEM AND METHOD FOR EXTENDING RANGE AND COVERAGE OF BANDWIDTH INTENSIVE WIRELESS DATA STREAMS

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Attorney Docket No.: PSYC.P102C2

SYSTEM AND METHOD FOR EXTENDING RANGE AND COVERAGE OF BANDWIDTH INTENSIVE WIRELESS DATA STREAMS

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This patent application claims the benefit of U.S. Patent Application S/N 16/039,660, filed July 19, 2018, titled "System and Method For Extending Range and Coverage of Bandwidth Intensive Wireless Data Streams", which claims the benefit of U.S. Patent Application S/N 14/526,799, filed October 29, 2014, titled "System and Method For Extending Range and Coverage of Bandwidth Intensive Wireless Data Streams", now U.S. Patent No. 10,034,179, which claims the benefit of U.S. Provisional Patent Application S/N 61/897,219, filed October 30, 2013, and U.S. Provisional Patent Application S/N 61/897,216, filed October 30, 2013, all of which are incorporated by reference herein in their entirety.

TECHNICAL FIELD

[0002] The disclosure herein relates to wireless networks, and more specifically to high-bandwidth wireless networks for distributing multi-media content.

BACKGROUND

[0003] Wireless networks may take many forms, depending on the application. Various WiFi standards exist where users within range of a "hotspot" may establish a wireless link to access a given network. A given hotspot, or wireless access point, typically has a limited range and coverage area.

[0004] With the proliferation of multi-media content over wireless networks comes an insatiable demand for more bandwidth over the networks. Conventional wireless networking architectures fail to provide adequate resources to efficiently provide optimum range and coverage for wireless network users.

BRIEF DESCRIPTION OF THE DRAWINGS

[0005] Embodiments of the disclosure are illustrated by way of example, and not by way of limitation, in the figures of the accompanying drawings and in which like reference numerals refer to similar elements and in which:

[0006] FIG. 1 illustrates one embodiment of a system for wirelessly extending range of a wireless network linearly from one access point to another.

[0007] FIG. 2 illustrates a wireless management system that utilizes a virtual MAC and virtual PHY to wirelessly and adaptively manage and control multiple radios in a given wireless access point.

[0008] FIG. 3 illustrates a flowchart of steps for one embodiment of a method of wirelessly accessing a wireless network, consistent with the systems shown in FIGs. 1 and 2.

[0009] FIG. 4A - 4C illustrate embodiments of a system for wirelessly extending range of a wireless network radially from one access point to other access points.

[0010] FIG. 5 illustrates one embodiment of multiple wireless management systems that cooperate to allocate transceiver resources between users.

DETAILED DESCRIPTION

[0011] Embodiments of wireless networking systems, wireless transceivers and associated methods are disclosed herein. In one embodiment, a wireless networking system is disclosed. The system includes a first wireless access point having a first coverage area. The first wireless access point includes a first wireless transceiver to access a wireless network and a second wireless transceiver coupled to the first wireless transceiver. A second wireless access point has a second coverage area. The second wireless access point includes a third wireless transceiver for establishing a wireless link with the second wireless transceiver, and a fourth wireless transceiver coupled to the third wireless transceiver to provide user access to the wireless link. User access to the wireless link accesses the wireless network via the second and first wireless transceivers.

[0012] In a further embodiment, a method of providing wireless network access to a user is disclosed. The method includes accessing a wireless network with a first wireless transceiver associated with a first wireless access point. The first wireless access point has a first coverage area bounded by a range of a first broadcast transceiver associated with the first wireless access point. Wireless access to the wireless network is enabled within the first coverage area with the first broadcast transceiver. A wireless link is established between the first wireless access point and a third wireless transceiver associated with a second wireless access point. The second wireless access point has a second coverage area bounded by a fourth wireless transceiver. The fourth wireless transceiver is in communication with the third wireless transceiver. Access to

the wireless network from within the second coverage area is enabled via the fourth wireless transceiver.

