September 29, 2023

Inova Diagnostics, Inc.
Andrea Seaman
Manager, Research and Development
9900 Old Grove Road
San Diego, California 92131

Re: K213403
Trade/Device Name: Aptiva CTD Essential Reagent
Regulation Number: 21 CFR 866.5100
Regulation Name: Antinuclear Antibody Immunological Test System
Regulatory Class: Class II
Product Code: LLL, LJM, LKP, LKO, LSW, MQA, OBE,
Dated: February 24, 2023
Received: February 24, 2023

Dear Andrea Seaman:

We have reviewed your Section 510(k) premarket notification of intent to market the device referenced above and have determined the device is substantially equivalent (for the indications for use stated in the enclosure) to legally marketed predicate devices marketed in interstate commerce prior to May 28, 1976, the enactment date of the Medical Device Amendments, or to devices that have been reclassified in accordance with the provisions of the Federal Food, Drug, and Cosmetic Act (Act) that do not require approval of a premarket approval application (PMA). You may, therefore, market the device, subject to the general controls provisions of the Act. Although this letter refers to your product as a device, please be aware that some cleared products may instead be combination products. The 510(k) Premarket Notification Database located at https://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfpmn/pmn.cfm identifies combination product submissions. The general controls provisions of the Act include requirements for annual registration, listing of devices, good manufacturing practice, labeling, and prohibitions against misbranding and adulteration. Please note: CDRH does not evaluate information related to contract liability warranties. We remind you, however, that device labeling must be truthful and not misleading.

If your device is classified (see above) into either class II (Special Controls) or class III (PMA), it may be subject to additional controls. Existing major regulations affecting your device can be found in the Code of Federal Regulations, Title 21, Parts 800 to 898. In addition, FDA may publish further announcements concerning your device in the Federal Register.

Please be advised that FDA's issuance of a substantial equivalence determination does not mean that FDA has made a determination that your device complies with other requirements of the Act or any Federal statutes and regulations administered by other Federal agencies. You must comply with all the Act's

requirements, including, but not limited to: registration and listing (21 CFR Part 807); labeling (21 CFR Part 801 and Part 809); medical device reporting (reporting of medical device-related adverse events) (21 CFR 803) for devices or postmarketing safety reporting (21 CFR 4, Subpart B) for combination products (see https://www.fda.gov/combination-products/guidance-regulatory-information/postmarketing-safety-reporting-combination-products); good manufacturing practice requirements as set forth in the quality systems (QS) regulation (21 CFR Part 820) for devices or current good manufacturing practices (21 CFR 4, Subpart A) for combination products; and, if applicable, the electronic product radiation control provisions (Sections 531-542 of the Act); 21 CFR 1000-1050.

Also, please note the regulation entitled, "Misbranding by reference to premarket notification" (21 CFR Part 807.97). For questions regarding the reporting of adverse events under the MDR regulation (21 CFR Part 803), please go to https://www.fda.gov/medical-devices/medical-device-safety/medical-device-reporting-mdr-how-report-medical-device-problems.

For comprehensive regulatory information about medical devices and radiation-emitting products, including information about labeling regulations, please see Device Advice (https://www.fda.gov/medical-devices/device-advice-comprehensive-regulatory-assistance) and CDRH Learn (https://www.fda.gov/training-and-continuing-education/cdrh-learn). Additionally, you may contact the Division of Industry and Consumer Education (DICE) to ask a question about a specific regulatory topic. See the DICE website (https://www.fda.gov/medical-devices/device-advice-comprehensive-regulatory-assistance/contact-us-division-industry-and-consumer-education-dice) for more information or contact DICE by email (DICE@fda.hhs.gov) or phone (1-800-638-2041 or 301-796-7100).

Sincerely,

Ying Mao -S

Ying Mao, Ph.D.
Branch Chief
Division of Immunology and Hematology Devices
OHT7: Office of In Vitro Diagnostics
Office of Product Evaluation and Quality
Center for Devices and Radiological Health

Enclosure

DEPARTMENT OF HEALTH AND HUMAN SERVICES
Food and Drug Administration

Indications for Use

Form Approved: OMB No. 0910-0120
Expiration Date: 06/30/2020
See PRA Statement below.

510(k) Number *(if known)*
K213403

Device Name
Aptiva CTD Essential Reagents

Indications for Use *(Describe)*
The Aptiva CTD Essential Reagent consists of 10 multiplexed immunoassays utilizing particle-based multi-analyte technology for the quantitative determination of IgG autoantibodies against dsDNA, and semi-quantitative determination of IgG autoantibodies against RNP, Sm, Ro52, Ro60, SS-B, Scl-70, Jo-1, centromere, and Ribo-P in human serum:

• The presence of dsDNA antibodies, in conjunction with clinical findings and other laboratory tests, is an aid in the diagnosis of systemic lupus erythematosus.
• The presence of RNP antibodies, in conjunction with clinical findings and other laboratory tests, is an aid in the diagnosis of mixed connective tissue disease and systemic lupus erythematosus.
• The presence of Sm antibodies, in conjunction with clinical findings and other laboratory tests, is an aid in the diagnosis of systemic lupus erythematosus.
• The presence of Ro52 antibodies, in conjunction with clinical findings and other laboratory tests, is an aid in the diagnosis of systemic lupus erythematosus, Sjögren's syndrome, systemic sclerosis, and idiopathic inflammatory myositis.
• The presence of Ro60 antibodies, in conjunction with clinical findings and other laboratory tests, is an aid in the diagnosis of systemic lupus erythematosus and Sjögren's syndrome.
• The presence of SS-B antibodies, in conjunction with clinical findings and other laboratory tests, is an aid in the diagnosis of systemic lupus erythematosus and Sjögren's syndrome.
• The presence of Scl-70 antibodies, in conjunction with clinical findings and other laboratory tests, is an aid in the diagnosis of systemic sclerosis.
• The presence of Jo-1 antibodies, in conjunction with clinical findings and other laboratory tests, is an aid in the diagnosis of idiopathic inflammatory myositis.
• The presence of centromere antibodies, in conjunction with clinical findings and other laboratory tests, is an aid in the diagnosis of systemic sclerosis.
• The presence of Ribo-P antibodies, in conjunction with clinical findings and other laboratory tests, is an aid in the diagnosis of systemic lupus erythematosus.

The individual assays included in the Aptiva CTD Essential Reagent are intended for use with the Inova Diagnostics Aptiva System.

Type of Use *(Select one or both, as applicable)*

☒ Prescription Use (Part 21 CFR 801 Subpart D) ☐ Over-The-Counter Use (21 CFR 801 Subpart C)

CONTINUE ON A SEPARATE PAGE IF NEEDED.

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Table of Contents

This summary of the 510(k) safety and effectiveness information is being submitted in accordance with the requirements of SMDA 1990 and 21 CFR 807.92.

Administrative data

Submitter: Inova Diagnostics, Inc
9900 Old Grove Road,
San Diego, CA, 92131

Purpose of submission: New device

Device in the submission: Aptiva CTD Essential Reagent

Scientific contact: Andrea Seaman, Associate Director, Research and Development
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Email: cbridges@werfen.com

Device name (kit):

Proprietary name:	Aptiva CTD Essential Reagent
Common name:	anti-nuclear antibody tests
Classification name:	Anti-nuclear antibody immunological test system

Regulation Medical Specialty	Immunology
Review Panel	Immunology
Product Code	LLL, Extractable Antinuclear antibody OBE, Anti-SS-A 52 Autoantibodies LKP, Anti-Sm antibody LKO, Anti-RNP Antibody LJM, Antinuclear Antibody MQA, Anti-Ribosomal P Antibodies LSW, Anti-DNA Antibody
Regulation Number	866.5100
Device Class	2

Predicate device

QUANTA Flash® dsDNA IgG, 510(k) number: K152013. Date declared: April 11, 2016.
QUANTA Flash® RNP, 510(k) number: K123593. Date declared: April 17, 2013.
Orgentec Sm ELISA, 510(k) number: K954830. Date declared: May 8, 1996.
QUANTA Flash® Ro52, 510(k) number: K141655. Date declared: March 5, 2015.
QUANTA Flash® Ro60, 510(k) number: K141328. Date declared: February 12, 2015.
QUANTA Flash® SS-B, 510(k) number: K141210. Date declared: January 29, 2015.
QUANTA Flash® Scl-70, 510(k) number: K152635. Date declared: June 1, 2016.
QUANTA Flash® Jo-1, 510(k) number: K151429. Date declared: February 12, 2016.
QUANTA Flash® Centromere, 510(k) number: K123880. Date declared: February 7, 2014.
QUANTA Lite® Ribo-P, 510(k) number: K981237. Date declared: June 5, 1998.

Device description

The Aptiva CTD Essential reagent utilizes particle based multi-analyte technology (PMAT) in a cartridge format. Each analyte (dsDNA, RNP, Sm, Ro60, Ro52, SS-B, Scl-70, Jo-1, Centromere and Ribo-P) in the Aptiva CTD Essential reagent is a solid phase immunoassay utilizing fluorescent microparticles. This technology allows each of the ten analytes, along with a human anti-IgG capture antibody (IgG Control Microparticle), to be coated onto eleven uniquely recognizable paramagnetic microparticles, which are combined into one tube.

The Aptiva Multi-Analyte Instrument is a fully automated, random-access analyzer. This platform is a closed system with continuous load and random-access capabilities that processes the samples, runs the reagent, and reports results. It includes liquid handling hardware, optical module (OM), and integrated computer with proprietary software and touch screen user interface.

The ten unique populations of microparticles coated with dsDNA, RNP, Sm, Ro60, Ro52, SS-B, Scl-70, Jo-1, Centromere and Ribo-P, along with the one for the control microparticle, are stored in the reagent cartridge under conditions that preserve the autoantigens in their reactive states. When the assay cartridge is ready to be used for the first time, the reagent tube seals are pierced using the cartridge lid. The reagent cartridge is then loaded onto the Aptiva Multi-Analyte Instrument, where the microparticles are automatically rehydrated using buffer located within the cartridge.

A patient's serum is diluted 1:44.4 fold with Aptiva system rinse by the instrument in a disposable cuvette. A small amount of the diluted sample is combined with assay buffer and the microparticle suspension in a second cuvette, and mixed (final serum dilution: 1:230). This reaction cuvette is incubated for 9 ½ minutes at 37°C. The cuvette is then exposed to a magnet that retains the microparticles in place. The liquid is aspirated, and the microparticles are resuspended as system rinse is added to the cuvette and the magnet is removed. This wash cycle is repeated. During the third wash, no system rinse is added after the aspiration step. After the third wash, phycoerythrin conjugated polyclonal anti-human IgG (known as PE Tracer IgG) is added to the cuvette with microparticles, and mixed. Again, the cuvette is incubated for 9 ½ minutes at 37°C. Three wash steps, as described above, are performed on the microparticles. Following the wash steps, the microparticles are transferred to the optical module of the instrument, where a charge coupled device (CCD) camera takes multiple images to identify and count the twelve unique microparticle regions, as well as determine the amount of conjugate on the microparticles. A twelfth particle, coated with goat anti-human IgG, is present in the reagent as a control to flag low concentrations of IgG in the patient serum sample as an assay verification step. The median fluorescent

intensity (MFI) is proportional to the amount of PE Tracer that is bound to the human IgG, which is proportional to the amount of IgG antibodies bound to the corresponding microparticle regions.

For quantitation, the ten assays (together as part of the Aptiva CTD Essential Reagent) each utilizes a predefined lot specific Master Curve that is uploaded onto the instrument through the RFID tag on the reagent cartridge. The first time a reagent cartridge of a new lot of Aptiva CTD Essential is placed in the instrument, it must be calibrated. The Aptiva CTD Essential Calibrators are sold separately. The calibration process utilizes the 6 Calibrators that are included in the Calibrators kit to adjust the predefined lot specific dsDNA, RNP, Sm, Ro60, Ro52, SS-B, Scl-70, Jo-1, Centromere and Ribo-P Master Curves into instrument specific Working Curves. These Working Curves are used to calculate FLU (or IU/mL for dsDNA) values from the measured MFI. The Working Curves are lot and instrument specific and stored in the system for use with any reagent cartridge from that lot. The lot specific calibration expires 6 months from the last time the calibration was performed, and re-calibration is required.

Aptiva CTD Essential Calibrators and Aptiva CTD Essential Controls are sold separately.

The Aptiva CTD Essential Reagent kit contains the following materials:

One (1) Aptiva CTD Essential Reagent Cartridge contains the following materials to process 250 determinations:

a. dsDNA, RNP, Sm, Ro60, Ro52, SS-B, Scl-70, Jo-1, Centromere and Ribo-P, and Control paramagnetic particles, preserved.
b. Assay Buffer – clear liquid, containing protein stabilizers and preservatives.
c. PE Tracer IgG – PE labeled anti-human IgG antibody, containing buffer, protein stabilizers and preservative.
d. Rehydration Buffer - containing protein stabilizers and preservatives.

Intended use(s)

The Aptiva CTD Essential Reagent consists of 10 multiplexed immunoassays utilizing particle-based multi-analyte technology for the quantitative determination of IgG autoantibodies against dsDNA, and semi-quantitative determination of IgG autoantibodies against RNP, Sm, Ro52, Ro60, SS-B, Scl-70, Jo-1, centromere, and Ribo-P in human serum:

- The presence of dsDNA antibodies, in conjunction with clinical findings and other laboratory tests, is an aid in the diagnosis of systemic lupus erythematosus.
- The presence of RNP antibodies, in conjunction with clinical findings and other laboratory tests, is an aid in the diagnosis of mixed connective tissue disease and systemic lupus erythematosus.
- The presence of Sm antibodies, in conjunction with clinical findings and other laboratory tests, is an aid in the diagnosis of systemic lupus erythematosus.
- The presence of Ro52 antibodies, in conjunction with clinical findings and other laboratory tests, is an aid in the diagnosis of systemic lupus erythematosus, Sjögren's syndrome, systemic sclerosis, and idiopathic inflammatory myositis.
- The presence of Ro60 antibodies, in conjunction with clinical findings and other laboratory tests, is an aid in the diagnosis of systemic lupus erythematosus and Sjögren's syndrome.
- The presence of SS-B antibodies, in conjunction with clinical findings and other laboratory tests, is an aid in the diagnosis of systemic lupus erythematosus and Sjögren's syndrome.

- The presence of Scl-70 antibodies, in conjunction with clinical findings and other laboratory tests, is an aid in the diagnosis of systemic sclerosis.
- The presence of Jo-1 antibodies, in conjunction with clinical findings and other laboratory tests, is an aid in the diagnosis of idiopathic inflammatory myositis.
- The presence of centromere antibodies, in conjunction with clinical findings and other laboratory tests, is an aid in the diagnosis of systemic sclerosis.
- The presence of Ribo-P antibodies, in conjunction with clinical findings and other laboratory tests, is an aid in the diagnosis of systemic lupus erythematosus.

The individual assays included in the Aptiva CTD Essential Reagent are intended for use with the Inova Diagnostics Aptiva System.

Indications for use

Same as intended use.

Substantial equivalence

The Aptiva CTD Essential Reagent has the same intended use and assay principle as the predicate devices.

Comparison to predicate device

Aptiva CTD Essential Reagent – dsDNA Assay

Similarities		
Item	**Aptiva CTD Essential Reagent (dsDNA)**	**QUANTA Flash dsDNA**
Intended Use	The Aptiva CTD Essential Reagent consists of 10 multiplexed immunoassays utilizing particle-based multi-analyte technology for the quantitative determination of IgG autoantibodies against dsDNA, and semi-quantitative determination of IgG autoantibodies against RNP, Sm, Ro52, Ro60, SS-B, Scl-70, Jo-1, centromere, and Ribo-P in human serum: The presence of dsDNA antibodies, in conjunction with clinical findings and other laboratory tests, is an aid in the	QUANTA Flash dsDNA is a chemiluminescent immunoassay for the quantitative determination of IgG anti-double stranded deoxyribonucleic acid (dsDNA) antibodies in human serum. The presence of anti-dsDNA antibodies, in conjunction with clinical findings and other laboratory tests, is an aid in the diagnosis of Systemic Lupus Erythematosus.

