

PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1
Stylesheet Version v1.2

EPAS ID: PAT5885357

SUBMISSION TYPE:	NEW ASSIGNMENT
NATURE OF CONVEYANCE:	PATENT SECURITY AGREEMENT
CONVEYING PARTY DATA	
Name	Execution Date
ON SEMICONDUCTOR CONNECTIVITY SOLUTIONS, INC.	12/20/2019
RECEIVING PARTY DATA	
Name:	DEUTSCHE BANK AG NEW YORK BRANCH, AS COLLATERAL AGENT
Street Address:	60 WALL STREET
City:	NEW YORK
State/Country:	NEW YORK
Postal Code:	10005
PROPERTY NUMBERS Total: 97	
Property Type	Number
Patent Number:	8031101
Patent Number:	8063839
Patent Number:	8064835
Patent Number:	8073073
Patent Number:	8090060
Patent Number:	8090374
Patent Number:	8091012
Patent Number:	8111790
Patent Number:	8180304
Patent Number:	8223802
Patent Number:	8305921
Patent Number:	8358588
Patent Number:	8407551
Patent Number:	8432826
Patent Number:	8446998
Patent Number:	8462751
Patent Number:	8483297
Patent Number:	8599780
Patent Number:	8619887
Patent Number:	8634434

Property Type	Number
Patent Number:	8750157
Patent Number:	8755455
Patent Number:	8767657
Patent Number:	8902769
Patent Number:	8937884
Patent Number:	8964605
Patent Number:	9071299
Patent Number:	9071972
Patent Number:	9078142
Patent Number:	9078153
Patent Number:	9088962
Patent Number:	9107090
Patent Number:	9231671
Patent Number:	9252990
Patent Number:	9331883
Patent Number:	9332554
Patent Number:	9380604
Patent Number:	9420530
Patent Number:	9461724
Patent Number:	9479240
Patent Number:	9479799
Patent Number:	9490882
Patent Number:	9635649
Patent Number:	9647736
Patent Number:	9667301
Patent Number:	9686002
Patent Number:	9698878
Patent Number:	9717014
Patent Number:	9730089
Patent Number:	9742415
Patent Number:	9743333
Patent Number:	9755712
Patent Number:	9756450
Patent Number:	9788263
Patent Number:	9793965
Patent Number:	9807635
Patent Number:	9866308
Patent Number:	9992795

Property Type	Number
Application Number:	10015683
Application Number:	10219169
Application Number:	10298299
Application Number:	10310082
Application Number:	10321341
Application Number:	16272874
Application Number:	15965968
Application Number:	16136180
Application Number:	15635179
Application Number:	15635170
Application Number:	15610610
Application Number:	15462903
Application Number:	10368360
Application Number:	10342052
Application Number:	62817993
Application Number:	15995089
Application Number:	10340891
Application Number:	15826632
Application Number:	15727668
Application Number:	15803828
Application Number:	62777743
Application Number:	62788922
Application Number:	62758677
Application Number:	62756008
Application Number:	62756049
Application Number:	62755555
Application Number:	16403073
Application Number:	62817385
Application Number:	62813010
Application Number:	16444945
Application Number:	16429731
Application Number:	16374589
Application Number:	62837113
Application Number:	62853160
Application Number:	62827735
Application Number:	62863191
Application Number:	62840371
Application Number:	62821945

Property Type	Number
Application Number:	16436694

CORRESPONDENCE DATA

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

Phone: 212-819-2655

Email: iprecordations@whitecase.com

Correspondent Name: PETER GIOVINE/WHITE & CASE LLP

Address Line 1: 1221 AVENUE OF THE AMERICAS

Address Line 4: NEW YORK, NEW YORK 10020

ATTORNEY DOCKET NUMBER:	1111779-2989-BC15
NAME OF SUBMITTER:	PETER GIOVINE
SIGNATURE:	/Peter Giovine/
DATE SIGNED:	12/26/2019

Total Attachments: 11

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PATENT SECURITY AGREEMENT

This PATENT SECURITY AGREEMENT, dated as of December 20, 2019 (“Patent Security Agreement”), made by each of the signatories hereto (together with any other entity that may become a party hereto as provided herein, the “Patent Grantors”), is in favor of DEUTSCHE BANK AG NEW YORK BRANCH, as collateral agent (in such capacity, the “Collateral Agent”) for the Secured Parties.

