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January 06, 2025

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FILING DATE: *October 19, 2009*
PATENT NUMBER: 8228801
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Application Number	
Filing Date	October 19, 2009
First Named Inventor	Eric Delangis
Title	A Broadband Comm. Device
Art Unit	
Examiner Name	
Attorney Docket Number	ED 1020

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64828

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☒ 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/06) submitted herewith or filed on _____

SIGNATURE of Applicant or Assignee of Record

Signature

Date

Telephone

Name

ERIC M. DELANGIS

Title and Company

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.

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Electronic Patent Application Fee Transmittal				
Application Number:				
Filing Date:				
Title of Invention:		A BROADBAND COMMUNICATIONS DEVICE		
First Named Inventor/Applicant Name:		Eric M Delangis		
Filer:		Harold C. McGurk		
Attorney Docket Number:		ED 1020		
Filed as Small Entity				
Utility under 35 USC 111(a) Filing Fees				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Utility filing Fee (Electronic filing)	4011	1	82	82
Utility Search Fee	2111	1	270	270
Utility Examination Fee	2311	1	110	110
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
Total in USD (\$)				462

Electronic Acknowledgement Receipt

EFS ID:	6289741
Application Number:	12581852
International Application Number:	
Confirmation Number:	3420
Title of Invention:	A BROADBAND COMMUNICATIONS DEVICE
First Named Inventor/Applicant Name:	Eric M Delangis
Customer Number:	64828
Filer:	Harold C. McGurk
Filer Authorized By:	
Attorney Docket Number:	ED 1020
Receipt Date:	19-OCT-2009
Filing Date:	
Time Stamp:	22:07:27
Application Type:	Utility under 35 USC 111(a)

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RAM confirmation Number	5240
Deposit Account	
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
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1	Application Data Sheet	ED_1020_ADS_SB14.pdf	964631 8a8dd3a76211945c2bbb6a3084dcca9d63ee2786	no	4
Warnings:					
Information:					
2	Specification	ED_1020_Specification.pdf	127554 c24e65e1778ce056d4b24da9da80fab18aff46c	no	24
Warnings:					
Information:					
3	Claims	ED_1020_Claims.pdf	17918 c9816840bd587c1ed8bcc9ce569ee4787e4fdbf1	no	3
Warnings:					
Information:					
4	Abstract	ED_1020_Abstract.pdf	20279 dddb3ce67b3396e9104a9ffdc70b30b3b44a9629c	no	1
Warnings:					
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5	Drawings-other than black and white line drawings	ED_1020_Drawings_1-5.pdf	99663 dfc9eece4d4c9129c0e0a8acea3c28f0ea15d3d	no	5
Warnings:					
Information:					
6	Drawings-other than black and white line drawings	ED_1020_Drawings_6-9.pdf	121374 c000340616f0f35718dec93fb1883bb071945fd	no	4
Warnings:					
Information:					
7	Oath or Declaration filed	ED_1020_Declaration_Signed.pdf	398549 d945819a4f69fab8f66765c8ae10280935f804a4	no	1
Warnings:					
Information:					
8	Power of Attorney	ED_1020_POA_Signed.pdf	339143 cf2ef6fce40d38f7356ef8acb6dc546139f96174	no	1
Warnings:					
Information:					
9	Fee Worksheet (PTO-875)	fee-info.pdf	32837 030b31b4e12372035e56f755f3a67866dc99274	no	2
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New International Application Filed with the USPTO as a Receiving Office

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Application Data Sheet 37 CFR 1.76		Attorney Docket Number	ED 1020
		Application Number	
Title of Invention	A BROADBAND COMMUNICATIONS DEVICE		
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.			

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☐ 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.)

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Applicant ¹					Remove
Applicant Authority		☒ Inventor		☐ Legal Representative under 35 U.S.C. 117	☐ Party of Interest under 35 U.S.C. 118
Prefix	Given Name	Middle Name	Family Name		Suffix
	Eric	M.	Delangis		
Residence Information (Select One)		☒ US Residency ☐ Non US Residency ☐ Active US Military Service			
City	Loveland	State/Province	CA	Country of Residence ⁱ	US
Citizenship under 37 CFR 1.41(b) ⁱ		US			
Mailing Address of Applicant:					
Address 1	4339 Golf Vista Drive				
Address 2					
City	Loveland	State/Province	CO		
Postal Code	80537	Country ⁱ	US		
All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the Add button.					Add

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☐ An Address is being provided for the correspondence Information of this application.			
Customer Number	64828		
Email Address	claymcgurk@cox.net	Add Email	Remove Email

Application Information:

Title of the Invention	A BROADBAND COMMUNICATIONS DEVICE		
Attorney Docket Number	ED 1020	Small Entity Status Claimed ☒	
Application Type	Nonprovisional		
Subject Matter			
Suggested Class (if any)		Sub Class (if any)	
Suggested Technology Center (if any)			
Total Number of Drawing Sheets (if any)	9	Suggested Figure for Publication (if any)	6

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	ED 1020
		Application Number	
Title of Invention	A BROADBAND COMMUNICATIONS DEVICE		

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:

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Customer Number	64828		

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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(a)(2) or CFR 1.78(a)(4), and need not otherwise be made part of the specification.			
Prior Application Status	Pending	Remove	
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
	Continuation of	10686375	2003-10-14
Prior Application Status	Expired	Remove	
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
10686375	non provisional of		2002-10-15
Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the Add button.			Add

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Remove			
Application Number	Country ⁱ	Parent Filing Date (YYYY-MM-DD)	Priority Claimed
			☒ Yes ☐ No
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Application Data Sheet 37 CFR 1.76		Attorney Docket Number	ED 1020
		Application Number	
Title of Invention	A BROADBAND COMMUNICATIONS DEVICE		

Assignee Information:

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Assignee 1				Remove
If the Assignee is an Organization check here. ☐				
Prefix	Given Name	Middle Name	Family Name	Suffix
Mailing Address Information:				
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:

A signature of the applicant or representative is required in accordance with 37 CFR 1.33 and 10.18. Please see 37 CFR 1.4(d) for the form of the signature.					
Signature	/H C MCGURK, REG.NO. 34964/			Date (YYYY-MM-DD)	2009-10-19
First Name	HAROLD	Last Name	MCGURK	Registration Number	34964

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A BROADBAND COMMUNICATIONS DEVICE

RELATED APPLICATIONS

[0001] This application is a continuation of U.S. Patent Application Serial No. 10/686,375 filed October 14, 2005, which claims priority to U.S. Provisional Application Serial No. _____, filed October 15, 2002, all which are incorporated by reference herein.

BACKGROUND OF INVENTION

[0002] The primary function of the RCG is to provide a platform for Competitive Local Exchange Companies (CLECs) to compete with the Local Exchange Companies (LECs) for residential voice and data services. The LECs have a strangle hold on the “last mile” of copper over which almost all residential customers receive their communications services. Today, most CLECs resell the existing services that are offered by the LECs. CLECs make their money by purchasing these services from the LECs at a discount and marking them up to the customer. Since these services are regulated and controlled by the Public Utilities Commission (PUC) the pricing for these services to the CLECs is set. The monthly CLEC discount is approximately \$5 to \$6 per line per month for basic rate services. This means, in practicality, that a CLEC can only charge an additional \$5 or \$6 to the residential customer for basic rate services otherwise they would be more expensive than the LEC, and no one would buy the services from them; telephone customers would simply stay with the LEC.

[0003] To be competitive then, CLECs try to sell additional services such as call waiting, caller ID, etc. where they have as much as a 50% margin. Some CLECs also bundle long distance services with their packages as additional incentive to get residential customers to buy local telephone service from them. Since long distance fees are as low as pennies per minute to the customer, there is little profit in long distance for the CLECs. As it is, the pricing structure is such that the LECs will stay in control of the residential market, and the CLECs are nothing more than a marketing arm of the LEC. This structure also keeps the CLECs at an equal competitive advantage, or disadvantage, with respect to each other. The only thing that one CLEC could do to gain more customers is to be a better marketier. Since the CLECs are unable to discount their services because their margins are too slim as it is, the net effect is that the

consumer looses by not really getting competition in the residential markets, and prices are kept artificially high.

[0004] For the CLECs to be truly competitive in the local telecommunications markets, they must be able to do more than simply resell the LECs services. CLECs must be able to offer many more features or services than those that the LEC provides, and they must be able to do this at a lower cost, in order to attract new customers.

[0005] So, what new services can the CLECs offer? As things stand today there are none, with the exception of DSL or Cable services which require tremendous infrastructure costs on behalf of the CLEC. However, by deploying an RCG in a residence, CLECs can offer advanced new calling features and services over the existing POTS line. Their costs for the POTS line from the LEC remains the same, but they can now charge for high bandwidth data services as well as additional calling and messaging features that the LECs cannot offer. This is their competitive advantage.

Competition:

[0006] Many companies are currently trying to provide VoIP services to residential customers over high-speed or broadband backbones such as DSL and cable modems, over Internet connections via a computer. The high-speed services require expensive infrastructure enhancements to the local telephone companies' facilities and cable plants, as well as expensive modems at the customer's end. These services are also difficult to deploy and too complicated for the average user. Internet based VoIP services suffer from Internet delays caused by a lack of true Quality of Service (QOS) capabilities across the Internet. Existing VoIP services also require access to a computer and a technical knowledge to be able to make it work. Because of these problems, VoIP services are primarily targeted at the corporate market place where private IP networks that can carry VoIP services with a true guaranteed QOS exist, or can be controlled.

[0007] The only available alternatives for the residential user for high speed services are DSL and cable modems. DSL and Cable based communications reach only a small segment of the population, and growth has failed to live up to initial expectations. The recent collapse of the internet boom has led to the failure of many DSL service providers and has effectively eliminated DSL as a potential service for most POTS users for the immediate future.

SUMMARY OF THE INVENTION

[0008] The RCG combines the capabilities and features of IP routers, Class 5 circuit switches and wireless LANs in a small stand-alone external modem like device. Additional capabilities for a hands-free speakerphone device with a large touch display are also detailed. The RCG can employ a large display with sufficient resolution to provide a functional user interface to access all of the advanced features offered by the RCG, but also to be able to provide video telephone services.

[0009] The device is placed in a residence and connected to the primary POTS line coming from the LEC. Up to three standard telephones or FAX machines (or any combination) are typically connected into the RCG. It also has a Universal Serial Bus (USB) and/or a 10-100 Ethernet interface for connection to a computer or a Local Area Network (LAN). In addition, it has an 802.11b/g wireless interface for wireless home networking as well as broadband-to-the-home services.

[0010] The system is installed in a customer's home by simply plugging it into the existing incoming telephone line that provides POTS services from the LEC. One or more standard telephones are then plugged into its three line-output jacks. This is the simplest and most basic usage. In this implementation, the user only is interested in gaining additional telephone lines into the household. No computer connection is required in order to use the system. However, if data communications are desired, then there are three additional interfaces for computer connectivity. Typically either an Ethernet port, USB port or firewire (IEEE 1394) port is used to connect to a PC or LAN. The 802.11b/g interface is for wireless communications between the RCG and PCs, other RCGs as well as any other types of compatible wireless devices. A version of the RCG includes a speakerphone and video camera to provided for video telephone services.

Services provided by the RCG:

[0011] The following discussion refers to figure 1. The RCG has a main system processor that is responsible for all house keeping and traffic routing tasks. The Main CPU 19 routes data to and from the Ethernet Port 11, USB Port 12, Modem/DAA 41, DSP Engine 33, 802.11b/g Module 36 and the Display and Keypad 10.

[0012] The RCG provides a total telecommunications communications services package for residential and small business customers. With the RCG, a CLEC can offer its customers dialtone for up to three separate telephone numbers per residence (the limit of three telephone numbers is an arbitrary number based upon typical residential usage and is not a limit imposed by the system), all local and long distance services, 24/7 always-on Internet access, a host of custom messaging and calling features, as well as Broadband access and lifeline service. All of these services can be offered over a customer's existing POTS line, and it doesn't require any network infrastructure build out like DSL and Cable services. Because there is no expensive network equipment required, it can be readily deployed throughout the country to expand the CLECs customer base quickly.

[0013] The RCG is designed to enhance, not replace, the existing telephone line, enabling it to provide new combined packetized voice and data services. Meanwhile, all existing telecommunications infrastructure and equipment will continue to work seamlessly with the RCG. Aside from simply installing the low cost RCG device in the home telephone wiring, no other equipment needs to be purchased by either the home owner or telephone companies. This eliminates the tremendously expensive infrastructure costs for communications companies that are trying to provide voice services using DSL or cable modems.

The RCG VIP Home Gateway features:

[0014] Up to three telephone lines i.e. numbers, over a single POTS line and/or wireless connection.

[0015] Ethernet, USB and IEEE 1394 computer interfaces.

[0016] Full G1, G2 and G3 FAX support.

[0017] Full support for all CLASS services.

[0018] Broadband networking for home computers and appliances as well as wide area networking using a combination of a plurality POTS lines connected to a plurality of RCGs and/or a direct wireless connection to a wireless access point. (These interfaces allow smart devices to communicate to other devices within the home, or over the Internet through the RCG.)

[0019] Automated, remote upgradability and configuration. (Requires the customer to do nothing.)

- [0020]** Transparent user operation. (User doesn't have to know that any new technology is being employed)
- [0021]** 100% compatible with existing public telephone system.
- [0022]** Video Telephone capabilities.
- [0023]** No local or long distance usage charges.
- [0024]** No Internet access fees.
- [0025]** Lower monthly communication costs.
- [0026]** Multiple telephone calls at the same time.
- [0027]** Voice messaging, follow me features, call forwarding, automatic call back, conferencing, custom call routing. Home networking capabilities, all CLASS calling features, high speed broadband networking, continuous 24/7 internet access. and many others.
- [0028]** All of these features are available even while connected to the Internet.
- [0029]** Very low cost of entry into the market, especially as compared to broadband alternatives.
- [0030]** New calling features that are not currently available to home users.

BRIEF DESCRIPTION OF THE DRAWINGS

- [0031]** Figure 1 shows the RCG functional block diagram with the preferred embodiment of an 802.11 wireless connection.
- [0032]** Figure 2 shows the network topology for native RCG to RCG communications.
- [0033]** Figure 3 shows the network topology for an RCG to PSTN call.
- [0034]** Figure 4 shows the RCG top view with associated functions.
- [0035]** Figure 5 shows the RCG rear view and associated connections.
- [0036]** Figure 6 shows a typical application with peripheral equipment connections.
- [0037]** Figure 7 shows an ad-hoc wireless LAN configuration with ppp multilink data distribution and wireless connectivity.
- [0038]** Figure 8 shows an ad-hoc wireless LAN configuration with ppp multilink data distribution and wireless connectivity with connection to a broadband neighborhood access point (Wi-Fi hot spot).

[0039] Figure 9 shows an ad-hoc wireless LAN configuration with ppp multilink data distribution and wireless connectivity with wireless data hopping with POTS connections through numerous different Class 5 offices.

DETAILED DESCRIPTION OF THE INVENTION

[0040] The preferred embodiment is detailed herein using the ubiquitous 802.11 wireless protocol. It is by no means insinuated that this is the only wireless scheme that can be used by this device; rather, it is intended that any wireless transmission scheme can be used for wireless communications between this device and other wireless devices as various applications may dictate.

System Initialization

[0041] Refer to figures 1, 2 and 3 for the following discussion. When the RCG is first plugged into an AC power outlet the Main CPU 19, performs a Power-on Self Test (POST) routine. Once the POST completes and the RCG is connected to an active POTS line, connected to the LEC, by means of the Incoming POTS Port 40, the RCG automatically initiates a modem connection via the Modem/DAA 41, to a registration service via a toll free 800 telephone number. The registration service connects directly to the service provider's sales or customer service offices via a VoIP connection. An operator or an automated service answers the call and sets up a new account for the customer. Once the account is set up, the service provider's network automatically sends control information to the device to store the required routing and feature/service information in its non-volatile memory of its Main CPU 19. As part of this information, a local dialup telephone number is sent to the device that it will use for local network access in the same fashion as a standard ISP connection is made from a home computer. The URL of the Softswitch/SIP Proxy Server and Registrar 51 that will be controlling this particular device is also stored at this time. During the service activation and configuration process, the customer service operator can send test requests to the device, as well as call into it on another telephone number (assuming an additional telephone number is part of the users class of service) or the speakerphone to verify that it is configured and working properly. The final step of the configuration and initialization process is to register the device with the appropriate

Softswitch/SIP Proxy Server and Registrar 51 so that the Softswitch/SIP Proxy Server and Registrar 51 knows that it is the controlling SIP Proxy for this RCG. Also configured at this time is the username/password verification server (this is a standard network device and is not shown) that is used to allow the RCG's modem to make a connection onto the service provider's network. Once the RCG configuration is completed, it disconnects the call by hanging up the Modem/DAA 41, then dials the new local network access number that had been sent during the configuration process and establishes a constant local network connection. This connection is maintained continuously on a 24/7 basis, and is immediately reestablished whenever it drops. Should the RCG become unable to reestablish this connection after several tries, it will switch over to failsafe mode and inform the user via the Display and Keypad 10. The RCG will try to reestablish the connection every few minutes until it finally succeeds.

[0042] By default, the first telephone port, POTS 1 Port 30, is assigned as the termination port for the existing POTS service that is connected to Incoming POTS Port 40. This is the existing telephone service that the user already has as his primary telephone service from his LEC. POTS 1 Port 30, typically has connected to it a standard telephone set that does not require any power (other than that derived over the POTS interface) to operate properly. POTS 1 Port 30 is the Lifeline telephone port for the user. In the case that all power is lost to the RCG, POTS 1 Port 30 will fail to a direct connection to the Incoming POTS Port 40 telephone line that comes into the RCG from the LEC to provide uninterrupted telephone services to the user. In this state, however, none of the enhanced VoIP services of the RCG are available to the user since the user simply has a stand POTS telephone service to the LEC.

[0043] Two additional and unique telephone numbers can be assigned to the other two telephone ports, POTS 2 Port 29 and POTS 3 Port 28, by the service provider at any time. These numbers are drawn from a pool of available telephone numbers assigned to the service provider. POTS 2 Port 29 and POTS 3 Port 28 must to have standard telephone numbers assigned to them so that the PSTN is able to route calls from its network to these ports. For calls originating from IP based telephones, these numbers are not necessarily needed since POTS 1 Port 30, POTS 2 Port 29 and POTS 3 Port 28 are uniquely identifiable to IP networks via their IP addresses assigned through the Dynamic Host Configuration Protocol (DHCP) at the time that the RCG establishes a connection to the service provider's network. Since POTS 2 Port 29 and POTS 3 Port 28 must have a telephone number assigned to them, it is a matter of convenience to use the

assigned telephone numbers as part of their SIP address for IP routing of their data. In this way, all three user POTS ports, POTS 1 Port 30, POTS 2 Port 29 and POTS 3 Port 28 are all addressed the same manor.

[0044] At this point, the user is able to take advantage of all of the RCG's features that have been activated according to his service agreement. The user can at any time connect additional telephones, a computer or a computer network to the RCG. The user will only be able to use those telephone ports (POTS 1 Port 30, POTS 2 Port 29 or POTS 3 Port 28) that have been activated, and assigned unique telephone numbers by the service provider. Any type of standard telephone can be connected to the three POTS ports, POTS 1 Port 30, POTS 2 Port 29 and POTS 3 Port 28. In the event that a cordless telephone or a telephone that derives its power from an AC outlet is connected to POTS 1 Port 30, the lifeline functionality of this port will be ineffective since the telephone itself will not operate once power is lost.

[0045] The speaker phone feature of the RCG, comprised of Speakerphone Drivers 22, Microphone 24, Speaker 25 and DSP Engine 33, can be used on any of the activated telephone numbers and is by default enabled to operate on POTS 1 Port 30. Once either of the other two telephone ports, POTS 2 Port 29 or POTS 3 Port 28, is activated, the speakerphone function is activated for those lines as well. To use the speakerphone for any assigned telephone number, the user simply presses either the Line Select Button 79-81 for Line 1, Line2 or Line 3 on the face of the RCG, and the speakerphone function is activated on that line. This is convenient for answering any call directly at the RCG. The RCG may or may not have a number keypad for originating calls. This feature may be added or removed based upon the target market price points.

[0046] The determination as to which Inter Exchange Carrier (IXC) the RCG will route its data through is determined by any of a number of criteria including, but not limited to, whether the RCG is a private labeled product, or which carrier has the lowest cost routing, or if a specific carrier is specified by the customer, or and number of other considerations. The RCG can be programmed to change its routing path to any IXC at any time by the service provider. Complicated routing algorithms can be programmed into the RCG to control which IXC it will use at any time.

Failsafe Mode

[0047] During any time that the RCG is in failsafe mode i.e. Lifeline failsafe logic 39 is activated, the RCG will only be able to receive or initiate telephone calls via the telephone connected to its primary telephone port, POTS 1 Port 30 or through its speakerphone feature. In this condition, all activated telephone numbers are ported via the PSTN to the primary (first) telephone number for delivery to the user's telephone that is connected to POTS 1 Port 30. While in failsafe mode, the modem is not activated, and the RCG appears to the local Class 5 office as a standard telephone, and the PSTN will route all incoming calls to the RCG as it normally would to any standard telephone.

Call Flow 1:

[0048] Dialed call origination from a telephone connected to an RCG POTS port and terminating at another user's RCG POTS port:

[0049] When a user picks up a telephone connected to any of the three POTS ports, POTS 1 Port 30, POTS 2 Port 29 and POTS 3 Port 28, an off hook condition is detected by the SLIC/CODEC Interface 27 that is connected to the DSP Engine 33 by way of the DSP Audio Interface 31. The DSP Engine 33 responds by sending digitally generated dialtone to the appropriate POTS interface over the DSP Audio Interface 31. (Note: all BORSCHT telephony functions are performed by the DSP Engine 33 and the SLIC/CODEC Interface 27.) Upon hearing the dialtone, the user enters the desired telephone number on his telephone keypad. The Dual Tone Multi-Frequency (DTMF) digits that the user dials are decoded within the DSP Engine 33. The dialed digits are transferred to the Main CPU 19 via the CPU/DSP Communications Path 34. The Main CPU 19 polls the DSP Engine 33 approximately every two milliseconds looking for data. The Main CPU 19 polling rate varies according to the process that is being performed. The CPU/DSP Communications path 34 also can generate an interrupt to force data transfer between it and the Main CPU 19.

