

## TRADEMARK ASSIGNMENT COVER SHEET

Electronic Version v1.1  
Stylesheet Version v1.2

ETAS ID: TM618294

<b>SUBMISSION TYPE:</b>	NEW ASSIGNMENT		
<b>NATURE OF CONVEYANCE:</b>	Amended and Restated Intellectual Property Security Agreement		
<b>CONVEYING PARTY DATA</b>			
<b>Name</b>	<b>Formerly</b>	<b>Execution Date</b>	<b>Entity Type</b>
TQ Delta LLC		12/31/2020	Limited Liability Company: DELAWARE
<b>RECEIVING PARTY DATA</b>			
<b>Name:</b>	Alter Domus (US) LLC		
<b>Street Address:</b>	225 W. Washington Street, 9th Floor		
<b>City:</b>	Chicago		
<b>State/Country:</b>	ILLINOIS		
<b>Postal Code:</b>	60606		
<b>Entity Type:</b>	Corporation: DELAWARE		
<b>PROPERTY NUMBERS Total: 1</b>			
<b>Property Type</b>	<b>Number</b>	<b>Word Mark</b>	
<b>Registration Number:</b>	5110447	TQ DELTA	
<b>CORRESPONDENCE DATA</b>			
<b>Fax Number:</b>	2028874288		
<i>Correspondence will be sent to the e-mail address first; if that is unsuccessful, it will be sent using a fax number, if provided; if that is unsuccessful, it will be sent via US Mail.</i>			
<b>Phone:</b>	2028874000		
<b>Email:</b>	dlee@akingump.com		
<b>Correspondent Name:</b>	David C. Lee		
<b>Address Line 1:</b>	2001 K Street N.W.		
<b>Address Line 2:</b>	Akin Gump Strauss Hauer & Feld LLP		
<b>Address Line 4:</b>	Washington, D.C. 20006		
<b>NAME OF SUBMITTER:</b>	David C. Lee		
<b>SIGNATURE:</b>	/David C. Lee/		
<b>DATE SIGNED:</b>	01/04/2021		
<b>Total Attachments: 25</b>			
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AMENDED AND RESTATED INTELLECTUAL PROPERTY SECURITY AGREEMENT

This AMENDED AND RESTATED INTELLECTUAL PROPERTY SECURITY AGREEMENT (as amended, restated, amended and restated, supplemented or otherwise modified from time to time, the “**IP Security Agreement**”), dated as of December 31, 2020, is made by each undersigned grantor (each, a “**Grantor**”, and, collectively, the “**Grantors**”) in favor of ALTER DOMUS (US) LLC, a Delaware limited liability company, as collateral agent for its own benefit and the benefit of the Lenders (as defined in the Credit Agreement defined below) (in such capacity, together with its successor and assigns in such capacity, the “**Collateral Agent**”). Capitalized terms used herein and not otherwise defined herein shall have the meanings assigned to such terms in the Credit Agreement or the Security Agreement (as defined below), as applicable.

WHEREAS, the Borrower, ALTER DOMUS (US) LLC, as Administrative Agent (as defined therein), the Collateral Agent and the Lenders from time party thereto, are each party to that certain Amended and Restated Credit Agreement, dated as of December 31, 2020 (as amended, restated, amended and restated, supplemented or otherwise modified from time to time, the “**Credit Agreement**”), pursuant to which the Lenders have agreed, among other things, to continue the existing term loan and extend further credit to the Borrower in the form of delayed draw term loans upon the terms and subject to the conditions specified therein;

WHEREAS, in connection with the Credit Agreement, each Grantor has entered into the Amended and Restated Security Agreement, dated as of December 31, 2020 (as amended, restated, amended and restated, supplemented or otherwise modified from time to time, the “**Security Agreement**”) in order to induce the Lenders to make and continue to make, as applicable, Loans; and

WHEREAS, under the terms of the Security Agreement, each Grantor has granted to the Collateral Agent, for the ratable benefit of the Credit Parties, a security interest in, among other property, certain intellectual property of such Grantor, and has agreed as a condition thereof to execute this IP Security Agreement for recording with the United States Patent and Trademark Office and the United States Copyright Office, as the case may be.

NOW, THEREFORE, for good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, each Grantor agrees as follows:

(a) Grant of Security Interest. As security for the prompt and complete payment or performance, as the case may be, in full of the Secured Obligations, each Grantor hereby grants to the Collateral Agent for itself and the ratable benefit of the Credit Parties, a security interest in all of its right, title and interest in and to all of the following personal property, whether now owned by or owing to or hereafter acquired by or arising in favor of such Grantor (collectively, the “**IP Collateral**”):

(i) all Trademark registrations and applications for Trademark registration in the United States Patent and Trademark Office listed on Schedule I hereto;

(ii) all issued Patents and pending Patent applications in the United States Patent and Trademark Office listed on Schedule II hereto;

(iii) all Copyright registrations and pending applications for Copyright registration in the United States Copyright Office listed on Schedule III; and

(iv) all Proceeds and products of any and all of the foregoing and all supporting obligations, collateral security and guarantees given by any Person with respect to any of the foregoing;

provided, however, that notwithstanding any of the other provisions herein (and notwithstanding any recording of the Collateral Agent's Lien made in the United States Patent and Trademark Office, United States Copyright Office, or other registry office in any other jurisdiction), this Short-Form IP Security Agreement shall not constitute a grant of a security interest in any Trademark applications filed in the United States Patent and Trademark Office on the basis of such Grantor's "intent-to-use" such trademark, unless and until acceptable evidence of use of the Trademark has been filed with and accepted by the United States Patent and Trademark Office pursuant to Section 1(c) or Section 1(d) of the Lanham Act (15 U.S.C. 1051, et seq.), to the extent that granting a lien in such Trademark application prior to such filing would adversely affect the enforceability or validity of such Trademark application.

(b) Security for Secured Obligations. The grant of a security interest in the IP Collateral by each Grantor under this IP Security Agreement secures the payment of all Secured Obligations of such Grantor now or hereafter existing under or in respect of the Loan Documents, whether direct or indirect, absolute or contingent, and whether for principal, reimbursement obligations, interest, premiums, penalties, fees, indemnifications, contract causes of action, costs, expenses or otherwise, subject to the terms and provisions thereof.

(c) Recordation. This IP Security Agreement has been executed and delivered by each Grantor for the purpose of recording the grant of security interest herein with the United States Patent and Trademark Office and the United States Copyright Office, as the case may be. Each Grantor authorizes and requests that the Register of Copyrights, the Commissioner for Patents and the Commissioner for Trademarks and any other applicable government officer record this IP Security Agreement.

(d) Execution in Counterparts. This IP Security Agreement may be executed in any number of counterparts, each of which when so executed shall be deemed to be an original and all of which taken together shall constitute one and the same agreement.

(e) Grants, Rights and Remedies. This IP Security Agreement has been entered into in conjunction with the provisions of the Security Agreement. The Grantor does hereby acknowledge and confirm that the grant of the security interest hereunder to, and the rights and remedies of, the Collateral Agent with respect to the Collateral are more fully set forth in the Security Agreement, the terms and provisions of which are incorporated herein by reference as if fully set forth herein. In the event of any conflict between the terms of this IP Security Agreement and the terms of the Security Agreement, the terms of the Security Agreement shall govern.

(f) Governing Law. THIS IP SECURITY AGREEMENT SHALL BE GOVERNED BY, AND CONSTRUED IN ACCORDANCE WITH, THE LAW OF THE STATE OF NEW YORK.

(g) General. Sections 10.04, 10.14(b) and 10.15 of the Credit Agreement are hereby incorporated by reference into this IP Security Agreement *mutatis mutandis* and shall apply hereto.

(h) Severability. In case any one or more of the provisions contained in this IP Security Agreement should be held invalid, illegal or unenforceable in any respect, the validity, legality and enforceability of the remaining provisions contained herein and in the Security Agreement shall not in any way be affected or impaired thereby (it being understood that the invalidity of a particular provision in a particular jurisdiction shall not in and of itself affect the validity of such provision in any other jurisdiction). The parties hereto shall endeavor in good-faith negotiations to replace the invalid, illegal or unenforceable provisions with valid provisions the economic effect of which comes as close as possible to that of the invalid, illegal or unenforceable provisions.

(i) Amendment and Restatement. This IP Security Agreement is an amendment and restatement but not a novation of that certain Intellectual Property Security Agreement, dated as of October 5, 2018, in favor of the Collateral Agent (as amended, modified or supplemented prior to the date hereof, the “**Original IP Security Agreement**”). All Liens and security interests securing payment of the Secured Obligations under the Original IP Security Agreement are hereby collectively, renewed, extended, ratified and brought forward as security for the payment and performance of the Secured Obligations. Each Grantor hereby (i) reaffirms each Lien, pledge and security interest granted to the Collateral Agent under or in connection with the Original IP Security Agreement, (ii) agrees that after giving effect to this IP Security Agreement such Liens, pledges and security interests shall continue in full force and effect, and (iii) agrees that such Liens, pledges and security interests continue to secure the full and prompt payment and performance of all of the Secured Obligations.

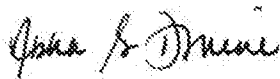
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IN WITNESS WHEREOF, each Grantor has caused this IP Security Agreement to be duly executed and delivered by its officer thereunto duly authorized as of the date first above written.

**TQ DELTA LLC**, as Grantor

By: TQCAP GP, LLC, its manager

By: TECHQUITY CAPITAL MANAGEMENT,  
LLC, its sole member

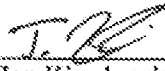
By:  \_\_\_\_\_

Name: Abha Divine

Title: Managing Director

ACCEPTED AND AGREED  
as of the date first above written.

ALTER DOMUS (US) LLC,  
as Collateral Agent

By:   
Name: Jon Kirschmeier  
Title: Associate Counsel

[Signature Page to A&R IP Security Agreement]

**Schedule I**

Trademarks

UNITED STATES TRADEMARKS:

Registrations / Applications:

OWNER	REGISTRATION/ APPLICATION NUMBER	TRADEMARK
TQ Delta LLC	5110447	TQ DELTA



**Schedule II**

Patents

(see attached)

TQ DELTA, LLC  
Privileged and Confidential / Attorney Client Communication

Reference #	Title	Country ID	Status	Serial #	Filed Date	Publication #	Patent #	Issue Date	Expiration Date
6936-2-CON-2	Systems and Methods for Establishing a Diagnostic Transmission Mode and Communicating Over the Same	US	ISSUED	10/619,691	7/16/03	US 2004-0202237 A1	7,570,686	8/4/09	10/1/22
6936-2-CON-2-1	Multicarrier Modulation Messaging for Frequency Domain Received Idle Channel Noise Information	US	ISSUED	12/477,742	6/3/09	US 2009-0238254 A1	7,835,430	11/16/10	1/8/21
6936-2-CON-2-1-1	Multicarrier Modulation Messaging for Power Level Per Subchannel Information	US	EXPIRED	12/779,660	5/13/10	US 2010-0226418 A1	8,238,412	8/7/12	4/7/20
6936-2-CON-2-1-2	Multicarrier Modulation Messaging for SNR Per Subchannel During Showtime Information	US	ISSUED	12/779,708	5/13/10	US 2010-0220775 A1	7,889,784	2/15/11	1/8/21
6936-2-CON-2-1-3	Systems and Methods for Establishing a Diagnostic Transmission Mode and Communicating Over the Same	US	ISSUED	13/004,254	1/11/11	US 2011-0103443 A1	8,634,449	1/21/14	7/4/21
6936-2-CON-2-1-4	Multicarrier Modulation Messaging for Power Level Per Subchannel Information	US	ISSUED	13/476,310	5/21/12	US 2012-0230476 A1	8,432,956	4/30/13	1/8/21
6936-2-CON-2-1-5	Systems and Methods for a Transceiver to Transmit or Receive Test Information Over a Communication Channel Using Multicarrier Modulation	US	ISSUED	13/873,892	4/30/13	US 2013-0243049 A1	8,743,931	6/3/14	1/8/21
6936-2-CON-2-1-6	Systems and Methods for Establishing a Diagnostic Transmission Mode and Communicating Over the Same	US	ISSUED	14/153,282	1/13/14	US 2014-0126616 A1	8,929,423	1/6/15	1/8/21
8303-2-CON-2-1-7	Systems and Methods for Establishing a Diagnostic Transmission Mode and Communicating Over the Same	US	ISSUED	14/282,254	5/20/14	US 2014-0254645 A1	9,319,512	4/19/16	1/8/21
8303-2-CON-2-1-8	Systems and Methods for Establishing a Diagnostic Transmission Mode and Communicating Over the Same	US	ABANDONED	14/577,769	12/19/14	US 2015-0103936 A1			2/16/16
8303-2-CON-2-1-9	SYSTEMS AND METHODS FOR ESTABLISHING A DIAGNOSTIC TRANSMISSION MODE AND COMMUNICATING OVER THE SAME	US	ISSUED	14/818,731	8/5/15	US 2015-0341488 A1	9,264,533	2/16/16	1/8/21
8303-2-CON-2-1-10	SYSTEMS AND METHODS FOR ESTABLISHING A DIAGNOSTIC TRANSMISSION MODE AND COMMUNICATING OVER THE SAME	US	ISSUED	14/991,431	1/8/16	US 2016-0127537 A1	9,479,637	10/25/16	1/8/21
6936-2-CON-2-1-11	SYSTEMS AND METHODS FOR ESTABLISHING A DIAGNOSTIC TRANSMISSION MODE AND COMMUNICATING OVER THE SAME	US	ISSUED	15/016,432	2/5/16	US 2016-0165042 A1	9,973,624	5/15/18	1/8/21
6936-2-CON-2-1-12	SYSTEMS AND METHODS FOR ESTABLISHING A DIAGNOSTIC TRANSMISSION MODE AND COMMUNICATING OVER THE SAME	US	ISSUED	15/098,932	4/14/16	US 2016-0227026 A1	10,264,119	4/16/19	1/8/21
6936-2-CON-2-1-13	SYSTEMS AND METHODS FOR ESTABLISHING A DIAGNOSTIC TRANSMISSION MODE AND COMMUNICATING OVER THE SAME	US	ISSUED	15/295,602	10/17/16	US 2017-0034343 A1	9,838,531	12/5/17	1/8/21
6936-2-CON-2-1-14	SYSTEMS AND METHODS FOR ESTABLISHING A DIAGNOSTIC TRANSMISSION MODE AND COMMUNICATING OVER THE SAME	US	ISSUED	15/958,878	4/20/18	US 2018-0249001 A1	10,623,559	4/14/20	1/8/21
6936-2-PAU-4-DIV	SYSTEMS AND METHODS FOR ESTABLISHING A DIAGNOSTIC TRANSMISSION MODE AND COMMUNICATING OVER THE SAME	AU	ISSUED	2008203520	1/8/01	AU 2008203520	2008203520	11/5/09	1/8/21
6936-2-PAU-4-DIV-2	Diagnostic Methods and Systems for Multicarrier Modems	AU	ABANDONED	2009222537	1/8/01	AU 2009222537	2009222537	12/22/11	1/4/17
6936-2-PAU-4-DIV-3	SYSTEMS AND METHODS FOR ESTABLISHING A DIAGNOSTIC TRANSMISSION MODE AND COMMUNICATING OVER THE SAME	AU	ABANDONED	2011247879	1/8/01		2011247879	9/18/14	1/4/17
6936-2-PAU-4-DIV-4	SYSTEMS AND METHODS FOR ESTABLISHING A DIAGNOSTIC TRANSMISSION MODE AND COMMUNICATING OVER THE SAME	AU	ABANDONED	2014208320	1/8/01		2014208320	3/12/15	1/4/17
8303-2-PAU-4-DIV-5	DIAGNOSTIC METHODS AND SYSTEMS FOR MULTICARRIER MODEMS	AU	ABANDONED	2015200087	1/8/01				2/28/17
8303-2-PAU-4-DIV-6	DIAGNOSTIC METHODS AND SYSTEMS FOR MULTICARRIER MODEMS	AU	ABANDONED	2017201226	1/8/01		2017201226	9/7/17	12/6/19
8303-2-PAU-4-DIV-7	DIAGNOSTIC METHODS AND SYSTEMS FOR MULTICARRIER MODEMS	AU	ABANDONED	2017210489	1/8/01				12/6/19
6936-2-PCA	Diagnostic Methods and Systems for Multicarrier Modems	CA	ISSUED	2,394,491	1/8/01	CA 2394491	2,394,491	3/29/11	1/8/21
6936-2-PCA-DIV	Diagnostic Methods and Systems for Multicarrier Modems	CA	ABANDONED	2,726,826	1/8/01	CA 2726826	2,726,826	11/20/12	12/23/16
6936-2-PCA-DIV-2	Diagnostic Methods and Systems for Multicarrier Modems	CA	EXPIRED	2,788,662	1/8/01		2,788,662	1/3/17	1/8/20
6936-2-PCA-DIV-3	Diagnostic Methods and Systems for Multicarrier Modems	CA	ISSUED	2,948,960	1/8/01		2,948,960	6/23/20	1/8/21
6936-2-PCT	SYSTEMS AND METHODS FOR ESTABLISHING A DIAGNOSTIC TRANSMISSION MODE AND COMMUNICATING OVER THE SAME	WO	NAT PHASE	PCT/US01/00418	1/8/01	WO 2001/52516			

