510(k) SUBSTANTIAL EQUIVALENCE DETERMINATION
DECISION SUMMARY
ASSAY AND INSTRUMENT

I Background Information:

A 510(k) Number

K243168

B Applicant

Abbott Laboratories

C Proprietary and Established Names

Alinity i Rubella IgG

D Regulatory Information

Product Code(s)	Classification	Regulation Section	Panel
LFX	Class II	21 CFR 866.3510 - Rubella Virus Serological Reagents	MI - Microbiology

II Submission/Device Overview:

A Purpose for Submission:

To obtain clearance for a new device.

B Measurand:

IgG antibodies to rubella virus.

C Type of Test:

Fully automated chemiluminescent microparticle immunoassay (CMIA)

III Intended Use/Indications for Use:

A Intended Use(s):

The Alinity i Rubella IgG assay is a chemiluminescent microparticle immunoassay (CMIA) used for the quantitative determination of IgG antibodies to rubella virus in human serum, serum separator, and plasma tubes (lithium heparin, lithium heparin separator, and tripotassium EDTA) on the Alinity i system.

The Alinity i Rubella IgG assay is to be used as an aid in the determination of immune status to rubella in individuals including women of child-bearing age.

The Alinity i Rubella IgG assay has not been cleared for use in screening blood, plasma, or tissue donors.

The performance of this device has not been established for cord blood or neonatal samples. Likewise, performance has not been established for populations of immunocompromised or immunosuppressed individuals.

B Indication(s) for Use:

See Intended Use

C Special Conditions for Use Statement(s):

Rx - For Prescription Use Only

D Special Instrument Requirements:

Alinity i system.

IV Device/System Characteristics:

A Device Description:

The Alinity i Rubella IgG assay is a chemiluminescent microparticle immunoassay (CMIA) which requires the use of the Alinity i Rubella IgG Reagent Kit, the Alinity i Rubella IgG Calibrator, and the Alinity i Rubella IgG Controls (positive and negative). Each of these immunoassay components is designed to be used on the Alinity i system and packaged separately.

The Alinity i Rubella IgG Reagent Kit contains:

- Rubella virus-coated microparticles.
- Acridinium-labeled anti-human IgG conjugate.
- Assay diluent.

The Alinity i Rubella IgG Calibrators are described below:

- Calibrator A: Contains recalcified human plasma with protein (ovine) stabilizer.
- Calibrator B – F: Contain recalcified human plasma (reactive for IgG antibodies to rubella virus [anti-rubella IgG]) with protein (ovine) stabilizer.

The target concentrations for the calibrators are provided in the following table.

Calibrator	Anti-Rubella IgG Concentration (IU/mL)
Calibrator A	0.0
Calibrator B	5.5
Calibrator C	16.5
Calibrator D	82.5
Calibrator E	275.0
Calibrator F	550.0

The Alinity i Rubella IgG Controls are described below:

- Negative Control: Contains recalcified human plasma with protein (ovine) stabilizer.
- Positive Control 1 and 2: Contain recalcified human plasma (reactive for anti-rubella IgG) with protein (ovine) stabilizer.

Control	Anti-Rubella IgG	
	Concentration (IU/mL)	Range (IU/mL)
Negative Control	0.0	<4.4
Positive Control 1	30.7	18.5 – 42.9
Positive Control 2	348.8	209.3 – 488.3

B Principle of Operation:

The Alinity i Rubella IgG assay is an automated, two-step immunoassay for the quantitative determination of anti-rubella IgG in human serum and plasma using chemiluminescent microparticle immunoassay (CMIA) technology.

Initially, the sample is mixed with rubella virus-coated paramagnetic microparticles and assay diluent, allowing any anti-rubella IgG present in the sample bind to the rubella virus coated microparticles. After washing, an anti-human IgG acridinium-labeled conjugate is added, followed by further incubation, and washing. The addition of Pre-Trigger and Trigger Solutions initiates a chemiluminescent reaction, which is measured in relative light units (RLU).

