Dustin Moody
Information Technology Laboratory
Attention: Post-Quantum Cryptographic Algorithm Submissions
National Institute of Standards and Technology
100 Bureau Drive - Stop 8930
Gaithersburg, MD 20899–8930
USA

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E-Mail	thomas.poeppelmann@infineon.com
Internet	www.infineon.com

Date 12. Dezember 2017

Dear Mr. Moody,

Attached you find the intellectual property statements 2.D.1 for our submission NewHope to the Post-Quantum Cryptography Standardization Process by Thomas Pöppelmann, Erdem Alkim, Roberto Avanzi, Joppe Bos, Léo Ducas, Antonio de la Piedra, Peter Schwabe, and Douglas Stebila. None of the authors has declared to hold any patents of patent applications (of his own) with a claim that covers the submission and thus no statement 2.D.2 is provided.

Additionally, I have attached Statement 2.D.3 by Erdem Alkim, Thomas Pöppelmann, Peter Schwabe, and Antonio de la Piedra who contributed to the optimized, reference, or additional implementations.

If possible, I would appreciate a short email to Thomas.Poeppelmann@infineon.com to indicate that the letter and statements were received.

Best regards,

Thomas Pöppelmann and the NewHope team

2.D.1 Statement by Each Submitter

I, Thomas Pöppelmann, Orleansstr. 5a, 81669 Munich, Germany, Germany do hereby declare that the cryptosystem, reference implementation, or optimized implementations that I have submitted, known as NewHope, is my own original work, or if submitted jointly with others, is the original work of the joint submitters.

I further declare that (check one):

☒ *I do not hold and do not intend to hold any patent or patent application with a claim which may cover the cryptosystem, reference implementation, or optimized implementations that I have submitted, known as NewHope; OR (check one or both of the following):*

- ☐ *to the best of my knowledge, the practice of the cryptosystem, reference implementation, or optimized implementations that I have submitted, known as ____ (print name of cryptosystem)____, may be covered by the following U.S. and/or foreign patents: _____ (describe and enumerate or state "none" if applicable)_____ ;*
- ☐ *I do hereby declare that, to the best of my knowledge, the following pending U.S. and/or foreign patent applications may cover the practice of my submitted cryptosystem, reference implementation or optimized implementations: _____ (describe and enumerate or state "none" if applicable) _____.*

I do hereby acknowledge and agree that my submitted cryptosystem will be provided to the public for review and will be evaluated by NIST, and that it might not be selected for standardization by NIST. I further acknowledge that I will not receive financial or other compensation from the U.S. Government for my submission. I certify that, to the best of my knowledge, I have fully disclosed all my patents and patent applications which may cover my cryptosystem, reference implementation or optimized implementations. I also acknowledge and agree that the U.S. Government may, during the public review and the evaluation process, and, if my submitted cryptosystem is selected for standardization, during the lifetime of the standard, modify my submitted cryptosystem's specifications (e.g., to protect against a newly discovered

vulnerability).

I acknowledge that NIST will announce any selected cryptosystem(s) and proceed to publish the draft standards for public comment

I do hereby agree to provide the statements required by Sections 2.D.2 and 2.D.3, below, for any patent or patent application identified to cover the practice of my cryptosystem, reference implementation or optimized implementations and the right to use such implementations for the purposes of the public review and evaluation process.

I acknowledge that, during the post-quantum algorithm evaluation process, NIST may remove my cryptosystem from consideration for standardization. If my cryptosystem (or the derived cryptosystem) is removed from consideration for standardization or withdrawn from consideration by all submitter(s) and owner(s), I understand that rights granted and assurances made under Sections 2.D.1, 2.D.2 and 2.D.3, including use rights of the reference and optimized implementations, may be withdrawn by the submitter(s) and owner(s), as appropriate.

Signed: T. Pö

Title: Dr.-Ing. Thomas Pöppelmann

Date: 17 November 2017

Place: Munich, Germany

2.D.1 Statement by Each Submitter

I, Erdem ALKIM, of Merkez Mah. Yıldırım Sok.No 2, Yenice, Karabuk, Turkey , do hereby declare that the cryptosystem, reference implementation, or optimized implementations that I have submitted, known as NewHope, is my own original work, or if submitted jointly with others, is the original work of the joint submitters.