[0050] The Main CPU 19 generates a SIP Invite IP packet using the dialed digits as the called destination address and the URL of its local controlling SIP Proxy Server which was programmed into the RCG during the configuration process. The Main CPU 19 passes this SIP packet off to the Modem/DAA 41 for transmission over the network. The RCG Modem/DAA 41 is connected to and communicating with a modem in a modem bank located in the Inter

Exchange Carrier's (IXCs) facility. This facility may actually be located in the LEC's physical plant or it may be physically located at another location.

[0051] Referring to Figure 2, User A RCG 44 is connected via its modem to the LEC's local Class 5 Office A 47. In this example, the service provider's connections to the IXC A Modem Bank & Router 48 are through IXC A Inter-Office Trunks 46. The service provider may or may not be the IXC. If the service provider does not have its own network, then it will purchase capacity from an IXC and route its traffic to that IXC's facilities. The SIP Invite IP Packet that is sent from User A RCG 44 transits the LEC's Class 5 Office A 47 facilities and is routed to the IXC A Modem Bank/Router 48 via the IXC A Inter-Office Trunks 46. It is the job of the router to take the IP packet and route it on to its intended destination, in this case the appropriate SIP proxy server 51. The router uses the URL for the Softswitch/SIP Proxy Server and Registrar 51 contained in the SIP Invite to know where to route the packet. (Note: The Softswitch, SIP Proxy Server and Registrar are logical devices that may reside in a single computer system, or may be implemented as completely separate devices. In this example, the Softswitch, SIP Proxy Server and Registrar are all shown as a single physical device running these three separate processes.) The IXC A Modem Bank/Router 48 sends the SIP Invite IP packet on to Softswitch/SIP Proxy Server and Registrar 51 via an IP based network route 52.

[0052] The SIP Proxy Server process running on Softswitch/SIP Proxy Server and Registrar 51 performs a look up to determine the termination destination for the call using the dialed digits passed along in the SIP Invite IP packet. In this example, the terminating device for User B RCG 56 is via IXC B's Modem Bank/Router 49 then through Class 5 Office B 50 and over User B POTS line 55 and finally to User B RCG 56. Not covered in detail here is the SIP message handling since it is completely covered in IETF RFC2543. This example shows that both the originating and terminating ends of this call are controlled by the same Softswitch/SIP Proxy Server and Registrar 51 device. Where the originating and terminating ends of a call are controlled by different Softswitch/SIP Proxy Server and Registrar devices, an additional level of SIP messaging is used between the two SIP Proxy Server processes of each of the Softswitch/SIP Proxy Server and Registrar devices to locate and control the terminating location of the call. Again, that information is covered in IETF RFC2543 and is repeated here.

[0053] After the call routing is setup using SIP, and User B answers the call, the Softswitch/SIP Proxy Server and Registrar 51 device sends IP address of the originating User A

RCG 44 to the User B RCG 56 and the IP address of User B RCG 56 to User A RCG 44. Once both RCG's have the other's IP address, they then communicate directly to each other using Real Time Protocol (RTP), and the Softswitch/SIP Proxy Server and Registrar 51 device is no longer part of the connection. This direct communication is shown as IP based RTP Stream 57 between IXC A Modem Bank/Router 48 and IXC B Modem Bank/Router 49.

[0054] On the receiving end of the call, referring back to Figure 2, User B RCG 56 receives the SIP Invite data stream through its Modem/DAA 41 and passes it on to the Main CPU 19. The Main CPU 19 reassembles the SIP IP packet and interrogates the header information to determine which POTS port, POTS 1 Port 30, POTS 2 Port 29 and POTS 3 Port 28 the call is destined for based upon the dialed number contained in the SIP Invite message. The Main CPU 19 commands the DSP Engine 33 to control the SLIC/CODEC Interface 27 to apply ringing voltage to the selected POTS port to ring the phone. A corresponding SIP 180 (ringing) message is sent back to User A RCG 44 in the reverse direction. When the phone attached to the selected POTS port is answered, the off hook condition detected by the SLIC/CODEC Interface 27 is sent through the DSP Engine 33 to the Main CPU 19 that sends the SIP 200 OK message back to User A RCG 44 to let the RCG know that the call was answered by User B RCG 56 and to turn off the audible ringing tone for User B. Once the call is established, User A RCG 44 sends and ACK F12 SIP message to User B RCG 56 indicating that User A RCG 44 understands that the call setup has been completed.

[0055] The two RCGs now exchange SIP messages that include the type of voice encoding that will be used such as G.729, G.723.1, G.711 etc to configure their RTP streams so that they can reliably transfer the user information between them. At this point the call (voice data) is sent between both RCGs and a normal telephone conversation takes place between the user A and user B.

[0056] Call teardown is accomplished by either user hanging up their telephone. The RCG of the terminating end (the end that hangs up the phone first) detects the on-hook condition and sends a SIP Bye message to the other end. The other end upon receiving the SIP Bye message responds with an OK 200 SIP message and disables the appropriate POTS port that the user was using.

[0057] The Speakerphone interface can be used for either end of a telephone conversation in exactly the same way as described above except that the corresponding POTS port that the call was intended for is disabled if the call is answered via the speakerphone.

Call Flow 2:

[0058] Calls between an RCG device and a PSTN telephone:

[0059] Refer to figure 3 for the following discussion.

[0060] In the previous call example, the PSTN network had nothing to do since the call was over a previously established modem connection between two RCGs. In the cases where a call originates or terminates to a standard telephone serviced by a Class 5 office, the process is a bit more complicated.

[0061] When a call originates from a user via an RCG, such as User A RCG 44, the call handling practices are exactly the same up to the point that the SIP Proxy Server process in the Softswitch, SIP Proxy Server and Registrar 51 performs a lookup to determine how to route the call. In this case, the SIP Proxy Server process determines that the call terminates at a standard PSTN telephone attached to the Class 5 Office B 50. Since the call originates as a native VoIP service, it must be converted to a standard switched circuit based service to be able to be delivered to User B's telephone 61. The conversion is performed by the IXC's Media Gateway 60 device. In this example, the SIP Proxy Server process routes the call via the IXC's Media Gateway 60 device instead of through the IXC B Modem Bank/Router 49 as before. The SIP Proxy Server process sends a SIP Invite to the IXC's Media Gateway 60 device, as well as other control information, to direct the Media Gateway 60 device to terminate the call and to apply the appropriate voice compression algorithm to the media stream to convert it between switched circuit PCM format and the selected VoIP protocol. At the same time, the Softswitch process of the Softswitch, SIP Proxy Server and Registrar 51 device sends commands to the Media Gateway 60 device to cause it to route the call's PCM data to a specific channel on the IXC B Interoffice Trunk 54. The Softswitch process then generates an SS7 ISUP message that is sent over the PSTN SS7 signaling network to the Class 5 Office B informing it of the incoming call and on which circuit the call has been placed. It is up to the PSTN at this point to ring the User B telephone 61 and process the call between the IXC's Media Gateway and the User B Telephone 61. The Softswitch process handles the signaling conversion between the PSTN's

SS7 network and the IXC's SIP messaging, as well as any other proprietary signaling schemes utilized by the IXC to control its network. The standard SS7 call control messages, such as ringing, busy, ring back etc., all have a comparable SIP call flow control messages. The Softswitch simply maps the SS7 messages into SIP messages and visa-versa while routing the messages to the appropriate network equipment.

[0062] As in the case of a call between two RCGs, the RTP media stream (the actual call data) is routed directly by the IXC A Modem Bank/Router 48 and the IXC's Media Gateway 60 via an IP based RTP Stream 57.

[0063] Again, call teardown is accomplished by either user hanging up their telephone. Depending which end hangs up the phone first, the associated network will generate the appropriate messages which will eventually make it back to the Softswitch process. The Softswitch process will relay the appropriate call control messages between the PSTN and the IXC's SIP based control system.

[0064] A telephone call originating from a PSTN telephone is configured and setup in the same fashion as the above description except that the originating messaging begins within the PSTN network instead of the IXC's network.

Personal Computer based communications:

[0065] Where the RCG is connected to a Personal Computer (PC) through either its USB Port 11 or Ethernet Port 12, the RCG operates exactly as a cable or DSL type modem device. The RCG is simply a pass through for the computer's data. The RCG receives the IP packets (of whatever type) from the computer and sends the information unchanged to the Modem/DAA 41 interface for transmission over the Internet. Received information from the Internet is processed in the reverse way.

Dynamic Bandwidth Allocation:

[0066] When a modem connection is established between the RCG and the "Network", the total available bandwidth of this connection is used in a shared/prioritized fashion. Voice services (calls) take precedence over data services. Therefore, when no calls are in progress all of the available bandwidth is used by data type services such as surfing the Internet or uploading/downloading files. However, when a call is to be passed through the RCG, the

required bandwidth for the call is deallocated from the data services and prioritized for the telephone call. This necessary because the Quality Of Service (QOS) is important for effective communications over electronic networks. Since the voice data is carried over a “data centric” network topology (an IP based network), call quality can suffer greatly. Every effort must be taken to eliminate or reduce the packet delay through every network element to be able to provide the best call quality. For data applications such as surfing the Internet or downloading files packet delay is acceptable and expected, and it does not affect the “quality” of the data.

[0067] Since all voice and data is transmitted as packets, there are no “time slots” or other type of “channelization” associated with the transmission of this data over either the POTS line or the wireless interface. Channelization of the voice data does occur within the SLIC/Codec Interface – 27 but is converted into IP packets by the DSP engine – 33 and is handled as packets from that point on.

[0068] Regardless of whether the call is originating or terminating at the RCG, the bandwidth allocation process is the same. When the SIP call setup messages are processed, the type of voice compression that will be used is defined. The RCG Main CPU 19 handles the IP packet flow between the DSP Engine 33, USB Port 12, Ethernet Port 11, 802.11b/g Module 36 and the Modem/DAA 41 devices giving priority to the voice packets to and from the DSP Engine 33 and the Modem/DAA 41 interfaces. Voice compression algorithms create IP packets at a specified number of packets per second. These packets are handled by a timed process in the RCG. This process is started during call setup so that the packets are handled at the correct rate based upon the compression algorithm’s packet generation rate. There is no priority assigned between the voice packets of each of the three different POTS Ports 28-30. When more than one voice call is in progress, they are handled in a round robin fashion based upon the packet rate for the compression algorithm used. If, for example, two calls are using a compression scheme that generates packets every 2 milliseconds, and the third generates packets every 4 milliseconds, then the calls utilizing the faster packet rate will be polled at twice the rate as the call using a slower packet rate but they are not given priority “over” the other call. Only when there are no voice packets ready for transmission to the Modem/DAA 41, i.e. during the approximately 2 to 4 millisecond packetization period between packets, will any pending data packets received from the USB Port 12, Ethernet Port 11 or the 802.11b/g Module 36 be sent to the Modem/DAA 41 for transmission over the network.

[0069] Thus, the POTS bandwidth is allocated on a per packet basis, not on a “time slot” or “channelization” or even a “frequency” basis as it the case with T-Carrier, DSL or channelized DSL systems. The same is true for the wireless interface, whether it is carrying pure data or voice.

[0070] Security is currently a big concern in today’s networks, and especially with wireless 802.11 transmissions. For this reason, the RCG defaults to route voice data over the users POTS connection via Incoming POTS Port 40. As security concerns regarding wireless communications transmissions are addressed and alleviated, voice call data can, and will, be routed over the wireless interface via the 802.11 b/g Module 36.

FAX Transmission:

[0071] Group I, 2 and 3 fax transmission is completely supported by the RCG. Fax transmission has the same priority as other voice communications. That is to say that FAX transmission is treated the same as a voice call and takes precedence over native IP data traffic.

Broadband Over POTS:

[0072] One of the primary functions of the RCG is to be able to transfer large files such as video files over the POTS lines to a residence. The ability to do this is limited by the maximum of 56Kbps due to the design of the digital Class 5 office linecards and network transmission schemes based upon T carriers. Typical Class 5 linecard design samples the POTS lines at a rate of 8,000 samples per second. Typically, each sample is digitized into 12 to 16 bits by a codec device. The digitized sample is then companded to an 8 bit sample (1 byte) which makes up the PCM data stream that is transferred over the PSTN. Therefore, each POTS line is sampled at an effective rate of 64Kbps. Since legacy T1 transmission equipment uses robbed-bit signaling, the maximum guaranteed transmission rate for the PSTN as a whole is 56Kbps. Because of this limitation, standard POTS lines can only guarantee a maximum of 56Kbps transfer rate under the best conditions. DSL equipment gets around this problem by installing DSL Access Multiplexing (DSLAM) equipment at the Class 5 office end of the POTS line. By routing around the linecard, as well as routing the data directly over the Internet or other private IP based networks, and therefore the 64Kbps sampling rate, DSL is not bandwidth limited like PSTN traffic is. DSL, however, suffers from the very high costs associated with the purchase,

installation, maintenance, floor lease costs, etc. DSL also suffers from very high deployment costs resulting from the labor intensive process to turn up each line. Each DSL “POTS” line must be inspected, conditioned and all load coils removed.

[0073] The RCG gets around the 56Kbps POTS limitation as well as the DSL problems by using the standard POTS lines as they are, and not requiring any additional equipment to be installed at the Class 5 end of the POTS line. This technique simplifies deployment and drastically cuts costs.

Multilink PPP connections:

[0074] Referring to figure 7, the RCG implements broadband over POTS by employing an 802.11 b/g wireless interface to configure a multilink PPP bundle – 87 (per RFC 1990) comprised of the POTS lines connected to up to 32 RCGs. The limitation of 32 RCGs in a multilink PPP bundle is an arbitrary number and can be scaled up or down as required to support changes in network equipment capabilities. An 802.11b/g interface – 87 is shown as the preferred embodiment, since its 11/54 Mbps interface is considered sufficient bandwidth at this time also, its transmission distances are sufficient for implementation of this device, as opposed to other shorter ranged wireless transmission schemes. However as time goes on, some other wireless interface may be more desirable. There is nothing special or specific to the 802.11 wireless interface that makes it particularly suited to this application. Any wireless interface scheme can be used to implement this device.

[0075] The 802.11b/g interface – 88 on an individual RCG is also used to provide a peer-to-peer wireless home networking environment to other 802.11 compatible wireless component within the residence (such as a hand-held computer device) while acting as an always on dialup Internet gateway over the POTS line – 40 for the other wireless devices. An RCG that is transferring a very large file can request the services of 31 (in this embodiment) other RCGs to assist in the file transfer using their respective POTS lines. A single RCG can therefore gain the combined bandwidth of up to 32 POTS lines transferring data at as much as 56Kbps each to transfer information. This is roughly equivalent to a transfer rate of 1.79Mbps in the inbound direction (towards the RCG) and approximately 1.075Mbps in the outbound direction (towards the PSTN).

[0076] The multilink PPP connection – 87 is initiated by an RCG when it determines that the file (or streaming service) that it is to download (receive) is of sufficient size or requires a minimum amount of bandwidth to justify the use of a multilink PPP connection. This determination can be made on many different criteria such as the file size, type of data being transmitted, the type of compression if any, a Quality-of-Service requirement or any other pertinent information. (Since a certain amount of overhead is required to set up a Multilink PPP connection, it doesn't make sense to use it for small or low data rate transfers.)

Multilink PPP bandwidth allocation and initialization:

[0077] Referring to figure 7, an RCG – 85 that decides to initiate a multilink PPP session with a remote computer i.e. internet URL, requests a multilink PPP session with that URL resource via Link Control Protocol (LCP) session management. The initiating RCG - 85 and the remote server computer (not shown) will negotiate the pertinent multilink parameters such as compression, packet size, sync/async, link quality monitoring, bit stuffing etc. As part of a successful multilink PPP session setup, the initiating RCG –85 receives a multilink PPP session ID, or “magic number”, which is used to identify this particular multilink PPP session and is also used for adding or removing links from the multilink bundle – 87 . Once the multilink bundle is setup, the initiating RCG – 85 begins data transfer across its POTS interface – 90 with the far end computer system. The initiating RCG – 85 then looks up the addresses of up to 31 (in this embodiment) other RCGs in its router tables to use for the multilink PPP transfer. (If a Neighborhood Access Point is available the RCG could request service through it instead of setting up a Multilink PPP connection – see figure 8.) The initiating RCG - 85 determines the number of remote RCGs - 86 that it wants to use to get the desired bandwidth for the transfer and sends multilink PPP service requests via the 802.11 b/g wireless connections – 88 to the selected remote RCGs - 86. The selected remote RCGs - 86 respond back to the initiating RCG with either an acceptance or denial of multilink PPP service request. This decision is made based upon the remote RCG's currently available POTS bandwidth and the current local demands for that bandwidth. The remote RCG – 86 makes a decision to participate in a multilink PPP service for an initiating RCG if its POTS line – 91 has a current average bandwidth utilization of less than some arbitrary limit such as 8Kbps to 16 Kbps. This 8Kbps to 16Kbps bandwidth utilization represents about two concurrent voice conversations using standard voice

compression techniques, or some small amount of data transmission occurring on the remote RCG's POTS interface - 91 or a combination thereof. Assuming that the remote RCG - 86 has a modem connection speed somewhere between 33Kbps to 56Kbps, this would leave approximately 17Kbps to 40Kbps of POTS bandwidth that the remote RCG - 86 could offer to the initiating RCG - 85 for use in its multilink PPP bundle - 87. Of course, if there is no activity on the remote RCG - 86 POTS line, then the entire bandwidth will be used for the multilink transfer. If the remote RCG - 86 accepts the multilink PPP service request from the initiating RCG - 85 it also sends its currently available bandwidth on its POTS line - 91 that the initiating RCG - 85 will have available to it for the multilink PPP transfers. The initiating RCG then selects which of the responding remote RCGs - 86 it will use for the multilink PPP bundle - 87 and sends them a multilink initialization packet containing the URL of the destination as well as the multilink PPP session ID (magic number) and any other pertinent information required for the remote RCG to join in the existing multilink PPP bundle - 87. Each remote RCG POTS interface - 91 participating in a multilink PPP bundle, represents a logical "link" in the initiating RCG's multilink PPP bundle - 87. The remote RCGs - 86 then send a multilink PPP packet (over their respective POTS lines - 91) to the destination URL with the multilink PPP session ID and request to be added to that multilink PPP bundle - 87. The destination URL accepts the request of each of the remote RCGs - 86 and begins sending data packets to each over their respective POTS lines - 91. When the remote RCGs - 86 receive data packets sent over their respective POTS lines - 91, that are destined for the multilink PPP bundle - 87, they simply relay the data packets over their 802.11b/g interface - 88 to the initiating RCG - 85. It is the responsibility of the initiating RCG - 85 to perform all housekeeping tasks associated with the multilink transfer such as detection of lost packets and data packet reassembly, if those functions are required. Typically, lost packet detection and retransmission and reassembly are performed at higher OSI layers by the requesting software such as a browser. The remote RCGs - 86 are simply data transport nodes and do not perform any data processing on data received over a multilink PPP bundle destined for another RCG.

[0078] The initiating RCG- 85 of the multilink PPP bundle -87 continually monitors the bandwidth of each remote RCG's -86 multilink link which together comprise its multilink bundle - 87. When the available bandwidth for the multilink PPP link of an individual remote RCG -86 falls below an arbitrary minimum set by the initiating RCG - 85, the initiating RCG - 85

instructs the offending remote RCG, via its 802.11b/g wireless interface – 88, to remove itself from the multilink bundle. The remote RCG – 86 will then notify the remote computer (URL) to be removed as a link in the current multilink bundle on which it is participating. Alternatively, a remote RCG – 86 can inform the initiating RCG – 85 of local demands on its POTS bandwidth, and request that the initiating RCG – 85 remove it (the remote RCG – 86) from the participation in the initiating RCG’s multilink bundle – 87. The remote RCG – 86 will not unilaterally remove itself from participation in a multilink bundle without prior notification to the Initiating RCG – 85. The remote RCG – 86 must get authorization from the initiating RCG – 85 to remove itself from the bundle, since the initiating RCG – 85 will have no way of knowing if the loss of data from that remote RCG is due to some sort of failure or from the remote RCG simply removing itself from participation in the multilink bundle – 87. Also, for services that require a minimum Quality of Service (QOS) such as streaming video, the initiating RCG – 85 needs to control the multilink bundle – 87 bandwidth, and it can not do that if remote RCGs – 86 drop out of the multilink bundle – 87 at will. When a remote RCG – 86 requests to be removed from participation in a multilink bundle – 87, the initiating RCG – 85 must immediately grant the request. If the initiating RCG – 85 were to not grant the request, then the remote RCG – 86 could, in worst case, delay or drop incoming multilink packets destined for the initiating RCG – 85. If this were to happen, the initiating RCG – 85 will have missing packets and could over run its reassembly buffer (if reassembly is being performed by the RCG) causing catastrophic data loss and potentially have to restart the entire transmission. In the least case, the initiating RCG – 85 would have to initiate retransmission of potentially many packets which it assumes to be lost, but may simply be delayed by the remote RCG – 86. Once a remote RCG – 86 has been removed from participating in a multilink bundle – 87, the initiating RCG – 85 will then look up another remote RCG in its router tables that can be used to participate in the multilink PPP bundle – 87, and request that the new remote RCG – 86 to join the existing multilink bundle – 87. This is necessary to maintain a minimum Quality of Service. Since RCGs prioritize their bandwidth requirements based upon their own “local” service requirements, their participation in any multilink PPP service is available only to bandwidth that is not required for its own current local demands. Therefore, a remote RCG’s – 86 bandwidth that is available for multilink services can change at any time. The dynamic reassignment of remote RCGs that participate in a multilink bundle is also required to prevent a remote RCG – 86 from receiving packets so slowly

that the originating RCG – 85 interprets this delay as lost packets. When the initiating RCG – 85 determines that a packet has been lost, and it is performing packet reassembly, it will, itself, request that the remote computer retransmit the lost packet. The initiating RCG will not ask any remote RCG – 86 to perform retransmissions or any other kind of data computations or manipulations.