The RLU detected by the system's optics directly correlates with the amount of anti-rubella IgG in the sample, enabling quantitative determination of these antibodies. The Alinity i Rubella IgG assay utilizes a 4 Parameter Logistic Curve fit data reduction method (4PLC, Y-weighted) to generate a calibration and results. The cutoff is 10.0 IU/mL. The Alinity i system automatically calculates the analyte concentration of each sample in international units, IU/mL, as presented in in the following tables.

Alinity i Rubella IgG Initial Results

Concentration Values	Instrument Interpretation	Retest Procedure
< 5.0 IU/mL	Nonreactive	No retest required
5.0 to < 10.0 IU/mL	Grayzone/Equivocal	Retest in duplicate using the Alinity i Rubella IgG assay
≥ 10.0 IU/mL	Reactive	No retest required

Alinity i Rubella IgG Final Result Interpretation

Initial Result	Results After Retest	Final Result	Final Interpretation
Nonreactive	No retest required.	Nonreactive	Specimen is considered nonreactive for anti-rubella IgG. Individuals are presumed not to be immune to rubella virus and susceptible to acute infection.
Grayzone/Equivocal	If 2 of the 3 results are < 5.0 IU/mL	Nonreactive	Specimen is considered nonreactive for anti-rubella IgG. Individuals are presumed not to be immune to rubella virus and susceptible to acute infection.
	If 2 of the 3 results are ≥ 5.0 to < 10.0 IU/mL	Grayzone/Equivocal	Specimens may contain low levels of anti-rubella IgG. It is recommended to take a second sample at least 2-3 weeks after the first and to repeat Alinity i Rubella IgG testing to further evaluate immune status.
	If 2 of the 3 results are ≥ 10.0 IU/mL	Reactive	Individuals are presumed to have a previous exposure from vaccination or a recent or prior infection with rubella virus. Individuals are presumed immune to rubella virus.
Reactive	No retest required.	Reactive	Individuals are presumed to have a previous exposure from vaccination or a recent or prior infection with rubella virus. Individuals are presumed immune to rubella virus.

C Instrument Description Information:

1. Instrument Name:

   Alinity i system

2. Specimen Identification:

   Serum, serum separator, and plasma (lithium heparin, lithium heparin separator, and tripotassium EDTA) are the validated specimen types for the Alinity i Rubella IgG Assay.

V Substantial Equivalence Information:

A Predicate Device Name(s):
Vidas Rub Igg

B Predicate 510(k) Number(s):
K080766

C Comparison with Predicate(s):

Device & Predicate Device(s):	**Candidate Device** K243168	**Predicate Device** K080766
Device Trade Name	Alinity i Rubella IgG	bioMérieux VIDAS RUB IgG
General Device Characteristic Similarities		
Intended Use/Indications For Use	The Alinity i Rubella IgG assay is a chemiluminescent microparticle immunoassay (CMIA) used for the quantitative determination of IgG antibodies to rubella virus in human serum, serum separator, and plasma tubes (lithium heparin, lithium heparin separator, and tripotassium EDTA) on the Alinity i system. The Alinity i Rubella IgG assay is to be used as an aid in the determination of immune status to rubella in	The VIDAS RUB IgG (RBG) assay uses Enzyme Linked Fluorescent Assay (ELFA) technology on the VIDAS automated instruments for the *in vitro* quantitative and qualitative measurement of IgG antibodies to rubella virus in human serum. The VIDAS RUB IgG assay is intended as an aid in the determination of immune status to rubella. The performance of this device has not been