6936-2-PEP-5	SYSTEMS AND METHODS FOR ESTABLISHING A DIAGNOSTIC TRANSMISSION MODE AND COMMUNICATING OVER THE SAME	EP	ISSUED	06022008.4	1/8/01	1755253	1755253	7/13/11	1/8/21
6936-2-PEP-5-BE	SYSTEMS AND METHODS FOR ESTABLISHING A DIAGNOSTIC TRANSMISSION MODE AND COMMUNICATING OVER THE SAME	BE	ISSUED	06022008.4	1/8/01	N/A	1755253	7/13/11	1/8/21
6936-2-PEP-5-CH	SYSTEMS AND METHODS FOR ESTABLISHING A DIAGNOSTIC TRANSMISSION MODE AND COMMUNICATING OVER THE SAME	CH	ISSUED	06022008.4	1/8/01	N/A	1755253	7/13/11	1/8/21
6936-2-PEP-5-DE	SYSTEMS AND METHODS FOR ESTABLISHING A DIAGNOSTIC TRANSMISSION MODE AND COMMUNICATING OVER THE SAME	DE	ISSUED	06022008.4	1/8/01	N/A	1755253	7/13/11	1/8/21
6936-2-PEP-5-ES	SYSTEMS AND METHODS FOR ESTABLISHING A DIAGNOSTIC TRANSMISSION MODE AND COMMUNICATING OVER THE SAME	ES	ISSUED	06022008.4	1/8/01	N/A	1755253	7/13/11	1/8/21
6936-2-PEP-5-FR	SYSTEMS AND METHODS FOR ESTABLISHING A DIAGNOSTIC TRANSMISSION MODE AND COMMUNICATING OVER THE SAME	FR	ISSUED	06022008.4	1/8/01	N/A	1755253	7/13/11	1/8/21
6936-2-PEP-5-GB	SYSTEMS AND METHODS FOR ESTABLISHING A DIAGNOSTIC TRANSMISSION MODE AND COMMUNICATING OVER THE SAME	GB	ISSUED	06022008.4	1/8/01	N/A	1755253	7/13/11	1/8/21
6936-2-PEP-5-GR	SYSTEMS AND METHODS FOR ESTABLISHING A DIAGNOSTIC TRANSMISSION MODE AND COMMUNICATING OVER THE SAME	GR	ABANDONED	06022008.4	1/8/01	N/A	1755253	7/13/11	12/6/19
6936-2-PEP-5-HK	SYSTEMS AND METHODS FOR ESTABLISHING A DIAGNOSTIC TRANSMISSION MODE AND COMMUNICATING OVER THE SAME	HK	ABANDONED	07108499.2	1/8/01	HK 1100379			8/4/11
6936-2-PEP-5-IE	SYSTEMS AND METHODS FOR ESTABLISHING A DIAGNOSTIC TRANSMISSION MODE AND COMMUNICATING OVER THE SAME	IE	ISSUED	06022008.4	1/8/01	N/A	1755253	7/13/11	1/8/21
6936-2-PEP-5-IT	SYSTEMS AND METHODS FOR ESTABLISHING A DIAGNOSTIC TRANSMISSION MODE AND COMMUNICATING OVER THE SAME	IT	ISSUED	06022008.4	1/8/01	N/A	1755253	7/13/11	1/8/21
6936-2-PEP-5-NL	SYSTEMS AND METHODS FOR ESTABLISHING A DIAGNOSTIC TRANSMISSION MODE AND COMMUNICATING OVER THE SAME	NL	ISSUED	06022008.4	1/8/01	N/A	1755253	7/13/11	1/8/21
6936-2-PEP-5-DIV-1	SYSTEMS AND METHODS FOR ESTABLISHING A DIAGNOSTIC TRANSMISSION MODE AND COMMUNICATING OVER THE SAME	EP	ISSUED	10011985.8	1/8/01	2276182	2276182	2/26/20	1/8/21
6936-2-PEP-5-DIV-1-DE	SYSTEMS AND METHODS FOR ESTABLISHING A DIAGNOSTIC TRANSMISSION MODE AND COMMUNICATING OVER THE SAME	DE	ISSUED	10011985.8	1/8/01	2276182	60151242.1	2/26/20	1/8/21
6936-2-PEP-5-DIV-1-FR	SYSTEMS AND METHODS FOR ESTABLISHING A DIAGNOSTIC TRANSMISSION MODE AND COMMUNICATING OVER THE SAME	FR	ISSUED	10011985.8	1/8/01		2276182	2/26/20	1/8/21
6936-2-PEP-5-DIV-1-GB	SYSTEMS AND METHODS FOR ESTABLISHING A DIAGNOSTIC TRANSMISSION MODE AND COMMUNICATING OVER THE SAME	GB	ISSUED	10011985.8	1/8/01		2276182	2/26/20	1/8/21
6936-2-PEP-5-DIV-1-HK	SYSTEMS AND METHODS FOR ESTABLISHING A DIAGNOSTIC TRANSMISSION MODE AND COMMUNICATING OVER THE SAME	HK	ABANDONED	11101591.8	1/8/01	HK 1147612			12/5/19
6936-2-PEP-5-DIV-2	SYSTEMS AND METHODS FOR ESTABLISHING A DIAGNOSTIC TRANSMISSION MODE AND COMMUNICATING OVER THE SAME	EP	ABANDONED	10011983.3	1/8/01	2293459			12/12/19
6936-2-PEP-5-DIV-2-HK	SYSTEMS AND METHODS FOR ESTABLISHING A DIAGNOSTIC TRANSMISSION MODE AND COMMUNICATING OVER THE SAME	HK	ABANDONED	11103980.3	1/8/01	HK 1149982			12/12/19
6936-2-PEP-5-DIV-3	SYSTEMS AND METHODS FOR ESTABLISHING A DIAGNOSTIC TRANSMISSION MODE AND COMMUNICATING OVER THE SAME	EP	ISSUED	10011984.1	1/8/01	2317684	2317684	2/26/20	1/8/21
6936-2-PEP-5-DIV-3-DE	SYSTEMS AND METHODS FOR ESTABLISHING A DIAGNOSTIC TRANSMISSION MODE AND COMMUNICATING OVER THE SAME	DE	ISSUED	10011984.1	1/8/01	2317684	60151241.3	2/26/20	1/8/21
6936-2-PEP-5-DIV-3-FR	SYSTEMS AND METHODS FOR ESTABLISHING A DIAGNOSTIC TRANSMISSION MODE AND COMMUNICATING OVER THE SAME	FR	ISSUED	10011984.1	1/8/01		2317684	2/26/20	1/8/21
6936-2-PEP-5-DIV-3-GB	SYSTEMS AND METHODS FOR ESTABLISHING A DIAGNOSTIC TRANSMISSION MODE AND COMMUNICATING OVER THE SAME	GB	ISSUED	10011984.1	1/8/01		2317684	2/26/20	1/8/21
6936-2-PEP-5-DIV-3-HK	SYSTEMS AND METHODS FOR ESTABLISHING A DIAGNOSTIC TRANSMISSION MODE AND COMMUNICATING OVER THE SAME	HK	ABANDONED	11106469.6	1/8/01	1152597			11/11/19

6936-2-PEP-5-DIV-3-NL	SYSTEMS AND METHODS FOR ESTABLISHING A DIAGNOSTIC TRANSMISSION MODE AND COMMUNICATING OVER THE SAME	NL	ISSUED	10011984.1	1/8/01		2317684	2/26/20	1/8/21
6936-2-PEP-5-DIV-4	SYSTEMS AND METHODS FOR ESTABLISHING A DIAGNOSTIC TRANSMISSION MODE AND COMMUNICATING OVER THE SAME	EP	ISSUED	10011982.5	1/8/01	2270996	2270996	3/7/18	1/8/21
6936-2-PEP-5-DIV-4-DE	SYSTEMS AND METHODS FOR ESTABLISHING A DIAGNOSTIC TRANSMISSION MODE AND COMMUNICATING OVER THE SAME	DE	ISSUED	10011982.5	1/8/01		2270996	3/7/18	1/8/21
6936-2-PEP-5-DIV-4-FR	SYSTEMS AND METHODS FOR ESTABLISHING A DIAGNOSTIC TRANSMISSION MODE AND COMMUNICATING OVER THE SAME	FR	ISSUED	10011982.5	1/8/01		2270996	3/7/18	1/8/21
6936-2-PEP-5-DIV-4-GB	SYSTEMS AND METHODS FOR ESTABLISHING A DIAGNOSTIC TRANSMISSION MODE AND COMMUNICATING OVER THE SAME	GB	ISSUED	10011982.5	1/8/01		2270996	3/7/18	1/8/21
6936-2-PEP-5-DIV-4-HK	SYSTEMS AND METHODS FOR ESTABLISHING A DIAGNOSTIC TRANSMISSION MODE AND COMMUNICATING OVER THE SAME	HK	ISSUED	11101590.0	1/8/01	HK 1147611	HK 1147611	9/21/18	1/8/21
6936-2-PEP-5-DIV-5	SYSTEMS AND METHODS FOR ESTABLISHING A DIAGNOSTIC TRANSMISSION MODE AND COMMUNICATING OVER THE SAME	EP	ABANDONED	18159847.5	1/8/01	3349386			12/12/19
6936-2-PEP-5-DIV-5-HK	SYSTEMS AND METHODS FOR ESTABLISHING A DIAGNOSTIC TRANSMISSION MODE AND COMMUNICATING OVER THE SAME	HK	ABANDONED	18113502.4	1/8/01	1254420			1/14/20
6936-2-PJP	SYSTEMS AND METHODS FOR ESTABLISHING A DIAGNOSTIC TRANSMISSION MODE AND COMMUNICATING OVER THE SAME	JP	ABANDONED	2001-552611	1/8/01	JP 2003/520504			7/13/11
6936-2-PJP-DIV	SYSTEMS AND METHODS FOR ESTABLISHING A DIAGNOSTIC TRANSMISSION MODE AND COMMUNICATING OVER THE SAME	JP	ISSUED	2008-191051	1/8/01	2009-027721	4722972	4/15/11	1/8/21
6936-2-PJP-DIV-2	SYSTEMS AND METHODS FOR ESTABLISHING A DIAGNOSTIC TRANSMISSION MODE AND COMMUNICATING OVER THE SAME	JP	ABANDONED	2011-012155	1/8/01	2011-151808			6/21/13
6936-2-PROV-1	MULTICARRIER MODULATION SYSTEM WITH REMOTE DIAGNOSTIC TRANSMISSION MODE	US	EXPIRED	60/174,865	1/7/00	N/A			1/7/01
6936-2-PROV-2	CHARACTERIZATION OF TRANSMISSION LINES USING BROADBAND SIGNALS IN A MULTI-CARRIER DSL SYSTEM	US	EXPIRED	60/224,308	8/10/00	N/A			8/10/01
6936-16	SYSTEMS AND METHODS FOR MULTI-PAIR ATM OVER DSL	US	ISSUED	10/264,258	10/4/02	US 2003-0091053 A1	7,453,881	11/18/08	7/24/25
6936-16-CON	SYSTEMS AND METHODS FOR MULTI-PAIR OVER DSL	US	ISSUED	12/247,741	10/8/08	US 2009-0028158 A1	7,809,028	10/5/10	10/4/22
6936-16-CON-2	Combining Multiple DSL Transceivers for a High Data Rate Connection	US	ISSUED	12/769,277	4/28/10	US 2010-0208737 A1	7,978,706	7/12/11	10/4/22
6936-16-CON-3	Systems and Methods for Multi-Pair ATM Over DSL	US	ISSUED	12/783,777	5/20/10	US 2010-0290471 A1	8,422,511	4/16/13	10/4/22
6936-16-CON-4	Systems and Methods for Multi-Pair ATM Over DSL	US	ISSUED	13/863,058	4/15/13	US 2013-0223453	8,831,031	9/9/14	10/4/22
6936-16-CON-5	BONDING DEVICE AND METHOD	US	ISSUED	14/465,502	8/21/14	US 2014-0362863 A1	9,014,193	4/21/15	10/4/22
6936-16-CON-6	BONDING DEVICE AND METHOD	US	ISSUED	14/682,435	4/9/15	US 2015-0215239 A1	9,300,601	3/29/16	10/4/22
6936-16-CON-7	BONDING DEVICE AND METHOD	US	ISSUED	15/057,741	3/1/16	US 2016-0182406 A1	9,894,014	2/13/18	10/4/22
6936-16-CON-8	BONDING DEVICE AND METHOD	US	ISSUED	15/882,619	1/29/18	US 2018-0152395 A1	10,341,261	7/2/19	10/4/22
6936-16-PCA	SYSTEMS AND METHODS FOR MULTI-PAIR ATM OVER DSL	CA	ISSUED	2,461,320	10/4/02	CA 2461320	2,461,320	10/25/11	10/4/22
6936-16-PCT	SYSTEMS AND METHODS FOR MULTI-PAIR ATM OVER DSL	WO	NAT PHASE	PCT/US02/31649	10/4/02	WO 2003/032555			
6936-16-PEP	SYSTEMS AND METHODS FOR MULTI-PAIR ATM OVER DSL	EP	ISSUED	02778433.9	10/4/02	1433277	1433277	7/25/12	10/4/22
6936-16-PEPBE	SYSTEMS AND METHODS FOR MULTI-PAIR ATM OVER DSL	BE	ISSUED	02778433.9	10/4/02		1433277	7/25/12	10/4/22
6936-16-PEPDE	SYSTEMS AND METHODS FOR MULTI-PAIR ATM OVER DSL	DE	ISSUED	02778433.9	10/4/02		1433277	7/25/12	10/4/22
6936-16-PEPFR	SYSTEMS AND METHODS FOR MULTI-PAIR ATM OVER DSL	FR	ISSUED	02778433.9	10/4/02		1433277	7/25/12	10/4/22
6936-16-PEPGB	SYSTEMS AND METHODS FOR MULTI-PAIR ATM OVER DSL	GB	ISSUED	02778433.9	10/4/02		1433277	7/25/12	10/4/22
6936-16-PEP-DIV	SYSTEMS AND METHODS FOR MULTI-PAIR ATM OVER DSL	EP	ISSUED	12002728.9	10/4/02	2506508	2506508	5/2/18	10/4/22
6936-16-PEP-DIV-DE	SYSTEMS AND METHODS FOR MULTI-PAIR ATM OVER DSL	DE	ISSUED	12002728.9	10/4/02		2506508	5/2/18	10/4/22
6936-16-PEP-DIV-FR	SYSTEMS AND METHODS FOR MULTI-PAIR ATM OVER DSL	FR	ISSUED	12002728.9	10/4/02		2506508	5/2/18	10/4/22
6936-16-PEP-DIV-GB	SYSTEMS AND METHODS FOR MULTI-PAIR ATM OVER DSL	GB	ISSUED	12002728.9	10/4/02		2506508	5/2/18	10/4/22
6936-16-PEP-DIV-2	SYSTEMS AND METHODS FOR MULTI-PAIR ATM OVER DSL	EP	ISSUED	18170134.3	10/4/02	3386128	3386128	7/24/19	10/4/22
6936-16-PEP-DIV-2-DE	SYSTEMS AND METHODS FOR MULTI-PAIR ATM OVER DSL	DE	ISSUED	18170134.3	10/4/02	3386128	DE60249960.7	7/24/19	10/4/22
6936-16-PEP-DIV-2-FR	SYSTEMS AND METHODS FOR MULTI-PAIR ATM OVER DSL	FR	ISSUED	18170134.3	10/4/02		3386128	7/24/19	10/4/22
6936-16-PEP-DIV-2-GB	SYSTEMS AND METHODS FOR MULTI-PAIR ATM OVER DSL	GB	ISSUED	18170134.3	10/4/02		3386128	7/24/19	10/4/22

