

PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1
Stylesheet Version v1.2

EPAS ID: PAT7518737

SUBMISSION TYPE:	RESUBMISSION
NATURE OF CONVEYANCE:	RELEASE OF SECURITY INTEREST
RESUBMIT DOCUMENT ID:	507398358

CONVEYING PARTY DATA

Name	Execution Date
MUZINICH BDC, INC.	05/27/2022

RECEIVING PARTY DATA

Name:	ASSIA SPE, LLC
Street Address:	1209 ORANGE ST.
City:	WILMINGTON
State/Country:	DELAWARE
Postal Code:	19801

PROPERTY NUMBERS Total: 165

Property Type	Number
PCT Number:	US1954135
PCT Number:	US2020242
PCT Number:	US2037654
PCT Number:	US2052928
PCT Number:	US1965560
PCT Number:	US2021515
PCT Number:	US2019039603
Application Number:	14910879
Application Number:	14356581
Application Number:	15506225
Application Number:	16279584
Application Number:	16747270
Application Number:	16900965
Patent Number:	9877724
Application Number:	10795593
Application Number:	10808771
Application Number:	10817128
Application Number:	10893826
Application Number:	10922705

PATENT

Property Type	Number
Application Number:	11071762
Application Number:	11122365
Application Number:	11122428
Application Number:	11267623
Application Number:	11284692
Application Number:	11336113
Application Number:	11336666
Application Number:	11341969
Application Number:	11342003
Application Number:	11342023
Application Number:	11342024
Application Number:	11344873
Application Number:	11345215
Application Number:	11363769
Application Number:	11367930
Application Number:	11636316
Application Number:	11897683
Application Number:	11945210
Application Number:	11995194
Application Number:	11995195
Application Number:	12028738
Application Number:	12089044
Application Number:	12185729
Application Number:	12226910
Application Number:	12226939
Application Number:	12227966
Application Number:	12375216
Application Number:	12402339
Application Number:	12444381
Application Number:	12517525
Application Number:	12853209
Application Number:	12940970
Application Number:	13084829
Application Number:	13194736
Application Number:	13214598
Application Number:	13254454
Application Number:	13376742
Application Number:	13511632

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Application Number:	13512262
Application Number:	13527074
Application Number:	13554945
Application Number:	13610195
Application Number:	13696798
Application Number:	13995900
Application Number:	13995901
Application Number:	14162133
Application Number:	14216573
Application Number:	14242164
Application Number:	14341659
Application Number:	14362584
Application Number:	14362585
Application Number:	14365604
Application Number:	14384368
Application Number:	14385679
Application Number:	14394074
Application Number:	14398069
Application Number:	14399151
Application Number:	14414435
Application Number:	14414437
Application Number:	14417544
Application Number:	14431774
Application Number:	14434073
Application Number:	14434076
Application Number:	14443999
Application Number:	14605911
Application Number:	14630569
Application Number:	14685522
Application Number:	14740123
Application Number:	14763486
Application Number:	14771789
Application Number:	14779942
Application Number:	14786438
Application Number:	14877720
Application Number:	14907655
Application Number:	14952635
Application Number:	14983367

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Application Number:	15022752
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Application Number:	15144082
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Application Number:	15188959
Application Number:	15315364
Application Number:	15323087
Application Number:	15471779
Application Number:	15505866
Application Number:	15506102
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Application Number:	15543793
Application Number:	15753159
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Application Number:	16290094
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Application Number:	16537045
Application Number:	16709857
Application Number:	16804000
Application Number:	16846276
Application Number:	16855986

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Application Number:	16900940
Application Number:	16916038
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Application Number:	17033437
Application Number:	62861979
Application Number:	62861993
Application Number:	62864869
Application Number:	62907035
Application Number:	62987827
Application Number:	63006628
Application Number:	63023804
Application Number:	63026112
Application Number:	63057806
Application Number:	63069635
Application Number:	63076209
Application Number:	63076263
Application Number:	16024420
Application Number:	16383214
Application Number:	16575101
Application Number:	16577462
Application Number:	16705180
Application Number:	16709620
Application Number:	16741210
Application Number:	16743821
Application Number:	16811593
Application Number:	16882484
Application Number:	16888684
Application Number:	14891320
Application Number:	15315348

CORRESPONDENCE DATA

Fax Number:

Correspondence will be sent to the e-mail address first; if that is unsuccessful, it will be sent using a fax number, if provided; if that is unsuccessful, it will be sent via US Mail.

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Email: docket1@northweber.com

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Address Line 4: LOS ALTOS, CALIFORNIA 94024

ATTORNEY DOCKET NUMBER: RELEASE SECURITY INTRST

NAME OF SUBMITTER: DOMARINA ALKHAS

SIGNATURE: /Domarina Alkhas/

DATE SIGNED: 09/02/2022

Total Attachments: 49

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RELEASE OF PATENT SECURITY INTEREST

THIS RELEASE OF PATENT SECURITY INTEREST (this “Release”) is made as of May 27, 2022 by Muzinich BDC, Inc., in its capacity as administrative agent (in such capacity, the “Administrative Agent”) for the Secured Parties (as defined in the Credit Agreement referred to in the Patent Security Agreement (as defined below)), in favor of the Grantors (as defined below).

WITNESSETH:

WHEREAS Adaptive Spectrum and Signal Alignment, Incorporated, a California corporation and ASSIA SPE LLC, a Delaware limited liability company (each a “Grantor” and, together, the “Grantors”), executed that certain Patent Security Agreement, dated as of December 4, 2020 (as amended, restated, supplemented or otherwise modified from time to time, the “Patent Security Agreement”) in favor of the Administrative Agent, pursuant to which the Grantors granted a security interest to the Administrative Agent in certain patents and other intellectual property of the Grantors;

WHEREAS, the Patent Security Agreement was recorded by the United States Patent and Trademark Office at Reel: 054593; Frame: 0459 on December 4, 2020, with respect to the patents owned by the Grantors; and

WHEREAS, the Administrative Agent has agreed to terminate and release the entirety of its security interest in all collateral secured by the Patent Security Agreement, including all of its liens on the patent and patent applications of each Grantor identified on Schedule A of the Patent Security Agreement filed in the United States Patent and Trademark Office on December 4, 2020, attached hereto as Exhibit I and made a part hereof and any and all patents and patent applications in the United States and throughout the world then owned or subsequently acquired or filed, including without limitation continuations and divisions thereof (the “Released Patent Collateral”), and to reconvey any and all rights in the Released Patent Collateral to the persons legally entitled thereto.

NOW, THEREFORE, in consideration of the promises and other good and valuable consideration, receipt of which is hereby acknowledged, the Administrative Agent hereby releases all its rights in and to the Released Patent Collateral, reconveys to the persons legally entitled thereto all of the Administrative Agent’s right, title and interest in and to the Released Patent Collateral, all without warranty or representation of any kind.

[Signature Page Follows]

IN WITNESS WHEREOF, the Administrative Agent has caused this Release to be duly executed on the date first above written.

MUZINICH BDC, INC., as Administrative Agent


By: 
Name: Jeffrey L. Youde
Title: CEO

EXHIBIT I

Date Filed - Priority Patent	Grant Date	Country Name	Status	Application #	Patent #	Title
Sep 25, 2020		Argentina	Pending	20200102664		WIRELESS-WIRELINE PHYSICALLY CONVERGED ARCHITECTURES
Dec 2, 2004	Jul 1, 2010	Australia	Issued	04297733	2004297733	ADAPTIVE MARGIN AND BAND CONTROL IN A DSL SYSTEM
Dec 2, 2004	Jul 1, 2010	Australia	Issued	2004298118	2004298118	ADAPTIVE FEC CODEWORD MANAGEMENT
Mar 18, 2005	Sep 10, 2009	Australia	Issued	2005226164	2005226164	HIGH SPEED MULTIPLE LOOP DSL SYSTEM
May 18, 2005	Mar 25, 2010	Australia	Issued	2005246544	2005246544	Dynamic management of communication system
Aug 10, 2005	Mar 25, 2010	Australia	Issued	2005303552	2005303552	INTERFERENCE CANCELLATION SYSTEM
Feb 28, 2006	May 12, 2011	Australia	Issued	2006228424	2006228424	DIGITAL SUBSCRIBER LINE (DSL) STATE AND LINE PROFILE CONTROL
Mar 16, 2006	Jun 23, 2011	Australia	Issued	2006253892	2006253892	DSL SYSTEM TRAINING
Mar 16, 2006	Jun 30, 2011	Australia	Issued	2006253893	2006253893	TONAL PRECODING IN MULTI-USER VECTORED DSL TRANSMISSION
Mar 17, 2006	Jun 30, 2011	Australia	Issued	2006256483	2006256483	USER-PREFERENCE-BASED DSL SYSTEM
Jul 8, 2006	Jul 7, 2011	Australia	Issued	2006268292	2006268292	DSL SYSTEM
Jul 8, 2006	Jun 30, 2011	Australia	Issued	2006268293	2006268293	ADAPTIVE MARGIN AND BAND CONTROL
Nov 2, 2010	Nov 2, 2010	Australia	Issued	2010313127	2010313127	DEVICE ABSTRACTION PROXY
Dec 15, 2011	Jun 2, 2016	Australia	Issued	2011383259	2011383259	METHOD AND APPARATUS FOR REDUCING THE POWER OF A SIGNAL ELECTROMAGNETICALLY COUPLED FROM A PLC MEDIUM TO A DSL MEDIUM

Date Filed - Priority Patent	Grant Date	Country Name	Status	Application #	Patent #	Title
Mar 19, 2012	Aug 4, 2016	Australia	Issued	2012374062	2012374062	SYSTEM FOR DIAGNOSING AND OPTIMIZING VECTORED DSL LINE
Sep 29, 2012	Sep 29, 2012	Australia	Issued	2012391037	2012391037	OPTIMIZED CONTROL SYSTEM FOR AGGREGATION OF MULTIPLE BROADBAND CONNECTIONS OVER RADIO INTERFACES
Dec 5, 2011	Dec 5, 2011	Australia	Issued	2016200291	2016200291	SYSTEMS AND METHODS FOR TRAFFIC LOAD BALANCING ON MULTIPLE WAN BACKHAULS AND MULTIPLE DISTINCT LAN NETWORKS
		Australia	Issued	2016200393	2016200393	SYSTEMS AND METHODS FOR TRAFFIC AGGREGATION ON MULTIPLE WAN BACKHAULS AND MULTIPLE DISTINCT LAN NETWORKS
Jul 13, 2012	Jul 13, 2012	Australia	Issued	2016204112	2016204112	METHOD AND SYSTEM FOR PERFORMANCE ESTIMATION OF A COMMUNICATION LINK
Sep 25, 2012	Mar 22, 2018	Australia	Issued	2016204716	2016204716	METHOD AND SYSTEM FOR USING A DOWNLOADABLE AGENT FOR A COMMUNICATION SYSTEM, DEVICE, OR LINK
Oct 12, 2012	Sep 13, 2018	Australia	Issued	2016204999	2016204999	MANAGEMENT SYSTEM AND METHODS OF MANAGING TIME-DIVISION DUPLEX (TDD) TRANSMISSION OVER COPPER
Oct 9, 2012	Dec 21, 2017	Australia	Issued	2016206284	2016206284	METHOD AND SYSTEM FOR CONNECTIVITY DIAGNOSTICS IN COMMUNICATION SYSTEMS
Oct 9, 2012	Aug 16, 2019	Australia	Issued	2016213912	2016213912	METHOD AND SYSTEM FOR LATENCY MEASUREMENT IN COMMUNICATION SYSTEMS
Jan 12, 2011	Jul 5, 2018	Australia	Issued	2016222368	2016222368	SYSTEMS AND METHODS FOR JOINTLY OPTIMIZING WAN AND LAN NETWORK COMMUNICATIONS
Jul 13, 2012	Aug 16, 2019	Australia	Issued	2016222369	2016222369	METHOD AND SYSTEM FOR PERFORMANCE MEASUREMENT OF A COMMUNICATION LINK
Jan 24, 2014	Jun 20, 2019	Australia	Issued	2016266044	2016266044	METHOD AND APPARATUS FOR CLOUD SERVICES FOR ENHANCING BROADBAND EXPERIENCE
Feb 1, 2018	Feb 13, 2020	Australia	Issued	2018200787	2018200787	SYSTEMS AND METHODS FOR TRAFFIC LOAD BALANCING ON MULTIPLE WAN BACKHAULS AND MULTIPLE DISTINCT LAN NETWORKS
Jul 13, 2012	Sep 3, 2020	Australia	Issued	2018267616	2018267616	METHOD AND SYSTEM FOR PERFORMANCE MEASUREMENT OF A COMMUNICATION LINK
Dec 5, 2011		Australia	Pending	2018200888		SYSTEMS AND METHODS FOR TRAFFIC AGGREGATION ON MULTIPLE WAN BACKHAULS AND MULTIPLE DISTINCT LAN NETWORKS

Date Filed - Priority Patent	Grant Date	Country Name	Status	Application #	Patent #	Title
May 2, 2018		Australia	Pending	2018263932		SYSTEMS AND METHODS FOR IMPLEMENTING HIGH-SPEED WAVEGUIDE TRANSMISSION OVER WIRES
Oct 9, 2012		Australia	Pending	2018267677		METHOD AND SYSTEM FOR LATENCY MEASUREMENT IN COMMUNICATION SYSTEMS
Nov 10, 2011		Australia	Pending	2019202408		METHOD, APPARATUS, AND SYSTEM FOR OPTIMIZING PERFORMANCE OF A COMMUNICATION UNIT BY A REMOTE SERVER
Jan 24, 2019		Australia	Pending	2019213577		SYSTEMS AND METHODS FOR NET NEUTRALITY TESTING
Jan 30, 2019		Australia	Pending	2019214925		SYSTEMS AND METHODS FOR BROADBAND COMMUNICATION LINK PERFORMANCE MONITORING
Apr 30, 2020		Australia	Pending	2020202897		SYSTEMS AND METHODS FOR TRAFFIC AGGREGATION ON MULTIPLE WAN BACKHAULS AND MULTIPLE DISTINCT LAN NETWORKS
Jul 13, 2012		Australia	Pending	2020220132		METHOD AND SYSTEM FOR PERFORMANCE MEASUREMENT OF A COMMUNICATION LINK
Dec 2, 2004	May 10, 2017	Austria	Issued	04801293.4	1721230	ADAPTIVE MARGIN AND BAND CONTROL
Feb 28, 2006	May 23, 2012	Austria	Issued	06755837.9	1869790	DIGITAL SUBSCRIBER LINE (DSL) STATE AND LINE PROFILE CONTROL
Dec 2, 2004	Nov 16, 2011	Belgium	Issued	04801291.8	1700423	DHL SYSTEM ESTIMATION AND PARAMETER RECOMMENDATION
Dec 2, 2004	Apr 28, 2010	Belgium	Issued	04801294.2	1700410	ADAPTIVE FEC CODEWORD MANAGEMENT
Mar 18, 2005	Aug 3, 2011	Belgium	Issued	05708773.6	1733550	HIGH SPEED MULTIPLE LOOP DSL SYSTEM
May 18, 2005	Jan 4, 2012	Belgium	Issued	05741016.9	1756963	Dynamic management of communication system
Feb 28, 2006	Feb 21, 2018	Belgium	Issued	06710503.1	1880503	PHANTOM USE IN DSL SYSTEMS
Mar 16, 2006	May 9, 2018	Belgium	Issued	06727405.0	1897306	TONAL PRECODING IN MULTI-USER VECTORED DSL TRANSMISSION

Date Filed - Priority Patent	Grant Date	Country Name	Status	Application #	Patent #	Title
Mar 17, 2006	Sep 13, 2017	Belgium	Issued	06727414.2	1911256	USER-PREFERENCE-BASED DSL SYSTEM
Feb 28, 2006	May 23, 2012	Belgium	Issued	06755837.9	1869790	DIGITAL SUBSCRIBER LINE (DSL) STATE AND LINE PROFILE CONTROL
Oct 3, 2006	Jul 8, 2020	Belgium	Issued	06816102.5	60 2006 059 537.9	DSL SYSTEM
Jul 31, 2007	Oct 18, 2017	Belgium	Issued	07810931.1	2055086	METHOD AND APPARATUS FOR ANALYZING AND MITIGATING NOISE IN A DIGITAL SUBSCRIBER LINE
Oct 5, 2007	Mar 28, 2018	Belgium	Issued	07852551.6	2076972	INTERFERENCE CANCELLATION SYSTEM
Dec 2, 2004	May 13, 2015	Belgium	Issued	10152127.6	2187558	ADAPTIVE FEC CODEWORD MANAGEMENT
Dec 2, 2004	Nov 9, 2011	Belgium	Issued	10179600.1	2259495	ADAPTIVE MARGIN AND BAND CONTROL IN A DSL SYSTEM
Mar 18, 2005	May 6, 2020	Belgium	Issued	10182701.2	2278785	HIGH SPEED MULTIPLE LOOP DSL SYSTEM
Nov 2, 2010	Jan 10, 2018	Belgium	Issued	10785244.4	2497226	DEVICE ABSTRACTION PROXY
Jun 6, 2007	Apr 4, 2018	Belgium	Issued	11161331.1	2337371	VECTORED DSL SYSTEM
Dec 5, 2011	May 22, 2019	Belgium	Issued	11802826.5	2789134	SYSTEMS AND METHODS FOR TRAFFIC AGGREGATION ON MULTIPLE WAN BACKHAULS AND MULTIPLE DISTINCT LAN NETWORKS
Aug 10, 2005	Oct 4, 2017	Belgium	Issued	12154413.4	2472729	INTERFERENCE CANCELLATION SYSTEM
May 31, 2002	Dec 12, 2012	Belgium	Issued	12167376.8	2533436	DYNAMIC DIGITAL COMMUNICATION SYSTEM CONTROL
Mar 16, 2006	May 27, 2020	Belgium	Issued	12179552.0	2549728	DSL SYSTEM TRAINING
Nov 2, 2010	Apr 11, 2018	Belgium	Issued	12189530.4	2602958	DEVICE ABSTRACTION PROXY