	individuals including women of child-bearing age. The Alinity i Rubella IgG assay has not been cleared for use in screening blood, plasma, or tissue donors. The performance of this device has not been established for cord blood or neonatal samples. Likewise, performance has not been established for populations of immunocompromised or immunosuppressed individuals.	established for screening of cord blood, or for neonatal samples. Likewise, performance characteristics of the assay have not been established for immunocompromised or immunosuppressed individuals.
Interpretation of Results	Nonreactive: < 5.0 IU/mL Grayzone/Equivocal: 5.0 to < 10.0 IU/mL Reactive: ≥ 10.0 IU/mL	Negative: < 5 IU/mL Equivocal: 5 to < 10 IU/mL Positive: ≥ 10 IU/mL
Antigen and Antibody Used	• Rubella virus antigen • Anti-human IgG antibody (mouse, monoclonal)	• Rubella virus antigen (Strain MR 383) • Anti-human IgG antibodies (mouse, monoclonal)
General Device Characteristic Differences		
Calibrator(s)	6 Calibrators	1 Calibrator
Control(s)	3 (1 Negative, 2 Positives)	2 (1 Negative, 1 Positive)
Type of Specimen	Serum and Plasma	Serum
Methodology	Chemiluminescent microparticle immunoassay (CMIA)	Enzyme-linked fluorescent assay (ELFA)
Components	Microparticles – Partially purified rubella virus coated microparticles in TRIS buffer with surfactant. Minimum concentration: 0.12% solids. Preservatives: ProClin 950 and sodium azide. Conjugate – Anti-human IgG (mouse, monoclonal) acridinium-labeled conjugate	RBG SPRs – Solid Phase Receptacles (SPR) coated with rubella antigen (Strain MR 383). Ready to use. Conjugate – Alkaline phosphatase labeled monoclonal anti-human IgG antibodies (mouse);

	in MES buffer with protein (bovine) stabilizer and surfactant. Minimum concentration: 16 ng/mL. Preservatives: antimicrobial agents. Assay Diluent – TRIS buffer with protein (caprine, bovine, murine) stabilizers and surfactant. Preservatives: ProClin 300 and ProClin 950.	0.09% sodium azide. Sample Diluent and Wash Solution – TRIS buffer (50 mmol/L) pH 7.4; protein and chemical stabilizers; 0.09% sodium azide.
Calibration Storage	Maximum of 30 days	Maximum of 14 days

VI Standards/Guidance Documents Referenced:

- CLSI EP05-A3 Evaluation of Precision of Quantitative Measurement Procedures; Approved Guideline - Third Edition (Reaffirmed: September 2019).
- CLSI EP06 Evaluation of the Linearity of Quantitative Measurement Procedures - 2nd Edition (2020).
- CLSI EP07 lnterference Testing in Clinical Chemistry; Approved Guideline - 3rd Edition (2018).
- CLSI EP17-A2 Evaluation of Detection Capability for Clinical Laboratory Measurement Procedures; Approved Guideline – 2nd Edition (2012).
- CLSI EP37 Supplemental Tables for Interference Testing in Clinical Chemistry - 1st Edition (2018).
- CLSI EP12-A2 User Protocol for Evaluation of Qualitative Test Performance; Approved Guideline - 2nd Edition (2008).

VII Performance Characteristics (if/when applicable):

A Analytical Performance:

1. Precision/Reproducibility:

Within-Laboratory Precision: A 20-day within-laboratory precision study was performed using 3 lots of the Alinity i Rubella IgG reagents, 3 lots of the Alinity i Rubella IgG Calibrators, 3 lots of the Alinity i Rubella IgG Controls, and 1 Alinity i instrument. Three controls and 7 recalcified human plasma panels were tested in 3 replicates at 2 separate times per day over 20 days using 3 reagent lot/calibrator lot combinations, where a unique reagent lot and a unique calibrator lot are paired. The within-laboratory precision study results are presented below in **Table 1.**

