PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1
Stylesheet Version v1.2

EPAS ID: PAT4521993

SUBMISSION TYPE:	NEW ASSIGNMENT
NATURE OF CONVEYANCE:	FIRST LIEN PATENT SECURITY AGREEMENT
SEQUENCE:	3

CONVEYING PARTY DATA

Name	Execution Date
COMMUNICATIONS & POWER INDUSTRIES LLC	07/26/2017
CPI RADIANT TECHNOLOGIES DIVISION INC.	07/26/2017
ASC SIGNAL CORPORATION	07/26/2017
CPI MALIBU DIVISION	07/26/2017

RECEIVING PARTY DATA

Name:	UBS AG, STAMFORD BRANCH
Street Address:	677 WASHINGTON BOULEVARD
City:	STAMFORD
State/Country:	CONNECTICUT
Postal Code:	06901

PROPERTY NUMBERS Total: 46

Property Type	Number
Patent Number:	6437510
Patent Number:	9147549
Patent Number:	6236161
Patent Number:	6740858
Patent Number:	7733195
Patent Number:	6867401
Patent Number:	7755564
Patent Number:	7804464
Patent Number:	6198457
Patent Number:	7868839
Patent Number:	8159410
Patent Number:	7872614
Patent Number:	6882311
Patent Number:	6856301
Patent Number:	6552490
Patent Number:	6870318

Property Type	Number
Patent Number:	6456009
Application Number:	62325951
Patent Number:	7368874
Patent Number:	7888873
Patent Number:	6777877
Patent Number:	9625515
Patent Number:	6211657
Patent Number:	7384293
Patent Number:	7029296
Patent Number:	8278812
Patent Number:	7242135
Patent Number:	7145297
Patent Number:	8872057
Patent Number:	6856081
Patent Number:	7005789
Patent Number:	7359206
Patent Number:	8076853
Patent Number:	7420523
Patent Number:	7463212
Patent Number:	8917220
Patent Number:	9099782
Patent Number:	8558753
Patent Number:	8199061
Patent Number:	8169377
Patent Number:	7965255
Patent Number:	7965256
Patent Number:	7918423
Patent Number:	6657588
Patent Number:	6943750
Patent Number:	6107958

CORRESPONDENCE DATA

Fax Number: (650)213-8158

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ATTORNEY DOCKET NUMBER:	1145754-0012
NAME OF SUBMITTER:	CHRISTINA ISHIHARA
SIGNATURE:	/Christina Ishihara/
DATE SIGNED:	07/26/2017

Total Attachments: 7
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FIRST LIEN PATENT SECURITY AGREEMENT

This FIRST LIEN PATENT SECURITY AGREEMENT, dated as of July 26, 2017 (this "**Agreement**"), is made by each of the signatories hereto indicated as a "Grantor" (each, a "**Grantor**" and collectively, the "**Grantors**") in favor of UBS AG, STAMFORD BRANCH, as Collateral Agent for the Secured Parties (in such capacity and together with its successors and assigns in such capacity, the "**Agent**").

WHEREAS, the Grantors entered into a First Lien Pledge and Security Agreement dated as of July 26, 2017 (as amended, restated, supplemented or otherwise modified from time to time, the "**Security Agreement**"), by and among the Grantors and each of the other grantors from time to time party thereto and the Agent, pursuant to which the Grantors granted to the Agent, for the benefit of the Secured Parties, a security interest in the Patent Collateral (as defined below); and

WHEREAS, pursuant to the Security Agreement, the Grantors agreed to execute and deliver this Agreement, in order to record the security interest granted to the Agent for the benefit of the Secured Parties with the United States Patent and Trademark Office.

NOW, THEREFORE, in consideration of the foregoing and for other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, each Grantor hereby agrees with the Agent as follows:

SECTION 1. Defined Terms

Capitalized terms used but not defined herein shall have the respective meanings given thereto in the Security Agreement, and if not defined therein, shall have the respective meanings given thereto in the Credit Agreement.

SECTION 2. Grant of Security Interest

Each Grantor hereby grants to the Agent, for the benefit of the Secured Parties, a security interest in and continuing lien on all of such Grantor's right, title and interest in, to and under all personal property of such Grantor including the following, in each case whether now owned or existing or hereafter acquired or arising and wherever located (collectively, the "**Patent Collateral**") as collateral security for the Secured Obligations: all United States and foreign patents and certificates of invention, or similar industrial property rights, and applications for any of the foregoing, including: (a) each patent and patent application listed on Schedule A attached hereto, (b) all reissues, divisions, continuations, continuations-in-part, extensions, renewals and reexaminations thereof, (c) all rights corresponding thereto throughout the world, (d) all inventions and improvements claimed therein, (e) all rights to sue for past, present and future infringements thereof, and (f) all Proceeds of the foregoing, including license fees, royalties, income, payments, claims, damages and proceeds of suit.