6936-16-PEP-DIV-2-NL	SYSTEMS AND METHODS FOR MULTI-PAIR ATM OVER DSL	NL	ISSUED	18170134.3	10/4/02		3386128	7/24/19	10/4/22
6936-16-PROV	MULTI-PAIR ATM OVER DSL	US	EXPIRED	60/327,440	10/5/01	N/A			10/5/02
6936-54	RESOURCE SHARING IN A TELECOMMUNICATIONS ENVIRONMENT	US	ISSUED	11/246,163	10/11/05	US 2006-0088054 A1	7,831,890	11/9/10	11/7/28
6936-54-CON	RESOURCE SHARING IN A TELECOMMUNICATIONS ENVIRONMENT	US	ISSUED	12/761,586	4/16/10	US 2010-0228924 A1	7,844,882	11/30/10	10/11/25
6936-54-CON-2	Computer Readable Medium with Instructions for Resource Sharing in a Telecommunications Environment	US	ISSUED	12/853,020	8/9/10	US 2010-0306628 A1	7,836,381	11/16/10	10/11/25
6936-54-CON-3	RESOURCE SHARING IN A TELECOMMUNICATIONS ENVIRONMENT	US	ISSUED	12/901,699	10/11/10	US 2011-0029844 A1	8,276,048	9/25/12	10/11/25
6936-54-CON-4	RESOURCE SHARING IN A TELECOMMUNICATIONS ENVIRONMENT	US	ISSUED	13/367,261	8/6/12	US 2012-0297148 A1	8,495,473	7/23/13	10/11/25
6936-54-CON-5	RESOURCE SHARING IN A TELECOMMUNICATIONS ENVIRONMENT	US	ISSUED	13/942,938	7/16/13	US 2013-0308689 A1	8,607,126	12/10/13	10/11/25
6936-54-CON-6	RESOURCE SHARING IN A TELECOMMUNICATIONS ENVIRONMENT	US	ISSUED	14/081,469	11/15/13	US 2014-0075128 A1	9,069,718	6/30/15	10/11/25
6936-54-CON-7	RESOURCE SHARING IN A TELECOMMUNICATIONS ENVIRONMENT	US	ISSUED	14/730,874	6/4/15	US 2015-0268863 A1	9,286,251	3/15/16	10/11/25
6936-54-CON-8	RESOURCE SHARING IN A TELECOMMUNICATIONS ENVIRONMENT	US	ISSUED	15/046,821	2/18/16	US 2016-0179389 A1	9,547,608	1/17/17	10/11/25
6936-54-CON-9	RESOURCE SHARING IN A TELECOMMUNICATIONS ENVIRONMENT	US	ISSUED	15/372,841	12/8/16	US 2017-0090811 A1	9,898,220	2/20/18	10/11/25
6936-54-CON-10	RESOURCE SHARING IN A TELECOMMUNICATIONS ENVIRONMENT	US	ISSUED	15/874,277	1/18/18	US 2018-0157436 A1	10,409,510	9/10/19	10/11/25
6936-54-CON-10-DIV	RESOURCE SHARING IN A TELECOMMUNICATIONS ENVIRONMENT	US	ISSUED	16/261,109	1/29/19	US 2019-0155530 A1	10,579,291	3/3/20	10/11/25
6936-54-CON-11	RESOURCE SHARING IN A TELECOMMUNICATIONS ENVIRONMENT	US	PUBLISHED	16/544,003	8/19/19	US 2019-0369891 A1			10/11/25
6936-54-PAU	Resource Sharing in a Telecommunications Environment	AU	ABANDONED	2005296086	10/11/05	AU 2005296086			4/6/11
6936-54-PAU-DIV	Resource Sharing in a Telecommunications Environment	AU	ABANDONED	2011201250	10/11/05	AU 2011201250			2/25/15
6936-54-PAU-DIV-2	Resource Sharing in a Telecommunications Environment	AU	ISSUED	2015200618	10/11/05		2015200618	11/12/15	10/11/25
6936-54-PCA	Resource Sharing in a Telecommunications Environment	CA	ISSUED	2,580,280	10/11/05	CA 2580280	2,580,280	3/10/15	10/11/25
6936-54-PCA-DIV	Resource Sharing in a Telecommunications Environment	CA	ABANDONED	2,869,452	10/11/05		2,869,452	1/19/16	9/25/17
6936-54-PCA-DIV-2	Resource Sharing in a Telecommunications Environment	CA	ABANDONED	2,909,150	10/11/05		2,909,150	11/7/17	9/4/20
6936-54-PCA-DIV-3	Resource Sharing in a Telecommunications Environment	CA	ISSUED	2,980,607	10/11/05		2,980,607	4/7/20	10/11/25
6936-54-PCN	Resource Sharing in a Telecommunications Environment	CN	ABANDONED	200580032703.1	10/11/05	CN101057438A			7/14/15
6936-54-PCN-DIV	Resource Sharing in a Telecommunications Environment	CN	ISSUED	201510413116.2	10/11/05	104993912	ZL201510413116.2	12/3/19	10/11/25
6936-54-PCT	RESOURCE SHARING IN A TELECOMMUNICATIONS ENVIRONMENT	WO	NAT PHASE	PCT/US05/36015	10/11/05	WO 2006/044227 A1			
6936-54-PEP	RESOURCE SHARING IN A TELECOMMUNICATIONS ENVIRONMENT	EP	ISSUED	05807443.6	10/11/05	EP 1832028	1832028	1/31/18	10/11/25
6936-54-PEPDE	RESOURCE SHARING IN A TELECOMMUNICATIONS ENVIRONMENT	DE	ISSUED	05807443.6	10/11/05		1832028	1/31/18	10/11/25
6936-54-PEPFR	RESOURCE SHARING IN A TELECOMMUNICATIONS ENVIRONMENT	FR	ISSUED	05807443.6	10/11/05		1832028	1/31/18	10/11/25
6936-54-PEPGB	RESOURCE SHARING IN A TELECOMMUNICATIONS ENVIRONMENT	GB	ISSUED	05807443.6	10/11/05		1832028	1/31/18	10/11/25
6936-54-PEPHK	RESOURCE SHARING IN A TELECOMMUNICATIONS ENVIRONMENT	HK	ISSUED	07110121.4	10/11/05	HK 1102043	HK 1102043	7/6/18	10/11/25
6936-54-PEP-DIV	RESOURCE SHARING IN A TELECOMMUNICATIONS ENVIRONMENT	EP	PUBLISHED	18153945.3	10/11/05	3340511			10/11/25
6936-54-PEP-DIV-HK	RESOURCE SHARING IN A TELECOMMUNICATIONS ENVIRONMENT	HK	PUBLISHED	18113503.3	10/11/05	1254421			10/11/25
6936-54-PIN	Resource Sharing in a Telecommunications Environment	IN	ABANDONED	1208/KOLNP/2007	10/11/05	IN 1208/KOLNP/2007			10/12/24
6936-54-PJP	Resource Sharing in a Telecommunications Environment	JP	ISSUED	2007-535818	10/11/05	2008-516533	4889646	12/22/11	10/11/25
6936-54-PJP-DIV	Resource Sharing in a Telecommunications Environment	JP	ABANDONED	2008-264540	10/11/05	2009-065692	4976359	4/20/12	2/21/17
6936-54-PKR	Method and System for Allocating Shared Memory in a Transceiver	KR	ISSUED	10-2007-7008270	10/11/05	10-2007-0065369	10-1160717	6/21/12	10/11/25
6936-54-PKR-DIV	Method for Allocating Memory in a Transceiver	KR	ABANDONED	10-2010-7022463	10/11/05	10-2010/0116234	10-1160765	6/21/12	3/10/17
6936-54-PROV	RESOURCE SHARING IN A TELECOMMUNICATIONS ENVIRONMENT	US	EXPIRED	60/618,269	10/12/04	N/A			10/12/05

6936-47	SYSTEM AND METHOD FOR SCRAMBLING THE PHASE OF THE CARRIERS IN A MULTICARRIER COMMUNICATIONS SYSTEM	US	ISSUED	09/710,310	11/9/00	N/A	6,961,369	11/1/05	7/28/23
6936-47-CON	SYSTEM AND METHOD FOR SCRAMBLING THE PHASE OF THE CARRIERS IN A MULTICARRIER COMMUNICATIONS SYSTEM	US	EXPIRED	11/211,535	8/26/05	US 2006-0002454 A1	7,292,627	11/6/07	11/9/20
6936-47-CON-2	System and Method for Scrambling the Phase of the Carriers in a Multicarrier Communications System	US	EXPIRED	11/863,581	9/28/07	US 2008-0069253 A1	7,471,721	12/30/08	11/9/20
6936-47-CON-3	System and Method for Scrambling the Phase of the Carriers in a Multicarrier Communications System	US	EXPIRED	12/255,713	10/22/08	US 2009-0110105 A1	7,769,104	8/3/10	11/9/20
6936-47-CON-4	System and Method for Scrambling the Phase of the Carriers in a Multicarrier Communications System	US	EXPIRED	12/783,725	5/20/10	US 2010-0290507 A1	8,090,008	1/3/12	11/9/20
6936-47-CON-5	System and Method for Scrambling the Phase of the Carriers in a Multicarrier Communications System	US	EXPIRED	13/303,417	11/23/11	US 2012-0069878 A1	8,718,158	5/6/14	11/18/20
6936-47-CON-6	System and Method for Scrambling the Phase of the Carriers in a Multicarrier Communications System	US	EXPIRED	14/256,677	4/18/14	US 2014-0226737 A1	8,929,470	1/6/15	11/9/20
6936-47-CON-7	System and Method for Scrambling the Phase of the Carriers in a Multicarrier Communications System	US	EXPIRED	14/540,332	11/13/14	US 2015-0071385 A1	9,755,876	9/5/17	11/9/20
6936-47-CON-8	System and Method for Scrambling the Phase of the Carriers in a Multicarrier Communications System	US	EXPIRED	15/693,914	9/1/17	US 2018-0013599 A1	10,187,240	1/22/19	11/9/20
6936-47-CON-DIV	System and Method for Descrambling the Phase of the Carriers in a Multicarrier Communications System	US	ISSUED	11/860,080	9/24/07		8,073,041	12/6/11	11/5/23
6936-47-CON-DIV-CON	System and method for descrambling the phase of carriers in a multicarrier communications system	US	EXPIRED	13/284,549	10/28/11	US 2012-0044977 A1	8,218,610	7/10/12	11/9/20
6936-47-CON-DIV-CON-2	System and Method for Descrambling the Phase of Carriers in a Multicarrier Communications System	US	EXPIRED	13/439,605	4/4/12	US 2012-0195353 A1	8,355,427	1/15/13	11/9/20
6936-47-CON-DIV-CON-3	System and Method for Scrambling Using a Bit Scrambler and a Phase Scrambler	US	EXPIRED	13/718,016	12/18/12	US 2013-0136160-A1	9,014,243	4/21/15	11/9/20
6936-47-CON-DIV-CON-4	SYSTEM AND METHOD FOR SCRAMBLING USING A BIT SCRAMBLER AND A PHASE SCRAMBLER	US	EXPIRED	14/684,737	4/13/15	US 2015-0222467 A1	9,485,128	11/1/16	11/9/20
6936-47-CON-DIV-CON-5	SYSTEM AND METHOD FOR SCRAMBLING USING A BIT SCRAMBLER AND A PHASE SCRAMBLER	US	PUBLISHED	15/298,817	10/20/16	US 2017-0041173 A1			11/9/20
6936-47-PAU	SYSTEM AND METHOD FOR SCRAMBLING THE PHASE OF THE CARRIERS IN A MULTICARRIER COMMUNICATIONS SYSTEM	AU	ABANDONED	15964/01	11/9/00	AU 1596401			11/9/20
6936-47-PCA	SYSTEM AND METHOD FOR SCRAMBLING THE PHASE OF THE CARRIERS IN A MULTICARRIER COMMUNICATIONS SYSTEM	CA	ABANDONED	2,387,812	11/9/00	CA2387812			11/9/20
6936-47-PCT	SYSTEM AND METHOD FOR SCRAMBLING THE PHASE OF THE CARRIERS IN A MULTICARRIER COMMUNICATIONS SYSTEM	WO	NAT PHASE	PCT/US00/030958	11/9/00	WO 2001/035591			
6936-47-PEP	SYSTEM AND METHOD FOR SCRAMBLING THE PHASE OF THE CARRIERS IN A MULTICARRIER COMMUNICATIONS SYSTEM	EP	ABANDONED	00978507.2	11/9/00	EP 1228615			11/9/20
6936-47-PJP	SYSTEM AND METHOD FOR SCRAMBLING THE PHASE OF THE CARRIERS IN A MULTICARRIER COMMUNICATIONS SYSTEM	JP	ABANDONED	2001-537217	11/9/00	2003-514444A			11/9/20
6936-47-PJP-DIV	System and Method for Scrambling the Phase of the Carriers in a Multicarrier Communications System	JP	ABANDONED	2006-345675	11/9/00	JP 2007/129755			11/9/20
6936-47-PKR	SYSTEM AND METHOD FOR SCRAMBLING THE PHASE OF THE CARRIERS IN A MULTICARRIER COMMUNICATIONS SYSTEM	KR	ABANDONED	2002-7005830	11/9/00	10-2002-0049025			11/9/20
6936-47-PROV	SYSTEM AND METHOD FOR SCRAMBLING THE PHASE OF THE CARRIERS IN A MULTICARRIER COMMUNICATIONS SYSTEM	US	EXPIRED	60/164,134	11/9/99	N/A			11/9/00
6936-53	CRC COUNTER NORMALIZATION	US	ISSUED	11/232,899	9/23/05	US 2006-0069980 A1	7,451,379	11/11/08	3/8/27
6936-53-CON	CRC COUNTER NORMALIZATION	US	ISSUED	12/236,902	9/24/08	US 2009-0019346	7,925,558	4/12/11	5/4/26
6936-53-CON-2	CRC COUNTER NORMALIZATION	US	ISSUED	12/783,771	5/20/10	US 2010-0293444 A1	7,979,778	7/12/11	9/23/25
6936-53-CON-3	CRC COUNTER NORMALIZATION	US	ISSUED	13/156,098	6/8/11	US 2011-0239087 A1	8,516,337	8/20/13	9/23/25
6936-53-CON-4	CRC COUNTER NORMALIZATION	US	ISSUED	13/968,880	8/16/13	US 2013-0339828 A1	8,793,553	7/29/14	9/23/25
6936-53-CON-5	CRC COUNTER NORMALIZATION	US	ISSUED	14/338,503	7/23/14	US 2014-0337683 A1	8,984,366	3/17/15	9/23/25
6936-53-CON-6	CRC COUNTER NORMALIZATION	US	ISSUED	14/638,889	3/4/15	US 2015-0180508 A1	9,300,324	3/29/16	9/23/25
6936-53-CON-7	CRC COUNTER NORMALIZATION	US	ISSUED	15/062,522	3/7/16	US 2016-0188403 A1	10,049,003	8/14/18	9/23/25
6936-53-CON-8	CRC COUNTER NORMALIZATION	US	ISSUED	16/037,825	7/17/18	US 2018-0341544 A1	10,346,243	7/9/19	9/23/25
6936-53-CON-9	CRC COUNTER NORMALIZATION	US	PUBLISHED	16/428,232	5/31/19	US 2019-0286514 A1			9/23/25
6936-53-PAU	CRC COUNTER NORMALIZATION	AU	ISSUED	2005289753	9/23/05	AU 2005289753	2005289753	3/19/09	9/23/25
6936-53-PAU-DIV	CRC COUNTER NORMALIZATION	AU	ABANDONED	2009200784	9/23/05	AU 2009200784			6/27/11
6936-53-PCA	CRC COUNTER NORMALIZATION	CA	ISSUED	2,550,263	9/23/05	CA 2550263	2,550,263	11/2/10	9/23/25