Table 1: Alinity i Rubella IgG Assay Within-Laboratory Precision

Sample	n	Mean (IU/mL)	Repeatability (Within-Run)		Between-Run		Between-Day		Between-Lot[a]		Overall, Within-Laboratory[b]	
			SD	%CV	SD	%CV	SD	%CV	SD	%CV	SD	%CV
Negative Control	360	0.0	0.06	NA[c]	0.00	NA[c]	0.00	NA[c]	0.00	NA[c]	0.06	NA[c]
Positive Control 1	360	30.4	1.04	3.4	0.39	1.3	0.37	1.2	0.94	3.1	1.50	4.9
Positive Control 2	360	342.7	18.14	5.3	7.58	2.2	4.26	1.2	8.55	2.5	21.86	6.4
Panel 1	359[d]	0.0	0.03	NA[c]	0.01	NA[c]	0.02	NA[c]	0.02	NA[c]	0.04	NA[c]
Panel 2	360	3.0	0.14	NA[c]	0.04	NA[c]	0.04	NA[c]	0.19	NA[c]	0.24	NA[c]
Panel 3	358[d]	8.0	0.33	NA[c]	0.08	NA[c]	0.01	NA[c]	0.34	NA[c]	0.49	NA[c]
Panel 4	360	12.6	0.47	3.7	0.17	1.4	0.17	1.4	0.51	4.0	0.73	5.8
Panel 5	360	25.1	1.05	4.2	0.21	0.8	0.00	0.0	0.76	3.0	1.31	5.2
Panel 6	360	234.8	10.98	4.7	5.52	2.3	0.00	0.0	8.22	3.5	14.79	6.3
Panel 7	360	398.1	29.74	7.5	7.18	1.8	0.00	0.0	9.19	2.3	31.94	8.0

[a] Alinity i Rubella IgG reagent lot and Alinity i Rubella IgG calibrator lot are confounded, and the confounding effect is represented by between-lot.

[b] Overall within-laboratory variability contains repeatability (within-run), between-run, between-day, and between-lot variance components.

[c] Not applicable

[d] In cases where n < 360, replicate(s) were excluded due to an instrument error and no results were reported.

Reproducibility Study (multi-site precision): A 5-day reproducibility study was conducted at 3 US sites, using 3 controls and 7 recalcified human plasma panels. Four replicates per sample were evaluated in 2 runs per day over 5 days. Three lots of the Alinity i Rubella IgG reagents, 2 lots of the Alinity i Rubella IgG Calibrators, and 2 lots of the Alinity i Rubella IgG Controls reagents were used across the 3 testing sites.

Table 2: Alinity i Rubella IgG Assay Reproducibility

Sample	n	Mean (IU/mL)	Repeatability		Between-Run		Between-Day		Between-Site		Between-Lot[a]		Reproducibility[b]	
			SD	%CV	SD	%CV	SD	%CV	SD	%CV	SD	%CV	SD	%CV
Negative Control	359[d]	0.0	0.00	NA[c]	0.00	NA[c]	0.00	NA[c]	0.00	NA[c]	0.00	NA[c]	0.00	NA[c]
Positive Control 1	359[d]	29.4	0.89	3.0	0.26	0.9	0.35	1.2	0.13	0.5	0.23	0.8	1.03	3.5
Positive Control 2	360	349.1	15.63	4.5	5.03	1.4	14.66	4.2	4.01	1.1	9.33	2.7	24.25	6.9
Panel 1	360	0.0	0.02	NA[c]	0.00	NA[c]	0.01	NA[c]	0.01	NA[c]	0.01	NA[c]	0.02	NA[c]
Panel 2	359[d]	2.8	0.10	NA[c]	0.07	NA[c]	0.04	NA[c]	0.07	NA[c]	0.01	NA[c]	0.14	NA[c]
Panel 3	360	7.6	0.33	NA[c]	0.04	NA[c]	0.10	NA[c]	0.14	NA[c]	0.09	NA[c]	0.38	NA[c]
Panel 4	360	12.1	0.32	2.6	0.25	2.1	0.18	1.5	0.06	0.5	0.13	1.1	0.47	3.9
Panel 5	360	24.8	0.69	2.8	0.59	2.4	0.27	1.1	0.11	0.5	0.30	1.2	1.00	4.0
Panel 6	360	245.2	10.53	4.3	6.31	2.6	5.68	2.3	1.62	0.7	7.21	2.9	15.41	6.3
Panel 7	356[d]	410.9	22.94	5.6	11.15	2.7	20.94	5.1	8.39	2.0	4.33	1.1	34.32	8.4

[a] Alinity i Rubella IgG reagent lot and Alinity i Rubella IgG calibrator lot are confounded, and the confounding effect is represented by between-lot.

[b] Reproducibility contains repeatability, between-run, between-day, between-site, and between-lot variance components.

