

PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1
Stylesheet Version v1.2

EPAS ID: PAT4206929

SUBMISSION TYPE:	NEW ASSIGNMENT
NATURE OF CONVEYANCE:	SECURITY INTEREST
SEQUENCE:	2

CONVEYING PARTY DATA

Name	Execution Date
MULTIPHY LTD.	12/20/2016

RECEIVING PARTY DATA

Name:	KREOS CAPITAL V (EXPERT FUND) L.P.
Street Address:	47 ESPLANADE
City:	ST HELIER
State/Country:	JERSEY

PROPERTY NUMBERS Total: 20

Property Type	Number
Application Number:	12601980
Application Number:	13515397
Application Number:	14454363
Application Number:	14370481
Application Number:	14101872
Application Number:	14636040
Application Number:	14605199
Application Number:	14662593
Application Number:	14643746
Application Number:	15165905
Application Number:	15166654
Application Number:	15175968
Application Number:	15210835
Application Number:	15213809
Application Number:	15239067
Application Number:	15280963
Application Number:	15331752
Application Number:	15280930
Application Number:	15242502
Application Number:	15238608

PATENT

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.

Email: aaron.lewin@jmbdavis.com**Correspondent Name:** JMB DAVIS BEN-DAVID**Address Line 1:** 8 HARTOM STREET**Address Line 2:** PO BOX 45087**Address Line 4:** JERUSALEM, ISRAEL**ATTORNEY DOCKET NUMBER:** 96088/24.996**NAME OF SUBMITTER:** AARON LEWIN**SIGNATURE:** /AARON LEWIN/**DATE SIGNED:** 01/03/2017**Total Attachments: 10**

source=G31082-V003 Multiphy - US IP Security Agreement -KREOS V - Signed 201216#page1.tif
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U.S. INTELLECTUAL PROPERTY SECURITY AGREEMENT

This U.S. INTELLECTUAL PROPERTY SECURITY AGREEMENT (“**IP Security Agreement**”) dated December 20, 2016, is made by and between (i) MultiPLY Ltd. (the “**Grantor**”), a company incorporated in Israel under registered number 513901611 whose registered office is at 3 Golda Meir Street, Ness Ziona Science Industrial Park 74140, Israel, and (ii) Kreos Capital V (Expert Fund) L.P. (“**Kreos**”), a company incorporated in Jersey under registered number 87844 whose registered office is at 47 Esplanade, St Helier, Jersey.

WHEREAS, Kreos and the Grantor, have entered into that certain Agreement for the Provision of a Loan Facility dated December 20, 2016 (the “**Loan Agreement**”), to which a Debenture - Floating Charge (the “**Debenture - Floating Charge**”) and a Debenture - Fixed Charge (the “**Debenture - Fixed Charge**”), in each case executed by the Grantor and Kreos, are attached as exhibits; and

WHEREAS, under the terms of the Debenture - Floating Charge, Grantor has agreed, among other things, to grant a first priority floating charge over the intellectual property of Grantor to Kreos and under the Debenture - Fixed Charge, Grantor has agreed, among other things, to grant a first priority fixed charge over certain specific intellectual property of Grantor to Kreos, and the Grantor has agreed as a condition thereof and in addition to the creation of the charges pursuant to the Debenture - Fixed Charge and the Debenture - Floating Charge, to execute this IP Security Agreement for recording with the U.S. Patent and Trademark Office on any intellectual property owned by it throughout the term of this IP Security Agreement.

NOW, THEREFORE, for good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, and intending to be legally bound hereby, Grantor agrees as follows:

Section 1. Grant of Security. Subject to the provisions of the Debenture - Floating Charge and the Debenture - Fixed Charge (collectively, the “**Charge Agreements**”), Grantor hereby grants to Kreos a security interest in and to all right, title and interest to (i) the registered United States patents and pending applications as set forth in **Schedule A** hereto together with all reissues, divisions, continuations, continuations-in-part, extensions and reexaminations thereof, and all rights therein provided by international treaties or conventions (the “**Patents**”), (ii) the registered trademarks, service marks, trade names and domain names, and applications therefore as set forth in **Schedule A** hereto together with all goodwill associated with such trademarks and service marks and all rights therein provided by international treaties or conventions (the “**Trademarks**”), and (iii) all copyrights and registrations and applications therefore set forth in **Schedule A** (the “**Copyrights**”), all as currently owned by the Grantor or which shall be owned in the future by the Grantor (the “**Collateral**”). Schedule A shall be updated pursuant to the provisions of Section 3.8 of the Loan Agreement upon the application for, or acquisition of, any new Patents or Trademarks in the United States by the Grantor and/or the application for, or acquisition of, any new Copyrights (whether registered or not), and the Grantor shall file amendments to Schedule A to that effect pursuant to said subsection of the Loan Agreement.