I further declare that (check one):

☑ *I do not hold and do not intend to hold any patent or patent application with a claim which may cover the cryptosystem, reference implementation, or optimized implementations that I have submitted, known as NewHope;* ***OR*** *(check one or both of the following):*

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made under Sections 2.D.1, 2.D.2 and 2.D.3 of the Call For Proposals, including use rights of the reference and optimized implementations, may be withdrawn by the submitter(s) and owner(s), as appropriate.

Signed: 
Title: Dr. Erdem ALKIM
Date: 09/11/2017
Place:Merkez Mah. Yıldırım Sok. No 2 Yenice, Karabük, Turkey

2.D.1 Statement by Each Submitter

I, ROBERTO AVANZI of ARM, 110 Fulbourn Rd, Cambridge CB1 9NJ, UK, do hereby declare that the cryptosystem, reference implementation, or optimized implementations that I have submitted, known as NewHope, is my own original work, or if submitted jointly with others, is the original work of the joint submitters.

I further declare that (check one):

- ✓ *I do not hold and do not intend to hold any patent or patent application with a claim which may cover the cryptosystem, reference implementation, or optimized implementations that I have submitted, known as NewHope;* ***OR*** *(check one or both of the following):*

  - ☐ *to the best of my knowledge, the practice of the cryptosystem, reference implementation, or optimized implementations that I have submitted, known as NewHope, may be covered by the following U.S. and/or foreign patents: NONE;*
  - ☐ *I do hereby declare that, to the best of my knowledge, the following pending U.S. and/or foreign patent applications may cover the practice of my submitted cryptosystem, reference implementation or optimized implementations: NONE.*

I do hereby acknowledge and agree that my submitted cryptosystem will be provided to the public for review and will be evaluated by NIST, and that it might not be selected for standardization by NIST. I further acknowledge that I will not receive financial or other compensation from the U.S. Government for my submission. I certify that, to the best of my knowledge, I have fully disclosed all patents and patent applications which may cover my cryptosystem, reference implementation or optimized implementations. I also acknowledge and agree that the U.S. Government may, during the public review and the evaluation process, and, if my submitted cryptosystem is selected for standardization, during the lifetime of the standard, modify my submitted cryptosystem's specifications (e.g., to protect against a newly discovered vulnerability).

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Signed: Roberto Avanzi

Title: Senior Principal Cryptography and Security Architect
Date: November 15, 2017
Place: Munich, Germany

2.D.1 Statement by Each Submitter

I, Joppe W. Bos, of NXP Semiconductors, Interleuvenlaan 80, 3001, Leuven, Belgium, do hereby declare that the cryptosystem, reference implementation, or optimized implementations that I have submitted, known as NewHope, is my own original work, or if submitted jointly with others, is the original work of the joint submitters.

I further declare that:

X *I do not hold and do not intend to hold any patent or patent application with a claim which may cover the cryptosystem, reference implementation, or optimized implementations that I have submitted, known as NewHope.*

I do hereby acknowledge and agree that my submitted cryptosystem will be provided to the public for review and will be evaluated by NIST, and that it might not be selected for standardization by NIST. I further acknowledge that I will not receive financial or other compensation from the U.S. Government for my submission. I certify that, to the best of my knowledge, I have fully disclosed all patents and patent applications which may cover my cryptosystem, reference implementation or optimized implementations. I also acknowledge and agree that the U.S. Government may, during the public review and the evaluation process, and, if my submitted cryptosystem is selected for standardization, during the lifetime of the standard, modify my submitted cryptosystem's specifications (e.g., to protect against a newly discovered vulnerability).

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Signed:

Title: Joppe W. Bos, PhD
Date: November 2nd 2017
Place: Leuven, Belgium

2.D.1 Statement by Each Submitter

I, Léo Ducas, of CWI, Science Park 123, 1098 XG Amsterdam, The Netherlands, do hereby declare that the cryptosystem, reference implementation, or optimized implementations that I have submitted, known as NewHope, is my own original work, or if submitted jointly with others, is the original work of the joint submitters.