[c] Not applicable

[d] In cases where n < 360, replicate(s) were excluded due to an instrument error and no results were reported.

2. Linearity:

The linearity of the Alinity i Rubella IgG assay was evaluated around the cutoff (near LoD to 25 IU/mL) and across the analytical measuring interval supporting linearity across the analytical measuring interval of 1.0 IU/mL to 500 IU/mL.

3. Analytical Specificity/Interference:

a. Potential Cross-Reactivity:

The Alinity i Rubella IgG assay was evaluated for potential cross-reactivity from 126 serum specimens from individuals with other medical conditions unrelated to rubella virus, in addition to specimens from individuals with IgM antibodies to rubella virus. The results are shown in the following table.

Table 3: Alinity i Rubella IgG Assay Cross-Reactivity study

Category	n	Number of Alinity i Rubella IgG Reactive Results	Number of Alinity i Rubella IgG Grayzone/ Equivocal Results
Anti-dsDNA Antibodies	4	0	0
Anti-nuclear Antibody (ANA)	5	0	0
Cytomegalovirus (IgG)	7	0	0
Epstein-Barr Virus (EBV) IgG	5	0	0
HAMA	3	0	1[a]
Hepatitis B Antibodies	10	0	0
Hepatitis C Antibodies	4	0	0
Herpes Simplex Virus Type 1 (IgG)	10	0	0
Herpes Simplex Virus Type 2 (IgG)	5	0	0
Human Immunodeficiency Virus (HIV)	5	0	0
Human Chorionic Gonadotropin	5	0	1[b]
Hyper IgG	5	0	1[b]
Measles (IgG)	7	0	0
Mumps (IgG)	4	0	0
Parvovirus B19 (IgG)	4	0	0
Rheumatoid Factor (RF)	5	0	0
Rubella (IgM)	1	0	0
SARS-CoV-2 IgG	3	0	0
Syphilis	10	0	1[b]
Systemic Lupus Erythematosus	8	0	0
Toxoplasmosis (IgG)	6	0	0
Varicella Zoster Virus (IgG)	10	0	0
Total	126	0	4

[a] Positive result obtained on the comparator assay.

[b] Equivocal results obtained on the comparator assay.

b. Potentially Interfering Endogenous Substances:

The Alinity i Rubella IgG assay was evaluated for potential interference caused by endogenous substances using samples containing anti-rubella IgG at the target ranges of 5.0 to 9.9 IU/mL and 10.0 to 20.0 IU/mL. No significant interference (interference within ± 1.0 IU/mL for samples < 10.0 IU/mL and within ± 10% for samples ≥ 10.0 IU/mL) was observed at the following concentration:

Table 4: Endogenous Interfering Substances Evaluated

Substance	Concentrations tested
Conjugated Bilirubin	40 mg/dL
Unconjugated Bilirubin	40 mg/dL
Hemoglobin	1000 mg/dL
Total Protein	15 g/dL
Triglycerides	3000 mg/dL

c. Potentially Interfering Drugs and Other Substances:

The Alinity i Rubella IgG assay was evaluated for potential interference caused by exogenous substances using samples containing anti-rubella IgG at the target ranges of 5.0 to 9.9 IU/mL and 10.0 to 20.0 IU/mL. No significant interference was observed at the following concentration:

Table 5: Exogenous Interfering Substances Evaluated

Substance	Concentrations tested
Acetaminophen	250 mg/L
Acetylsalicylic Acid	1000 mg/L
Ascorbic Acid	300 mg/L
Biotin	4250 ng/mL
Folic Acid	100 nmol/L
Ibuprofen	500 mg/L

4. Assay Reportable Range:

The Alinity i Rubella IgG assay has the following ranges:

1. AMI (Analytical Measuring Interval): 1.0 to 500.0 IU/mL
2. EMI (Extended Measuring Interval): 500.0 to 1300.0 IU/mL
3. Reportable Interval: 1.0 to 1300.0 IU/mL

5. Traceability, Stability, Expected Values (Controls, Calibrators, or Methods):

Not Applicable.