[0013] In yet another embodiment, a wireless access point for use in a wireless networking system, the wireless access point includes a first wireless transceiver to establish a wireless link to a wireless network. A second wireless transceiver provides wireless access to the wireless link within a first coverage area. A third wireless transceiver establishes a wireless link to a second wireless access point. Processing logic controls each of the first, second and third wireless transceivers.

[0014] Referring to Figure 1, one embodiment of a wireless networking system is shown, generally designated 100, that increases the range of wireless network access. The wireless networking system 100 includes multiple wireless access points, or nodes, 102A – 102E. The nodes may be positioned linearly, such as in serial or wirelessly daisy-chained arrangement, to linearly extend wireless network access across multiple access point coverage zones. A similar embodiment that extends coverage radially is described below with reference to FIGs. 4A – 4C.

[0015] With continued reference to FIG. 1, for one specific embodiment, node 102A includes multiple radios A1 and A2. Radio A1 is configured as a receiver/transmitter (transceiver) that exhibits a wireless transceiver range, denoted by the circle at 104, to receive and transmit signals to a network, such as the Internet 105. Note that for purposes of clarity, each node is shown in FIG. 1 as having a range defined by the range of one of the radios. Radio A1, while acting as a receiver/transmitter (often referred to herein as a transceiver) is also able to broadcast and receive signals within its coverage area to users that are in the area 104, thereby serving as a wireless access point for that area. User U1 thus may access the

Internet via radio A1. Radio A1 also communicates with a relay radio A2, which may be disposed near the periphery of the range 104 of radio A1. Relay radio A2 has a similar range as radio A1, and is able to communicate with radio B1 that is associated with node 102B. For some embodiments, the relay radio (such as radio A2) for a given node is assigned to one or more dedicated transceivers (such as B1) associated with respective adjacent nodes. Additionally, in general, the transceivers of a given node can communicate to any of the transceivers available in adjacent nodes.

[0016] Further referring to FIG. 1, node 102B includes three radios, one to establish communication with radio A2 of node 102A, a second radio B2 to act as a relay to a third node 102C, and a third radio B3 to act as a wireless access point to a second user U2 within the node 102B. The third node 102C includes a first radio C1 to communicate with the second radio B2 of the second node 102B, and a second radio C2 to provide wireless access to a third user U3 within the access coverage area of the third node 102C. Thus, with communication links established from the Internet to radio A1, to radio A2, to radio B1 to radio B2 to radio C1 and to radio C2, the user U3 is able to access the Internet wirelessly even though the distance between the user U3 to the first wireless access point A1 exceeds the coverage or range of radio A1.

[0017] Each node 102A – 102C described above, may be configured differently depending on the available resources and bandwidth demands. Thus, a given radio may handle multiple tasks to receive and broadcast simultaneously, if the bandwidth demands are relatively low, or handle a single task, such as relay radio A2, if the bandwidth demand necessitates the need for additional wireless transceiver resources.

[0018] To manage the allocation and configuration of wireless transceiver resources, each node employs a management system, such as one embodiment shown in FIG. 2, and generally designated 200. The management systems for multiple nodes thus forms distributed logic that cooperate to efficiently manage bandwidth utilization for users. Further details of the management system for a variety of applications are disclosed in U.S. Patent Number 9,788,305, titled METHOD AND APPARATUS FOR PROCESSING BANDWIDTH INTENSIVE DATA STREAMS USING VIRTUAL MEDIA ACCESS CONTROL AND PHYSICAL LAYERS, filed October 29, 2014, and expressly incorporated herein by reference.