[0079] Refer to figure 8 for the following discussion. In areas where there are existing 802.11 network equipment such as Neighborhood Access Point - 93, or where there is sufficient bandwidth requirements from an installed base of RCGs to warrant the deployment of a Neighborhood Access Point - 93, the RCGs will automatically detect the presence of the compatible neighborhood access points and register with that equipment for transport services. In this case, an RCG has an alternative broadband service route in addition to the multilink option. An RCG can communicate directly with a local 802.11 Network Access Point - 93 that is connected to the PSTN or another carrier's network via some sort of high bandwidth backbone such as a T-Carrier or optical carrier connection (T1, T3, OC3, OC12 etc.). The RCGs can communicate directly with neighborhood access points at their full 11/54 Mbps data rates to provide up to that full bandwidth to the user. This functionality is, of course, subject to the Network Access Point – 93 allowing access to its resources to the RCG according to the 802.11 wireless protocol.

[0080] This architecture is important since it provides an avenue to relieve the local class 5 offices of congestion that can be caused by a wide spread deployment of RCGs within the class 5 service area. Since each RCG requires a constant 24/7 modem connection, this ties up the class 5 switch in a fashion that it was not designed for. This could lead to wholesale class 5 office expansions which would be extremely expensive, and potentially prohibitive for the Local Exchange Carriers (LECs). By deploying neighborhood access points that operate at 54Mbps (802.11a/g), in areas where the RCG concentration starts placing too high of a demand on the local class 5 office, the bandwidth from the RCGs can be aggregated by the neighborhood access points into large capacity backbones to relieve the switch congestion. In this case, the RCG POTS interface – 40 can be used solely as a lifeline connection, or when the 802.11 wireless LAN in which the RCG resides is congested. With this implementation, voice calls will be carried over the wireless interface as opposed to the POTS interface on which they would normally be carried. Also, the RCG modem - 41 connected to the POTS interface – 40 would

not need to maintain a constant always on connection, it could be a dialed on demand connection and thereby relieving the local class 5 office switch.

Bouncing or Hopping traffic:

[0081] Refer to figure 9. In areas where the density of RCGs is less than the arbitrary number of 32 RCGs within its transmission radius for multilink connections, the RCGs can bounce, or relay, the data traffic between each other to reach other RCGs located farther than the RCGs wireless transmission area. Since the POTS data rate of 56Kbps is miniscule as compared to the 11/54 Mbps 802.11b/g transfer rate, the overhead associated with bouncing data traffic is not a concern. This will allow for the fastest possible data transfer across POTS lines for every RCG user.

[0082] RCGs can also communicate directly with an 802.11a Neighborhood Access Point - 93 device (such as that used in WI-FI networks) that is connected to a data network connection such as a DS3 or OC3 service via a Metro Access Point. Where an RCG has access to a broadband device such as an 802.11a type device, either directly or via a bounced signal across several RCGs, a direct high speed data connection can be used to transfer large files. When an RCG is communicating directly with an 802.11a device, data transfer speeds up to the full 11/54 Mbps can be achieved to speed video transfers for such applications as video on demand.

RCG Router Tables:

[0083] The RCG continually monitors its 802.11b/g wireless interface for transmissions from other RCGs or 802.11a Access Points as well as other 802.11b/g wireless devices within the residence. The RCG provides a means to identify and store the addresses of other RCGs and Neighborhood Access Points within its local area. The RCG creates routing tables, much like an IP router device, so that it knows which RCGs are local to itself, and how many hops will be needed to reach the maximum of 32 POTS lines or a Neighborhood Access Point. The RCG can then determine how to route its data transfers to gain the most efficient routing and network efficiencies.

[0084] The router tables in each RCG are continually updated by monitoring the 802.11 frames received from other RCGs or Network Access Points. The number of entries in the router tables can be limited to an arbitrary number of other RCGs but contains room for at least 32

entries. For each RCG listed in the router tables, certain information is kept such as signal strength, if the other device is another RCG or some other 802.11 compatible device, if the other RCG is reachable directly, or if it is accessed via another RCGs by hopping. In the case there RCG hopping is used, the address of each RCG that is hopped is stored in the routing table. When an RCG is first powered up, it monitors its 802.11 interface for a period of time to identify other RCGs or Neighborhood Access Point devices, or other Wi-Fi devices within its transmission area. When first deployed, the RCG will not have any entries in its routing tables. This condition can persist for some time, until another RCG or other 802.11 device is deployed within the former RCGs transmission range. In this state, the RCG can be used for wireless networking within the residence, connecting the local computer to the RCGs always on Internet connection as well as to other wireless devices within the home. When an 802.11 frame is received by an RCG that contains the address of an RCG whose address does not exist in the receiving RCG's router table (as is the case when a new RCG is first installed), the receiving RCG polls the transmitting RCG for its router table information. The received router information is reviewed for other RCG's or other 802.11 compatible devices that are not listed in its own router tables. A decision is made to use some, all, or none of the new route information in its router tables. There is no real limitation on the number of RCGs that can be "hopped" in order to build a complete router table or to reach many more RCGs, Neighborhood Access Points or Metro Access Points.

Equipment and Services Priorities:

[0085] Just as voice has priority over data transfers within a single RCG, local RCG traffic (both voice and data) has priority over remote transfer requests by other RCGs. If an RCG is currently using all of its available POTS bandwidth for its own purposes, it will deny any remote RCG's request for access to its POTS line. Only when there is available POTS bandwidth available will an RCG allow other RCGs access to its POTS line. It will, however, bounce the traffic to other RCGs within its transmission area if requested by the originating RCG. In this case, available wireless bandwidth of any RCG (that amount of the 11/54 Mbps not currently used for its own traffic) can be used to relay traffic between other RCGs that do have available POTS bandwidth. In the same fashion, excess wireless bandwidth of any RCG can be by other RCGs to access high speed backbones via Neighborhood or Metro Access Points.

[0086] RCGs can also access other 802.11 wireless networks (Wi-Fi for example) that happen to be deployed within their service areas. In this case, access agreements between the RCG service provider and the wireless network operator must be put into place. By remaining compatible with the 802.11 standards, the RCGs capabilities will benefit by the growing WI-FI network infrastructure, and the WI-FI network will benefit by the RCG network.

Voice Over POTS and Data Over Wireless:

[0087] Normally, all communications from an RCG will be transmitted over the local POTS line, or a multilink bundle made up of many remote RCG POTS lines. By default, all voice calls will be carried over the “local” POTS line – 40 to alleviate security/privacy concerns and only “data” will be transmitted via multilink bundles. Generally, since voice “data” is compressed locally by the RCG, the required bandwidth for a voice call is so small that it does not make for a good choice to route it over a multilink connection. However, it is possible to route voice calls entirely over another RCGs POTS line. It is also possible for an RCG to transmit voice data over POTS lines connected to other RCGs via multilink bundles or directly over its 802.11 wireless interface, and since the 802.11 specification does support the Wired Equivalent Privacy (WEP) specification, a secured connection can be made in this fashion.

Remote Upgradability

[0088] The RCG is designed with the capability for unassisted remote upgradability. The remote upgradability feature is not the same as the storing of operational parameters during the configuration process. This feature allows the system operator to add new features as they are developed, or to correct bugs remotely and without the users knowledge or involvement. This feature can also be used to install a complete new operating system (OS).

[0089] Key to the successful implementation of the Remote upgradability feature is that a completely fail-safe routine be implemented that can recover from any failure during the upgrade process and to re-initiate and monitor the upgrade process until it has successfully completed. This process is carried out by loading a boot loader program that is stored in non-volatile memory. The boot loader program provides the minimum capabilities to start up the RCG and connect into the system operator’s diagnostics network to download fixes or a new OS. The boot loader program is technically part of the OS, but it cannot be over written by any upgrade

process. It is responsible for detecting failure of the RCG and initiating a connection to the diagnostics network. Once connected with the diagnostics network, the boot loader will provide diagnostics support to help correct the RCG's operation and reconfigure the OS.

CLAIMS

What is claimed is:

1. A Residential Communications Gateway (RCG) device that is capable of providing broadband communications services over a plurality of standard Plain-Old-Telephone Service (POTS) lines, the RCG device comprising:

at least one POTS connection capable of connecting to a Public Switched Telephone Network (PSTN)

a wireless interface capable of connecting to at least one of wireless devices, wireless Local Area Networks (LANs) and other RCGs;

one of a USB, firewire, Ethernet and other physical layer connections capable of physically connecting to other equipment;

at least one POTS circuit capable of connecting to a standard telephone device; and

a processor capable of

creating an ad-hoc wireless network via direct wireless connections between devices,

hopping said wireless connections among other RCGs to create a network of wirelessly connected RCGs to increase bandwidth for a requesting RCG device wherein an aggregated POTS bandwidth is faster than the speed of a single POTS line device,

utilizing Voice over IP (VoIP), voice/data compression and IP packet routing and switched circuit techniques to communicate multiple derived telephone POTS circuits over a single POTS telephone line connected to a Local Exchange Company (LEC), and over a wireless network[;],

assigning individual and unique telephone numbers, as those used by the PSTN, to the derived virtual POTS circuits that are carried over a single POTS circuit from the LEC,

2. The RCG of claim 1, wherein the processor is capable of:

dynamically allocating the POTS and wireless bandwidth between multiple local voice circuits and local data demands as well as requests for that bandwidth made by remote RCG devices, dynamically allocating its physically connected POTS bandwidth to other RCGs not physically connected to said POTS line(s), requesting said bandwidth, and prioritizing local as well as remote bandwidth requirements on both POTS circuits as well as wireless connections.

3. The RCG of claim 1, wherein the processor is capable of:

allocating separate and physically diverse POTS lines or wireless connections into a multilink group,

aggregating the combined bandwidth of a plurality of said separate physically diverse POTS lines or wireless connections,

providing said aggregate bandwidth to the benefit of one of a single[, or] and a plurality of RCG devices for the concurrent and high speed transmission of one of large and multiple files, and

utilizing at least one of the separate and physically diverse POTS lines or wireless connections that are physically connected to other remote RCG devices as stand alone connections that are not grouped in a multilink configuration to the benefit of a single or a plurality of RCG devices for the concurrent high speed transmission of large or multiple files.

4. The RCG of claim 1, wherein the processor is capable of creating and maintaining POTS and wireless routing tables that constantly change and that are used to determine maximum routing efficiencies for Quality Of Service (QOS) and maximum bandwidth between local and remote POTS circuits and broadband wireless connections.

5. The RCG of claim 1, wherein the processor is capable of providing dynamic bandwidth reallocation for a plurality of separate and physically diverse POTS lines and wireless connections.

6. The RCG of claim 1, wherein the processor is capable of providing security by one of Wired Equivalent Privacy (WEP), Internet Protocol Security (IPSEC), combination of proprietary and public security protocols, and providing security by employing standard security practices.

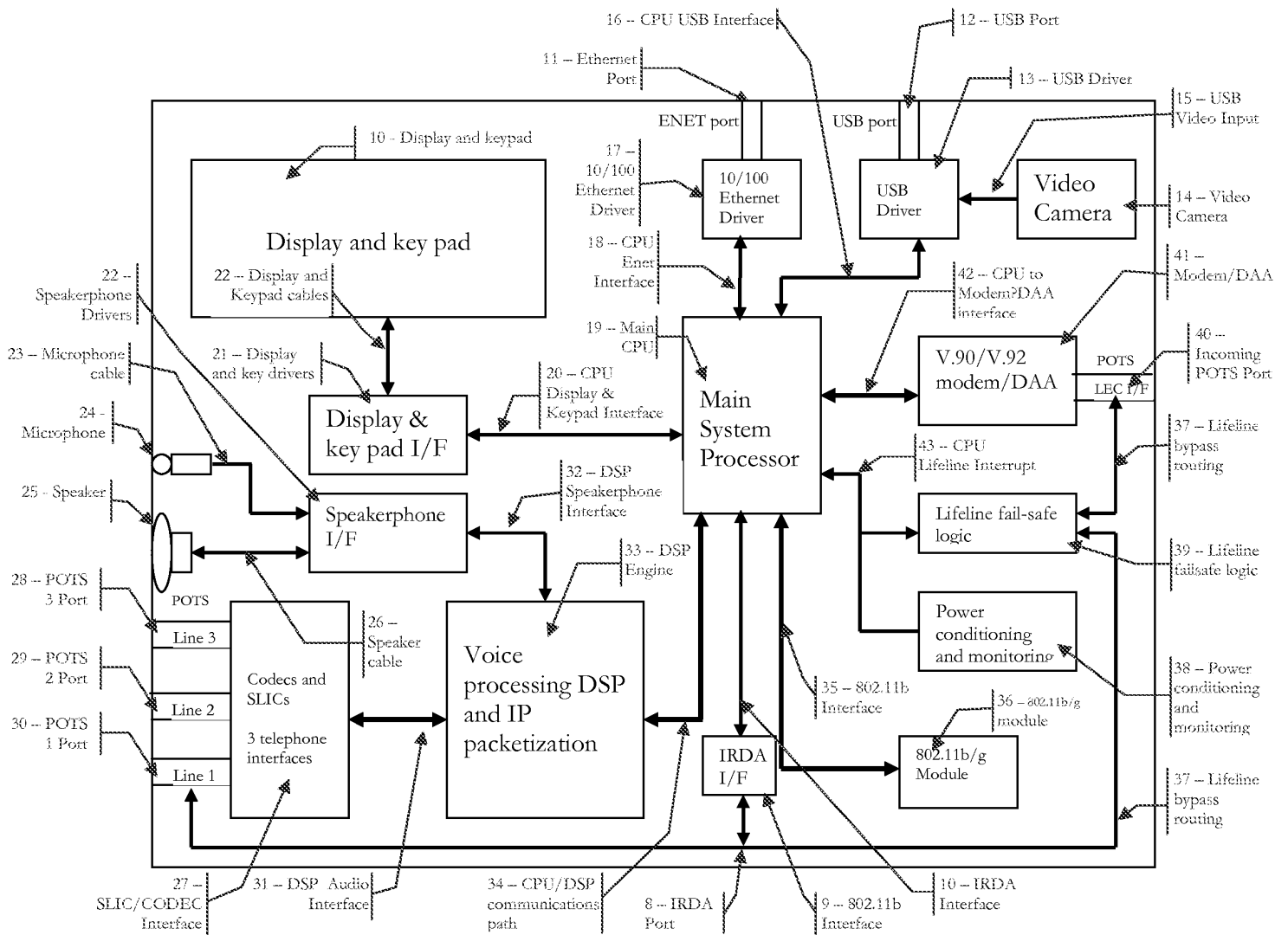
7. The RCG of claim 1, further comprising an automatically initiated account activation service whereby installing the RCG device will initiate an equipment configuration, network configuration, equipment registration, account activation and billing services.

8. The RCG of claim 1, wherein the processor is capable of creating a wireless router table by polling other devices within its transmission range for their wireless routing tables.

9. The RCG of claim 1, wherein the processor is capable of providing a failsafe lifeline support for power failure.

ABSTRACT

The Residential Communications Gateway (RCG) is a broadband communications device that combines all voice, data and video communications to and from a typical residence or small business for transmission over a single, or a plurality of Plain Old Telephone Service (POTS) lines separately or in conjunction with, a wireless broadband backbone. The RCG does this by employing packetized data with Voice over Internet Protocol (VoIP) technologies combined with RF communications technologies. A key consideration to the design of the RCG is that no additional or special transmission equipment must be installed at the Central Office or anywhere else in the network to enable new calling features provided by the RCG as is the case with DSL and Cable systems. By eliminating the requirement for costly infrastructure enhancements, ubiquitous high speed communications and services can be deployed to every POTS subscriber.