Date Filed - Priority Patent	Grant Date	Country Name	Status	Application #	Patent #	Title
Mar 19, 2012	Jul 18, 2018	Belgium	Issued	12711318.1	2828977	SYSTEM FOR DIAGNOSING AND OPTIMIZING VECTORED DSL LINE
Jul 13, 2012	Jan 2, 2019	Belgium	Issued	12743284.7	2873195	METHOD AND SYSTEM FOR PERFORMANCE MEASUREMENT OF A COMMUNICATION LINK
Sep 29, 2012	May 30, 2018	Belgium	Issued	12773465	2901632	OPTIMIZED CONTROL SYSTEM FOR AGGREGATION OF MULTIPLE BROADBAND CONNECTIONS OVER RADIO INTERFACES
Oct 9, 2012	Dec 27, 2017	Belgium	Issued	12780966.3	2907269	METHOD AND SYSTEM FOR CONNECTIVITY DIAGNOSTICS IN COMMUNICATION SYSTEMS
Apr 23, 2013	Jun 6, 2018	Belgium	Issued	13721852	3020138	METHODS SYSTEMS, AND APPARATUSES FOR IMPLEMENTING UPSTREAM POWER CONTROL FOR DSL
Dec 17, 2013	Mar 27, 2019	Belgium	Issued	13821031.5	3114891	SYSTEMS METHODS AND APPARATUSES FOR IMPLEMENTING DISTRIBUTED WIRELESS DATA SHARING AND CONTROL SYSTEMS
Mar 16, 2006	Jan 17, 2018	Belgium	Issued	067446302		SELF-LEARNING AND SELF-ADJUSTING DSL SYSTEM
Dec 5, 2011	Apr 18, 2018	Belgium	Issued	117970970	2789133	SYSTEMS AND METHODS FOR TRAFFIC LOAD BALANCING ON MULTIPLE WAN BACKHAULS AND MULTIPLE DISTINCT LAN NETWORKS
Aug 10, 2005	Jan 9, 2013	Belgium	Issued	2005850646	1784923	INTERFERENCE CANCELLATION SYSTEM
Apr 13, 2012	Feb 21, 2018	Belgium	Issued	2012717538.8	2837168	DIAGNOSTIC METHODS FOR TWISTED PAIR TELEPHONE LINES BASED ON LINE DATA DISTRIBUTION ANALYSIS
Aug 30, 2013	May 6, 2020	Belgium	Issued	2013763375	3039850	LOW POWER SYSTEM AND METHOD FOR DSL LINES
May 2, 2018		Brazil	Pending	BR 11 2019 018737 5		SYSTEMS AND METHODS FOR IMPLEMENTING HIGH-SPEED WAVEGUIDE TRANSMISSION OVER WIRES
Jan 30, 2019		Brazil	Pending	BR 11 2020 015685 0		SYSTEMS AND METHODS FOR BROADBAND COMMUNICATION LINK PERFORMANCE MONITORING
Jan 24, 2019		Brazil	Pending	BR 11 2020 015691 4		SYSTEMS AND METHODS FOR NET NEUTRALITY TESTING
Jan 12, 2011		Canada	Allowed	2,823,295		SYSTEMS AND METHODS FOR JOINTLY OPTIMIZING WAN AND LAN NETWORK COMMUNICATIONS

Date Filed - Priority Patent	Grant Date	Country Name	Status	Application #	Patent #	Title
Dec 2, 2004	Nov 24, 2015	Canada	Issued	2,548,561	2,548,561	ADAPTIVE MARGIN AND BAND CONTROL
Dec 2, 2004	Nov 24, 2015	Canada	Issued	2,548,743	2,548,743	ADAPTIVE FEC CODEWORD MANAGEMENT
Mar 18, 2005	Jul 2, 2013	Canada	Issued	2,561,009	2,561,009	HIGH SPEED MULTIPLE LOOP DSL SYSTEM
May 18, 2005	Dec 17, 2013	Canada	Issued	2,566,499	2,566,499	FEXT DETERMINATION SYSTEM
Aug 10, 2005	Oct 8, 2013	Canada	Issued	2,577,489	2,577,489	INTERFERENCE CANCELLATION SYSTEM
Feb 28, 2006	Apr 15, 2014	Canada	Issued	2,599,895	2,599,895	DIGITAL SUBSCRIBER LINE (DSL) STATE AND LINE PROFILE CONTROL
Mar 17, 2006	Nov 24, 2015	Canada	Issued	2,611,387	2,611,387	USER-PREFERENCE-BASED DSL SYSTEM
Nov 2, 2010	Jun 16, 2020	Canada	Issued	2,779,631	2,779,631	DEVICE ABSTRACTION PROXY
Dec 5, 2011	Apr 9, 2019	Canada	Issued	2,858,162	2,858,162	SYSTEMS AND METHODS FOR TRAFFIC AGGREGATION ON MULTIPLE WAN BACKHAULS AND MULTIPLE DISTINCT LAN NETWORKS
Dec 15, 2011	Jan 21, 2020	Canada	Issued	2,859,524	2,859,524	METHOD AND APPARATUS FOR REDUCING THE POWER OF A SIGNAL ELECTROMAGNETICALLY COUPLED FROM A PLC MEDIUM TO A DSL MEDIUM
Mar 19, 2012	May 29, 2018	Canada	Issued	2,867,845	2,867,845	SYSTEM FOR DIAGNOSING AND OPTIMIZING VECTORED DSL LINE
Sep 25, 2012	Aug 14, 2018	Canada	Issued	2,879,047	2,879,047	METHOD AND SYSTEM FOR USING A DOWNLOADABLE AGENT FOR A COMMUNICATION SYSTEM, DEVICE, OR LINK
Jul 13, 2012	Jun 30, 2020	Canada	Issued	2,879,073	2,879,073	METHOD AND SYSTEM FOR PERFORMANCE MEASUREMENT OF A COMMUNICATION LINK
Oct 12, 2012	Aug 20, 2019	Canada	Issued	2,880,267	2,880,267	MANAGEMENT SYSTEM AND METHODS OF MANAGING TIME-DIVISION DUPLEX (TDD) TRANSMISSION OVER COPPER
Sep 29, 2012	Aug 25, 2020	Canada	Issued	2,886,147	2,886,147	OPTIMIZED CONTROL SYSTEM FOR AGGREGATION OF MULTIPLE BROADBAND CONNECTIONS OVER RADIO INTERFACES

Date Filed - Priority Patent	Grant Date	Country Name	Status	Application #	Patent #	Title
Oct 9, 2012	Nov 13, 2018	Canada	Issued	2,887,576	2,887,576	METHOD AND SYSTEM FOR CONNECTIVITY DIAGNOSTICS IN COMMUNICATION SYSTEMS
Oct 9, 2012	Jan 7, 2020	Canada	Issued	2,887,584	2,887,584	METHOD AND SYSTEM FOR LATENCY MEASUREMENT IN COMMUNICATION SYSTEMS
Nov 2, 2010		Canada	Pending	2779631		DEVICE ABSTRACTION PROXY
Nov 10, 2011		Canada	Pending	2,855,461		METHOD, APPARATUS, AND SYSTEM FOR OPTIMIZING PERFORMANCE OF A COMMUNICATION UNIT BY A REMOTE SERVER
Jul 13, 2012		Canada	Pending	2,879,060		METHOD AND SYSTEM FOR PERFORMANCE ESTIMATION OF A COMMUNICATION LINK
Jan 24, 2014		Canada	Pending	2,899,419		METHOD AND APPARATUS FOR CLOUD SERVICES FOR ENHANCING BROADBAND EXPERIENCE
Dec 5, 2011		Canada	Pending	3,034,504		SYSTEMS AND METHODS FOR TRAFFIC AGGREGATION ON MULTIPLE WAN BACKHAULS AND MULTIPLE DISTINCT LAN NETWORKS
Oct 12, 2012		Canada	Pending	3,047,928		MANAGEMENT SYSTEM AND METHODS OF MANAGING TIME-DIVISION DUPLEX (TDD) TRANSMISSION OVER COPPER
May 2, 2018		Canada	Pending	3053942		SYSTEMS AND METHODS FOR IMPLEMENTING HIGH-SPEED WAVEGUIDE TRANSMISSION OVER WIRES
Sep 29, 2012		Canada	Pending	3,084,410		OPTIMIZED CONTROL SYSTEM FOR AGGREGATION OF MULTIPLE BROADBAND CONNECTIONS OVER RADIO INTERFACES
Jan 24, 2019		Canada	Pending	3,090,091		SYSTEMS AND METHODS FOR NET NEUTRALITY TESTING
Jan 30, 2019		Canada	Pending	3,090,099		SYSTEMS AND METHODS FOR BROADBAND COMMUNICATION LINK PERFORMANCE MONITORING
Apr 16, 2020		Canada	Pending	P6730CA01		METHOD AND SYSTEM FOR PERFORMANCE MEASUREMENT OF A COMMUNICATION LINK
Mar 4, 2020		Canada	Published	3,074,395		SYSTEMS AND METHODS FOR JOINTLY OPTIMIZING WAN AND LAN NETWORK COMMUNICATIONS
Jan 24, 2019		Chile	Pending	1995-2020		SYSTEMS AND METHODS FOR NET NEUTRALITY TESTING

Date Filed - Priority Patent	Grant Date	Country Name	Status	Application #	Patent #	Title
Jan 30, 2019		Chile	Pending	1996-2020		SYSTEMS AND METHODS FOR BROADBAND COMMUNICATION LINK PERFORMANCE MONITORING
Jul 13, 2012		China	Allowed	201280075723.7		METHOD AND SYSTEM FOR PERFORMANCE MEASUREMENT OF A COMMUNICATION LINK
Jul 13, 2012		China	Allowed	201280075813.6	ZL201280075813.6	METHOD AND SYSTEM FOR PERFORMANCE ESTIMATION OF A COMMUNICATION LINK
Dec 4, 2014	Nov 30, 2020	China	Allowed	201480083855.3	201480083855.3	METHOD AND APPARATUS FOR PREDICTING SUCCESSFUL DSL LINE OPTIMIZATION
Dec 2, 2004	May 26, 2010	China	Issued	200480040960.5	ZL200480040960.5	ADAPTIVE FEC CODEWORD MANAGEMENT
Dec 2, 2004	May 16, 2012	China	Issued	200480041317.4	ZL200480041317.4	ADAPTIVE MARGIN AND BAND CONTROL IN A DSL SYSTEM
Mar 18, 2005	Nov 14, 2012	China	Issued	200580015585.3	ZL200580015585.3	HIGH SPEED MULTIPLE LOOP DSL SYSTEM
May 18, 2005	Mar 6, 2013	China	Issued	200580018584.4	ZL200580018584.4	Dynamic management of communication system
May 18, 2005	Aug 15, 2012	China	Issued	200580018591.4	ZL200580018591.4	INCENTIVE-BASED DSL SYSTEM
Aug 10, 2005	Jun 20, 2012	China	Issued	200580030892.9	ZL200580030892.9	INTERFERENCE CANCELLATION SYSTEM
Feb 28, 2006	Jun 27, 2012	China	Issued	200680007001.2	ZL200680007001.2	DIGITAL SUBSCRIBER LINE (DSL) STATE AND LINE PROFILE CONTROL
Mar 16, 2006	Sep 7, 2011	China	Issued	200680020603.1	ZL200680020603.1	VECTORED DSL NESTING
Feb 28, 2006	Oct 10, 2012	China	Issued	200680022004.3	ZL200680022004.3	PHANTOM USE IN DSL SYSTEMS
Mar 16, 2006	May 9, 2012	China	Issued	200680022225.0	ZL200680022225.0	DYNAMIC MINIMUM-MEMORY INTERLEAVING
Mar 17, 2006	Oct 10, 2012	China	Issued	200680023058.1	ZL200680023058.1	Tonal predictive GDFE

Date Filed - Priority Patent	Grant Date	Country Name	Status	Application #	Patent #	Title
Mar 16, 2006	Oct 10, 2012	China	Issued	200680024116.2	ZL200680024116.2	DSL SYSTEM TRAINING
Mar 16, 2006	Jan 11, 2012	China	Issued	200680027103.0	ZL200680027103.0	Operator-controlled user-preference-based xDSL system
Mar 16, 2006	Mar 28, 2012	China	Issued	200680027325.2	ZL200680027325.2	DSL SYSTEM LOADING AND ORDERING
Mar 17, 2006	Aug 3, 2011	China	Issued	200680027629.9	ZL200680027629.9	USER-PREFERENCE-BASED DSL SYSTEM
Jul 8, 2006	Jul 16, 2014	China	Issued	200680027968.7	ZL200680027968.7	DSL SYSTEM
Jun 6, 2007	May 25, 2011	China	Issued	200780021083.0	ZL200780021083.0	DSL SYSTEM
Apr 27, 2007	May 21, 2014	China	Issued	200780021490.1	ZL200780021490.1	METHODS AND APPARATUS TO PERFORM LINE TESTING AT CUSTOMER PREMISES
Jul 31, 2007	May 22, 2013	China	Issued	200780028511.2	ZL200780028511.2	METHOD AND APPARATUS FOR ANALYZING AND MITIGATING NOISE IN A DIGITAL SUBSCRIBER LINE
Nov 2, 2010	Nov 25, 2015	China	Issued	201080056377.9	ZL201080056377.9	DEVICE ABSTRACTION PROXY
May 10, 2010	Nov 25, 2015	China	Issued	201080066733.5	ZL201080066733.5	NON-INVASIVE DIAGNOSTIC TRANSMISSION LINE TESTING
Feb 28, 2005	Oct 14, 2015	China	Issued	201210299479.4	ZL201210299479.4	PHANTOM USE IN DSL SYSTEMS
Oct 12, 2012	Sep 21, 2018	China	Issued	201280075697.8	ZL201280075697.8	MANAGEMENT SYSTEM AND METHODS OF MANAGING TIME-DIVISION DUPLEX (TDD) TRANSMISSION OVER COPPER
Oct 9, 2012	Apr 10, 2018	China	Issued	201280076953.5	ZL201280076953.5	METHOD AND SYSTEM FOR CONNECTIVITY DIAGNOSTICS IN COMMUNICATION SYSTEMS
Jul 8, 2006	Apr 10, 2018	China	Issued	201410276353.4	ZL201410276353.4	DSL SYSTEM
Sep 29, 2012	Dec 18, 2018	China	Issued	201280076667.9	ZL201280076667.9	OPTIMIZED CONTROL SYSTEM FOR AGGREGATION OF MULTIPLE BROADBAND CONNECTIONS OVER RADIO INTERFACES

Date Filed - Priority Patent	Grant Date	Country Name	Status	Application #	Patent #	Title
Oct 3, 2006	May 21, 2014	China	Issued	200680036556. X	ZL2006800365 56.X	DSL SYSTEM
Nov 10, 2011		China	Pending	201180075399. 4		METHOD, APPARATUS, AND SYSTEM FOR OPTIMIZING PERFORMANCE OF A COMMUNICATION UNIT BY A REMOTE SERVER
Sep 25, 2012		China	Pending	201280075818. 9		METHOD AND SYSTEM FOR USING A DOWNLOADABLE AGENT FOR A COMMUNICATION SYSTEM, DEVICE, OR LINK
Oct 9, 2012		China	Pending	201280076950. 1		METHOD AND SYSTEM FOR LATENCY MEASUREMENT IN COMMUNICATION SYSTEMS
Aug 27, 2014		China	Pending	201480082810. 4		SYSTEMS, METHODS, AND APPARATUSES FOR IMPLEMENTING THE VIRTUALIZATION OF ACCESS NODE FUNCTIONS
Aug 27, 2014		China	Pending	201480082823. 1		SYSTEMS, METHODS, AND APPARATUSES FOR IMPLEMENTING PERSISTENT MANAGEMENT AGENT (PMA) FUNCTIONS FOR THE CONTROL AND COORDINATION OF DPU AND DSLAM COMPONENTS
Jan 14, 2015		China	Pending	201580077753. 5		SYSTEMS, METHODS, AND APPARATUSES FOR IMPLEMENTING DSL LINE FAULT DETERMINATION AND LOCALIZATION VIA SELT, DELT, AND MELT DIAGNOSTICS
Sep 24, 2015		China	Pending	201580083378. 5		METHODS AND APPARATUS FOR DETECTING INTERNET CONNECTION PROBLEMS
Oct 12, 2012		China	Pending	201811187858. 8		MANAGEMENT SYSTEM AND METHODS OF MANAGING TIME-DIVISION DUPLEX (TDD) TRANSMISSION OVER COPPER
Sep 29, 2012		China	Pending	201811414162. 4		OPTIMIZED CONTROL SYSTEM FOR AGGREGATION OF MULTIPLE BROADBAND CONNECTIONS OVER RADIO INTERFACES
May 2, 2018		China	Pending	201880017852. 8		SYSTEMS AND METHODS FOR IMPLEMENTING HIGH-SPEED WAVEGUIDE TRANSMISSION OVER WIRES
Jul 13, 2012		China	Pending	201910614310. 5		METHOD AND SYSTEM FOR PERFORMANCE ESTIMATION OF A COMMUNICATION LINK
Oct 9, 2012		China	Pending	201910863959. 0		METHOD AND SYSTEM FOR LATENCY MEASUREMENT IN COMMUNICATION SYSTEMS
Jan 30, 2019		China	Pending	201980011072. 7		SYSTEMS AND METHODS FOR BROADBAND COMMUNICATION LINK PERFORMANCE MONITORING
Oct 30, 2014		China	Pending	201480082947. X		METHOD AND APPARATUS FOR PROVIDING PERFORMANCE AND USAGE INFORMATION FOR A WIRELESS LOCAL AREA NETWORK