6936-53-PCA-DIV	CRC COUNTER NORMALIZATION	CA	ABANDONED	2,711,718	9/23/05	CA 2711718	2,711,718	3/24/15	7/28/20
6936-53-PCA-DIV-2	CRC COUNTER NORMALIZATION	CA	ABANDONED	2,876,137	9/23/05		2,876,137	9/13/16	9/12/18
6936-53-PCA-DIV-3	CRC COUNTER NORMALIZATION	CA	ABANDONED	2,935,980	9/23/05		2,935,980	1/8/19	7/28/20
6936-53-PCA-DIV-4	CRC COUNTER NORMALIZATION	CA	ABANDONED	3,023,907	9/23/05		3,023,907	6/4/19	7/28/20
6936-53-PCN	CRC COUNTER NORMALIZATION	CN	ISSUED	200580008869.X	9/23/05	CN1934817A	200580008869.X	5/16/12	9/23/25
6936-53-PCN-DIV	CRC COUNTER NORMALIZATION	CN	ABANDONED	201210063701.0	9/23/05	CN 102624488	201210063701.0	11/25/15	7/25/17
6936-53-PCN-DIV-HK	A Method and a system for Cyclic Redundancy Checksum (CRC) Anomaly Counter Normalization, and a Module Performing the Method	HK	ABANDONED	13101408.9	9/23/05	HK1174752			3/22/16
6936-53-PCT	CRC COUNTER NORMALIZATION	WO	NAT PHASE	PCT/US05/033922	9/23/05	WO 2006/036723 A1			
6936-53-PEP	CRC COUNTER NORMALIZATION	EP	ISSUED	05799765.2	9/23/05	1792430	1792430	7/20/11	9/23/25
6936-53-PEPBE	CRC COUNTER NORMALIZATION	BE	ABANDONED	05799765.2	9/23/05	N/A	1792430	7/20/11	8/4/20
6936-53-PEPCH	CRC COUNTER NORMALIZATION	CH	ABANDONED	05799765.2	9/23/05	N/A	1792430	7/20/11	8/4/20
6936-53-PEPDE	CRC COUNTER NORMALIZATION	DE	ISSUED	05799765.2	9/23/05	N/A	1792430	7/20/11	9/23/25
6936-53-PEPDK	CRC COUNTER NORMALIZATION	DK	ABANDONED	05799765.2	9/23/05	N/A	1792430	7/20/11	8/4/20
6936-53-PEPFR	CRC COUNTER NORMALIZATION	FR	ISSUED	05799765.2	9/23/05	N/A	1792430	7/20/11	9/23/25
6936-53-PEPGB	CRC COUNTER NORMALIZATION	GB	ABANDONED	05799765.2	9/23/05	N/A	1792430	7/20/11	8/6/19
6936-53-PEPHK	CRC COUNTER NORMALIZATION	HK	ABANDONED	07110654.9	9/23/05	HK 1102488			8/4/11
6936-53-PEPIE	CRC COUNTER NORMALIZATION	IE	ABANDONED	05799765.2	9/23/05	N/A	1792430	7/20/11	8/4/20
6936-53-PEPNL	CRC COUNTER NORMALIZATION	NL	ISSUED	05799765.2	9/23/05	N/A	1792430	7/20/11	9/23/25
6936-53-PEPSE	CRC COUNTER NORMALIZATION	SE	ABANDONED	05799765.2	9/23/05	N/A	1792430	7/20/11	8/4/20
6936-53-PEP-DIV	CRC COUNTER NORMALIZATION	EP	ISSUED	11005906.0	9/23/05	EP2381610A1	2381610	12/21/16	9/23/25
6936-53-PEP-DIV-DE	CRC COUNTER NORMALIZATION	DE	ISSUED	11005906.0	9/23/05		2381610	12/21/16	9/23/25
6936-53-PEP-DIV-FR	CRC COUNTER NORMALIZATION	FR	ISSUED	11005906.0	9/23/05		2381610	12/21/16	9/23/25
6936-53-PEP-DIV-GB	CRC COUNTER NORMALIZATION	GB	ISSUED	11005906.0	9/23/05		2381610	12/21/16	9/23/25
6936-53-PEP-DIV-2	CRC COUNTER NORMALIZATION	EP	ISSUED	16020487.1	9/23/05	3176973	3176973	6/17/20	9/23/25
6936-53-PEP-DIV-2-DE	CRC COUNTER NORMALIZATION	DE	ISSUED	16020487.1	9/23/05		3176973	6/17/20	9/23/25
6936-53-PEP-DIV-2-FR	CRC COUNTER NORMALIZATION	FR	ISSUED	16020487.1	9/23/05		3176973	6/17/20	9/23/25
6936-53-PEP-DIV-2-GB	CRC COUNTER NORMALIZATION	GB	ISSUED	16020487.1	9/23/05		3176973	6/17/20	9/23/25
6936-53-PIN	CRC COUNTER NORMALIZATION	IN	ABANDONED	1601/KOLNP/2006	9/23/05	IN 1601/KOLNP/2006			9/23/25
6936-53-PJP	CRC COUNTER NORMALIZATION	JP	ABANDONED	2006-551651	9/23/05	2007-519382			10/12/11
6936-53-PJP-DIV	CRC COUNTER NORMALIZATION	JP	ABANDONED	2006-345676	9/23/05	JP 2007/151145			10/12/11
6936-53-PJP-DIV-2	CRC COUNTER NORMALIZATION	JP	ISSUED	2010-042193	9/23/05	2010-178353	5237317	4/5/13	9/23/25
6936-53-PJP-DIV-3	CRC COUNTER NORMALIZATION	JP	ISSUED	2012-194723	9/23/05	2013-009417	5823936	10/16/15	9/23/25
6936-53-PJP-DIV-4	CRC COUNTER NORMALIZATION	JP	ISSUED	2015-105633	9/23/05	2015-167401	6215254	9/29/17	9/23/25
6936-53-PJP-DIV-5	CRC COUNTER NORMALIZATION	JP	ISSUED	2016-162059	9/23/05	2016-220241	6335230	5/11/18	9/23/25
6936-53-PKR	CRC COUNTER NORMALIZATION	KR	ISSUED	10-2006-7011697	9/23/05	10-2007-0072425	10-0955190	4/20/10	9/23/25
6936-53-PKR-DIV	CRC COUNTER NORMALIZATION	KR	ABANDONED	10-2010-7005285	9/23/05	10-2010/0035665			9/23/25
6936-53-PKR-DIV-2	CRC COUNTER NORMALIZATION	KR	ABANDONED	10-2010-7024190	9/23/05	10-2010-0120722			9/23/25
6936-53-PROV	CRC COUNTER NORMALIZATION METHOD AND SYSTEM	US	EXPIRED	60/613,594	9/25/04	N/A			9/25/05
6936-52-PCA	Impulse Noise Management	CA	ISSUED	2,555,757	3/3/05	CA 2555757	2,555,757	1/20/15	3/3/25
6936-52-PCA-REI	Impulse Noise Management	CA	ISSUED	2,555,757R	3/3/05		2,555,757	3/27/18	3/3/25
6936-52-PCN	ON-LINE IMPULSE NOISE PROTECTION (INP) ADAPTATION	CN	ABANDONED	200580006738.8	3/3/05	CN1926794A			11/10/11
6936-52-PCT	ON-LINE IMPULSE NOISE PROTECTION (INP) ADAPTATION	WO	NAT PHASE	PCT/US05/06842	3/3/05	WO 2005/086405 A3			
6936-52-PEP	Impulse Noise Management	EP	ABANDONED	05724394.1	3/3/05	EP 1721403			3/3/25
6936-52-PEPHK	ON-LINE IMPULSE NOISE PROTECTION (INP) ADAPTATION	HK	ABANDONED	07105041.1	3/3/05	HK 1097672			8/23/12
6936-52-PEP-DIV	Impulse Noise Management	EP	ABANDONED	10006702.4	3/3/05	2228936			3/7/11
6936-52-PEP-DIV-HK	Impulse Noise Management	HK	ABANDONED	10110020.1	3/3/05	HK 1143672			8/23/12
6936-52-PIN	ON-LINE IMPULSE NOISE PROTECTION (INP) ADAPTATION	IN	ABANDONED	2155/KOLNP/2006	7/31/06	IN 2137/KOLNP/2006			7/31/26
6936-52-PROV	ON-LINE IMPULSE NOISE PROTECTION (INP) ADAPTATION	US	EXPIRED	60/549,804	3/3/04	N/A			3/3/05
6936-52-PROV-2	IMPULSE NOISE PROTECTION (INP) TRAINING	US	EXPIRED	60/555,982	3/24/04	N/A			3/24/05
6936-52-PUS	Impulse Noise Management	US	ABANDONED	10/597,482	7/27/06	US 2008-0232444 A1			10/14/11
6936-52-PUS-CON	Impulse Noise Management	US	ISSUED	12/769,193	4/28/10	US 2010-0220771 A1	8,462,835	6/11/13	3/3/25
6936-52-PUS-CON-2	Impulse Noise Management	US	ISSUED	13/914,852	6/11/13	US 2013-0272355 A1	8,594,162	11/26/13	3/3/25
6936-52-PUS-CON-3	Impulse Noise Management	US	ISSUED	14/075,077	11/8/13	US 2014-0064343 A1	8,743,932	6/3/14	3/3/25
6936-52-PUS-CON-4	Impulse Noise Management	US	ABANDONED	14/285,911	5/23/14	US 2014-0254643 A1			2/11/16
6936-52-PUS-CON-5	IMPULSE NOISE MANAGEMENT	US	ABANDONED	14/757,630	12/23/15	US 2016-0127079 A1			9/10/18
6936-52-PUS-CON-6	IMPULSE NOISE MANAGEMENT	US	ISSUED	16/126,027	9/10/18	US 2019-0007164 A1	10,567,112	2/18/20	3/3/25
6936-52-PUS-CON-6-DIV	IMPULSE NOISE MANAGEMENT	US	ISSUED	16/448,939	6/21/19	US 2019-0312667 A1	10,805,040	10/13/20	3/3/25
6936-52-PUS-CON-7	IMPULSE NOISE MANAGEMENT	US	PUBLISHED	16/781,802	2/4/20	US 2020-0177304 A1			3/3/25
6936-28	MULTICARRIER TRANSMISSION SYSTEM WITH LOW POWER SLEEP MODE AND RAPID-ON CAPABILITY	US	EXPIRED	09/581,400	6/13/00	N/A	6,445,730	9/3/02	1/26/19
6936-28-CON	MULTICARRIER TRANSMISSION SYSTEM WITH LOW POWER SLEEP MODE AND RAPID-ON CAPABILITY	US	ABANDONED	10/175,815	6/21/02	US 2002-0150152			5/17/04
6936-28-CON-1	MULTICARRIER TRANSMISSION SYSTEM WITH LOW POWER SLEEP MODE AND RAPID-ON CAPABILITY	US	ABANDONED	10/778,083	2/17/04	US 2004-0160906			5/30/05
6936-28-CON-2	MULTICARRIER TRANSMISSION SYSTEM WITH LOW POWER SLEEP MODE AND RAPID-ON CAPABILITY	US	ABANDONED	11/090,183	3/28/05	US 2005-0185726 A1			3/12/06
6936-28-CON-3	MULTICARRIER TRANSMISSION SYSTEM WITH LOW POWER SLEEP MODE AND RAPID-ON CAPABILITY	US	ABANDONED	11/289,516	11/30/05	US 2006-0078060 A1			

6936-28-CON-4	MULTICARRIER TRANSMISSION SYSTEM WITH LOW POWER SLEEP MODE AND RAPID-ON CAPABILITY	US	EXPIRED	11/425,507	6/21/06	US 2006-0233273 A1	7,697,598	4/13/10	1/26/19
6936-28-CON-5	Multicarrier Transmission System with Low Power Sleep Mode and Rapid-on Capability	US	ABANDONED	12/615,946	11/10/09	US 2010-0054312 A1	7,978,753	7/12/11	12/12/18
6936-28-CON-6	Multicarrier Transmission System with Low Power Sleep Mode and Rapid-On Capability	US	EXPIRED	13/152,558	6/3/11	US 2011-0235691 A1	8,437,382	5/7/13	1/26/19
6936-28-CON-7	Multicarrier Transmission System with Low Power Sleep Mode and Rapid-On Capability	US	EXPIRED	13/887,889	5/6/13	US 2013-0243051-A1	8,611,404	12/17/13	1/26/19
6936-28-CON-8	Multicarrier Transmission System with Low Power Sleep Mode and Rapid-On Capability	US	EXPIRED	14/092,248	11/27/13	US 2014-0086287 A1	8,750,352	6/10/14	1/26/19
6936-28-CON-9	Multicarrier Transmission System with Low Power Sleep Mode and Rapid-On Capability	US	ABANDONED	14/295,981	6/4/14	US 2014-0286379 A1	9,094,268	7/28/15	12/12/18
6936-28-CON-10	MULTICARRIER TRANSMISSION SYSTEM WITH LOW POWER SLEEP MODE AND RAPID-ON CAPABILITY	US	EXPIRED	14/798,014	7/13/15	US 2015-0326404 A1	9,521,003	12/13/16	1/26/19
6936-28-CON-11	MULTICARRIER TRANSMISSION SYSTEM WITH LOW POWER SLEEP MODE AND RAPID-ON CAPABILITY	US	ABANDONED	15/180,274	6/13/16	US 2016-0286493 A1			11/19/18
6936-28-PAU	MULTICARRIER TRANSMISSION SYSTEM WITH LOW POWER SLEEP MODE AND RAPID-ON CAPABILITY	AU	EXPIRED	23409/99	1/26/99	AU 2340999	764933	12/18/03	1/26/19
6936-28-PAU-2	MULTICARRIER TRANSMISSION SYSTEM WITH LOW POWER SLEEP MODE AND RAPID-ON CAPABILITY	AU	ABANDONED	2003266426	12/4/03	AU 2003266429			3/10/05
6936-28-PCA	MULTICARRIER TRANSMISSION SYSTEM WITH LOW POWER SLEEP MODE AND RAPID-ON CAPABILITY	CA	EXPIRED	2,357,551	1/26/99	CA 2357551	2,357,551	9/30/08	1/26/19
6936-28-PCA-DIV	Multicarrier Transmission System With Low Power Sleep Mode and Rapid-On Capability	CA	ABANDONED	2,633,064	1/26/99	CA 2633064	2,633,064	4/2/13	12/23/16
6936-28-PCA-DIV-2	Multicarrier Transmission System With Low Power Sleep Mode and Rapid-On Capability	CA	EXPIRED	2,800,005	1/26/99		2,800,005	3/14/17	1/26/19
6936-28-PCT	MULTICARRIER TRANSMISSION SYSTEM WITH LOW POWER SLEEP MODE AND RAPID-ON CAPABILITY	WO	NAT PHASE	PCT/US99/01539	1/26/99	WO 2000/045559			
6936-28-PEP	MULTICARRIER TRANSMISSION SYSTEM WITH LOW POWER SLEEP MODE AND RAPID-ON CAPABILITY	EP	EXPIRED	99903370.7	1/26/99	1145518	1145518	11/24/04	1/26/19
6936-28-PEPGB	MULTICARRIER TRANSMISSION SYSTEM WITH LOW POWER SLEEP MODE AND RAPID-ON CAPABILITY	GB	EXPIRED	99903370.7	1/26/99	N/A	1145518	11/24/04	1/26/19
6936-28-PEP-2	MULTICARRIER TRANSMISSION SYSTEM WITH LOW POWER SLEEP MODE AND RAPID-ON CAPABILITY	EP	EXPIRED	04022871.0	1/26/99	1524812	1524812	10/31/07	1/26/19
6936-28-PEP-2-DE	MULTICARRIER TRANSMISSION SYSTEM WITH LOW POWER SLEEP MODE AND RAPID-ON CAPABILITY	DE	EXPIRED	04022871.0	1/26/99	N/A	1524812	10/31/07	1/26/19
6936-28-PEP-2-FR	MULTICARRIER TRANSMISSION SYSTEM WITH LOW POWER SLEEP MODE AND RAPID-ON CAPABILITY	FR	EXPIRED	04022871.0	1/26/99	N/A	1524812	10/31/07	1/26/19
6936-28-PEP-2-GB	MULTICARRIER TRANSMISSION SYSTEM WITH LOW POWER SLEEP MODE AND RAPID-ON CAPABILITY	GB	EXPIRED	04022871.0	1/26/99	N/A	1524812	10/31/07	1/26/19
6936-28-PEP-3	Multicarrier Transmission System with Low Power Sleep Mode and Rapid-on-Capability	EP	EXPIRED	07021150.3	1/26/99	1901512	1901512	11/23/11	1/26/19
6936-28-PEP-3-DE	Multicarrier Transmission System with Low Power Sleep Mode and Rapid-on-Capability	DE	EXPIRED	07021150.3	1/26/99	N/A	1901512	11/23/11	1/26/19
6936-28-PEP-3-FR	Multicarrier Transmission System with Low Power Sleep Mode and Rapid-on-Capability	FR	EXPIRED	07021150.3	1/26/99	N/A	1901512	11/23/11	1/26/19
6936-28-PEP-3-GB	Multicarrier Transmission System with Low Power Sleep Mode and Rapid-on-Capability	GB	EXPIRED	07021150.3	1/26/99	N/A	1901512	11/23/11	1/26/19
6936-28-PEP-3-HK	Multicarrier Transmission System with Low Power Sleep Mode and Rapid-on-Capability	HK	ABANDONED	08110349.9	1/26/99	HK 1117978			7/28/11
6936-28-PEP-3-DIV-1	Multicarrier Transmission System with Low Power Sleep Mode and Rapid-on-Capability	EP	EXPIRED	10011996.5	1/26/99	2302857	2302857	9/2/15	1/26/19
6936-28-PEP-3-DIV-1-DE	Multicarrier Transmission System with Low Power Sleep Mode and Rapid-on-Capability	DE	EXPIRED	10011996.5	1/26/99		2302857	9/2/15	1/26/19
6936-28-PEP-3-DIV-1-FR	Multicarrier Transmission System with Low Power Sleep Mode and Rapid-on-Capability	FR	EXPIRED	10011996.5	1/26/99		2302857	9/2/15	1/26/19
6936-28-PEP-3-DIV-1-GB	Multicarrier Transmission System with Low Power Sleep Mode and Rapid-on-Capability	GB	EXPIRED	10011996.5	1/26/99		2302857	9/2/15	1/26/19
6936-28-PEP-3-DIV-2	Multicarrier Transmission System with Low Power Sleep Mode and Rapid-on-Capability	EP	EXPIRED	10012013.8	1/26/99	2330749	2330749	4/30/14	1/26/19
6936-28-PEP-3-DIV-2-DE	Multicarrier Transmission System with Low Power Sleep Mode and Rapid-on-Capability	DE	EXPIRED	10012013.8	1/26/99		2330749	4/30/14	1/26/19
6936-28-PEP-3-DIV-2-FR	Multicarrier Transmission System with Low Power Sleep Mode and Rapid-on-Capability	FR	EXPIRED	10012013.8	1/26/99		2330749	4/30/14	1/26/19