[0019] Further referring to Figure 2, one specific embodiment of the management system 200, is shown in a networking "layer" context. Generally speaking, the wireless management system may be configured for coupling an available transceiver resource to a WiFi network, a mobile wireless network, or a combination of the two. The management system 200 includes an application layer "APP", at 202, with one or more data-intensive software applications "APP A" – "APP D." The individual applications, for example, may have different peak bandwidth requirements in terms of data transfer rates. Thus, for instance, application APP A may have a peak bandwidth requirement of 450 Megabits per second (Mbps), while application APP D may have a peak bandwidth requirement of 750 Mbps.

[0020] Further referring to Figure 2, the application layer 202 cooperates with a process layer, at 204. The process layer includes a decision block 206 that interfaces with a processing block 208. The decision block determines the size and type of data stream being received, and the type of processing necessary to put the stream in a format where it is capable of being transmitted. The processing block processes the data stream as determined by the decision block, and couples to an ultra-streaming block 210. The ultra-streaming block manages the

processing of signal streams or sub-streams given the available resources (memory, processing speed, number of available radios, etc.), and packetizes sufficiently processed streams or sub-streams. The ultra-streaming block feeds data to and from an RF block 212. While not explicitly shown in FIG. 2, the ultra-streaming block carries out a monitoring function, more fully described below, that feeds back wireless resource availability to the decision block 206. Various ways for determining availability of resources include common memory, host interfaces, common threads, and/or queues or other data structures.

[0021] The decision block 206, processing block 208 and ultra-streaming block 210 together form a virtual MAC layer 211. The RF block 212 forms a virtual PHY layer. The virtual MAC and PHY layers enable simultaneous allocation of multiple PHY resources for different signal types associated with different applications. Transceiver configurations may be applied at initialization of the system, periodically during normal operation, or randomly on demand during operation. As a result, the most efficient path for wireless access between a given user and the wireless network is paved. The wireless networking system 200 thus exhibits significant performance improvements and efficiency advantages.

[0022] With continued reference to FIG. 2, the wireless management system 200 includes an actual media access control (MAC) layer, at 214, and an actual physical (PHY) layer, at 216. The actual MAC layer 214 generally includes software resources capable of controlling one or more transceiver resources 218 that are at the actual PHY layer, such as various radios and receivers. The actual PHY layer 216 may include multiple transceiver resources corresponding to multiple radios, each with an actual data transfer capability, or bandwidth.

[0023] The actual PHY layer transceivers may transmit and receive data consistent with a variety of signal protocols, such as High Definition Multimedia Interface (HDMI) consistent

with the IEEE 802.11 Standard, Multiple-In Multiple-Out (MIMO), standard Wi-Fi physical control layer (PHY) and Media Access Control (MAC) layer, and existing IP protocols. Additionally, extremely high bandwidth applications such as Voice Over IP (VOIP), streaming audio and video content, multicast applications, convergent and ad-hoc network environment may employ signal protocols consistent with the wireless network system described herein. Additionally, the wireless management system may be employed and/or embedded into a variety of electronic devices, including wireless access points, base stations, handhelds, tablets, computers, telephones, televisions, DVD players, BluRay players, media players, storage devices, or any such devices that use wireless networks to send and receive data including stand-alone add-on devices such as "dongles" that serve as wireless interfaces between devices.

[0024] Figure 3 illustrates a flowchart that shows generic steps carried out during operation of the wireless networking system of FIG. 1. At 302, the first node 102A (FIG. 1) accesses a wireless network, such as the Internet 105, with a first radio or transceiver A1. A second transceiver A2, establishes a wireless link with the first transceiver A1, at 304. The second transceiver may then act as a relay to establish a further link with a radio in a different node, such as radio B1 in node 102B. The wireless network may then be accessed through the different node 102B via the wireless link (between radios B1 and A2) and the first access point, at 306. By employing a plurality of transceivers at each of the nodes that run the UltraStreaming engine to allocate their available resources, either at initialization as configurable, or while in operation periodically, or dynamically in random demand while in operation, the most efficient path for wireless access is accomplished. This results in increased range and coverage for a given wireless network, and it's Internet access.