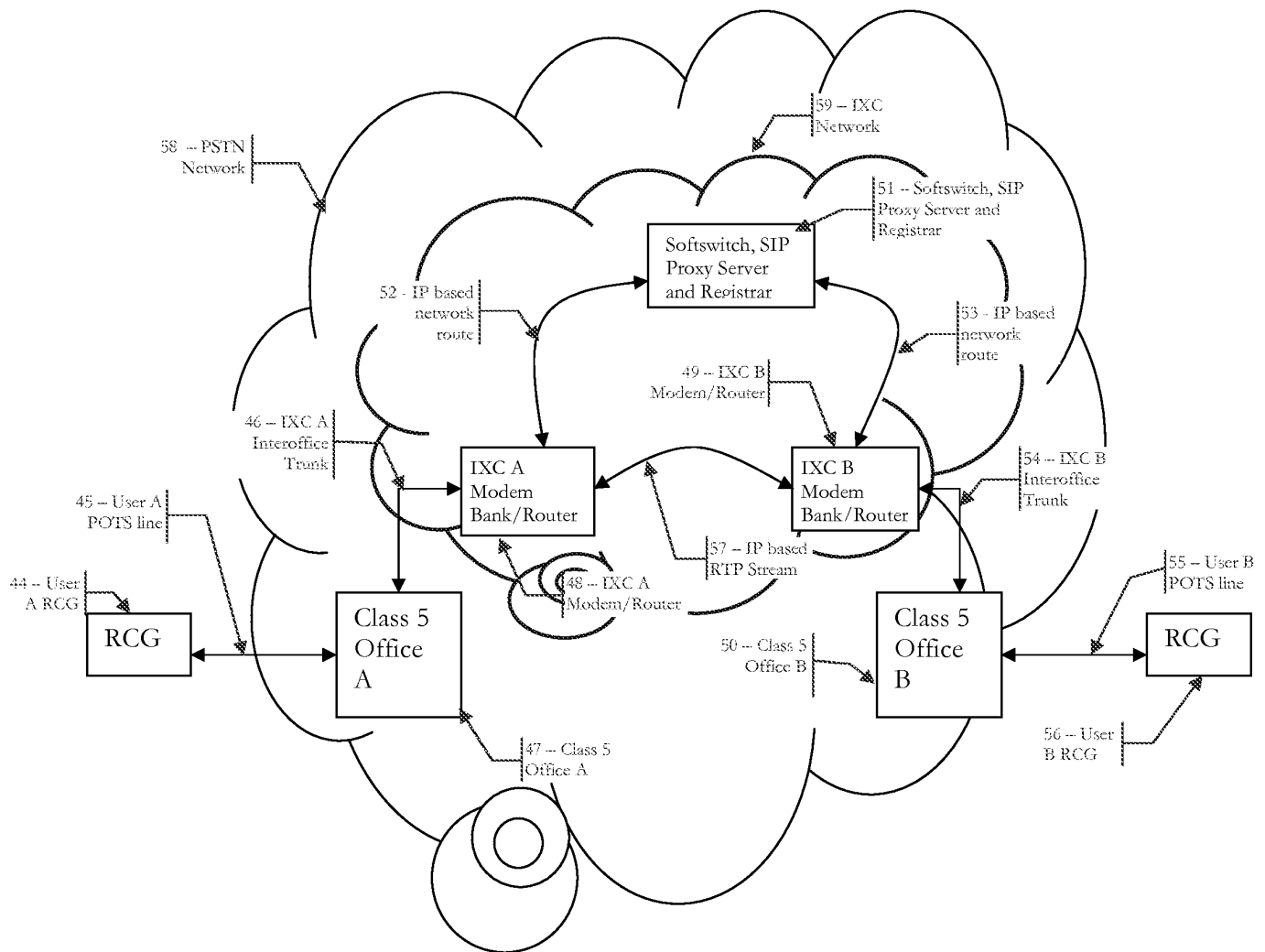


Figure 2 - Network Topology for RCG to RCG Communications

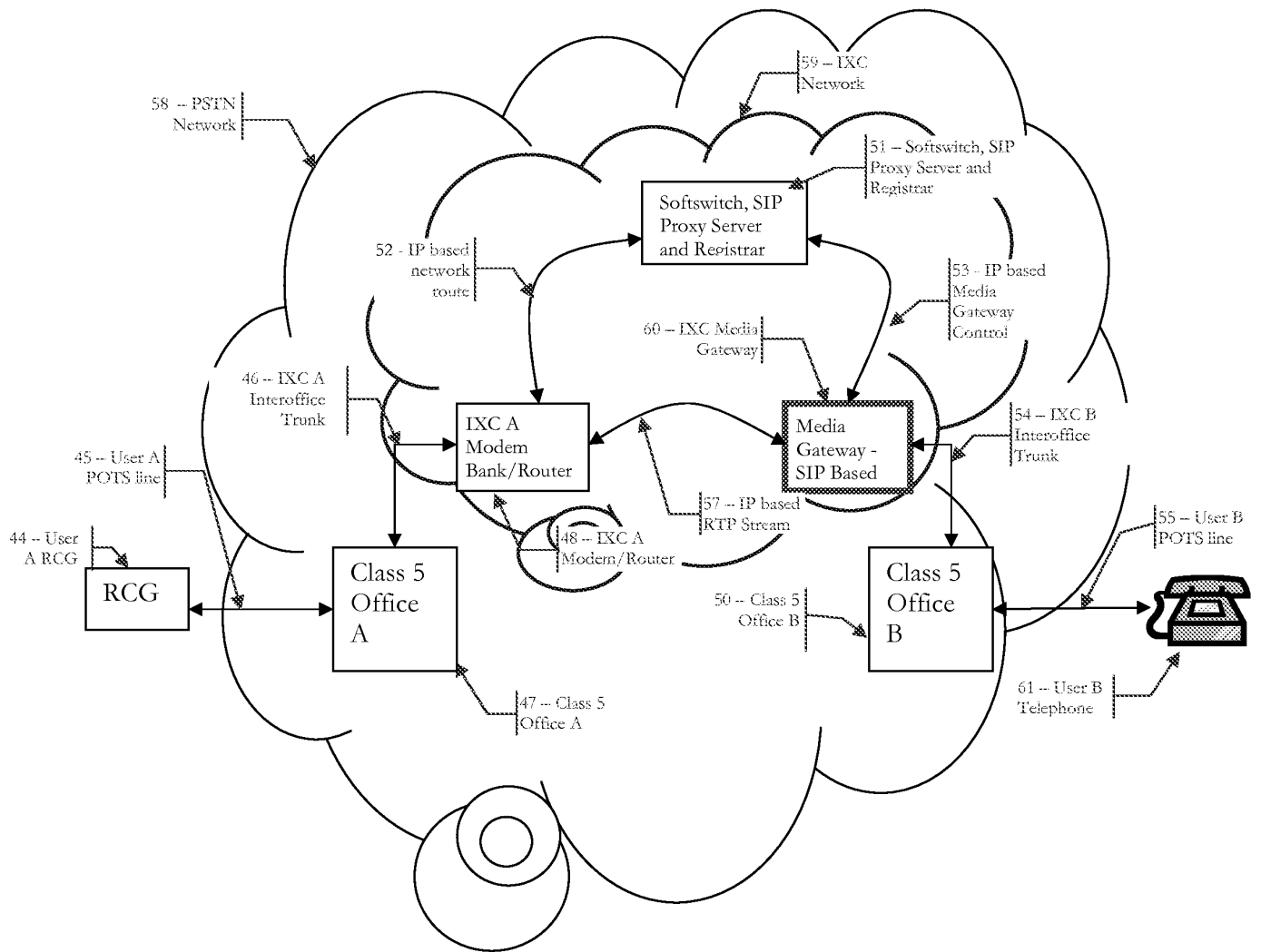


Figure 3 - Network Topology for RCG to PSTN call

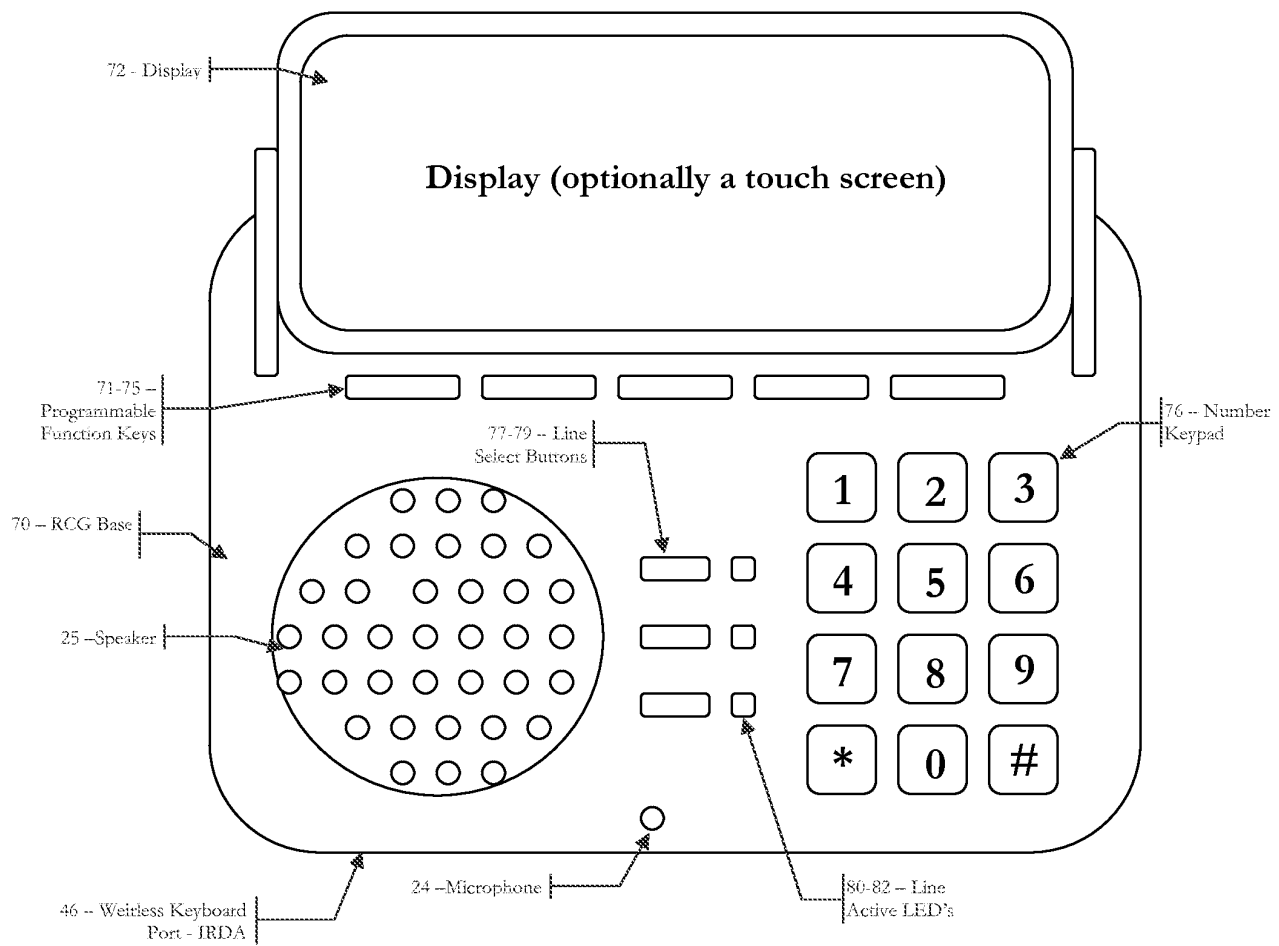


Figure 4 – RCG Top View

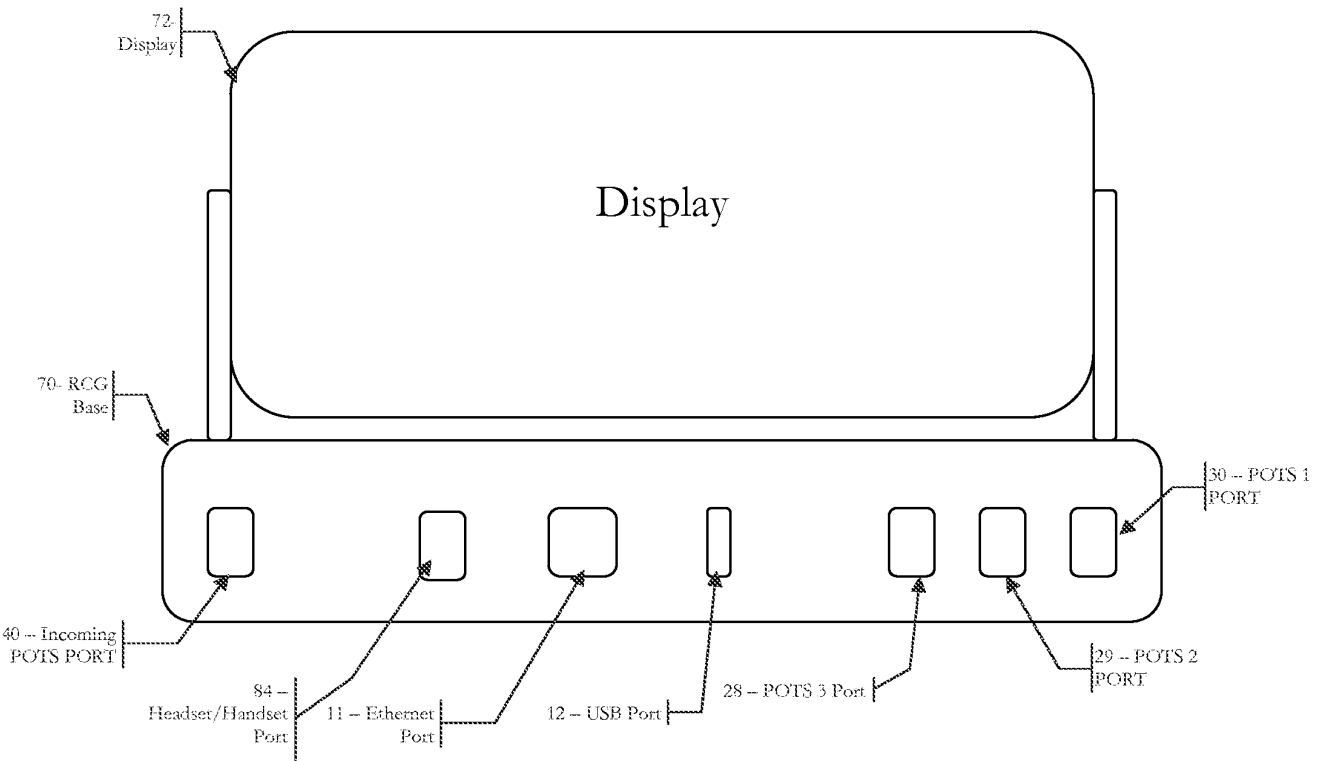


Figure 5 – RCG Rear View

Inventor: Eric DeLangis

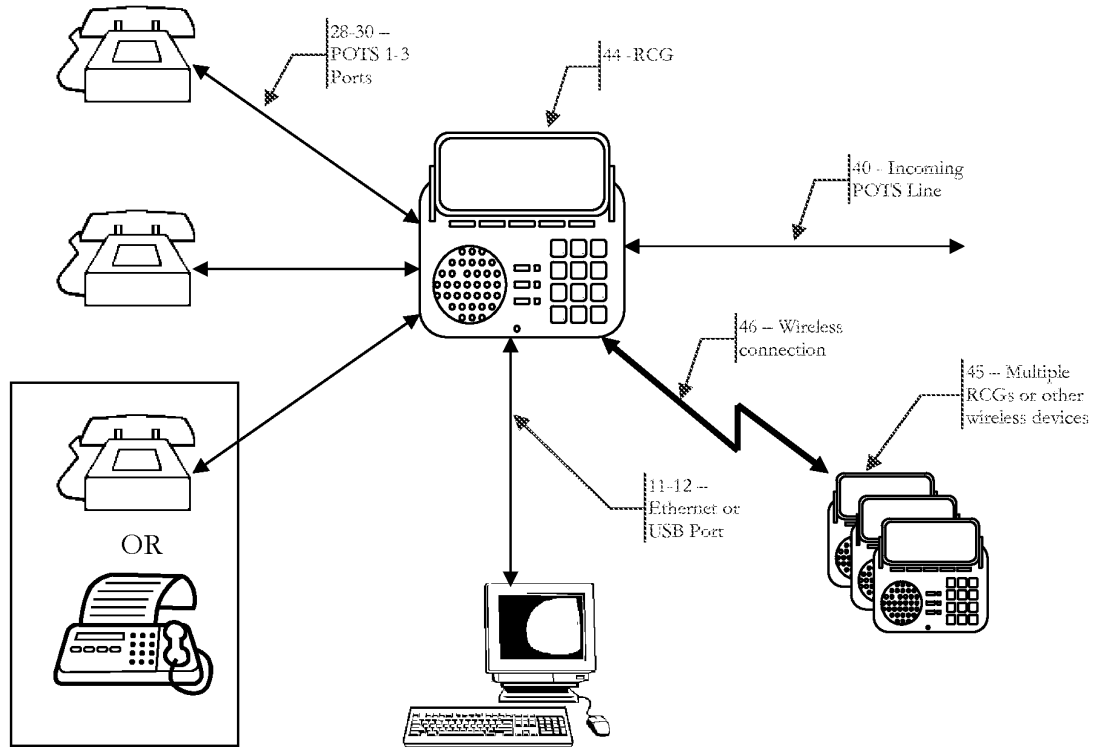


Figure 6 - Typical Application

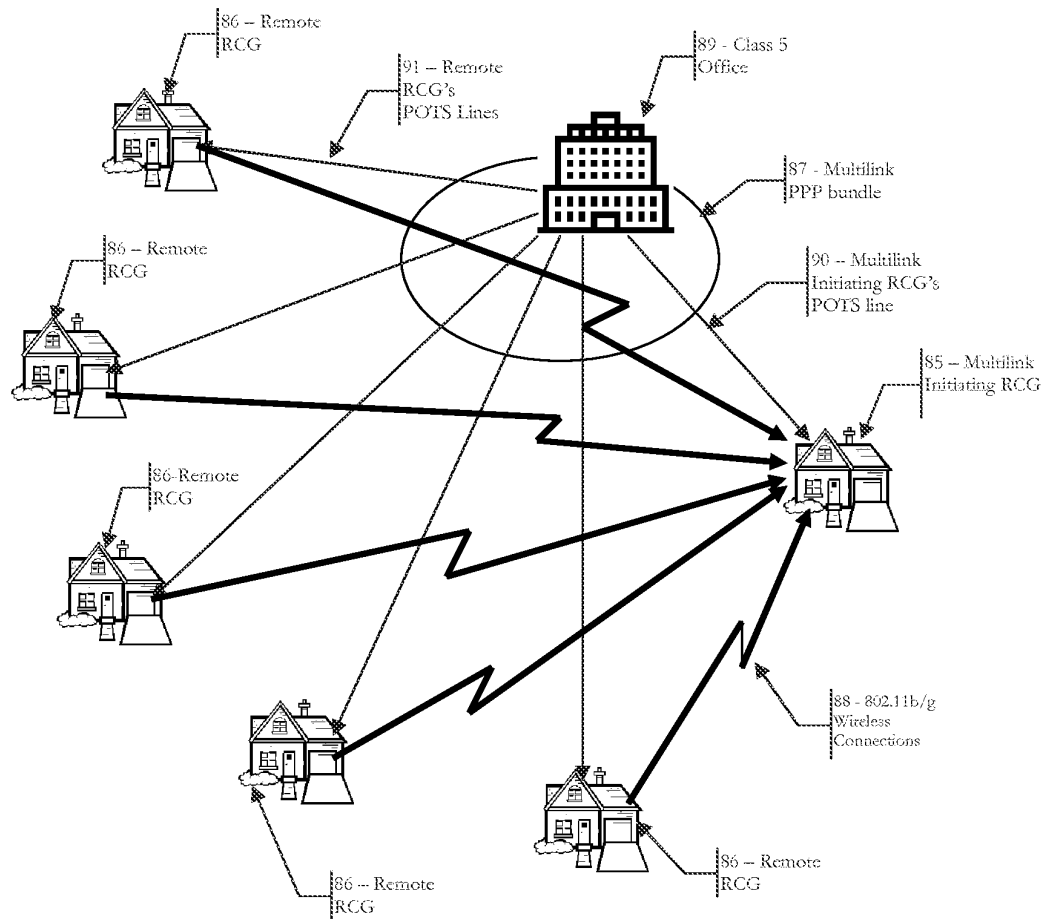


Figure 7 – Ad-hoc wireless LAN with broadband over POTS using 802.11b/g 11/54 Mbps wireless connections

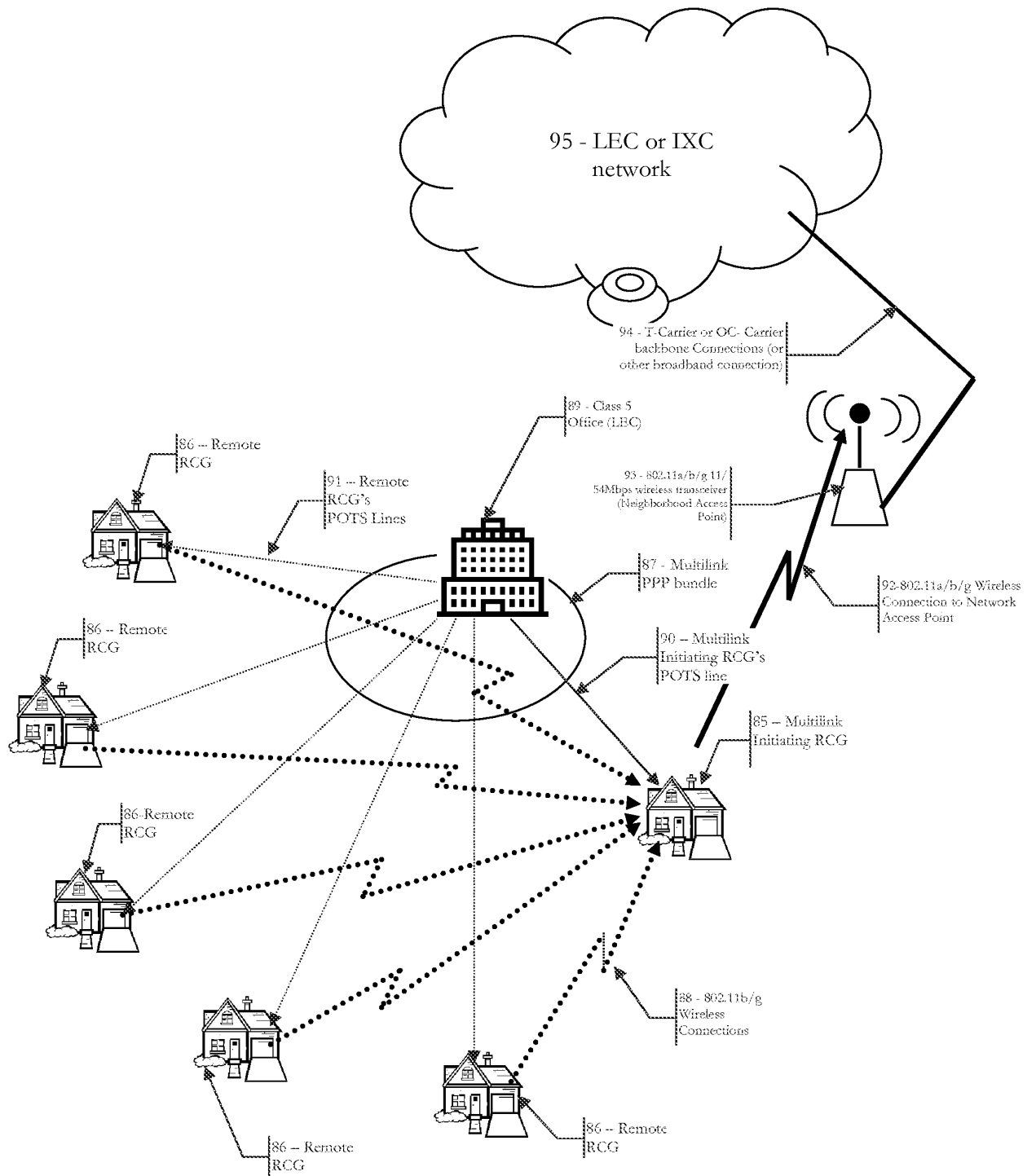


Figure 8 - Broadband over POTS w/ 802.11a/b/g 11/54Mbps wireless connections w/ broadband backbone connection to LEC or IXC

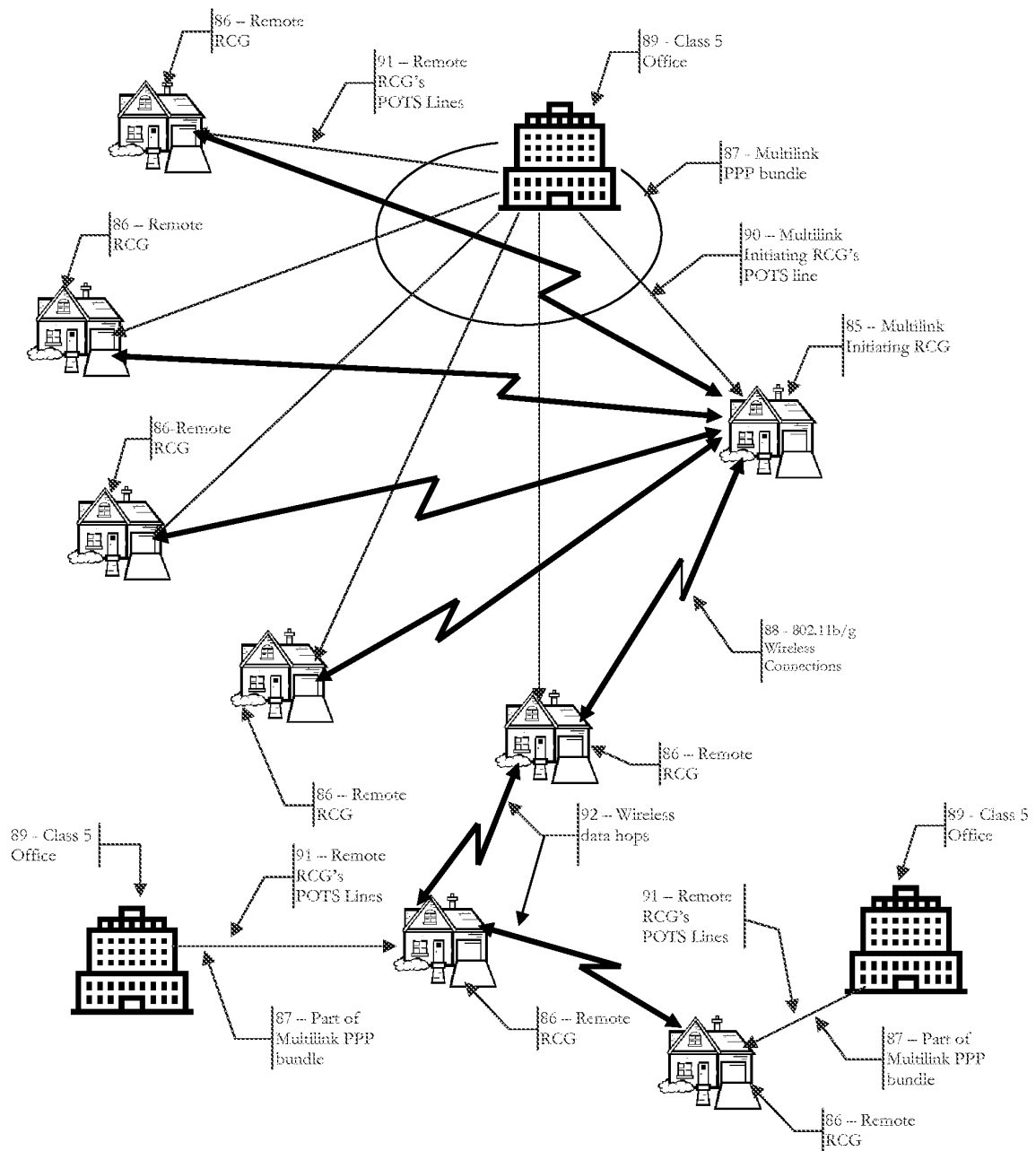


Figure 9 - Ad-hoc wireless LAN with data hopping

DECLARATION (37 CFR 1.63) FOR UTILITY OR DESIGN APPLICATION USING AN APPLICATION DATA SHEET (37 CFR 1.76)

Title of
Invention

A BROADBAND COMMUNICATIONS DEVICE

As the below named inventor(s), I/we declare that:

This declaration is directed to:



The attached application, or



Application No. _____ filed on _____



As amended on _____ (if applicable);

I/we believe that I/we am/are the original and first inventor(s) of the subject matter which is claimed and for which a patent is sought;

I/we have reviewed and understand the contents of the above-identified application, including the claims, as amended by any amendment specifically referred to above;

I/we acknowledge the duty to disclose to the United States Patent and Trademark Office all information known to me/us to be material to patentability as defined in 37 CFR 1.56, including for continuation-in-part applications, material information which became available between the filing date of the prior application and the national or PCT International filing date of the continuation-in-part application.