6936-28-PEP-3-DIV-2-GB	Multicarrier Transmission System with Low Power Sleep Mode and Rapid-on-Capability	GB	EXPIRED	10012013.8	1/26/99		2330749	4/30/14	1/26/19
6936-28-PJP	MULTICARRIER TRANSMISSION SYSTEM WITH LOW POWER SLEEP MODE AND RAPID-ON CAPABILITY	JP	EXPIRED	2000-596705	1/26/99	2003-518341	4282907	3/27/09	1/26/19
6936-28-PJP-DIV	MULTICARRIER TRANSMISSION SYSTEM WITH LOW POWER SLEEP MODE AND RAPID-ON CAPABILITY	JP	ABANDONED	2008-323651	1/26/99	N/A			1/26/19
6936-28-PKR	MULTICARRIER TRANSMISSION SYSTEM WITH LOW POWER SLEEP MODE AND RAPID-ON CAPABILITY	KR	ABANDONED	7009402/2001	1/26/99	10-2001-0108132			5/15/06
6936-28-PROV	MULTICARRIER TRANSMISSION SYSTEM WITH LOW POWER SLEEP MODE AND RAPID-ON CAPABILITY	US	EXPIRED	60/072,447	1/26/98	N/A			1/26/99
6936-55-PAU	Initialization in the Presence of Impulse Noise	AU	ISSUED	2005295758	10/14/05	AU 2005295758	2005295758	7/9/10	10/14/25
6936-55-PAU-2	Initialization in the Presence of Impulse Noise	AU	ABANDONED	2010202626	10/14/05	AU 2010202626			6/27/11
6936-55-PCA	DMT Symbol Repetition in the Presence of Impulse Noise	CA	ISSUED	2,582,106	10/14/05	2,582,106	2,582,106	4/28/15	10/14/25
6936-55-PCA-DIV	DMT Symbol Repetition in the Presence of Impulse Noise	CA	ABANDONED	2,881,036	10/14/05		2,881,036	12/22/15	9/8/20
6936-55-PCA-DIV-2	DMT Symbol Repetition in the Presence of Impulse Noise	CA	ABANDONED	2,906,478	10/14/05		2,906,478	1/8/19	10/14/25
6936-55-PCN	Initialization in the Presence of Impulse Noise	CN	ISSUED	200580034464.3	10/14/05	CN101040480A	200580034464.3	8/31/11	10/14/25
6936-55-PCN-HK	DMT Symbol Repetition in the Presence of Impulse Noise	HK	ISSUED	08102934.7	10/14/05	HK 1108783	HK1108783	12/16/11	10/14/25
6936-55-PCT	DMT SYMBOL REPETITION IN THE PRESENCE OF IMPULSE NOISE	WO	NAT PHASE	PCT/US05/36815	10/14/05	WO 2006/044533 A1			
6936-55-PEP	Initialization in the Presence of Impulse Noise	EP	ISSUED	05810124.7	10/14/05	1800427	1800427	6/20/12	10/14/25
6936-55-PEPBE	Initialization in the Presence of Impulse Noise	BE	ISSUED	05810124.7	10/14/05		1800427	6/20/12	10/14/25
6936-55-PEPCH	Initialization in the Presence of Impulse Noise	CH	ABANDONED	05810124.7	10/14/05		1800427	6/20/12	9/8/20
6936-55-PEPDE	Initialization in the Presence of Impulse Noise	DE	ISSUED	05810124.7	10/14/05		1800427	6/20/12	10/14/25
6936-55-PEPDK	Initialization in the Presence of Impulse Noise	DK	ABANDONED	05810124.7	10/14/05		1800427	6/20/12	10/14/25
6936-55-PEPES	Initialization in the Presence of Impulse Noise	ES	ISSUED	05810124.7	10/14/05		1800427	6/20/12	10/14/25
6936-55-PEPFR	Initialization in the Presence of Impulse Noise	FR	ISSUED	05810124.7	10/14/05		1800427	6/20/12	10/14/25
6936-55-PEPGB	Initialization in the Presence of Impulse Noise	GB	ISSUED	05810124.7	10/14/05		1800427	6/20/12	10/14/25
6936-55-PEPHK	Initialization in the Presence of Impulse Noise	HK	ISSUED	07112380.6	10/14/05	HK 1103889	1103889	12/28/12	10/14/25
6936-55-PEPIT	Initialization in the Presence of Impulse Noise	IT	ISSUED	05810124.7	10/14/05		1800427	6/20/12	10/14/25
6936-55-PEPNL	Initialization in the Presence of Impulse Noise	NL	ISSUED	05810124.7	10/14/05		1800427	6/20/12	10/14/25
6936-55-PEPSE	Initialization in the Presence of Impulse Noise	SE	ABANDONED	05810124.7	10/14/05		1800427	6/20/12	10/14/25
6936-55-PEP-DIV	Initialization in the Presence of Impulse Noise	EP	ISSUED	11000980.0	10/14/05	2312784	2312784	2/1/17	10/14/25
6936-55-PEP-DIV-DE	Initialization in the Presence of Impulse Noise	DE	ISSUED	11000980.0	10/14/05		2312784	2/1/17	10/14/25
6936-55-PEP-DIV-FR	Initialization in the Presence of Impulse Noise	FR	ISSUED	11000980.0	10/14/05		2312784	2/1/17	10/14/25
6936-55-PEP-DIV-GB	Initialization in the Presence of Impulse Noise	GB	ISSUED	11000980.0	10/14/05		2312784	2/1/17	10/14/25
6936-55-PEP-DIV-2	Initialization in the Presence of Impulse Noise	EP	PUBLISHED	17020039.8	10/14/05	3220567			10/14/25
6936-55-PEP-DIV-2-HK	Initialization in the Presence of Impulse Noise	HK	PUBLISHED	18100419.3	10/14/15	1241167			10/14/35
6936-55-PIN	Initialization in the Presence of Impulse Noise	IN	ABANDONED	1209/KOLNP/2007	10/14/05	IN 1209/KOLNP/2007			10/15/24
6936-55-PJP	DMT Symbol Repetition in the Presence of Impulse Noise	JP	ABANDONED	2007-536883	10/14/05	2008-517535			4/15/13
6936-55-PJP-DIV	DMT Symbol Repetition in the Presence of Impulse Noise	JP	ABANDONED	2008-264567	10/14/05	2009-081862			4/15/13
6936-55-PKR	DMT SYMBOL REPETITION IN THE PRESENCE OF IMPULSE NOISE	KR	ISSUED	10-2007-7008275	10/14/05	10-2007-0061867	10-1272404	5/31/13	10/14/25
6936-55-PKR-DIV	DMT Symbol Repetition in the Presence of Impulse Noise	KR	ISSUED	10-2010-7022479	10/14/05	10-2010/0121542	10-1314976	9/27/13	10/14/25
6936-55-PKR-DIV-2	DMT Symbol Repetition in the Presence of Impulse Noise	KR	ABANDONED	10-2012-7021605	10/14/05				4/16/13
6936-55-PROV	XDSL INITIALIZATION IN THE PRESENCE OF IMPULSE NOISE	US	EXPIRED	60/619,618	10/15/04	N/A			10/15/05
6936-55-PUS	DMT Symbol Repetition in the Presence of Impulse Noise	US	ISSUED	11/575,598	3/20/07	US 2007-0217491 A1	7,796,705	9/14/10	8/22/27
6936-55-PUS-CON	Impulse Noise Protection During Initialization	US	ISSUED	12/769,747	4/29/10	US 2010-0208842 A1	8,913,649	12/16/14	10/14/25
6936-55-PUS-CON-2	DMT Symbol Repetition in the Presence of Impulse Noise	US	ISSUED	14/559,156	12/3/14	US 2015-0146821 A1	9,621,198	4/11/17	10/14/25
6936-55-PUS-CON-3	DMT SYMBOL REPETITION IN THE PRESENCE OF IMPULSE NOISE	US	ABANDONED	15/479,866	4/5/17	US 2017-0214487 A1			9/12/19
6936-55-PUS-CON-4	DMT SYMBOL REPETITION IN THE PRESENCE OF IMPULSE NOISE	US	PUBLISHED	16/569,144	9/12/19	US 2020-0007268 A1			10/14/25
6936-57-PAU	Packet Retransmission and Memory Sharing	AU	ABANDONED	2007257055	4/12/07	AU 2007257055			4/12/27
6936-57-PBR	Packet Retransmission and Memory Sharing	BR	ISSUED	PI-0709871-5	4/12/07	BR PI0709871	PI 0709871-5	10/15/19	10/15/29
6936-57-PCA	Packet Retransmission and Memory Sharing	CA	ISSUED	2,647,589	4/12/07	CA 2647589	2,647,589	8/21/18	4/12/27

6936-57-PCA-DIV	Packet Retransmission and Memory Sharing	CA	PENDING	3,011,163	4/12/07				4/12/27
6936-57-PCN	Packet Retransmission and Memory Sharing	CN	ABANDONED	200780012891.0	4/12/07	CN101421992A			4/16/13
6936-57-PCN-HK	Packet Retransmission and Memory Sharing	HK	ABANDONED	09109954.6	4/12/07	HK 1133132			4/16/13
6936-57-PCO	Packet Retransmission and Memory Sharing	CO	ABANDONED	08-109.377	4/12/07	08-109.377			4/12/27
6936-57-PCT	Packet Retransmission and Memory Sharing	WO	NAT PHASE	PCT/US07/66522	4/12/07	WO 2007/143277			
6936-57-PEP	Packet Retransmission and Memory Sharing	EP	ISSUED	07811844.5	4/12/07	2005674	2005674	9/28/16	4/12/27
6936-57-PEP-DE	Packet Retransmission and Memory Sharing	DE	ISSUED	07811844.5	4/12/07		2005674	9/28/16	4/12/27
6936-57-PEP-FR	Packet Retransmission and Memory Sharing	FR	ISSUED	07811844.5	4/12/07		2005674	9/28/16	4/12/27
6936-57-PEP-GB	Packet Retransmission and Memory Sharing	GB	ISSUED	07811844.5	4/12/07		2005674	9/28/16	4/12/27
6936-57-PEP-DIV	Packet Retransmission and Memory Sharing	EP	ISSUED	10000017.3	4/12/07	2178254	2178254	2/8/17	4/12/27
6936-57-PEP-DIV-DE	Packet Retransmission and Memory Sharing	DE	ISSUED	10000017.3	4/12/07		2178254	2/8/17	4/12/27
6936-57-PEP-DIV-FR	Packet Retransmission and Memory Sharing	FR	ISSUED	10000017.3	4/12/07		2178254	2/8/17	4/12/27
6936-57-PEP-DIV-GB	Packet Retransmission and Memory Sharing	GB	ISSUED	10000017.3	4/12/07		2178254	2/8/17	4/12/27
6936-57-PEP-DIV-HK	Packet Retransmission and Memory Sharing	HK	ABANDONED	10104429.1	4/12/07	HK 1136723			10/26/16
6936-57-PEP-DIV-2	Packet Retransmission and Memory Sharing	EP	ISSUED	10000016.5	4/12/07	2173071	2173071	6/26/13	4/12/27
6936-57-PEP-DIV-2-BE	Packet Retransmission and Memory Sharing	BE	ABANDONED	10000016.5	4/12/07		2173071	6/26/13	1/13/17
6936-57-PEP-DIV-2-DE	Packet Retransmission and Memory Sharing	DE	ABANDONED	10000016.5	4/12/07		2173071	6/26/13	1/13/17
6936-57-PEP-DIV-2-FR	Packet Retransmission and Memory Sharing	FR	ABANDONED	10000016.5	4/12/07		2173071	6/26/13	1/13/17
6936-57-PEP-DIV-2-GB	Packet Retransmission and Memory Sharing	GB	ABANDONED	10000016.5	4/12/07		2173071	6/26/13	1/13/17
6936-57-PEP-DIV-2-HK	Packet Retransmission and Memory Sharing	HK	ABANDONED	10103698.7	4/12/07	HK 1135537	1135537	11/15/13	1/13/17
6936-57-PEP-DIV-3	Packet Retransmission and Memory Sharing	EP	ISSUED	17020026.5	4/12/07	3190756	3190756	10/31/18	4/12/27
6936-57-PEP-DIV-3-DE	Packet Retransmission and Memory Sharing	DE	ISSUED	17020026.5	4/12/07		3190756	10/31/18	4/12/27
6936-57-PEP-DIV-3-FR	Packet Retransmission and Memory Sharing	FR	ISSUED	17020026.5	4/12/07		3190756	10/31/18	4/12/27
6936-57-PEP-DIV-3-GB	Packet Retransmission and Memory Sharing	GB	ISSUED	17020026.5	4/12/07		3190756	10/31/18	4/12/27
6936-57-PEP-DIV-4	Packet Retransmission and Memory Sharing	EP	PUBLISHED	17020525.6	4/12/07	3301871			4/12/27
6936-57-PEP-DIV-4-HK	Packet Retransmission and Memory Sharing	HK	PENDING	18110134.6	4/12/07				4/12/27
6936-57-PIN	Packet Retransmission and Memory Sharing	IN	ABANDONED	4084/KOLNP/2008	4/12/07	IN 4084/KOLNP/2008			4/12/27
6936-57-PIP	6936and Memory Sharing	JP	ABANDONED	2009-505623	4/12/07	2009-533973			2/27/12
6936-57-PIP-DIV	Packet Retransmission and Memory Sharing	JP	ABANDONED	2010-017356	4/12/07	2010-136427			10/2/12
6936-57-PIP-DIV-2	Packet Retransmission and Memory Sharing	JP	ISSUED	2012-042978	4/12/07	2012-151863	5486621	2/28/14	4/12/27
6936-57-PIP-DIV-3	Packet Retransmission and Memory Sharing	JP	ISSUED	2013-246257	4/12/07	2014-090433	5948307	6/10/16	4/12/27
6936-57-PKR	Packet Retransmission and Memory Sharing	KR	ISSUED	10-2008-7024792	4/12/07	10-2008-0108127	10-1736999	5/11/17	4/12/27
6936-57-PKR-DIV	Packet Retransmission and Memory Sharing	KR	ABANDONED	10-2014-7005299	4/12/07				6/20/16
6936-57-PKR-DIV-2	Packet Retransmission and Memory Sharing	KR	ABANDONED	10-2017-7012757	4/12/07				1/12/18
6936-57-PKR-DIV-3	Packet Retransmission and Memory Sharing	KR	ISSUED	10-2017-7036067	4/12/07		10-1952812	2/21/19	4/12/27
6936-57-PKR-DIV-4	Packet Retransmission and Memory Sharing	KR	ISSUED	10-2019-7005116	4/12/07		10-2151398	8/28/20	4/12/27
6936-57-PMX	Packet Retransmission and Memory Sharing	MX	ISSUED	MX/a/2008/012505	4/12/07	MX 2008012505	301471	7/18/12	4/12/27
6936-57-PMX-DIV	Packet Retransmission and Memory Sharing	MX	ABANDONED	MX/a/2011/005751	4/12/07				4/12/27
6936-57-PROV	XDSL PACKET RETRANSMISSION MECHANISM	US	EXPIRED	60/792,236	4/12/06	N/A			4/12/07
6936-57-PUS	Packet Retransmission and Memory Sharing	US	ISSUED	12/295,828	10/2/08	US 2009-0300450 A1	8,335,956	12/18/12	10/11/25
6936-57-PUS-CON	Packet Retransmission and Memory Sharing	US	ISSUED	12/783,758	5/20/10	US 2011-0002331 A1	8,407,546	3/26/13	7/23/28
6936-57-PUS-CON-2	Packet Retransmission and Memory Sharing	US	ISSUED	13/766,059	2/13/13	US 2013-0163592 A1	8,645,784	2/4/14	4/12/27
6936-57-PUS-CON-3	Packet Retransmission and Memory Sharing	US	ISSUED	14/159,125	1/20/14	US 2014-0133491 A1	9,485,055	11/1/16	4/12/27
6936-57-PUS-CON-4	PACKET RETRANSMISSION AND MEMORY SHARING	US	ISSUED	15/298,526	10/20/16	US 2017-0041224 A1	10,044,473	8/7/18	4/12/27
6936-57-PUS-CON-5	PACKET RETRANSMISSION AND MEMORY SHARING	US	ISSUED	16/046,494	7/26/18	US 2018-0331790 A1	10,484,140	11/19/19	10/11/25
6936-57-PUS-CON-6	PACKET RETRANSMISSION AND MEMORY SHARING	US	PUBLISHED	16/561,835	9/5/19	US 2019-0393991 A1			4/12/27
6936-57-PUS-DIV	Packet Retransmission	US	ISSUED	12/760,728	4/15/10	US 2010-0205501 A1	8,595,577	11/26/13	8/28/27
6936-57-PUS-DIV-CON	Packet Retransmission	US	ISSUED	12/783,765	5/20/10	US 2010-0332935 A1	8,468,411	6/18/13	10/11/25
6936-57-PUS-DIV-CON-2	Packet Retransmission	US	ISSUED	14/075,194	11/8/13	US 2014-0068366 A1	9,094,348	7/28/15	4/12/27
6936-57-PUS-DIV-CON-3	Packet Retransmission	US	ISSUED	14/742,334	6/17/15	US 2015-0312001 A1	9,749,235	8/29/17	4/12/27