I do not hold and do not intend to hold any patent or patent application with a claim which may cover the cryptosystem, reference implementation, or optimized implementations that I have submitted, known as NewHope;

I do hereby acknowledge and agree that my submitted cryptosystem will be provided to the public for review and will be evaluated by NIST, and that it might not be selected for standardization by NIST. I further acknowledge that I will not receive financial or other compensation from the U.S. Government for my submission. I certify that, to the best of my knowledge, I have fully disclosed all patents and patent applications which may cover my cryptosystem, reference implementation or optimized implementations. I also acknowledge and agree that the U.S. Government may, during the public review and the evaluation process, and, if my submitted cryptosystem is selected for standardization, during the lifetime of the standard, modify my submitted cryptosystem's specifications (e.g., to protect against a newly discovered vulnerability).

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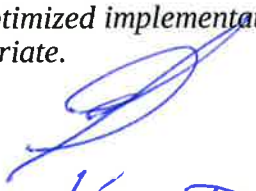
Signed: 

Title: Dr. Léo Ducas

Date: 1st November 2017

Place: Amsterdam, The Netherlands

2.D.1 Statement by Each Submitter

I, Antonio de la Piedra, of Compumatica secure networks B.V., Oude Udenseweg 29, 5405 PD Uden, The Netherlands, do hereby declare that the cryptosystem, reference implementation, or optimized implementations that I have submitted, known as NewHope, is my own original work, or if submitted jointly with others, is the original work of the joint submitters.

I further declare that (check one):

☒ *I do not hold and do not intend to hold any patent or patent application with a claim which may cover the cryptosystem, reference implementation, or optimized implementations that I have submitted, known as NewHope;* ***OR*** *(check one or both of the following):*

- ☐ *to the best of my knowledge, the practice of the cryptosystem, reference implementation, or optimized implementations that I have submitted, known as NewHope, may be covered by the following U.S. and/or foreign patents: _____ (describe and enumerate or state "none" if applicable)_____ ;*
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reference and optimized implementations, may be withdrawn by the submitter(s) and owner(s), as appropriate.

Signed: ANTONIO DE LA PIEDRA, PHD
Title: DR.
Date: 2017 NOVEMBER 10
Place: UDEN, THE NETHERLANDS

2.D.1 Statement by Each Submitter

I, Peter Schwabe, of Radboud University, Comeniuslaan 4, 6525 HP Nijmegen, The Netherlands, do hereby declare that the cryptosystem, reference implementation, or optimized implementations that I have submitted, known as NewHope, is my own original work, or if submitted jointly with others, is the original work of the joint submitters.

I further declare that (check one):

☑ *I do not hold and do not intend to hold any patent or patent application with a claim which may cover the cryptosystem, reference implementation, or optimized implementations that I have submitted, known as NewHope;* ***OR*** *(check one or both of the following):*

- ☐ *to the best of my knowledge, the practice of the cryptosystem, reference implementation, or optimized implementations that I have submitted, known as NewHope, may be covered by the following U.S. and/or foreign patents:none;*
- ☐ *I do hereby declare that, to the best of my knowledge, the following pending U.S. and/or foreign patent applications may cover the practice of my submitted cryptosystem, reference implementation or optimized implementations:none.*

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Signed: 

Title: Dr. Peter Schwabe, Assistant Professor

Date: Nov. 7, 2017

Place: Nijmegen, The Netherlands

I, Douglas Stebila, McMaster University, 1280 Main St. W., Hamilton, Ontario, Canada, do hereby declare that the cryptosystem, reference implementation, or optimized implementations that I have submitted, known as NEWHOPE, is my own original work, or if submitted jointly with others, is the original work of the joint submitters.