Section 2. Security for Obligations. The grant of a security interest in the Collateral by Grantor to Kreos under this IP Security Agreement secures the performance of all

obligations and the payment of all money and liabilities owed or incurred by Grantor to Kreos now or hereafter existing under or in respect of the Loan Agreement and the Charge Agreements, or under any other future financing arrangement between the Company and the Creditor (as defined in the Charge Agreements) (the "Secured Obligations").

Section 3. Recordation. Grantor authorizes and requests that the Commissioner of Patents and Trademarks record this IP Security Agreement.

Section 4. Right to Request Information. Kreos shall have the right to request, and Grantor shall promptly provide upon such request, information reasonably required in order to confirm that Schedule A is updated.

Section 5. Grants, Rights and Remedies. This IP Security Agreement has been entered into in conjunction with the provisions of the Loan Agreement and the Charge Agreements. The Grantor does hereby acknowledge and confirm that the grant of the security interest hereunder to, and the rights and remedies of, Kreos with respect to the Collateral are more fully set forth in the Loan Agreement and/or the Charge Agreements and in the event of any contradiction between this IP Security Agreement and the Loan Agreement or the Charge Agreements, the provisions of the Loan Agreement or the Charge Agreements will prevail.

Section 6. Governing Law; Forum for Dispute Resolution. This Agreement shall be governed by and construed according to the laws of the State of Israel, without regard to the conflict of laws provisions thereof. Any dispute arising under or in relation to this Agreement shall be resolved in the competent court for the Tel Aviv-Jaffa district, and each of the parties hereby submits exclusively and irrevocably to the jurisdiction of such court.

Section 7. Termination. This IP Security Agreement and the security interest granted hereunder to Kreos shall terminate and be of no force upon satisfaction in full of the Secured Obligations. Upon termination of this IP Security Agreement and the security interest granted to Kreos hereunder, Kreos shall execute all documents reasonably necessary to remove the security interest granted by Grantor hereunder and take any action reasonably necessary to remove the security interest granted by Grantor hereunder, including without limitation, the filing of a Termination Statement in the USPTO for the affected Patents and Trademarks.

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

MULTIPHY LTD.

By: _____

Name: _____

Title: _____

KREOS CAPITAL V (EXPERT FUND) L.P.

By: _____

Name: _____

Title: _____

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

MULTIPHY LTD.

By: _____

Name: Avi Shabtai

Title: Chief Executive Officer

KREOS CAPITAL V (EXPERT FUND) L.P.

By: _____

Name: _____

Title: _____

SCHEDULE A



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Short Name	Title	Our Ref.	Country	Serial No. Patent No.	Effective Date	Filing Date Grant Date	Cilent's ref Case	Applicant Name Publication No. & Date	Status
multiply	A METHOD AND APPARATUS FOR INCREASING THE CAPACITY OF A DATA COMMUNICATION CHANNEL	22323/CH/07-EP	Switzerland		May/26/2008	May/26/2008		MULTIPON NETWORKS LTD.	Allowed
multiply	A METHOD AND APPARATUS FOR INCREASING THE CAPACITY OF A DATA COMMUNICATION CHANNEL	22323/DE/07-EP	Germany		May/26/2008	May/26/2008		MULTIPON NETWORKS LTD.	Allowed
multiply	A METHOD AND APPARATUS FOR INCREASING THE CAPACITY OF A DATA COMMUNICATION CHANNEL	22323/EP/07	EPO	8751394.1 2168278	May/26/2008	May/26/2008 Sep/14/2016		MULTIPON NETWORKS LTD. 2168278 Mar/31/2010	Granted
multiply	A METHOD AND APPARATUS FOR INCREASING THE CAPACITY OF A DATA COMMUNICATION CHANNEL	22323/FR/07-EP	France		May/26/2008	May/26/2008		MULTIPON NETWORKS LTD.	Allowed
multiply	A METHOD AND APPARATUS FOR INCREASING THE CAPACITY OF A DATA COMMUNICATION CHANNEL	22323/GB/07-EP	United Kingdom		May/26/2008	May/26/2008		MULTIPON NETWORKS LTD.	Allowed
multiply	A METHOD AND APPARATUS FOR INCREASING THE CAPACITY OF A DATA COMMUNICATION CHANNEL	22323/IE/07-EP	Ireland		May/26/2008	May/26/2008		MULTIPON NETWORKS LTD.	Allowed
multiply	A METHOD AND APPARATUS FOR INCREASING THE CAPACITY OF A DATA COMMUNICATION CHANNEL	22323/JP/07	Japan	2010-509844 5236730	May/26/2008	May/26/2008 Apr/05/2013		MULTIPON NETWORKS LTD. 2010-528549 Aug/19/2010	Granted
multiply	A METHOD AND APPARATUS FOR	22323/US/07	USA	12/601,980	May/26/2008	May/26/2008		MULTIPON	Granted

