

PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1
 Stylesheet Version v1.2

EPAS ID: PAT4013281

SUBMISSION TYPE:	NEW ASSIGNMENT	
NATURE OF CONVEYANCE:	SECURITY INTEREST	
CONVEYING PARTY DATA		
	Name	Execution Date
	MICROSEISMIC, INC.	08/15/2016
RECEIVING PARTY DATA		
Name:	PNC BANK, NATIONAL ASSOCIATION	
Street Address:	2100 ROSS AVENUE, SUITE 1850	
City:	DALLAS	
State/Country:	TEXAS	
Postal Code:	75201	
PROPERTY NUMBERS Total: 7		
Property Type	Number	
Application Number:	14176165	
PCT Number:	US2015014957	
Application Number:	14246290	
PCT Number:	US2015020684	
PCT Number:	US2015026269	
PCT Number:	US2015032652	
PCT Number:	US2015044574	
CORRESPONDENCE DATA		
Fax Number:	(617)523-6850	
<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>		
Phone:	617-523-2700	
Email:	susan.dinicola@hklaw.com,ashley.ingraham@hklaw.com	
Correspondent Name:	HOLLAND & KNIGHT LLP	
Address Line 1:	10 ST. JAMES AVENUE	
Address Line 4:	BOSTON, MASSACHUSETTS 02116	
ATTORNEY DOCKET NUMBER:	57833.00018	
NAME OF SUBMITTER:	SUSAN C. DINICOLA	
SIGNATURE:	/Susan C. DiNicola/	
DATE SIGNED:	08/18/2016	

Total Attachments: 4

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SUPPLEMENT NO. 1 TO
SECOND AMENDED AND RESTATED
INTELLECTUAL PROPERTY SECURITY AGREEMENT

This SUPPLEMENT NO. 1 TO SECOND AMENDED AND RESTATED INTELLECTUAL PROPERTY SECURITY AGREEMENT (as amended, restated, amended and restated, modified, supplemented, extended, joined and/or restated from time to time, the "Supplement") dated as of August [15], 2016, is made by the Persons listed on the signature page hereof (individually, each a "Grantor" and collectively, the "Grantors") in favor of PNC Bank, National Association, as a lender and as Agent for the Lenders party from time to time to the Credit Agreement (together with its successors and assigns in such capacity, "Agent") pursuant to that certain Second Amended and Restated Intellectual Property Security Agreement, dated as of May 12, 2015 and as recorded with the United States Patent and Trademark Office with respect to Trademarks, on May 20, 2015, at Reel 5520 Frame 0871, and with respect to Patents, on May 20, 2015, at Reel 035682 Frame 0891 (as it may be from time to time amended, restated, amended and restated, modified or supplemented, the "IP Security Agreement"). Capitalized terms used herein and not otherwise defined herein shall have the meanings ascribed thereto in the IP Security Agreement.

Each Grantor hereby confirms the grant to the Agent, for the benefit of itself and the Lenders, set forth in the IP Security Agreement of, and does hereby grant to the Agent, for the benefit of itself and the Lenders, a continuing security interest in and Lien upon all of such Grantor's right, title and interest in and to its respective Collateral, in each case whether now or hereafter existing or in which such Grantor now has or hereafter acquires an interest and wherever the same may be located. Each Grantor hereby agrees that the attached Schedule A and Schedule B to the IP Security Agreement shall constitute part of and an addition to Schedule A and Schedule B to the IP Security Agreement, respectively.

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IN WITNESS WHEREOF, Grantor has caused this Supplement No. 1 to IP Security Agreement to be duly executed and delivered by its officer thereunto duly authorized as of the date first above written.

GRANTORS:

MICROSEISMIC, INC., a Delaware corporation

By: 

Name: Peter M Duncan

Title: President

MICROSEISMIC (CANADA) ULC, a Canadian corporation

By: 

Name: Peter M Duncan

Title: President

SCHEDULE A

PATENTS AND PATENT LICENSES

SERIAL NO.	FILING DATE	PUBL. NO.	PUBL. DATE	PATENT NO.	ISSUE DATE
201180041977	08/09/2011	CN103109207	11/24/2015		
2014212886	01/13/2014	AU2014212886		2014212886	12/03/2015
2014745641	01/13/2014	EP2951393	12/09/2015		
2911378	04/28/2014	CA2811378	11/13/2014	2911378	03/01/2016
14/176,165	02/10/2014	US20150226868	08/13/2015		
PCT/US2015/014957	02/09/2015	2015120353	08/13/2015		
14/246,290	04/07/2014	20150285933	10/08/2015		
PCT/US2015/20684	05/16/2015	2015156963	10/15/2015		
PCT/US2015/26269	04/17/2015	2015167818	11/05/2015		
PCT/US2015/32652	05/26/2015				
PCT/US2015/44574	08/11/2015				

[Horizon] IP Security Agreement
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SCHEDULE B

TRADEMARKS AND TRADEMARK LICENSES

WORD MARK	SERIAL NO	FILING DATE	REG. NO.	REG. DATE
FracRX	86/350,437	07/28/2014	4933226	04/05/2016
Permindex	86/350,444	07/28/2014	4933227	04/05/2016
Dindex (intend to use status – do not record against at this time)	86/904,870	07/05/2016		
Pindex (intend to use status – do not record against at this time)	86/904,883	07/05/2016		
Productive-SRV	909052	07/21/2015		
FRACSTAR	913348	09/08/2015		
Permindex	918074	10/23/2015		

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