Similarities		
Item	**Aptiva CTD Essential Reagent (dsDNA)**	**QUANTA Flash dsDNA**
	diagnosis of systemic lupus erythematosus. The Aptiva CTD Essential Reagent is intended for use with the Inova Diagnostics Aptiva System.	
Assay Methodology	solid phase immunoassay	solid phase immunoassay
Antigen	Synthetic DNA	Synthetic DNA
Sample Type	human serum	human serum
Solid Phase	paramagnetic microparticles	paramagnetic microparticles
Units	International Units (IU/mL)	International Units (IU/mL)
Cut-off	27.00 IU/mL – 35.00 IU/mL	27.00 IU/mL – 35.00 IU/mL
Differences		
Item	**Aptiva CTD Essential Reagent (dsDNA)**	**QUANTA Flash dsDNA**
Detection/Operating Principle	fluorescent immunoassay	chemiluminescent immunoassay
Conjugate	phycoerythrin conjugated polyclonal anti-human IgG antibody	Isoluminol conjugated monoclonal anti-human IgG antibody
Analytical Measuring Range	2.30 IU/mL – 814.10 IU/mL	9.8 IU/mL – 666.9 IU/mL
Calibration	Lot specific Master Curve + 6 calibrators (sold separately)	Lot specific Master Curve + 2 calibrators (sold separately)

Aptiva CTD Essential Reagent – RNP Assay

Similarities		
Item	**Aptiva CTD Essential Reagent (RNP)**	**QUANTA Flash RNP**
Intended Use	The Aptiva CTD Essential Reagent consists of 10 multiplexed immunoassays utilizing particle-based multi-analyte technology for the quantitative determination of IgG autoantibodies against dsDNA, and semi-quantitative determination of IgG	The QUANTA Flash RNP is a chemiluminescent immunoassay for the semi-quantitative determination of IgG anti-ribonucleoprotein (RNP) antibodies in human serum. The presence of anti-RNP antibodies, in conjunction with clinical

Similarities		
Item	**Aptiva CTD Essential Reagent (RNP)**	**QUANTA Flash RNP**
	autoantibodies against RNP, Sm, Ro52, Ro60, SS-B, Scl-70, Jo-1, centromere, and Ribo-P in human serum: The presence of RNP antibodies, in conjunction with clinical findings and other laboratory tests, is an aid in the diagnosis of mixed connective tissue disease and systemic lupus erythematosus. The individual assays included in the Aptiva CTD Essential Reagent are intended for use with the Inova Diagnostics Aptiva System.	findings and other laboratory tests, can aid in the diagnosis of Systemic Lupus Erythematosus (SLE) and Mixed Connective Tissue Disease (MCTD).
Assay Methodology	solid phase immunoassay	solid phase immunoassay
Antigen	Native RNP	Native RNP
Sample Type	human serum	human serum
Solid Phase	paramagnetic microparticles	paramagnetic microparticles
Differences		
Item	**Aptiva CTD Essential Reagent (RNP)**	**QUANTA Flash RNP**
Detection/Operating Principle	fluorescent immunoassay	chemiluminescent immunoassay
Conjugate	phycoerythrin conjugated polyclonal anti-human IgG antibody	Isoluminol conjugated monoclonal anti-human IgG antibody
Units	fluorescent light units (FLU)	chemiluminescent units (CU)
Cut-off	5.00 FLU	20.0 CU
Analytical Measuring Range	0.50 FLU – 181.99 FLU	3.5 CU – 643.8 CU
Calibration	Lot specific Master Curve + 6 calibrators (sold separately)	Lot specific Master Curve + 2 calibrators (sold separately)

Aptiva CTD Essential Reagent – Sm Assay

Similarities		
Item	**Aptiva CTD Essential Reagent (Sm)**	**Orgentec anti-Sm**
Intended Use	The Aptiva CTD Essential Reagent consists of 10 multiplexed immunoassays utilizing particle-based multi-analyte technology for the quantitative determination of IgG autoantibodies against dsDNA, and semi-quantitative determination of IgG autoantibodies against RNP, Sm, Ro52, Ro60, SS-B, Scl-70, Jo-1, centromere, and Ribo-P in human serum: The presence of Sm antibodies, in conjunction with clinical findings and other laboratory tests, is an aid in the diagnosis of systemic lupus erythematosus. The Aptiva CTD Essential Reagent is intended for use with the Inova Diagnostics Aptiva System.	Anti-Sm is an ELISA test system for the quantitative measurement of IgG class autoantibodies against Sm in human serum or plasma. This product is intended for professional in vitro diagnostic use only. The detection of autoantibodies against Sm proteins is a component of the multi-parametric ACR criteria for the diagnosis of systemic lupus erythematosus (SLE). The detection of Sm antibodies serves as a prognostic marker for SLE, there is a relationship between the appearance of Sm antibodies and severe organ manifestations of the disease. Evaluation of a test result should always take into account all clinical and laboratory diagnostic findings.
Assay Methodology	solid phase immunoassay	solid phase immunoassay

Differences		
Item	**Aptiva CTD Essential Reagent (Sm)**	**Orgentec anti-Sm**
Detection/Operating Principle	fluorescent immunoassay	Chromogenic immunoassay
Conjugate	phycoerythrin conjugated polyclonal anti-human IgG antibody	HRP conjugated anti-human IgG antibody
Antigen	Synthetic Sm peptide	Synthetic Sm peptide
Sample Type	human serum	human serum or plasma
Solid Phase	paramagnetic microparticles	ELISA
Units	fluorescent light units (FLU)	Units (U/mL)
Cut-off	5.00 FLU	25 U/mL
Analytical Measuring Range	0.25 FLU – 256.00 FLU	1 U/mL – 200.0 U/mL
Calibration	Lot specific Master Curve + 6 calibrators (sold separately)	Calibration Curve using 6 calibrators (included)

Aptiva CTD Essential Reagent – Ro52 Assay

Similarities		
Item	**Aptiva CTD Essential Reagent (Ro52)**	**QUANTA Flash Ro52**
Intended Use	The Aptiva CTD Essential Reagent consists of 10 multiplexed immunoassays utilizing particle-based multi-analyte technology for the quantitative determination of IgG autoantibodies against dsDNA, and semi-quantitative determination of IgG autoantibodies against RNP, Sm, Ro52, Ro60, SS-B, Scl-70, Jo-1, centromere, and Ribo-P in human serum: The presence of Ro52 antibodies, in conjunction with clinical findings and other laboratory tests, is an aid in the diagnosis of systemic lupus erythematosus,	QUANTA Flash Ro52 is a chemiluminescent immunoassay for the semi-quantitative determination of IgG anti-Ro52 autoantibodies in human serum. The presence of anti-Ro52 autoantibodies, in conjunction with clinical findings and other laboratory tests, is an aid in the diagnosis of Systemic Lupus Erythematosus, Sjögren's Syndrome, Systemic Sclerosis, Idiopathic Inflammatory Myopathies.

Similarities		
Item	**Aptiva CTD Essential Reagent (Ro52)**	**QUANTA Flash Ro52**
	Sjögren's syndrome, systemic sclerosis, and idiopathic inflammatory myositis. The Aptiva CTD Essential Reagent is intended for use with the Inova Diagnostics Aptiva System.	
Assay Methodology	solid phase immunoassay	solid phase immunoassay
Antigen	Recombinant Ro52	Recombinant Ro52
Sample Type	human serum	human serum
Solid Phase	paramagnetic microparticles	paramagnetic microparticles
Differences		
Item	**Aptiva CTD Essential Reagent (Ro52)**	**QUANTA Flash Ro52**
Detection/Operating Principle	fluorescent immunoassay	chemiluminescent immunoassay
Conjugate	phycoerythrin conjugated polyclonal anti-human IgG antibody	Isoluminol conjugated monoclonal anti-human IgG antibody
Units	fluorescent light units (FLU)	chemiluminescent units (CU)
Cut-off	5.00 FLU	20.0 CU
Analytical Measuring Range	0.25 FLU – 196.27 FLU	2.3 CU – 1685.3 CU
Calibration	Lot specific Master Curve + 6 calibrators (sold separately)	Lot specific Master Curve + 2 calibrators (sold separately)

Aptiva CTD Essential Reagent – Ro60 Assay

Similarities		
Item	**Aptiva CTD Essential Reagent (Ro60)**	**QUANTA Flash Ro60**
Intended Use	The Aptiva CTD Essential Reagent consists of 10 multiplexed immunoassays utilizing particle-based multi-analyte technology for the quantitative determination of IgG autoantibodies against dsDNA, and semi-quantitative determination of IgG autoantibodies against RNP, Sm, Ro52, Ro60, SS-B, Scl-70, Jo-1, centromere, and Ribo-P in human serum: The presence of Ro60 antibodies, in conjunction with clinical findings and other laboratory tests, is an aid in the diagnosis of systemic lupus erythematosus and Sjögren's syndrome. The Aptiva CTD Essential Reagent is intended for use with the Inova Diagnostics Aptiva System.	QUANTA Flash Ro60 is a chemiluminescent immunoassay for the semi-quantitative determination of IgG anti-Ro60 autoantibodies in human serum. The presence of anti-Ro60 autoantibodies, in conjunction with clinical findings and other laboratory tests, aids in the diagnosis of Systemic Lupus Erythematosus and Sjögren's Syndrome.
Assay Methodology	solid phase immunoassay	solid phase immunoassay
Antigen	Recombinant Ro60	Recombinant Ro60
Sample Type	human serum	human serum
Solid Phase	paramagnetic microparticles	paramagnetic microparticles

Differences		
Item	**Aptiva CTD Essential Reagent (Ro60)**	**QUANTA Flash Ro60**
Detection/Operating Principle	fluorescent immunoassay	chemiluminescent immunoassay

Conjugate	phycoerythrin conjugated polyclonal anti-human IgG antibody	Isoluminol conjugated monoclonal anti-human IgG antibody
Units	fluorescent light units (FLU)	chemiluminescent units (CU)
Cut-off	5.00 FLU	20.0 CU
Analytical Measuring Range	0.50 FLU – 583.72 FLU	4.9 CU – 1374.8 CU
Calibration	Lot specific Master Curve + 6 calibrators (sold separately)	Lot specific Master Curve + 2 calibrators (sold separately)

Aptiva CTD Essential Reagent – SS-B Assay

Similarities		
Item	**Aptiva CTD Essential Reagent (SS-B)**	**QUANTA Flash SS-B**
Intended Use	The Aptiva CTD Essential Reagent consists of 10 multiplexed immunoassays utilizing particle-based multi-analyte technology for the quantitative determination of IgG autoantibodies against dsDNA, and semi-quantitative determination of IgG autoantibodies against RNP, Sm, Ro52, Ro60, SS-B, Scl-70, Jo-1, centromere, and Ribo-P in human serum: The presence of SS-B antibodies, in conjunction with clinical findings and other laboratory tests, is an aid in the diagnosis of systemic lupus erythematosus and Sjögren's syndrome. The Aptiva CTD Essential Reagent is intended for use with the Inova Diagnostics Aptiva System.	QUANTA Flash SS-B is a chemiluminescent immunoassay for the semi-quantitative determination of IgG anti-SS-B autoantibodies in human serum. The presence of anti-SS-B autoantibodies, in conjunction with clinical findings and other laboratory tests is an aid in the diagnosis of Sjögren's Syndrome and Systemic Lupus Erythematosus.
Assay Methodology	solid phase immunoassay	solid phase immunoassay
Antigen	Recombinant SS-B	Recombinant SS-B
Sample Type	human serum	human serum

Similarities		
Item	**Aptiva CTD Essential Reagent (SS-B)**	**QUANTA Flash SS-B**
Solid Phase	paramagnetic microparticles	paramagnetic microparticles

Differences		
Item	**Aptiva CTD Essential Reagent (SS-B)**	**QUANTA Flash SS-B**
Detection/Operating Principle	fluorescent immunoassay	chemiluminescent immunoassay
Conjugate	phycoerythrin conjugated polyclonal anti-human IgG antibody	Isoluminol conjugated monoclonal anti-human IgG antibody
Units	fluorescent light units (FLU)	chemiluminescent units (CU)
Cut-off	5.00 FLU	20.0 CU
Analytical Measuring Range	0.40 FLU – 195.84 FLU	3.3 CU – 1550.0 CU
Calibration	Lot specific Master Curve + 6 calibrators (sold separately)	Lot specific Master Curve + 2 calibrators (sold separately)

Aptiva CTD Essential Reagent – Scl-70 Assay

Similarities		
Item	**Aptiva CTD Essential Reagent (Scl-70)**	**QUANTA Flash Scl-70**
Intended Use	The Aptiva CTD Essential Reagent consists of 10 multiplexed immunoassays utilizing particle-based multi-analyte technology for the quantitative determination of IgG autoantibodies against dsDNA, and semi-quantitative determination of IgG autoantibodies against RNP, Sm, Ro52, Ro60, SS-B, Scl-70, Jo-1, centromere, and Ribo-P in human serum: The presence of Scl-70 antibodies, in conjunction with clinical	QUANTA Flash Scl-70 is a chemiluminescent immunoassay for the semi-quantitative determination of IgG anti-Scl-70 autoantibodies in human serum. The presence of anti-Scl-70 autoantibodies, in conjunction with clinical findings and other laboratory tests, aids in the diagnosis of systemic sclerosis.

Similarities		
Item	**Aptiva CTD Essential Reagent (Scl-70)**	**QUANTA Flash Scl-70**
	findings and other laboratory tests, is an aid in the diagnosis of systemic sclerosis. The Aptiva CTD Essential Reagent is intended for use with the Inova Diagnostics Aptiva System.	
Assay Methodology	solid phase immunoassay	solid phase immunoassay
Antigen	Recombinant Scl-70	Recombinant Scl-70
Sample Type	human serum	human serum
Solid Phase	paramagnetic microparticles	paramagnetic microparticles

Differences		
Item	**Aptiva CTD Essential Reagent (Scl-70)**	**QUANTA Flash Scl-70**
Detection/Operating Principle	fluorescent immunoassay	chemiluminescent immunoassay
Conjugate	phycoerythrin conjugated polyclonal anti-human IgG antibody	Isoluminol conjugated monoclonal anti-human IgG antibody
Units	fluorescent light units (FLU)	chemiluminescent units (CU)
Cut-off	5.00 FLU	20.0 CU
Analytical Measuring Range	0.50 FLU – 371.24 FLU	1.2 CU – 786.3 CU
Calibration	Lot specific Master Curve + 6 calibrators (sold separately)	Lot specific Master Curve + 2 calibrators (sold separately)

Aptiva CTD Essential Reagent – Jo-1 Assay

Similarities		
Item	**Aptiva CTD Essential Reagent (Jo-1)**	**QUANTA Flash Jo-1**
Intended Use	The Aptiva CTD Essential Reagent consists of 10 multiplexed immunoassays utilizing particle-based multi-analyte technology for the quantitative determination of IgG autoantibodies against dsDNA, and semi-quantitative determination of IgG autoantibodies against RNP, Sm, Ro52, Ro60, SS-B, Scl-70, Jo-1, centromere, and Ribo-P in human serum: The presence of Jo-1 antibodies, in conjunction with clinical findings and other laboratory tests, is an aid in the diagnosis of idiopathic inflammatory myositis. The Aptiva CTD Essential Reagent is intended for use with the Inova Diagnostics Aptiva System.	QUANTA Flash Jo-1 is a chemiluminescent immunoassay for the semi-quantitative determination of IgG anti-Jo-1 antibodies in human serum. The presence of anti-Jo-1 antibodies, in conjunction with clinical findings and other laboratory tests, is an aid in the diagnosis of idiopathic inflammatory myopathy.
Assay Methodology	solid phase immunoassay	solid phase immunoassay
Antigen	Recombinant Jo-1	Recombinant Jo-1
Sample Type	human serum	human serum
Solid Phase	paramagnetic microparticles	paramagnetic microparticles
Differences		
Item	**Aptiva CTD Essential Reagent (Jo-1)**	**QUANTA Flash Jo-1**
Detection/Operating Principle	fluorescent immunoassay	chemiluminescent immunoassay
Conjugate	phycoerythrin conjugated polyclonal anti-human IgG antibody	Isoluminol conjugated monoclonal anti-human IgG antibody
Units	fluorescent light units (FLU)	chemiluminescent units (CU)
Cut-off	5.00 FLU	20.0 CU

Similarities		
Item	**Aptiva CTD Essential Reagent (Jo-1)**	**QUANTA Flash Jo-1**
Analytical Measuring Range	0.25 FLU – 153.60 FLU	2.2 CU – 1147.2 CU
Calibration	Lot specific Master Curve + 6 calibrators (sold separately)	Lot specific Master Curve + 2 calibrators (sold separately)