PATENT

REEL: 040818 FRAME: 0497



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Short Name	Title	Our Ref.	Country	Serial No. Patent No.	Effective Date	Filing Date Grant Date	Client's ref Case	Applicant Name Publication No. & Date	Status
	INCREASING THE CAPACITY OF A DATA COMMUNICATION CHANNEL			8483570		Jul/09/2013		NETWORKS LTD. 2010-0247107 Sep/30/2010	
multiply	METHOD AND SYSTEM FOR COHERENT EQUALIZATION OF CHROMATIC DISPERSION OF OPTICAL SIGNALS IN A FIBER	27729/CN/10	China	201080003104.8 ZL 2010800003104.8	Dec/13/2010	Dec/13/2010 Oct/15/2014		MULTIPHY LTD. 102204132 A Sep/28/2011	Granted
multiply	31836	27729/EP/10	EPO	10837158.4	Dec/13/2010	Dec/13/2010		MULTIPHY LTD.	Pend
multiply	METHOD AND SYSTEM FOR COHERENT EQUALIZATION OF CHROMATIC DISPERSION OF OPTICAL SIGNALS IN A FIBER	27729/HK/10	Hong Kong	11113143.6 HK1158844	Dec/13/2010	Dec/06/2011 Aug/14/2015		MULTIPHY LTD. 1158844A Jul/20/2012	Granted
multiply	METHOD AND SYSTEM FOR COHERENT EQUALIZATION OF CHROMATIC DISPERSION OF OPTICAL SIGNALS IN A FIBER	27729/np/10	Israel	220425	Dec/13/2010	Jun/14/2012 Mar/01/2015		MULTIPHY LTD.	Granted
multiply	METHOD AND SYSTEM FOR COHERENT EQUALIZATION OF CHROMATIC DISPERSION OF OPTICAL SIGNALS IN A FIBER	27729/US/10	USA	13/515,397	Dec/13/2010	Dec/13/2010		MULTIPHY LTD. Nov/30/2014	Allowed
multiply	BLIND CHANNEL ESTIMATION METHOD FOR AN MLSE RECEIVER IN HIGH SPEED OPTICAL COMMUNICATION CHANNELS	28851/US/11	USA	14/454,363	Aug/07/2014	Aug/07/2014		MULTIPHY LTD. 2012-0251112 Oct/04/2012	Pend
multiply	SYMBOL SPACED ADAPTIVE MIMO EQUALIZATION FOR ULTRA HIGH BIT RATE OPTICAL COMMUNICATION	29498/US/12	USA	14/370,481 9,426,000	Jan/02/2013	Jan/02/2013 Aug/23/2016		MULTIPHY LTD. 2015-0043926 Feb/12/2015	Granted