W I T N E S S E T H:

WHEREAS, the Patent Grantors are party to a Guarantee and Collateral Agreement dated as of April 15, 2016 (the “Guarantee and Collateral Agreement”) in favor of the Collateral Agent pursuant to which the Patent Grantors are required to execute and deliver this Patent Security Agreement (capitalized terms used but not otherwise defined herein shall have the meanings given to them in the Guarantee and Collateral Agreement);

WHEREAS, pursuant to the terms of the Guarantee and Collateral Agreement, each Patent Grantor has created in favor of the Collateral Agent a security interest in, and the Collateral Agent has become a secured creditor with respect to, the Patent Collateral (as defined below);

NOW, THEREFORE, in consideration of the premises and to induce the Agents and the Lenders to enter into the Credit Agreement and to induce Lenders to make their respective extensions of credit to the Borrower thereunder and to induce the Qualified Counterparties to enter into the Specified Hedge Agreements and the Specified Cash Management Agreements and provide financial accommodation, each Patent Grantor hereby grants to the Collateral Agent, for the benefit of the Secured Parties, a security interest in all of the following property now owned or at any time hereafter acquired by such Patent Grantor or in which such Patent Grantor now has or at any time in the future may acquire any right, title or interest (collectively, the “Patent Collateral”), as collateral security for the complete payment and performance when due (whether at the stated maturity, by acceleration or otherwise) of all Secured Obligations:

(a) all Patents of such Patent Grantor, including, without limitation, the registered and applied-for Patents of such Patent Grantor listed on Schedule 1 attached hereto;

(b) to the extent not covered by clause (a), all Proceeds of any of the foregoing;
and

(c) to the extent not covered by clause (a), all causes of action arising prior to or after the date hereof for infringement of any of the Patents;

provided, that (i) this Patent Security Agreement shall not constitute a grant of a security interest in any property to the extent that and for as long as such grant of a security interest would be prohibited by the terms of the Guarantee and Collateral Agreement; and (ii) the security interest granted hereby (x) shall attach at all times to all proceeds of such property, (y) shall attach to such property immediately and automatically (without need for any further grant or act) at such time as the condition described in clause (i) ceases to exist and (z) to the extent severable shall in any event

attach to all rights in respect of such property that are not subject to the applicable condition described in clause (i).

The security interest granted pursuant to this Patent Security Agreement is granted in conjunction with the security interest granted to the Collateral Agent pursuant to the Guarantee and Collateral Agreement and the Patent Grantors hereby acknowledge and affirm that the rights and remedies of the Collateral Agent with respect to the security interest in the Patents made and granted hereby are more fully set forth in the Guarantee and Collateral Agreement. In the event that any provision of this Patent Security Agreement is deemed to conflict with the Guarantee and Collateral Agreement, the provisions of the Guarantee and Collateral Agreement shall govern.

Each Patent Grantor hereby authorizes and requests that the Commissioner of Patents and Trademarks record this Patent Security Agreement.


THIS PATENT SECURITY AGREEMENT AND THE RIGHTS AND OBLIGATIONS OF THE PARTIES UNDER THIS PATENT SECURITY AGREEMENT SHALL BE GOVERNED BY, AND CONSTRUED AND INTERPRETED IN ACCORDANCE WITH, THE LAW OF THE STATE OF NEW YORK.

This Patent Security Agreement may be executed by one or more of the parties to this Patent Security Agreement on any number of separate counterparts, and all of said counterparts taken together shall be deemed to constitute one and the same instrument. Delivery of an executed signature page of this Patent Security Agreement by facsimile transmission or electronic transmission (in PDF format) shall be effective as delivery of a manually executed counterpart hereof. A copy of this Patent Security Agreement signed by all the parties shall be delivered to the Administrative Agent.

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IN WITNESS WHEREOF, each Patent Grantor has caused this PATENT SECURITY AGREEMENT to be executed and delivered by its duly authorized officer as of the date first above written.