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FULL NAME OF INVENTOR(S)

Inventor one: ERIC M. DELANGIS

Date: 10/19/2009

Signature: 

Citizen of: USA

Inventor two: _____

Date: _____

Signature: _____

Citizen of: _____

☐ Additional inventors or a legal representative are being named on _____ additional form(s) attached hereto.

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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
12/581,852	10/19/2009	Eric M. Delangis	ED 1020

CONFIRMATION NO. 3420

FORMALITIES LETTER



OC000000038567542

64828

LAW OFFICE OF CLAY MCGURK
P.O. BOX 6127
LAGUNA NIGUEL, CA 92677

Date Mailed: 11/06/2009

NOTICE TO FILE CORRECTED APPLICATION PAPERS

Filing Date Granted

An application number and filing date have been accorded to this application. The application is informal since it does not comply with the regulations for the reason(s) indicated below. Applicant is given TWO MONTHS from the date of this Notice within which to correct the informalities indicated below. 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 required item(s) identified below must be timely submitted to avoid abandonment:

- Replacement drawings in compliance with 37 CFR 1.84 and 37 CFR 1.121(d) are required. The drawings submitted are not acceptable because:
 - Numbers, letters, and reference characters on the drawings must measure at least 0.32 cm (1/8 inch) in height. See Figure(s) all.

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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
12/581,852	10/19/2009	2614	462	ED 1020	9	1

CONFIRMATION NO. 3420

FILING RECEIPT



OC000000038567541

64828
LAW OFFICE OF CLAY MCGURK
P.O. BOX 6127
LAGUNA NIGUEL, CA 92677

Date Mailed: 11/06/2009

Receipt is acknowledged of this non-provisional 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 APPLICANT, 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 Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections 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**

Applicant(s)

Eric M. Delangis, Loveland, CA;

Power of Attorney: The patent practitioners associated with Customer Number 64828

Domestic Priority data as claimed by applicant

This application is a CON of 10/686,375 10/14/2003 PAT 7,606,156

Foreign Applications

If Required, Foreign Filing License Granted: 10/30/2009

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 12/581,852**

Projected Publication Date: To Be Determined - pending completion of Corrected Papers

Non-Publication Request: No

Early Publication Request: No

**** SMALL ENTITY ****

Title

BROADBAND COMMUNICATIONS DEVICE

Preliminary Class

379

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page 2 of 3

set forth in 37 CFR 5.15. The scope and limitations of this license are set forth in 37 CFR 5.15(a) unless an earlier license has been issued under 37 CFR 5.15(b). The license is subject to revocation upon written notification. The date indicated is the effective date of the license, unless an earlier license of similar scope has been granted under 37 CFR 5.13 or 5.14.

This license is to be retained by the licensee and may be used at any time on or after the effective date thereof unless it is revoked. This license is automatically transferred to any related applications(s) filed under 37 CFR 1.53(d). This license is not retroactive.

The grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Bureau of Industry and Security, Department of Commerce (15 CFR parts 730-774); the Office of Foreign Assets Control, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

NOT GRANTED

No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).



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
12/581,852	10/19/2009	Eric M. Delangis	ED 1020

64828

LAW OFFICE OF CLAY MCGURK

P.O. BOX 6127

LAGUNA NIGUEL, CA 92677

CONFIRMATION NO. 3420

POA ACCEPTANCE LETTER



OC000000038553598

Date Mailed: 11/06/2009

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 10/19/2009.

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

/agoitom/

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

Filing Date: 10/19/09

PTO/SB/06 (12-04)

Approved for use through 7/31/2006. 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					Application or Docket Number 12/581,852	
Substitute for Form PTO-875						
APPLICATION AS FILED – PART I						
(Column 1)		(Column 2)		SMALL ENTITY		OR
OTHER THAN SMALL ENTITY						
FOR	NUMBER FILED	NUMBER EXTRA	RATE (\$)	FEE (\$)	RATE (\$)	FEE (\$)
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	82	N/A	
SEARCH FEE (37 CFR 1.16(k), (l), or (m))	N/A	N/A	N/A	270	N/A	
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	110	N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	9	minus 20 =	x\$26		x\$52	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	1	minus 3 =	x\$110		x\$220	
APPLICATION SIZE FEE (37 CFR 1.16(s))			If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$270 (\$135 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR			
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))			195		390	
			TOTAL	462	TOTAL	
* If the difference in column 1 is less than zero, enter "0" in column 2.						
APPLICATION AS AMENDED – PART II						
(Column 1)		(Column 2)		(Column 3)		
AMENDMENT A	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		SMALL ENTITY	
	Total (37 CFR 1.16(i))	Minus	**	=	RATE (\$)	ADDITIONAL FEE (\$)
	Independent (37 CFR 1.16(h))	Minus	***	=	X =	
	Application Size Fee (37 CFR 1.16(s))				X =	
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))				N/A	
				TOTAL		OR
				ADD'T FEE		OR
(Column 1)		(Column 2)		(Column 3)		
AMENDMENT B	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		SMALL ENTITY	
	Total (37 CFR 1.16(i))	Minus	**	=	RATE (\$)	ADDITIONAL FEE (\$)
	Independent (37 CFR 1.16(h))	Minus	***	=	X =	
	Application Size Fee (37 CFR 1.16(s))				X =	
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))				N/A	
				TOTAL		OR
				ADD'T FEE		OR
* 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 number found in the appropriate box in column 1.						

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

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

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

INVENTOR: Eric DeLangis

EXAMINER:

APPLICATION NO.: **12/581,852**

GROUP ART UNIT: 2614

FILED: OCTOBER 19, 2009

CONFIRMATION NO.: 3420

TITLE: BROADBAND COMMUNICATIONS DEVICE

ATTORNEY NO: ED 1020

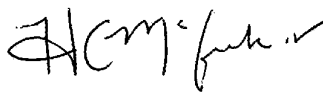
Mail Stop **Amendment**
Commissioner For Patents
PO Box 1450
Alexandria, VA 22313-1450

PRELIMINARY AMENDMENT

SIR:

This Preliminary Amendment is being submitted before the first Office Action.
There is no fee associated with the submittal of this Preliminary Amendment.

Best Regards,



Date: December 11, 2009

H C McGurk, Reg. No. 34,964
Attorney of Record

The Law Office of Clay McGurk
P.O.Box 6127
Laguna Niguel, CA 92607
Phone: 949.395.3942

IN THE SPECIFICATION

Please replace in its entirety Paragraph 1 of the Specification with the following:

[0001] This application is a continuation of U.S. Patent Application Serial No. 10/686,375 filed October 14, 2005, now U.S. Patent No. 7,606,156, which is a non-provisional application of U.S. Provisional Application Serial No. 60/418,521, filed October 15, 2002, now abandoned, all of which are incorporated by reference herein.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

INVENTOR: Eric DeLangis

EXAMINER:

APPLICATION NO.: **12/581,852**

GROUP ART UNIT: 2614

FILED: OCTOBER 19, 2009

CONFIRMATION No.: 3420

TITLE: BROADBAND COMMUNICATIONS DEVICE

ATTORNEY No: ED 1020

Commissioner For Patents
PO Box 1450
Alexandria, VA 22313-1450

REQUEST FOR FILING RECEIPT CORRECTION

SIR:

This is a request to change the Domestic Priority data as claimed by applicant on the Filing Receipt.

The correct statement for Domestic Priority is as follows: this application is a continuation of U.S. Patent Application Serial No. 10/686,375 filed October 14, 2005, now U.S. Patent No. 7,606,156, which is a non-provisional application of U.S. Provisional Application Serial No. 60/418,521, filed October 15, 2002, now abandoned, all of which are incorporated by reference herein.

It is respectfully requested that a new Filing Receipt be issued showing the correct version of the Domestic Priority data.

Best Regards,



Date: December 11, 2009

H C McGurk, Reg. No. 34,964
Attorney of Record

The Law Office of Clay McGurk
P.O.Box 6127
Laguna Niguel, CA 92607
Phone: 949.395.394

Electronic Acknowledgement Receipt

EFS ID:	6623281
Application Number:	12581852
International Application Number:	
Confirmation Number:	3420
Title of Invention:	BROADBAND COMMUNICATIONS DEVICE
First Named Inventor/Applicant Name:	Eric M. Delangis
Customer Number:	64828
Filer:	Harold C. McGurk
Filer Authorized By:	
Attorney Docket Number:	ED 1020
Receipt Date:	11-DEC-2009
Filing Date:	19-OCT-2009
Time Stamp:	18:12:05
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Preliminary Amendment	12581852_Preliminary_Amend ment.pdf	72877 eea2cf9e9537a2b22bb1724bc1753af8f3bd 53aa	no	2

Warnings:

Information:

2	Request for Corrected Filing Receipt	12581852_Filing_Receipt_Correction.pdf	69006 d3eae51c6120b6578605c1cef886b65d20ec987	no	1
Warnings:					
Information:					
Total Files Size (in bytes):				141883	
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. <u>New Applications Under 35 U.S.C. 111</u> 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. <u>National Stage of an International Application under 35 U.S.C. 371</u> 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. <u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.					



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APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY DOCKET NO	TOT CLAIMS	IND CLAIMS
12/581,852	10/19/2009	2614	462	ED 1020	9	1

CONFIRMATION NO. 3420

CORRECTED FILING RECEIPT



OC000000039384366

64828
LAW OFFICE OF CLAY MCGURK
P.O. BOX 6127
LAGUNA NIGUEL, CA 92677

Date Mailed: 12/30/2009

Receipt is acknowledged of this non-provisional 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 APPLICANT, 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 Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections 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**

Applicant(s)

Eric M. Delangis, Loveland, CA;

Power of Attorney: The patent practitioners associated with Customer Number 64828

Domestic Priority data as claimed by applicant

This application is a CON of 10/686,375 10/14/2003 PAT 7,606,156
which claims benefit of 60/418,521 10/15/2002

Foreign Applications

If Required, Foreign Filing License Granted: 10/30/2009

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 12/581,852**

Projected Publication Date: To Be Determined - pending completion of Corrected Papers

Non-Publication Request: No

Early Publication Request: No

**** SMALL ENTITY ****

Title

BROADBAND COMMUNICATIONS DEVICE

Preliminary Class

379

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 (1-866-999-4158).

LICENSE FOR FOREIGN FILING UNDER**Title 35, United States Code, Section 184****Title 37, Code of Federal Regulations, 5.11 & 5.15****GRANTED**

The applicant has been granted a license under 35 U.S.C. 184, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" followed by a date appears on this form. Such licenses are issued in all applications where the conditions for issuance of a license have been met, regardless of whether or not a license may be required as

page 2 of 3

set forth in 37 CFR 5.15. The scope and limitations of this license are set forth in 37 CFR 5.15(a) unless an earlier license has been issued under 37 CFR 5.15(b). The license is subject to revocation upon written notification. The date indicated is the effective date of the license, unless an earlier license of similar scope has been granted under 37 CFR 5.13 or 5.14.

This license is to be retained by the licensee and may be used at any time on or after the effective date thereof unless it is revoked. This license is automatically transferred to any related applications(s) filed under 37 CFR 1.53(d). This license is not retroactive.

The grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Bureau of Industry and Security, Department of Commerce (15 CFR parts 730-774); the Office of Foreign Assets Control, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

NOT GRANTED

No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

INVENTOR: Eric DeLangis EXAMINER:
APPLICATION NO.: **12/581,852** GROUP ART UNIT: 2614
FILED: OCTOBER 19, 2009 CONFIRMATION No.: 3420
TITLE: BROADBAND COMMUNICATIONS DEVICE
ATTORNEY NO: ED 1020

Mail Stop **Missing Parts**
Commissioner For Patents
PO Box 1450
Alexandria, VA 22313-1450

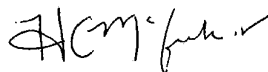
RESPONSE TO MISSING PARTS

SIR:

This Response is being submitted via EFS-Web to reply to the *Notice to File Corrected Application Papers*, dated November 6, 2009, which set a two month period for response.

Replacement drawings are being submitted for Figures 1-9. Each figure now complies with 37 C.F.R. §1.84 and §1.121(d).

Best Regards,



Date: January 6, 2010

H C McGurk, Reg. No. 34,964
Attorney of Record

The Law Office of Clay McGurk
P.O.Box 6127
Laguna Niguel, CA 92607
Phone: 949.395.3942