Notwithstanding the foregoing and anything to the contrary contained herein, the security interest created hereby shall not extend to, and the term "Patent Collateral" shall not include, any Excluded Assets.

SECTION 3. Security Agreement

The security interest granted pursuant to this Agreement is granted in conjunction with the security interest granted to the Agent for the Secured Parties pursuant to the Security Agreement, and each Grantor hereby acknowledges and affirms that the rights and remedies of the Agent with respect to

the security interest in the Patent Collateral made and granted hereby are more fully set forth in the Security Agreement, the terms and provisions of which are incorporated by reference herein as if fully set forth herein. In the event that any provision of this Agreement is deemed to conflict with the Security Agreement, the provisions of the Security Agreement shall control.

SECTION 4. Recordation

Each Grantor authorizes and requests that the Director of the United States Patent and Trademark Office and any other applicable government officer record this Agreement.

SECTION 5. Governing Law, Etc.

THIS AGREEMENT AND THE RIGHTS AND OBLIGATIONS OF THE PARTIES HEREUNDER AND ALL CLAIMS AND CONTROVERSIES ARISING OUT OF THE SUBJECT MATTER HEREOF WHETHER SOUNDING IN CONTRACT LAW, TORT LAW OR OTHERWISE SHALL BE GOVERNED BY, AND SHALL BE CONSTRUED AND ENFORCED IN ACCORDANCE WITH, THE LAWS OF THE STATE OF NEW YORK, WITHOUT REGARD TO CONFLICTS OF LAW PROVISIONS THAT WOULD RESULT IN THE APPLICATION OF ANY OTHER LAW (OTHER THAN ANY MANDATORY PROVISIONS OF THE UCC RELATING TO THE LAW GOVERNING PERFECTION AND THE EFFECT OF PERFECTION OF THE SECURITY INTEREST).

SECTIONS 10.15 (CONSENT TO JURISDICTION) AND 10.16 (WAIVER OF JURY TRIAL) OF THE CREDIT AGREEMENT ARE INCORPORATED HEREIN BY THIS REFERENCE AND SUCH INCORPORATION SHALL SURVIVE ANY TERMINATION OF THE CREDIT AGREEMENT.

SECTION 6. Counterparts

This Agreement may be executed in one or more counterparts and by different parties hereto in separate counterparts, each of which when so executed and delivered shall be deemed an original, but all such counterparts together shall constitute but one and the same instrument.

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

COMMUNICATIONS & POWER INDUSTRIES LLC

By: _____
Name: Joel A. Littman
Title: Chief Financial Officer, Treasurer & Secretary

CPI RADANT TECHNOLOGIES DIVISION INC.

By: _____
Name: Joel A. Littman
Title: Secretary

ASC SIGNAL CORPORATION

By: _____
Name: Joel A. Littman
Title: Secretary & Treasurer

CPI MALIBU DIVISION

By: _____
Name: Joel A. Littman
Title: Secretary & Chief Financial Officer

Accepted and Agreed:

UBS AG, STAMFORD BRANCH, as Collateral Agent

By: _____
Name: Kenneth Chin
Title: Director
Banking Products Services, US

By: _____
Name: Darlene Arias
Title: Director

SCHEDULE A
to
FIRST LIEN PATENT SECURITY AGREEMENT

Owner	Application/ Serial No.	Patent No.	Title	Filing Date
Communications & Power Industries LLC	09/455,886	6,437,510	Crossed-Field Amplifier with Multipactor Suppression	12/6/1999
Communications & Power Industries LLC	13/424,460	9,147,549	Crossed-Field Amplifiers with Anode/Cathode Structures for Reduced Spurious Emissions	3/20/2012
Communications & Power Industries LLC	09/259,643	6,236,161	Crossed-Field Device	2/26/1999
Communications & Power Industries LLC	10/160,666	6,740,858	Microwave Applicator for Heating a Moving Fluid	5/30/2002
Communications & Power Industries LLC	12/047,399	7,733,195	Waveguide Attenuator Having Coaxial Probes	3/13/2007
Communications & Power Industries LLC	10/222,255	6,867,401	Waveguide Foreign Object Damage Prevention Window	8/16/2002
Communications & Power Industries LLC	11/932,785	7,755,564	A Deployable Phasing System for Emulating Reflective Surfaces	10/31/2007
Communications & Power Industries LLC	11/933,063	7,804,464	Adjustable Paneling System for a Phasing Structure	10/31/2007
Communications & Power Industries LLC	09/169,454	6,198,457	Low-Windload Satellite Antenna	10/9/1998
Communications & Power Industries LLC	11/933,103	7,868,839	Planar Scanner Antenna for High Frequency Scanning and Radar Environments	10/31/2007
Communications & Power Industries LLC	11/933,053	8,159,410	Reflective Antenna Assembly	10/31/2007
CPI Malibu Division	11/933,040	7,872,614	System and Method for Providing a Deployable Phasing Structure	10/31/2007
Communications & Power Industries LLC	10/121,964	6,882,311	Digital Beamforming Radar System	4/12/2002
Communications & Power Industries LLC	10/427,705	6,856,301	Plasma Phased Array Electronic Scan Antenna	4/30/2003
Communications & Power Industries LLC	09/668,008	6,552,490	Multiple Stage Depressed Collector (MSDC) Klystron Based Amplifier for Ground-Based Satellite and Terrestrial Communications	9/21/2000