6936-57-PUS-DIV-CON-4	Packet Retransmission	US	ISSUED	15/678,870	8/16/17	US 2017-0373971 A1	10,498,495	12/3/19	4/12/27
6936-57-PUS-DIV-CON-5	TECHNIQUES FOR PACKET AND MESSAGE COMMUNICATION IN A MULTICARRIER TRANSCIEVER ENVIRONMENT	US	ISSUED	16/701,343	12/3/19	US 2020-0106558 A1	10,833,809	11/10/20	4/12/27
6936-57-PUS-DIV-CON-6	PACKET RETRANSMISSION	US	PENDING	17/027,196	9/21/20				4/12/27
6936-59-PROV	xDSL Packet Retransmission Mechanism With Examples	US	EXPIRED	60/849,650	10/5/06	N/A			10/5/07
6936-26	SYSTEMS AND METHODS FOR A MULTICARRIER MODULATION SYSTEM WITH A VARIABLE MARGIN	US	ABANDONED	09/836,295	4/18/01	US 2002-0009155			10/4/05
6936-26-CON	SYSTEMS AND METHODS FOR A MULTICARRIER MODULATION SYSTEM WITH A VARIABLE MARGIN	US	ABANDONED	11/242,024	10/4/05	US 2006-0018395 A1			4/18/21
6936-26-CON-2	Systems and Methods for a Multicarrier Modulation System with a Variable Margin	US	ABANDONED	11/972,340	1/10/08	US 2008-0107204 A1			7/27/11
6936-26-CON-3	Systems and Methods for a Multicarrier Modulation System with a Variable Margin	US	ISSUED	12/694,143	1/26/10	US 2010-0128810 A1	8,374,226	2/12/13	7/3/21
6936-26-CON-4	Systems and Methods for a Multicarrier Modulation System with a Variable Margin	US	ABANDONED	13/467,392	5/9/12	US 2012-0219047 A1			4/18/21
6936-26-CON-5	Systems and Methods for a Multicarrier Modulation System with a Variable Margin	US	ISSUED	13/764,529	2/11/13	US 2013-0148708 A1	8,625,660	1/7/14	4/18/21
6936-26-CON-6	Systems and Methods for a Multicarrier Modulation System with a Variable Margin	US	ISSUED	14/079,285	11/13/13	US 2014-0072062 A1	8,937,988	1/20/15	4/18/21
6936-26-CON-7	Systems and Methods for a Multicarrier Modulation System with a Variable Margin	US	ISSUED	14/591,612	1/7/15	US 2015-0117557 A1	9,154,354	10/6/15	4/18/21
6936-26-CON-8	SYSTEMS AND METHODS FOR A MULTICARRIER MODULATION SYSTEM WITH A VARIABLE MARGIN	US	ABANDONED	14/865,966	9/25/15	US 2016-0013962 A1			12/13/16
6936-26-CON-9	SYSTEMS AND METHODS FOR A MULTICARRIER MODULATION SYSTEM WITH A VARIABLE MARGIN	US	ISSUED	15/348,372	11/10/16	US 2017-0078129 A1	9,893,921	2/13/18	4/18/21
6936-26-CON-10	SYSTEMS AND METHODS FOR A MULTICARRIER MODULATION SYSTEM WITH A VARIABLE MARGIN	US	ISSUED	15/886,295	2/1/18	US 2018-0159711 A1	10,708,104	7/7/20	4/18/21
6936-26-PAU	MULTICARRIER MODULATION SYSTEM WITH VARIABLE MARGIN TO ACCOUNT FOR TIME VARYING IMPAIRMENTS	AU	ABANDONED	2001257081	4/18/01	N/A			
6936-26-PAU-CON	Data Allocation with Variable SNR Margins	AU	ISSUED	2007200448	4/18/01	AU 2007200448	2007200448	8/6/09	4/18/21
6936-26-PAU-CON-2	Data Allocation with Variable SNR Margins	AU	ABANDONED	2009202880	4/18/05	AU 2009202880			10/18/11
6936-26-PCA	MULTICARRIER MODULATION SYSTEM WITH VARIABLE MARGIN TO ACCOUNT FOR TIME VARYING IMPAIRMENTS	CA	ISSUED	2,406,151	4/18/01	CA 2405151	2,406,151	4/13/10	4/18/21
6936-26-PCA-2	DATA ALLOCATION WITH VARIABLE SNR MARGINS	CA	ABANDONED	2,689,952	4/18/01	CA 689952			2/24/11
6936-26-PCT	MULTICARRIER MODULATION SYSTEM WITH VARIABLE MARGIN TO ACCOUNT FOR TIME VARYING IMPAIRMENTS	WO	NAT PHASE	PCT/US01/12555	4/18/01	WO 2001/080510			
6936-26-PEP	MULTICARRIER MODULATION SYSTEM WITH VARIABLE MARGIN TO ACCOUNT FOR TIME VARYING IMPAIRMENTS	EP	ABANDONED	01930554.9	4/18/01	EP 1275229	1275229	3/21/07	4/18/21
6936-26-PEPBE	Data Allocation With Variable SNR Margins	BE	ABANDONED	01930554.9	4/18/01	N/A	1275229	3/21/07	4/18/21
6936-26-PEPDE	Data Allocation With Variable SNR Margins	DE	ABANDONED	01930554.9	4/18/01	N/A	1275229	3/21/07	4/18/21
6936-26-PEPFR	Data Allocation With Variable SNR Margins	FR	ABANDONED	01930554.9	4/18/01	N/A	1275229	3/21/07	4/18/21
6936-26-PEPGB	Data Allocation With Variable SNR Margins	GB	ABANDONED	01930554.9	4/18/01	N/A	1275229	3/21/07	4/18/21
6936-26-PEP-DIV	Data Allocation With Variable SNR Margins	EP	ISSUED	07005676.7	4/18/01	1830535	1830535	6/15/11	4/18/21
6936-26-PEP-DIV-BE	Data Allocation With Variable SNR Margins	BE	ISSUED	07005676.7	4/18/01	N/A	1830535	9/5/07	4/18/21
6936-26-PEP-DIV-DE	Data Allocation With Variable SNR Margins	DE	ISSUED	07005676.7	4/18/01		1830535	6/15/11	4/18/21
6936-26-PEP-DIV-FR	Data Allocation With Variable SNR Margins	FR	ISSUED	07005676.7	4/18/01	N/A	1830535	9/5/07	4/18/21
6936-26-PEP-DIV-GB	Data Allocation With Variable SNR Margins	GB	ISSUED	07005676.7	4/18/01	N/A	1830535	9/5/07	4/18/21
6936-26-PEP-DIV-2	MULTICARRIER MODULATION SYSTEM WITH VARIABLE MARGIN TO ACCOUNT FOR TIME VARYING IMPAIRMENTS	EP	ABANDONED	10011998.1	4/18/01	2267963			4/18/21
6936-26-PJP	MULTICARRIER MODULATION SYSTEM WITH VARIABLE MARGIN TO ACCOUNT FOR TIME VARYING IMPAIRMENTS	JP	ABANDONED	2001-576639	4/18/01	2004-501535			4/18/21
6936-26-PKR	MULTICARRIER MODULATION SYSTEM WITH VARIABLE MARGIN TO ACCOUNT FOR TIME VARYING IMPAIRMENTS	KR	ABANDONED	2002-7013983	4/18/01	10-2002-087990			4/18/21
6936-26-PROV	MULTICARRIER MODULATION SYSTEM WITH VARIABLE MARGIN TO ACCOUNT FOR TIME VARYING IMPAIRMENTS	US	EXPIRED	60/197,727	4/18/00	N/A			4/18/01

6936-7-CON	MULTICARRIER COMMUNICATION WITH VARIABLE OVERHEAD RATE	US	ABANDONED	10/202,688	7/25/02	US 2003-0007509			7/13/06
6936-7-PAU	MULTICARRIER COMMUNICATION WITH VARIABLE OVERHEAD RATE	AU	EXPIRED	48339/99	6/25/99	AU 4833999	750898	11/21/02	6/25/19
6936-7-PAU-2	MULTICARRIER COMMUNICATION WITH VARIABLE OVERHEAD RATE	AU	EXPIRED	2002301627	6/25/99	AU 2002301627	2002301627	8/6/04	6/25/19
6936-7-PAU-3	MULTICARRIER COMMUNICATION WITH VARIABLE OVERHEAD RATE	AU	ABANDONED	2004203322	6/25/99	AU 2004203322	2004203322	10/11/07	5/4/17
6936-7-PAU-4	Multicarrier Communication With Variable Overhead Rate	AU	ABANDONED	2007202930	6/25/99	AU 2007202930			6/25/19
6936-7-PAU-4-DIV	Multicarrier Communication With Variable Overhead Rate	AU	ABANDONED	2010249199	6/25/99	AU 2010249199			6/25/19
6936-7-PCA	MULTICARRIER COMMUNICATION WITH VARIABLE OVERHEAD RATE	CA	ABANDONED	2,335,865	6/25/99	CA 2335865	2,335,865	12/16/08	3/10/17
6936-7-PCA-DIV	MULTICARRIER COMMUNICATION WITH VARIABLE OVERHEAD RATE	CA	EXPIRED	2,641,978	6/25/99	CA 2641978	2,641,978	1/6/15	6/25/19
6936-7-PCA-DIV-2	MULTICARRIER COMMUNICATION WITH VARIABLE OVERHEAD RATE	CA	EXPIRED	2,867,539	6/25/99		2,867,539	3/14/17	6/25/19
6936-7-PCT	MULTICARRIER COMMUNICATION WITH VARIABLE OVERHEAD RATE	WO	NAT PHASE	PCT/US99/14467	6/25/99	WO 2000/001127			
6936-7-PEP-2	MULTICARRIER COMMUNICATION WITH VARIABLE OVERHEAD RATE	EP	EXPIRED	04012683.1	6/25/99	1453268	1453268	3/8/06	6/25/19
6936-7-PEPAT-2	MULTICARRIER COMMUNICATION WITH VARIABLE OVERHEAD RATE	AT	EXPIRED	04012683.1	6/25/99	N/A	1453268	3/8/06	6/25/19
6936-7-PEPBE-2	MULTICARRIER COMMUNICATION WITH VARIABLE OVERHEAD RATE	BE	EXPIRED	04012683.1	6/25/99	N/A	1453268	3/8/06	6/25/19
6936-7-PEPCH-2	MULTICARRIER COMMUNICATION WITH VARIABLE OVERHEAD RATE	CH	EXPIRED	04012683.1	6/25/99	N/A	1453268	3/8/06	6/25/19
6936-7-PEPDE-2	Multicarrier Communication With Variable Overhead Rate	DE	EXPIRED	04012683.1	6/25/99	N/A	1453268	3/8/06	6/25/19
6936-7-PEPES-2	MULTICARRIER COMMUNICATION WITH VARIABLE OVERHEAD RATE	ES	EXPIRED	04012683.1	6/25/99	N/A	1453268	3/8/06	6/25/19
6936-7-PEPFI-2	MULTICARRIER COMMUNICATION WITH VARIABLE OVERHEAD RATE	FI	EXPIRED	04012683.1	6/25/99	N/A	1453268	3/8/06	6/25/19
6936-7-PEPFR-2	MULTICARRIER COMMUNICATION WITH VARIABLE OVERHEAD RATE	FR	EXPIRED	04012683.1	6/25/99	N/A	1453268	3/8/06	6/25/19
6936-7-PEPGB-2	MULTICARRIER COMMUNICATION WITH VARIABLE OVERHEAD RATE	GB	EXPIRED	04012683.1	6/25/99	N/A	1453268	3/8/06	6/25/19
6936-7-PEPGR-2	MULTICARRIER COMMUNICATION WITH VARIABLE OVERHEAD RATE	GR	EXPIRED	04012683.1	6/25/99	N/A	1453268	3/8/06	6/25/19
6936-7-PEPHK-2	MULTICARRIER COMMUNICATION WITH VARIABLE OVERHEAD RATE	HK	EXPIRED	05101665.7	6/25/99	HK 1068080	HK1068080	5/6/06	6/25/19
6936-7-PEPIE-2	MULTICARRIER COMMUNICATION WITH VARIABLE OVERHEAD RATE	IE	EXPIRED	04012683.1	6/25/99	N/A	1453268	3/8/06	6/25/19
6936-7-PEPIT-2	MULTICARRIER COMMUNICATION WITH VARIABLE OVERHEAD RATE	IT	EXPIRED	04012683.1	6/25/99	N/A	1453268	3/8/06	6/25/19
6936-7-PEPNL-2	MULTICARRIER COMMUNICATION WITH VARIABLE OVERHEAD RATE	NL	EXPIRED	04012683.1	6/25/99	N/A	1453268	3/8/06	6/25/19
6936-7-PEPSE-2	MULTICARRIER COMMUNICATION WITH VARIABLE OVERHEAD RATE	SE	EXPIRED	04012683.1	6/25/99	N/A	1453268	3/8/06	6/25/19
6936-7-PEP-3	MULTICARRIER COMMUNICATION WITH VARIABLE OVERHEAD RATE	EP	EXPIRED	06004566.3	6/25/99	EP 1667392	1667392	1/10/18	6/25/19
6936-7-PEP-3-DE	MULTICARRIER COMMUNICATION WITH VARIABLE OVERHEAD RATE	DE	EXPIRED	06004566.3	6/25/99		1667392	1/10/18	6/25/19
6936-7-PEP-3-FR	MULTICARRIER COMMUNICATION WITH VARIABLE OVERHEAD RATE	FR	EXPIRED	06004566.3	6/25/99		1667392	1/10/18	6/25/19
6936-7-PEP-3-GB	MULTICARRIER COMMUNICATION WITH VARIABLE OVERHEAD RATE	GB	EXPIRED	06004566.3	6/25/99		1667392	1/10/18	6/25/19
6936-7-PEP-3-HK	MULTICARRIER COMMUNICATION WITH VARIABLE OVERHEAD RATE	HK	EXPIRED	06112790.1	6/25/99	1091070	HK1091070	6/22/18	6/25/19
6936-7-PEP-3-DIV-1	MULTICARRIER COMMUNICATION WITH VARIABLE OVERHEAD RATE	EP	EXPIRED	10011974.2	6/25/99	2278765	2278765	11/7/18	6/25/19
6936-7-PEP-3-DIV-1-AT	MULTICARRIER COMMUNICATION WITH VARIABLE OVERHEAD RATE	AT	EXPIRED	10011974.2	6/25/99		2278765	11/7/18	6/25/19
6936-7-PEP-3-DIV-1-BE	MULTICARRIER COMMUNICATION WITH VARIABLE OVERHEAD RATE	BE	EXPIRED	10011974.2	6/25/99		2278765	11/7/18	6/25/19
6936-7-PEP-3-DIV-1-CH	MULTICARRIER COMMUNICATION WITH VARIABLE OVERHEAD RATE	CH	EXPIRED	10011974.2	6/25/99		2278765	11/7/18	6/25/19
6936-7-PEP-3-DIV-1-DE	MULTICARRIER COMMUNICATION WITH VARIABLE OVERHEAD RATE	DE	EXPIRED	10011974.2	6/25/99	2278765	DE 699 45 900.1	11/7/18	6/25/19
6936-7-PEP-3-DIV-1-ES	MULTICARRIER COMMUNICATION WITH VARIABLE OVERHEAD RATE	ES	EXPIRED	10011974.2	6/25/99		2278765	11/7/18	6/25/19
6936-7-PEP-3-DIV-1-FI	MULTICARRIER COMMUNICATION WITH VARIABLE OVERHEAD RATE	FI	EXPIRED	10011974.2	6/25/99		2278765	11/7/18	6/25/19
6936-7-PEP-3-DIV-1-FR	MULTICARRIER COMMUNICATION WITH VARIABLE OVERHEAD RATE	FR	EXPIRED	10011974.2	6/25/99		2278765	11/7/18	6/25/19
6936-7-PEP-3-DIV-1-GB	MULTICARRIER COMMUNICATION WITH VARIABLE OVERHEAD RATE	GB	EXPIRED	10011974.2	6/25/99		2278765	11/7/18	6/25/19
6936-7-PEP-3-DIV-1-GR	MULTICARRIER COMMUNICATION WITH VARIABLE OVERHEAD RATE	GR	EXPIRED	10011974.2	6/25/99		2278765	11/7/18	6/25/19
6936-7-PEP-3-DIV-1-IE	MULTICARRIER COMMUNICATION WITH VARIABLE OVERHEAD RATE	IE	EXPIRED	10011974.2	6/25/99		2278765	11/7/18	6/25/19
6936-7-PEP-3-DIV-1-IT	MULTICARRIER COMMUNICATION WITH VARIABLE OVERHEAD RATE	IT	EXPIRED	10011974.2	6/25/99		2278765	11/7/18	6/25/19
6936-7-PEP-3-DIV-1-NL	MULTICARRIER COMMUNICATION WITH VARIABLE OVERHEAD RATE	NL	EXPIRED	10011974.2	6/25/99		2278765	11/7/18	6/25/19
6936-7-PEP-3-DIV-1-SE	MULTICARRIER COMMUNICATION WITH VARIABLE OVERHEAD RATE	SE	EXPIRED	10011974.2	6/25/99		2278765	11/7/18	6/25/19
6936-7-PEP-3-DIV-2	MULTICARRIER COMMUNICATION WITH VARIABLE OVERHEAD RATE	EP	EXPIRED	10011980.9	6/25/99	2278766	2278766	11/7/18	6/25/19
6936-7-PEP-3-DIV-2-DE	MULTICARRIER COMMUNICATION WITH VARIABLE OVERHEAD RATE	DE	EXPIRED	10011980.9	6/25/99	2278766	DE 699 45 902.8	11/7/18	6/25/19
6936-7-PEP-3-DIV-2-FR	MULTICARRIER COMMUNICATION WITH VARIABLE OVERHEAD RATE	FR	EXPIRED	10011980.9	6/25/99		2278766	11/7/18	6/25/19
6936-7-PEP-3-DIV-2-GB	MULTICARRIER COMMUNICATION WITH VARIABLE OVERHEAD RATE	GB	EXPIRED	10011980.9	6/25/99		2278766	11/7/18	6/25/19