Date Filed - Priority Patent	Grant Date	Country Name	Status	Application #	Patent #	Title
Jul 8, 2006		China	Pending	201510088758. X		ADAPTIVE MARGIN AND BAND CONTROL
Jul 13, 2012		China	Pending	201910653987. X		METHOD AND SYSTEM FOR PERFORMANCE MEASUREMENT OF A COMMUNICATION LINK
Jan 24, 2019		China	Pending	USASS165521		SYSTEMS AND METHODS FOR NET NEUTRALITY TESTING
Oct 24, 2019		China	Published	201911016737. 1		METHOD AND SYSTEM FOR USING A DOWNLOADABLE AGENT FOR A COMMUNICATION SYSTEM, DEVICE, OR LINK
Feb 28, 2006	May 23, 2012	Czech Republic	Issued	06755837.9	1869790	DIGITAL SUBSCRIBER LINE (DSL) STATE AND LINE PROFILE CONTROL
Feb 28, 2006	May 23, 2012	Denmark	Issued	06755837.9	1869790	DIGITAL SUBSCRIBER LINE (DSL) STATE AND LINE PROFILE CONTROL
Mar 18, 2005	May 6, 2020	Denmark	Issued	10182701.2	2278785	HIGH SPEED MULTIPLE LOOP DSL SYSTEM
Mar 19, 2012	Jul 18, 2018	Denmark	Issued	12711318.1	2828977	SYSTEM FOR DIAGNOSING AND OPTIMIZING VECTORED DSL LINE
Dec 2, 2004	Nov 16, 2011	EPO	Issued	04801291.8	1700423	DSL SYSTEM ESTIMATION AND PARAMETER RECOMMENDATION
Dec 2, 2004	May 10, 2017	EPO	Issued	04801293.4	1721230	ADAPTIVE MARGIN AND BAND CONTROL
Dec 2, 2004	Apr 28, 2010	EPO	Issued	04801294.2	1700410	ADAPTIVE FEC CODEWORD MANAGEMENT
Mar 18, 2005	Aug 3, 2011	EPO	Issued	05708773.6	1733550	HIGH SPEED MULTIPLE LOOP DSL SYSTEM
May 18, 2005	Jan 4, 2012	EPO	Issued	05741016.9	1756963	Dynamic management of communication system
May 18, 2005	Jan 14, 2009	EPO	Issued	05747117.9	1757042	INCENTIVE-BASED DSL SYSTEM
Feb 28, 2006	Feb 21, 2018	EPO	Issued	06710503.1	1880503	PHANTOM USE IN DSL SYSTEMS

Date Filed - Priority Patent	Grant Date	Country Name	Status	Application #	Patent #	Title
Mar 16, 2006	May 8, 2019	EPO	Issued	06710580.9	1894401	DSL SYSTEM TRAINING
Mar 16, 2006	May 9, 2018	EPO	Issued	06727405.0	1897306	TONAL PRECODING IN MULTI-USER VECTORED DSL TRANSMISSION
Mar 17, 2006	Sep 13, 2017	EPO	Issued	06727414.2	1911256	USER-PREFERENCE-BASED DSL SYSTEM
Feb 28, 2006	May 23, 2012	EPO	Issued	06755837.9	1869790	DSL STATE AND LINE PROFILE CONTROL
July 10, 2005	September 2, 2020	EPO	Issued	06786826.5	1905195	DSL SYSTEM
Jul 8, 2006	May 10, 2017	EPO	Issued	06786827.3	1905164	ADAPTIVE MARGIN AND BAND CONTROL
Oct 3, 2006	Jul 8, 2020	EPO	Issued	06816102.5	1932076	DSL SYSTEM
Jul 31, 2007	Oct 18, 2017	EPO	Issued	07810931	2055086	METHOD AND APPARATUS FOR ANALYZING AND MITIGATING NOISE IN A DIGITAL SUBSCRIBER LINE
Oct 5, 2007	Mar 28, 2018	EPO	Issued	07852551.6	2076972	INTERFERENCE CANCELLATION SYSTEM
Jul 1, 2009	Mar 4, 2020	EPO	Issued	09790028.6	2449758	METHOD AND APPARATUS FOR DSL PERFORMANCE ENHANCEMENT IN A DSL NETWORK
Dec 2, 2004	May 13, 2015	EPO	Issued	10152127.6	2187558	ADAPTIVE FEC CODEWORD MANAGEMENT
May 31, 2002	Dec 8, 2010	EPO	Issued	10178213.4	2259456	DYNAMIC DIGITAL COMMUNICATION SYSTEM CONTROL
Dec 2, 2004	Nov 9, 2011	EPO	Issued	10179600.1	2259495	ADAPTIVE DSL MARGIN AND BAND CONTROL USING HISTORICAL OPERATIONAL DATA
Mar 18, 2005	May 6, 2020	EPO	Issued	10182701.2	2278785	HIGH SPEED MULTIPLE LOOP DSL SYSTEM
Nov 2, 2010	Jan 10, 2018	EPO	Issued	10785244.4		DEVICE ABSTRACTION PROXY

Date Filed - Priority Patent	Grant Date	Country Name	Status	Application #	Patent #	Title
Jun 6, 2007	Apr 4, 2018	EPO	Issued	11161331.1	2497226	VECTORED DSL SYSTEM
Jan 12, 2011	Apr 4, 2018	EPO	Issued	11700879.7	2337371	SYSTEMS AND METHODS FOR JOINTLY OPTIMIZING WAN AND LAN NETWORK COMMUNICATIONS
Dec 5, 2011	May 22, 2019	EPO	Issued	11802826.5	2664103	SYSTEMS AND METHODS FOR TRAFFIC AGGREGATION ON MULTIPLE WAN BACKHAULS AND MULTIPLE DISTINCT LAN NETWORKS
Dec 15, 2011	Aug 19, 2020	EPO	Issued	11808461.5	2789134	METHOD AND APPARATUS FOR REDUCING THE POWER OF A SIGNAL ELECTROMAGNETICALLY COUPLED FROM A PLC MEDIUM TO A DSL MEDIUM
Aug 10, 2005	Oct 4, 2017	EPO	Issued	12154413.4	2792080	INTERFERENCE CANCELLATION SYSTEM
May 31, 2002	Dec 12, 2012	EPO	Issued	12167376.8	2472729	DYNAMIC DIGITAL COMMUNICATION SYSTEM CONTROL
Mar 16, 2006	May 27, 2020	EPO	Issued	12179552.0	2533436	DSL SYSTEM TRAINING
Nov 2, 2010	Apr 11, 2018	EPO	Issued	12189530.4	2549728	DEVICE ABSTRACTION PROXY
Mar 19, 2012	Jul 18, 2018	EPO	Issued	12711318.1	2602958	SYSTEM FOR DIAGNOSING AND OPTIMIZING VECTORED DSL LINE
Jul 13, 2012	Jan 2, 2019	EPO	Issued	12743284.7	2828977	METHOD AND SYSTEM FOR PERFORMANCE MEASUREMENT OF A COMMUNICATION LINK
Sep 29, 2012	May 30, 2018	EPO	Issued	12773465	2873195	OPTIMIZED CONTROL SYSTEM FOR AGGREGATION OF MULTIPLE BROADBAND CONNECTIONS OVER RADIO INTERFACES
Oct 9, 2012	Dec 27, 2017	EPO	Issued	12780966.3	2901632	METHOD AND SYSTEM FOR CONNECTIVITY DIAGNOSTICS IN COMMUNICATION SYSTEMS
Apr 23, 2013	Jun 6, 2018	EPO	Issued	13721852	2907269	METHODS SYSTEMS, AND APPARATUSES FOR IMPLEMENTING UPSTREAM POWER CONTROL FOR DSL
Aug 30, 2013	May 6, 2020	EPO	Issued	13763375.6	3020138	LOW POWER SYSTEM AND METHOD FOR DSL LINES
Dec 17, 2013	Mar 27, 2019	EPO	Issued	13821031.5	3039850	SYSTEMS METHODS AND APPARATUSES FOR IMPLEMENTING DISTRIBUTED WIRELESS DATA SHARING AND CONTROL SYSTEMS

Date Filed - Priority Patent	Grant Date	Country Name	Status	Application #	Patent #	Title
Aug 27, 2014	Jul 8, 2020	EPO	Issued	14900460.8	3114891	SYSTEMS, METHODS, AND APPARATUSES FOR IMPLEMENTING PERSISTENT MANAGEMENT AGENT (PMA) FUNCTIONS FOR THE CONTROL AND COORDINATION OF DPU AND DSLAM COMPONENTS
Oct 30, 2014	Oct 14, 2020	EPO	Issued	14905229.2	3186924	METHOD AND APPARATUS FOR PROVIDING PERFORMANCE AND USAGE INFORMATION FOR A WIRELESS LOCAL AREA NETWORK
Dec 4, 2014	Oct 14, 2020	EPO	Issued	14907600.2	3213548	METHOD AND APPARATUS FOR PREDICTING SUCCESSFUL DSL LINE OPTIMIZATION
May 31, 2002	Nov 8, 2017	EPO	Issued	17172944.5	3228049	DYNAMIC DIGITAL COMMUNICATION SYSTEM CONTROL
Mar 16, 2006	Jan 17, 2018	EPO	Issued	067446302	3242420	SELF-LEARNING AND SELF-ADJUSTING DSL SYSTEM
Mar 4, 2009	Jul 24, 2019	EPO	Issued	097894950	2404385	DSL NOISE CANCELLATION USING SUB-OPTIMAL NOISE REFERENCE SIGNALS
Dec 5, 2011	Apr 18, 2018	EPO	Issued	117970970	2789133	SYSTEMS AND METHODS FOR TRAFFIC LOAD BALANCING ON MULTIPLE WAN BACKHAULS AND MULTIPLE DISTINCT LAN NETWORKS
Mar 17, 2006	Sep 30, 2020	EPO	Issued	121832992	2560359	USER-PREFERENCE-BASED DSL SYSTEM
Aug 10, 2005	Jan 9, 2013	EPO	Issued	2005850646	1784923	INTERFERENCE CANCELLATION SYSTEM
Mar 17, 2006	May 31, 2017	EPO	Issued	2006727480	1897305	Tonal predictive GDFE
Mar 16, 2006	Jan 26, 2011	EPO	Issued	2006744467		DSL SYSTEM LOADING AND ORDERING
Jun 6, 2007	Aug 10, 2011	EPO	Issued	2007795837	2030454	VECTORED DSL SYSTEM
May 7, 2012	Aug 21, 2019	EPO	Issued	2012721143	2847914	APPARATUS, SYSTEMS AND METHODS FOR IMPULSE NOISE DETECTION AND MITIGATION
Oct 9, 2012	Jul 8, 2020	EPO	Issued	2012787194	2907270	METHOD AND SYSTEM FOR LATENCY MEASUREMENT IN COMMUNICATION SYSTEMS
May 10, 2010	Sep 5, 2018	EPO	Issued	20107197030	2569929	NON-INVASIVE DIAGNOSTIC TRANSMISSION LINE TESTING

Date Filed - Priority Patent	Grant Date	Country Name	Status	Application #	Patent #	Title
Apr 13, 2012	Feb 21, 2018	EPO	Issued	20127175388	2837168	DIAGNOSTIC METHODS FOR TWISTED PAIR TELEPHONE LINES BASED ON LINE DATA DISTRIBUTION ANALYSIS
Mar 1, 2013	Sep 16, 2020	EPO	Issued	EP13711198.5	2989780	SYSTEMS AND METHODS FOR MANAGING MIXED DEPLOYMENTS OF VECTORED AND NON-VECTORED VDSL
May 30, 2014	Oct 14, 2020	EPO	Issued	EP14893520.8	3149991	METHOD AND APPARATUS FOR GENERATING POLICIES FOR IMPROVING NETWORK SYSTEM PERFORMANCE
Mar 16, 2006		EPO	Pending	11153605.8		TONAL PRECODING IN MULTI-USER VECTORED DSL TRANSMISSION
Feb 28, 2006		EPO	Pending	11155157.8		DIGITAL SUBSCRIBER LINE (DSL) STATE AND LINE PROFILE CONTROL
Nov 10, 2011		EPO	Pending	11787994.0		METHOD, APPARATUS, AND SYSTEM FOR OPTIMIZING PERFORMANCE OF A COMMUNICATION UNIT BY A REMOTE SERVER
Mar 17, 2006		EPO	Pending	12183299.2		USER-PREFERENCE-BASED DSL SYSTEM
May 3, 2012		EPO	Pending	12722585.2		APPARATUS, SYSTEMS AND METHODS FOR DSM ENERGY MANAGEMENT
Jul 13, 2012		EPO	Pending	12745938.6		METHOD AND SYSTEM FOR PERFORMANCE ESTIMATION OF A COMMUNICATION LINK
Sep 25, 2012		EPO	Pending	12773454		METHOD AND SYSTEM FOR USING A DOWNLOADABLE AGENT FOR A COMMUNICATION SYSTEM, DEVICE, OR LINK
Oct 12, 2012		EPO	Pending	12784144.3		MANAGEMENT SYSTEM AND METHODS OF MANAGING TIME-DIVISION DUPLEX (TDD) TRANSMISSION OVER COPPER
Nov 19, 2012		EPO	Pending	12795700.9		SYSTEMS, METHODS, AND APPARATUSES FOR OPTIMIZING DSL LINE CONFIGURATIONS AND PARAMETERS IN A DSL SYSTEM
Jul 31, 2013		EPO	Pending	13750984.0		METHOD AND APPARATUS FOR CONTINUOUS ACCESS NETWORK MONITORING AND PACKET LOSS ESTIMATION
Jun 30, 2014		EPO	Pending	14747749.1		METHOD AND APPARATUS FOR WI-FI DEVICE TYPE IDENTIFICATION AND DEVICE TYPE BASED DIAGNOSTICS AND OPTIMIZATION
Aug 27, 2014		EPO	Pending	14900509.2		SYSTEMS, METHODS, AND APPARATUSES FOR IMPLEMENTING THE VIRTUALIZATION OF ACCESS NODE FUNCTIONS

Date Filed - Priority Patent	Grant Date	Country Name	Status	Application #	Patent #	Title
Jan 14, 2015		EPO	Pending	15878218.5		SYSTEMS, METHODS, AND APPARATUSES FOR IMPLEMENTING DSL LINE FAULT DETERMINATION AND LOCALIZATION VIA SELT, DELT, AND MELT DIAGNOSTICS
Sep 24, 2015		EPO	Pending	15904903.0		METHODS AND APPARATUS FOR DETECTING INTERNET CONNECTION PROBLEMS
Dec 2, 2004		EPO	Pending	17170000.8		ADAPTIVE MARGIN AND BAND CONTROL IN A DSL SYSTEM
Nov 2, 2010		EPO	Pending	17197764.8		DEVICE ABSTRACTION PROXY
Dec 5, 2011		EPO	Pending	18160805.0		SYSTEMS AND METHODS FOR TRAFFIC LOAD BALANCING ON MULTIPLE WAN BACKHAULS AND MULTIPLE DISTINCT LAN NETWORKS
Jul 13, 2012		EPO	Pending	18210562.7		METHOD AND SYSTEM FOR PERFORMANCE MEASUREMENT OF A COMMUNICATION LINK
Jan 30, 2019		EPO	Pending	19705639.3		SYSTEMS AND METHODS FOR BROADBAND COMMUNICATION LINK PERFORMANCE MONITORING
Aug 27, 2014		EPO	Pending	20177254.8		SYSTEMS, METHODS, AND APPARATUSES FOR IMPLEMENTING PERSISTENT MANAGEMENT AGENT (PMA) FUNCTIONS FOR THE CONTROL AND COORDINATION OF DPU AND DSLAM COMPONENTS
Dec 5, 2011		EPO	Pending	201821162.5		SYSTEMS AND METHODS FOR TRAFFIC AGGREGATION ON MULTIPLE WAN BACKHAULS AND MULTIPLE DISTINCT LAN NETWORKS
Mar 25, 2013		EPO	Pending	2013715545		METHOD AND APPARATUS FOR IMPLEMENTING WIRELESS SYSTEM DISCOVERY AND CONTROL USING A STATE-SPACE
May 30, 2014		EPO	Pending	2014893025		METHOD AND APPARATUS FOR IMPROVING BROADBAND EXPERIENCE USING CLOUD BASED RECOMMENDATION ENGINE
Jan 24, 2019		EPO	Pending	EP19719973.0		SYSTEMS AND METHODS FOR NET NEUTRALITY TESTING
Oct 3, 2006		EPO	Pending	EP20177570.7		DSL SYSTEM
Oct 9, 2012		EPO	Pending	EP20177683.8		METHOD AND SYSTEM FOR LATENCY MEASUREMENT IN COMMUNICATION SYSTEMS
Oct 30, 2014		EPO	Pending	EP20194193.7		METHOD AND APPARATUS FOR PROVIDING PERFORMANCE AND USAGE INFORMATION FOR A WIRELESS LOCAL AREA NETWORK