[0025] FIGs 4A – 4C illustrate a further embodiment of a wireless networking system, generally designated 400, that is similar to the system of FIG. 1, but configured with various nodes 402A – 402G that are positioned in a relative manner to extend coverage radially, rather than linearly. Each of the nodes includes a wireless management system, such as that shown in FIG. 2 and described above.

[0026] Further referring to FIG. 4A, a first node 402A includes radios A1 – A7, with radio A1 acting as an originating access point for a local network signal, such as the Internet 403. The remaining radios A2 – A7 may then be configured to communicate with specified adjacent nodes. The adjacent nodes have respective coverage zones that overlap the primary node 402A radially outwardly. Thus, by encircling the primary node with the other nodes, the corresponding coverage area may be increased dramatically.

[0027] FIG. 4B illustrates one configuration where radio A1 acts as the originating radio to communicate with the local wireless network, and radio A2 communicates the network signal as a relay with radios B2 and C2, of nodes 402B and 402C. Radios B1 and C1 of each respective node broadcast wireless access to users within the respective coverage zones, bounded by coverage rings 404 and 406 associated with each respective node 402B and 402C. Similar arrangements are managed with radio A3 communicating with radios D2 and E2, and radios A4 and A5 communicating with F2 and G2, respectively. To optimize coverage radially, the nodes 402B – 402G are positioned radially around the primary node 402A in a honeycomb structure. The resulting coverage boundary, represented by the coverage circle 408, is significantly larger than the originating access coverage area (represented by ring 410) provided by the broadcast radio associated with node 402A by itself.

[0028] FIG. 4C illustrates different assignments of the radios in the wireless networking system of FIG. 4A managed by the wireless management system 400 of each node 402A – 402G. The assignments and radio configurations may be defined and managed during an initialization process, periodically during operation, or randomly on demand depending on the bandwidth demands of the system. Thus, if bandwidth demands are higher in nodes 402B and 402C, then instead of sharing the bandwidth of radio A2 with nodes 402B (radio B2) and 402C (radio C2), such as the arrangement of FIG. 4B, dedicated relay radios A2 and A3 may be assigned to each of those nodes so that maximum bandwidth may be provided to each, resulting in radio A2 communicating with radio B2 and radio A3 communicating with radio C2 (FIG. 4C).

[0029] For some embodiments, whether the wireless networking system is configured as a linear or radial architecture, there may be multiple transceivers assigned to a wireless node, and each node may have multiple transceivers assigned to a given user. FIG. 5 illustrates how multiple wireless management systems cooperate to efficiently allocate transceiver resources in such a situation. A first node management system 502 may control transceiver resources A1 and A2 within a first node. A second management system 504 may control transceiver resources B1, B2, and B3. The management systems 502 and 504 communicate with each other to determine the optimal resource allocation to service respective local users, at 508 and 510.

[0030] Thus, for the example shown in FIG. 5, the first local user 508 within the coverage of the first node may need bandwidth that may be sufficiently provided by transceiver A1 alone. The second local user 510, positioned within the vicinity of both the first and second nodes, may be assigned transceiver A2 from the first node, and transceiver B2 from the second

node, thereby having access to twice the bandwidth. Other examples may involve partial transceiver allocations, where a portion of the transceiver bandwidth is allocated to a first user, and a second portion of the bandwidth allocated to a second user.

[0031] In some embodiments, a given wireless link may be configured as a variable duplex link. Each wireless management system may task the virtual MAC and virtual PHY to control respective transmit and receive cycles for one or more of the wireless transceivers. Varying the transmit and/or receive times may be accomplished in various ways, such as through programmable buffer resources and/or through programmable transmit and receive times. Further detail of such a variable duplex wireless link may be found in U.S. Patent Number 9,788,305, titled METHOD AND APPARATUS FOR PROCESSING BANDWIDTH INTENSIVE DATA STREAMS USING VIRTUAL MEDIA ACCESS CONTROL AND PHYSICAL LAYERS, filed October 29, 2014, and expressly incorporated herein by reference.