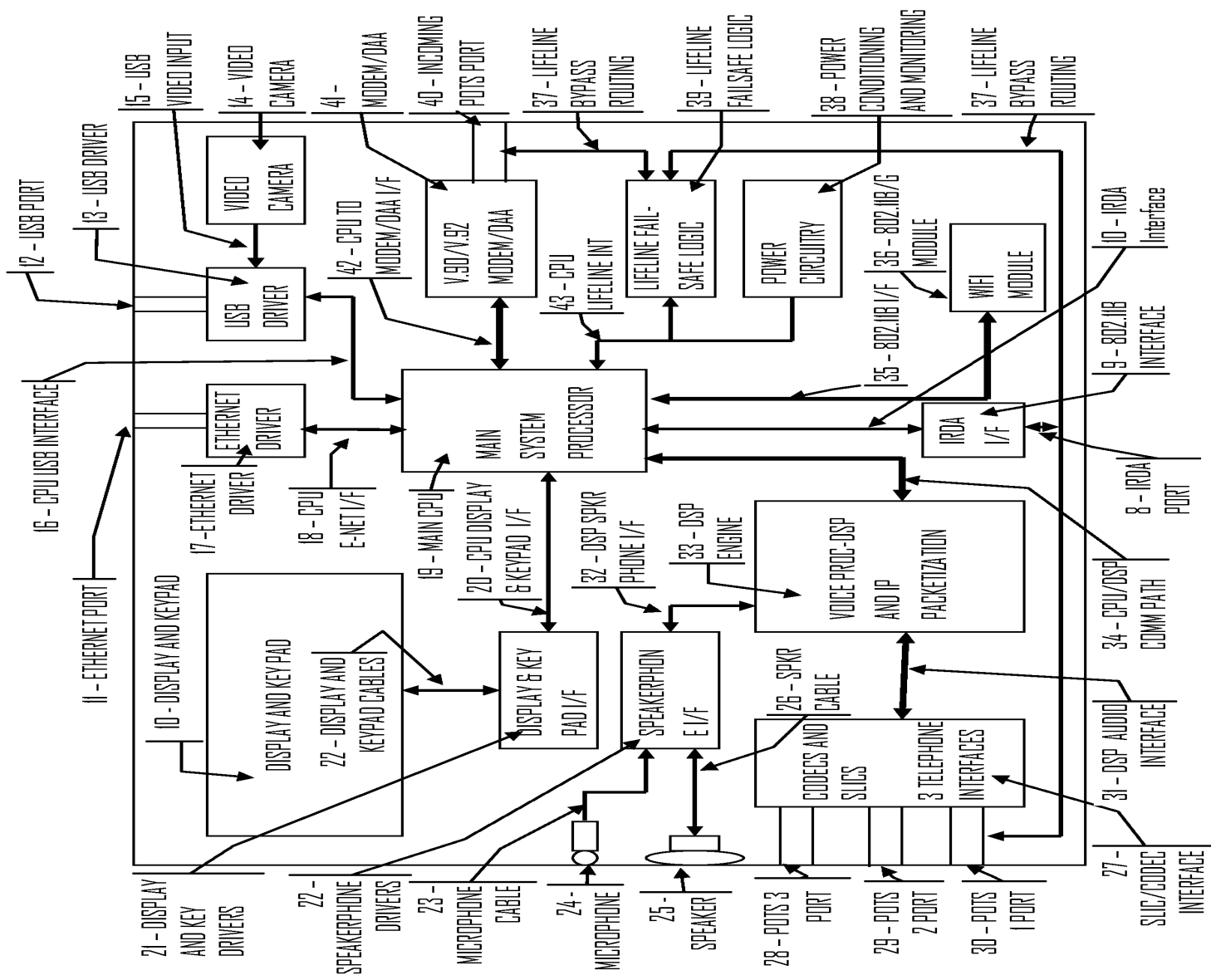


FIG. 1

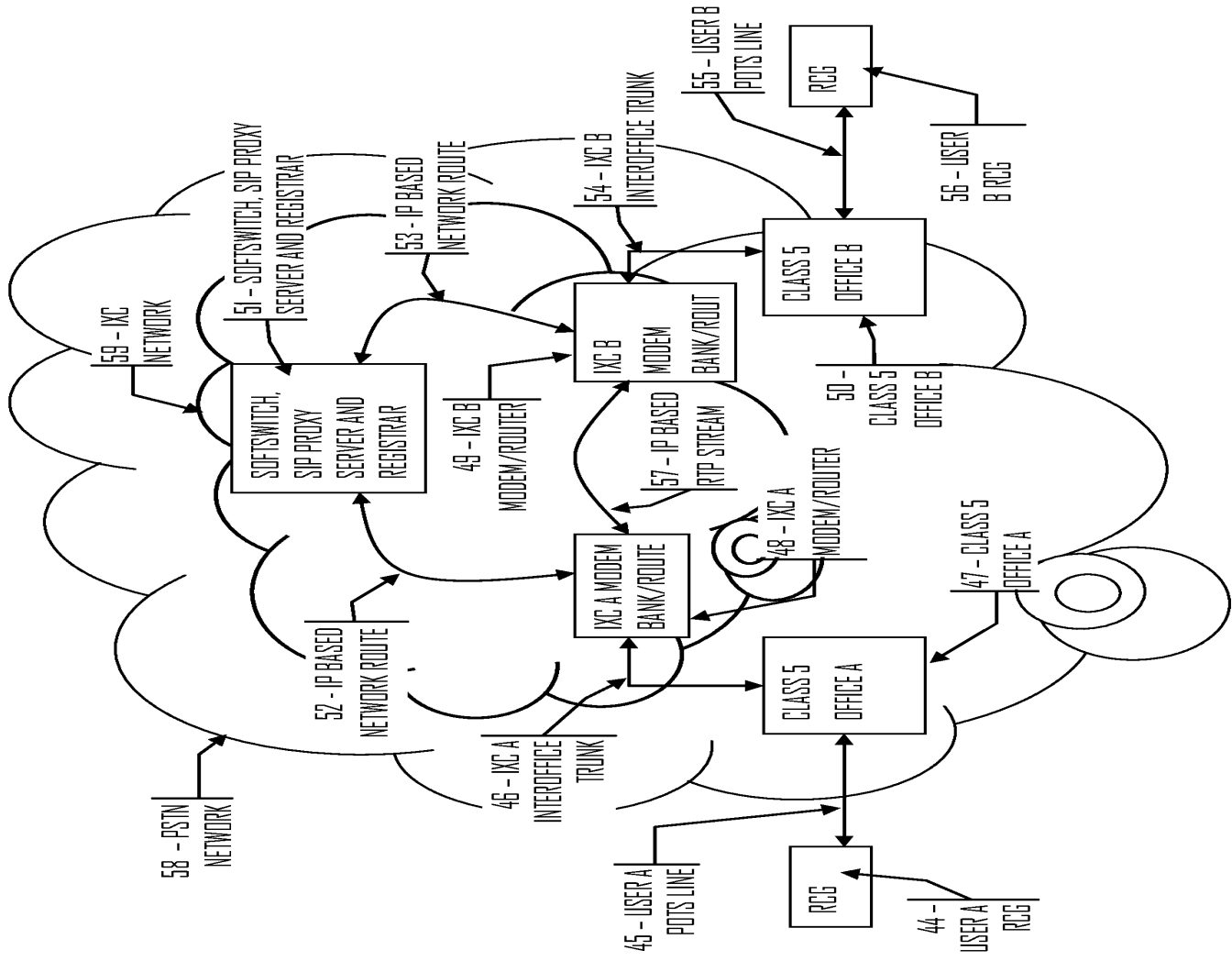


FIG. 2

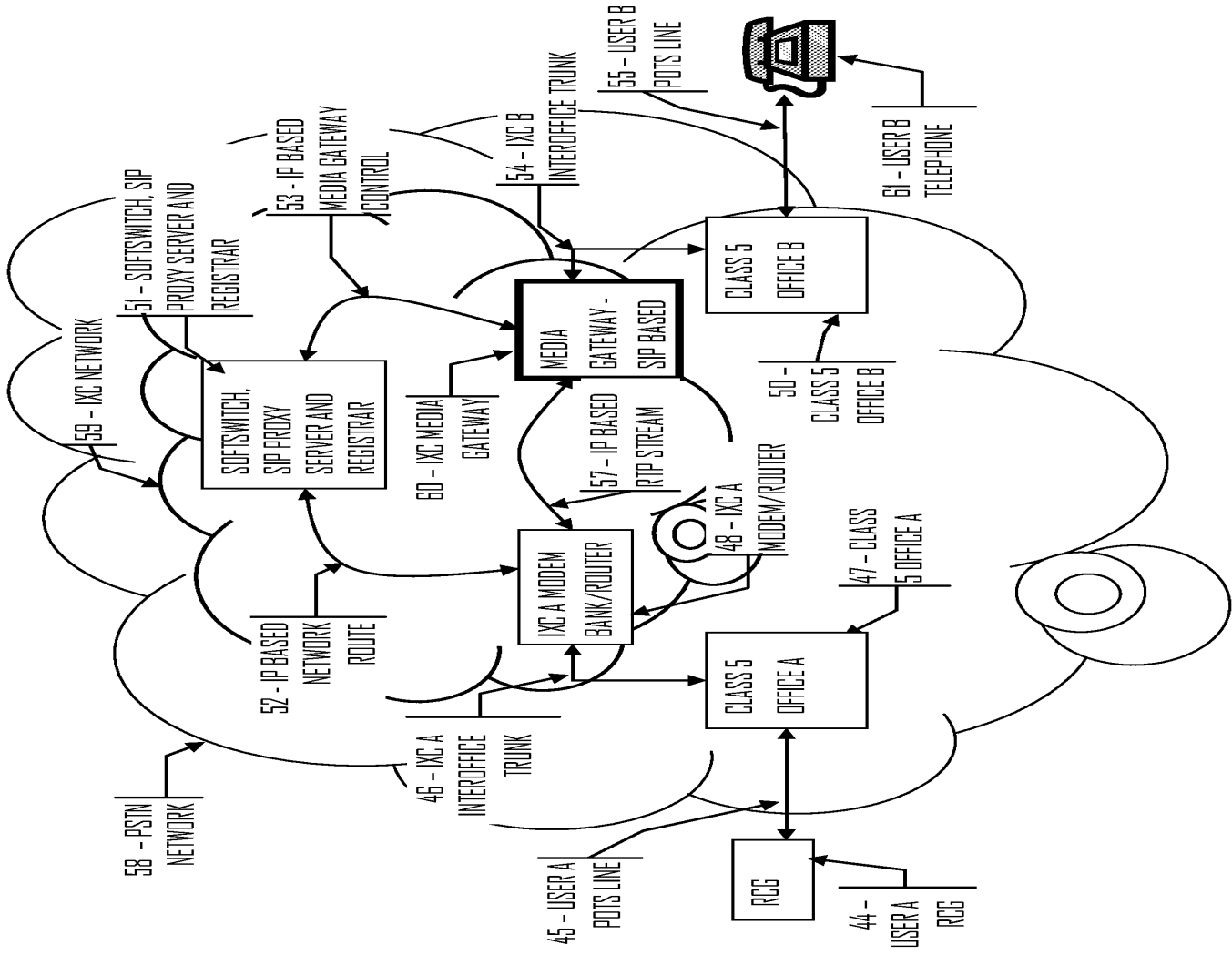


FIG. 3

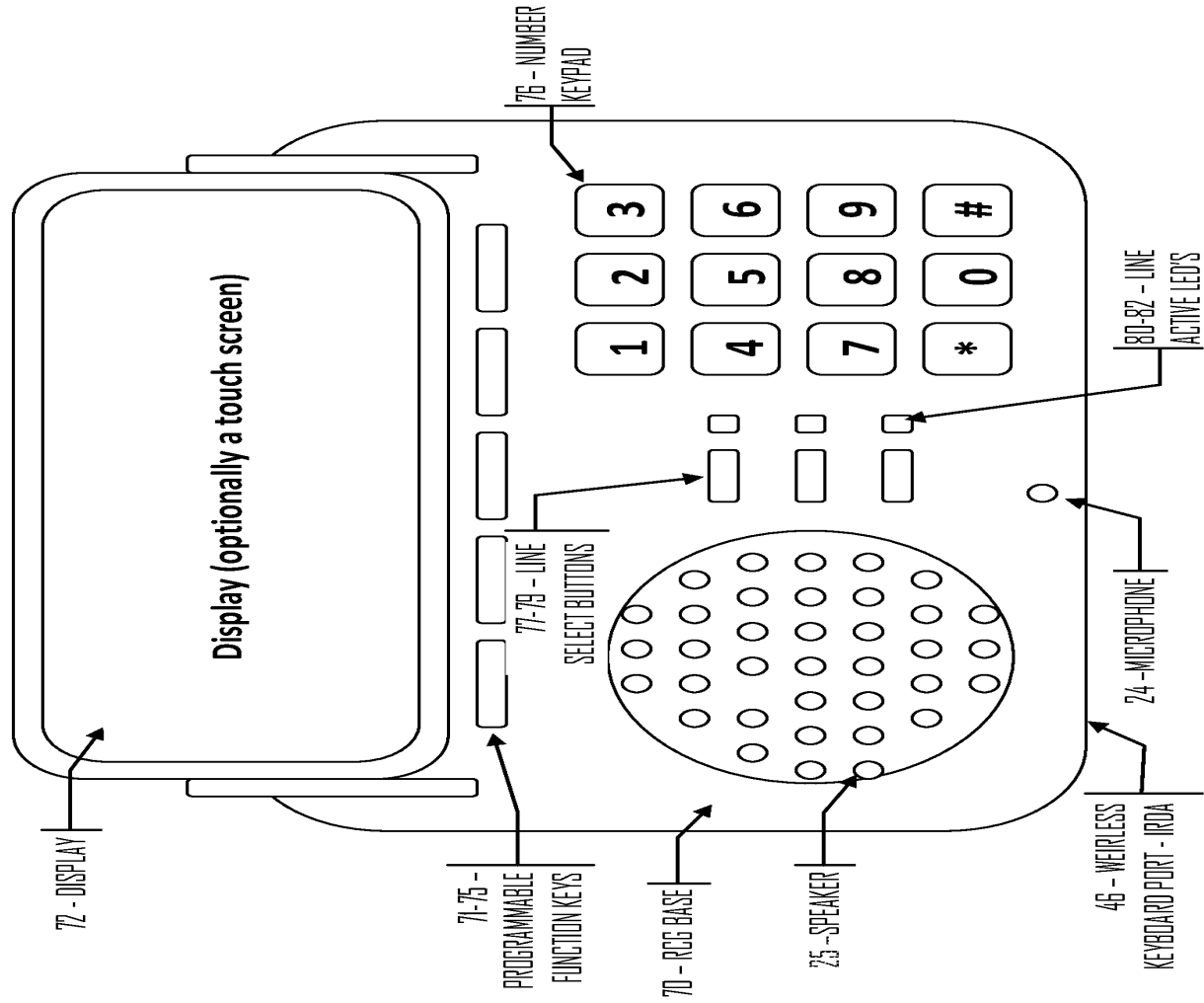


FIG. 4

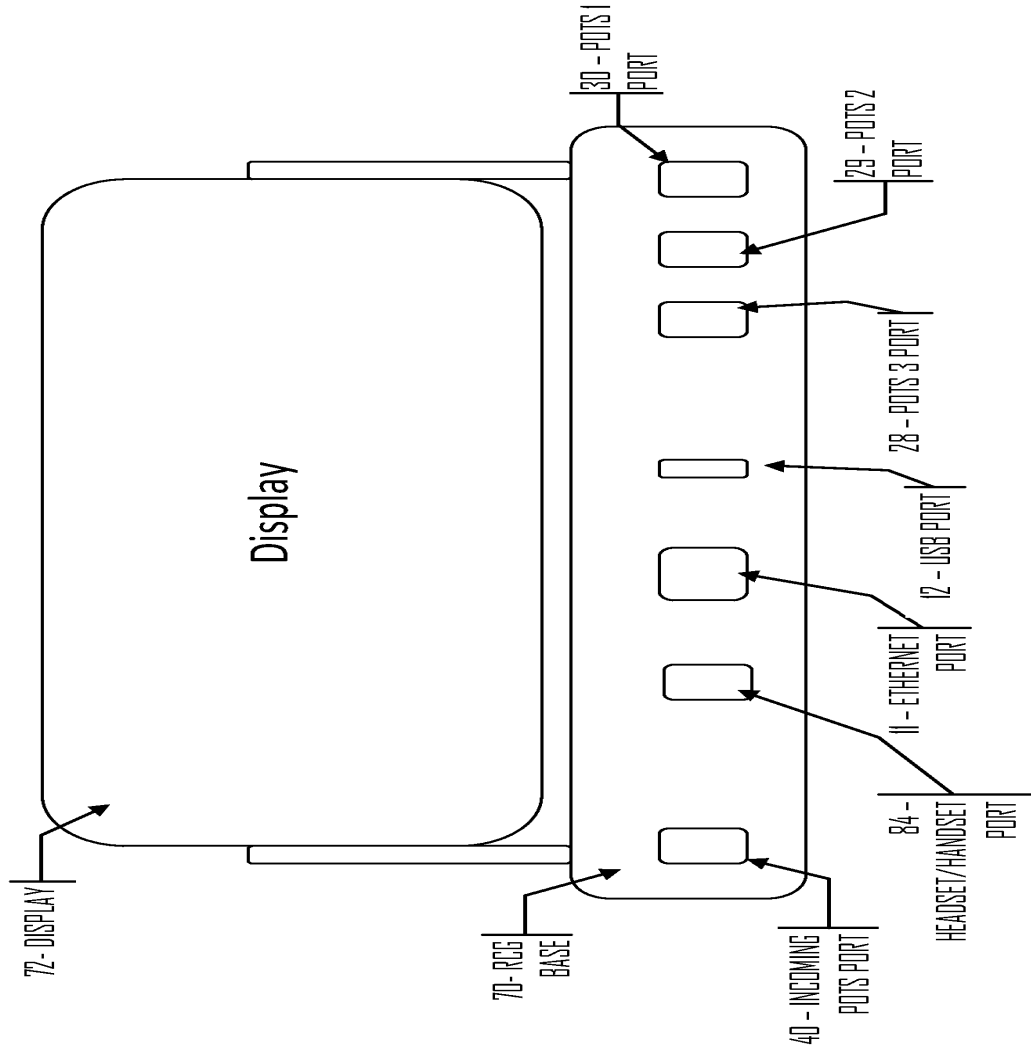


FIG. 5

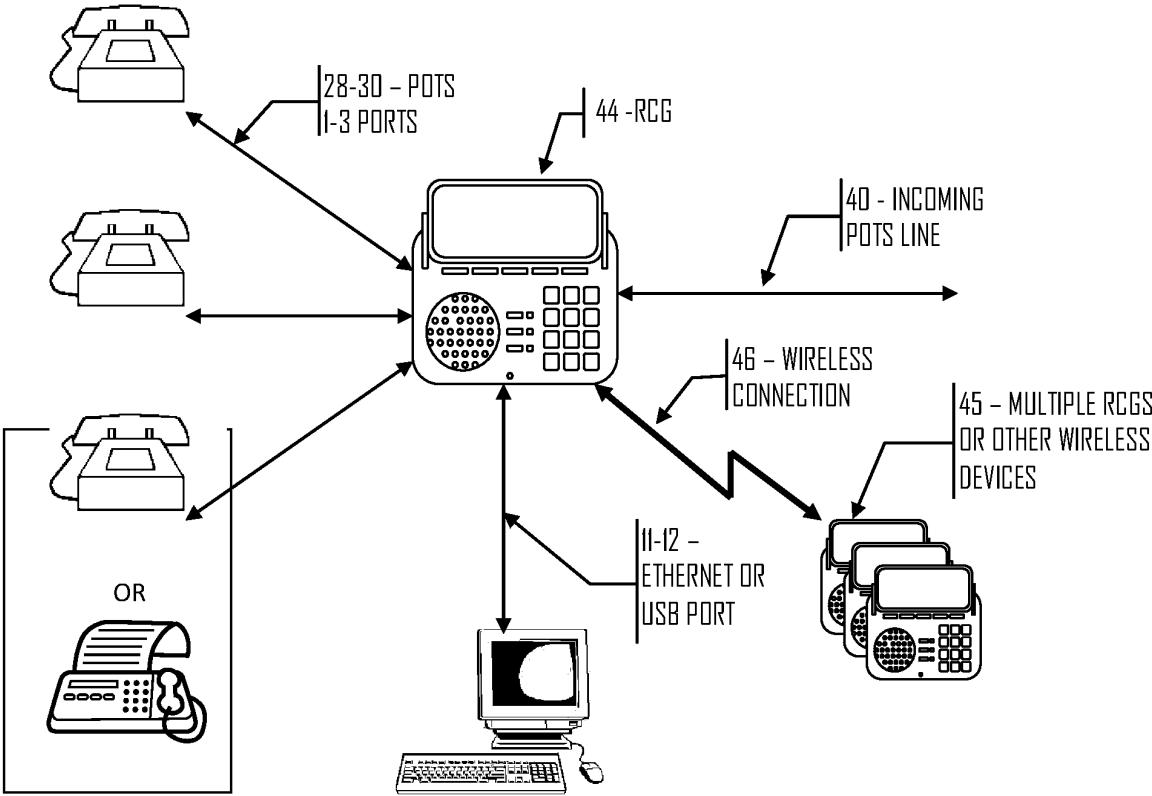


FIG. 6

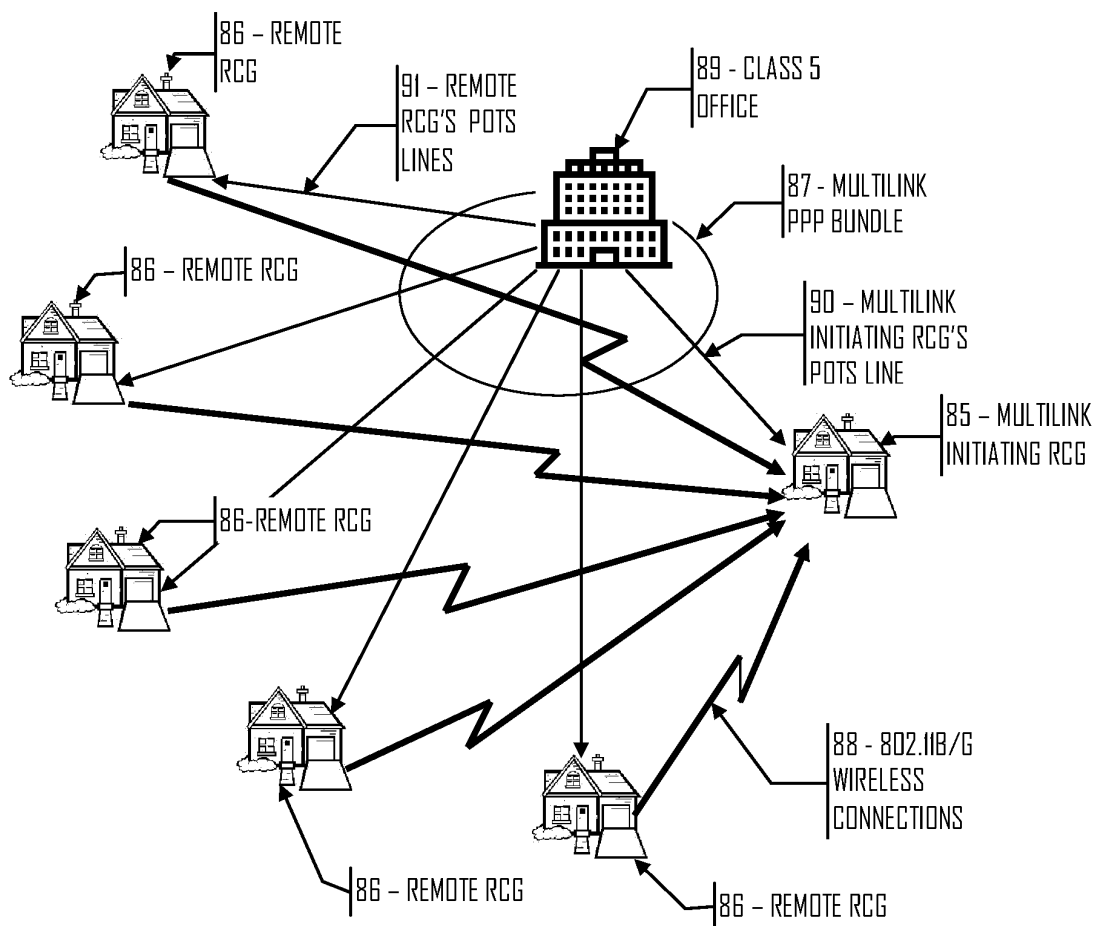


FIG. 7

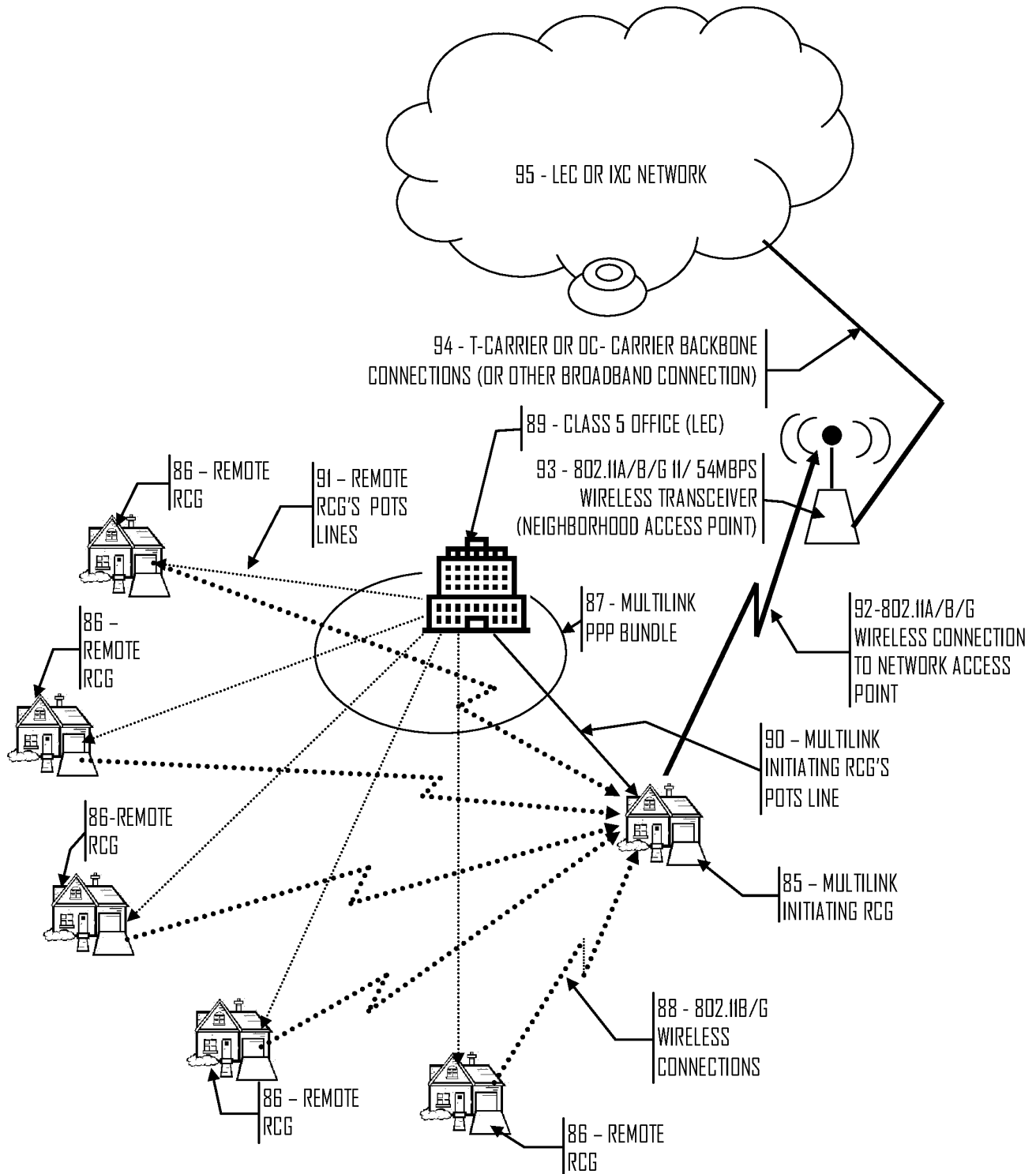


FIG. 8

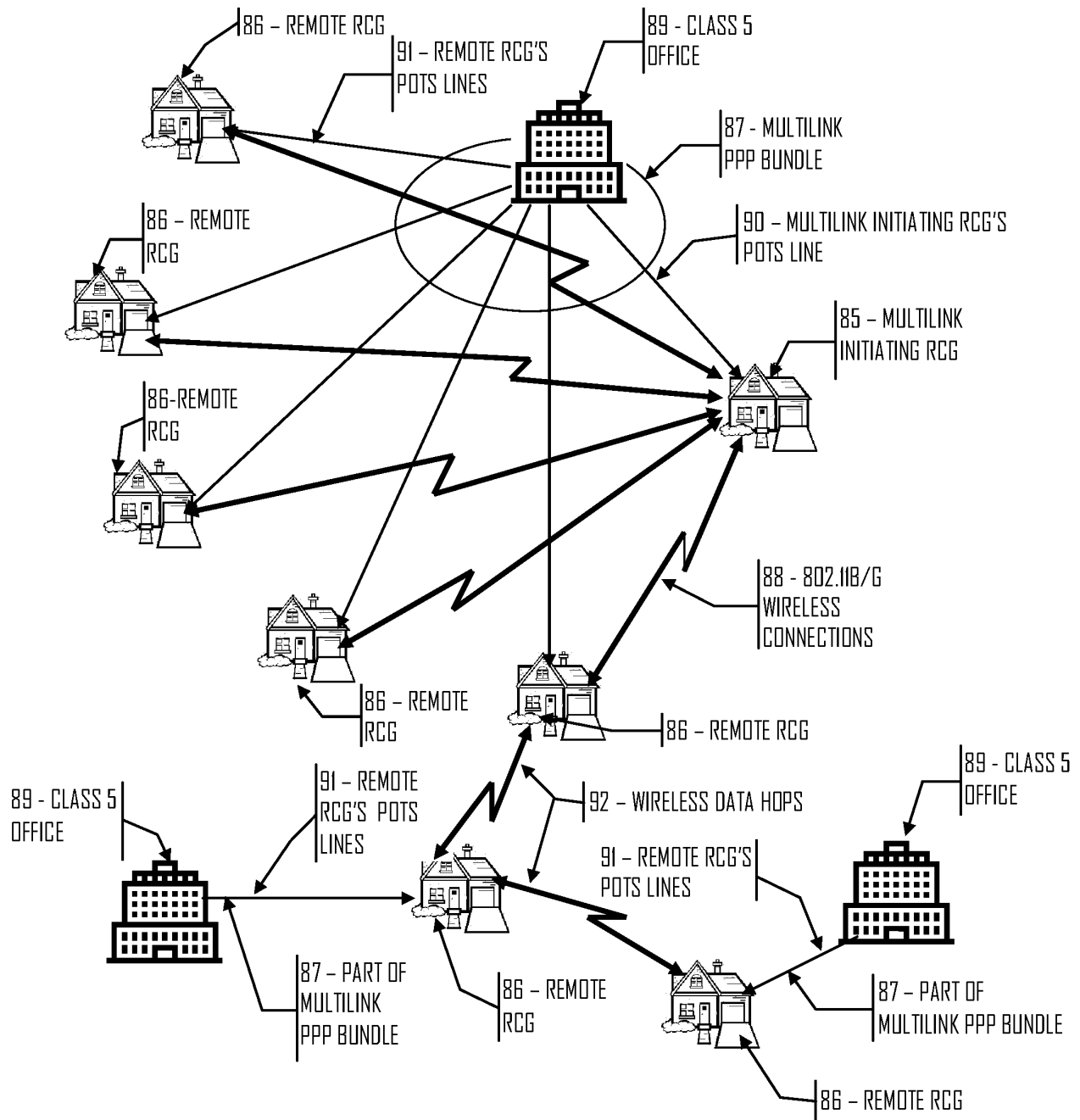


FIG. 9

Electronic Acknowledgement Receipt

EFS ID:	6760390
Application Number:	12581852
International Application Number:	
Confirmation Number:	3420
Title of Invention:	BROADBAND COMMUNICATIONS DEVICE
First Named Inventor/Applicant Name:	Eric M. Delangis
Customer Number:	64828
Filer:	Harold C. McGurk
Filer Authorized By:	
Attorney Docket Number:	ED 1020
Receipt Date:	06-JAN-2010
Filing Date:	19-OCT-2009
Time Stamp:	15:44:49
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Applicant Response to Pre-Exam Formalities Notice	12581852_Response_Missing_Parts.pdf	71712 f56c46066264ddb805b9fd0cac35c9bc3c268026	no	1