Aptiva CTD Essential Reagent – Centromere Assay

Similarities		
Item	**Aptiva CTD Essential Reagent (Centromere)**	**QUANTA Flash Centromere**
Intended Use	The Aptiva CTD Essential Reagent consists of 10 multiplexed immunoassays utilizing particle-based multi-analyte technology for the quantitative determination of IgG autoantibodies against dsDNA, and semi-quantitative determination of IgG autoantibodies against RNP, Sm, Ro52, Ro60, SS-B, Scl-70, Jo-1, centromere, and Ribo-P in human serum: The presence of centromere antibodies, in conjunction with clinical findings and other laboratory tests, is an aid in the diagnosis of systemic sclerosis. The Aptiva CTD Essential Reagent is intended for use with the Inova Diagnostics Aptiva System.	QUANTA Flash Centromere is a chemiluminescent immunoassay for the semi-quantitative determination of IgG anti-centromere protein B autoantibodies in human serum. The presence of anti-centromere protein B autoantibodies is used as an aid in the diagnosis of systemic sclerosis, in conjunction with clinical finding and other laboratory tests.
Assay Methodology	solid phase immunoassay	solid phase immunoassay
Antigen	Recombinant Centromere	Recombinant Centromere
Sample Type	human serum	human serum
Solid Phase	paramagnetic microparticles	paramagnetic microparticles

Differences		
Item	**Aptiva CTD Essential Reagent (Centromere)**	**QUANTA Flash Centromere**
Detection/Operating Principle	fluorescent immunoassay	chemiluminescent immunoassay
Conjugate	phycoerythrin conjugated polyclonal anti-human IgG antibody	Isoluminol conjugated monoclonal anti-human IgG antibody
Units	fluorescent light units (FLU)	chemiluminescent units (CU)
Cut-off	5.00 FLU	20.0 CU
Analytical Measuring Range	0.50 FLU – 187.69 FLU	3.4 CU – 708.9 CU
Calibration	Lot specific Master Curve + 6 calibrators (sold separately)	Lot specific Master Curve + 2 calibrators (sold separately)

Aptiva CTD Essential Reagent – Ribo-P Assay

Similarities		
Item	**Aptiva CTD Essential Reagent (Ribo-P)**	**QUANTA Lite Ribosomal P**
Intended Use	The Aptiva CTD Essential Reagent consists of 10 multiplexed immunoassays utilizing particle-based multi-analyte technology for the quantitative determination of IgG autoantibodies against dsDNA, and semi-quantitative determination of IgG autoantibodies against RNP, Sm, Ro52, Ro60, SS-B, Scl-70, Jo-1, centromere, and Ribo-P in human serum: The presence of Ribo-P antibodies, in conjunction with clinical findings and other laboratory tests, is an aid in the diagnosis of systemic lupus erythematosus.	QUANTA Lite Ribosome P is an enzyme-linked immunosorbent assay (ELISA) for the semi-quantitative detection of Ribosome P antibodies in human serum. The presence of Ribosome P antibodies can be used in conjunction with clinical findings and other laboratory tests to aid in the diagnosis of Systemic Lupus Erythematosus (SLE) and other related connective tissue diseases.

Similarities		
Item	**Aptiva CTD Essential Reagent (Ribo-P)**	**QUANTA Lite Ribosomal P**
	The Aptiva CTD Essential Reagent is intended for use with the Inova Diagnostics Aptiva System.	
Assay Methodology	solid phase immunoassay	solid phase immunoassay
Antigen	Synthetic Ribosomal P peptide	Synthetic Ribosomal P peptide
Sample Type	human serum	human serum
Differences		
Item	**Aptiva CTD Essential Reagent (Ribo-P)**	**QUANTA Lite Ribosomal P**
Solid Phase	paramagnetic microparticles	ELISA
Detection/Operating Principle	fluorescent immunoassay	Chromogenic immunoassay
Conjugate	phycoerythrin conjugated polyclonal anti-human IgG antibody	HRP conjugated anti-human IgG antibody
Units	fluorescent light units (FLU)	Units (U)
Cut-off	5.00 FLU	20.0 U
Analytical Measuring Range	0.25 FLU – 86.86 FLU	N/A
Calibration	Lot specific Master Curve + 6 calibrators (sold separately)	Single point calibration

Analytical performance characteristics

Quantitation and units of measure

For quantitation, the Aptiva CTD Essential reagent utilizes predefined lot specific Master Curves per each analyte, that is uploaded onto the instrument through the reagent cartridge RFID. The analyte specific Master Curves are generated at Inova for each reagent lot, where in-house Master Curve Standards with assigned FLU (or IU/mL for dsDNA) values are run multiple times. The resulting MFI values generated are used to create a unique 4 parameter logistic (4PL) curve for each of the ten analytes. The IgG control microparticle will flag low concentrations of IgG in the patient serum sample as an assay verification step. This microparticle also has an in-house standard which is run each time a new reagent lot is manufactured. The MFI produced by this standard is used as the cut-off threshold for the IgG control microparticle for that reagent lot. These four parameters of the analyte curves, as well as the MFI cut-off for the IgG control microparticle are embedded in the reagent cartridge RFID.

List of Aptiva CTD Essential Master Curve Standards – dsDNA:

Material	Assigned Value (IU/mL)
Aptiva CTD Essential Master Curve Standard 1	0.00
Aptiva CTD Essential Master Curve Standard 2	3.15
Aptiva CTD Essential Master Curve Standard 3	12.74
Aptiva CTD Essential Master Curve Standard 4	50.89
Aptiva CTD Essential Master Curve Standard 5	203.49
Aptiva CTD Essential Master Curve Standard 6	814.10

List of Aptiva CTD Essential Master Curve Standards – RNP:

Material	Assigned Value (FLU)
Aptiva CTD Essential Master Curve Standard 1	0.00
Aptiva CTD Essential Master Curve Standard 2	0.71
Aptiva CTD Essential Master Curve Standard 3	2.84
Aptiva CTD Essential Master Curve Standard 4	11.37
Aptiva CTD Essential Master Curve Standard 5	45.50
Aptiva CTD Essential Master Curve Standard 6	181.99

List of Aptiva CTD Essential Master Curve Standards – Sm:

Material	Assigned Value (FLU)
Aptiva CTD Essential Master Curve Standard 1	0.00
Aptiva CTD Essential Master Curve Standard 7	1.00
Aptiva CTD Essential Master Curve Standard 8	4.00
Aptiva CTD Essential Master Curve Standard 9	16.00
Aptiva CTD Essential Master Curve Standard 10	64.00
Aptiva CTD Essential Master Curve Standard 11	256.00

List of Aptiva CTD Essential Master Curve Standards – SS-B:

Material	Assigned Value (FLU)
Aptiva CTD Essential Master Curve Standard 1	0.00
Aptiva CTD Essential Master Curve Standard 7	0.77
Aptiva CTD Essential Master Curve Standard 8	3.06
Aptiva CTD Essential Master Curve Standard 9	12.24
Aptiva CTD Essential Master Curve Standard 10	48.96
Aptiva CTD Essential Master Curve Standard 11	195.84

List of Aptiva CTD Essential Master Curve Standards – Ro52:

Material	Assigned Value (FLU)
Aptiva CTD Essential Master Curve Standard 1	0.00
Aptiva CTD Essential Master Curve Standard 2	0.77
Aptiva CTD Essential Master Curve Standard 3	3.07
Aptiva CTD Essential Master Curve Standard 4	12.27
Aptiva CTD Essential Master Curve Standard 5	49.07
Aptiva CTD Essential Master Curve Standard 6	196.25

List of Aptiva CTD Essential Master Curve Standards – Ro60:

Material	Assigned Value (FLU)
Aptiva CTD Essential Master Curve Standard 1	0.00
Aptiva CTD Essential Master Curve Standard 2	2.28
Aptiva CTD Essential Master Curve Standard 3	9.12
Aptiva CTD Essential Master Curve Standard 4	36.48
Aptiva CTD Essential Master Curve Standard 5	145.93
Aptiva CTD Essential Master Curve Standard 6	583.72

List of Aptiva CTD Essential Master Curve Standards – Jo-1:

Material	Assigned Value (FLU)
Aptiva CTD Essential Master Curve Standard 1	0.00
Aptiva CTD Essential Master Curve Standard 2	0.60
Aptiva CTD Essential Master Curve Standard 3	2.40
Aptiva CTD Essential Master Curve Standard 4	9.60
Aptiva CTD Essential Master Curve Standard 5	38.40
Aptiva CTD Essential Master Curve Standard 6	153.60

List of Aptiva CTD Essential Master Curve Standards – Scl-70:

Material	Assigned Value (FLU)
Aptiva CTD Essential Master Curve Standard 1	0.00
Aptiva CTD Essential Master Curve Standard 7	1.45
Aptiva CTD Essential Master Curve Standard 8	5.80
Aptiva CTD Essential Master Curve Standard 9	23.20
Aptiva CTD Essential Master Curve Standard 10	92.81
Aptiva CTD Essential Master Curve Standard 11	371.24

List of Aptiva CTD Essential Master Curve Standards – Centromere:

Material	Assigned Value (FLU)
Aptiva CTD Essential Master Curve Standard 1	0.00
Aptiva CTD Essential Master Curve Standard 7	0.73
Aptiva CTD Essential Master Curve Standard 8	2.93
Aptiva CTD Essential Master Curve Standard 9	11.73
Aptiva CTD Essential Master Curve Standard 10	46.92
Aptiva CTD Essential Master Curve Standard 11	187.69

List of Aptiva CTD Essential Master Curve Standards – Ribo-P:

Material	Assigned Value (FLU)
Aptiva CTD Essential Master Curve Standard 1	0.00
Aptiva CTD Essential Master Curve Standard 7	0.34
Aptiva CTD Essential Master Curve Standard 8	1.36
Aptiva CTD Essential Master Curve Standard 9	5.43
Aptiva CTD Essential Master Curve Standard 10	21.71
Aptiva CTD Essential Master Curve Standard 11	86.86

IgG Control Microparticle Standard: 1 mg/dL human IgG

Precision

The precision of the Aptiva CTD Essential Reagent was evaluated on 9 samples for dsDNA, 6 samples for RNP, 7 samples for Sm, 8 samples for Ro60, 9 samples for Ro52, 5 samples for SS-B, 6 samples for Scl-70, 5 samples for Jo-1, 5 samples for Centromere and 6 samples for Ribo-P, containing various concentrations of antibodies in accordance with CLSI EP05-A3, Evaluation of Precision of Quantitative Measurement Procedures; Approved Guideline. Samples were run in duplicates, twice a day, for 20 days.

Data were analyzed with the Analyse-it for Excel method evaluation software, and repeatability (within-run), between run, between day and within-laboratory precision (total precision) were calculated. Results are summarized in the two tables below.

Acceptance criteria: Total %CV: < 12%

Results are summarized in the ten tables below:

dsDNA Precision			Repeatability		Between Run		Between Day		Within Laboratory	
Sample	**Replicates (N)**	**Mean (IU/mL)**	**SD (IU/mL)**	**CV**	**SD (IU/mL)**	**CV**	**SD (IU/mL)**	**CV**	**SD (IU/mL)**	**CV**
dsDNA Sample 1	80	16.19	1.13	7.0%	0.64	4.0%	1.39	8.6%	1.90	11.8%
dsDNA Sample 2	80	25.81	1.97	7.6%	1.65	6.4%	1.30	5.0%	2.88	11.1%
dsDNA Sample 3	80	33.39	2.08	6.2%	1.99	6.0%	1.03	3.1%	3.06	9.2%
dsDNA Sample 4	80	47.86	3.03	6.3%	2.07	4.3%	3.34	7.0%	4.96	10.4%
dsDNA Sample 5	80	67.19	4.53	6.7%	2.86	4.3%	3.28	4.9%	6.28	9.3%
dsDNA Sample 6	80	98.34	5.16	5.2%	0.70	0.7%	5.70	5.8%	7.72	7.9%
dsDNA Sample 7	80	208.89	13.01	6.2%	0.00	0.0%	9.46	4.5%	16.09	7.7%
dsDNA Sample 8	80	425.21	31.59	7.4%	28.14	6.6%	14.65	3.4%	44.77	10.5%
dsDNA Sample 9	80	600.13	35.66	5.9%	53.43	8.9%	0.00	0.0%	64.24	10.7%

RNP Precision			Repeatability		Between Run		Between Day		Within Laboratory	
Sample	**Replicates (N)**	**Mean (FLU)**	**SD (FLU)**	**CV**	**SD (FLU)**	**CV**	**SD (FLU)**	**CV**	**SD (FLU)**	**CV**
RNP Sample 1	80	1.96	0.09	4.8%	0.09	4.8%	0.15	7.5%	0.20	10.1%
RNP Sample 2	80	2.93	0.14	4.7%	0.13	4.3%	0.28	9.7%	0.34	11.6%
RNP Sample 3	80	5.26	0.31	5.9%	0.24	4.5%	0.42	8.0%	0.57	10.9%
RNP Sample 4	80	14.59	0.53	3.6%	0.57	3.9%	0.82	5.6%	1.13	7.8%
RNP Sample 5	80	45.76	2.71	5.9%	1.47	3.2%	2.85	6.2%	4.20	9.2%
RNP Sample 6	80	131.34	8.27	6.3%	2.20	1.7%	9.41	7.2%	12.72	9.7%

Sm Precision			Repeatability		Between Run		Between Day		Within Laboratory	
Sample	**Replicates (N)**	**Mean (FLU)**	**SD (FLU)**	**CV**	**SD (FLU)**	**CV**	**SD (FLU)**	**CV**	**SD (FLU)**	**CV**
Sm Sample 1	80	3.98	0.18	4.5%	0.17	4.2%	0.39	9.8%	0.46	11.6%
Sm Sample 2	80	5.17	0.22	4.3%	0.18	3.5%	0.40	7.8%	0.50	9.6%
Sm Sample 3	80	9.53	0.29	3.0%	0.38	4.0%	0.43	4.5%	0.64	6.7%
Sm Sample 4	80	51.21	2.62	5.1%	0.00	0.0%	3.19	6.2%	4.13	8.1%
Sm Sample 5	80	122.68	5.04	4.1%	6.59	5.4%	8.95	7.3%	12.20	9.9%
Sm Sample 6	80	156.91	9.72	6.2%	10.53	6.7%	9.42	6.0%	17.15	10.9%
Sm Sample 7	80	188.62	13.87	7.4%	12.55	6.7%	6.05	3.2%	19.66	10.4%

Ro52 Precision			Repeatability		Between Run		Between Day		Within Laboratory	
Sample	Replicates (N)	Mean (FLU)	SD (FLU)	CV	SD (FLU)	CV	SD (FLU)	CV	SD (FLU)	CV
Ro52 Sample 1	80	1.16	0.06	5.4%	0.05	3.9%	0.06	5.0%	0.10	8.3%
Ro52 Sample 2	80	2.57	0.16	6.4%	0.14	5.3%	0.17	6.8%	0.28	10.8%
Ro52 Sample 3	80	5.59	0.32	5.7%	0.17	3.1%	0.40	7.1%	0.54	9.6%
Ro52 Sample 4	80	8.14	0.28	3.4%	0.23	2.8%	0.46	5.6%	0.58	7.1%
Ro52 Sample 5	80	44.31	1.33	3.0%	1.48	3.3%	3.17	7.2%	3.75	8.5%
Ro52 Sample 6	80	73.45	1.80	2.4%	2.45	3.3%	3.56	4.9%	4.68	6.4%
Ro52 Sample 7	80	118.51	6.22	5.2%	4.90	4.1%	5.49	4.6%	9.63	8.1%
Ro52 Sample 8	80	150.71	7.42	4.9%	2.14	1.4%	7.04	4.7%	10.45	6.9%
Ro52 Sample 9	80	186.21	9.86	5.3%	6.60	3.5%	8.88	4.8%	14.82	8.0%

