

PATENT ASSIGNMENT COVER SHEET

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NATURE OF CONVEYANCE:	ASSIGNMENT
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PROPERTY NUMBERS Total: 1	
Property Type	Number
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NAME OF SUBMITTER:	JENNIFER CATANESE
SIGNATURE:	/Jennifer Catanese/
DATE SIGNED:	07/09/2019
Total Attachments: 4	
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ASSIGNMENT

Each person signing below ("Assignor") has made or authorized to be made the following patent applications ("Patent Applications"):

U.S. Application No. 15/605,055, filed May 25, 2017, titled Piecewise RF Power Systems and Methods for Supplying Pre-Distorted RF Bias Voltage Signals to an Electrode in a Processing Chamber.

The Patent Applications disclose, whether claimed or unclaimed, inventions ("Inventions"), of which Assignor believes Assignor is an original inventor or an original joint inventor.

MKS Instruments, Inc. ("Assignee"), having a place of business at 2 Tech Drive, Suite 201, Andover, Massachusetts 01810, desires to acquire all right, title, and interest in and to "Intellectual Property" as defined below.

Assignor acknowledges and confirms any prior assignment(s) or obligation(s) of assignment from Assignor to Assignee of any part of the Intellectual Property.

For good and valuable consideration, the receipt and adequacy of which is acknowledged, Assignor irrevocably assigns, sells, and transfers all legal and equitable right, title, and interest in and to the Intellectual Property to Assignee. Assignee acknowledges and accepts the assignment, sale, and transfer. The right, title, and interest shall be held and enjoyed by Assignee and Assignee's successors in interest to the full end of any term, and to the full extent, as the Intellectual Property would have been held and enjoyed by Assignor if no assignment had been made to Assignee.

The Intellectual Property includes:

- a. the Inventions;
- b. the Patent Applications;
- c. any application to which one of the Patent Applications could have claimed priority or benefit directly or indirectly, where "application" encompasses (i) applications filed under the laws and treaties of the United States, other countries, regions, and international bodies, (ii) provisional patent applications and non-provisional patent applications, and (iii) other applications for the protection of intellectual property, including applications for utility models, design patents, and statutory invention registrations;
- d. any application that claims or could have claimed priority to or benefit of one of the Patent Applications directly or indirectly (including divisionals, continuations, continuations-in-part, patents of addition, and non-U.S. applications);
- e. any application, whether or not linked by priority/benefit claim to the Patent Applications, that describes or claims at least one of the Inventions;
- f. any official grant (including a United States Patent) arising from any application identified in parts (a)–(e);
- g. any modification or extension of any official grant, including reissues, reexaminations, renewals, substitutes, patents of addition, and extensions;

- h. any improvements to the Inventions that were conceived by Assignor prior to execution of this Assignment; and
- i. all interest in works of authorship by Assignor related to the Inventions, whether reproduced in the Patent Applications or not, and including computer code, user interfaces, graphic works, and the Patent Applications themselves, including the written descriptions, the drawings, and the claims.

The right, title, and interest include:

- a. the right to claim priority to any application, official grant, and modification or extension of the Intellectual Property;
- b. all copyrights and other rights associated with the Intellectual Property in each jurisdiction, including, for any work of authorship, the exclusive rights to (i) produce copies or reproductions of the work of authorship and sell those copies or reproductions, (ii) import and export the work of authorship, (iii) create derivative works of the work of authorship, (iv) perform or display the work of authorship publicly, and (v) transmit or display the work of authorship electronically; and
- c. all rights to sue for, and recover for, infringements of, or liabilities for, the Intellectual Property, including those infringements occurring and liabilities accruing prior to execution of this Assignment.

Assignor requests, in each country in which an application encompassed by the Intellectual Property is filed, that any official whose duty it is to make an official grant (such as the Director of the country's Patent Office) issue the official grant to Assignee.

Assignor represents that Assignor has not, and agrees that Assignor will not, enter into any assignment, sale, license, agreement, transfer, or encumbrance that would conflict with this Assignment. Assignor further agrees not to challenge, or assist in any challenge to, the Intellectual Property.

Assignor agrees to fully cooperate ("Cooperation") with Assignee and Assignee's successors in interest to (i) acquire or defend title to the Intellectual Property, (ii) make, prosecute, and issue applications identified in the Intellectual Property, (iii) defend the validity of the Intellectual Property, and (iv) enforce the Intellectual Property. The cooperation encompasses proceedings in front of administrative tribunals (such as an appeals board of the United States Patent and Trademark Office or the Patent Office of any other country, region, or international body) and in courts of law or equity in any country, region, or international body. The proceedings include litigation (such as disputes regarding validity, infringement, and indemnification), reexamination proceedings, reissue proceedings, interference proceedings, derivation proceedings, opposition proceedings, post-grant review, *inter partes* review, covered business method review, and any similar proceedings.

Cooperation includes, at Assignee's request and without further or other compensation beyond the good and valuable consideration recited above, (i) promptly reviewing and executing all truthful instruments or documents, (ii) promptly providing Assignee with all pertinent facts and documents relating to the Intellectual Property as may be known and accessible to Assignor, and (iii) testifying truthfully, under oath if necessary, orally and in writing.

For any reason, including by operation of law, in any respect and in any jurisdiction:

- a. to the extent that the assignment, sale, and transfer fails, Assignor grants Assignee an unconditional, irrevocable, perpetual, worldwide, fully paid-up, royalty-free, exclusive license, including the right to sublicense;
- b. to the extent that the exclusive license fails, the exclusive license shall operate as a non-exclusive license; and
- c. to the extent that the non-exclusive license fails, Assignor grants Assignee, Assignee's successors in interest, and each of their respective direct and indirect customers, a covenant not-to-sue, binding on Assignor's successors in interest.

If any provision of this Assignment is determined to be invalid or unenforceable for any reason, including by operation of law, all other provisions shall remain in full force and effect, and the court or tribunal making such a finding shall substitute an enforceable provision that most closely reflects the original.

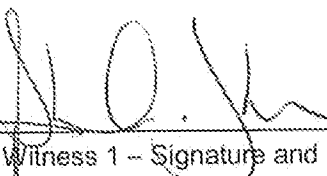
Assignor grants Harness, Dickey & Pierce, P.L.C. the power and authority to insert the corresponding application numbers, filing dates, and titles in the spaces provided above for any of the Patent Applications after execution of this Assignment.



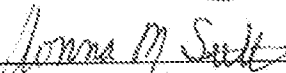
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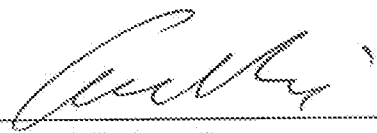
Dated

 SHEELA A. JOHNSON

Witness 1 - Signature and Printed Name

 DONNA M. SUTTER

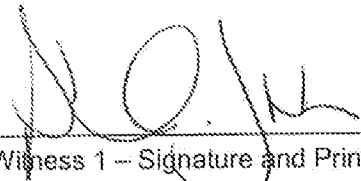
Witness 2 - Signature and Printed Name



Aaron T. Radomski

5/30/17

Dated

 SHEELA A. JOHNSON

Witness 1 - Signature and Printed Name

 DONNA M. SUTTER

Witness 2 - Signature and Printed Name

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