Owner	Application/ Serial No.	Patent No.	Title	Filing Date
Communications & Power Industries LLC	10/387,929	6,870,318	Multiple Stage Depressed Collector (MSDC) Klystron Based Amplifier for Ground-Based Satellite and Terrestrial Communications	3/12/2003
Communications & Power Industries LLC	09/629,315	6,456,009	Adaptive Heater Voltage Algorithm and Control System for Setting and Maintenance of the Heater Voltage of a Vacuum Electron Device	7/31/2000
Communications & Power Industries LLC	62/325,951	N/A	Amplifier Control System	4/21/2016
Communications & Power Industries LLC	11/347,357	7,368,874	Dynamic Depressed Collector	2/3/2006
Communications & Power Industries LLC	12/075,870	7,888,873	Dynamic Depressed Collector	3/14/2008
Communications & Power Industries LLC	09/649,479	6,777,877	Gun-Only Magnet Used For a Multi-Stage Depressed Collector Klystron	8/28/2000
Communications & Power Industries LLC	14/300,214	9,625,515	Predicting The End of Service Life for A Vacuum Electron Device	6/9/2014
Communications & Power Industries LLC	09/574,712	6,211,657	Two Stage Power Converter with Interleaved Buck Regulators	5/18/2000
Communications & Power Industries LLC	11/370,708	7,384,293	Breach Lock Mechanism for Seating Vacuum Electron Device	3/7/2006
Communications & Power Industries LLC	09/778,387	7,029,296	Cover Assembly for Vacuum Electron Device	2/6/2001
Communications & Power Industries LLC	12/008,069	8,278,812	Grid for Vacuum Electron Device and Method for manufacture of same	1/7/2008
Communications & Power Industries LLC	11/370,279	7,242,135	High Voltage Connection Vacuum Electron Device	3/7/2006
Communications & Power Industries LLC	10/982,192	7,145,297	L-Band Inductive Output Tube	11/4/2004
Communications & Power Industries LLC	11/376,970	8,872,057	Liquid Cooling System for Linear Beam Device Electrodes	3/15/2006
Communications & Power Industries LLC	10/192,772	6,856,081	Method and Apparatus for Magnetic Focusing of off-Axis Electron Beam	7/9/2002

Owner	Application/ Serial No.	Patent No.	Title	Filing Date
Communications & Power Industries LLC	10/996,180	7,005,789	Method and Apparatus for Magnetic Focusing of off-Axis Electron Beam	11/22/2004
Communications & Power Industries LLC	11/370,429	7,359,206	Radio Frequency Isolation System and Cover Assembly for Vacuum Electron Device	3/7/2006
Communications & Power Industries LLC	12/074,558	8,076,853	Terahertz Sheet Beam Klystron	3/3/2008
CPI Radant Technologies Division Inc.	11434485	7,420,523	B-Sandwich Radome Fabrication	5/15/2006
CPI Radant Technologies Division Inc.	11434052	7,463,212	Lightweight C-Sandwich Radome Fabrication	5/15/2006
CPI Radant Technologies Division Inc.	13/135,263	8,917,220	Multi-Band, Broadband, High Angle Sandwich Radome Structure	6/30/2011
CPI Radant Technologies Division Inc.	13/506,968	9,099,782	Lightweight Multi-band High Angle Sandwich Radome for Millimeter Wave Frequencies	5/29/2012
ASC Signal Corporation	13/105,479	8,558,753	Method for Assembly of a Segmented Reflector Antenna	5/11/2011
ASC Signal Corporation	12/550,956	8,199,061	Thermal Compensating Subreflector Tracking Assembly And Method of Use	8/31/2009
ASC Signal Corporation	12/418,757	8,169,377	Dual Opposed Drive Loop Antenna Pointing Apparatus And Method of Operation	4/6/2009
ASC Signal Corporation	12/126,439	7,965,255	Rotatable Antenna Mount	5/23/2008
ASC Signal Corporation	12/126,434	7,965,256	Segmented Antenna Reflector	5/23/2008
ASC Signal Corporation	12/126,448	7,918,423	Mobile Antenna Support	5/23/2008
ASC Signal Corporation	10/096,424	6,657,588	Satellite Tracking System Using Orbital Tracking Techniques	3/12/2002
ASC Signal Corporation	10/051,141	6,943,750	Self-Pointing Antenna Scanning	1/22/2002
CPI Malibu Division	09/181,366	6107958	Method and Apparatus for testing an Antenna Control System	10/28/1998