Warnings:

Information:

2	Drawings-only black and white line drawings	12581852_Fig_1.pdf	27129	no	1
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Warnings:					
Information:					
3	Drawings-only black and white line drawings	12581852_Fig_2.pdf	22372	no	1
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Warnings:					
Information:					
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Information:					
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Information:					
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Warnings:					
Information:					
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Warnings:					
Information:					
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Information:					
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Warnings:					
Information:					
10	Drawings-only black and white line drawings	12581852_Fig_9.pdf	268294	no	1
			3f5bbfa579e4c02bf5d07f5195e125f19c411439		
Warnings:					
Information:					

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

New Applications Under 35 U.S.C. 111

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

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

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

New International Application Filed with the USPTO as a Receiving Office

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



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
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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
12/581,852	10/19/2009	2614	462	ED 1020	9	1

CONFIRMATION NO. 3420

UPDATED FILING RECEIPT



OC000000039619495

64828
LAW OFFICE OF CLAY MCGURK
P.O. BOX 6127
LAGUNA NIGUEL, CA 92677

Date Mailed: 01/13/2010

Receipt is acknowledged of this non-provisional 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 APPLICANT, 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 Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections 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**

Applicant(s)

Eric M. Delangis, Loveland, CA;

Power of Attorney: The patent practitioners associated with Customer Number 64828

Domestic Priority data as claimed by applicant

This application is a CON of 10/686,375 10/14/2003 PAT 7,606,156
which claims benefit of 60/418,521 10/15/2002

Foreign Applications

If Required, Foreign Filing License Granted: 10/30/2009

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 12/581,852**

Projected Publication Date: 04/22/2010

Non-Publication Request: No

Early Publication Request: No

**** SMALL ENTITY ****

Title

BROADBAND COMMUNICATIONS DEVICE

Preliminary Class

379

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.

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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>.

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page 2 of 3

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Application Number: 12581852 Document Date: 1/6/2010

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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875					Application or Docket Number 12/581,852		Filing Date 10/19/2009		☐ To be Mailed	
APPLICATION AS FILED – PART I										
(Column 1)			(Column 2)		SMALL ENTITY ☒		OR		OTHER THAN SMALL ENTITY	
FOR	NUMBER FILED	NUMBER EXTRA	RATE (\$)	FEE (\$)			RATE (\$)	FEE (\$)		
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A				N/A			
☐ SEARCH FEE (37 CFR 1.16(k), (l), or (m))	N/A	N/A	N/A				N/A			
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A				N/A			
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X \$ =		OR		X \$ =			
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X \$ =				X \$ =			
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$250 (\$125 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.										
APPLICATION AS AMENDED – PART II										
(Column 1)			(Column 2)		(Column 3)		SMALL ENTITY		OR OTHER THAN SMALL ENTITY	
AMENDMENT	12/11/2009	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)			RATE (\$)	ADDITIONAL FEE (\$)
	Total (37 CFR 1.16(j))	* 9	Minus	** 20	= 0	X \$26 =	0	OR		X \$ =
	Independent (37 CFR 1.16(h))	* 1	Minus	***3	= 0	X \$110 =	0	OR		X \$ =
	☐ Application Size Fee (37 CFR 1.16(s))									
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))									
						TOTAL ADD'L FEE	0	OR		TOTAL ADD'L FEE
(Column 1)			(Column 2)		(Column 3)		SMALL ENTITY		OR OTHER THAN SMALL ENTITY	
AMENDMENT	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)			RATE (\$)	ADDITIONAL FEE (\$)	
	Total (37 CFR 1.16(j))	*	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))									
						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 number found in the appropriate box in column 1.										

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

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Legal Instrument Examiner:
/MIKKI SHORT/



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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
12/581,852	10/19/2009	Eric M. Delangis	ED 1020

CONFIRMATION NO. 3420

64828

LAW OFFICE OF CLAY MCGURK
P.O. BOX 6127
LAGUNA NIGUEL, CA 92677

PUBLICATION NOTICE



0000000041235507

Title:BROADBAND COMMUNICATIONS DEVICE

Publication No.US-2010-0098058-A1

Publication Date:04/22/2010

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.

The publication may be accessed through the USPTO's publically available Searchable Databases via the Internet at www.uspto.gov. The direct link to access the publication is currently <http://www.uspto.gov/patft/>.

The publication process established by the Office does not provide for mailing a copy of the publication to applicant. A copy of the publication may be obtained from the Office upon payment of the appropriate fee set forth in 37 CFR 1.19(a)(1). Orders for copies of patent application publications are handled by the USPTO's Office of Public Records. The Office of Public Records can be reached by telephone at (703) 308-9726 or (800) 972-6382, by facsimile at (703) 305-8759, by mail addressed to the United States Patent and Trademark Office, Office of Public Records, Alexandria, VA 22313-1450 or via the Internet.

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

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

INVENTOR: Eric DeLangis

EXAMINER:

APPLICATION NO.: **12/581,852**

GROUP ART UNIT: 2468

FILED: OCTOBER 19, 2009

CONFIRMATION No.: 3420

TITLE: BROADBAND COMMUNICATIONS DEVICE

ATTORNEY No: ED 1020

Mail Stop **Amendment**
Commissioner For Patents
PO Box 1450
Alexandria, VA 22313-1450

PRELIMINARY AMENDMENT

SIR:

This Preliminary Amendment is being submitted before the first Office Action. Please cancel claims 1-9, and add new claims 10-28. There is no fee associated with the submittal of this Preliminary Amendment.

Best Regards,



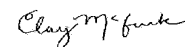
Date: June 17, 2010

H. C. McGurk, Reg. No. 34,964
Attorney of Record
The Law Office of Clay McGurk
P.O.Box 6127
Laguna Niguel, CA 92607
Phone: 949.395.3942

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Dated: June 17, 2010

By: 
Clay McGurk

12/581,852
PAGE 1 OF 6

IN THE SPECIFICATION

Please replace in its entirety Paragraph 1 of the Specification with the following:

[0001] This application is a continuation of U.S. Patent Application Serial No. 10/686,375 filed October 14, 2005, which claims priority to U.S. Provisional Application Serial No. 60/418,521, filed October 15, 2002, all of which are incorporated by reference herein.

CLAIMS

1-9. (Canceled).

10. (New) A communications device that is capable of providing broadband communications services, comprising:

at least one connection for connecting to a communications network;

at least one wireless interface for connecting wirelessly to at least one remote communications device; and

a processor that requests the at least one remote communications device to assist in transferring data and aggregates the data from the at least one remote communications device with data transfers from the at least one connection to increase data bandwidth for the communications device.

11. (New) The communications device of claim 10, wherein the processor combines the data bandwidth of the at least one connection with the at least one remote communications device.

12. (New) The communications device of claim 10, wherein the at least one remote communications device is at least one of a residential communications gateway, a cable modem, a digital subscriber line, a wireless device, a neighborhood access point device, a Wi-Fi device and a cellular phone.

13. (New) The communications device of claim 10, wherein the processor allocates the at least one remote communications device into a multilink group transfer.

14. (New) The communications device of claim 10, wherein the processor creates and updates routing tables with the at least one remote communications device.

15. (New) The communications device of claim 14, wherein the processor uses the routing tables to determine routing efficiencies based on at least one of quality of service, total connection speed of the at least one remote communication device, a number of data hops, available unused bandwidth of the at least one remote communication device, wireless transfer speeds and signal strength between the at least one remote communication device and the communication device.

16. (New) The communications device of claim 10, wherein the processor determines how many remote communications devices are located in a transmission range.

17. (New) The communications device of claim 10, wherein the processor sends a request to the at least one remote communications device for requesting use of a portion of unused bandwidth of the at least one remote communications device, receives a response from the at least one remote communications device, the response containing information about the portion of unused bandwidth, selects the at least one remote communications device with a larger unused bandwidth, sends control information to the at least one remote communications device for participating in a multilink connection, and receiving packets from the at least one remote communications device.

18. (New) The communications device of claim 10, wherein the communications network is at least one of a public wired network, a private wired network, a public wireless network, and a private wireless network.

19. (New) The communications device of claim 10, wherein the communications network is at least one of a public switched telephone network, a cable network, a wireless network and a fiber network.

20. (New) A communications device that is capable of providing broadband communications services, comprising:

at least one connection for connecting to a network;

at least one wireless interface for connecting wirelessly to remote communications devices; and

a processor that requests the remote communications devices to transfer portions of data, and combines and sequences the portions of the data from the remote communications devices with second data transferred from the at least one connection to increase data bandwidth for the communications device.

21. (New) The communications device of claim 20, wherein the processor creates and updates routing tables for each of the remote communications devices.

22. (New) The communications device of claim 20, wherein the processor uses the routing tables to determine routing efficiencies based on quality of service and selects a group of the remote communications devices for optimizing the routing efficiencies.

23. (New) The communications device of claim 20, wherein the processor uses the routing tables to determine routing efficiencies based on at least one of quality of service, total connection speed of the remote communication devices, a number of data hops, available unused bandwidth of the remote communication devices, wireless transfer speeds and signal strength between the remote communication devices and the communication device.

24. (New) The communications device of claim 20, wherein the processor receives information whether each of the remote communications devices wants to participate in a multilink group transfer, and configures a multilink group for all the participating remote communications devices to optimize routing efficiency.

25. (New) The communications device of claim 20, wherein the processor sends a request to the remote communications devices for requesting use of a portion of unused bandwidth of each of the remote communications devices, receives a response from each of the remote communications devices, the response containing information about the portion of unused bandwidth for each of the remote communications devices, selects a group of the remote communications devices with a larger, combined, unused bandwidth, sends control information to the selected remote communications devices for participating in a multilink transfer, and receiving packets from the selected remote communications devices.

26. (New) A communications device that is capable of providing broadband communications services, comprising:

at least one connection for connecting to a communications network;

at least one wireless interface for connecting wirelessly to at least one cellular phone; and

a processor that requests the at least one cellular phone to assist in transferring data and aggregates the data from the at least one cellular phone with data transfers from the at least one connection to increase data bandwidth for the communications device.

27. (New) The communications device of claim 26, wherein the processor creates and updates routing tables with the at least one cellular phone.

28. (New) The communications device of claim 26, wherein the processor uses the routing tables to determine routing efficiencies based on at least one of quality of service, total connection speed of the at least one cellular phone, a number of data hops, available unused bandwidth of the at least one cellular phone, wireless transfer speeds and signal strength between the at least one cellular phone and the communication device.

Electronic Acknowledgement Receipt

EFS ID:	7836506
Application Number:	12581852
International Application Number:	
Confirmation Number:	3420
Title of Invention:	BROADBAND COMMUNICATIONS DEVICE
First Named Inventor/Applicant Name:	Eric M. Delangis
Customer Number:	64828
Filer:	Harold C. McGurk
Filer Authorized By:	
Attorney Docket Number:	ED 1020
Receipt Date:	17-JUN-2010
Filing Date:	19-OCT-2009
Time Stamp:	15:14:53
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Preliminary Amendment	12581852_Preliminary_Amend ment.pdf	91552 5dd89afa444dac90434a571c10cec8c9b20f 2a32	no	6

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Information:

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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.

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

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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875					Application or Docket Number 12/581,852		Filing Date 10/19/2009		☐ To be Mailed	
APPLICATION AS FILED – PART I										
(Column 1)			(Column 2)			SMALL ENTITY ☒ OR		OTHER THAN SMALL ENTITY		
FOR	NUMBER FILED	NUMBER EXTRA	RATE (\$)	FEE (\$)	OR		RATE (\$)	FEE (\$)		
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A				N/A			
☐ SEARCH FEE (37 CFR 1.16(k), (l), or (m))	N/A	N/A	N/A				N/A			
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A				N/A			
TOTAL CLAIMS (37 CFR 1.16(j))	minus 20 =	*	X \$ =				X \$ =			
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X \$ =				X \$ =			
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))			If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$250 (\$125 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.										
APPLICATION AS AMENDED – PART II										
(Column 1)			(Column 2)			SMALL ENTITY OR		OTHER THAN SMALL ENTITY		
AMENDMENT	06/17/2010	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)		RATE (\$)	ADDITIONAL FEE (\$)
	Total (37 CFR 1.16(j))	* 19	Minus	** 20	=	X \$ =		OR	X \$ =	
	Independent (37 CFR 1.16(h))	* 3	Minus	***3	=	X \$ =		OR	X \$ =	
	☐ Application Size Fee (37 CFR 1.16(s))							OR		
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	
AMENDMENT		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)		RATE (\$)	ADDITIONAL FEE (\$)
	Total (37 CFR 1.16(j))	*	Minus	**	=	X \$ =		OR	X \$ =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	X \$ =		OR	X \$ =	
	☐ Application Size Fee (37 CFR 1.16(s))							OR		
	☐ 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 number found in the appropriate box in column 1.										

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

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Legal Instrument Examiner:
/KATRINA S. TURNER/

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.: **12/581,852**

EXAMINER: Hong Sol Cho

INVENTOR: Eric DeLangis

GROUP ART UNIT: 2468

FILED: OCTOBER 19, 2009

CONFIRMATION No.: 3420

TITLE: BROADBAND COMMUNICATIONS DEVICE

ATTORNEY No: ED 1020

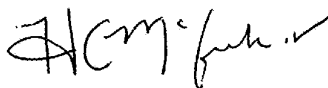
Mail Stop **Amendment**
Commissioner For Patents
PO Box 1450
Alexandria, VA 22313-1450

PRELIMINARY AMENDMENT 2

SIR:

This second Preliminary Amendment is being submitted before the first Office Action.
There is no fee associated with the submittal of this Preliminary Amendment.

Best Regards,



Date: March 20, 2012

H. C. McGurk, Reg. No. 34,964
Attorney of Record
The Law Office of Clay McGurk
PO Box 1488
Orange, CA 92856
Phone: 949.395.3942

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Dated: March 20, 2012

By: 
Clay McGurk

12/581,852
PAGE 1 OF 5

CLAIMS

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

1-9. (Canceled).

10. (Currently Amended) A communications device that is capable of providing broadband communications services, comprising:

at least one connection for connecting to a communications network;

at least one wireless interface for connecting wirelessly to at least one remote communications device; and

a processor that requests the at least one remote communications device to assist in transferring data, sends a request to the at least one remote communications device for requesting use of a portion of unused bandwidth of the at least one remote communications device, receives a response from the at least one remote communications device, the response containing information about the portion of unused bandwidth, selects the at least one remote communications device with unused bandwidth, sends control information to the at least one remote communications device for participating in a multilink connection, receives packets from the at least one remote communications device and aggregates the data from the at least one remote communications device with data transfers from the at least one connection to increase data bandwidth for the communications device.

11. (Previously Presented) The communications device of claim 10, wherein the processor combines the data bandwidth of the at least one connection with the at least one remote communications device.

12. (Previously Presented) The communications device of claim 10, wherein the at least one remote communications device is at least one of a residential communications gateway, a cable modem, a digital subscriber line, a wireless device, a neighborhood access point device, a Wi-Fi device and a cellular phone.

13. (Previously Presented) The communications device of claim 10, wherein the processor allocates the at least one remote communications device into a multilink group transfer.

14. (Previously Presented) The communications device of claim 10, wherein the processor creates and updates routing tables with the at least one remote communications device.

15. (Previously Presented) The communications device of claim 14, wherein the processor uses the routing tables to determine routing efficiencies based on at least one of quality of service, total connection speed of the at least one remote communication device, a number of data hops, available unused bandwidth of the at least one remote communication device, wireless transfer speeds and signal strength between the at least one remote communication device and the communication device.

16. (Previously Presented) The communications device of claim 10, wherein the processor determines how many remote communications devices are located in a transmission range.

17. (Canceled).

18. (Previously Presented) The communications device of claim 10, wherein the communications network is at least one of a public wired network, a private wired network, a public wireless network, and a private wireless network.

19. (Previously Presented) The communications device of claim 10, wherein the communications network is at least one of a public switched telephone network, a cable network, a wireless network and a fiber network.

20. (Currently Amended) A communications device that is capable of providing broadband communications services, comprising:

at least one connection for connecting to a network;

at least one wireless interface for connecting wirelessly to remote communications devices; and

a processor that requests the remote communications devices to transfer portions of data, sends a request to the remote communications devices for requesting use of a portion of unused bandwidth of each of the remote communications devices, receives a response from each of the remote communications devices, the response containing information about the portion of unused bandwidth for each of the remote communications devices, selects a group of the remote communications devices with a larger, combined, unused bandwidth, sends control information to the selected remote communications devices for participating in a multilink transfer, and receiving packets from the selected remote communications devices and combines and sequences the portions of the data from the remote communications devices with second data transferred from the at least one connection to increase data bandwidth for the communications device.

21. (Previously Presented) The communications device of claim 20, wherein the processor creates and updates routing tables for each of the remote communications devices.

22. (Previously Presented) The communications device of claim 20, wherein the processor uses the routing tables to determine routing efficiencies based on quality of service and selects a group of the remote communications devices for optimizing the routing efficiencies.

23. (Previously Presented) The communications device of claim 20, wherein the processor uses the routing tables to determine routing efficiencies based on at least one of quality of service, total connection speed of the remote communication devices, a number of data hops, available unused bandwidth of the remote communication devices, wireless transfer speeds and signal strength between the remote communication devices and the communication device.

24. (Previously Presented) The communications device of claim 20, wherein the processor receives information whether each of the remote communications devices wants to participate in a multilink group transfer, and configures a multilink group for all the participating remote communications devices to optimize routing efficiency.

25. (Canceled).

26. (Currently Amended) A communications device that is capable of providing broadband communications services, comprising:

at least one connection for connecting to a communications network;

at least one wireless interface for connecting wirelessly to at least one cellular phone; and

a processor that requests the at least one cellular phone to assist in transferring data, sends a request to the at least one cellular phone for requesting use of a portion of unused bandwidth of the at least one cellular phone, receives a response from the at least one cellular phone, the response containing information about the portion of unused bandwidth, selects the at least one cellular phone with unused bandwidth, sends control information to the at least one cellular phone for participating in a multilink connection, receiving packets from the at least one cellular phone and aggregates the data from the at least one cellular phone with data transfers from the at least one connection to increase data bandwidth for the communications device.

27. (Previously Presented) The communications device of claim 26, wherein the processor creates and updates routing tables with the at least one cellular phone.

28. (Previously Presented) The communications device of claim 26, wherein the processor uses the routing tables to determine routing efficiencies based on at least one of quality of service, total connection speed of the at least one cellular phone, a number of data hops, available unused bandwidth of the at least one cellular phone, wireless transfer speeds and signal strength between the at least one cellular phone and the communication device.

Electronic Acknowledgement Receipt

EFS ID:	12351242
Application Number:	12581852
International Application Number:	
Confirmation Number:	3420
Title of Invention:	BROADBAND COMMUNICATIONS DEVICE
First Named Inventor/Applicant Name:	Eric M. Delangis
Customer Number:	64828
Filer:	Harold C. McGurk
Filer Authorized By:	
Attorney Docket Number:	ED 1020
Receipt Date:	20-MAR-2012
Filing Date:	19-OCT-2009
Time Stamp:	18:14:30
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Preliminary Amendment	12581852_Preliminary_Amend ment_3-20-12.pdf	90729 a6e7cb0cd67223c70c692a12961456991ea 6a137	no	5

Warnings:

Information:

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

New Applications Under 35 U.S.C. 111

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

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

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

New International Application Filed with the USPTO as a Receiving Office

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



UNITED STATES PATENT AND TRADEMARK OFFICE

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/581,852	10/19/2009	Eric M. Delangis	ED 1020	3420
64828	7590	03/22/2012		
Harold McGurk The Law Office of Clay McGurk P.O. BOX 1488 Orange, CA 92856			EXAMINER CHO, HONG SOL	
			ART UNIT	PAPER NUMBER
			2467	
			MAIL DATE	DELIVERY MODE
			03/22/2012	PAPER

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

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

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 12/581,852		Filing Date 10/19/2009		☐ To be Mailed	
APPLICATION AS FILED – PART I										
(Column 1)			(Column 2)			SMALL ENTITY ☒ OR		OTHER THAN SMALL ENTITY		
FOR	NUMBER FILED	NUMBER EXTRA	RATE (\$)	FEE (\$)	OR	RATE (\$)	FEE (\$)			
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A				
☐ SEARCH FEE (37 CFR 1.16(k), (j), or (m))	N/A	N/A	N/A			N/A				
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A				
TOTAL CLAIMS (37 CFR 1.16(j))	minus 20 =	*	X \$ =		OR	X \$ =				
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X \$ =			X \$ =				
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$250 (\$125 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.										
APPLICATION AS AMENDED – PART II										
(Column 1)			(Column 2)			SMALL ENTITY OR		OTHER THAN SMALL ENTITY		
AMENDMENT	03/20/2012	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)	OR	RATE (\$)	ADDITIONAL FEE (\$)
	Total (37 CFR 1.16(j))	* 17	Minus	** 20	= 0	X \$30 =	0	OR	X \$ =	
	Independent (37 CFR 1.16(h))	* 3	Minus	***3	= 0	X \$125 =	0	OR	X \$ =	
	☐ Application Size Fee (37 CFR 1.16(s))							OR		
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE	0	OR	TOTAL ADD'L FEE	
AMENDMENT		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)	OR	RATE (\$)	ADDITIONAL FEE (\$)
	Total (37 CFR 1.16(j))	*	Minus	**	=	X \$ =		OR	X \$ =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	X \$ =		OR	X \$ =	
	☐ Application Size Fee (37 CFR 1.16(s))							OR		
	☐ 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 number found in the appropriate box in column 1.										