ON SEMINCONDUCTOR CONNECTIVITY
SOLUTIONS, INC.

By: 
Name: Bernard Gutmann
Title: Chief Financial Officer, Senior
Vice President and Treasurer

Accepted and Agreed:

DEUTSCHE BANK AG NEW YORK BRANCH, as Collateral Agent

By: 
Name: Yumi Okabe
Title: Vice President

By: 
Name: Philip Tancorra
Title: Associate

PATENTSPatent Registrations and Applications

Patent	Reg. No. (App. No.)	Reg. Date (App. Date)	Owner
SPUR CANCELLATION	8031101	10/4/2011	ON Semiconductor Connectivity Solutions, Inc.
TUNABLE ANTENNA SYSTEM	8063839	11/22/2011	ON Semiconductor Connectivity Solutions, Inc.
ANTENNA ASSIGNMENT SYSTEM AND METHOD	8064835	11/22/2011	ON Semiconductor Connectivity Solutions, Inc.
OPTIMIZED CLIPPING FOR PEAK-TO-AVERAGE POWER RATIO REDUCTION	8073073	12/6/2011	ON Semiconductor Connectivity Solutions, Inc.
Demodulation Technique For Gfsk And Dpsk	8090060	1/3/2012	ON Semiconductor Connectivity Solutions, Inc.
WIRELESS MULTIMEDIA HANDSET	8090374	1/3/2012	ON Semiconductor Connectivity Solutions, Inc.
SYSTEM AND METHOD FOR DECREASING DECODER COMPLEXITY	8091012	1/3/2012	ON Semiconductor Connectivity Solutions, Inc.
SOFT DECODING TO MITIGATE THE IMPACT OF BLUETOOTH INTERFERENCE ON CONVOLUTIONALLY-ENCODED SIGNALS	8111790	2/7/2012	ON Semiconductor Connectivity Solutions, Inc.
EFFICIENT POWER AMPLIFIER	8180304	5/15/2012	ON Semiconductor Connectivity Solutions, Inc.
Primary User Detection	8223802	7/17/2012	ON Semiconductor Connectivity Solutions, Inc.
CHANNEL SELECTION AND INTERFERENCE SUPPRESSION	8305921	11/6/2012	ON Semiconductor Connectivity Solutions, Inc.
INTERFERENCE-COGNITIVE TRANSMISSION	8358588	1/22/2013	ON Semiconductor Connectivity Solutions, Inc.
LOW COMPLEXITY LDPC DECODING	8407551	3/26/2013	ON Semiconductor Connectivity Solutions, Inc.
Channel Scanning And Channel Selection In A Wireless Communication Network	8432826	4/30/2013	ON Semiconductor Connectivity Solutions, Inc.

Patent	Reg. No. (App. No.)	Reg. Date (App. Date)	Owner
Multiple Antenna Receiver System And Method	8446998	5/21/2013	ON Semiconductor Connectivity Solutions, Inc.
Managing Wireless Local Area Networks	8462751	6/11/2013	ON Semiconductor Connectivity Solutions, Inc.
MULTIFUNCTIONAL SIGNAL TRANSFORM ENGINE	8483297	7/9/2013	ON Semiconductor Connectivity Solutions, Inc.
ACCESS POINT RANGE EXTENSION	8599780	12/3/2013	ON Semiconductor Connectivity Solutions, Inc.
ADJUSTABLE OPERATIONAL STATE WIRELESS MIMO	8619887	12/31/2013	ON Semiconductor Connectivity Solutions, Inc.
MESSAGE ROUTING IN WIRELESS MESH NETWORKS	8634434	1/21/2014	ON Semiconductor Connectivity Solutions, Inc.
Installation And Service Of A Wireless Home Network	8750157	6/10/2014	ON Semiconductor Connectivity Solutions, Inc.
Quality of Service and Rate Selection	8755455	6/17/2014	ON Semiconductor Connectivity Solutions, Inc.
MIXED-MODE MIMO DETECTOR IN A LOCAL AREA NETWORK	8767657	7/1/2014	ON Semiconductor Connectivity Solutions, Inc.
METHOD AND APPARATUS FOR OVERSUBSCRIPTION CONTROL IN A WI-FI HOME NETWORK	8902769	12/2/2014	ON Semiconductor Connectivity Solutions, Inc.
INTERFERENCE-COGNITIVE TRANSMISSION	8937884	1/20/2015	ON Semiconductor Connectivity Solutions, Inc.
Method and Apparatus for Integrating a Transceiver and a Half-Duplexing Split Balun	8964605	2/24/2015	ON Semiconductor Connectivity Solutions, Inc.
HDTV COMPATIBLE PRECODING FOR MULTI-USER MIMO IN A WIRELESS HOME NETWORK	9071299	6/30/2015	ON Semiconductor Connectivity Solutions, Inc.
Asynchronous tiered access control to a wireless home network	9071972	6/30/2015	ON Semiconductor Connectivity Solutions, Inc.
Method And Apparatus To Decouple Link Adaptation And Transmit Beamforming In Wifi Systems	9078142	7/7/2015	ON Semiconductor Connectivity Solutions, Inc.
Wireless Local Area Network with Spatial Diagnostics	9078153	7/7/2015	ON Semiconductor Connectivity Solutions, Inc.