6. Detection Limit:

The limit of blank (LoB), limit of detection (LoD), and limit of quantitation (LoQ) for Alinity i Rubella IgG assay were evaluated using 3 lots of the Alinity i Rubella IgG reagents on each of 2 instruments over a minimum of 3 days.

Table 6: Lower Limits of Measurement

	IU/mL
LoB[a]	0.1
LoD[b]	0.3
LoQ[c]	0.7

[a] The LoB represents the 95th percentile from n ≥ 60 replicates of zero-analyte samples.

[b] The LoD represents the lowest concentration at which the analyte can be detected with 95% probability based on n ≥ 60 replicates of low-analyte level samples.

[c] The LoQ is defined as the lowest concentration at which a maximum allowable precision of 20 %CV and a maximum allowable bias of 15% were independently met. The LoQ was determined from n ≥ 60 replicates of low-analyte level samples.

7. Assay Cut-Off:

Not Applicable.

8. Accuracy (Instrument):

Not Applicable.

B Comparison Studies:

1. Method Comparison with Predicate Device:

Clinical Agreement:
A clinical method comparison study was conducted to evaluate the clinical performance of the Alinity i Rubella IgG assay using specimens collected from individuals included in the following categories:

- The Routine Order category was comprised of consecutively collected remnant specimens from individuals (non-pregnant) with a physician's routine order for anti-rubella IgG, including specimens collected in the US (n=946) and outside of the US (OUS) (n=457).
- The Pregnant Females (US) category was comprised of 435 specimens collected from pregnant females in the US.
- The Supplemental Preselected Negative Pregnant Female category was comprised of specimens that were additionally obtained to supplement the small number of negative subjects in the Pregnant Females (US) category. These specimens were from pregnant

females who had a negative anti-rubella IgG test result with the comparator assay. They were collected in the US (n=52) and outside of the US (OUS) (n=59).

- The Preselected Negative (OUS) category was comprised of 135 consecutively collected remnant specimens from individuals (non-pregnant) with a physician's routine order for anti-rubella IgG and a negative anti-rubella IgG test result.

Demographic information for specimens from the intended use population collected in the US (n=1433) is shown in the following table.

Table 7: Subject Demographics (US specimens)

Specimen	Age	Female (n)	Male (n)	Unknown (n)	Total (n)
Routine Order (US) (n=946)	≤ 5 years	1	1	0	2
	6 to 21 years	92	29	0	121
	22 to 59 years	666	121	3	790
	≥ 60 years	17	16	0	33
	Total	776	167	3	946
Pregnant Females (US) (n=435)	≤ 5 years	0	0	0	0
	6 to 21 years	28	0	0	28
	22 to 59 years	404	0	0	404
	≥ 60 years	0	0	0	0
	Unknown	3	0	0	3
	Total	435	0	0	435
Supplemental Preselected Negative Pregnant Females (US) (n=52)	≤ 5 years	0	0	0	0
	6 to 21 years	5	0	0	5
	22 to 59 years	47	0	0	47
	≥ 60 years	0	0	0	0
	Total	52	0	0	52
Total (US) (n=1433)	≤ 5 years	1	1	0	2
	6 to 21 years	125	29	0	154
	22 to 59 years	1117	121	3	1241
	≥ 60 years	17	16	0	33
	Unknown	3	0	0	3
	Total	1263	167	3	1433

The clinical performance of the Alinity i Rubella IgG assay was evaluated comparing the results of the Alinity i Rubella IgG assay and the results of a composite comparator method comprised of 3 FDA-cleared anti-rubella IgG assays. Specimens with initially equivocal results on the comparator device (5 to < 10 IU/mL) were tested with 2 additional FDA-cleared devices, and the final 2 out of 3 consensus results were used for performance evaluation. The positive percent agreement (PPA) and negative percent agreement (NPA) between the Alinity i Rubella IgG investigational assay and the composite comparator method anti-rubella IgG assays were calculated.

The PPA and NPA for each specimen category are shown in the following 3 by 3 table.