[0032] Those skilled in the art will appreciate that the embodiments described above enable efficient wireless access to wireless networking systems by users that might be outside the range of a single wireless access point. By employing linear and/or radial wireless access system architectures, and configuring available wireless transceiver resources optimally within each node, a given wireless network may be accessed with greater bandwidth and more efficiently.

[0033] When received within a computer system via one or more computer-readable media, such data and/or instruction-based expressions of the above described circuits may be processed by a processing entity (e.g., one or more processors) within the computer system in conjunction with execution of one or more other computer programs including, without limitation, net-list generation programs, place and route programs and the like, to generate a

representation or image of a physical manifestation of such circuits. Such representation or image may thereafter be used in device fabrication, for example, by enabling generation of one or more masks that are used to form various components of the circuits in a device fabrication process.

[0034] In the foregoing description and in the accompanying drawings, specific terminology and drawing symbols have been set forth to provide a thorough understanding of the present invention. In some instances, the terminology and symbols may imply specific details that are not required to practice the invention. For example, any of the specific numbers of bits, signal path widths, signaling or operating frequencies, component circuits or devices and the like may be different from those described above in alternative embodiments. Also, the interconnection between circuit elements or circuit blocks shown or described as multi-conductor signal links may alternatively be single-conductor signal links, and single conductor signal links may alternatively be multi-conductor signal links. Signals and signaling paths shown or described as being single-ended may also be differential, and vice-versa. Similarly, signals described or depicted as having active-high or active-low logic levels may have opposite logic levels in alternative embodiments. Component circuitry within integrated circuit devices may be implemented using metal oxide semiconductor (MOS) technology, bipolar technology or any other technology in which logical and analog circuits may be implemented. With respect to terminology, a signal is said to be "asserted" when the signal is driven to a low or high logic state (or charged to a high logic state or discharged to a low logic state) to indicate a particular condition. Conversely, a signal is said to be "deasserted" to indicate that the signal is driven (or charged or discharged) to a state other than the asserted state (including a high or low logic state, or the floating state that may occur when the signal driving circuit is transitioned to a high impedance condition, such as an open drain or open

collector condition). A signal driving circuit is said to "output" a signal to a signal receiving circuit when the signal driving circuit asserts (or deasserts, if explicitly stated or indicated by context) the signal on a signal line coupled between the signal driving and signal receiving circuits. A signal line is said to be "activated" when a signal is asserted on the signal line, and "deactivated" when the signal is deasserted. Additionally, the prefix symbol "/" attached to signal names indicates that the signal is an active low signal (i.e., the asserted state is a logic low state). A line over a signal name (e.g., '$\overline{<\text{signal name}>}$') is also used to indicate an active low signal. The term "coupled" is used herein to express a direct connection as well as a connection through one or more intervening circuits or structures. Integrated circuit device "programming" may include, for example and without limitation, loading a control value into a register or other storage circuit within the device in response to a host instruction and thus controlling an operational aspect of the device, establishing a device configuration or controlling an operational aspect of the device through a one-time programming operation (e.g., blowing fuses within a configuration circuit during device production), and/or connecting one or more selected pins or other contact structures of the device to reference voltage lines (also referred to as strapping) to establish a particular device configuration or operation aspect of the device. The term "exemplary" is used to express an example, not a preference or requirement.

[0035] While the invention has been described with reference to specific embodiments thereof, it will be evident that various modifications and changes may be made thereto without departing from the broader spirit and scope of the invention. For example, features or aspects of any of the embodiments may be applied, at least where practicable, in combination with any other of the embodiments or in place of counterpart features or aspects thereof. Accordingly,

the specification and drawings are to be regarded in an illustrative rather than a restrictive sense.