Patent	Reg. No. (App. No.)	Reg. Date (App. Date)	Owner
WAP SUPPORTING COMPLEMENTARY SUBNETS IN A WLAN	9088962	7/21/2015	ON Semiconductor Connectivity Solutions, Inc.
Method And Apparatus For Correlating Wireless Local Area Network Communication Parameters With Subscriber Structure	9107090	8/11/2015	ON Semiconductor Connectivity Solutions, Inc.
Method and Apparatus for Link Optimization in a Wi-Fi Home Network	9231671	1/5/2016	ON Semiconductor Connectivity Solutions, Inc.
Mimo Sphere Decoder With Linear Startup In A Wireless Local Area Network	9252990	2/2/2016	ON Semiconductor Connectivity Solutions, Inc.
WIRELESS HOME NETWORK SUPPORTING CONCURRENT LINKS TO LEGACY DEVICES	9331883	5/3/2016	ON Semiconductor Connectivity Solutions, Inc.
Wireless Home Network Supporting Discrete Concurrent Communication Links	9332554	5/3/2016	ON Semiconductor Connectivity Solutions, Inc.
Opportunistic Concurrency between Wireless Local Area Networks	9380604	6/28/2016	ON Semiconductor Connectivity Solutions, Inc.
Wap With Context Sensitive Energy Management	9420530	8/16/2016	ON Semiconductor Connectivity Solutions, Inc.
Matrix Processing Engine For Multi-Tone Mimo Systems	9461724	10/4/2016	ON Semiconductor Connectivity Solutions, Inc.
COMPOSITE BEAMFORMING TO COORDINATE CONCURRENT WLAN LINKS	9479240	10/25/2016	ON Semiconductor Connectivity Solutions, Inc.
Compression Using an Iterative Data Derived Basis Set	9479799	10/25/2016	ON Semiconductor Connectivity Solutions, Inc.
Composite Sounding for MIMO Beamforming in a Wireless Home Network	9490882	11/8/2016	ON Semiconductor Connectivity Solutions, Inc.
Method And Apparatus For Channel Selection In A Wireless Local Area Network	9635649	4/25/2017	ON Semiconductor Connectivity Solutions, Inc.
Compressed Training for Massive MU-MIMO in a	9647736	5/9/2017	ON Semiconductor Connectivity Solutions, Inc.