I further declare that I do not hold and do not intend to hold any patent or patent application with a claim which may cover the cryptosystem, reference implementation, or optimized implementations that I have submitted, known as NEWHOPE

I do hereby acknowledge and agree that my submitted cryptosystem will be provided to the public for review and will be evaluated by NIST, and that it might not be selected for standardization by NIST. I further acknowledge that I will not receive financial or other compensation from the U.S. Government for my submission. I certify that, to the best of my knowledge, I have fully disclosed all patents and patent applications which may cover my cryptosystem, reference implementation or optimized implementations. I also acknowledge and agree that the U.S. Government may, during the public review and the evaluation process, and, if my submitted cryptosystem is selected for standardization, during the lifetime of the standard, modify my submitted cryptosystem's specifications (e.g., to protect against a newly discovered vulnerability).

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Signed: Douglas Stebila

Title: Dr Douglas Stebila, Assistant Professor

Date: 2017-10-05

Place: Hamilton, Ontario, Canada

2.D.3 Statement by Reference/Optimized Implementations' Owner(s)

The following must also be included:

I, Thomas Pöppelmann , Orleansstr. 5a, 81669 Munich, Germany, am co- *the owner* ~~*or authorized representative of the owner (print full name, if different than the signer)*~~ *of the submitted reference implementation and optimized implementations* to that extend *and hereby grant the U.S. Government and any interested party the right to reproduce, prepare derivative works based upon, distribute copies of, and display such implementations for the purposes of the post-quantum algorithm public review and evaluation process, and implementation if the corresponding cryptosystem is selected for standardization and as a standard, notwithstanding that the implementations may be copyrighted or copyrightable.*

Signed: T. Pö

Title: Dr.-Ing. Thomas Pöppelmann

Date: 17 November 2017

Place: Munich, Germany

2.D.3 Statement by Reference/Optimized Implementations' Owner(s)

The following must also be included:

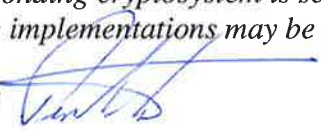
I, Erdem ALKIM, Merkez Mah. Yıldırım Sok. No 2 Yenice, Karabük, Turkey , am the owner or authorized representative of the owner (print full name, if different than the signer) of the submitted reference implementation and optimized implementations and hereby grant the U.S. Government and any interested party the right to reproduce, prepare derivative works based upon, distribute copies of, and display such implementations for the purposes of the post-quantum algorithm public review and evaluation process, and implementation if the corresponding cryptosystem is selected for standardization and as a standard, notwithstanding that the implementations may be copyrighted or copyrightable.

Signed: 
Title: Dr. Erdem ALKIM
Date: 09/11/2017
Place:Merkez Mah. Yıldırım Sok. No 2 Yenice, Karabük, Turkey

2.D.3 Statement by Reference/Optimized Implementations' Owner(s)

The following must also be included:

I, Peter Schwabe , Radboud University, Comeniuslaan 4, 6525 HP Nijmegen, The Netherlands, am the owner or authorized representative of the owner (print full name, if different than the signer) of the submitted reference implementation and optimized implementations and hereby grant the U.S. Government and any interested party the right to reproduce, prepare derivative works based upon, distribute copies of, and display such implementations for the purposes of the post-quantum algorithm public review and evaluation process, and implementation if the corresponding cryptosystem is selected for standardization and as a standard, notwithstanding that the implementations may be copyrighted or copyrightable.

Signed: 

Title: Dr. Peter Schwabe, Assistant Professor

Date: Nov. 7, 2017

Place: Nijmegen, The Netherlands

2.D.3 Statement by Reference/Optimized Implementations' Owner(s)

The following must also be included:

I, Antonio de la Piedra, Compumatica secure networks B.V., Oude Udenseweg 29, 5405 PD Uden, The Netherlands, am the owner or authorized representative of the owner of the submitted reference implementation and optimized implementations and hereby grant the U.S. Government and any interested party the right to reproduce, prepare derivative works based upon, distribute copies of, and display such implementations for the purposes of the post-quantum algorithm public review and evaluation process, and implementation if the corresponding cryptosystem is selected for standardization and as a standard, notwithstanding that the implementations may be copyrighted or copyrightable.

Signed: ANTONIO DE LA PIEDRA, PHD
Title: DR.
Date: 10- NOVEMBER -2017
Place: UDEN, THE NETHERLANDS