CLAIMS

We Claim:

1. A wireless networking system comprising:

a first wireless access point having a first coverage area, the first wireless access point including a first wireless transceiver to access a wireless network and a second wireless transceiver coupled to the first wireless transceiver;

a second wireless access point having a second coverage area, the second wireless access point including a third wireless transceiver for establishing a wireless link with the second wireless transceiver, and a fourth wireless transceiver coupled to the third wireless transceiver to provide a first user access to the wireless link;

wherein the first user accesses the wireless network via the wireless link and the second and first wireless transceivers.

ABSTRACT OF THE DISCLOSURE

A wireless networking system is disclosed. The system includes a first wireless access point having a first coverage area. The first wireless access point includes a first wireless transceiver to access a wireless network and a second wireless transceiver coupled to the first wireless transceiver. A second wireless access point has a second coverage area. The second wireless access point includes a third wireless transceiver for establishing a wireless link with the second wireless transceiver, and a fourth wireless transceiver coupled to the third wireless transceiver to provide user access to the wireless link. User access to the wireless link accesses the wireless network via the second and first wireless transceivers.

PTO/AIA/15 (03-13)
Approved for use through 01/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

UTILITY PATENT APPLICATION TRANSMITTAL

(Only for new nonprovisional applications under 37 CFR 1.53(b))

Attorney Docket No.	PSYC_P102C2
First Named Inventor	Sai Manapragada
Title	SYSTEM AND METHOD FOR EXTENDING RANGE AND COVERAGE OF BANDWID
Express Mail Label No.	filed via EFS-web

APPLICATION ELEMENTS

See MPEP chapter 600 concerning utility patent application contents.

1. ☐ **Fee Transmittal Form** (PTO/SB/17 or equivalent)
2. ☐ **Applicant asserts small entity status.** See 37 CFR 1.27
3. ☐ **Applicant certifies micro entity status.** See 37 CFR 1.29. Applicant must attach form PTO/SB/15A or B or equivalent.
4. ☑ **Specification** [*Total Pages* 21] Both the claims and abstract must start on a new page. *(See MPEP § 608.01(a) for information on the preferred arrangement)*
5. ☑ **Drawing(s)** (35 U.S.C. 113) [*Total Sheets* 5]
6. **Inventor's Oath or Declaration** [*Total Pages* 1] *(including substitute statements under 37 CFR 1.64 and assignments serving as an oath or declaration under 37 CFR 1.63(e))*
   a. ☐ Newly executed (original or copy)
   b. ☑ A copy from a prior application (37 CFR 1.63(d))
7. ☑ **Application Data Sheet** ** See note below.* See 37 CFR 1.76 (PTO/AIA/14 or equivalent)
8. **CD-ROM or CD-R** in duplicate, large table, or Computer Program (*Appendix*)
   ☐ Landscape Table on CD
9. **Nucleotide and/or Amino Acid Sequence Submission** (*if applicable, items a. – c. are required*)
   a. ☐ Computer Readable Form (CRF)
   b. ☐ Specification Sequence Listing on:
      i. ☐ CD-ROM or CD-R (2 copies); or
      ii. ☐ Paper
   c. ☐ Statements verifying identity of above copies

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ACCOMPANYING APPLICATION PAPERS

10. ☐ **Assignment Papers** (cover sheet & document(s)) Name of Assignee _____
11. ☐ **37 CFR 3.73(c) Statement** (*when there is an assignee*) ☑ **Power of Attorney**
12. ☐ **English Translation Document** (*if applicable*)
13. ☐ **Information Disclosure Statement** (PTO/SB/08 or PTO-1449)
    ☐ Copies of citations attached
14. ☐ **Preliminary Amendment**
15. ☐ **Return Receipt Postcard** (*MPEP § 503*) (*Should be specifically itemized*)
16. ☐ **Certified Copy of Priority Document(s)** (*if foreign priority is claimed*)
17. ☐ **Nonpublication Request** Under 35 U.S.C. 122(b)(2)(B)(i). Applicant must attach form PTO/SB/35 or equivalent.
18. ☐ **Other:** _____

***Note**: (1) Benefit claims under 37 CFR 1.78 and foreign priority claims under 1.55 **must** be included in an Application Data Sheet (ADS).
(2) For applications filed under 35 U.S.C. 111, the application must contain an ADS specifying the applicant if the applicant is an assignee, person to whom the inventor is under an obligation to assign, or person who otherwise shows sufficient proprietary interest in the matter. See 37 CFR 1.46(b).