Patent	Reg. No. (App. No.)	Reg. Date (App. Date)	Owner
Wireless Local Area Network			
Transceiver for Heterogeneous WLAN	9667301	5/30/2017	ON Semiconductor Connectivity Solutions, Inc.
MU-MIMO SNIFFER FOR A WIRELESS LOCAL AREA NETWORK	9686002	6/20/2017	ON Semiconductor Connectivity Solutions, Inc.
Unsolicited Channel Sounding in a Wireless Local Area Network	9698878	7/4/2017	ON Semiconductor Connectivity Solutions, Inc.
CROSS-NETWORK TRAFFIC MANAGEMENT OF NEIGHBORING WLANS	9717014	7/25/2017	ON Semiconductor Connectivity Solutions, Inc.
Remote Controlled WiFi Transceiver for Wireless Home Networks	9730089	8/8/2017	ON Semiconductor Connectivity Solutions, Inc.
Apparatus for Linearizing a Differential Charge Pump	9742415	8/22/2017	ON Semiconductor Connectivity Solutions, Inc.
Arbitration of Distributed Services for Wireless Home Networks	9743333	8/22/2017	ON Semiconductor Connectivity Solutions, Inc.
Composite Sounding for MIMO Beamforming in a Wireless Home Network	9755712	9/5/2017	ON Semiconductor Connectivity Solutions, Inc.
Automated Setup of a Station on a Wireless Home Network	9756450	9/5/2017	ON Semiconductor Connectivity Solutions, Inc.
WIFI CLIENT WITH HYBRID COMMUNICATION CAPABILITIES FOR WIRELESS LOCAL AREA NETWORK	9788263	10/10/2017	ON Semiconductor Connectivity Solutions, Inc.
Frequency Orthogonalized MIMO Channel Sounding and Feedback in a Wireless Home Network	9793965	10/17/2017	ON Semiconductor Connectivity Solutions, Inc.
Wireless Local Area Network with Spatial Diagnostics	9807635	10/31/2017	ON Semiconductor Connectivity Solutions, Inc.
COMPOSITE WIFI AND ACOUSTIC SPATIAL DIAGNOSTICS FOR SMART HOME MANAGEMENT	9866308	1/9/2018	ON Semiconductor Connectivity Solutions, Inc.
WAP SUPPORTING COMPLEMENTARY SUBNETS IN A WLAN	9992795	6/5/2018	ON Semiconductor Connectivity Solutions, Inc.

Patent	Reg. No. (App. No.)	Reg. Date (App. Date)	Owner
Device Optimization across Wireless Local Area Networks	10015683	7/3/2018	ON Semiconductor Connectivity Solutions, Inc.
Hybrid MU-MIMO Spatial Mapping using both Explicit Sounding and Crosstalk Tracking in a Wireless Local Area Network	10,219,169	2/26/2019	ON Semiconductor Connectivity Solutions, Inc.
Transmutable MIMO Wireless Transceiver	10,298,299	5/21/2019	ON Semiconductor Connectivity Solutions, Inc.
Acoustic Spatial Diagnostics for Smart Home Management	10,310,082	6/4/2019	ON Semiconductor Connectivity Solutions, Inc.
Channel Tracking in a Wireless Home Network	10,321,341	6/11/2019	ON Semiconductor Connectivity Solutions, Inc.
Hybrid MU-MIMO Spatial Mapping using both Explicit Sounding and Crosstalk Tracking in a Wireless Local Area Network	16/272,874	2/11/2019	ON Semiconductor Connectivity Solutions, Inc.
WAP SUPPORTING COMPLEMENTARY SUBNETS IN A WLAN	15/965,968	4/29/2018	ON Semiconductor Connectivity Solutions, Inc.
ADAPTIVE SPATIAL DIAGNOSTICS IN A WIRELESS NETWORK	16/136,180	9/19/2018	ON Semiconductor Connectivity Solutions, Inc.
MOBILE WIRELESS REPEATER	15/635,179	6/27/2017	ON Semiconductor Connectivity Solutions, Inc.
MOBILE WIRELESS CHARGING STATION	15/635,170	6/27/2017	ON Semiconductor Connectivity Solutions, Inc.
WIFI MULTI-USER CPE AND ICI MITIGATION	15/610,610	5/31/2017	ON Semiconductor Connectivity Solutions, Inc.
WiFi Antenna Selection with Beamforming	15/462,903	3/19/2017	ON Semiconductor Connectivity Solutions, Inc.
Network Event Based Security and Home Automation	10368360	7/30/2019	ON Semiconductor Connectivity Solutions, Inc.
Client Steering for a Wireless Local Area Network	10342052	7/2/2019	ON Semiconductor Connectivity Solutions, Inc.
HARQ FRAMING AND DUAL ERROR DETECTION WITH RETRANSMISSION	62/817,993	3/13/2019	ON Semiconductor Connectivity Solutions, Inc.
MULTI-RADIO WIRELESS TRANSCEIVER POWER CONSERVATION	15/995,089	5/31/2018	ON Semiconductor Connectivity Solutions, Inc.
Differential Elliptic Filter with a Single Op-Amp	10340891	7/2/2019	ON Semiconductor Connectivity Solutions, Inc.