Ro60 Precision			Repeatability		Between Run		Between Day		Within Laboratory	
Sample	Replicates (N)	Mean (FLU)	SD (FLU)	CV	SD (FLU)	CV	SD (FLU)	CV	SD (FLU)	CV
Ro60 Sample 1	80	2.96	0.19	6.5%	0.25	8.5%	0.07	2.2%	0.32	10.9%
Ro60 Sample 2	80	5.53	0.32	5.7%	0.26	4.7%	0.38	6.9%	0.56	10.1%
Ro60 Sample 3	80	8.48	0.55	6.5%	0.39	4.6%	0.62	7.3%	0.91	10.8%
Ro60 Sample 4	80	19.73	0.81	4.1%	0.41	2.1%	1.01	5.1%	1.36	6.9%
Ro60 Sample 5	80	58.82	2.59	4.4%	1.92	3.3%	3.47	5.9%	4.74	8.1%
Ro60 Sample 6	80	80.96	3.98	4.9%	4.99	6.2%	4.51	5.6%	7.82	9.7%
Ro60 Sample 7	80	226.76	14.37	6.3%	16.15	7.1%	9.72	4.3%	23.70	10.5%
Ro60 Sample 8	80	400.89	24.72	6.2%	27.87	7.0%	20.96	5.2%	42.75	10.7%

SS-B Precision			Repeatability		Between Run		Between Day		Within Laboratory	
Sample	Replicates (N)	Mean (FLU)	SD (FLU)	CV	SD (FLU)	CV	SD (FLU)	CV	SD (FLU)	CV
SS-B Sample 1	80	1.33	0.05	4.0%	0.06	4.2%	0.12	9.0%	0.14	10.7%
SS-B Sample 2	80	4.69	0.16	3.3%	0.18	3.8%	0.49	10.5%	0.55	11.7%
SS-B Sample 3	80	64.34	1.87	2.9%	1.60	2.5%	3.74	5.8%	4.48	7.0%
SS-B Sample 4	80	138.52	5.76	4.2%	2.62	1.9%	7.95	5.7%	10.16	7.3%
SS-B Sample 5	80	157.86	6.60	4.2%	5.43	3.4%	10.42	6.6%	13.48	8.5%

Scl-70 Precision			Repeatability		Between Run		Between Day		Within Laboratory	
Sample	Replicates (N)	Mean (FLU)	SD (FLU)	CV	SD (FLU)	CV	SD (FLU)	CV	SD (FLU)	CV
Scl-70 Sample 1	80	3.21	0.11	3.3%	0.18	5.5%	0.28	8.6%	0.34	10.7%
Scl-70 Sample 2	80	5.38	0.25	4.7%	0.23	4.3%	0.51	9.5%	0.62	11.5%
Scl-70 Sample 3	80	11.49	0.32	2.8%	0.32	2.8%	0.62	5.4%	0.77	6.7%
Scl-70 Sample 4	80	62.11	2.48	4.0%	0.59	0.9%	3.89	6.3%	4.65	7.5%
Scl-70 Sample 5	80	109.42	3.49	3.2%	1.97	1.8%	6.83	6.2%	7.92	7.2%
Scl-70 Sample 6	80	307.35	18.93	6.2%	25.47	8.3%	9.60	3.1%	33.16	10.8%

Jo-1 Precision			Repeatability		Between Run		Between Day		Within Laboratory	
Sample	Replicates (N)	Mean (FLU)	SD (FLU)	CV	SD (FLU)	CV	SD (FLU)	CV	SD (FLU)	CV
Jo-1 Sample 1	80	2.07	0.10	4.8%	0.07	3.4%	0.14	6.8%	0.19	9.0%
Jo-1 Sample 2	80	5.15	0.27	5.2%	0.22	4.3%	0.24	4.6%	0.42	8.1%
Jo-1 Sample 3	80	18.54	0.75	4.0%	0.93	5.0%	1.41	7.6%	1.85	10.0%
Jo-1 Sample 4	80	81.42	4.76	5.8%	5.37	6.6%	4.28	5.3%	8.36	10.3%
Jo-1 Sample 5	80	107.75	7.29	6.8%	2.98	2.8%	6.19	5.7%	10.01	9.3%

Centromere Precision			Repeatability		Between Run		Between Day		Within Laboratory	
Sample	Replicates (N)	Mean (FLU)	SD (FLU)	CV	SD (FLU)	CV	SD (FLU)	CV	SD (FLU)	CV
Cent. Sample 1	80	4.05	0.16	4.0%	0.18	4.4%	0.38	9.4%	0.45	11.1%
Cent. Sample 2	80	5.00	0.19	3.7%	0.23	4.6%	0.38	7.6%	0.48	9.6%
Cent. Sample 3	80	7.41	0.26	3.5%	0.23	3.1%	0.43	5.7%	0.55	7.4%
Cent. Sample 4	80	30.72	1.11	3.6%	1.71	5.6%	2.23	7.3%	3.02	9.8%
Cent. Sample 5	80	134.91	9.40	7.0%	8.44	6.3%	5.78	4.3%	13.89	10.3%

Ribo-P Precision			Repeatability		Between Run		Between Day		Within Laboratory	
Sample	Replicates (N)	Mean (FLU)	SD (FLU)	CV	SD (FLU)	CV	SD (FLU)	CV	SD (FLU)	CV
Ribo-P Sample 1	80	1.42	0.09	6.5%	0.00	0.0%	0.10	7.1%	0.14	9.6%
Ribo-P Sample 2	80	3.39	0.16	4.8%	0.12	3.4%	0.21	6.1%	0.29	8.4%
Ribo-P Sample 3	80	4.85	0.27	5.5%	0.25	5.2%	0.39	8.1%	0.54	11.1%
Ribo-P Sample 4	80	21.77	1.23	5.6%	1.07	4.9%	0.71	3.3%	1.77	8.1%
Ribo-P Sample 5	80	38.9	2.76	7.1%	0.00	0.0%	2.63	6.7%	3.81	9.8%
Ribo-P Sample 6	80	66.90	4.89	7.3%	2.54	3.8%	2.95	4.4%	6.25	9.3%

Reproducibility Studies

Reproducibility between sites (instruments)

Reproducibility (between sites) of the Aptiva CTD Essential Reagent was evaluated on 5 samples for dsDNA, RNP, Jo-1 and Ribo-P, and 6 samples for Sm, Ro52, Ro60, SS-B, Scl-70 and Centromere, by testing according to CLSI EP05-A3 Evaluation of Precision of Quantitative Measurement Procedures; Approved Guideline, at three different sites. Samples were run in replicates of 5, once a day, for 5 days, to generate 25 data points per sample, per site. Data were analyzed with the Analyse-it for Excel method evaluation software to calculate between site precision.

Acceptance criteria: Reproducibility Between-Site %CV: < 12%

Results are summarized in the tables below.

dsDNA			Repeatability		Between Day		Between-Site/Instrument		Reproducibility	
Sample	Replicates (N)	Mean (IU/mL)	SD (IU/mL)	CV	SD (IU/mL)	CV	SD (IU/mL)	CV	SD (IU/mL)	CV
1	75	24.31	1.48	6.1%	1.15	4.7%	2.00	8.2%	2.74	11.3%
2	75	36.29	2.32	6.4%	1.64	4.5%	2.90	8.0%	4.06	11.2%
3	75	120.50	7.07	5.9%	2.57	2.1%	6.74	5.6%	10.10	8.4%
4	75	248.98	11.90	4.8%	8.06	3.2%	4.79	1.9%	15.15	6.1%
5	75	554.77	34.39	6.2%	22.84	4.1%	62.44	11.3%	74.85	13.5%

RNP			Repeatability		Between Day		Between Site/Instrument		Reproducibility	
Sample	Replicates (N)	Mean (FLU)	SD (FLU)	CV	SD (FLU)	CV	SD (FLU)	CV	SD (FLU)	CV
1	75	2.09	0.09	4.5%	0.13	6.2%	0.23	11.2%	0.28	13.6%
2	75	5.64	0.30	5.3%	0.24	4.3%	0.61	10.9%	0.72	12.8%
3	75	14.59	0.54	3.7%	0.37	2.6%	1.32	9.1%	1.48	10.1%
4	75	45.09	1.93	4.3%	2.20	4.9%	3.98	8.8%	4.94	11.0%
5	75	130.87	5.91	4.5%	3.15	2.4%	8.29	6.3%	10.66	8.1%

Sm			Repeatability		Between Day		Between Site/Instrument		Reproducibility	
Sample	Replicates (N)	Mean (FLU)	SD (FLU)	CV	SD (FLU)	CV	SD (FLU)	CV	SD (FLU)	CV
1	75	2.93	0.11	3.8%	0.17	5.6%	0.29	9.9%	0.35	12.0%
2	75	5.01	0.20	4.0%	0.19	3.8%	0.46	9.2%	0.54	10.7%
3	75	7.13	0.30	4.2%	0.38	5.3%	0.69	9.7%	0.84	11.8%
4	75	50.85	2.35	4.6%	2.47	4.9%	4.19	8.2%	5.40	10.6%
5	75	84.84	3.19	3.8%	1.72	2.0%	7.73	9.1%	8.54	10.1%
6	75	142.01	6.59	4.6%	6.89	4.9%	16.28	11.5%	18.87	13.3%

Ro52			Repeatability		Between Day		Between Site/Instrument		Reproducibility	
Sample	Replicates (N)	Mean (FLU)	SD (FLU)	CV	SD (FLU)	CV	SD (FLU)	CV	SD (FLU)	CV
1	75	1.80	0.06	3.3%	0.05	2.9%	0.18	9.8%	0.19	10.7%
2	75	4.62	0.16	3.5%	0.15	3.2%	0.37	8.1%	0.43	9.4%
3	75	7.90	0.28	3.5%	0.14	1.8%	0.65	8.2%	0.72	9.1%
4	75	43.21	0.93	2.1%	0.96	2.2%	2.88	6.7%	3.17	7.3%
5	75	77.74	2.86	3.7%	2.50	3.2%	9.01	11.6%	9.78	12.6%
6	75	130.60	5.80	4.4%	3.76	2.9%	15.07	11.5%	16.58	12.7%

Ro60			Repeatability		Between Day		Between Site/Instrument		Reproducibility	
Sample	Replicates (N)	Mean (FLU)	SD (FLU)	CV	SD (FLU)	CV	SD (FLU)	CV	SD (FLU)	CV
1	75	2.69	0.17	6.5%	0.08	2.9%	0.19	7.1%	0.27	10.0%
2	75	5.99	0.34	5.6%	0.21	3.6%	0.70	11.6%	0.80	13.4%
3	75	29.52	1.29	4.4%	1.10	3.7%	2.07	7.0%	2.68	9.1%
4	75	79.82	3.90	4.9%	1.02	1.3%	5.12	6.4%	6.52	8.2%
5	75	212.42	10.48	4.9%	7.77	3.7%	7.80	3.7%	15.20	7.2%
6	75	325.49	25.27	7.8%	19.39	6.0%	25.95	8.0%	41.09	12.6%

SS-B			Repeatability		Between Day		Between Site/Instrument		Reproducibility	
Sample	Replicates (N)	Mean (FLU)	SD (FLU)	CV	SD (FLU)	CV	SD (FLU)	CV	SD (FLU)	CV
1	75	1.27	0.06	4.5%	0.05	4.3%	0.14	10.7%	0.16	12.4%
2	75	4.17	0.16	3.8%	0.15	3.6%	0.29	6.9%	0.36	8.6%
3	75	22.80	0.88	3.9%	1.20	5.2%	1.71	7.5%	2.27	10.0%
4	75	61.69	1.80	2.9%	2.21	3.6%	3.31	5.4%	4.37	7.1%
5	75	136.07	5.76	4.2%	3.91	2.9%	10.08	7.4%	12.25	9.0%
6	75	149.63	6.64	4.4%	4.44	3.0%	10.67	7.1%	13.33	8.9%

Scl-70			Repeatability		Between Day		Between Site/Instrument		Reproducibility	
Sample	Replicates (N)	Mean (FLU)	SD (FLU)	CV	SD (FLU)	CV	SD (FLU)	CV	SD (FLU)	CV
1	75	3.39	0.20	6.0%	0.23	6.8%	0.26	7.7%	0.40	11.9%
2	75	5.93	0.26	4.4%	0.17	2.9%	0.47	8.0%	0.57	9.6%
3	75	12.51	0.41	3.2%	0.37	2.9%	0.60	4.8%	0.81	6.5%
4	75	70.19	2.23	3.2%	3.19	4.5%	2.37	3.4%	4.55	6.5%
5	75	123.54	3.76	3.0%	5.14	4.2%	3.50	2.8%	7.27	5.9%
6	75	220.48	8.57	3.9%	7.79	3.5%	26.09	11.8%	28.54	12.9%

Jo-1			Repeatability		Between Day		Between Site/Instrument		Reproducibility	
Sample	Replicates (N)	Mean (FLU)	SD (FLU)	CV	SD (FLU)	CV	SD (FLU)	CV	SD (FLU)	CV
1	75	3.23	0.17	5.1%	0.12	3.6%	0.24	7.3%	0.31	9.7%
2	75	5.41	0.22	4.1%	0.20	3.7%	0.43	7.9%	0.52	9.6%
3	75	17.49	0.60	3.5%	0.55	3.2%	1.03	5.9%	1.32	7.5%
4	75	79.52	3.72	4.7%	4.09	5.1%	9.30	11.7%	10.82	13.6%
5	75	108.64	7.01	6.5%	2.60	2.4%	13.06	12.0%	15.05	13.9%

Centromere			Repeatability		Between Day		Between Site/Instrument		Reproducibility	
Sample	Replicates (N)	Mean (FLU)	SD (FLU)	CV	SD (FLU)	CV	SD (FLU)	CV	SD (FLU)	CV
1	75	2.28	0.13	5.6%	0.15	6.8%	0.15	6.4%	0.25	10.9%
2	75	4.34	0.14	3.2%	0.16	3.7%	0.37	8.6%	0.43	9.9%
3	75	6.79	0.22	3.2%	0.21	3.1%	0.66	9.7%	0.73	10.7%
4	75	28.61	1.04	3.6%	1.20	4.2%	1.32	4.6%	2.07	7.2%
5	75	43.74	1.75	4.0%	1.88	4.3%	5.01	11.5%	5.63	12.9%
6	75	112.03	6.74	6.0%	6.21	5.5%	8.78	7.8%	12.69	11.3%

Ribo-P			Repeatability		Between Day		Between Site/Instrument		Reproducibility	
Sample	Replicates (N)	Mean (FLU)	SD (FLU)	CV	SD (FLU)	CV	SD (FLU)	CV	SD (FLU)	CV
1	75	1.56	0.07	4.4%	0.04	2.5%	0.18	11.7%	0.20	12.8%
2	75	4.78	0.25	5.2%	0.27	5.7%	0.31	6.6%	0.48	10.1%
3	75	21.96	1.21	5.5%	0.26	1.2%	2.17	9.9%	2.50	11.4%
4	75	38.20	1.76	4.6%	1.40	3.7%	3.17	8.3%	3.89	10.2%
5	75	61.32	3.38	5.5%	1.15	1.9%	5.46	8.9%	6.53	10.6%

Reproducibility between lots

Reproducibility (between lots) of the Aptiva CTD Essential Reagent was evaluated on 6 samples for dsDNA and Ro52, 5 samples for Sm, Ro60 and Jo-1, and 4 samples for RNP, SS-B, Scl-70, Centromere and Ribo-P, by testing according to CLSI EP05-A3 Evaluation of Precision of Quantitative Measurement Procedures; Approved Guideline, using three different lots. Samples were run in replicates of 5, once a day, for 5 days, to generate 25 data points per sample, per lot, 75 data points total for each sample. Data were analyzed with the Analyse-it for Excel method evaluation software to calculate between lot precision.
Acceptance criteria: Reproducibility Between-Lot %CV: < 12%

Results are summarized in the tables below.

dsDNA			Repeatability		Between Day		Between-Lot		Reproducibility	
Sample	Replicates (N)	Mean (IU/mL)	SD (IU/mL)	CV	SD (IU/mL)	CV	SD (IU/mL)	CV	SD (IU/mL)	CV
1	75	14.26	1.04	7.3%	0.59	4.2%	0.97	6.8%	1.54	10.8%
2	75	26.41	2.30	8.7%	1.92	7.3%	1.75	6.6%	3.47	13.1%
3	75	87.69	6.04	6.9%	4.73	5.4%	3.64	4.2%	8.49	9.7%
4	75	191.71	10.49	5.5%	9.92	5.2%	1.98	1.0%	14.57	7.6%
5	75	402.15	32.20	8.0%	5.28	1.3%	33.19	8.3%	46.54	11.6%
6	75	557.44	30.79	5.5%	18.13	3.3%	61.67	11.1%	71.27	12.8%