Table 8: Alinity i Rubella IgG Clinical Performance

Specimen Category	Alinity i Rubella IgG Result[a]	Composite Comparator Anti-Rubella IgG Result			PPA (95% CI)[b]	NPA (95% CI)[b]
		Positive	Equivocal	Negative		
Routine Order (US) (n=946)	Reactive	822	2	0	93.94 (822/875) (92.16, 95.34)	86.67 (26/30) (70.32, 94.69)
	Grayzone/ Equivocal	36	41	2		
	Nonreactive	4	13	26		
Routine Order (OUS) (n=457)	Reactive	378	3	0	97.42 (378/388) (95.32, 98.59)	88.37 (38/43) (75.52, 94.93)
	Grayzone/ Equivocal	9	26	2		
	Nonreactive	0	1	38		
Pregnant Females (US) (n=435)	Reactive	360	2	0	93.02 (360/387) (90.04, 95.16)	77.78 (14/18) (54.79, 91.00)
	Grayzone/ Equivocal	17	30	2		
	Nonreactive	1	9	14		
Supplemental Preselected Negative Pregnant Females (US) (n=52)	Reactive	0	0	0	NA[c]	100.00 (52/52) (93.12, 100.00)
	Grayzone/ Equivocal	0	0	0		
	Nonreactive	0	0	52		
Supplemental Preselected Negative Pregnant Females (OUS) (n=59)	Reactive	0	0	1[d]	NA[c]	98.31 (58/59) (91.00, 99.70)
	Grayzone/ Equivocal	0	0	0		
	Nonreactive	0	0	58		
Preselected Negative (OUS) (n=135)	Reactive	0	0	0	0.00 (0/5) (0.00, 43.45)	99.23 (129/130) (95.77, 99.86)
	Grayzone/ Equivocal	0	0	1		
	Nonreactive	3	2	129		

[a] The interpretation for Alinity i Rubella IgG results is ≥ 10.0 IU/mL for reactive, 5.0 to < 10.0 IU/mL for grayzone/equivocal, and < 5.0 IU/mL for nonreactive.
[b] The 95% confidence intervals (CIs) for PPA and NPA were estimated using the Wilson score method.
[c] Not applicable
[d] One sample was discordant between Alinity i Rubella IgG (19.0 IU/mL) and the comparator (4 IU/mL). After retesting, the results with Alinity i Rubella IgG were 18.4 and 18.5 IU/mL, and the results with the comparator were 24 and 26 IU/mL.

An additional assessment of the PPA and NPA between the Alinity i Rubella IgG assay and the composite comparator, relative to the medical decision point of 10 IU/mL antibody level considered to provide immunity from rubella infection, is provided in the following 2 by 2 table.

Table 9: Clinical Performance relative to the medical decision point of 10 IU/mL

Specimen Category	Alinity i Rubella IgG Result (IU/mL)[a]	Composite Comparator Anti-Rubella IgG Result		PPA (95% CI)[b]	NPA (95% CI)[b]
		Positive	Negative or Equivocal		
Routine Order (US) (n=946)	≥ 10.0	822	2	95.36 (822/862) (93.74, 96.57)	97.62 (82/84) (91.73, 99.34)
	< 10.0	40	82		
Routine Order (OUS) (n=457)	≥ 10.0	378	3	97.67 (378/387) (95.64, 98.77)	95.71 (67/70) (88.14, 98.53)
	< 10.0	9	67		
Pregnant Females (US) (n=435)	≥ 10.0	360	2	95.24 (360/378) (92.60, 96.97)	96.49 (55/57) (88.08, 99.03)
	< 10.0	18	55		
Supplemental Preselected Negative Pregnant Females (US) (n=52)	≥ 10.0	0	0	NA[c]	100.00 (52/52) (93.12, 100.00)
	< 10.0	0	52		
Supplemental Preselected Negative Pregnant Females (OUS) (n=59)	≥ 10.0	0	1	NA[c]	98.31 (58/59) (91.00, 99.70)
	< 10.0	0	58		
Preselected Negative (OUS) (n=135)	≥ 10.0	0	0	0.00 (0/3) (0.00, 56.15)	100.00 (132/132) (97.17, 100.00)
	< 10.0	3	132		