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Short Name	Title	Our Ref.	Country	Serial No. Patent No.	Effective Date	Filing Date Grant Date	Cient's ref Case	Applicant Name Publication No. & Date	Status
	SYSTEMS								
multiphy	HARDWARE EFFICIENT IMPLEMENTATION OF DECISION FEEDBACK PHASE ESTIMATION FOR AN ULTRA HIGH SPEED COHERENT RECEIVER	30498/US/12	USA	14/101,872	Decr/10/2013	Decr/10/2013		MULTIPHY LTD. US 2016/0226577 Apr/02/2015	Pend
multiphy	ENHANCED EQUALIZATION BASED ON A COMBINATION OF REDUCED COMPLEXITY MLSE AND LINEAR EQUALIZER FOR	32114/US/14	USA	14/636,040	Mar/02/2015	Mar/02/2015		MULTIPHY LTD. US 2015/0249657 Sep/03/2015	Pend
multiphy	DIGITAL BAUD RATE CLOCK RECOVERY OF HEAVILY ISI-INDUCED SIGNALS	32123/US/14	USA	14/605,199 9,485,121	Jan/26/2015	Jan/26/2015 Nov/01/2016		MULTIPHY LTD. US-2015-0215138-A1 Jul/30/2015	Allowed
multiphy	A METHOD FOR INCREASING THE PROBABILITY OF ERROR CORRECTION IN AN OPTICAL COMMUNICATION CHANNEL	32226/US/14	USA	14/662,583	Mar/19/2015	Mar/19/2015		MULTIPHY LTD. US-2015-0270928-A1 Sep/24/2015	Pend
multiphy	MIMO EQUALIZATION OPTIMIZED FOR BAUD RATE CLOCK RECOVERY IN COHERENT DP-QPSK METRO SYSTEMS	32227/US/14	USA	14/643,746	Mar/10/2015	Mar/10/2015		MULTIPHY LTD. US 2015-0263813 A1 Sep/17/2015	Pend
multiphy	LOW-POWER HIGH-SWING PAM4/PAM8 FAST DRIVER	33516/US/15	USA	15/165,905	May/26/2016	May/26/2016		MULTIPHY LTD.	Await



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Short Name	Title	Our Ref.	Country	Serial No. Patent No.	Effective Date	Filing Date Grant Date	Cilent's ref Case	Applicant Name Publication No. & Date	Status
multiply	STEEPEST DESCENT FFE COMPUTATION AND TRACKING	33517/US/15	USA	15/166,654	May/27/2016	May/27/2016		MULTIPHY LTD.	Await
multiply	A FRAMING SCHEME FOR CONTINUOUS OPTICAL TRANSMISSION SYSTEMS	33518/US/15	USA	15/175,968	Jun/07/2016	Jun/07/2016		MULTIPHY LTD.	Await
multiply	EYE DIAGRAM ESTIMATION, BASED ON SIGNAL STATISTICS COLLECTION	33741/US/15	USA	15/210,835	Jul/14/2016	Jul/14/2016		MULTIPHY LTD.	Await
multiply	SEAMLESS MATCH POINT SWITCHING IN MLSE-BASED MODEMS	33749/US/15	USA	15/213,809	Jul/19/2016	Jul/19/2016		MULTIPHY LTD.	Await
multiply	BACKGROUND CALIBRATION OF INTERLEAVE TIMING ERRORS IN DIGITAL TO ANALOG CONVERTERS	33886/US/15	USA	15/239,067	Aug/17/2015	Aug/17/2016		MULTIPHY LTD.	Await
multiply	BACKGROUND CALIBRATION OF SAMPLER OFFSETS IN ANALOG TO DIGITAL CONVERTERS	33887/US/15	USA	15/280,963	Sep/29/2016	Sep/29/2016			Filed
multiply	BACKGROUND CALIBRATION OF SAMPLER TIMING ERRORS IN FLASH ANALOG TO DIGITAL CONVERTERS	33888/US/15	USA	15/331,752	Oct/21/2016	Oct/21/2016		MULTIPHY LTD.	Await



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Short Name	Title	Our Ref.	Country	Serial No. Patent No.	Effective Date	Filing Date Grant Date	Client's ref Case	Applicant Name Publication No. & Date	Status
multiply	BACKGROUND CALIBRATION OF INTERLEAVE TIMING ERRORS IN TIME-INTERLEAVED ANALOG TO DIGITAL CONVERTERS	33889/US/15	USA	15/280,930	Sep/29/2016	Sep/29/2016		MULTIPHY LTD.	Filed
multiply	ANALOG OPTICAL PRE-DISTORTION OF PAM4 AND HIGH ORDER MODULATED SIGNALS	33890/US/15	USA	15/242,502	Aug/20/2016	Aug/20/2016		MULTIPHY LTD.	Await
multiply	ELECTRO-OPTICAL FINITE IMPULSE RESPONSE TRANSMIT FILTER	33893/US/15	USA	15/238,608	Aug/16/2016	Aug/16/2016		MULTIPHY LTD.	Filed