RNP			Repeatability		Between Day		Between Lot		Reproducibility	
Sample	Replicates (N)	Mean (FLU)	SD (FLU)	CV	SD (FLU)	CV	SD (FLU)	CV	SD (FLU)	CV
1	75	1.72	0.16	9.4%	0.10	5.9%	0.04	2.3%	0.19	11.3%
2	75	4.36	0.30	6.9%	0.19	4.4%	0.25	5.8%	0.44	10.0%
3	75	21.30	1.48	7.0%	0.65	3.0%	1.33	6.2%	2.09	9.8%
4	75	114.31	7.08	6.2%	2.24	2.0%	4.21	3.7%	8.54	7.5%

Sm			Repeatability		Between Day		Between Lot		Reproducibility	
Sample	Replicates (N)	Mean (FLU)	SD (FLU)	CV	SD (FLU)	CV	SD (FLU)	CV	SD (FLU)	CV
1	75	2.90	0.13	4.6%	0.24	8.3%	0.35	12.0%	0.44	15.3%
2	75	3.90	0.26	6.8%	0.23	6.0%	0.34	8.8%	0.49	12.6%
3	75	47.73	1.71	3.6%	3.35	7.0%	3.25	6.8%	4.97	10.4%
4	75	115.48	4.70	4.1%	9.17	7.9%	5.14	4.5%	11.51	10.0%
5	75	163.02	6.28	3.9%	10.02	6.1%	15.23	9.3%	19.28	11.8%

Ro52			Repeatability		Between Day		Between Lot		Reproducibility	
Sample	Replicates (N)	Mean (FLU)	SD (FLU)	CV	SD (FLU)	CV	SD (FLU)	CV	SD (FLU)	CV
1	75	1.77	0.07	4.2%	0.10	5.8%	0.17	9.4%	0.21	11.9%
2	75	4.11	0.16	3.9%	0.23	5.6%	0.11	2.7%	0.30	7.3%
3	75	7.50	0.33	4.4%	0.45	6.0%	0.52	7.0%	0.77	10.2%
4	75	39.74	2.11	5.3%	2.79	7.0%	1.38	3.5%	3.76	9.5%
5	75	71.05	2.15	3.0%	6.03	8.5%	6.23	8.8%	8.93	12.6%
6	75	118.01	7.98	6.8%	5.99	5.1%	10.71	9.1%	14.64	12.4%

Ro60			Repeatability		Between Day		Between Lot		Reproducibility	
Sample	Replicates (N)	Mean (FLU)	SD (FLU)	CV	SD (FLU)	CV	SD (FLU)	CV	SD (FLU)	CV
1	75	3.06	0.44	14.5%	0.20	6.6%	0.14	4.7%	0.51	16.6%
2	75	4.72	0.37	7.9%	0.20	4.2%	0.09	1.9%	0.43	9.1%
3	75	72.00	4.61	6.4%	2.08	2.9%	6.00	8.3%	7.84	10.9%
4	75	251.18	12.67	5.0%	11.98	4.8%	19.10	7.6%	25.86	10.3%
5	75	359.05	19.11	5.3%	9.87	2.7%	22.33	6.2%	31.00	8.6%

SS-B			Repeatability		Between Day		Between Lot		Reproducibility	
Sample	Replicates (N)	Mean (FLU)	SD (FLU)	CV	SD (FLU)	CV	SD (FLU)	CV	SD (FLU)	CV
1	75	1.31	0.07	5.2%	0.07	5.7%	0.12	8.9%	0.15	11.8%
2	75	4.66	0.19	4.0%	0.29	6.2%	0.50	10.8%	0.61	13.1%
3	75	65.82	1.81	2.7%	3.54	5.4%	5.86	8.9%	7.08	10.8%
4	75	138.38	5.93	4.3%	7.58	5.5%	5.30	3.8%	10.99	7.9%

Scl-70			Repeatability		Between Day		Between Lot		Reproducibility	
Sample	Replicates (N)	Mean (FLU)	SD (FLU)	CV	SD (FLU)	CV	SD (FLU)	CV	SD (FLU)	CV
1	75	2.23	0.16	7.3%	0.10	4.6%	0.25	11.1%	0.31	14.1%
2	75	4.58	0.20	4.5%	0.26	5.6%	0.49	10.8%	0.59	12.9%
3	75	85.97	3.19	3.7%	7.35	8.6%	3.27	3.8%	8.66	10.1%
4	75	287.33	13.38	4.7%	17.36	6.0%	19.27	6.7%	29.19	10.2%

Jo-1			Repeatability		Between Day		Between Lot		Reproducibility	
Sample	Replicates (N)	Mean (FLU)	SD (FLU)	CV	SD (FLU)	CV	SD (FLU)	CV	SD (FLU)	CV
1	75	3.05	0.13	4.4%	0.20	6.6%	0.07	2.2%	0.25	8.2%
2	75	4.96	0.30	6.1%	0.27	5.5%	0.10	2.0%	0.42	8.4%
3	75	16.14	0.89	5.5%	0.82	5.1%	1.01	6.2%	1.58	9.8%
4	75	69.67	5.20	7.5%	2.21	3.2%	6.10	8.8%	8.31	11.9%
5	75	97.37	7.35	7.6%	2.02	2.1%	9.19	9.4%	11.94	12.3%

Centromere			Repeatability		Between Day		Between Lot		Reproducibility	
Sample	Replicates (N)	Mean (FLU)	SD (FLU)	CV	SD (FLU)	CV	SD (FLU)	CV	SD (FLU)	CV
1	75	1.69	0.25	14.9%	0.17	9.9%	0.09	5.1%	0.31	18.6%
2	75	4.37	0.18	4.2%	0.35	8.1%	0.16	3.6%	0.43	9.8%
3	75	28.59	1.16	4.1%	2.66	9.3%	1.58	5.5%	3.30	11.5%
4	75	128.28	6.57	5.1%	6.06	4.7%	13.72	10.7%	16.38	12.8%

Ribo-P			Repeatability		Between Day		Between Lot		Reproducibility	
Sample	Replicates (N)	Mean (FLU)	SD (FLU)	CV	SD (FLU)	CV	SD (FLU)	CV	SD (FLU)	CV
1	75	1.33	0.08	5.8%	0.09	6.7%	0.00	0.0%	0.12	8.9%
2	75	4.81	0.32	6.7%	0.16	3.3%	0.34	7.0%	0.49	10.2%
3	75	23.81	0.99	4.1%	0.87	3.6%	0.91	3.8%	1.60	6.7%
4	75	62.64	2.54	4.0%	2.89	4.6%	3.49	5.6%	5.19	8.3%

Limit of Blank (LoB), Limit of Detection (LoD), and Limit of Quantitation (LoQ)

The LoB, LoD, and LoQ of the dsDNA, RNP, Sm, Ro60, Ro52, SS-B, Scl-70, Jo-1, Centromere and Ribo-P assays in the Aptiva CTD Essential Reagent were calculated separately by a study according to CLSI EP17-A2, Evaluation of Detection Capability for Clinical Laboratory Measurement Procedures; Approved Guideline- Second Edition.

Study protocol for LoB:

Four blank samples were prepared using three lots of Aptiva system rinse. The blanks were run in replicates of five, once a day for 3 days, on two reagent lots as a "serum" sample type for a total of 60 data points generated on each lot. The LoB was determined for each assay, on each reagent lot separately with the Analyse-it for Excel software's Reference Interval function, at the 95th percentile, using the non-parametric method for all analyses.

The table below summarizes the LoB for all the analytes in CTD Essential Reagent.

Analyte	LoB 1 MFI	LoB 1 FLU, IU/mL	LoB 2 MFI	LoB 2 FLU, IU/mL	Final LoB MFI	Final LoB FLU, IU/mL
dsDNA	8	0.09	19	0.11	19	0.11
RNP	11	0.03	21	0.02	21	0.03
Sm	8	0.00	20	0.01	20	0.01
Ro52	15	0.00	11	0.00	15	0.00
Ro60	10	0.01	15	0.00	15	0.01
SS-B	11	0.00	11	0.00	11	0.00
Scl-70	10	0.00	11	0.02	11	0.02
Jo-1	9	0.00	11	0.01	11	0.01
Centromere	11	0.00	10	0.00	11	0.00
Ribo-P	9	0.02	11	0.00	11	0.02

Study protocol for LoD:

Four low level samples for each analyte (prepared by mixing human serum samples with high and low levels of antibodies) were run in replicates of five on two reagent lots, twice per day, for 3 days, with 120 data points generated on each assay, on each reagent lot. The LoD was determined separately for each assay, on each reagent lot. The table below summarizes the LoD for all the analytes in the Aptiva CTD Essential reagent.

Analyte	Lot 1 LoD	Lot 2 LoD	Final LoD
dsDNA	1.16	1.64	1.64
RNP	0.12	0.11	0.12
Sm	0.11	0.13	0.13
Ro52	0.10	0.10	0.10
Ro60	0.06	0.06	0.06
SS-B	0.14	0.07	0.14
Scl-70	0.08	0.12	0.12
Jo-1	0.03	0.03	0.03
Centromere	0.06	0.06	0.06
Ribo-P	0.16	0.14	0.16

Study protocol for LoQ:

Four low level samples for each analyte (prepared by mixing human serum samples with high and low levels of antibodies) were run in replicates of five on two reagent lots, twice per day, for 3 days, with 120 data points generated on each assay, on each reagent lot. The LoQ was determined separately for each assay, on each reagent lot. The LoQ was determined in each case by calculating the total imprecision of each sample (acceptance criteria: total imprecision <20%). The table below summarizes the LoQ for all the analytes in the Aptiva CTD Essential Reagent.

Analyte	Lot 1 LoQ	Lot 2 LoQ	Final LoQ
dsDNA	2.19	2.30	2.30
RNP	0.15	0.13	0.15
Sm	0.18	0.17	0.18
Ro52	0.23	0.20	0.23
Ro60	0.14	0.10	0.14
SS-B	0.33	0.19	0.33
Scl-70	0.16	0.16	0.16
Jo-1	0.07	0.04	0.07
Centromere	0.21	0.20	0.21
Ribo-P	0.16	0.16	0.16

Analytical Measuring Range (AMR)

The analytical measuring range (AMR) of the dsDNA, RNP, Sm, Ro60, Ro52, SS-B, Scl-70, Jo-1, Centromere and Ribo-P assays are outlined in the table below.

Assay	Analytical Measuring Range (AMR)
dsDNA	2.30 – 814.10 IU/mL
RNP	0.50 – 181.99 FLU
Sm	0.25 – 256.00 FLU
Ro52	0.25 – 196.27 FLU
Ro60	0.50 - 583.72 FLU
SS-B	0.40 – 195.84 FLU
Scl-70	0.50 - 371.24 FLU
Jo-1	0.25 – 153.60 FLU
Centromere	0.50 – 187.69 FLU
Ribo-P	0.25 – 86.86 FLU

Auto-rerun function and reportable results

The Aptiva software has an auto-rerun option available. If this option is selected, the instrument will automatically rerun any sample that has a result >181.99 FLU for RNP, >256.00 FLU for Sm, >583.72 FLU for Ro60, >196.27 FLU for Ro52, >195.84 FLU for SS-B, >371.24 FLU for Scl-70, >153.60 FLU for Jo-1, >86.86 FLU for Ribo-P, >187.69 FLU for Centromere, or >814.10 IU/mL for dsDNA after performing an additional 10-fold dilution, thereby bringing the measured value within the AMR. The reported result will be calculated by the software factoring the additional dilution. The highest value that can be reported for each measurand is listed in the table below.

Assay	Auto rerun highest value
dsDNA	8141.00 IU/mL
RNP	1819.90 FLU
Sm	2560.00 FLU
Ro52	1962.70 FLU
Ro60	5837.20 FLU
SS-B	1958.40 FLU
Scl-70	3712.40 FLU
Jo-1	1536.00 FLU
Centromere	1876.90 FLU
Ribo-P	868.60 FLU

High concentration hook effect

To assess hook effect, 2 samples for dsDNA, RNP, Sm, Ro52, Ro60, SS-B, Scl-70, Jo-1, Centromere, and Ribo-P were tested at three increasing 2-fold serial dilutions from the standard 1:44.4 dilution used by the Aptiva CTD Essential Reagent. All FLU values above the analytical measuring ranges of the ten assays are theoretical and were mathematically calculated using the 4 parameters of their respective calibration curves. All samples showed increase in FLU values as dilution factor became more concentrated, thereby

confirming that high positive specimens above the AMR do not show hook effect up to for the for dsDNA, RNP, Sm, Ro52, Ro60, SS-B, Scl-70, Jo-1, Centromere, and Ribo-P in the Aptiva CTD Essential Reagent.

Linearity

The linearity of the AMR was calculated separately for all analytes (dsDNA, RNP, Sm, Ro60, Ro52, SS-B, Scl-70, Jo-1, Ribo-P and Centromere) as part of the Aptiva CTD Essential Reagent.

The linearity for all analytes was evaluated by a study according to CLSI EP06-Ed2, Evaluation of the Linearity of Quantitative Measurement Procedures: 2nd Edition. The study used three human serum samples for the dsDNA assay, four human serum samples for the RNP, Sm, Ro52, SS-B, Scl-70, Jo-1, Centromere and Ribo-P assays and 5 samples for the Ro60 assay with various antibody concentrations in 10% increments (from 0% to 90% of sample) to obtain values that cover the entire AMR of each analyte. The dilutions were assayed in duplicates. Results were analyzed according to the guideline performing regression analysis and identifying the best fitting polynomial.

Acceptance criteria:

- Allowable deviation from linearity: +/- 15% or +/- 0.75 FLU (+/- 5.25 IU/mL for dsDNA)
- Slope: 0.9-1.1
- R2: > 0.95

For dsDNA, all acceptance criteria were fulfilled. Results included in the table below:

dsDNA				
Serum Sample	**Test Range (IU/mL)**	**Slope (95% CI)**	**R^2**	**Range of Linearity Deviations**
1	120.85 - 1208.48	1.02 (0.98 - 1.05)	0.99	-9.2% to 6.4%
2	13.09 - 130.89	0.98 (0.96 - 0.99)	1.00	-4.5% to 4.1%
3	1.99 - 19.89	0.98 (0.94 - 1.02)	0.99	-5.0% to 5.3% and -1.12 to 0.08 IU/mL

For RNP, all acceptance criteria were fulfilled. Results included in the table below:

RNP				
Serum Sample	**Test Range (FLU)**	**Slope (95% CI)**	**R^2**	**Range of Linearity Deviations**
1	20.36 - 203.59	0.96 (0.93 to 1.00)	0.99	-9.6% to 5.8%
2	4.55 - 45.46	1.00 (0.97 to 1.03)	0.99	-11.6% to 6.9%
3	0.71 - 7.09	0.93 (0.88 to 0.99)	0.98	-13.9% to 7.0% and -0.11 FLU
4	0.14 - 1.43	0.99 (0.94 to 1.04)	0.99	-0.07 to -0.08 FLU

For Sm, all acceptance criteria were fulfilled. Results included in the table below:

Sm				
Serum Sample	**Test Range (FLU)**	**Slope (95% CI)**	**R^2**	**Range of Linearity Deviations**
1	33.02 - 330.25	0.92 (0.89 to 0.96)	0.98	-12.8% to 8.3%
2	5.87 - 58.72	1.02 (1.00 to 1.04)	1.00	-2.3% to 10.9%
3	0.73 - 7.31	0.96 (0.93 to 0.99)	0.99	-9.0% to 4.2% and -0.30 to -0.21 FLU
4	0.13 - 1.33	1.01 (0.97 to 1.04)	0.99	-0.06 to 0.04 FLU

For Ro52, all acceptance criteria were fulfilled. Results included in the table below:

Ro52				
Serum Sample	**Test Range (FLU)**	**Slope (95% CI)**	**R^2**	**Range of Linearity Deviations**
1	20.07 – 200.73	0.98 (0.95 to 1.01)	0.99	-8.8% to 4.5%
2	4.81 - 48.10	1.02 (1.00 to 1.03)	1.00	-9.8% to 3.5%
3	0.96 - 9.58	1.01 (0.96 to 1.06)	0.98	-8.8% to 7.0% and -0.60 to 0.27 FLU
4	0.12 - 1.25	0.97 (0.94 to 0.99)	0.99	-0.04 to 0.04 FLU