6936-7-PEP-3-DIV-3	MULTICARRIER COMMUNICATION WITH VARIABLE OVERHEAD RATE	EP	EXPIRED	10011981.7	6/25/99	2278767	2278767	11/7/18	6/25/19
6936-7-PEP-3-DIV-3-DE	MULTICARRIER COMMUNICATION WITH VARIABLE OVERHEAD RATE	DE	EXPIRED	10011981.7	6/25/99	2278767	DE 699 45 903.6	11/7/18	6/25/19
6936-7-PEP-3-DIV-3-FR	MULTICARRIER COMMUNICATION WITH VARIABLE OVERHEAD RATE	FR	EXPIRED	10011981.7	6/25/99		2278767	11/7/18	6/25/19
6936-7-PEP-3-DIV-3-GB	MULTICARRIER COMMUNICATION WITH VARIABLE OVERHEAD RATE	GB	EXPIRED	10011981.7	6/25/99		2278767	11/7/18	6/25/19
6936-7-PKR	MULTICARRIER COMMUNICATION WITH VARIABLE OVERHEAD RATE	KR	ABANDONED	2000-7014830	6/25/99	10-2001-0053220	10-0955169	4/20/10	3/10/17
6936-7-PKR-2	MULTICARRIER COMMUNICATION WITH VARIABLE OVERHEAD RATE	KR	EXPIRED	10-2010-7002843	6/25/99	10-2010-0031635	10-1006609	12/30/10	6/25/19
6936-7-PKR-3	MULTICARRIER COMMUNICATION WITH VARIABLE OVERHEAD RATE	KR	ABANDONED	10-2010-7021589	6/25/99	10-2010-0121683			6/25/19
6936-7-PROV	MULTICARRIER COMMUNICATION WITH VARIABLE OVERHEAD RATE	US	EXPIRED	60/090,891	6/26/98	N/A			6/26/99
6936-3	SYSTEM AND METHOD FOR THE APPLICATION OF AN LMS METHOD TO UPDATING AN ECHO CANCELLER IN AN ADSL MODEM	US	ABANDONED	09/768,275	1/25/01	US 2001-0040875			8/25/05
6936-3-CON	SYSTEM AND METHOD FOR THE APPLICATION OF AN LMS METHOD TO UPDATING AN ECHO CANCELLER IN AN ADSL MODEM	US	ABANDONED	11/058,289	2/16/05	US 2005-0141441 A1			5/9/06
6936-3-CON-2	SYSTEM AND METHOD FOR THE APPLICATION OF AN LMS METHOD TO UPDATING AN ECHO CANCELLER IN AN ADSL MODEM	US	ABANDONED	11/430,251	5/9/06	US 2006-0215587 A1			12/10/10
6936-3-CON-3	SYSTEM AND METHOD FOR THE APPLICATION OF AN LMS METHOD TO UPDATING AN ECHO CANCELLER IN AN ADSL MODEM	US	ISSUED	12/783,740	5/20/10	US 2010-0296663 A1	8,391,191	3/5/13	1/29/21
6936-3-CON-4	SYSTEM AND METHOD FOR THE APPLICATION OF AN LMS METHOD TO UPDATING AN ECHO CANCELLER IN AN ADSL MODEM	US	ABANDONED	12/783,744	5/20/10	N/A			2/18/11
6936-3-CON-5	SYSTEM AND METHOD FOR THE APPLICATION OF AN LMS METHOD TO UPDATING AN ECHO CANCELLER IN AN ADSL MODEM	US	ISSUED	13/772,516	2/21/13	US 2013-0163749 A1	8,649,305	2/11/14	1/25/21
6936-3-CON-6	System and Method for the Application of an LMS Method to Updating an Echo Canceller in an ADSL Modem	US	ISSUED	14/164,632	1/27/14	US 2014-0140499 A1	9,065,886	6/23/15	1/25/21
6936-3-CON-7	SYSTEM AND METHOD FOR THE APPLICATION OF AN LMS METHOD TO UPDATING AN ECHO CANCELLER IN A MULTICARRIER TRANSCIVER	US	ABANDONED	14/724,345	5/28/15	US 2015-0288808 A1			11/4/16
6936-3-PAU	SYSTEM AND METHOD FOR THE APPLICATION OF AN LMS METHOD TO UPDATING AN ECHO CANCELLER COEFFICIENTS IN AN ADSL MODEM	AU	ABANDONED	32943/01	1/25/01	AU 3294301	783527	2/16/06	1/4/17
6936-3-PCA	System and Method for the Application of an LMS Method to Updating an Echo Canceller in an ADSL Modem	CA	ABANDONED	2,396,162	1/25/01	CA 2396162			4/25/12
6936-3-PCT	APPLICATION OF LMS METHOD TO UPDATING ECHO CANCELLER COEFFICIENTS IN ADSL MODEM	WO	NAT PHASE	PCT/US01/02341	1/25/01	WO 2001/056184			
6936-3-PEP	APPLICATION OF LMS METHOD TO UPDATING ECHO CANCELLER COEFFICIENTS IN ADSL MODEM	EP	ABANDONED	01905022.8	1/25/01	EP 1250766	1250766	9/17/08	12/12/19
6936-3-PEP-BE	APPLICATION OF LMS METHOD TO UPDATING ECHO CANCELLER COEFFICIENTS IN ADSL MODEM	BE	ABANDONED	01905022.8	1/25/01	N/A	1250766	9/17/08	12/12/19
6936-3-PEP-DE	APPLICATION OF LMS METHOD TO UPDATING ECHO CANCELLER COEFFICIENTS IN ADSL MODEM	DE	ABANDONED	01905022.8	1/25/01	N/A	1250766	9/17/08	12/12/19
6936-3-PEP-FR	APPLICATION OF LMS METHOD TO UPDATING ECHO CANCELLER COEFFICIENTS IN ADSL MODEM	FR	ABANDONED	01905022.8	1/25/01	N/A	1250766	9/17/08	12/12/19
6936-3-PEP-GB	APPLICATION OF LMS METHOD TO UPDATING ECHO CANCELLER COEFFICIENTS IN ADSL MODEM	GB	ABANDONED	01905022.8	1/25/01	N/A	1250766	9/17/08	12/12/19
6936-3-PEP-DIV	System and Method for the Application of an LMS Method to Updating an Echo Canceller in an ADSL Modem	EP	ABANDONED	08015818.1	1/25/01	1 995 884			1/25/21
6936-3-PEP-DIV-2	System and Method for the Application of an LMS Method to Updating an Echo Canceller in an ADSL Modem	EP	ABANDONED	10011999.9	1/25/01	2267913			1/25/21
6936-3-PJP	APPLICATION OF LMS METHOD TO UPDATING ECHO CANCELLER COEFFICIENTS IN ADSL MODEM	JP	ABANDONED	2001-555226	1/25/01	JP 2003-521194			1/25/21
6936-3-PKR	APPLICATION OF LMS METHOD TO UPDATING ECHO CANCELLER COEFFICIENTS IN ADSL MODEM	KR	ABANDONED	2002-7009465	1/25/01	10-2002-0069265			1/25/21
6936-3-PKR-DIV	APPLICATION OF LMS METHOD TO UPDATING ECHO CANCELLER COEFFICIENTS IN ADSL MODEM	KR	ABANDONED	10-2010-7006184	1/25/01	10-2010-0034063			1/25/21
6936-3-PROV	APPLICATION OF LMS METHOD TO UPDATING ECHO CANCELLER COEFFICIENTS IN ADSL MODEM	US	EXPIRED	60/177,944	1/25/00	N/A			1/25/01

6936-14	SYSTEMS AND METHODS FOR MULTICARRIER MODULATION USING MULTI-TAP FREQUENCY-DOMAIN EQUALIZER AND DECISION FEEDBACK	US	ISSUED	10/211,425	8/2/02	US 2003-0067865	6,760,373	7/6/04	8/2/22
6936-14-CON	SYSTEMS AND METHODS FOR MULTICARRIER MODULATION USING MULTI-TAP FREQUENCY-DOMAIN EQUALIZER AND DECISION FEEDBACK	US	ABANDONED	10/834,193	4/29/04	US 2004-0202259			8/2/22
6936-14-CON-2	Systems and Methods for Multicarrier Modulation Using Multi-Tap Frequency-Domain Equalizer and Decision Feedback	US	ISSUED	11/964,409	12/26/07	US 2008-0101452 A1	7,656,976	2/2/10	8/2/22
6936-14-CON-3	SYSTEMS AND METHODS FOR MULTICARRIER MODULATION USING MULTI-TAP FREQUENCY-DOMAIN EQUALIZER AND DECISION FEEDBACK	US	ABANDONED	12/640,838	12/17/09	US 2010-0098149 A1			9/23/11
6936-14-CON-4	SYSTEMS AND METHODS FOR MULTICARRIER MODULATION USING MULTI-TAP FREQUENCY-DOMAIN EQUALIZER AND DECISION FEEDBACK	US	ABANDONED	12/783,796	5/20/10	US 2010-0296570 A1			3/2/11
6936-14-CON-5	SYSTEMS AND METHODS FOR MULTICARRIER MODULATION USING MULTI-TAP FREQUENCY-DOMAIN EQUALIZER AND DECISION FEEDBACK	US	ABANDONED	12/783,801	5/20/10	N/A			2/18/11
6936-14-PCT	SYSTEMS AND METHOD FOR MULTICARRIER MODULATION USING MULTI-TAP FREQUENCY-DOMAIN EQUALIZER AND DECISION FEEDBACK	WO	NAT PHASE	PCT/US02/24326	8/2/02	WO 2003/012990			
6936-14-PROV	MULTICARRIER MODULATION METHOD USING MULTI-TAP FREQUENCY-DOMAIN EQUALIZATION AND DECISION FEEDBACK	US	EXPIRED	60/309,631	8/2/01	N/A			8/2/02
6936-19	MULTI-CARRIER TRANSCIEVER	US	EXPIRED	08/105,796	8/12/93	N/A	5,497,398	3/5/96	8/12/13
6936-19-PCT	MULTI-CARRIER TRANSCIEVER	WO	NAT PHASE	PCT/US94/06713	6/13/94	WO 1995/005711			
6936-21	SYSTEMS AND METHODS FOR IMPLEMENTING RECEIVER TRANSPARENT Q-MODE	US	ISSUED	10/106,329	3/27/02	US 2002/0196861	6,731,695	5/4/04	3/27/21
6936-21-CON	SYSTEMS AND METHODS FOR IMPLEMENTING RECEIVER TRANSPARENT Q-MODE	US	ABANDONED	10/802,867	3/18/04	US 2004-0184552 A1			11/10/05
6936-21-CON-2	SYSTEMS AND METHODS FOR IMPLEMENTING RECEIVER TRANSPARENT Q-MODE	US	ABANDONED	11/200,002	8/10/05	US 2006-0039490 A1			8/7/06
6936-21-CON-3	SYSTEMS AND METHODS FOR IMPLEMENTING RECEIVER TRANSPARENT Q-MODE	US	ABANDONED	11/434,249	5/16/06	US 2006-0203927 A1			3/27/22
6936-21-CON-4	SYSTEMS AND METHODS FOR IMPLEMENTING RECEIVER TRANSPARENT Q-MODE	US	ISSUED	11/674,871	2/14/07	US 2007-0147540 A1	7,558,329	7/7/09	3/27/22
6936-21-CON-5	Systems and Methods for Implementing Receiver Transparent Q-Mode	US	ABANDONED	12/478,577	6/4/09	US 2009-0290620 A1			7/25/11
6936-21-CON-6	Systems and Methods for Implementing Receiver Transparent Q-Mode	US	ISSUED	12/783,749	5/20/10	US 2010-0290558 A1	8,335,271	12/18/12	3/27/22
6936-21-CON-7	Systems and Methods for Implementing Receiver Transparent Q-Mode	US	ABANDONED	12/783,755	5/20/10	US 2010-0296604 A1			3/27/22
6936-21-CON-8	Systems and Methods for Implementing Receiver Transparent Q-Mode	US	ISSUED	13/693,394	12/4/12	US 2013-0094609 A1	8,792,574	7/29/14	3/27/22
6936-21-CON-9	RANDOMIZATION USING AN XOR SCRAMBLER IN MULTICARRIER COMMUNICATIONS	US	ISSUED	14/308,934	6/19/14	US 2014-0294116 A1	9,191,039	11/17/15	3/27/22
6936-21-CON-10	SYSTEMS AND METHODS FOR IMPLEMENTING RECEIVER TRANSPARENT Q-MODE	US	ABANDONED	14/932,599	11/4/15	US 2016-0056857 A1			11/14/17
6936-21-CON-11	SYSTEMS AND METHODS FOR IMPLEMENTING RECEIVER TRANSPARENT Q-MODE	US	ISSUED	15/812,705	11/14/17	US 2018-0069590 A1	10,419,059	9/17/19	3/27/22
6936-21-PAU	RECEIVER TRANSPARENT Q-MODE	AU	ABANDONED	2002248711	3/27/02	AU 2002248711			1/4/05
6936-21-PCA	RECEIVER TRANSPARENT Q-MODE	CA	ABANDONED	2,439,804	3/27/02	CA 2439804			
6936-21-PCT	RECEIVER TRANSPARENT Q-MODE	WO	NAT PHASE	PCT/US02/09411	3/27/02	WO02/078244			
6936-21-PEP	RECEIVER TRANSPARENT Q-MODE	EP	ABANDONED	02717728.6	3/27/02	EP 1374469			11/2/04
6936-21-PJP	RECEIVER TRANSPARENT Q-MODE	JP	ABANDONED	2002-576356	3/27/02	JP 2004-538676			3/10/05
6936-21-PKR	RECEIVER TRANSPARENT Q-MODE	KR	ABANDONED	2003-7012442	3/27/02	10-2004-0004562			
6936-21-PROV-1	RECEIVER TRANSPARENT Q-MODE	US	EXPIRED	60/278,936	3/27/01	N/A			3/27/02
6936-21-PROV-2	RECEIVER TRANSPARENT Q-MODE WITH ON-LINE RECONFIGURATION	US	EXPIRED	60/283,467	4/12/01	N/A			4/12/02
6936-21-PROV-3	RECEIVER TRANSPARENT Q-MODE WITH ON-LINE RECONFIGURATION AND SCRAMBLING	US	EXPIRED	60/287,968	5/1/01	N/A			5/1/02
6936-21-PROV-4	RECEIVER TRANSPARENT Q-MODE WITH ON-LINE RECONFIGURATION, SCRAMBLING AND Q-MODE SYMBOL DISTORTION	US	EXPIRED	60/293,034	5/23/01	N/A			5/23/02
6936-22	MULTI-CARRIER TRANSMISSION SYSTEM ADAPTED FOR PACKET DATA TRANSFER	US	EXPIRED	08/670,245	6/19/96	N/A	5,751,716	5/12/98	6/19/16
6936-22-PCT	MULTI-CARRIER TRANSMISSION SYSTEM ADAPTED FOR PACKET DATA TRANSFER	WO	NAT PHASE	PCT/US97/08756	5/17/97	WO 1997/049208			
6936-22-PEP	MULTI-CARRIER TRANSMISSION SYSTEM ADAPTED FOR PACKET DATA TRANSFER	EP	ABANDONED	97925713.6	5/17/97	N/A			9/5/00

6936-23	SYSTEMS AND METHODS THAT PROVIDE FREQUENCY DOMAIN SUPPLEMENTAL TRAINING OF THE TIME DOMAIN EQUALIZER FOR DMT	US	ISSUED	09/982,065	10/19/01	US 2002-0057734	7,180,938	2/20/07	10/14/23
6936-23-CON	Systems and Methods That Provide Frequency Domain Supplemental Training of the Time Domain Equalizer for DMT	US	ABANDONED	11/616,630	12/27/06	US 2007-0104262			10/19/21
6936-23-CON-2	Systems and Methods That Provide Frequency Domain Supplemental Training of the Time Domain Equalizer for DMT	US	ABANDONED	12/013,874	1/14/08	US 2008-0107164 A1	7,636,389	12/22/09	3/14/17
6936-23-CON-3	Systems and Methods That Provide Frequency Domain Supplemental Training of the Time Domain Equalizer for DMT	US	ABANDONED	12/615,077	11/9/09	US 2010-0054321 A1			2/28/11
6936-23-CON-4	Systems and Methods That Provide Frequency Domain Supplemental Training of the Time Domain Equalizer for DMT	US	ISSUED	12/783,783	5/20/10	US 2010-0290514 A1	8,102,909	1/24/12	10/19/21
6936-23-CON-5	Systems and Methods That Provide Frequency Domain Supplemental Training of the Time Domain Equalizer for DMT	US	ABANDONED	12/783,788	5/20/10	N/A			2/17/11
6936-23-CON-6	Systems and Methods That Provide Frequency Domain Supplemental Training of the Time Domain Equalizer for DMT	US	ABANDONED	13/330,943	12/20/11	US 2012-0087399 A1			9/19/13
6936-23-PCT	SYSTEMS AND METHODS THAT PROVIDE FREQUENCY DOMAIN SUPPLEMENTAL TRAINING OF THE TIME DOMAIN EQUALIZER FOR DMT	WO	NAT PHASE	PCT/US01/32503	10/19/01	WO 2002/033926			
6936-23-PROV	FREQUENCY DOMAIN SUPPLEMENTAL TRAINING OF THE TIME DOMAIN EQUALIZER FOR DMT	US	EXPIRED	60/241,664	10/19/00	N/A			10/19/01
6936-24	MULTICARRIER TRANSMISSION SYSTEM	US	EXPIRED	08/340,747	11/16/94	N/A	5,636,246	6/3/97	11/16/14
6936-24-PAU	MULTICARRIER TRANSMISSION SYSTEM	AU	EXPIRED	41666/96	11/17/95	AU 4166696	708318	11/11/99	11/17/15
6936-24-PCT	MULTICARRIER TRANSMISSION SYSTEM	WO	NAT PHASE	PCT/US95/15115	11/17/95	WO 1997/026711			
6936-24-PGB	MULTICARRIER TRANSMISSION SYSTEM	GB	EXPIRED	9709849.5	11/17/95	GB 2320401	2320401	4/12/00	11/17/15
6936-25	BIT ALLOCATION AMONG CARRIERS IN MULTICARRIER COMMUNICATIONS	US	EXPIRED	09/600,971	7/20/00	N/A	6,870,888	3/22/05	11/23/19
6936-25-PAU	ALLOCATION OF COMMUNICATION BITS AMONG CARRIERS IN MULTICARRIER COMMUNICATIONS	AU	ABANDONED	18292/00	11/23/99	AU 1829200	754597	3/6/03	11/22/16
6936-25-PAU-2	ALLOCATION OF COMMUNICATION BITS AMONG CARRIERS IN MULTICARRIER COMMUNICATIONS	AU	ABANDONED	2002302029	11/18/02	AU 2002302029			11/19/03
6936-25-PCA	ALLOCATION OF COMMUNICATION BITS AMONG CARRIERS IN MULTICARRIER COMMUNICATIONS	CA	ABANDONED	2,350,916	11/23/99	CA 2350916	2,350,916	11/20/07	9/25/17
6936-25-PCA-DIV	Bit Allocation Among Carriers in Multicarrier Communications	CA	EXPIRED	2,599,805	11/23/99	CA 2599805	2,599,805	9/29/09	11/23/19
6936-25-PCT	ALLOCATION OF COMMUNICATION BITS AMONG CARRIERS IN MULTICARRIER COMMUNICATIONS	WO	NAT PHASE	PCT/US99/27798	11/23/99	WO 2000/031940			
6936-25-PEP	ALLOCATION OF COMMUNICATION BITS AMONG CARRIERS IN MULTICARRIER COMMUNICATIONS	EP	EXPIRED	99961782.2	11/23/99	1133858	1133858	6/30/04	11/23/19
6936-25-PEPGB	ALLOCATION OF COMMUNICATION BITS AMONG CARRIERS IN MULTICARRIER COMMUNICATIONS	GB	EXPIRED	99961782.2	11/23/99	N/A	1133858	6/30/04	11/23/19
6936-25-PEP-2	ALLOCATION OF COMMUNICATION BITS AMONG CARRIERS IN MULTICARRIER COMMUNICATIONS	EP	ABANDONED	04012682.3	11/23/99	1453267			11/23/19
6936-25-PEP-2-DIV-1	ALLOCATION OF COMMUNICATION BITS AMONG CARRIERS IN MULTICARRIER COMMUNICATIONS	EP	ABANDONED	10011993.2	11/23/99	2264932			11/23/19
6936-25-PJP	ALLOCATION OF COMMUNICATION BITS AMONG CARRIERS IN MULTICARRIER COMMUNICATIONS	JP	ABANDONED	2000-584658	11/23/99	2002-531010			11/23/19
6936-25-PJP-DIV	ALLOCATION OF COMMUNICATION BITS AMONG CARRIERS IN MULTICARRIER COMMUNICATIONS	JP	ABANDONED	2010-56580	11/23/99	2010-141931			11/23/19
6936-25-PKR	ALLOCATION OF COMMUNICATION BITS AMONG CARRIERS IN MULTICARRIER COMMUNICATIONS	KR	ABANDONED	2001-7006580	11/23/99	10-2001-0101081			11/23/19
6936-25-PROV	ALLOCATION OF COMMUNICATION BITS AMONG CARRIERS IN MULTICARRIER COMMUNICATIONS	US	EXPIRED	60/109,876	11/25/98	N/A			11/25/99
6936-30	MULTI-TAP FREQUENCY DOMAIN EQUALIZATION WITH DECISION FEEDBACK AND TRELLIS DECODING	US	ABANDONED	10/631,745	8/1/03	US 2004-0096008 A1			8/1/23
6936-30-DIV	MULTI-TAP FREQUENCY DOMAIN EQUALIZATION WITH DECISION FEEDBACK AND TRELLIS DECODING	US	ABANDONED	11/748,806	5/15/07	US 2007-0211812			6/20/11
6936-30-DIV-CON	MULTI-TAP FREQUENCY DOMAIN EQUALIZATION WITH DECISION FEEDBACK AND TRELLIS DECODING	US	ABANDONED	12/783,733	5/20/10	US 2010-0293442 A1			2/25/13
6936-30-DIV-CON-2	MULTI-TAP FREQUENCY DOMAIN EQUALIZATION WITH DECISION FEEDBACK AND TRELLIS DECODING	US	ABANDONED	12/783,737	5/20/10	US 2010-0299582 A1			2/25/13