Date Filed - Priority Patent	Grant Date	Country Name	Status	Application #	Patent #	Title
Dec 4, 2014		EPO	Pending	EP20194697.7		METHOD AND APPARATUS FOR PREDICTING SUCCESSFUL DSL LINE OPTIMIZATION
May 30, 2014		EPO	Pending	EP20194700.9		METHOD AND APPARATUS FOR GENERATING POLICIES FOR IMPROVING NETWORK SYSTEM PERFORMANCE
May 2, 2018		EPO	Published	18795224.7		SYSTEMS AND METHODS FOR IMPLEMENTING HIGH-SPEED WAVEGUIDE TRANSMISSION OVER WIRES
Dec 2, 2004	May 10, 2017	Finland	Issued	04801293.4	1721230	ADAPTIVE MARGIN AND BAND CONTROL
Mar 18, 2005	May 6, 2020	Finland	Issued	10182701.2	2278785	HIGH SPEED MULTIPLE LOOP DSL SYSTEM
Dec 5, 2011	May 22, 2019	Finland	Issued	11802826.5	2789134	SYSTEMS AND METHODS FOR TRAFFIC AGGREGATION ON MULTIPLE WAN BACKHAULS AND MULTIPLE DISTINCT LAN NETWORKS
Mar 16, 2006	May 27, 2020	Finland	Issued	12179552.0	2549728	DSL SYSTEM TRAINING
Dec 2, 2004	May 10, 2017	France	Issued	04801293.4	1721230	ADAPTIVE MARGIN AND BAND CONTROL IN A DSL SYSTEM
Dec 2, 2004	Apr 28, 2010	France	Issued	04801294.2	1700410	ADAPTIVE FEC CODEWORD MANAGEMENT
Mar 18, 2005	Aug 3, 2011	France	Issued	05708773.6	1733550	HIGH SPEED MULTIPLE LOOP DSL SYSTEM
May 18, 2005	Jan 4, 2012	France	Issued	05741016.9	1756963	Dynamic management of communication system
May 18, 2005	Jan 14, 2009	France	Issued	05747117.9	1757042	INCENTIVE-BASED DSL SYSTEM
Mar 16, 2006	May 8, 2019	France	Issued	06710580.9	1894401	DSL SYSTEM TRAINING
Mar 17, 2006	Sep 13, 2017	France	Issued	06727414.2	1911256	USER-PREFERENCE-BASED DSL SYSTEM
Mar 16, 2006	Jan 26, 2011	France	Issued	06744467.9	1894377	DSL SYSTEM LOADING AND ORDERING

Date Filed - Priority Patent	Grant Date	Country Name	Status	Application #	Patent #	Title
Feb 28, 2006	May 23, 2012	France	Issued	06755837.9	1869790	DIGITAL SUBSCRIBER LINE (DSL) STATE AND LINE PROFILE CONTROL
Oct 3, 2006	Jul 8, 2020	France	Issued	06816102.5	1932076	DSL SYSTEM
Dec 2, 2004	May 13, 2015	France	Issued	10152127.6	2187558	ADAPTIVE FEC CODEWORD MANAGEMENT
Dec 2, 2004	Nov 9, 2011	France	Issued	10179600.1	2259495	ADAPTIVE MARGIN AND BAND CONTROL
Mar 18, 2005	May 6, 2020	France	Issued	10182701.2	2278785	HIGH SPEED MULTIPLE LOOP DSL SYSTEM
Nov 2, 2010	Jan 10, 2018	France	Issued	10785244.4	2497226	DEVICE ABSTRACTION PROXY
Aug 10, 2005	Oct 4, 2017	France	Issued	12154413.4	2472729	INTERFERENCE CANCELLATION SYSTEM
May 31, 2002	Dec 12, 2012	France	Issued	12167376.8	2533436	DYNAMIC DIGITAL COMMUNICATION SYSTEM CONTROL
Mar 16, 2006	May 27, 2020	France	Issued	12179552.0	2549728	DSL SYSTEM TRAINING
Mar 19, 2012	Jul 18, 2018	France	Issued	12711318.1	2828977	SYSTEM FOR DIAGNOSING AND OPTIMIZING VECTORED DSL LINE
May 7, 2012	Aug 21, 2019	France	Issued	12721143.1	2847914	APPARATUS, SYSTEMS AND METHODS FOR IMPULSE NOISE DETECTION AND MITIGATION
Jul 13, 2012	Jan 2, 2019	France	Issued	12743284.7	2873195	METHOD AND SYSTEM FOR PERFORMANCE MEASUREMENT OF A COMMUNICATION LINK
Sep 29, 2012	May 30, 2018	France	Issued	12773465	2901632	OPTIMIZED CONTROL SYSTEM FOR AGGREGATION OF MULTIPLE BROADBAND CONNECTIONS OVER RADIO INTERFACES
Oct 9, 2012	Dec 27, 2017	France	Issued	12780966.3	2907269	METHOD AND SYSTEM FOR CONNECTIVITY DIAGNOSTICS IN COMMUNICATION SYSTEMS
Aug 30, 2013	May 6, 2020	France	Issued	13763375.6	3039850	LOW POWER SYSTEM AND METHOD FOR DSL LINES

Date Filed - Priority Patent	Grant Date	Country Name	Status	Application #	Patent #	Title
Dec 17, 2013	Mar 27, 2019	France	Issued	13821031.5	3114891	SYSTEMS METHODS AND APPARATUSES FOR IMPLEMENTING DISTRIBUTED WIRELESS DATA SHARING AND CONTROL SYSTEMS
Dec 5, 2011	Apr 18, 2018	France	Issued	117970970	2789133	SYSTEMS AND METHODS FOR TRAFFIC LOAD BALANCING ON MULTIPLE WAN BACKHAULS AND MULTIPLE DISTINCT LAN NETWORKS
Aug 10, 2005	Jan 9, 2013	France	Issued	2005850646	1784923	INTERFERENCE CANCELLATION SYSTEM
Mar 17, 2006	May 31, 2017	France	Issued	2006727480	1897305	Tonal predictive GDFE
Jun 6, 2007	Aug 10, 2011	France	Issued	2007795837	EP200779583 7	VECTORED DSL SYSTEM
Jul 8, 2006	May 10, 2017	France	Issued	06786827/3	1905164	ADAPTIVE MARGIN AND BAND CONTROL
Jan 12, 2011	Apr 4, 2018	France	Issued	E11700879.7	2664103	SYSTEMS AND METHODS FOR JOINTLY OPTIMIZING WAN AND LAN NETWORK COMMUNICATIONS
Oct 30, 2014		France	Pending	14905229.2		METHOD AND APPARATUS FOR PROVIDING PERFORMANCE AND USAGE INFORMATION FOR A WIRELESS LOCAL AREA NETWORK
Dec 4, 2014		France	Pending	EP 14 907 600.2		METHOD AND APPARATUS FOR PREDICTING SUCCESSFUL DSL LINE OPTIMIZATION
Dec 2, 2004	Nov 16, 2011	Germany	Issued	04801291.8	1700423	DHL SYSTEM ESTIMATION AND PARAMETER RECOMMENDATION
Dec 2, 2004	May 10, 2017	Germany	Issued	04801293.4	60200405124 7.8	ADAPTIVE MARGIN AND BAND CONTROL IN A DSL SYSTEM
Dec 2, 2004	Apr 28, 2010	Germany	Issued	04801294.2	1700410	ADAPTIVE FEC CODEWORD MANAGEMENT
Mar 18, 2005	Aug 3, 2011	Germany	Issued	05708773.6	1733550	HIGH SPEED MULTIPLE LOOP DSL SYSTEM
May 18, 2005	Jan 4, 2012	Germany	Issued	05741016.9	1756963	Dynamic management of communication system
May 18, 2005	Jan 14, 2009	Germany	Issued	05747117.9	1757042	INCENTIVE-BASED DSL SYSTEM

Date Filed - Priority Patent	Grant Date	Country Name	Status	Application #	Patent #	Title
Aug 10, 2005	Jan 9, 2013	Germany	Issued	05850646.0	1784923	INTERFERENCE CANCELLATION SYSTEM
Feb 28, 2006	Feb 21, 2018	Germany	Issued	06710503.1	60200605473 9.0	PHANTOM USE IN DSL SYSTEMS
Mar 16, 2006	May 8, 2019	Germany	Issued	06710580.9	60200605791 4.4	DSL SYSTEM TRAINING
Mar 16, 2006	May 9, 2018	Germany	Issued	06727405.0	1897306	TONAL PRECODING IN MULTI-USER VECTORED DSL TRANSMISSION
Mar 17, 2006	Sep 13, 2017	Germany	Issued	06727414.2	1911256	USER-PREFERENCE-BASED DSL SYSTEM
Mar 16, 2006	Jan 26, 2011	Germany	Issued	6744467.9	1894377	DSL SYSTEM LOADING AND ORDERING
Feb 28, 2006	May 23, 2012	Germany	Issued	06755837.9	1869790	DIGITAL SUBSCRIBER LINE (DSL) STATE AND LINE PROFILE CONTROL
Oct 3, 2006	Jul 8, 2020	Germany	Issued	06816102.5	60 2006 059 537.9	DSL SYSTEM
Oct 5, 2007	Mar 28, 2018	Germany	Issued	07852551.6	60200705439 4.0	INTERFERENCE CANCELLATION SYSTEM
Dec 2, 2004	May 13, 2015	Germany	Issued	10152127.6	2187558	ADAPTIVE FEC CODEWORD MANAGEMENT
Dec 2, 2004	Nov 9, 2011	Germany	Issued	10179600.1	2259495	ADAPTIVE MARGIN AND BAND CONTROL IN A DSL SYSTEM
Mar 18, 2005	May 6, 2020	Germany	Issued	10182701.2	60200505680 8.5	HIGH SPEED MULTIPLE LOOP DSL SYSTEM
Nov 2, 2010	Jan 10, 2018	Germany	Issued	10785244.4	60201004799 5.1	DEVICE ABSTRACTION PROXY
Jun 6, 2007	Apr 4, 2018	Germany	Issued	11161331.1	60200705449 1.2	VECTORED DSL SYSTEM
Jan 12, 2011	Apr 4, 2018	Germany	Issued	11700879.7	2664103	SYSTEMS AND METHODS FOR JOINTLY OPTIMIZING WAN AND LAN NETWORK COMMUNICATIONS

Date Filed - Priority Patent	Grant Date	Country Name	Status	Application #	Patent #	Title
Dec 5, 2011	May 22, 2019	Germany	Issued	11802826.5	60201105922 9.7	SYSTEMS AND METHODS FOR TRAFFIC AGGREGATION ON MULTIPLE WAN BACKHAULS AND MULTIPLE DISTINCT LAN NETWORKS
May 31, 2002	Dec 12, 2012	Germany	Issued	12167376.8	2533436	DYNAMIC DIGITAL COMMUNICATION SYSTEM CONTROL
Mar 16, 2006	May 27, 2020	Germany	Issued	12179552.0	60200605943 8.0	DSL SYSTEM TRAINING
Nov 2, 2010	Apr 11, 2018	Germany	Issued	12189530.4	60201004993 2.4	DEVICE ABSTRACTION PROXY
Mar 19, 2012	Jul 18, 2018	Germany	Issued	12711318.1	2828977	SYSTEM FOR DIAGNOSING AND OPTIMIZING VECTORED DSL LINE
Apr 13, 2012	Feb 21, 2018	Germany	Issued	12717538.8	60201204301 2.5	DIAGNOSTIC METHODS FOR TWISTED PAIR TELEPHONE LINES BASED ON LINE DATA DISTRIBUTION ANALYSIS
Oct 9, 2012	Dec 27, 2017	Germany	Issued	12780966.3	60201204140 4.9	METHOD AND SYSTEM FOR CONNECTIVITY DIAGNOSTICS IN COMMUNICATION SYSTEMS
Apr 23, 2013	Jun 6, 2018	Germany	Issued	13721852.5	60201303854 8.3	METHODS SYSTEMS, AND APPARATUSES FOR IMPLEMENTING UPSTREAM POWER CONTROL FOR DSL
Aug 30, 2013	May 6, 2020	Germany	Issued	13763375.6	3039850	LOW POWER SYSTEM AND METHOD FOR DSL LINES
Dec 17, 2013	Mar 27, 2019	Germany	Issued	13821031.5	3114891	SYSTEMS METHODS AND APPARATUSES FOR IMPLEMENTING DISTRIBUTED WIRELESS DATA SHARING AND CONTROL SYSTEMS
Mar 16, 2006	Jan 17, 2018	Germany	Issued	67446302		SELF-LEARNING AND SELF-ADJUSTING DSL SYSTEM
Mar 4, 2009	Jul 24, 2019	Germany	Issued	097894950	60200905923 8.6	DSL NOISE CANCELLATION USING SUB-OPTIMAL NOISE REFERENCE SIGNALS
Dec 5, 2011	Apr 18, 2018	Germany	Issued	117970970	60201104763 1.9	SYSTEMS AND METHODS FOR TRAFFIC LOAD BALANCING ON MULTIPLE WAN BACKHAULS AND MULTIPLE DISTINCT LAN NETWORKS
Sep 29, 2012	May 30, 2018	Germany	Issued	127734655	60201204694 12	OPTIMIZED CONTROL SYSTEM FOR AGGREGATION OF MULTIPLE BROADBAND CONNECTIONS OVER RADIO INTERFACES
Jul 8, 2006	Jul 25, 2017	Germany	Issued	2006786827	60200605251 3.3	ADAPTIVE MARGIN AND BAND CONTROL

Date Filed - Priority Patent	Grant Date	Country Name	Status	Application #	Patent #	Title
Jun 6, 2007	Aug 10, 2011	Germany	Issued	2007795837	EP200779583 7	VECTORED DSL SYSTEM
May 7, 2012	Aug 21, 2019	Germany	Issued	2012721143	60201206312 7.9	APPARATUS, SYSTEMS AND METHODS FOR IMPULSE NOISE DETECTION AND MITIGATION
Aug 10, 2005	Oct 4, 2017	Germany	Issued	602005052865. 2	2472729	INTERFERENCE CANCELLATION SYSTEM
Mar 17, 2006	May 31, 2017	Germany	Issued	602006052676. 8	60200605267 6.8	Tonal predictive GDFE
Jul 31, 2007	Oct 18, 2017	Germany	Issued	602007052746. 5	60200705274 6.5	METHOD AND APPARATUS FOR ANALYZING AND MITIGATING NOISE IN A DIGITAL SUBSCRIBER LINE
May 10, 2010	Sep 5, 2018	Germany	Issued	60 2010 053 301.8	2569929	NON-INVASIVE DIAGNOSTIC TRANSMISSION LINE TESTING
Jul 1, 2009	Mar 4, 2020	Germany	Issued	EP 09790028.6	60200906136 3.4	METHOD AND APPARATUS FOR DSL PERFORMANCE ENHANCEMENT IN A DSL NETWORK
Dec 4, 2014		Germany	Pending	14907600.2		METHOD AND APPARATUS FOR PREDICTING SUCCESSFUL DSL LINE OPTIMIZATION
Oct 30, 2014		Germany	Pending	EP 14 905 229.2		METHOD AND APPARATUS FOR PROVIDING PERFORMANCE AND USAGE INFORMATION FOR A WIRELESS LOCAL AREA NETWORK
May 2, 2018		India	Pending	201927033783		SYSTEMS AND METHODS FOR IMPLEMENTING HIGH-SPEED WAVEGUIDE TRANSMISSION OVER WIRES
Dec 5, 2011		India	Pending	1113MUMNP2 014		SYSTEMS AND METHODS FOR TRAFFIC LOAD BALANCING ON MULTIPLE WAN BACKHAULS AND MULTIPLE DISTINCT LAN NETWORKS
Sep 25, 2012		India	Pending	418/CHENP/20 15		METHOD AND SYSTEM FOR USING A DOWNLOADABLE AGENT FOR A COMMUNICATION SYSTEM, DEVICE, OR LINK
Dec 5, 2011		India	Pending	4205CHENP201 4		SYSTEMS AND METHODS FOR TRAFFIC AGGREGATION ON MULTIPLE WAN BACKHAULS AND MULTIPLE DISTINCT LAN NETWORKS
Jan 12, 2011		India	Pending	4985CHENP201 3		SYSTEMS AND METHODS FOR JOINTLY OPTIMIZING WAN AND LAN NETWORK COMMUNICATIONS
Oct 9, 2012		India	Pending	992MUMNP20 15		METHOD AND SYSTEM FOR LATENCY MEASUREMENT IN COMMUNICATION SYSTEMS