For Ro60, all acceptance criteria were fulfilled. Results included in the table below:

Ro60				
Serum Sample	**Test Range (FLU)**	**Slope (95% CI)**	**R^2**	**Range of Linearity Deviations**
1	71.74 - 717.36	0.93 (0.89 to 0.98)	0.98	-8.1% to 7.1%
2	17.17 - 85.85	1.04 (1.01 to 1.07)	0.99	-3.6% to 5.4%
3	5.94 - 59.41	1.02 (0.98 to 1.06)	0.99	-7.0% to 14.4%
4	1.48 - 7.41	1.02 (0.98 to 1.05)	0.99	-5.9% to 11.3%
5	0.30 - 2.96	0.91 (0.84 to 0.97)	0.95	-0.38 to 0.28 FLU

For SS-B, all acceptance criteria were fulfilled. Results included in the table below:

SS-B				
Serum Sample	**Test Range (FLU)**	**Slope (95% CI)**	**R^2**	**Range of Linearity Deviations**
1	20.55 - 205.54	0.98 (0.94 to 1.01)	0.99	-13.2% to 7.1%
2	8.89 - 88.85	0.94 (0.92 to 1.07)	0.99	-13.5% to 5.9%
3	1.15 - 11.51	0.88 (0.82 to 0.94)	0.98	-10.3% to 13.7% and -0.46 to -0.27 FLU
4	0.16 - 1.55	0.99 (0.96 to 1.02)	0.99	-0.09 to 0.06 FLU

For Scl-70, all acceptance criteria were fulfilled. Results included in the table below:

Scl-70				
Serum Sample	**Test Range (FLU)**	**Slope (95% CI)**	**R^2**	**Range of Linearity Deviations**
1	41.46 - 414.62	1.01 (0.99 to 1.03)	0.99	-4.7% to 6.9%
2	5.30 - 53.05	0.98 (0.96 to 0.99)	1.00	-12.9% to 2.5%
3	0.81 - 8.13	0.97 (0.92 to 1.01)	0.99	-14.5% to 4.9% and -0.43 to -0.25 FLU
4	0.16 - 1.57	0.94 (0.89 to 0.98)	0.98	-0.09 to 0.10 FLU

For Jo-1, all acceptance criteria were fulfilled. Results included in the table below:

Jo-1				
Serum Sample	**Test Range (FLU)**	**Slope (95% CI)**	**R^2**	**Range of Linearity Deviations**
1	20.60 - 206.02	0.95 (0.92 to 0.98)	0.99	-12.7% to 5.3%
2	5.78 - 57.76	0.96 (0.93 to 0.99)	0.99	-4.3% to 8.6%
3	0.76 - 7.63	1.07 (1.02 to 1.11)	0.98	-10.7% to 11.4%
4	0.14 - 1.38	0.96 (0.94 to 0.98)	0.99	-0.03 to 0.05 FLU

For Centromere, all acceptance criteria were fulfilled. Results included in the table below:

Centromere				
Serum Sample	**Test Range (FLU)**	**Slope (95% CI)**	**R^2**	**Range of Linearity Deviations**
1	40.48 - 202.38	1.01 (0.98 to 1.04)	0.99	-12.7% to 5.9%
2	5.96 - 59.56	1.00 (0.99 to 1.01)	1.00	-5.8% to 2.1%
3	0.91 - 9.08	1.01 (0.99 to 1.02)	1.00	-9.9% to 1.9%
4	0.19 - 1.86	0.96 (0.89 to 1.03)	0.97	-0.19 to 0.10 FLU

For Ribo-P, all acceptance criteria were fulfilled. Results included in the table below:

Ribo-P				
Serum Sample	**Test Range (FLU)**	**Slope (95% CI)**	**R^2**	**Range of Linearity Deviations**
1	13.91 - 139.12	0.97 (0.95 to 1.00)	0.99	-3.7% to 6.2%
2	2.78 - 27.83	1.00 (0.95 to 1.04)	0.98	-11.9% to 7.2%
3	0.58 – 5.76	0.99 (0.93 to 1.05)	0.99	-7.8% to 6.4% and -0.48 to -0.27 FLU
4	0.09 - 0.95	1.05 (0.97 to 1.12)	0.95	-0.10 to 0.11 FLU

These data demonstrate that the entire analytical measuring range for dsDNA (AMR: 2.30 – 814.10 IU/mL), of RNP (AMR: 0.50 – 181.99 FLU), Sm (AMR: 0.25 – 256.00 FLU) Ro52 (AMR: 0.25 – 196.27 FLU), Ro60 (AMR: 0.50 – 583.72 FLU), SS-B (0.40 – 195.84 FLU Scl-70 (0.50 – 371.24 FLU), Jo-1 (0.25 – 153.60 FLU) Centromere (AMR: 0.50 – 187.69 FLU) and Ribo-P (AMR: 0.25 – 86.86 FLU) have proven to be linear.

Interference

The interference study was performed according to CLSI EP07-A2, Interference Testing in Clinical Chemistry; Approved Guideline - Second Edition. A set of three human serum specimens, one positive, one near the cutoff and one negative sample were tested using the following endogenous interfering substances (bilirubin, hemoglobin, triglycerides, cholesterol, rheumatoid factor IgM and human IgG) and exogenous interfering substances (ibuprofen, acetaminophen, prednisone, warfarin, diltiazem, azathioprine, sildenafil, cyclophosphamide, mycophenolate mofetil and heparin). All interferents were spiked into every serum specimen and the resulting samples were assessed in triplicates with the Aptiva CTD Essential assays (dsDNA, RNP, Sm, Ro52, Ro60, SS-B, Scl-70, Jo-1, Centromere and Ribo-P). Recovery of the unit values was calculated compared to control samples.
Acceptance criteria for the interference studies were 85% - 115% recovery, or ± 15% of the cut-off (±0.75 FLU or ±4.05 IU/mL for dsDNA) difference, whichever is greater.
The Aptiva CTD Essential Reagent did not show interference with bilirubin up to 1 mg/mL, hemoglobin up to 2 mg/mL, triglyceride up to 1000 mg/dL, cholesterol up to 332.5 mg/dL, RF IgM up to 153.4 IU/mL and human IgG up to 35 mg/mL. The Aptiva CTD Essential Reagent did not show interference up to 21.9 mg/dL ibuprofen, 15.6 mg/dL acetaminophen, 0.0099 mg/dL prednisone, 7.5 mg/dL warfarin, 0.09 mg/dL diltiazem, 0.258 mg/dL azathioprine, 0.271 mg/dL sildenafil, 54.9 mg/dL cyclophosphamide, 1.125 mg/mL mycophenolate mofetil and 330 units/dL heparin.

Note: Rituximab was not evaluated for interference with the Aptiva CTD Essential Reagent.

Sample Stability and Handling

For the all analytes included in the Aptiva CTD Essential Reagent (dsDNA, RNP, Sm, Ro52, Ro60, SS-B, Scl-70, Jo-1, Centromere and Ribo-P) three samples were tested. The samples used for this study were achieved by combining high and low antibody level to yield their desired reactivity. All samples were tested in duplicates for up to 21 days while stored at 2-8°C, up to 48 hours while stored at room temperature, and after repeated freeze/thaw cycles up to 5 cycles. Results were compared to those obtained on control samples (time zero / zero cycles).

Acceptance criteria: percent recovery is between 85-115% for positive samples, and between 80-120% for negative samples (<5.00 FLU or <27.00 IU/mL for dsDNA).

All samples fulfilled the acceptance criteria at each time point for each condition. Based on these results, we recommend that samples may be stored up to 24 hours at room temperature, up to 14 days at 2-8°C and can be subjected to up to 4 freeze/thaw cycles (when samples are stored at or below -20°C).

Reagent Stability

Shelf life

To establish the initial claim for shelf life, accelerated stability studies were performed for 5 weeks at 37°C ± 3°C, where one week is equal to six months at 5 ± 3°C.

Accelerated stability testing was performed on each of the following sealed components to establish initial stability claim:

- Aptiva CTD Essential microparticles – 3 lots
- Rehydration Buffer – 3 lots

Each week a new sealed component was placed in the incubator, and all components were tested at the end of the experiment together with the one that was stored at 5 ± 3°C. The recovery of the measured values was calculated for each time point (compared to those obtained with 5 ± 3°C stored reagent). All calculations were performed by comparing results of sealed components stored at 5 ± 3°C (control) to those stored at 37 ± 3°C (test) for 1, 2, 3, 4, and 5 weeks, where one week is equal to six months at 5 ± 3°C. Linear regression analysis was performed between recovery values and the number of days. For each component tested, linear regression analysis was performed separately on each bead in the Aptiva CTD Essential Reagent (dsDNA, RNP, Sm, Ro52, Ro60, SS-B, Scl-70, Jo-1, Centromere, Ribo-P and Control Bead).

Acceptance criteria for two-year preliminary expiration dating: With regression analysis, the lower and upper 95% Cl interval of the regression line is between 80% and 120% recovery at day 28 (week 4).

All components tested fulfilled the acceptance criteria above, therefore, two-year expiration dating was assigned to each component.

In-use (onboard) stability

Reagent Cartridge

To establish the in-use stability of the Aptiva CTD Essential reagent cartridges, one lot of reagent cartridge was tested using human serum samples for all analytes. The specimens were tested periodically for 45 days. At day 21 the reagent cartridge was recalibrated, and a cartridge specific Working Curve was generated. Percent recoveries were calculated compared to the day zero average values, and linear regression analysis was performed by plotting percent recovery against the number of days. The claim was established using the following criteria (using the one that is fulfilled first):

- The stability claim is established at the actual measurement day proceeding the day when the 95% confidence interval of the regression line reaches 85% or 115% recovery, or
- At the actual measurement day preceding the day when ≥2% of the recovery data, (3 data points) is ≤75% or ≥125% recovery.

All data obtained fulfilled the acceptance criteria established.

The in-use (onboard) stability of the Aptiva CTD Essential Reagent was set at 36 days, with an 18 day recalibration.

Real time stability

Real time stability testing has been scheduled to be performed every three or six months on the Aptiva CTD Essential Reagents kit, to verify the two-year expiration that was assigned based on accelerated stability studies. Results for the first time point at 6 months will be available in Q1 2022.

A negative sample, a low positive sample, and a high positive sample will be tested at each time point.
- Acceptance criteria: results should fall within their respective ranges.

Cut-off, reference range

The following cutoff is used for both the RNP, Sm, Ro52, Ro60, SS-B, Scl-70, Centromere and Ribo-P assays in the Aptiva CTD Essential Reagent:

Negative	<5.00 FLU
Positive	≥5.00 FLU

For the dsDNA assay, the following cutoff is used in the Aptiva CTD Essential Reagent:

Negative	<27.00 IU/mL
Indeterminate	27.00 – 35.00 IU/mL
Positive	≥35.00 IU/mL

The reference population for establishing the reference interval for the Aptiva CTD Essential Reagent is outlined as follows:

The dsDNA, SS-B, Ro60, Ro52, Sm, RNP, Scl-70, Jo-1, Centromere and Ribo-P assay cut-offs were determined using 120 samples from reference subjects consisting of 16 patients with celiac disease, 18 patients with Hashimoto's thyroiditis, 25 patients with infectious diseases, 7 patients with primary biliary cholangitis (PBC), 2 patients with PBC/autoimmune hepatitis (AIH), 8 patients with primary sclerosing cholangitis (PSC), 1 patient with PSC/AIH, 30 patients with rheumatoid arthritis and 13 patients with Lyme disease.

All specimens were the same matrix (human serum) as specified in the Intended Use. All specimens were unaltered. The cut-off values were established in accordance with CLSI EP28-A3c: Defining, Establishing, and Verifying Reference Intervals in the Clinical Laboratory; Approved Guideline - Third Edition. The Analyse-it for Excel software was used to make the calculations. The distribution of the results was non-normal (Shapiro-Wilk $p<0.0001$), therefore the non-parametric percentile method was used. NOTE: For each assay, when a sample is proven to have antibodies that yield a positive result using another FDA cleared assay, the sample is excluded from the analysis.

For dsDNA, the cut-off was established based on equal or greater than the 95th percentile of the results obtained on the reference subjects, along with the results of 13 samples from patients with systemic lupus

erythematosus, to ensure optimal differentiation between dsDNA positive and negative samples. The cut-off for dsDNA has been established at 454 MFI and was assigned a value of 35.00 IU/mL.

For Sm, the cut-off was established based on equal or greater than the 95th percentile of the results obtained on the reference subjects, along with the results of 13 samples from patients with systemic lupus erythematosus, to ensure optimal differentiation between Sm positive and negative samples. The cut-off has been established at 200 MFI and assigned a value of 5.00 FLU.

For Ribo-P, the cut-off was established based on equal or greater than the 95th percentile of the results obtained on the reference subjects, along with the results of 13 samples from patients with systemic lupus erythematosus, to ensure optimal differentiation between Ribo-P positive and negative samples. The cut-off has been established at 350 MFI and assigned a value of 5.00 FLU.

For RNP, the cut-off was established based on equal or greater than the 95th percentile of the results obtained on the reference subjects, along with the results of 7 samples from patients with systemic lupus erythematosus and 5 samples from patients with mixed connective tissue disease, to ensure optimal differentiation between RNP positive and negative samples. The cut-off has been established at 211 MFI and was assigned a value of 5.00 FLU.

For Ro60, the cut-off was established based on equal or greater than the 95th percentile of the results obtained on the reference subjects, along with the results of 21 samples from patients with systemic lupus erythematosus and 5 samples from patients with Sjogren's syndrome, to ensure optimal differentiation between Ro60 positive and negative samples. The cut-off has been established at 315 MFI and assigned a value of 5.00 FLU.
For SS-B, the cut-off was established based on equal or greater than the 95th percentile of the results obtained on the reference subjects, along with the results of 21 samples from patients with systemic lupus erythematosus and 5 samples from patients with Sjogren's syndrome, to ensure optimal differentiation between SS-B positive and negative samples. The cut-off has been established at 250 MFI and assigned a value of 5.00 FLU.

For Scl-70, the cut-off was established based on equal or greater than the 95th percentile of the results obtained on the reference subjects, along with the results of 6 samples from patients with systemic sclerosis, to ensure optimal differentiation between Scl-70 positive and negative samples. The cut-off has been established at 644 MFI and assigned a value of 5.00 FLU.

For Centromere, the cut-off was established based on equal or greater than the 95th percentile of the results obtained on the reference subjects, along with the results of 6 samples from patients with systemic sclerosis, to ensure optimal differentiation between Centromere positive and negative samples. The cut-off has been established at 675 MFI and assigned a value of 5.00 FLU.

For Ro52, the cut-off was established based on equal or greater than the 95th percentile of the results obtained on the reference subjects, along with the results of 2 samples from patients with systemic lupus erythematosus, 3 samples from patients with Sjogren's syndrome, 6 samples from patients with idiopathic inflammatory myopathy, 3 samples from patients with systemic sclerosis and 1 sample from a patient

with mixed connective tissue disease, so as to ensure optimal differentiation between Ro52 positive and negative samples. The cut-off has been established at 300 MFI and assigned a value of 5.00 FLU.

For Jo-1, the cut-off was established based on equal or greater than the 95th percentile of the results obtained on the reference subjects, along with the results of 11 samples from patients with idiopathic inflammatory myopathy, to ensure optimal differentiation between Jo-1 positive and negative samples. The cut-off has been established at 500 MFI and assigned a value of 5.00 FLU.

Clinical performance characteristics

Clinical sensitivity, specificity

A cohort of characterized samples, none of which were used for establishing the reference range, was used to validate the clinical performance of the Aptiva CTD Essential Reagent. The clinical validation study included 1269 samples from patients with Sjögren's syndrome (SjS, n=141), systemic lupus erythematosus (SLE, n=230), systemic sclerosis (SSc, n=217), mixed connective tissue disease (MCTD, n=91), idiopathic inflammatory myopathy (IIM, n=200) and control samples (n=390) from patients with various types of autoimmune and infectious diseases.