6936-30-PCT	COMBINED MULTI-TAP FREQUENCY DOMAIN EQUALIZATION WITH DECISION FEEDBACK AND TRELLIS DECODING	WO	NAT PHASE	PCT/US03/23965	8/1/03	WO 2004/014032 A3			
6936-30-PROV	COMBINED MULTI-TAP FREQUENCY DOMAIN EQUALIZATION WITH DECISION FEEDBACK AND TRELLIS DECODING	US	EXPIRED	60/400,550	8/1/02	N/A			8/1/03
6936-36	A SYSTEM AND METHOD FOR TRANSMITTING MESSAGES BETWEEN TRANSCEIVERS USING ELECTRO MAGNETICALLY COUPLED SIGNALS	US	ISSUED	09/616,954	7/14/00	N/A	6,748,016	6/8/04	7/5/22
6936-36-CON	SYSTEM AND METHOD FOR TRANSMITTING MESSAGES BETWEEN TRANSCEIVERS USING ELECTRO MAGNETICALLY COUPLED SIGNALS	US	ABANDONED	10/743,946	12/24/03	US 2004-0136463 A1			8/27/04
6936-36-PAU	A SYSTEM AND METHOD FOR TRANSMITTING MESSAGES BETWEEN TRANSCEIVERS USING ELECTRO MAGNETICALLY COUPLED SIGNALS	AU	ABANDONED	59347/00	7/14/00				1/13/05
6936-36-PCA	A SYSTEM AND METHOD FOR TRANSMITTING MESSAGES BETWEEN TRANSCEIVERS USING ELECTRO MAGNETICALLY COUPLED SIGNALS	CA	ABANDONED	2378046	7/14/00				1/13/05
6936-36-PCT	A SYSTEM AND METHOD FOR TRANSMITTING MESSAGES BETWEEN TRANSCEIVERS USING ELECTRO MAGNETICALLY COUPLED SIGNALS	WO	NAT PHASE	PCT/US00/19247	7/14/00				
6936-36-PEP	A SYSTEM AND METHOD FOR TRANSMITTING MESSAGES BETWEEN TRANSCEIVERS USING ELECTRO MAGNETICALLY COUPLED SIGNALS	EP	ABANDONED	00945396.0	7/14/00				1/13/05
6936-36-PJP	A SYSTEM AND METHOD FOR TRANSMITTING MESSAGES BETWEEN TRANSCEIVERS USING ELECTRO MAGNETICALLY COUPLED SIGNALS	JP	ABANDONED	2001-511007	7/14/00				1/13/05
6936-36-PKR	A SYSTEM AND METHOD FOR TRANSMITTING MESSAGES BETWEEN TRANSCEIVERS USING ELECTRO MAGNETICALLY COUPLED SIGNALS	KR	ABANDONED	7000562/2002	7/14/00				1/13/05
6936-36-PROV	A SYSTEM AND METHOD FOR TRANSMITTING MESSAGES BETWEEN TRANSCEIVERS USING ELECTRO MAGNETICALLY COUPLED SIGNALS	US	EXPIRED	60/144,562	7/16/99	N/A			7/16/00
6936-41	MULTI-CARRIER TRANSMISSION SYSTEM UTILIZING CHANNELS WITH DIFFERENT ERROR RATES	US	EXPIRED	08/661,974	6/12/96	N/A	5,832,030	11/3/98	6/12/16
6936-41-PCT	MULTI-CARRIER TRANSMISSION SYSTEM UTILIZING CHANNELS WITH DIFFERENT ERROR RATES	WO	NAT PHASE	PCT/US97/08222	5/17/97	WO 1997/48204			
6936-45	SINGLE SIDE-BAND MODULATION SYSTEM FOR USE IN DIGITALLY IMPLEMENTED MULTICARRIER TRANSMISSION SYSTEMS	US	EXPIRED	08/591,831	1/25/96	N/A	5,631,610	5/20/97	1/25/16
6936-45-PAU	SINGLE SIDE-BAND MODULATION SYSTEM FOR USE IN DIGITALLY IMPLEMENTED MULTICARRIER TRANSMISSION SYSTEMS	AU	EXPIRED	31342/97	5/17/97	AU 3134297	738201	1/3/02	5/17/17
6936-45-PCA	SINGLE SIDE-BAND MODULATION SYSTEM FOR USE IN DIGITALLY IMPLEMENTED MULTICARRIER TRANSMISSION SYSTEMS	CA	ABANDONED	2289537	5/17/97				7/12/04
6936-45-PCT	SINGLE SIDE-BAND MODULATION SYSTEM FOR USE IN DIGITALLY IMPLEMENTED MULTICARRIER TRANSMISSION SYSTEMS	WO	NAT PHASE	PCT/US97/08549	5/17/97	WO 1998/053552			
6936-45-PEP	SINGLE SIDE-BAND MODULATION SYSTEM FOR USE IN DIGITALLY IMPLEMENTED MULTICARRIER TRANSMISSION SYSTEMS	EP	ABANDONED	97926623.6	5/17/97				3/27/03
6936-45-PJP	SINGLE SIDE-BAND MODULATION SYSTEM FOR USE IN DIGITALLY IMPLEMENTED MULTICARRIER TRANSMISSION SYSTEMS	JP	ABANDONED	10-550313	5/17/97				5/6/04
6936-46	METHOD FOR PARTIALLY MODULATING AND DEMODULATING DATA IN A MULTICARRIER TRANSMISSION SYSTEM	US	EXPIRED	08/668,575	6/20/96	N/A	5,715,280	2/3/98	6/20/16
6936-46-PAU	METHOD FOR PARTIALLY MODULATING AND DEMODULATING DATA IN A MULTICARRIER TRANSMISSION SYSTEM	AU	EXPIRED	30673/97	5/17/97	AU 3067397	743020	5/2/02	5/17/17
6936-46-PCA	METHOD FOR PARTIALLY MODULATING AND DEMODULATING DATA IN A MULTICARRIER TRANSMISSION SYSTEM	CA	ABANDONED	2289529	5/17/97				6/17/03



6936-46-PCT	METHOD FOR PARTIALLY MODULATING AND DEMODULATING DATA IN A MULTICARRIER TRANSMISSION SYSTEM	WO	NAT PHASE	PCT/US97/08209	5/17/97	WO 1998/053572			
6936-46-PEP	METHOD FOR PARTIALLY MODULATING AND DEMODULATING DATA IN A MULTICARRIER TRANSMISSION SYSTEM	EP	ABANDONED	97925573.4	5/17/97				4/16/03
6936-46-PJP	METHOD FOR PARTIALLY MODULATING AND DEMODULATING DATA IN A MULTICARRIER TRANSMISSION SYSTEM	JP	ABANDONED	10-550306	5/17/97				5/13/04
6936-48	INTELLIGENT RATE OPTION DETERMINATION METHOD APPLIED TO ADSL TRANSCIEVER	US	ISSUED	09/738,785	12/15/00	US 2001-0030998 A1	6,801,570	10/5/04	12/15/20
6936-48-PROV	INTELLIGENT RATE OPTION DETERMINATION METHOD APPLIED TO ADSL TRANSCIEVER	US	EXPIRED	60/172,343	12/16/99	N/A			12/16/00
6936-50	SYSTEMS AND METHODS FOR LDPC CODED MODULATION	US	ABANDONED	09/882,046	6/18/01	US 2002-0042899			5/31/05
6936-50-DIV	SYSTEMS AND METHODS FOR LDPC CODED MODULATION	US	ABANDONED	11/140,246	5/31/05	US 2005-0229088 A1			6/18/21
6936-50-DIV-2	SYSTEMS AND METHODS FOR LDPC CODED MODULATION	US	ABANDONED	12/383,056	3/19/09	US 2009-0183048 A1			4/20/16
6936-50-DIV-2-CON	SYSTEMS AND METHODS FOR LDPC CODED MODULATION	US	ABANDONED	12/783,825	5/20/10	US 2010-0299573 A1			5/30/11
6936-50-DIV-2-CON-2	Systems and Methods for LDPC Coded Modulation	US	ABANDONED	12/783,839	5/20/10	US 2010-0299574 A1			6/11/11
6936-50-DIV-3	SYSTEMS AND METHODS FOR LDPC CODED MODULATION	US	ABANDONED	15/077,506	3/22/16	US 2016-0204901 A1			1/13/17
6936-50-PAU	SYSTEMS AND METHODS FOR LDPC CODED MODULATION	AU	ABANDONED	2001267096	6/18/01	AU 2001267096			3/28/06
6936-50-PCA	SYSTEMS AND METHODS FOR LDPC CODED MODULATION	CA	ABANDONED	2,409,179	6/18/01	CA 2409179			2/24/11
6936-50-PCT	SYSTEMS AND METHODS FOR LDPC CODED MODULATION	WO	NAT PHASE	PCT/US01/41015	6/18/01	WO 2001/097387			
6936-50-PEP	SYSTEMS AND METHODS FOR LDPC CODED MODULATION	EP	ABANDONED	01944712.7	6/18/01	EP 1290802			
6936-50-PJP	SYSTEMS AND METHODS FOR LDPC CODED MODULATION	JP	ABANDONED	2002-511477	6/18/01	2004-503979			10/27/11
6936-50-PKR	SYSTEMS AND METHODS FOR LDPC CODED MODULATION	KR	ABANDONED	2002-7017148	6/18/01	10-2003-0036227			6/18/21
6936-50-PKR-DIV	SYSTEMS AND METHODS FOR LDPC CODED MODULATION	KR	ABANDONED	10-2010-7006498	6/18/01	10-2010-00469063			6/18/21
6936-50-PROV	LDPC CODED MODULATION	US	EXPIRED	60/212,233	6/16/00	N/A			6/16/01
6936-50-PROV-2	LOW DENSITY PARITY CHECK (LDPC) CODED MODULATION FOR ADSL	US	EXPIRED	60/241,468	10/18/00	N/A			10/18/01
6936-60-PCA	Stable Low Power Mode for Multicarrier Transceivers	CA	ABANDONED	2,706,362	11/21/08	CA 2706362			12/21/16
6936-60-PCN	Stable Low Power Mode for Multicarrier Transceivers	CN	ABANDONED	200880117277.5	11/21/08	CN101868951A	ZL200880117277.5	9/7/16	9/20/17
6936-60-PCN-DIV	Stable Low Power Mode for Multicarrier Transceivers	CN	ABANDONED	201310088357.5	11/21/08	CN103227767	ZL201310088357.5	4/12/17	9/20/17
6936-60-PCN-HK	Stable Low Power Mode for Multicarrier Transceivers	HK	ABANDONED	10110838.3	11/21/08	HK1144345			12/12/16
6936-60-PCT	Stable Low Power Mode for Multicarrier Transceivers	WO	NAT PHASE	PCT/US08/84322	11/21/08	WO 2009/067653			
6936-60-PEP	Stable Low Power Mode for Multicarrier Transceivers	EP	ABANDONED	08852660.3	11/21/08	EP 2223489	2223489	4/20/16	7/6/17
6936-60-PEP-DE	Stable Low Power Mode for Multicarrier Transceivers	DE	ABANDONED	08852660.3	11/21/08		2223489	4/20/16	7/6/17
6936-60-PEP-FR	Stable Low Power Mode for Multicarrier Transceivers	FR	ABANDONED	08852660.3	11/21/08		2223489	4/20/16	7/6/17
6936-60-PEP-GB	Stable Low Power Mode for Multicarrier Transceivers	GB	ABANDONED	08852660.3	11/21/08		2223489	4/20/16	7/6/17
6936-60-PEPHK	Stable Low Power Mode for Multicarrier Transceivers	HK	ABANDONED	10109672.4	11/21/08	HK 1143261			2/11/16
6936-60-PIN	Stable Low Power Mode for Multicarrier Transceivers	IN	ABANDONED	1800/KOLNP/2010	11/21/08				11/21/28
6936-60-PJP	Stable Low Power Mode for Multicarrier Transceivers	JP	ABANDONED	2010-535086	11/21/08	2011-504709			11/21/28
6936-60-PROV	Stable Low Power Mode for Multicarrier Transceivers	US	EXPIRED	60/989,542	11/21/07	N/A			11/21/08
6936-60-PUS	Stable Low Power Mode for Multicarrier Transceivers	US	ISSUED	12/739,330	8/12/10	US 2010-0296555 A1	8,837,610	9/16/14	6/24/29
6936-60-PUS-CON	Stable Low Power Mode for Multicarrier Transceivers	US	ABANDONED	14/485,937	9/15/14	US 2015-0003504 A1			5/10/16
6936-60-PUS-CON-2	STABLE LOW POWER MODE FOR MULTICARRIER TRANSCIEVERS	US	ABANDONED	15/084,788	3/30/16	US 2016-0212275 A1			6/7/17
6936-61-PROV	Stable Low Power Mode for Multicarrier Transceivers (Second Edition)	US	EXPIRED	61/011,267	1/16/08	N/A			1/16/09
6936-84-PCT	Reed-Solomon Erasure Decoding with Error Detection for Retransmission	WO	NAT PHASE	PCT/US10/37195	6/3/10	WO 2010/141677			
6936-84-PROV	Reed-Solomon Erasure Decoding with Error Detection for Retransmission	US	EXPIRED	61/183,845	6/3/09	N/A			6/3/10
6936-84-PUS	Reed-Solomon Erasure Decoding with Error Detection for Retransmission	US	ISSUED	13/322,170	2/8/12	US 2012-0144259 A1	8,782,498	7/15/14	11/15/30
6936-84-PUS-CON	Reed-Solomon Erasure Decoding with Error Detection for Retransmission	US	ISSUED	14/328,237	7/10/14	US 2014-0325306 A1	9,276,612	3/1/16	6/3/30
6936-84-PUS-CON-2	REED-SOLOMON ERASURE DECODING WITH ERROR DETECTION FOR RETRANSMISSION	US	ABANDONED	15/054,499	2/26/16	US 2016-0182089 A1			5/9/18
6936-85-PCA	Low Power Mode with Legacy Compatibility	CA	PENDING	2,944,006	4/28/15				4/28/35
6936-85-PCT	Low Power Mode with Legacy Compatibility	WO	NAT PHASE	PCT/US15/27983	4/28/15	WO 2015/168117			

6936-85-PEP	Low Power Mode with Legacy Compatibility	EP	ISSUED	15721495.8	4/28/15	3138206	3138206	6/10/20	4/28/35
6936-85-PEPDE	Low Power Mode with Legacy Compatibility	DE	ISSUED	15721495.8	4/28/15		3138206	6/10/20	4/28/35
6936-85-PEPFR	Low Power Mode with Legacy Compatibility	FR	ISSUED	15721495.8	4/28/15		3138206	6/10/20	4/28/35
6936-85-PEPGB	Low Power Mode with Legacy Compatibility	GB	ISSUED	15721495.8	4/28/15		3138206	6/10/20	4/28/35
6936-85-PEPNL	Low Power Mode with Legacy Compatibility	NL	ISSUED	15721495.8	4/28/15		3138206	6/10/20	4/28/35
6936-85-PEP-DIV	Low Power Mode with Legacy Compatibility	EP	ABANDONED	20178740.5	4/28/15				9/30/20
6936-85-PJP	Low Power Mode with Legacy Compatibility	JP	ISSUED	2016-563176	4/28/15	2017-516391	6592006	9/27/19	4/28/35
6936-85-PKR	Low Power Mode with Legacy Compatibility	KR	PENDING	10-2016-7029583	4/28/15				4/28/35
6936-85-PROV	Low Power Mode with Legacy Compatibility	US	EXPIRED	61/985,168	4/28/14				4/28/15
6936-85-PUS	LOW POWER MODE WITH LEGACY COMPATIBILITY	US	PUBLISHED	15/304,920	10/18/16	US 2017-0187512 A1			4/28/35

**Schedule III**

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