Date Filed - Priority Patent	Grant Date	Country Name	Status	Application #	Patent #	Title
Dec 2, 2004	Nov 16, 2011	Italy	Issued	04801291.8	1700423	DHL SYSTEM ESTIMATION AND PARAMETER RECOMMENDATION
Dec 2, 2004	Apr 28, 2010	Italy	Issued	04801294.2	1700410	ADAPTIVE FEC CODEWORD MANAGEMENT
Mar 18, 2005	Aug 2, 2018	Italy	Issued	05708773.6	83201800000 08493	HIGH SPEED MULTIPLE LOOP DSL SYSTEM
May 18, 2005	Jan 4, 2012	Italy	Issued	05741016.9	1756963	Dynamic management of communication system
Feb 28, 2006	May 23, 2012	Italy	Issued	06755837.9	1869790	DIGITAL SUBSCRIBER LINE (DSL) STATE AND LINE PROFILE CONTROL
Dec 2, 2004	May 13, 2015	Italy	Issued	10152127.6	2187558	ADAPTIVE FEC CODEWORD MANAGEMENT
Dec 2, 2004	Nov 9, 2011	Italy	Issued	10179600.1	2259495	ADAPTIVE MARGIN AND BAND CONTROL IN A DSL SYSTEM
Mar 18, 2005	May 6, 2020	Italy	Issued	10182701.2	2278785	HIGH SPEED MULTIPLE LOOP DSL SYSTEM
May 31, 2002	Dec 12, 2012	Italy	Issued	12167376.8	2533436	DYNAMIC DIGITAL COMMUNICATION SYSTEM CONTROL
Mar 16, 2006	May 27, 2020	Italy	Issued	12179552.0	50202000007 5628	DSL SYSTEM TRAINING
May 7, 2012	Aug 21, 2019	Italy	Issued	12721143.1	50201900009 5256	APPARATUS, SYSTEMS AND METHODS FOR IMPULSE NOISE DETECTION AND MITIGATION
Dec 17, 2013	Mar 27, 2019	Italy	Issued	13821031.5	3114891	SYSTEMS METHODS AND APPARATUSES FOR IMPLEMENTING DISTRIBUTED WIRELESS DATA SHARING AND CONTROL SYSTEMS
Aug 10, 2005	Jan 9, 2013	Italy	Issued	2005850646	1784923	INTERFERENCE CANCELLATION SYSTEM
Aug 30, 2013	May 6, 2020	Italy	Issued	502020000063 094	3039850	LOW POWER SYSTEM AND METHOD FOR DSL LINES
Dec 2, 2004	Dec 22, 2011	Japan	Issued	2006542048	4891779	ADAPTIVE MARGIN AND BAND CONTROL IN A DSL SYSTEM

Date Filed - Priority Patent	Grant Date	Country Name	Status	Application #	Patent #	Title
Dec 2, 2004	Apr 8, 2011	Japan	Issued	2006542049	4718479	ADAPTIVE FEC CODEWORD MANAGEMENT
May 18, 2005	Aug 10, 2012	Japan	Issued	2007517505	5057971	Dynamic management of communication system
May 18, 2005	Dec 3, 2010	Japan	Issued	2007517506	4637177	INCENTIVE-BASED DSL SYSTEM
Aug 10, 2005	Jul 27, 2012	Japan	Issued	2007526598	5049783	INTERFERENCE CANCELLATION SYSTEM
Feb 28, 2006	Jan 27, 2012	Japan	Issued	2007557625	4913758	DIGITAL SUBSCRIBER LINE (DSL) STATE AND LINE PROFILE CONTROL
Feb 28, 2006	Feb 3, 2012	Japan	Issued	2008510655	4918087	PHANTOM USE IN DSL SYSTEMS
Mar 16, 2006	Mar 8, 2013	Japan	Issued	2008514211	5216581	DSL SYSTEM TRAINING
Mar 17, 2006	Dec 22, 2011	Japan	Issued	2008514213	4891992	Tonal predictive GDFE
Mar 16, 2006	Sep 13, 2013	Japan	Issued	2008514214	5364370	SELF-LEARNING AND SELF-ADJUSTING DSL SYSTEM
Mar 16, 2006	Feb 17, 2012	Japan	Issued	2008515302	4928545	Operator-controlled user-preference-based xDSL system
Mar 16, 2006	Jan 18, 2013	Japan	Issued	2008515303	5180069	DSL SYSTEM LOADING AND ORDERING
Mar 17, 2006	Feb 17, 2012	Japan	Issued	2008515304	4928546	USER-PREFERENCE-BASED DSL SYSTEM
Mar 16, 2006	Dec 21, 2012	Japan	Issued	2008517616	5162455	DYNAMIC MINIMUM-MEMORY INTERLEAVING
Jul 8, 2006	Dec 22, 2011	Japan	Issued	2008521505	4891995	DSL SYSTEM
Jul 8, 2006	Feb 10, 2012	Japan	Issued	2008521506	4921468	ADAPTIVE MARGIN AND BAND CONTROL

Date Filed - Priority Patent	Grant Date	Country Name	Status	Application #	Patent #	Title
Oct 3, 2006	Apr 27, 2012	Japan	Issued	2008534622	4980362	DSL SYSTEM
Apr 27, 2007	Feb 28, 2014	Japan	Issued	2009509980	5486923	METHODS AND APPARATUS TO PERFORM LINE TESTING AT CUSTOMER PREMISES
Jun 6, 2007	Feb 22, 2013	Japan	Issued	2009514370	5203359	DSL SYSTEM
Jul 31, 2007	Jan 18, 2013	Japan	Issued	2009522833	5179495	METHOD AND APPARATUS FOR ANALYZING AND MITIGATING NOISE IN A DIGITAL SUBSCRIBER LINE
Oct 5, 2007	Apr 12, 2013	Japan	Issued	2009531465	5242578	INTERFERENCE CANCELLATION SYSTEM
Dec 7, 2007	Jul 19, 2013	Japan	Issued	2009540324	5319544	DSL RING SIGNAL COMPATIBILITY
Feb 19, 2010	Sep 19, 2014	Japan	Issued	2011554065	5615850	METHOD AND APPARATUS FOR REDUCING NOISE IN A COMMUNICATION SYSTEM
Nov 2, 2010	Mar 13, 2015	Japan	Issued	2012537954	5710636	DEVICE ABSTRACTION PROXY
Mar 16, 2006	Oct 31, 2014	Japan	Issued	2013081528	5638653	TONAL PRECODING IN MULTI-USER VECTORED DSL TRANSMISSION
May 10, 2010	Oct 17, 2014	Japan	Issued	2013510053	5632535	NON-INVASIVE DIAGNOSTIC TRANSMISSION LINE TESTING
Dec 30, 2010	Oct 2, 2015	Japan	Issued	2013547446	5814385	MANAGEMENT CENTER FOR COMMUNICATION SYSTEM CUSTOMER PREMISES EQUIPMENT
Sep 29, 2012	Jul 29, 2016	Japan	Issued	2015534448	5974226	OPTIMIZED CONTROL SYSTEM FOR AGGREGATION OF MULTIPLE BROADBAND CONNECTIONS OVER RADIO INTERFACES
Dec 28, 2010	Oct 4, 2013	Japan	Issued	2010-292642	5380427	ADAPTIVE FEC CODEWORD MANAGEMENT
Jul 8, 2006	Nov 1, 2013	Japan	Issued	2011-055791	5401494	DSL SYSTEM
Feb 28, 2006	Nov 22, 2013	Japan	Issued	2011-255444	5417415	DIGITAL SUBSCRIBER LINE (DSL) STATE AND LINE PROFILE CONTROL

Date Filed - Priority Patent	Grant Date	Country Name	Status	Application #	Patent #	Title
Jul 1, 2009	Sep 12, 2014	Japan	Issued	2012-518520	5612089	METHOD AND APPARATUS FOR DSL PERFORMANCE ENHANCEMENT IN A DSL NETWORK
Dec 5, 2011	May 22, 2019	Lithuania	Issued	11802826.5	2789134	SYSTEMS AND METHODS FOR TRAFFIC AGGREGATION ON MULTIPLE WAN BACKHAULS AND MULTIPLE DISTINCT LAN NETWORKS
Jan 30, 2019		Mexico	Pending	MX/a/2020/008077		SYSTEMS AND METHODS FOR BROADBAND COMMUNICATION LINK PERFORMANCE MONITORING
Jan 24, 2019		Mexico	Pending	MX/a/2020/008078		SYSTEMS AND METHODS FOR NET NEUTRALITY TESTING
Dec 2, 2004	Nov 16, 2011	Netherlands	Issued	04801291.8	1700423	DHL SYSTEM ESTIMATION AND PARAMETER RECOMMENDATION
Dec 2, 2004	May 10, 2017	Netherlands	Issued	04801293.4	1721230	ADAPTIVE MARGIN AND BAND CONTROL
Dec 2, 2004	Apr 28, 2010	Netherlands	Issued	04801294.2	1700410	ADAPTIVE FEC CODEWORD MANAGEMENT
Mar 18, 2005	Aug 3, 2011	Netherlands	Issued	05708773.6	1733550	HIGH SPEED MULTIPLE LOOP DSL SYSTEM
May 18, 2005	Jan 4, 2012	Netherlands	Issued	05741016.9	1756963	Dynamic management of communication system
Feb 28, 2006	Feb 21, 2018	Netherlands	Issued	06710503.1	1880503	PHANTOM USE IN DSL SYSTEMS
Mar 16, 2006	May 9, 2018	Netherlands	Issued	06727405.0	1897306	TONAL PRECODING IN MULTI-USER VECTORED DSL TRANSMISSION
Mar 17, 2006	Sep 13, 2017	Netherlands	Issued	06727414.2	1911256	USER-PREFERENCE-BASED DSL SYSTEM
Feb 28, 2006	May 23, 2012	Netherlands	Issued	06755837.9		DIGITAL SUBSCRIBER LINE (DSL) STATE AND LINE PROFILE CONTROL
Oct 3, 2006	Jul 8, 2020	Netherlands	Issued	06816102.5	60 2006 059 537.9	DSL SYSTEM
Jul 31, 2007	Oct 18, 2017	Netherlands	Issued	07810931.1	2055086	METHOD AND APPARATUS FOR ANALYZING AND MITIGATING NOISE IN A DIGITAL SUBSCRIBER LINE

Date Filed - Priority Patent	Grant Date	Country Name	Status	Application #	Patent #	Title
Oct 5, 2007	Mar 28, 2018	Netherlands	Issued	07852551.6	2076972	INTERFERENCE CANCELLATION SYSTEM
Dec 2, 2004	May 13, 2015	Netherlands	Issued	10152127.6	2187558	ADAPTIVE FEC CODEWORD MANAGEMENT
Dec 2, 2004	Nov 9, 2011	Netherlands	Issued	10179600.1	2259495	ADAPTIVE MARGIN AND BAND CONTROL IN A DSL SYSTEM
Nov 2, 2010	Jan 10, 2018	Netherlands	Issued	10785244.4	2497226	DEVICE ABSTRACTION PROXY
Jun 6, 2007	Apr 4, 2018	Netherlands	Issued	11161331.1	2337371	VECTORED DSL SYSTEM
Dec 5, 2011	May 22, 2019	Netherlands	Issued	11802826.5	2789134	SYSTEMS AND METHODS FOR TRAFFIC AGGREGATION ON MULTIPLE WAN BACKHAULS AND MULTIPLE DISTINCT LAN NETWORKS
Aug 10, 2005	Oct 4, 2017	Netherlands	Issued	12154413.4	2472729	INTERFERENCE CANCELLATION SYSTEM
May 31, 2002	Dec 12, 2012	Netherlands	Issued	12167376.8	2533436	DYNAMIC DIGITAL COMMUNICATION SYSTEM CONTROL
Mar 16, 2006	May 27, 2020	Netherlands	Issued	12179552.0	2549728	DSL SYSTEM TRAINING
Nov 2, 2010	Apr 11, 2018	Netherlands	Issued	12189530.4	2602958	DEVICE ABSTRACTION PROXY
Mar 19, 2012	Jul 18, 2018	Netherlands	Issued	12711318.1	2828977	SYSTEM FOR DIAGNOSING AND OPTIMIZING VECTORED DSL LINE
Apr 13, 2012	Feb 21, 2018	Netherlands	Issued	12717538.8	2837168	DIAGNOSTIC METHODS FOR TWISTED PAIR TELEPHONE LINES BASED ON LINE DATA DISTRIBUTION ANALYSIS
Jul 13, 2012	Jan 2, 2019	Netherlands	Issued	12743284.7	2873195	METHOD AND SYSTEM FOR PERFORMANCE MEASUREMENT OF A COMMUNICATION LINK
Sep 29, 2012	May 30, 2018	Netherlands	Issued	12773465	2901632	OPTIMIZED CONTROL SYSTEM FOR AGGREGATION OF MULTIPLE BROADBAND CONNECTIONS OVER RADIO INTERFACES
Oct 9, 2012	Dec 27, 2017	Netherlands	Issued	12780966.3	2907269	METHOD AND SYSTEM FOR CONNECTIVITY DIAGNOSTICS IN COMMUNICATION SYSTEMS

Date Filed - Priority Patent	Grant Date	Country Name	Status	Application #	Patent #	Title
Apr 23, 2013	Jun 6, 2018	Netherlands	Issued	13721852	2907269	METHODS SYSTEMS, AND APPARATUSES FOR IMPLEMENTING UPSTREAM POWER CONTROL FOR DSL
Aug 30, 2013	May 6, 2020	Netherlands	Issued	13763375.6	3020138	LOW POWER SYSTEM AND METHOD FOR DSL LINES
Dec 17, 2013	Mar 27, 2019	Netherlands	Issued	13821031.5	3039850	SYSTEMS METHODS AND APPARATUSES FOR IMPLEMENTING DISTRIBUTED WIRELESS DATA SHARING AND CONTROL SYSTEMS
Mar 16, 2006	Jan 17, 2018	Netherlands	Issued	067446302	3114891	SELF-LEARNING AND SELF-ADJUSTING DSL SYSTEM
Dec 5, 2011	Apr 18, 2018	Netherlands	Issued	117970970	2789133	SYSTEMS AND METHODS FOR TRAFFIC LOAD BALANCING ON MULTIPLE WAN BACKHAULS AND MULTIPLE DISTINCT LAN NETWORKS
Aug 10, 2005	Jan 9, 2013	Netherlands	Issued	2005850646	1784923	INTERFERENCE CANCELLATION SYSTEM
Mar 17, 2006	May 31, 2017	Netherlands	Issued	2006727480	1897305	Tonal predictive GDFE
Jul 8, 2006	Jun 2, 2017	Netherlands	Issued	2006786827	1905164	ADAPTIVE MARGIN AND BAND CONTROL
Mar 18, 2005	May 6, 2020	Netherlands	Issued	EP10182701.2	2278785	HIGH SPEED MULTIPLE LOOP DSL SYSTEM
Jan 24, 2019		PCT	Pending	PCT/US19/14962		SYSTEMS AND METHODS FOR NET NEUTRALITY TESTING
Oct 1, 2019		PCT	Pending	PCT/US19/54135		CONTENT DISTRIBUTION NETWORK CONTROL BASED ON NETWORK MEASUREMENT DATA
Feb 27, 2020		PCT	Pending	PCT/US20/20242		SYSTEMS AND METHODS FOR ERGODIC SPECTRUM MANAGEMENT
Jun 14, 2020		PCT	Pending	PCT/US20/37654		SYSTEMS AND METHODS FOR COMBINED MANAGEMENT WITH USER PREFERENCES OF WI-FI AND CELLULAR DATA
Sep 25, 2020		PCT	Pending	PCT/US20/52928		WIRELESS-WIRELINE PHYSICALLY CONVERGED ARCHITECTURES
Jan 30, 2019		PCT	Pending	PCTUS1915837		SYSTEMS AND METHODS FOR BROADBAND COMMUNICATION LINK PERFORMANCE MONITORING

Date Filed - Priority Patent	Grant Date	Country Name	Status	Application #	Patent #	Title
Dec 10, 2019		PCT	Published	PCT/US19/65560		SERVICE TYPE IDENTIFICATION SYSTEMS AND METHODS FOR OPTIMIZING LOCAL AREA NETWORKS
Mar 6, 2020		PCT	Published	PCT/US20/21515		CONSTRAINED OPTIMIZATION OF WIRELESS LINKS IN NETWORKS WITH COMPETING OBJECTIVES
Jun 27, 2019		PCT	Published	PCT/US2019/039603		SYSTEMS AND METHODS FOR CHAINING CONTROL-PLANE VIRTUAL FUNCTIONS FOR ENSURING END-TO-END QUALITY OF SERVICE (QOS) OF INTERNET SERVICES
Jul 13, 2012		Republic of Korea	Allowed	1020157003634		METHOD AND SYSTEM FOR PERFORMANCE MEASUREMENT OF A COMMUNICATION LINK
Aug 27, 2014		Republic of Korea	Allowed	1020171007812		SYSTEMS, METHODS, AND APPARATUSES FOR IMPLEMENTING THE VIRTUALIZATION OF ACCESS NODE FUNCTIONS
Jul 13, 2012		Republic of Korea	Allowed	1020187033817		METHOD AND SYSTEM FOR PERFORMANCE MEASUREMENT OF A COMMUNICATION LINK
Nov 28, 2019	Nov 18, 2020	Republic of Korea	Allowed	10-2019-7035220		SYSTEMS, METHODS, AND APPARATUSES FOR IMPLEMENTING THE VIRTUALIZATION OF ACCESS NODE FUNCTIONS
Jul 13, 2012	Nov 11, 2016	Republic of Korea	Issued	1020157002178	1677404	METHOD AND SYSTEM FOR PERFORMANCE ESTIMATION OF A COMMUNICATION LINK
Sep 29, 2012	Mar 16, 2017	Republic of Korea	Issued	1020157009199	10-1719078	OPTIMIZED CONTROL SYSTEM FOR AGGREGATION OF MULTIPLE BROADBAND CONNECTIONS OVER RADIO INTERFACES
Oct 9, 2012	Mar 18, 2016	Republic of Korea	Issued	1020157011644	160632	METHOD AND SYSTEM FOR CONNECTIVITY DIAGNOSTICS IN COMMUNICATION SYSTEMS
Jan 24, 2014	Aug 14, 2017	Republic of Korea	Issued	1020157022426	10-1770050	METHOD AND APPARATUS FOR CLOUD SERVICES FOR ENHANCING BROADBAND EXPERIENCE
Mar 25, 2013	May 21, 2018	Republic of Korea	Issued	1020157032038	101861908	METHOD AND APPARATUS FOR IMPLEMENTING WIRELESS SYSTEM DISCOVERY AND CONTROL USING A STATE-SPACE
Jul 13, 2012	Oct 27, 2017	Republic of Korea	Issued	1020177000083	101793413	METHOD AND SYSTEM FOR PERFORMANCE MEASUREMENT OF A COMMUNICATION LINK
Oct 9, 2012	Jul 13, 2017	Republic of Korea	Issued	1020177006563	10-1759860	METHOD AND SYSTEM FOR LATENCY MEASUREMENT IN COMMUNICATION SYSTEMS
Oct 30, 2014	Aug 17, 2018	Republic of Korea	Issued	1020177006954	10-1891451	METHOD AND APPARATUS FOR PROVIDING PERFORMANCE AND USAGE INFORMATION FOR A WIRELESS LOCAL AREA NETWORK