Distribution of samples and dsDNA antibody positivity rate in the validation study:

Patient Group	n=	No. of dsDNA Positive	% dsDNA Positive
Autoimmune hepatitis type 1 (AIH-1)	10	3	30.0%
Autoimmune hepatitis type 2 (AIH-2)	40	5	12.5%
Antiphospholipid syndrome (APS)	12	2	16.7%
Atopic dermatitis	16	0	0.0%
Celiac disease (CD)	43	8	18.6%
Crohn's disease (CrD)	20	5	25.0%
Dermatitis herpetiformis (DH)	7	2	28.6%
Drug induced liver injury	9	1	11.1%
Fibromyalgia	8	2	25.0%
Gout	6	0	0.0%
Granulomatosis with polyangiitis (GPA)	19	2	10.5%
Grave's Disease	16	4	25.0%
Hashimoto's thyroiditis (HT)	20	1	5.0%
Idiopathic inflammatory myopathy (IIM)	200	12	6.0%
Infectious Disease	20	1	5.0%
Mixed connective tissue disease (MCTD)	91	9	9.9%
Nodal Osteoarthritis	19	0	0.0%
Primary biliary cholangitis (PBC)	15	1	6.7%
Polymyalgia Rheumatica	13	1	7.7%
Prostate Cancer	15	1	6.7%
Psoriasis	7	0	0.0%
Psoriatic Arthritis	9	1	11.1%
Rheumatoid arthritis (RA)	35	5	14.3%
Sarcoidosis	15	2	13.3%
Sjögrens Syndrome (SjS)	141	11	7.8%

Patient Group	**n=**	**No. of dsDNA Positive**	**% dsDNA Positive**
Spondylarthritis	16	4	25.0%
Systemic sclerosis (SSc)	217	20	9.2%
Total Controls	**1039**	**103**	**9.9%**
Systemic lupus erythematosus (SLE)	230	116	50.4%
Total	**230**	**--**	**--**

Clinical sensitivity and specificity for the Aptiva dsDNA were analyzed in the table below with indeterminate as positive:

Clinical Analysis (n=1269)		Diagnosis			Analysis
		SLE	Controls	Total	(95% confidence interval)
Aptiva dsDNA	Positive	116	103	219	Sensitivity = 50.4% (44.0 – 56.8%)
	Negative	114	936	1050	Specificity = 90.1% (88.1 – 91.8%)
	Total	230	1039	1269	

Clinical sensitivity and specificity for the Aptiva dsDNA were analyzed in the table below with indeterminate as negative:

Clinical Analysis (n=1269)		Diagnosis			Analysis
		SLE	Controls	Total	(95% confidence interval)
Aptiva dsDNA	Positive	106	74	180	Sensitivity = 46.1% (39.8 – 52.5%)
	Negative	124	965	1089	Specificity = 92.9% (91.2 – 94.3%)
	Total	230	1039	1269	

Distribution of samples and RNP antibody positivity rate in the validation study:

Patient Group	**n=**	**No. of RNP Positive**	**% RNP Positive**
Autoimmune hepatitis type 1 (AIH-1)	10	0	0.0%
Autoimmune hepatitis type 2 (AIH-2)	40	0	0.0%
Antiphospholipid syndrome (APS)	12	0	0.0%
Atopic dermatitis	16	0	0.0%
Celiac disease (CD)	43	0	0.0%
Crohn's disease (CrD)	20	2	10.0%
Dermatitis herpetiformis (DH)	7	0	0.0%
Drug induced liver injury	9	0	0.0%
Fibromyalgia	8	0	0.0%
Gout	6	0	0.0%
Granulomatosis with polyangiitis (GPA)	19	0	0.0%
Grave's Disease	16	1	6.3%
Hashimoto's thyroiditis (HT)	20	1	5.0%
Idiopathic inflammatory myopathy (IIM)	200	10	5.0%
Infectious Disease	20	0	0.0%
Nodal Osteoarthritis	19	0	0.0%

Patient Group	**n=**	**No. of RNP Positive**	**% RNP Positive**
Primary biliary cholangitis (PBC)	15	0	0.0%
Polymyalgia Rheumatica	13	1	7.7%
Prostate Cancer	15	1	6.7%
Psoriasis	7	0	0.0%
Psoriatic Arthritis	9	0	0.0%
Rheumatoid arthritis (RA)	35	0	0.0%
Sarcoidosis	15	0	0.0%
Sjögrens Syndrome (SjS)	141	18	12.8%
Spondylarthritis	16	0	0.0%
Systemic sclerosis (SSc)	217	15	6.9%
Total Controls	**948**	**49**	**5.2%**
Systemic lupus erythematosus (SLE)	230	86	37.4%
Mixed connective tissue disease (MCTD)	91	62	68.1%
Total	**321**	**--**	**--**

Clinical sensitivity and specificity for the Aptiva RNP were analyzed in the tables below:

Clinical Analysis (n=1178)		Diagnosis			Analysis
		SLE	Controls	Total	(95% confidence interval)
Aptiva RNP	Positive	86	49	135	Sensitivity = 37.4% (31.4 – 43.8%)
	Negative	144	899	1043	Specificity = 94.8% (93.2 – 96.1%)
	Total	230	948	1178	

Clinical Analysis (n=1039)		Diagnosis			Analysis
		MCTD	Controls	Total	(95% confidence interval)
Aptiva RNP	Positive	62	49	111	Sensitivity = 68.1% (58.0 – 76.8%)
	Negative	29	899	928	Specificity = 94.8% (93.2 – 96.1%)
	Total	91	948	1039	

Distribution of samples and Sm antibody positivity rate in the validation study:

Patient Group	**n=**	**No. of Sm Positive**	**% Sm Positive**
Autoimmune hepatitis type 1 (AIH-1)	10	0	0.0%
Autoimmune hepatitis type 2 (AIH-2)	40	0	0.0%
Antiphospholipid syndrome (APS)	12	0	0.0%
Atopic dermatitis	16	0	0.0%
Celiac disease (CD)	43	0	0.0%
Crohn's disease (CrD)	20	0	0.0%
Dermatitis herpetiformis (DH)	7	0	0.0%
Drug induced liver injury	9	0	0.0%
Fibromyalgia	8	0	0.0%
Gout	6	0	0.0%
Granulomatosis with polyangiitis (GPA)	19	0	0.0%
Grave's Disease	16	0	0.0%

Patient Group	**n=**	**No. of Sm Positive**	**% Sm Positive**
Hashimoto's thyroiditis (HT)	20	0	0.0%
Idiopathic inflammatory myopathy (IIM)	200	0	0.0%
Infectious Disease	20	0	0.0%
Mixed connective tissue disease (MCTD)	91	1	1.1%
Nodal Osteoarthritis	19	0	0.0%
Primary biliary cholangitis (PBC)	15	0	0.0%
Polymyalgia Rheumatica	13	0	0.0%
Prostate Cancer	15	0	0.0%
Psoriasis	7	0	0.0%
Psoriatic Arthritis	9	0	0.0%
Rheumatoid arthritis (RA)	35	0	0.0%
Sarcoidosis	15	0	0.0%
Sjögrens Syndrome (SjS)	141	1	0.7%
Spondylarthritis	16	0	0.0%
Systemic sclerosis (SSc)	217	1	0.5%
Total Controls	**1039**	**3**	**0.3%**
Systemic lupus erythematosus (SLE)	230	24	10.4%
Total	**230**	**--**	**--**

Clinical sensitivity and specificity for the Aptiva Sm were analyzed in the table below:

Clinical Analysis (n=1269)		Diagnosis			Analysis
		SLE	Controls	Total	(95% confidence interval)
Aptiva Sm	Positive	24	4	28	Sensitivity = 10.4% (7.1 – 15.1%)
	Negative	206	1035	1241	Specificity = 99.6% (99.0 – 99.9%)
	Total	230	1039	1269	

Distribution of samples and Ro52 antibody positivity rate in the validation study:

Patient Group	**n=**	**No. of Ro52 Positive**	**% Ro52 Positive**
Autoimmune hepatitis type 1 (AIH-1)	10	1	10.0%
Autoimmune hepatitis type 2 (AIH-2)	40	0	0.0%
Antiphospholipid syndrome (APS)	12	0	0.0%
Atopic dermatitis	16	0	0.0%
Celiac disease (CD)	43	1	2.3%
Crohn's disease (CrD)	20	0	0.0%
Dermatitis herpetiformis (DH)	7	0	0.0%
Drug induced liver injury	9	1	11.1%
Fibromyalgia	8	1	12.5%
Gout	6	0	0.0%
Granulomatosis with polyangiitis (GPA)	19	1	5.3%
Grave's Disease	16	1	6.3%
Hashimoto's thyroiditis (HT)	20	0	0.0%
Infectious Disease	20	0	0.0%
Nodal Osteoarthritis	19	1	5.3%

Patient Group	**n=**	**No. of Ro52 Positive**	**% Ro52 Positive**
Primary biliary cholangitis (PBC)	15	1	6.7%
Polymyalgia Rheumatica	13	0	0.0%
Prostate Cancer	15	1	6.7%
Psoriasis	7	0	0.0%
Psoriatic Arthritis	9	1	11.1%
Rheumatoid arthritis (RA)	35	2	5.7%
Sarcoidosis	15	1	6.7%
Spondylarthritis	16	0	0.0%
Mixed connective tissue disease (MCTD)*	91	18	19.8%
Total Controls	**481**	**31**	**6.4%**
Systemic lupus erythematosus (SLE)	230	56	24.3%
Sjögrens Syndrome (SjS)	141	85	60.3%
Systemic sclerosis (SSc)	217	33	15.2%
Idiopathic inflammatory myopathy (IIM)	200	38	19.0%
Total	**788**	**--**	**--**

*Note: Some MCTD samples may test positive for Ro52 antibodies due to associations with this disease.

Clinical sensitivity and specificity for the Aptiva Ro52 were analyzed in the tables below:

Clinical Analysis (n=711)		Diagnosis			Analysis
		SLE	Controls	Total	(95% confidence interval)
Aptiva Ro52	Positive	56	31	87	Sensitivity = 24.3% (19.3 – 30.3%)
	Negative	174	450	624	Specificity = 93.6% (91.0 – 95.4%)
	Total	230	481	711	

Clinical Analysis (n=622)		Diagnosis			Analysis
		SjS	Controls	Total	(95% confidence interval)
Aptiva Ro52	Positive	85	31	116	Sensitivity = 60.3% (52.0 – 68.0%)
	Negative	56	450	506	Specificity = 93.6% (91.0 – 95.4%)
	Total	141	481	622	

Clinical Analysis (n=698)		Diagnosis			Analysis
		SSc	Controls	Total	(95% confidence interval)
Aptiva Ro52	Positive	33	31	64	Sensitivity = 15.2% (11.0 – 20.6%)
	Negative	184	450	634	Specificity = 93.6% (91.0 – 95.4%)
	Total	217	481	698	

Clinical Analysis (n=681)		Diagnosis			Analysis
		IIM	Controls	Total	(95% confidence interval)
Aptiva Ro52	Positive	38	31	69	Sensitivity = 19.0% (14.2 – 25.0%)
	Negative	162	450	612	Specificity = 93.6% (91.0 – 95.4%)
	Total	200	481	681	

Distribution of samples and Ro60 antibody positivity rate in the validation study:

Patient Group	**n=**	**No. of Ro60 Positive**	**% Ro60 Positive**
Autoimmune hepatitis type 1 (AIH-1)	10	0	0.0%
Autoimmune hepatitis type 2 (AIH-2)	40	1	2.5%
Antiphospholipid syndrome (APS)	12	3	25.0%
Atopic dermatitis	16	0	0.0%
Celiac disease (CD)	43	2	4.7%
Crohn's disease (CrD)	20	2	10.0%
Dermatitis herpetiformis (DH)	7	0	0.0%
Drug induced liver injury	9	1	11.1%
Fibromyalgia	8	0	0.0%
Gout	6	0	0.0%
Granulomatosis with polyangiitis (GPA)	19	0	0.0%
Grave's Disease	16	2	12.5%
Hashimoto's thyroiditis (HT)	20	0	0.0%
Infectious Disease	20	2	10.0%
Nodal Osteoarthritis	19	0	0.0%
Primary biliary cholangitis (PBC)	15	1	6.7%
Polymyalgia Rheumatica	13	0	0.0%
Prostate Cancer	15	1	6.7%
Psoriasis	7	0	0.0%
Psoriatic Arthritis	9	1	11.1%
Rheumatoid arthritis (RA)	35	2	5.7%
Sarcoidosis	15	1	6.7%
Spondylarthritis	16	1	6.3%
Mixed Connective Tissue Disease (MCTD)	91	19	20.9%
Systemic Sclerosis (SSc)	217	36	16.6%
Idiopathic Inflammatory Myopathy (IIM)	200	26	13.0%
Total Controls	**898**	**101**	**11.2%**
Systemic lupus erythematosus (SLE)	230	120	52.2%
Sjögrens Syndrome (SjS)	141	94	66.7%
Total	**371**	**--**	**--**

Clinical sensitivity and specificity for the Aptiva Ro60 were analyzed in the tables below:

Clinical Analysis (n=1128)		Diagnosis			Analysis
		SLE	Controls	Total	(95% confidence interval)
Aptiva Ro60	Positive	120	101	221	Sensitivity = 52.2% (45.7 – 58.5%)
	Negative	110	797	907	Specificity = 88.8% (86.5 – 90.7%)
	Total	230	898	1128	

Clinical Analysis (n=531)		Diagnosis			Analysis
		SjS	Controls	Total	(95% confidence interval)
Aptiva Ro60	Positive	94	101	195	Sensitivity = 66.7% (58.5 – 73.9%)
	Negative	47	797	844	Specificity = 88.8% (86.5 – 90.7%)
	Total	141	898	1039	

Distribution of samples and SS-B antibody positivity rate in the validation study:

Patient Group	**n=**	**No. of SS-B Positive**	**% SS-B Positive**
Autoimmune hepatitis type 1 (AIH-1)	10	0	0.0%
Autoimmune hepatitis type 2 (AIH-2)	40	0	0.0%
Antiphospholipid syndrome (APS)	12	0	0.0%
Atopic dermatitis	16	0	0.0%
Celiac disease (CD)	43	1	2.3%
Crohn's disease (CrD)	20	0	0.0%
Dermatitis herpetiformis (DH)	7	0	0.0%
Drug induced liver injury	9	1	11.1%
Fibromyalgia	8	0	0.0%
Gout	6	0	0.0%
Granulomatosis with polyangiitis (GPA)	19	0	0.0%
Grave's Disease	16	2	12.5%
Hashimoto's thyroiditis (HT)	20	0	0.0%
Idiopathic inflammatory myopathy (IIM)	200	9	4.5%
Infectious Disease	20	1	5.0%
Nodal Osteoarthritis	19	0	0.0%
Primary biliary cholangitis (PBC)	15	0	0.0%
Polymyalgia Rheumatica	13	0	0.0%
Prostate Cancer	15	0	0.0%
Psoriasis	7	0	0.0%
Psoriatic Arthritis	9	1	11.1%
Rheumatoid arthritis (RA)	35	0	0.0%
Sarcoidosis	15	0	0.0%
Mixed connective tissue disease (MCTD)	91	11	12.1%
Spondylarthritis	16	0	0.0%
Systemic sclerosis (SSc)	217	5	2.3%
Total Controls	**898**	**31**	**3.5%**
Systemic lupus erythematosus (SLE)	230	36	15.7%
Sjögrens Syndrome (SjS)	141	66	46.8%
Total	**371**	**--**	**--**

Clinical sensitivity and specificity for the Aptiva SS-B were analyzed in the tables below:

Clinical Analysis (n=1128)		Diagnosis			Analysis
		SLE	Controls	Total	(95% confidence interval)
Aptiva SS-B	Positive	36	31	67	Sensitivity = 15.7% (11.5 – 20.9%)
	Negative	194	867	1061	Specificity = 96.5% (95.1 – 97.6%)
	Total	230	898	1128	

Clinical Analysis (n=1039)		Diagnosis			Analysis
		SjS	Controls	Total	(95% confidence interval)
Aptiva SS-B	Positive	66	31	97	Sensitivity = 46.8% (38.8 – 55.0%)
	Negative	75	867	942	Specificity = 96.5% (95.1 – 97.6%)
	Total	141	898	1039	

Distribution of samples and Scl-70 antibody positivity rate in the validation study:

Patient Group	**n=**	**No. of Scl-70 Positive**	**% Scl-70 Positive**
Autoimmune hepatitis type 1 (AIH-1)	10	3	30.0%
Autoimmune hepatitis type 2 (AIH-2)	40	0	0.0%
Antiphospholipid syndrome (APS)	12	2	16.7%
Atopic dermatitis	16	1	6.3%
Celiac disease (CD)	43	2	4.7%
Crohn's disease (CrD)	20	1	5.0%
Dermatitis herpetiformis (DH)	7	1	14.3%
Drug induced liver injury	9	1	11.1%
Fibromyalgia	8	0	0.0%
Gout	6	0	0.0%
Granulomatosis with polyangiitis (GPA)	19	0	0.0%
Grave's Disease	16	2	12.5%
Hashimoto's thyroiditis (HT)	20	2	10.0%
Idiopathic inflammatory myopathy (IIM)	200	4	2.0%
Infectious Disease	20	0	0.0%
Mixed connective tissue disease (MCTD)	91	8	8.8%
Nodal Osteoarthritis	19	0	0.0%
Primary biliary cholangitis (PBC)	15	0	0.0%
Polymyalgia Rheumatica	13	1	7.7%
Prostate Cancer	15	2	13.3%
Psoriasis	7	0	0.0%
Psoriatic Arthritis	9	0	0.0%
Rheumatoid arthritis (RA)	35	1	2.9%
Sarcoidosis	15	0	0.0%
Sjögrens Syndrome (SjS)	141	13	9.2%
Spondylarthritis	16	0	0.0%
Systemic lupus erythematosus (SLE)	230	16	7.0%
Total Controls	**1052**	**60**	**5.7%**
Systemic sclerosis (SSc)	217	66	30.4%
Total	**217**	**--**	**--**

Clinical sensitivity and specificity for the Aptiva Scl-70 were analyzed in the table below:

Clinical Analysis (n=1269)		Diagnosis			Analysis
		SSc	Controls	Total	(95% confidence interval)
Aptiva Scl-70	Positive	66	60	126	Sensitivity = 30.4% (24.7 – 36.8%)
	Negative	151	992	1143	Specificity = 94.3% (92.7 – 95.5%)
	Total	217	1052	1269	

Distribution of samples and Jo-1 antibody positivity rate in the validation study:

Patient Group	**n=**	**No. of Jo-1 Positive**	**% Jo-1 Positive**
Autoimmune hepatitis type 1 (AIH-1)	10	0	0.0%
Autoimmune hepatitis type 2 (AIH-2)	40	0	0.0%
Antiphospholipid syndrome (APS)	12	0	0.0%
Atopic dermatitis	16	0	0.0%
Celiac disease (CD)	43	0	0.0%
Crohn's disease (CrD)	20	0	0.0%
Dermatitis herpetiformis (DH)	7	0	0.0%
Drug induced liver injury	9	0	0.0%
Fibromyalgia	8	0	0.0%
Gout	6	0	0.0%
Granulomatosis with polyangiitis (GPA)	19	0	0.0%
Grave's Disease	16	0	0.0%
Hashimoto's thyroiditis (HT)	20	0	0.0%
Infectious Disease	20	0	0.0%
Systemic sclerosis (SSc)	217	1	0.5%
Mixed connective tissue disease (MCTD)	91	0	0.0%
Nodal Osteoarthritis	19	0	0.0%
Primary biliary cholangitis (PBC)	15	0	0.0%
Polymyalgia Rheumatica	13	0	0.0%
Prostate Cancer	15	0	0.0%
Psoriasis	7	0	0.0%
Psoriatic Arthritis	9	0	0.0%
Rheumatoid arthritis (RA)	35	0	0.0%
Sarcoidosis	15	0	0.0%
Syphilis	3	0	0.0%
Sjögrens Syndrome (SjS)	141	5	3.5%
Spondylarthritis	16	0	0.0%
Systemic lupus erythematosus (SLE)	230	1	0.4%
Total Controls	**1069**	**7**	**0.7%**
Idiopathic inflammatory myopathy (IIM)	200	23	11.5%
Total	**200**	**--**	**--**

Clinical sensitivity and specificity for the Aptiva Jo-1 were analyzed in the table below:

Clinical Analysis (n=1269)		Diagnosis			Analysis
		IIM	Controls	Total	(95% confidence interval)
Aptiva Jo-1	Positive	23	7	30	Sensitivity = 11.5% (7.8 – 16.7%)
	Negative	177	1062	1239	Specificity = 99.3% (98.7 – 99.7%)
	Total	200	1069	1269	

Distribution of samples and Centromere antibody positivity rate in the validation study:

Patient Group	**n=**	**No. of Centromere Positive**	**% Centromere Positive**
Autoimmune hepatitis type 1 (AIH-1)	10	1	10.0%
Autoimmune hepatitis type 2 (AIH-2)	40	3	7.5%
Antiphospholipid syndrome (APS)	12	0	0.0%
Atopic dermatitis	16	0	0.0%
Celiac disease (CD)	43	4	9.3%
Crohn's disease (CrD)	20	1	5.0%
Dermatitis herpetiformis (DH)	7	1	14.3%
Drug induced liver injury	9	0	0.0%
Fibromyalgia	8	1	12.5%
Gout	6	0	0.0%
Granulomatosis with polyangiitis (GPA)	19	0	0.0%
Grave's Disease	16	2	12.5%
Hashimoto's thyroiditis (HT)	20	1	5.0%
Idiopathic inflammatory myopathy (IIM)	200	4	2.0%
Infectious Disease	20	0	0.0%
Mixed connective tissue disease (MCTD)	91	1	1.1%
Nodal Osteoarthritis	19	1	5.3%
Primary biliary cholangitis (PBC)	15	2	13.3%
Polymyalgia Rheumatica	13	0	0.0%
Prostate Cancer	15	1	6.7%
Psoriasis	7	0	0.0%
Psoriatic Arthritis	9	0	0.0%
Rheumatoid arthritis (RA)	35	1	2.9%
Sarcoidosis	15	0	0.0%
Sjögrens Syndrome (SjS)	141	3	2.1%
Spondylarthritis	16	0	0.0%
Systemic lupus erythematosus (SLE)	230	5	2.2%
Total Controls	**1052**	**32**	**3.0%**
Systemic sclerosis (SSc)	217	102	47.0%
Total	**217**	**--**	**--**

Clinical sensitivity and specificity for the Aptiva Centromere were analyzed in the table below:

Clinical Analysis (n=1269)		Diagnosis			Analysis
		SSc	Controls	Total	(95% confidence interval)
Aptiva Centromere	Positive	102	32	134	Sensitivity = 47.0% (40.5 – 53.6%)
	Negative	115	1020	1135	Specificity = 97.0% (95.7 – 97.8%)
	Total	217	1052	1269	

Distribution of samples and Ribo-P antibody positivity rate in the validation study:

Patient Group	**n=**	**No. of Ribo-P Positive**	**% Ribo-P Positive**
Autoimmune hepatitis type 1 (AIH-1)	10	0	0.0%
Autoimmune hepatitis type 2 (AIH-2)	40	1	2.5%
Antiphospholipid syndrome (APS)	12	0	0.0%
Atopic dermatitis	16	0	0.0%
Celiac disease (CD)	43	0	0.0%
Crohn's disease (CrD)	20	0	0.0%
Dermatitis herpetiformis (DH)	7	0	0.0%
Drug induced liver injury	9	0	0.0%
Fibromyalgia	8	0	0.0%
Gout	6	0	0.0%
Granulomatosis with polyangiitis (GPA)	19	0	0.0%
Grave's Disease	16	0	0.0%
Hashimoto's thyroiditis (HT)	20	0	0.0%
Idiopathic inflammatory myopathy (IIM)	200	0	0.0%
Infectious Disease	20	0	0.0%
Mixed connective tissue disease (MCTD)	91	1	1.1%
Nodal Osteoarthritis	19	0	0.0%
Primary biliary cholangitis (PBC)	15	0	0.0%
Polymyalgia Rheumatica	13	0	0.0%
Prostate Cancer	15	0	0.0%
Psoriasis	7	0	0.0%
Psoriatic Arthritis	9	0	0.0%
Rheumatoid arthritis (RA)	35	0	0.0%
Sarcoidosis	15	0	0.0%
Sjögrens Syndrome (SjS)	141	1	0.7%
Spondylarthritis	16	0	0.0%
Systemic sclerosis (SSc)	217	0	0.0%
Total Controls	**1039**	**3**	**0.3%**
Systemic lupus erythematosus (SLE)	230	27	11.7%
Total	**230**	**--**	**--**

Clinical sensitivity and specificity for the Aptiva Ribo-P were analyzed in the table below:

Clinical Analysis (n=1269)		Diagnosis			Analysis
		SLE	Controls	Total	(95% confidence interval)
Aptiva Ribo-P	Positive	27	3	30	Sensitivity = 11.7% (8.2 – 16.5%)
	Negative	203	1036	1239	Specificity = 99.7% (99.2 – 99.9%)
	Total	230	1039	1269	

Expected values

The expected value in the normal population is "negative". A panel of 115 apparently healthy blood donors (71 females/44 males, ages 18 to 59 years, with an average and median age of 33 years) were tested on the Aptiva CTD Essential Reagent. The number of positive samples, mean concentration and ranges for each analyte are included in the table below.

Assay	**Number of samples positive**	**Mean concentration**	**Range**
dsDNA	0 (0.0%)	5.84 IU/mL	2.30 – 27.71 IU/mL
RNP	2 (1.7%)	0.97 FLU	0.50 - 31.32 FLU
Sm	0 (0.0%)	0.26 FLU	0.25 – 1.12 FLU
Ro52	1 (0.9%)	0.40 FLU	0.25 – 5.64 FLU
Ro60	2 (1.7%)	2.84 FLU	0.50 – 214.80 FLU
SS-B	0 (0.0%)	0.67 FLU	0.40 – 4.84 FLU
Scl-70	1 (0.9%)	1.14 FLU	0.50 – 6.58 FLU
Jo-1	0 (0.0%)	0.27 FLU	0.25 – 0.77 FLU
Centromere	1 (0.9%)	0.88 FLU	0.50 – 13.83 FLU
Ribo-P	0 (0.0%)	0.29 FLU	0.25 – 1.30 FLU

Comparison with predicate device

Samples for the method comparison analysis included the samples from the clinical validation study. Samples were tested on both the Aptiva CTD Essential Reagent and the predicate devices.

Method comparison of the Aptiva dsDNA with the predicate device (indeterminate as negative):

Method Comparison (N=428)		QUANTA Flash dsDNA			Percent Agreement
		Positive	Negative	Total	(95% confidence interval)
Aptiva dsDNA	Positive	97	25	122	NPA = 91.8% (88.2 – 94.4%)
	Negative	26	280	306	PPA = 78.9% (70.8 – 85.1%)
	Total	123	305	428	TPA = 88.1% (84.7 – 90.8%)

NPA: Negative Percent Agreement; PPA: Positive Percent Agreement; TPA: Total Percent Agreement

Method comparison of the Aptiva dsDNA with the predicate device (indeterminate as positive):

Method Comparison (N=428)		QUANTA Flash dsDNA			Percent Agreement
		Positive	Negative	Total	(95% confidence interval)
Aptiva dsDNA	Positive	113	30	143	NPA = 89.2% (85.0 – 92.3%)
	Negative	37	248	285	PPA = 75.3% (67.9 – 81.5%)
	Total	150	278	428	TPA = 84.3% (80.6 – 87.5%)

NPA: Negative Percent Agreement; PPA: Positive Percent Agreement; TPA: Total Percent Agreement

Method comparison of the Aptiva RNP with the predicate device:

Method Comparison (N=480)		QUANTA Flash RNP			Percent Agreement
		Positive	Negative	Total	(95% confidence interval)
Aptiva RNP	Positive	93	36	129	NPA= 90.6% (87.3 – 93.2%)
	Negative	2	349	351	PPA= 97.9% (92.6 – 99.4%)
	Total	95	385	480	TPA= 92.1% (89.3 – 94.2%)

NPA: Negative Percent Agreement; PPA: Positive Percent Agreement; TPA: Total Percent Agreement

Method comparison of the Aptiva Sm with the predicate device:

Method Comparison (N=418)		Orgentec Sm			Percent Agreement
		Positive	Negative	Total	(95% confidence interval)
Aptiva Sm	Positive	30	7	37	NPA: 98.2% (96.3-99.1%)
	Negative	5	376	381	PPA: 85.7% (70.6 – 93.7%)
	Total	35	383	418	TPA: 97.1% (95.0 – 98.4%)

NPA: Negative Percent Agreement; PPA: Positive Percent Agreement; TPA: Total Percent Agreement

Method comparison of the Aptiva Ro52 with the predicate device:

Method Comparison (N=1028)		QUANTA Flash Ro52			Percent Agreement
		Positive	Negative	Total	(95% confidence interval)
Aptiva Ro52	Positive	203	18	221	NPA = 97.8% (96.6 – 98.6%)
	Negative	5	802	807	PPA = 97.6% (94.5 – 99.0%)
	Total	208	820	1028	TPA = 97.8% (96.7 – 98.5%)

NPA: Negative Percent Agreement; PPA: Positive Percent Agreement; TPA: Total Percent Agreement

Method comparison of the Aptiva Ro60 with the predicate device:

Method Comparison (N=551)		QUANTA Flash Ro60			Percent Agreement
		Positive	Negative	Total	(95% confidence interval)
Aptiva Ro60	Positive	193	29	222	NPA = 91.8% (88.5 – 94.3%)
	Negative	3	326	329	PPA = 98.5% (95.6 – 99.5%)
	Total	196	355	551	TPA = 94.2% (91.9 – 95.9%)

NPA: Negative Percent Agreement; PPA: Positive Percent Agreement; TPA: Total Percent Agreement

Method comparison of the Aptiva SS-B with the predicate device:

Method Comparison (N=550)		QUANTA Flash SS-B			Percent Agreement
		Positive	Negative	Total	(95% confidence interval)
Aptiva SS-B	Positive	88	17	105	NPA = 96.3% (94.1 – 97.7%)
	Negative	3	442	445	PPA = 96.7% (90.8 – 98.9%)
	Total	91	459	550	TPA = 96.4% (94.5 – 97.6%)

NPA: Negative Percent Agreement; PPA: Positive Percent Agreement; TPA: Total Percent Agreement

Method comparison of the Aptiva Scl-70 with the predicate device:

Method Comparison (N=435)		QUANTA Flash Scl-70			Percent Agreement
		Positive	Negative	Total	(95% confidence interval)
Aptiva Scl-70	Positive	64	9	73	NPA = 97.6% (95.4 – 98.7%)
	Negative	3	359	362	PPA = 95.5% (87.6 – 98.5%)
	Total	67	368	435	TPA = 97.2% (95.2 – 98.4%)

NPA: Negative Percent Agreement; PPA: Positive Percent Agreement; TPA: Total Percent Agreement

Method comparison of the Aptiva Jo-1 with the predicate device:

Method Comparison (N=416)		QUANTA Flash Jo-1			Percent Agreement
		Positive	Negative	Total	(95% confidence interval)
Aptiva Jo-1	Positive	24	1	25	NPA = 99.7% (98.6 – 100.0%)
	Negative	1	390	391	PPA = 96.0% (80.5 – 99.3%)
	Total	25	391	416	TPA = 99.5% (98.3 – 99.9%)

NPA: Negative Percent Agreement; PPA: Positive Percent Agreement; TPA: Total Percent Agreement

Method comparison of the Aptiva Centromere with the predicate device:

Method Comparison (N=449)		QUANTA Flash Centromere			Percent Agreement
		Positive	Negative	Total	(95% confidence interval)
Aptiva Centromere	Positive	101	6	107	NPA = 98.3% (96.2 – 99.2%)
	Negative	4	338	342	PPA = 96.2% (90.6 – 98.5%)
	Total	105	344	449	TPA = 97.8% (95.9 – 98.8%)

NPA: Negative Percent Agreement; PPA: Positive Percent Agreement; TPA: Total Percent Agreement

Method comparison of the Aptiva Ribo-P with the predicate device:

Method Comparison (N=387)		QUANTA Lite Ribosomal P			Percent Agreement
		Positive	Negative	Total	(95% confidence interval)
Aptiva Ribo-P	Positive	23	1	24	NPA = 99.7% (98.5 – 100.0%)
	Negative	0	363	363	PPA = 100.0% (85.7 – 100.0%)
	Total	23	364	387	TPA = 99.7% (98.6 – 100.0%)

NPA: Negative Percent Agreement; PPA: Positive Percent Agreement; TPA: Total Percent Agreement