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

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

Legal Instrument Examiner:
/CHRISTINE V. MOORE/



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NOTICE OF ALLOWANCE AND FEE(S) DUE

64828 7590 03/29/2012
Harold McGurk
The Law Office of Clay McGurk
P.O. BOX 1488
Orange, CA 92856

EXAMINER

CHO, HONG SOL

ART UNIT

PAPER NUMBER

2467

DATE MAILED: 03/29/2012

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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12/581,852

10/19/2009

Eric M. Delangis

ED 1020

3420

TITLE OF INVENTION: BROADBAND COMMUNICATIONS DEVICE

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	YES	\$870	\$300	\$0	\$1170	06/29/2012

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.

B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

PART B - FEE(S) TRANSMITTAL

**Complete and send this form, together with applicable fee(s), to: Mail Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
or Fax (571)-273-2885**

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

64828 7590 03/29/2012
Harold McGurk
The Law Office of Clay McGurk
P.O. BOX 1488
Orange, CA 92856

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/581,852	10/19/2009	Eric M. Delangis	ED 1020	3420

TITLE OF INVENTION: BROADBAND COMMUNICATIONS DEVICE

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	YES	\$870	\$300	\$0	\$1170	06/29/2012

EXAMINER	ART UNIT	CLASS-SUBCLASS
CHO, HONG SOL	2467	370-235000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

- ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
- ☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

- (1) the names of up to 3 registered patent attorneys or agents OR, alternatively, 1 _____
- (2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed. 2 _____
- 3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent): ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:

- ☐ Issue Fee
- ☐ Publication Fee (No small entity discount permitted)
- ☐ Advance Order - # of Copies _____

4b. Payment of Fee(s): (**Please first reapply any previously paid issue fee shown above**)

- ☐ A check is enclosed.
- ☐ Payment by credit card. Form PTO-2038 is attached.
- ☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)

- ☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27. ☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature _____ Date _____

Typed or printed name _____ Registration No. _____

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/581,852	10/19/2009	Eric M. Delangis	ED 1020	3420

64828 7590 03/29/2012
Harold McGurk
The Law Office of Clay McGurk
P.O. BOX 1488
Orange, CA 92856

EXAMINER

CHO, HONG SOL

ART UNIT PAPER NUMBER

2467

DATE MAILED: 03/29/2012

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 466 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 466 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

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).
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.

Notice of Allowability	Application No.	Applicant(s)	
	12/581,852	DELANGIS, ERIC M.	
	Examiner	Art Unit	
	HONG CHO	2467	

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

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the amendment filed on 03/20/12.

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

3. ☒ The allowed claim(s) is/are 10-16, 18-24 and 26-28 (renumbered 1-17).

4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____ .
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
* Certified copies not received: ____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
(a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
1) ☐ hereto or 2) ☐ to Paper No./Mail Date ____.
(b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date ____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892) 2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948) 3. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date ____ 4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material	5. ☐ Notice of Informal Patent Application 6. ☐ Interview Summary (PTO-413), Paper No./Mail Date ____ . 7. ☐ Examiner's Amendment/Comment 8. ☒ Examiner's Statement of Reasons for Allowance 9. ☐ Other _____.
--	---

/HONG CHO/ Primary Examiner, Art Unit 2467	
---	--

Reasons for Allowance

1. Claims 10-16, 18-24 and 26-28 are allowed.
2. The following is an examiner's statement of reasons for allowance:

Claims 1 and 26 are allowable over the prior art of record since the cited reference taken individually or in combination fails to particularly disclose sending a request to the at least one cellular phone for requesting use of a portion of unused bandwidth of the at least one cellular phone, receiving a response containing information about the portion of unused bandwidth from the at least one cellular phone, selecting the at least one cellular phone with unused bandwidth, sending control information to the at least one cellular phone for participating in a multilink connection, receiving packets from the at least one cellular phone and aggregating the data from the at least one cellular phone with data transfers from the at least one connection to increase data bandwidth for the communications device.

Claim 20 is allowable over the prior art of record since the cited reference taken individually or in combination fails to particularly disclose sending a request to the remote communications devices for requesting use of a portion of unused bandwidth of each of the remote communications devices, receiving a response containing information about the portion of unused bandwidth for each of the remote communications devices, selecting a group of the remote communications devices with a larger, combined, unused bandwidth, sending control information to the selected remote communications devices

Art Unit: 2467

for participating in a multilink transfer, and receiving packets from the selected remote communications devices and combining and sequencing the portions of the data from the remote communications devices with second data transferred from the at least one connection to increase data bandwidth for the communications device.

Conclusion

3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hong Cho whose telephone number is 571-272-3087. The examiner can normally be reached on Mon-Fri during 7 am to 4 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hassan Phillips can be reached on 571-272-3940. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Hong Cho/

Application/Control Number: 12/581,852
Art Unit: 2467

Page 4

Primary Examiner, Art Unit 2467

Notice of References Cited	Application/Control No. 12/581,852	Applicant(s)/Patent Under Reexamination DELANGIS, ERIC M.	
	Examiner HONG CHO	Art Unit 2467	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-6,307,839 B1	10-2001	Gerszberg et al.	370/235
*	B	US-2006/0079274 A1	04-2006	Gallagher et al.	455/552.1
*	C	US-7,257,106 B2	08-2007	Chen et al.	370/338
*	D	US-7,385,924 B1	06-2008	Riddle, Guy	370/235
	E	US-			
	F	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
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BIB DATA SHEET

CONFIRMATION NO. 3420

SERIAL NUMBER 12/581,852	FILING or 371(c) DATE 10/19/2009 RULE	CLASS 370	GROUP ART UNIT 2467	ATTORNEY DOCKET NO. ED 1020		
APPLICANTS Eric M. Delangis, Loveland, CA; ** CONTINUING DATA ***** This application is a CON of 10/686,375 10/14/2003 PAT 7,606,156 which claims benefit of 60/418,521 10/15/2002 ** FOREIGN APPLICATIONS ***** ** IF REQUIRED, FOREIGN FILING LICENSE GRANTED *** SMALL ENTITY ** 10/30/2009						
Foreign Priority claimed ☐ Yes ☒ No 35 USC 119(a-d) conditions met ☐ Yes ☒ No Verified and /HONG SOL CHO/ Acknowledged Examiner's Signature		☒ Met after Allowance hc Initials	STATE OR COUNTRY CA	SHEETS DRAWINGS 9	TOTAL CLAIMS 9	INDEPENDENT CLAIMS 1
ADDRESS Harold McGurk The Law Office of Clay McGurk P.O. BOX 1488 Orange, CA 92856 UNITED STATES						
TITLE BROADBAND COMMUNICATIONS DEVICE						
FILING FEE RECEIVED 462	FEES: Authority has been given in Paper No. _____ to charge/credit DEPOSIT ACCOUNT No. _____ for following:		☐ All Fees ☐ 1.16 Fees (Filing) ☐ 1.17 Fees (Processing Ext. of time) ☐ 1.18 Fees (Issue) ☐ Other _____ ☐ Credit			

Issue Classification 	Application/Control No. 12/581,852	Applicant(s)/Patent under Reexamination DELANGIS, ERIC M.
	Examiner HONG CHO	Art Unit 2467

ISSUE CLASSIFICATION															
ORIGINAL						INTERNATIONAL CLASSIFICATION									
CLASS			SUBCLASS			CLAIMED				NON-CLAIMED					
370			235			H	04	L	12	/26					/
CROSS REFERENCES						H	04	L	12	/28					/
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)														
370	401										/				/
											/				/
											/				/
											/				/
											/				/

(Assistant Examiner) (Date)		/Hong Cho/ 03/21/12		Total Claims Allowed: 17	
(Legal Instruments Examiner) (Date)				O.G. Print Claim(s) 1	
		(Primary Examiner) (Date)		O.G. Print Fig. 8	

☐ Claims renumbered in the same order as presented by applicant												☐ CPA		☐ T.D.		☐ R.1.47	
Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original		
	1		31		61		91		121		151		181				
	2		32		62		92		122		152		182				
	3		33		63		93		123		153		183				
	4		34		64		94		124		154		184				
	5		35		65		95		125		155		185				
	6		36		66		96		126		156		186				
	7		37		67		97		127		157		187				
	8		38		68		98		128		158		188				
	9		39		69		99		129		159		189				
1	10		40		70		100		130		160		190				
2	11		41		71		101		131		161		191				
3	12		42		72		102		132		162		192				
4	13		43		73		103		133		163		193				
5	14		44		74		104		134		164		194				
6	15		45		75		105		135		165		195				
7	16		46		76		106		136		166		196				
	17		47		77		107		137		167		197				
8	18		48		78		108		138		168		198				
9	19		49		79		109		139		169		199				
10	20		50		80		110		140		170		200				
11	21		51		81		111		141		171		201				
12	22		52		82		112		142		172		202				
13	23		53		83		113		143		173		203				
14	24		54		84		114		144		174		204				
	25		55		85		115		145		175		205				
15	26		56		86		116		146		176		206				
16	27		57		87		117		147		177		207				
17	28		58		88		118		148		178		208				
	29		59		89		119		149		179		209				
	30		60		90		120		150		180		210				

EAST Search History**EAST Search History (Prior Art)**

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S22	52	S21 and (aggregat\$3 or combin\$3 or add\$3) with unused near bandwidth	US-PGPUB; USPAT	OR	OFF	2012/03/19 08:52
S21	43899	(370/235,230,233,363,371,374,381,433,465-468,470-474,483-486,493-495,352,395,252).ccls.	US-PGPUB; USPAT	OR	OFF	2012/03/19 08:52
S23	7	((ERIC) near2 (DELANGIS)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2012/03/19 08:53
S25	3	10/686375	US-PGPUB; USPAT	OR	OFF	2012/03/19 10:07
S24	1	12/581852	US-PGPUB; USPAT	OR	OFF	2012/03/19 10:07
S27	52	S26 and (aggregat\$3 or combin\$3 or add\$3) with unused near bandwidth	US-PGPUB; USPAT	OR	OFF	2012/03/19 10:18
S26	43899	(370/235,230,233,363,371,374,381,433,465-468,470-474,483-486,493-495,352,395,252).ccls.	US-PGPUB; USPAT	OR	OFF	2012/03/19 10:18
S28	19	((aggregat\$3 or combin\$3 or add\$3) with unused near bandwidth).clm.	US-PGPUB; USPAT	OR	OFF	2012/03/19 12:13

3/ 21/ 2012 8:17:35 AM**C:\Users\hcho\Documents\EAST\Workspaces\12581852.wsp**

Search Notes 	Application/Control No. 12581852	Applicant(s)/Patent Under Reexamination DELANGIS, ERIC M.
	Examiner HONG CHO	Art Unit 2467

SEARCHED			
Class	Subclass	Date	Examiner
370	235,230,233,363,371,374,381,401,433,465-468,470-474,483-486,493-495,352,395,252	3/21/2012	hc

SEARCH NOTES		
Search Notes	Date	Examiner
EAST text search	3/21/2012	hc

INTERFERENCE SEARCH			
Class	Subclass	Date	Examiner
370	235, 401	3/21/2012	hc

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PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: **Mail** **Mail Stop ISSUE FEE**
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
or Fax (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the **ISSUE FEE** and **PUBLICATION FEE** (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

64828 7590 03/29/2012
Harold McGurk
The Law Office of Clay McGurk
P.O. BOX 1488
Orange, CA 92856

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/581,852	10/19/2009	Eric M. Delangis	ED-1020	3420

TITLE OF INVENTION: BROADBAND COMMUNICATIONS DEVICE

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	YES	\$870	\$300	\$0	\$1170	06/29/2012

EXAMINER	ART UNIT	CLASS-SUBCLASS
CHO, HONG SOL	2467	370-235000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).
☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. Use of a Customer Number is required.

2. For printing on the patent front page, list
 (1) the names of up to 3 registered patent attorneys or agents OR, alternatively,
 (2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 **CLAY MCGURK**
 2 **THE LAW OFFICE OF CLAY MCGURK**
 3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent): ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:

☒ Issue Fee
☒ Publication Fee (No small entity discount permitted)
☐ Advance Order - # of Copies _____

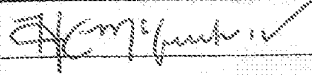
4b. Payment of Fee(s): (Please first reapply any previously paid issue fee shown above)

☐ A check is enclosed.
☐ Payment by credit card. Form PTO-2038 is attached.
☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. Change in Entity Status (from status indicated above)

☒ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27. ☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature: 
 Typed or printed name: **H C MCGURK IV**

Date: **June 23, 2012**
 Registration No.: **34964**

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

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.

Electronic Patent Application Fee Transmittal				
Application Number:		12581852		
Filing Date:		19-Oct-2009		
Title of Invention:		BROADBAND COMMUNICATIONS DEVICE		
First Named Inventor/Applicant Name:		Eric M. Delangis		
Filer:		Harold C. McGurk		
Attorney Docket Number:		ED 1020		
Filed as Small Entity				
Utility under 35 USC 111(a) Filing Fees				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Utility Appl issue fee	2501	1	870	870
Publ. Fee- early, voluntary, or normal	1504	1	300	300

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Extension-of-Time:				
Miscellaneous:				
Total in USD (\$)				1170

Electronic Acknowledgement Receipt

EFS ID:	13089598
Application Number:	12581852
International Application Number:	
Confirmation Number:	3420
Title of Invention:	BROADBAND COMMUNICATIONS DEVICE
First Named Inventor/Applicant Name:	Eric M. Delangis
Customer Number:	64828
Filer:	Harold C. McGurk
Filer Authorized By:	
Attorney Docket Number:	ED 1020
Receipt Date:	23-JUN-2012
Filing Date:	19-OCT-2009
Time Stamp:	12:25:55
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	\$1170
RAM confirmation Number	7324
Deposit Account	
Authorized User	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
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1	Issue Fee Payment (PTO-85B)	12581852_PartB_Signed.PDF	1484042 8baaeb3835ba02b9a375992ce65a8c0605285e3a	no	1
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	31791 461adc574f3c19b00aff14a567dd8bfa467f03de	no	2
Warnings:					
Information:					
Total Files Size (in bytes):			1515833		
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. <u>New Applications Under 35 U.S.C. 111</u> 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. <u>National Stage of an International Application under 35 U.S.C. 371</u> 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. <u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.					



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APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/581,852	07/24/2012	8228801	ED 1020	3420

64828 7590 07/04/2012
Harold McGurk
The Law Office of Clay McGurk
P.O. BOX 1488
Orange, CA 92856

ISSUE NOTIFICATION

The projected patent number and issue date are specified above.

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (application filed on or after May 29, 2000)

The Patent Term Adjustment is 466 day(s). Any patent to issue from the above-identified application will include an indication of the adjustment on the front page.

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Application Assistance Unit (AAU) of the Office of Data Management (ODM) at (571)-272-4200.

APPLICANT(s) (Please see PAIR WEB site <http://pair.uspto.gov> for additional applicants):

Eric M. Delangis, Loveland, CA;

The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The USA offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to encourage and facilitate business investment. To learn more about why the USA is the best country in the world to develop technology, manufacture products, and grow your business, visit SelectUSA.gov.

AO 120 (Rev. 08/10)

TO: Mail Stop 8 Director of the U.S. Patent and Trademark Office P.O. Box 1450 Alexandria, VA 22313-1450	REPORT ON THE FILING OR DETERMINATION OF AN ACTION REGARDING A PATENT OR TRADEMARK
---	---

In Compliance with 35 U.S.C. § 290 and/or 15 U.S.C. § 1116 you are hereby advised that a court action has been filed in the U.S. District Court Eastern District of Texas on the following

☐ Trademarks or ☒ Patents. (☐ the patent action involves 35 U.S.C. § 292.):

DOCKET NO. 2:22-cv-287	DATE FILED 7/27/2022	U.S. DISTRICT COURT Eastern District of Texas
PLAINTIFF Competitive Access Systems, Inc.		DEFENDANT Oracle Corporation and Oracle America, Inc.
PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1 8,228,801	7/24/2012	Competitive Access Systems, Inc.
2 9,350,649	5/24/2016	Competitive Access Systems, Inc.
3 10,868,908	12/15/2020	Competitive Access Systems, Inc.
4		
5		

In the above—entitled case, the following patent(s)/ trademark(s) have been included:

DATE INCLUDED	INCLUDED BY ☐ Amendment ☐ Answer ☐ Cross Bill ☐ Other Pleading	
PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1		
2		
3		
4		
5		

In the above—entitled case, the following decision has been rendered or judgement issued:

DECISION/JUDGEMENT

CLERK	(BY) DEPUTY CLERK	DATE
-------	-------------------	------

Copy 1—Upon initiation of action, mail this copy to Director Copy 3—Upon termination of action, mail this copy to Director
Copy 2—Upon filing document adding patent(s), mail this copy to Director Copy 4—Case file copy

AO 120 (Rev. 08/10)

TO: Mail Stop 8 Director of the U.S. Patent and Trademark Office P.O. Box 1450 Alexandria, VA 22313-1450	REPORT ON THE FILING OR DETERMINATION OF AN ACTION REGARDING A PATENT OR TRADEMARK
---	---

In Compliance with 35 U.S.C. § 290 and/or 15 U.S.C. § 1116 you are hereby advised that a court action has been filed in the U.S. District Court **Western District of Texas** on the following

☐ Trademarks or ☒ Patents. (☐ the patent action involves 35 U.S.C. § 292.);

DOCKET NO. 1:23-cv-286	DATE FILED 3/16/2022	U.S. DISTRICT COURT Western District of Texas
PLAINTIFF Competitive Access Systems, Inc.		DEFENDANT Oracle Corporation and Oracle America, Inc.
PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1 8,228,801	7/24/2012	Competitive Access Systems, Inc.
2 9,350,649	5/24/2016	Competitive Access Systems, Inc.
3 10,868,908	12/15/2020	Competitive Access Systems, Inc.
4		
5		

In the above—entitled case, the following patent(s)/ trademark(s) have been included:

DATE INCLUDED	INCLUDED BY ☐ Amendment ☐ Answer ☐ Cross Bill ☐ Other Pleading		
PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK	
1			
2			
3			
4			
5			

In the above—entitled case, the following decision has been rendered or judgement issued:

DECISION/JUDGEMENT

CLERK PHILIP J. DEVLIN	(BY) DEPUTY CLERK <i>Con R</i>	DATE 03/20/2023
---------------------------	-----------------------------------	--------------------

Copy 1—Upon initiation of action, mail this copy to Director Copy 3—Upon termination of action, mail this copy to Director
 Copy 2—Upon filing document adding patent(s), mail this copy to Director Copy 4—Case file copy

AO 120 (Rev. 08/10)

TO: Mail Stop 8 Director of the U.S. Patent and Trademark Office P.O. Box 1450 Alexandria, VA 22313-1450	REPORT ON THE FILING OR DETERMINATION OF AN ACTION REGARDING A PATENT OR TRADEMARK
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In Compliance with 35 U.S.C. § 290 and/or 15 U.S.C. § 1116 you are hereby advised that a court action has been
filed in the U.S. District Court for the District of Arizona on the following

☒ Trademarks or ☐ Patents. (☐ the patent action involves 35 U.S.C. § 292.):

DOCKET NO. 2:23-cv-00368-DWL	DATE FILED 3/1/2023	U.S. DISTRICT COURT for the District of Arizona
PLAINTIFF Christian Copyright Licensing International, LLC		DEFENDANT Multitracks.com LLC
PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1 U.S. Reg. No. 4,872,	12/15/2015	Multitracks.com LLC
2		
3		
4		
5		

In the above—entitled case, the following patent(s)/ trademark(s) have been included:

DATE INCLUDED	INCLUDED BY ☐ Amendment ☐ Answer ☐ Cross Bill ☐ Other Pleading	
PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1		
2		
3		
4		
5		

In the above—entitled case, the following decision has been rendered or judgement issued:

DECISION/JUDGEMENT

CLERK DEBRA LUCAS	(BY) DEPUTY CLERK <i>Debra Lucas</i>	DATE 3/10/23
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Copy 1—Upon initiation of action, mail this copy to Director Copy 3—Upon termination of action, mail this copy to Director
Copy 2—Upon filing document adding patent(s), mail this copy to Director Copy 4—Case file copy



UNITED STATES
PATENT AND TRADEMARK OFFICE

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ACKNOWLEDGEMENT OF LOSS OF ENTITLEMENT TO ENTITY STATUS DISCOUNT

APPLICATION #	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTORNEY DOCKET #	REQUEST ID
12/581,852	10/19/2009	Eric M. Delangis	ED 1020	244980

The entity status change request below filed through Patent Center on 07/15/2024 has been accepted.

Certifications

APPLICANT CHANGING TO REGULAR UNDISCOUNTED FEE STATUS

Signature

I certify, in accordance with 37 CFR 1.4(d)(4), that I am one of the signatories making the entity status change.

Signature	Name	Registration #
/Harold McGurk/	Harold McGurk	34964