Date Filed - Priority Patent	Grant Date	Country Name	Status	Application #	Patent #	Title
Aug 27, 2014	Mar 26, 2020	Republic of Korea	Issued	102017700767 7	10-2095919	SYSTEMS, METHODS, AND APPARATUSES FOR IMPLEMENTING PERSISTENT MANAGEMENT AGENT (PMA) FUNCTIONS FOR THE CONTROL AND COORDINATION OF DPU AND DSLAM COMPONENTS
Oct 12, 2012	Jul 12, 2017	Republic of Korea	Issued	102017700903 8	10-1759467	MANAGEMENT SYSTEM AND METHODS OF MANAGING TIME-DIVISION DUPLEX (TDD) TRANSMISSION OVER COPPER
Jul 13, 2012	Aug 11, 2020	Republic of Korea	Issued	10-2019- 7032227	10-2145360	METHOD AND SYSTEM FOR PERFORMANCE MEASUREMENT OF A COMMUNICATION LINK
Sep 25, 2012		Republic of Korea	Pending	102015700263 6		METHOD AND SYSTEM FOR USING A DOWNLOADABLE AGENT FOR A COMMUNICATION SYSTEM, DEVICE, OR LINK
Mar 27, 2018		Republic of Korea	Pending	10-2018- 7008197		METHODS AND APPARATUS FOR DETECTING INTERNET CONNECTION PROBLEMS
May 2, 2018		Republic of Korea	Pending	10-2019- 7026780		SYSTEMS AND METHODS FOR IMPLEMENTING HIGH-SPEED WAVEGUIDE TRANSMISSION OVER WIRES
Aug 27, 2014		Republic of Korea	Pending	10-2020- 7008770		SYSTEMS, METHODS, AND APPARATUSES FOR IMPLEMENTING PERSISTENT MANAGEMENT AGENT (PMA) FUNCTIONS FOR THE CONTROL AND COORDINATION OF DPU AND DSLAM COMPONENTS
Jan 24, 2019		Republic of Korea	Pending	10-2020- 7022043		SYSTEMS AND METHODS FOR NET NEUTRALITY TESTING
Jan 30, 2019		Republic of Korea	Pending	10-2020- 7022375		SYSTEMS AND METHODS FOR BROADBAND COMMUNICATION LINK PERFORMANCE MONITORING
Jul 13, 2012		Republic of Korea	Pending	10-2020- 7023155		METHOD AND SYSTEM FOR PERFORMANCE MEASUREMENT OF A COMMUNICATION LINK
May 2, 2018		Singapore	Pending	11201907716X		SYSTEMS AND METHODS FOR IMPLEMENTING HIGH-SPEED WAVEGUIDE TRANSMISSION OVER WIRES
Dec 2, 2004	May 10, 2017	Spain	Issued	04801293.4	1721230	ADAPTIVE MARGIN AND BAND CONTROL
Mar 17, 2006	Sep 13, 2017	Spain	Issued	06727414.2	1911256	USER-PREFERENCE-BASED DSL SYSTEM
Feb 28, 2006	May 23, 2012	Spain	Issued	06755837.9	1869790	DIGITAL SUBSCRIBER LINE (DSL) STATE AND LINE PROFILE CONTROL
Dec 2, 2004	Nov 9, 2011	Spain	Issued	10179600.1	2259495	ADAPTIVE MARGIN AND BAND CONTROL IN A DSL SYSTEM

Date Filed - Priority Patent	Grant Date	Country Name	Status	Application #	Patent #	Title
Nov 2, 2010	Jan 10, 2018	Spain	Issued	10785244.4	300262370	DEVICE ABSTRACTION PROXY
Aug 10, 2005	Oct 4, 2017	Spain	Issued	12154413.4	2472729	INTERFERENCE CANCELLATION SYSTEM
Mar 16, 2006	May 27, 2020	Spain	Issued	12179552.0	300368555	DSL SYSTEM TRAINING
Nov 2, 2010	Apr 11, 2018	Spain	Issued	12189530.4	300272582	DEVICE ABSTRACTION PROXY
May 7, 2012	Aug 21, 2019	Spain	Issued	12721143.1	300332219	APPARATUS, SYSTEMS AND METHODS FOR IMPULSE NOISE DETECTION AND MITIGATION
Sep 29, 2012	May 30, 2018	Spain	Issued	12773465	2901632	OPTIMIZED CONTROL SYSTEM FOR AGGREGATION OF MULTIPLE BROADBAND CONNECTIONS OVER RADIO INTERFACES
Oct 9, 2012	Dec 27, 2017	Spain	Issued	12780966.3	300261518	METHOD AND SYSTEM FOR CONNECTIVITY DIAGNOSTICS IN COMMUNICATION SYSTEMS
Dec 17, 2013	Mar 27, 2019	Spain	Issued	13821031.5	3114891	SYSTEMS METHODS AND APPARATUSES FOR IMPLEMENTING DISTRIBUTED WIRELESS DATA SHARING AND CONTROL SYSTEMS
Dec 5, 2011	Apr 18, 2018	Spain	Issued	117970970	300272601	SYSTEMS AND METHODS FOR TRAFFIC LOAD BALANCING ON MULTIPLE WAN BACKHAULS AND MULTIPLE DISTINCT LAN NETWORKS
Jan 12, 2011	Apr 4, 2018	Spain	Issued	E11700879	2664103	SYSTEMS AND METHODS FOR JOINTLY OPTIMIZING WAN AND LAN NETWORK COMMUNICATIONS
Feb 28, 2006	May 23, 2012	Sweden	Issued	06755837.9	1869790	DIGITAL SUBSCRIBER LINE (DSL) STATE AND LINE PROFILE CONTROL
Dec 5, 2011	May 22, 2019	Sweden	Issued	11802826.5	2789134	SYSTEMS AND METHODS FOR TRAFFIC AGGREGATION ON MULTIPLE WAN BACKHAULS AND MULTIPLE DISTINCT LAN NETWORKS
Mar 16, 2006	May 27, 2020	Sweden	Issued	12179552.0	2549728	DSL SYSTEM TRAINING
Jul 13, 2012	Jan 2, 2019	Sweden	Issued	12743284.7	2873195	METHOD AND SYSTEM FOR PERFORMANCE MEASUREMENT OF A COMMUNICATION LINK
Sep 29, 2012	May 30, 2018	Sweden	Issued	12773465	2901632	OPTIMIZED CONTROL SYSTEM FOR AGGREGATION OF MULTIPLE BROADBAND CONNECTIONS OVER RADIO INTERFACES

Date Filed - Priority Patent	Grant Date	Country Name	Status	Application #	Patent #	Title
Dec 5, 2011	Apr 18, 2018	Sweden	Issued	117970970	2789133	SYSTEMS AND METHODS FOR TRAFFIC LOAD BALANCING ON MULTIPLE WAN BACKHAULS AND MULTIPLE DISTINCT LAN NETWORKS
Dec 2, 2004	Nov 16, 2011	Switzerland	Issued	04801291.8	1700423	DHL SYSTEM ESTIMATION AND PARAMETER RECOMMENDATION
Dec 2, 2004	May 10, 2017	Switzerland	Issued	04801293.4	1721230	ADAPTIVE MARGIN AND BAND CONTROL
Dec 2, 2004	Apr 28, 2010	Switzerland	Issued	04801294.2	1700410	ADAPTIVE FEC CODEWORD MANAGEMENT
Mar 18, 2005	Aug 3, 2011	Switzerland	Issued	05708773.6	1733550	HIGH SPEED MULTIPLE LOOP DSL SYSTEM
May 18, 2005	Jan 4, 2012	Switzerland	Issued	05741016.9	1756963	Dynamic management of communication system
Feb 28, 2006	Feb 21, 2018	Switzerland	Issued	06710503.1	1880503	PHANTOM USE IN DSL SYSTEMS
Mar 16, 2006	May 9, 2018	Switzerland	Issued	06727405.0	1897306	TONAL PRECODING IN MULTI-USER VECTORED DSL TRANSMISSION
Mar 17, 2006	Sep 13, 2017	Switzerland	Issued	06727414.2	1911256	USER-PREFERENCE-BASED DSL SYSTEM
Feb 28, 2006	May 23, 2012	Switzerland	Issued	06755837.9	1869790	DIGITAL SUBSCRIBER LINE (DSL) STATE AND LINE PROFILE CONTROL
Jul 8, 2006	Jul 28, 2017	Switzerland	Issued	06786827	1869790	ADAPTIVE MARGIN AND BAND CONTROL
Jul 31, 2007	Oct 18, 2017	Switzerland	Issued	07810931.1	2055086	METHOD AND APPARATUS FOR ANALYZING AND MITIGATING NOISE IN A DIGITAL SUBSCRIBER LINE
Oct 5, 2007	Mar 28, 2018	Switzerland	Issued	07852551.6	2076972	INTERFERENCE CANCELLATION SYSTEM
Dec 2, 2004	May 13, 2015	Switzerland	Issued	10152127.6	2187558	ADAPTIVE FEC CODEWORD MANAGEMENT
Dec 2, 2004	Nov 9, 2011	Switzerland	Issued	10179600.1	2259495	ADAPTIVE MARGIN AND BAND CONTROL IN A DSL SYSTEM

Date Filed - Priority Patent	Grant Date	Country Name	Status	Application #	Patent #	Title
Mar 18, 2005	May 6, 2020	Switzerland	Issued	10182701.2	2278785	HIGH SPEED MULTIPLE LOOP DSL SYSTEM
Nov 2, 2010	Jan 10, 2018	Switzerland	Issued	10785244.4	2497226	DEVICE ABSTRACTION PROXY
Jun 6, 2007	Apr 4, 2018	Switzerland	Issued	11161331.1	2337371	VECTORED DSL SYSTEM
Jan 12, 2011	Apr 4, 2018	Switzerland	Issued	11700879	2664103	SYSTEMS AND METHODS FOR JOINTLY OPTIMIZING WAN AND LAN NETWORK COMMUNICATIONS
Dec 5, 2011	May 22, 2019	Switzerland	Issued	11802826.5	2789134	SYSTEMS AND METHODS FOR TRAFFIC AGGREGATION ON MULTIPLE WAN BACKHAULS AND MULTIPLE DISTINCT LAN NETWORKS
Aug 10, 2005	Oct 4, 2017	Switzerland	Issued	12154413.4	2472729	INTERFERENCE CANCELLATION SYSTEM
May 31, 2002	Dec 12, 2012	Switzerland	Issued	12167376.8	2533436	DYNAMIC DIGITAL COMMUNICATION SYSTEM CONTROL
Nov 2, 2010	Apr 11, 2018	Switzerland	Issued	12189530.4	2602958	DEVICE ABSTRACTION PROXY
Mar 19, 2012	Jul 18, 2018	Switzerland	Issued	12711318.1	2828977	SYSTEM FOR DIAGNOSING AND OPTIMIZING VECTORED DSL LINE
Sep 29, 2012	May 30, 2018	Switzerland	Issued	12773465	2901632	OPTIMIZED CONTROL SYSTEM FOR AGGREGATION OF MULTIPLE BROADBAND CONNECTIONS OVER RADIO INTERFACES
Oct 9, 2012	Dec 27, 2017	Switzerland	Issued	12780966.3	2907269	METHOD AND SYSTEM FOR CONNECTIVITY DIAGNOSTICS IN COMMUNICATION SYSTEMS
Apr 23, 2013	Jun 6, 2018	Switzerland	Issued	13721852.5	3020138.00	METHODS SYSTEMS, AND APPARATUSES FOR IMPLEMENTING UPSTREAM POWER CONTROL FOR DSL
Dec 17, 2013	Mar 27, 2019	Switzerland	Issued	13821031.5	3114891	SYSTEMS METHODS AND APPARATUSES FOR IMPLEMENTING DISTRIBUTED WIRELESS DATA SHARING AND CONTROL SYSTEMS
Mar 16, 2006	Jan 17, 2018	Switzerland	Issued	067446302	2789133	SELF-LEARNING AND SELF-ADJUSTING DSL SYSTEM
Dec 5, 2011	Apr 18, 2018	Switzerland	Issued	117970970	2789133	SYSTEMS AND METHODS FOR TRAFFIC LOAD BALANCING ON MULTIPLE WAN BACKHAULS AND MULTIPLE DISTINCT LAN NETWORKS

Date Filed - Priority Patent	Grant Date	Country Name	Status	Application #	Patent #	Title
Aug 10, 2005	Jan 9, 2013	Switzerland	Issued	2005850646	1784923	INTERFERENCE CANCELLATION SYSTEM
Apr 13, 2012	Feb 21, 2018	Switzerland	Issued	20127175388	2837168	DIAGNOSTIC METHODS FOR TWISTED PAIR TELEPHONE LINES BASED ON LINE DATA DISTRIBUTION ANALYSIS
Feb 28, 2006	May 23, 2012	Turkey	Issued	06755837.9	1869790	DIGITAL SUBSCRIBER LINE (DSL) STATE AND LINE PROFILE CONTROL
Dec 2, 2004	Apr 28, 2010	United Kingdom	Issued	04801294.2	1700410	ADAPTIVE FEC CODEWORD MANAGEMENT
Mar 18, 2005	Aug 3, 2011	United Kingdom	Issued	05708773.6	EP1733550	HIGH SPEED MULTIPLE LOOP DSL SYSTEM
May 18, 2005	Jan 4, 2012	United Kingdom	Issued	05741016.9	1756963	Dynamic management of communication system
May 18, 2005	Jan 14, 2009	United Kingdom	Issued	05747117.9	1757042	INCENTIVE-BASED DSL SYSTEM
Feb 28, 2006	Feb 21, 2018	United Kingdom	Issued	06710503.1	1880503	PHANTOM USE IN DSL SYSTEMS
Mar 16, 2006	May 8, 2019	United Kingdom	Issued	06710580.9	1894401	DSL SYSTEM TRAINING
Mar 16, 2006	May 9, 2018	United Kingdom	Issued	06727405.0	1897306	TONAL PRECODING IN MULTI-USER VECTORED DSL TRANSMISSION
Mar 17, 2006	Sep 13, 2017	United Kingdom	Issued	06727414.2	1911256	USER-PREFERENCE-BASED DSL SYSTEM
Mar 16, 2006	Jan 26, 2011	United Kingdom	Issued	06744467.9	1894377	DSL SYSTEM LOADING AND ORDERING
Feb 28, 2006	May 23, 2012	United Kingdom	Issued	06755837.9	1869790	DIGITAL SUBSCRIBER LINE (DSL) STATE AND LINE PROFILE CONTROL
Oct 3, 2006	Jul 8, 2020	United Kingdom	Issued	6816102.5	1932076	DSL SYSTEM
Jul 31, 2007	Oct 18, 2017	United Kingdom	Issued	07810931.1	2055086	METHOD AND APPARATUS FOR ANALYZING AND MITIGATING NOISE IN A DIGITAL SUBSCRIBER LINE