Patent	Reg. No. (App. No.)	Reg. Date (App. Date)	Owner
MIMO WiFi Transceiver with Rolling Gain Offset Pre-Distortion Calibration	15/826,632	11/29/2017	ON Semiconductor Connectivity Solutions, Inc.
WAP Uplink Optimization by Selection of MIMO Antennas Spatial States	15/727,668	10/09/2017	ON Semiconductor Connectivity Solutions, Inc.
Regulated Switch Banks for Driving Transmit Power Amplifiers of a MIMO Wireless Transceiver	15/803,828	11/5/2017	ON Semiconductor Connectivity Solutions, Inc.
ADAPTIVE SPATIAL REUSE	62/777,743	12/10/2018	ON Semiconductor Connectivity Solutions, Inc.
SOFTWARE FRAMEWORK AND DEVELOPMENT PLATFORM FOR WI-FI CHIPSETS	62/788,922	1/6/2019	ON Semiconductor Connectivity Solutions, Inc.
HARQ FRAMING AND DUAL ERROR DETECTION	62/758,677	11/11/2018	ON Semiconductor Connectivity Solutions, Inc.
Multi-Radio Bridge with Adaptive Topology Control	62/756,008	11/5/2018	ON Semiconductor Connectivity Solutions, Inc.
HYBRID SECTOR SELECTION AND BEAMFORMING	62/756,049	11/5/2018	ON Semiconductor Connectivity Solutions, Inc.
DYNAMIC DIRECTIONALITY	62/755,555	11/4/2018	ON Semiconductor Connectivity Solutions, Inc.
Beamformer Solicited Sounding	16/403,073	5/3/2019	ON Semiconductor Connectivity Solutions, Inc.
CLOUD SNIFFER CONTROL PLATFORM	62/817,385	3/12/2019	ON Semiconductor Connectivity Solutions, Inc.
Coordinated Beamforming with Active Synchronization	62/813,010	3/2/2019	ON Semiconductor Connectivity Solutions, Inc.
Client Steering for a Wireless Local Area Network	16/444,945	6/18/2019	ON Semiconductor Connectivity Solutions, Inc.
Acoustic Spatial Diagnostics for Smart Home Management	16/429,731	6/3/2019	ON Semiconductor Connectivity Solutions, Inc.
TRANSMUTABLE MIMO WIRELESS TRANSCEIVER	16/374,589	4/3/2019	ON Semiconductor Connectivity Solutions, Inc.
MULTI-FREQUENCY RANGE VOLTAGE CONTROLLED OSCILLATOR SYSTEM AND METHOD	62/837,113	4/22/2019	ON Semiconductor Connectivity Solutions, Inc.
Early Link Identification-based Receiver Setup	62/853,160	5/27/2019	ON Semiconductor Connectivity Solutions, Inc.

Patent	Reg. No. (App. No.)	Reg. Date (App. Date)	Owner
CO-EXISTENCE MANAGEMENT IN WIRELESS COMMUNICATIONS	62/827,735	4/1/2019	ON Semiconductor Connectivity Solutions, Inc.
Rate adaptation	62/863,191	6/18/2019	ON Semiconductor Connectivity Solutions, Inc.
Secure CSI with Adaptive Preamble Obfuscation	62/840,371	4/29/2019	ON Semiconductor Connectivity Solutions, Inc.
PREDICTING STATE OF WIRELESS NETWORK FOR STATE MIGRATION	62/821,945	3/21/2019	ON Semiconductor Connectivity Solutions, Inc.
Channel Tracking in a Wireless Home Network	16/436,694	6/10/2019	ON Semiconductor Connectivity Solutions, Inc.