[a] The interpretation for Alinity i Rubella IgG results is ≥ 10.0 IU/mL for reactive and < 10.0 IU/mL for grayzone/equivocal and nonreactive.
[b] The 95% CIs for PPA and NPA were estimated using the Wilson score method.
[c] Not applicable

CDC Panel Agreement:

The Centers for Disease Control and Prevention (CDC) Rubella Reference Sera Panel (collected in 2014) was tested using the Alinity i Rubella IgG assay. The Alinity i Rubella IgG assay results were submitted to the CDC for data analysis and for the result interpretation for each sample. The panel consisted of 82 true positive rubella specimens and 18 true negative rubella specimens. Out of the 82 positive specimens, the Alinity i Rubella IgG assay detected 77 as reactive and 5 as equivocal, while all 18 negative specimens were detected as nonreactive. The CDC performed kit sensitivity (PPA) and kit specificity (NPA) analyses and sent the results to Abbott.

The percent agreement of the Alinity i Rubella IgG assay relative to the CDC results was calculated. The PPA was 93.9% with a 95% CI of 86.51% to 97.37%. The NPA was 100.0% with a 95% CI of 82.41% to 100.00%.

The results are presented as a means to convey further information on the performance of this assay with a masked, characterized serum panel. This does not imply endorsement of the assay by the CDC.

Table 10: CDC Panel Agreement Results

Alinity i Rubella IgG Interpretation	CDC Interpretation		Positive % Agreement (95% CI)[a]	Negative % Agreement (95% CI)[a]
	Positive	Negative		
Reactive	77	0	93.9 (77/82) (86.51, 97.37)	100.0 (18/18) (82.41, 100.00)
Grayzone/Equivocal	5	0		
Nonreactive	0	18		

[a] The 95% CIs for PPA and NPA were estimated using the Wilson score method.

CDC Low Titer Standard

The ability of the Alinity i Rubella IgG assay to detect and measure low levels of anti-rubella IgG was verified by testing the CDC Low-Titer Anti-Rubella Human Reference Serum - CDC Biological Standard (catalog number: IS2153 at 21.0 IU/mL). The mean concentration was 18.2 IU/mL for the resuspended CDC low titer standard and 8.6 IU/mL for the 1:2 dilution of the standard.

2. Matrix Equivalency:

A study was performed to evaluate whether specific blood collection tube types are suitable for use with the Alinity i Rubella IgG assay. Specimens from 42 donors were obtained in 5 types of blood collection tubes: serum (control tube type), serum separator, lithium heparin, lithium heparin separator, and tripotassium EDTA tubes. Data was analyzed using regression analysis comparing concentrations of all matrices to serum. All the blood collection tube types tested are acceptable for use with the Alinity I Rubella IgG assay. Statistical evaluation data are summarized below.

Table 11: Alinity i Rubella IgG Matrix Equivalency

Collection Tube	Slope (95% CI) (IU/mL)	Intercept (95% CI) (IU/mL)	Correlation Coefficient (r)
Serum separator	1.01 (0.98, 1.02)	-0.3 (-0.5, 0.2)	1.00
Lithium heparin plasma	0.99 (0.97, 1.01)	-0.1 (-0.5, 0.2)	1.00
Lithium heparin plasma separator	1.00 (0.97, 1.02)	-0.2 (-0.7, 0.1)	1.00
Tripotassium EDTA plasma	0.96 (0.94, 0.98)	-0.1 (-0.4, 0.0)	1.00

C Clinical Studies:

1. Clinical Sensitivity:

   Not Applicable.

2. Clinical Specificity:

   Not Applicable.

3. Other Clinical Supportive Data (When 1. and 2. Are Not Applicable):

   Not Applicable.

D Clinical Cut-Off:

Not Applicable.

E Expected Values/Reference Range:

Not Applicable.

F Other Supportive Instrument Performance Characteristics Data:

Not Applicable.

VIII Proposed Labeling:

The labeling supports the finding of substantial equivalence for this device.

IX Conclusion:

The submitted information in this premarket notification is complete and supports a substantial equivalence decision.