Date Filed - Priority Patent	Grant Date	Country Name	Status	Application #	Patent #	Title
Oct 5, 2007	Mar 28, 2018	United Kingdom	Issued	07852551.6	2076972	INTERFERENCE CANCELLATION SYSTEM
Dec 2, 2004	May 13, 2015	United Kingdom	Issued	10152127.6	2187558	ADAPTIVE FEC CODEWORD MANAGEMENT
Dec 2, 2004	Nov 9, 2011	United Kingdom	Issued	10179600.1	2259495	ADAPTIVE MARGIN AND BAND CONTROL IN A DSL SYSTEM
Mar 18, 2005	May 6, 2020	United Kingdom	Issued	10182701.2	2278785	HIGH SPEED MULTIPLE LOOP DSL SYSTEM
Nov 2, 2010	Jan 10, 2018	United Kingdom	Issued	10785244.4	2497226	DEVICE ABSTRACTION PROXY
Jun 6, 2007	Apr 4, 2018	United Kingdom	Issued	11161331.1	2337371	VECTORED DSL SYSTEM
Jan 12, 2011	Apr 4, 2018	United Kingdom	Issued	11700879.7	2664103	SYSTEMS AND METHODS FOR JOINTLY OPTIMIZING WAN AND LAN NETWORK COMMUNICATIONS
Dec 5, 2011	May 22, 2019	United Kingdom	Issued	11802826.5	2789134	SYSTEMS AND METHODS FOR TRAFFIC AGGREGATION ON MULTIPLE WAN BACKHAULS AND MULTIPLE DISTINCT LAN NETWORKS
Aug 10, 2005	Oct 4, 2017	United Kingdom	Issued	12154413.4	2472729	INTERFERENCE CANCELLATION SYSTEM
May 31, 2002	Dec 12, 2012	United Kingdom	Issued	12167376.8	2533436	DYNAMIC DIGITAL COMMUNICATION SYSTEM CONTROL
Mar 16, 2006	May 27, 2020	United Kingdom	Issued	12179552.0	2549728	DSL SYSTEM TRAINING
Nov 2, 2010	Apr 11, 2018	United Kingdom	Issued	12189530.4	2602958	DEVICE ABSTRACTION PROXY
Mar 19, 2012	Jul 18, 2018	United Kingdom	Issued	12711318.1	2828977	SYSTEM FOR DIAGNOSING AND OPTIMIZING VECTORED DSL LINE
Apr 13, 2012	Feb 21, 2018	United Kingdom	Issued	12717538.8	2837168	DIAGNOSTIC METHODS FOR TWISTED PAIR TELEPHONE LINES BASED ON LINE DATA DISTRIBUTION ANALYSIS
May 7, 2012	Aug 21, 2019	United Kingdom	Issued	12721143.1	2847914	APPARATUS, SYSTEMS AND METHODS FOR IMPULSE NOISE DETECTION AND MITIGATION

Date Filed - Priority Patent	Grant Date	Country Name	Status	Application #	Patent #	Title
Jul 13, 2012	Jan 2, 2019	United Kingdom	Issued	12743284.7	2873195	METHOD AND SYSTEM FOR PERFORMANCE MEASUREMENT OF A COMMUNICATION LINK
Sep 29, 2012	May 30, 2018	United Kingdom	Issued	12773465	2901632	OPTIMIZED CONTROL SYSTEM FOR AGGREGATION OF MULTIPLE BROADBAND CONNECTIONS OVER RADIO INTERFACES
Oct 9, 2012	Dec 27, 2017	United Kingdom	Issued	12780966.3	2907269	METHOD AND SYSTEM FOR CONNECTIVITY DIAGNOSTICS IN COMMUNICATION SYSTEMS
Apr 23, 2013	Jun 6, 2018	United Kingdom	Issued	13721852	3020138	METHODS SYSTEMS, AND APPARATUSES FOR IMPLEMENTING UPSTREAM POWER CONTROL FOR DSL
Aug 30, 2013	May 6, 2020	United Kingdom	Issued	13763375.6	3039850	LOW POWER SYSTEM AND METHOD FOR DSL LINES
Dec 17, 2013	Mar 27, 2019	United Kingdom	Issued	13821031.5	3114891	SYSTEMS METHODS AND APPARATUSES FOR IMPLEMENTING DISTRIBUTED WIRELESS DATA SHARING AND CONTROL SYSTEMS
Dec 2, 2004	May 10, 2017	United Kingdom	Issued	048012934	1721230	ADAPTIVE MARGIN AND BAND CONTROL IN A DSL SYSTEM
Mar 16, 2006	Jan 17, 2018	United Kingdom	Issued	067446302		SELF-LEARNING AND SELF-ADJUSTING DSL SYSTEM
Mar 4, 2009	Jul 24, 2019	United Kingdom	Issued	097894950	2404385	DSL NOISE CANCELLATION USING SUB-OPTIMAL NOISE REFERENCE SIGNALS
Dec 5, 2011	Apr 18, 2018	United Kingdom	Issued	117970970	2789133	SYSTEMS AND METHODS FOR TRAFFIC LOAD BALANCING ON MULTIPLE WAN BACKHAULS AND MULTIPLE DISTINCT LAN NETWORKS
Aug 10, 2005	Jan 9, 2013	United Kingdom	Issued	2005850646	1784923	INTERFERENCE CANCELLATION SYSTEM
Mar 17, 2006	May 31, 2017	United Kingdom	Issued	2006727480	1897305	Tonal predictive GDFE
Jul 8, 2006	May 10, 2017	United Kingdom	Issued	2006786827	1905164	ADAPTIVE MARGIN AND BAND CONTROL
Jun 6, 2007	Aug 10, 2011	United Kingdom	Issued	2007795837	EP200779583 7	VECTORED DSL SYSTEM
May 10, 2010	Sep 5, 2018	United Kingdom	Issued	20107197030	2569929	NON-INVASIVE DIAGNOSTIC TRANSMISSION LINE TESTING

Date Filed - Priority Patent	Grant Date	Country Name	Status	Application #	Patent #	Title
May 29, 2020	Mar 4, 2020	United Kingdom	Issued	EP09790028.6	2449758	METHOD AND APPARATUS FOR DSL PERFORMANCE ENHANCEMENT IN A DSL NETWORK
Feb 8, 2016	Feb 20, 2018	USA	Issued	14/910,879		LOW POWER SYSTEM AND METHOD FOR DSL LINES
May 6, 2014		USA	Allowed	14/356,581		METHOD, APPARATUS, AND SYSTEM FOR OPTIMIZING PERFORMANCE OF A COMMUNICATION UNIT BY A REMOTE SERVER
Feb 23, 2017		USA	Allowed	15/506,225		METHOD AND APPARATUS FOR PROVIDING PERFORMANCE AND USAGE INFORMATION FOR A WIRELESS LOCAL AREA NETWORK
Feb 19, 2019		USA	Allowed	16/279,584		METHOD AND SYSTEM FOR LATENCY MEASUREMENT IN COMMUNICATION SYSTEMS
Jan 20, 2020		USA	Allowed	16/747,270		METHODS AND APPARATUS FOR DETECTING INTERNET CONNECTION PROBLEMS
Jun 14, 2020		USA	Allowed	16/900,965		METHODS SYSTEMS, AND APPARATUSES FOR IMPLEMENTING UPSTREAM POWER CONTROL FOR DSL
Jun 8, 2001	Jan 2, 2007	USA	Issued	09/877,724	7158563	DYNAMIC DIGITAL COMMUNICATION SYSTEM CONTROL
Mar 8, 2004	Sep 23, 2008	USA	Issued	10/795,593	7428669	ADAPTIVE FEC CODEWORD MANAGEMENT
Mar 25, 2004	Dec 29, 2009	USA	Issued	10/808,771	7639596	HIGH SPEED MULTIPLE LOOP DSL SYSTEM
Apr 2, 2004	Nov 27, 2007	USA	Issued	10/817,128	7302379	DSL SYSTEM ESTIMATION AND PARAMETER RECOMMENDATION
Jul 19, 2004	Jul 7, 2009	USA	Issued	10/893,826	7558315	ADAPTIVE MARGIN AND BAND CONTROL IN DIGITAL SUBSCRIBER LINE (DSL) SYSTEMS
Aug 20, 2004	Aug 11, 2009	USA	Issued	10/922,705	7573943	INTERFERENCE CANCELLATION SYSTEM
Mar 3, 2005	Dec 2, 2008	USA	Issued	11/071,762	7460588	DIGITAL SUBSCRIBER LINE (DSL) STATE AND LINE PROFILE CONTROL
May 5, 2005	Sep 22, 2009	USA	Issued	11/122,365	7593458	FEXT DETERMINATION SYSTEM

Date Filed - Priority Patent	Grant Date	Country Name	Status	Application #	Patent #	Title
May 5, 2005	Oct 20, 2009	USA	Issued	11/122,428	7606350	INCENTIVE-BASED DSL SYSTEM
Aug 9, 2010	Nov 13, 2012	USA	Issued	11/267,623	7773497	PHANTOM USE IN DSL SYSTEMS
Nov 22, 2005	Aug 10, 2010	USA	Issued	11/284,692	7774398	TONAL ROTORS
Jan 20, 2006	Oct 12, 2010	USA	Issued	11/336,113	7813420	ADAPTIVE GDFE
Jan 20, 2006	Oct 19, 2010	USA	Issued	11/336,666	7817745	TONAL PRECODING
Jan 28, 2006	Feb 1, 2011	USA	Issued	11/341,969	7881438	SELF-LEARNING AND SELF-ADJUSTING DSL SYSTEM
Jan 28, 2006	Mar 3, 2015	USA	Issued	11/342,003	8972549	USER-PREFERENCE-BASED DSL SYSTEM
Jan 28, 2006	Feb 3, 2015	USA	Issued	11/342,023	8948026	USER-PREFERENCE-BASED DSL SYSTEM
Jan 28, 2006	Mar 23, 2010	USA	Issued	11/342,024	7684546	DSL SYSTEM ESTIMATION AND CONTROL
Feb 1, 2006	Dec 14, 2010	USA	Issued	11/344,873	7852952	DSL SYSTEM LOADING AND ORDERING
Feb 1, 2006	Aug 2, 2011	USA	Issued	11/345,215	7991122	DSL SYSTEM TRAINING
Feb 28, 2006	Feb 2, 2010	USA	Issued	11/363,769	7657818	DYNAMIC MINIMUM-MEMORY INTERLEAVING
Mar 3, 2006	Mar 30, 2010	USA	Issued	11/367,930	7688884	VECTORED DSL NESTING
Dec 8, 2006	Dec 20, 2011	USA	Issued	11/636,316	8081704	DYNAMIC DIGITAL COMMUNICATION SYSTEM CONTROL
Aug 30, 2007	Oct 25, 2011	USA	Issued	11/897,683	8045629	DSL DATA COLLECTION SYSTEM

Date Filed - Priority Patent	Grant Date	Country Name	Status	Application #	Patent #	Title
Nov 26, 2007	May 4, 2010	USA	Issued	11/945,210	7711530	DHL SYSTEM ESTIMATION AND PARAMETER RECOMMENDATION
Jul 8, 2006	Apr 12, 2011	USA	Issued	11/995,194	7924736	DSL SYSTEM ESTIMATION
Jul 8, 2006	Nov 9, 2010	USA	Issued	11/995,195	7830955	ADAPTIVE MARGIN AND BAND CONTROL
Feb 8, 2008	Jul 16, 2013	USA	Issued	12/028,738	8489344	HOME NETWORK SYSTEM AUGMENTATION WITH REMOTE GUIDANCE AND LOCAL SET UP AND MONITORING
Apr 2, 2008	Aug 30, 2011	USA	Issued	12/089,044	8009665	DSL SYSTEM
Aug 4, 2008	Oct 5, 2010	USA	Issued	12/185,729	7809996	ADAPTIVE FEC CODEWORD MANAGEMENT
Apr 27, 2007	Dec 2, 2014	USA	Issued	12/226,910	8902958	METHODS AND APPARATUS TO COMBINE DATA FROM MULTIPLE SOURCES TO CHARACTERIZE COMMUNICATION SYSTEMS
Apr 27, 2007	Feb 4, 2014	USA	Issued	12/226,939	8644169	METHODS AND APPARATUS TO PERFORM LINE TESTING AT CUSTOMER PREMISES
Jun 6, 2007	Jul 9, 2013	USA	Issued	12/227,966	8483369	DSL SYSTEM
Jul 31, 2007	Apr 23, 2013	USA	Issued	12/375,216	8428225	METHOD AND APPARATUS FOR ANALYZING AND MITIGATING NOISE IN A DIGITAL SUBSCRIBER LINE
Mar 11, 2009	May 20, 2014	USA	Issued	12/402,339	8730785	METHOD AND APPARATUS FOR REDUCING NOISE IN A COMMUNICATION SYSTEM
Oct 5, 2007	Dec 25, 2012	USA	Issued	12/444,381	8340279	INTERFERENCE CANCELLATION SYSTEM
Dec 7, 2007	Jan 29, 2013	USA	Issued	12/517,525	8363788	DSL RING SIGNAL COMPATIBILITY
		USA	Issued	12/853,209	8310914	PHANTOM USE IN DSL SYSTEM
Nov 5, 2010	Oct 4, 2011	USA	Issued	12/940,970	8031761	ADAPTIVE MARGIN AND BAND CONTROL

Date Filed - Priority Patent	Grant Date	Country Name	Status	Application #	Patent #	Title
Jan 26, 2015	Apr 10, 2018	USA	Issued	13/084,829	9071534	DSL SYSTEM ESTIMATION
Jul 29, 2011	Jun 24, 2014	USA	Issued	13/194,736	8761348	DSL SYSTEM TRAINING
Aug 22, 2011	Dec 1, 2015	USA	Issued	13/214,598	9203724	DSL SYSTEM
Mar 4, 2009	Nov 4, 2017	USA	Issued	13/254,454	9819388	DSL NOISE CANCELLATION
Jul 1, 2009	Jan 19, 2016	USA	Issued	13/376,742	9241077	METHOD AND APPARATUS FOR DSL PERFORMANCE ENHANCEMENT IN A DSL NETWORK
Aug 16, 2012	May 17, 2016	USA	Issued	13/511,632	9344294	DEVICE ABSTRACTION PROXY
Nov 25, 2009	Aug 11, 2015	USA	Issued	13/512,262	9106735	DETECTION OF WIRING DEFECTS
Jun 19, 2012	Mar 25, 2014	USA	Issued	13/527,074	8681897	DYNAMIC DIGITAL COMMUNICATION SYSTEM CONTROL
Aug 17, 2012	Nov 19, 2013	USA	Issued	13/554,945	8589093	HOME NETWORK SYSTEM AUGMENTATION WITH REMOTE GUIDANCE AND LOCAL SET UP AND MONITORING
Sep 11, 2012	Jun 21, 2016	USA	Issued	13/610,195	9374240	DEVICE ABSTRACTION PROXY
Mar 4, 2013	Jul 29, 2014	USA	Issued	13/696,798	8792620	NON-INVASIVE DIAGNOSTIC TRANSMISSION LINE TESTING
Jul 8, 2014	Jun 14, 2016	USA	Issued	13/995,900	9369370	SYSTEMS AND METHODS FOR JOINTLY OPTIMIZING WAN AND LAN NETWORK COMMUNICATIONS
Nov 11, 2013	Jan 1, 2019	USA	Issued	13/995,901	10171298	MANAGEMENT CENTER FOR COMMUNICATION SYSTEM CUSTOMER PREMISES EQUIPMENT
Jan 23, 2014	Jul 12, 2016	USA	Issued	14/162,133	9391744	METHOD AND APPARATUS FOR ANALYZING AND MITIGATING NOISE IN A DIGITAL SUBSCRIBER LINE
Mar 17, 2014	Oct 13, 2015	USA	Issued	14/216,573	9160385	DYNAMIC DIGITAL COMMUNICATION SYSTEM CONTROL

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Apr 1, 2014	May 31, 2016	USA	Issued	14/242,164	9356654	METHOD AND APPARATUS FOR REDUCING NOISE IN A COMMUNICATION SYSTEM
Jul 25, 2014	May 7, 2019	USA	Issued	14/341,659	10284713	NON-INVASIVE DIAGNOSTIC TRANSMISSION LINE TESTING
Jun 3, 2014	Nov 14, 2017	USA	Issued	14/362,584	9819595	SYSTEMS AND METHODS FOR TRAFFIC AGGREGATION ON MULTIPLE WAN BACKHAULS AND MULTIPLE DISTINCT LAN NETWORKS
Jun 3, 2014	Dec 19, 2017	USA	Issued	14/362,585	9847944	SYSTEMS AND METHODS FOR TRAFFIC LOAD BALANCING ON MULTIPLE WAN BACKHAULS AND MULTIPLE DISTINCT LAN NETWORKS
Dec 15, 2011	Jul 12, 2016	USA	Issued	14/365,604	9391668	METHOD AND APPARATUS FOR REDUCING THE POWER OF A SIGNAL ELECTROMAGNETICALLY COUPLED FROM A PLC MEDIUM TO A DSL MEDIUM
Mar 12, 2012	Jul 12, 2016	USA	Issued	14/384,368	9391834	APPARATUS, SYSTEMS AND METHODS OF COMMON-MODE REJECTION RATIO BASED DIAGNOSTICS
Mar 19, 2012	Jun 16, 2015	USA	Issued	14/385,679	9060054	SYSTEM FOR DIAGNOSING AND OPTIMIZING VECTORED DSL LINE
Apr 13, 2012	Aug 16, 2016	USA	Issued	14/394,074	9420090	DIAGNOSTIC METHODS FOR TWISTED PAIR TELEPHONE LINES BASED ON LINE DATA DISTRIBUTION ANALYSIS
Oct 30, 2014	Oct 3, 2017	USA	Issued	14/398,069	9780956	APPARATUS, SYSTEMS AND METHODS FOR DSM ENERGY MANAGEMENT
May 7, 2012	Jun 14, 2016	USA	Issued	14/399,151	9369232	APPARATUS, SYSTEMS AND METHODS FOR IMPULSE NOISE DETECTION AND MITIGATION
Aug 12, 2015	Aug 6, 2019	USA	Issued	14/414,435	10375590	METHOD AND SYSTEM FOR PERFORMANCE ESTIMATION OF A COMMUNICATION LINK
Jan 12, 2015	Nov 19, 2019	USA	Issued	14/414,437	10484261	METHOD AND SYSTEM FOR PERFORMANCE MEASUREMENT OF A COMMUNICATION LINK
Jan 26, 2015	Apr 24, 2018	USA	Issued	14/417,544	9954631	MANAGEMENT SYSTEM AND METHODS OF MANAGING TIME-DIVISION DUPLEX (TDD) TRANSMISSION OVER COPPER
Mar 27, 2015	Aug 28, 2018	USA	Issued	14/431,774	10064095	OPTIMIZED CONTROL SYSTEM FOR AGGREGATION OF MULTIPLE BROADBAND CONNECTIONS OVER RADIO INTERFACES
Apr 7, 2015	Feb 19, 2019	USA	Issued	14/434,073	10212062	METHOD AND SYSTEM FOR LATENCY MEASUREMENT IN COMMUNICATION SYSTEMS