19. CORRESPONDENCE ADDRESS

☑ The address associated with Customer Number: 122222 **OR** ☐ Correspondence address below

Name					
Address					
City		State		Zip Code	
Country		Telephone		Email	

Signature	/Lance M. Kreisman/	Date	September 7, 2021
Name (Print/Type)	Lance M. Kreisman	Registration No. (Attorney/Agent)	39256

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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.
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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 inspection 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.

Doc Code: MES.GIB
Document Description: Certification of Micro Entity Status (Gross Income Basis)

PTO/SB/15A (07-14)

CERTIFICATION OF MICRO ENTITY STATUS
(GROSS INCOME BASIS)

Application Number or Control Number (if applicable):	Patent Number (if applicable):
NYA	NYA
First Named Inventor:	**Title of Invention:**
Sai Manapragada	SYSTEM AND METHOD FOR EXTENDING RANGE AND COVERAGE OF BANDWIDTH INTENSIVE WIRELESS DATA STREAMS

The applicant hereby certifies the following—

(1) **SMALL ENTITY REQUIREMENT –** The applicant qualifies as a small entity as defined in 37 CFR 1.27.

(2) **APPLICATION FILING LIMIT –** Neither the applicant nor the inventor nor a joint inventor has been named as the inventor or a joint inventor on more than four previously filed U.S. patent applications, excluding provisional applications and international applications under the Patent Cooperation Treaty (PCT) for which the basic national fee under 37 CFR 1.492(a) was not paid, and also excluding patent applications for which the applicant has assigned all ownership rights, or is obligated to assign all ownership rights, as a result of the applicant's previous employment.

(3) **GROSS INCOME LIMIT ON APPLICANTS AND INVENTORS –** Neither the applicant nor the inventor nor a joint inventor, in the calendar year preceding the calendar year in which the applicable fee is being paid, had a gross income, as defined in section 61(a) of the Internal Revenue Code of 1986 (26 U.S.C. 61(a)), exceeding the "Maximum Qualifying Gross Income" reported on the USPTO Web site at http://www.uspto.gov/patents/law/micro_entity.jsp which is equal to three times the median household income for that preceding calendar year, as most recently reported by the Bureau of the Census.

(4) **GROSS INCOME LIMIT ON PARTIES WITH AN "OWNERSHIP INTEREST" –** Neither the applicant nor the inventor nor a joint inventor has assigned, granted, or conveyed, nor is under an obligation by contract or law to assign, grant, or convey, a license or other ownership interest in the application concerned to an entity that, in the calendar year preceding the calendar year in which the applicable fee is being paid, had a gross income, as defined in section 61(a) of the Internal Revenue Code of 1986, exceeding the "Maximum Qualifying Gross Income" reported on the USPTO Web site at http://www.uspto.gov/patents/law/micro_entity.jsp which is equal to three times the median household income for that preceding calendar year, as most recently reported by the Bureau of the Census.

SIGNATURE by an authorized party set forth in 37 CFR 1.33(b)

Signature	/Lance M. Kreisman/				
Name	Lance M. Kreisman				
Date	09/07/2021	Telephone	650-468-9654	Registration No.	39256

☐ There is more than one inventor and I am one of the inventors who are jointly identified as the applicant. The required additional certification form(s) signed by the other joint inventor(s) are included with this form.

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 disclosure of these records is required by the Freedom of Information Act.
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).
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