Date Filed - Priority Patent	Grant Date	Country Name	Status	Application #	Patent #	Title
Apr 7, 2015	Feb 20, 2018	USA	Issued	14/434,076	9900228	METHOD AND SYSTEM FOR CONNECTIVITY DIAGNOSTICS IN COMMUNICATION SYSTEMS
Nov 19, 2012	Feb 7, 2017	USA	Issued	14/443,999	9565294	SYSTEMS, METHODS, AND APPARATUSES FOR OPTIMIZING DSL LINE CONFIGURATIONS AND PARAMETERS IN A DSL SYSTEM
June 6, 2006	April 10, 2018	USA	Issued	14/605,911	9941928	SYSTEMS, METHODS, AND APPARATUSES FOR IMPLEMENTING A DSL SYSTEM
Feb 24, 2015	Nov 3, 2015	USA	Issued	14/630,569	9178777	USER-PREFERENCE-BASED DSL SYSTEM
Apr 13, 2015	Mar 3, 2020	USA	Issued	14/685,522	10581683	DSL SYSTEM
Jun 15, 2015	Jul 19, 2016	USA	Issued	14/740,123	9398146	SYSTEM FOR DIAGNOSING AND OPTIMIZING VECTORED DSL LINE
Jul 24, 2015	May 8, 2018	USA	Issued	14/763,486	9967156	METHOD AND APPARATUS FOR CLOUD SERVICES FOR ENHANCING BROADBAND EXPERIENCE
Aug 31, 2015	Feb 20, 2018	USA	Issued	14/771,789	9900049	SYSTEMS AND METHODS FOR MANAGING MIXED DEPLOYMENTS OF VECTORED AND NON-VECTORED VDSL
Sep 24, 2015	Mar 12, 2019	USA	Issued	14/779,942	10231138	METHOD AND APPARATUS FOR IMPLEMENTING WIRELESS SYSTEM DISCOVERY AND CONTROL USING A STATE-SPACE
Jul 29, 2016	Mar 5, 2019	USA	Issued	14/786,438	10225147	METHODS SYSTEMS, AND APPARATUSES FOR IMPLEMENTING UPSTREAM POWER CONTROL FOR DSL
Oct 7, 2015	Dec 12, 2017	USA	Issued	14/877,720	9843348	DYNAMIC DIGITAL COMMUNICATION SYSTEM CONTROL
Nov 13, 2015	Apr 16, 2019	USA	Issued	14/891,320	10263866	DSL NEIGHBORHOOD DIAGNOSTICS
Jul 31, 2013	Mar 12, 2019	USA	Issued	14/907,655	10230610	METHOD AND APPARATUS FOR CONTINUOUS ACCESS NETWORK MONITORING AND PACKET LOSS ESTIMATION
Feb 8, 2016	Jun 19, 2020	USA	Issued	14/910,879	9900442	LOW POWER SYSTEM AND METHOD FOR DSL LINES
Nov 25, 2015	Jul 16, 2019	USA	Issued	14/952,635	10356151	VIDEO STREAMING DIAGNOSTICS

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Dec 29, 2015	Aug 14, 2018	USA	Issued	14/983,367	10050725	METHOD AND APPARATUS FOR DSL PERFORMANCE ENHANCEMENT IN A DSL NETWORK
Mar 17, 2016	Jul 10, 2018	USA	Issued	15/022,752	10020999	SYSTEM AND METHOD FOR VALIDATING BROADBAND SERVICE RECOMMENDATION
Apr 12, 2016	May 21, 2019	USA	Issued	15/028,932	10298474	AUTOMATIC BROADBAND INFORMATION CORRELATION & RECORD GENERATION
Nov 7, 2013	Jan 2, 2018	USA	Issued	15/034,856	9860111	METHOD AND APPARATUS FOR DIAGNOSING AND CONFIGURING A BROADBAND CONNECTION VIA AN ALTERNATE COMMUNICATION PATH
Jun 13, 2016	May 8, 2018	USA	Issued	15/104,222	9967757	SYSTEMS METHODS AND APPARATUSES FOR IMPLEMENTING DISTRIBUTED WIRELESS DATA SHARING AND CONTROL SYSTEMS
Jul 29, 2016	Aug 14, 2018	USA	Issued	15/115,618	10051117	SYSTEMS, METHODS, AND APPARATUSES FOR IDENTIFYING CABLE-LEVEL FAULTS IN A COPPER PLANT OF A DSL SYSTEM
May 2, 2016	Sep 19, 2017	USA	Issued	15/144,082	9768830	METHOD AND APPARATUS FOR REDUCING NOISE IN A COMMUNICATION SYSTEM
Jun 14, 2016	Jun 25, 2019	USA	Issued	15/182,513	10333819	SYSTEMS AND METHODS FOR JOINTLY OPTIMIZING WAN AND LAN NETWORK COMMUNICATIONS
Jun 21, 2016	Aug 14, 2018	USA	Issued	15/188,959	10050846	DEVICE ABSTRACTION PROXY
Nov 30, 2016	May 19, 2020	USA	Issued	15/315,348	10659323	METHOD AND APPARATUS FOR IMPROVING BROADBAND EXPERIENCE USING CLOUD BASED RECOMMENDATION ENGINE
Nov 30, 2016	Oct 8, 2019	USA	Issued	15/315,364	10440591	METHOD AND APPARATUS FOR GENERATING POLICIES FOR IMPROVING NETWORK SYSTEM PERFORMANCE
Dec 29, 2016	Aug 12, 2020	USA	Issued	15/323,087	10098057	METHOD AND APPARATUS FOR WI-FI DEVICE TYPE IDENTIFICATION AND DEVICE TYPE BASED DIAGNOSTICS AND OPTIMIZATION
Mar 28, 2017	Oct 22, 2019	USA	Issued	15/471,779	10454797	METHOD AND SYSTEM FOR CONNECTIVITY DIAGNOSTICS IN COMMUNICATION SYSTEMS
Feb 22, 2017	Sep 22, 2020	USA	Issued	15/505,866	10785053	SYSTEMS, METHODS, AND APPARATUSES FOR IMPLEMENTING PERSISTENT MANAGEMENT AGENT (PMA) FUNCTIONS FOR THE CONTROL AND COORDINATION OF DPU AND DSLAM COMPONENTS
Feb 23, 2017	Aug 6, 2019	USA	Issued	15/506,102	10374887	SYSTEMS, METHODS, AND APPARATUSES FOR IMPLEMENTING THE VIRTUALIZATION OF ACCESS NODE FUNCTIONS

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Aug 10, 2017	Dec 17, 2019	USA	Issued	15/532,976	10512000	METHOD AND APPARATUS FOR PREDICTING SUCCESSFUL DSL LINE OPTIMIZATION
Jul 14, 2017	Dec 31, 2019	USA	Issued	15/543,793	10523810	SYSTEMS, METHODS, AND APPARATUSES FOR IMPLEMENTING DSL LINE FAULT DETERMINATION AND LOCALIZATION VIA SELT, DELT, AND MELT DIAGNOSTICS
Feb 15, 2018	Feb 18, 2020	USA	Issued	15/753,159	10567266	METHODS AND APPARATUS FOR DETECTING INTERNET CONNECTION PROBLEMS
Nov 10, 2017	Jan 7, 2020	USA	Issued	15/809,823	10530695	SYSTEMS AND METHODS FOR TRAFFIC AGGREGATION ON MULTIPLE WAN BACKHAULS AND MULTIPLE DISTINCT LAN NETWORKS
Jan 8, 2018	Feb 4, 2020	USA	Issued	15/864,621	10554824	LOW POWER SYSTEM AND METHOD FOR DSL LINES
Oct 8, 2018	Jun 30, 2020	USA	Issued	16/154,534	10701623	METHOD AND APPARATUS FOR WI-FI DEVICE TYPE IDENTIFICATION AND DEVICE TYPE BASED DIAGNOSTICS AND OPTIMIZATION
Mar 1, 2019	Jul 21, 2020	USA	Issued	16/290,073	10721128	METHODS SYSTEMS, AND APPARATUSES FOR IMPLEMENTING UPSTREAM POWER CONTROL FOR DSL
Mar 1, 2019	Jul 7, 2020	USA	Issued	16/290,094	10708793	METHOD AND APPARATUS FOR IMPLEMENTING WIRELESS SYSTEM DISCOVERY AND CONTROL USING A STATE-SPACE
Mar 26, 2019	Jun 23, 2020	USA	Issued	16/365,486	10693755	BROADBAND ACCESS MANAGEMENT SYSTEMS AND METHODS
Jun 5, 2019	Aug 25, 2020	USA	Issued	16/432,364	10757003	SYSTEMS AND METHODS FOR JOINTLY OPTIMIZING WAN AND LAN NETWORK COMMUNICATIONS
Jul 18, 2019	May 12, 2020	USA	Issued	16/516,209	10652773	METHOD AND SYSTEM FOR PERFORMANCE ESTIMATION OF A COMMUNICATION LINK
Jan 12, 2015		USA	Pending	14/414,436		METHOD AND SYSTEM FOR USING A DOWNLOADABLE AGENT FOR A COMMUNICATION SYSTEM, DEVICE, OR LINK
Aug 13, 2015		USA	Pending	14/767,870		CHURN PREDICTION IN A BROADBAND NETWORK
Dec 18, 2017		USA	Pending	15/845,977		SYSTEMS AND METHODS FOR TRAFFIC LOAD BALANCING ON MULTIPLE WAN BACKHAULS AND MULTIPLE DISTINCT LAN NETWORKS
Mar 22, 2018		USA	Pending	15/928,583		MANAGEMENT SYSTEM AND METHODS OF MANAGING TIME-DIVISION DUPLEX (TDD) TRANSMISSION OVER COPPER

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May 2, 2018		USA	Pending	15/969,729		SYSTEMS AND METHODS FOR IMPLEMENTING HIGH-SPEED WAVEGUIDE TRANSMISSION OVER WIRES
Jul 20, 2018		USA	Pending	16/040,958		DEVICE ABSTRACTION PROXY
Aug 27, 2018		USA	Pending	16/114,097		OPTIMIZED CONTROL SYSTEM FOR AGGREGATION OF MULTIPLE BROADBAND CONNECTIONS OVER RADIO INTERFACES
Nov 15, 2018		USA	Pending	16/192,442		METHOD AND APPARATUS FOR CONTINUOUS ACCESS NETWORK MONITORING AND PACKET LOSS ESTIMATION
Jul 26, 2019		USA	Pending	16/523,854		SYSTEMS, METHODS, AND APPARATUSES FOR IMPLEMENTING THE VIRTUALIZATION OF ACCESS NODE FUNCTIONS
Aug 9, 2019		USA	Pending	16/537,045		METHODS AND SYSTEMS FOR PERFORMANCE MEASUREMENT OF A COMMUNICATION LINK
Dec 10, 2019		USA	Pending	16/709,857		SERVICE TYPE IDENTIFICATION SYSTEMS AND METHODS FOR OPTIMIZING LOCAL AREA NETWORKS
Feb 27, 2020		USA	Pending	16/804,000		SYSTEMS AND METHODS FOR ERGODIC SPECTRUM MANAGEMENT
Apr 10, 2020		USA	Pending	16/846,276		METHOD AND SYSTEM FOR PERFORMANCE ESTIMATION OF A COMMUNICATION LINK
Apr 22, 2020		USA	Pending	16/855,986		METHOD AND APPARATUS FOR IMPROVING BROADBAND EXPERIENCE USING CLOUD BASED RECOMMENDATION ENGINE
Jun 14, 2020		USA	Pending	16/900,940		SYSTEMS AND METHODS FOR COMBINED MANAGEMENT WITH USER PREFERENCES OF WI-FI AND CELLULAR DATA
Jun 29, 2020	Jun 30, 2020	USA	Pending	16/916,038		METHOD AND APPARATUS FOR WI-FI DEVICE TYPE IDENTIFICATION AND DEVICE TYPE BASED DIAGNOSTICS AND OPTIMIZATION
Jul 11, 2020		USA	Pending	16/926,696		SYSTEMS AND METHODS FOR JOINTLY OPTIMIZING WAN AND LAN NETWORK COMMUNICATIONS
Jan 24, 2019		USA	Pending	16/937,566		SYSTEMS AND METHODS FOR NET NEUTRALITY TESTING
Jan 30, 2019		USA	Pending	16/937,570		SYSTEMS AND METHODS FOR BROADBAND COMMUNICATION LINK PERFORMANCE MONITORING

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Aug 11, 2020		USA	Pending	16/991,002		SYSTEMS, METHODS, AND APPARATUSES FOR IMPLEMENTING PERSISTENT MANAGEMENT AGENT (PMA) FUNCTIONS FOR THE CONTROL AND COORDINATION OF DPU AND DSLAM COMPONENTS
Sep 25, 2020		USA	Pending	17/033,437		WIRELESS-WIRELINE PHYSICALLY CONVERGED ARCHITECTURES
June 14, 2019		USA	Pending	62/861,979		ERGODIC SPECTRUM MANAGEMENT SYSTEMS AND METHODS
June 14, 2019		USA	Pending	62/861,993		ERGODIC SPECTRUM MANAGEMENT SYSTEMS AND METHODS
Jun 21, 2019		USA	Pending	62/864,869		SYSTEMS AND METHODS FOR COMBINED MANAGEMENT WITH USER PREFERENCES OF WI-FI AND CELLULAR DATA
Sep 27, 2019		USA	Pending	62/907,035		WIRELESS-WIRELINE PHYSICALLY CONVERGED ARCHITECTURES
Mar 10, 2020		USA	Pending	62/987,827		SYSTEM AND METHOD FOR CLOSED LOOP AUTOMATION BETWEEN WIRELESS NETWORK NODES
Apr 7, 2020		USA	Pending	63/006,628		USER PREFERENCE BASED HOME NETWORK OPTIMIZATION
May 12, 2020		USA	Pending	63/023,804		SYSTEMS AND METHODS FOR CLOSED LOOP AUTOMATION BETWEEN WIRELESS NETWORK NODES
May 17, 2020		USA	Pending	63/026,112		Systems and Methods for Telework
May 17, 2020		USA	Pending	63/026,112		Systems and Methods for Telework
Jul 28, 2020		USA	Pending	63/057,806		SYSTEMS AND METHODS FOR TELEWORK
Aug 24, 2020		USA	Pending	63/069,635		WIRELESS-WIRELINE PHYSICALLY CONVERGED ARCHITECTURES
Sep 9, 2020		USA	Pending	63/076,209		SYSTEMS AND METHODS FOR TELEWORK
Sep 9, 2020		USA	Pending	63/076,263		ASSIA WORK FROM HOME EVENT

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Jun 29, 2018		USA	Published	16/024,420		SYSTEMS AND METHODS FOR CHAINING CONTROL-PLANE VIRTUAL FUNCTIONS FOR ENSURING END-TO-END QUALITY OF SERVICE (QOS) OF INTERNET SERVICES
Apr 12, 2019		USA	Published	16/383,214		AUTOMATIC BROADBAND INFORMATION CORRELATION & RECORD GENERATION
Sep 18, 2019		USA	Published	16/575,101		METHOD AND APPARATUS FOR GENERATING POLICIES FOR IMPROVING NETWORK SYSTEM PERFORMANCE
Sep 20, 2019		USA	Published	16/577,462		METHOD AND SYSTEM FOR CONNECTIVITY DIAGNOSTICS IN COMMUNICATION SYSTEMS
Dec 5, 2019		USA	Published	16/705,180		SYSTEMS AND METHODS FOR TRAFFIC AGGREGATION ON MULTIPLE WAN BACKHAULS AND MULTIPLE DISTINCT LAN NETWORKS
Dec 10, 2019		USA	Published	16/709,620		METHOD AND APPARATUS FOR PREDICTING SUCCESSFUL DSL LINE OPTIMIZATION
Jan 13, 2020		USA	Published	16/741,210		LOW POWER SYSTEM AND METHOD FOR DSL LINES
Jan 15, 2020		USA	Published	16/743,821		DSL SYSTEMS AND METHODS
Mar 6, 2020		USA	Published	16/811,593		CONSTRAINED OPTIMIZATION OF WIRELESS LINKS IN NETWORKS WITH COMPETING OBJECTIVES
May 24, 2020		USA	Published	16/882,484		BROADBAND ACCESS MANAGEMENT SYSTEMS AND METHODS
May 30, 2020		USA	Published	16/888,684		METHOD AND APPARATUS FOR IMPLEMENTING WIRELESS SYSTEM DISCOVERY AND CONTROL USING A STATE-SPACE