EVALUATION OF AUTOMATIC CLASS III DESIGNATION FOR VITROS Immunodiagnostic Products Anti-SARS-CoV-2 IgG Reagent Pack, VITROS Immunodiagnostic Products Anti-SARS-CoV-2 IgG Calibrator DECISION SUMMARY

I Background Information:

A De Novo Number

DEN210038

B Applicant

Ortho-Clinical Diagnostics, Inc.

C Proprietary and Established Names

VITROS Immunodiagnostic Products Anti-SARS-CoV-2 IgG Reagent Pack, VITROS Immunodiagnostic Products Anti-SARS-CoV-2 IgG Calibrator

D Regulatory Information

Product Code(s)	Classification	Regulation Section	Panel
QVP	Class II	21 CFR 866.3983 - SARS-CoV-2 serology test	MI - Microbiology

II Submission/Device Overview:

A Purpose for Submission:

De Novo request for evaluation of automatic class II designation for the VITROS Immunodiagnostic Products Anti-SARS-CoV-2 IgG test comprised of (1) the VITROS Immunodiagnostic Products Anti-SARS-CoV-2 IgG Reagent Pack, (2) the VITROS Immunodiagnostic Products Anti-SARS-CoV-2 IgG Calibrator, and (3) the VITROS Immunodiagnostic Products Anti-SARS-CoV-2 IgG Controls.

B Measurand:

IgG antibodies to SARS-CoV-2 in human serum, K_2-EDTA plasma, and K_3-EDTA plasma.

C Type of Test:

Chemiluminescent Immunoassay.

III Indications for Use:

A Indication(s) for Use:

Rx ONLY

For in vitro diagnostic and laboratory professional use.

VITROS Immunodiagnostic Products Anti-SARS-CoV-2 IgG Reagent Pack

The VITROS Immunodiagnostic Products Anti-SARS-CoV-2 IgG Reagent Pack when used in combination with the VITROS Immunodiagnostic Products Anti-SARS-CoV-2 IgG Calibrator is a chemiluminescent immunoassay intended for the qualitative detection of IgG antibodies to SARS-CoV-2 in human serum and plasma (K2-EDTA and K3-EDTA) samples collected on or after 15 days post-symptom onset using the VITROS ECi/ECiQ/3600 Immunodiagnostic Systems and the VITROS 5600/XT 7600 Integrated Systems. The VITROS Immunodiagnostic Products Anti-SARS-CoV-2 IgG test is intended for use as an aid in identifying individuals with an adaptive immune response to SARS-CoV-2, indicating recent or prior infection.

VITROS Immunodiagnostic Products Anti-SARS-CoV-2 IgG Calibrator

For use in the calibration of the VITROS ECi/ECiQ/3600 Immunodiagnostic Systems and the VITROS 5600/XT 7600 Integrated Systems for the in vitro qualitative detection of IgG antibodies to SARS-CoV-2 in human serum and plasma.

B Special Conditions for Use Statement(s):

Rx - For Prescription Use Only

C Special Instrument Requirements:

The VITROS Immunodiagnostic Products Anti-SARS-CoV-2 IgG Reagent Pack when used in combination with the VITROS Immunodiagnostic Products Anti-SARS-CoV-2 IgG Calibrators uses the following VITROS Systems (instruments):

- VITROS ECi/ECiQ Immunodiagnostic Systems
- VITROS 3600 Immunodiagnostic Systems
- VITROS 5600 Integrated Systems
- VITROS XT 7600 Integrated Systems

These VITROS systems were cleared previously as part of premarket notifications: K962919, K083173, K081543, and K182063 respectively.

IV Device/System Characteristics:

A Device Description:

The VITROS Immunodiagnostic Products Anti-SARS-CoV-2 IgG test is a qualitative chemiluminescent immunoassay performed on the VITROS Systems (VITROS ECi/ECiQ Immunodiagnostic System, VITROS 3600 Immunodiagnostic System, VITROS 5600 Integrated

System and VITROS XT 7600 Integrated System) providing fully automated random-access testing.

The VITROS Immunodiagnostic Products Anti-SARS-CoV-2 IgG test is performed using the VITROS Immunodiagnostic Products Anti-SARS-CoV-2 IgG Reagent Pack in combination with the VITROS Immunodiagnostic Products Anti-SARS-CoV-2 IgG Calibrator and the VITROS Immunodiagnostic Products Anti-SARS-CoV-2 IgG Controls on the VITROS Systems.

The VITROS Immunodiagnostic Products Anti-SARS-CoV-2 IgG Reagent Pack is supplied as ready to use and contains:

- 100 wells coated with 100ng/well of recombinant SARS-CoV-2 spike antigen derived from human cells.
- 18.0 mL assay reagent (buffer with bovine protein stabilizers and antimicrobial agent)
- 20.4 mL conjugate reagent [anti-human IgG (murine monoclonal) conjugated to horseradish peroxidase, 5ng/mL] in buffer with bovine protein stabilizers and antimicrobial agent.

The VITROS Immunodiagnostic Products Anti-SARS-CoV-2 IgG Calibrator contains:

- 2 vials of VITROS Immunodiagnostic Products Anti-SARS-CoV-2 IgG Calibrator (anti-SARS-CoV-2 IgG in anti-SARS-CoV-2 IgG negative human serum with antimicrobial agent, 1 mL)
- Lot calibration card
- Protocol card
- 8 calibrator bar code labels

The VITROS Immunodiagnostic Products Anti-SARS-CoV-2 IgG Controls contain:

- 3 sets of VITROS Immunodiagnostic Products Anti-SARS-CoV-2 IgG Controls 1 and 2 (defibrinated human plasma with anti-microbial agent, 2 mL). Control 1 is non-reactive and Control 2 is reactive

The VITROS Immunodiagnostic Products Anti-SARS-CoV-2 IgG test is designed for use on the VITROS Systems. The VITROS Systems use the following ancillary reagents (general purpose reagents):

- VITROS Immunodiagnostic Products Signal Reagent
- VITROS Immunodiagnostic Products Universal Wash Reagent

B Principle of Operation

The VITROS Immunodiagnostic Products Anti-SARS-CoV-2 IgG test is performed using the VITROS Immunodiagnostic Products Anti-SARS-CoV-2 IgG Reagent Pack and the VITROS Immunodiagnostic Products Anti-SARS-CoV-2 IgG Calibrator on the VITROS ECi/ECiQ/3600 Immunodiagnostic Systems and the VITROS 5600/XT 7600 Integrated Systems. An immunometric technique is used; this involves a two-stage reaction. In the first stage antibodies to SARS-CoV-2 present in the sample bind with SARS-CoV-2 spike protein coated on the well. Unbound sample is removed by washing. In the second stage horseradish peroxidase (HRP)-labeled murine monoclonal anti-human IgG antibodies are

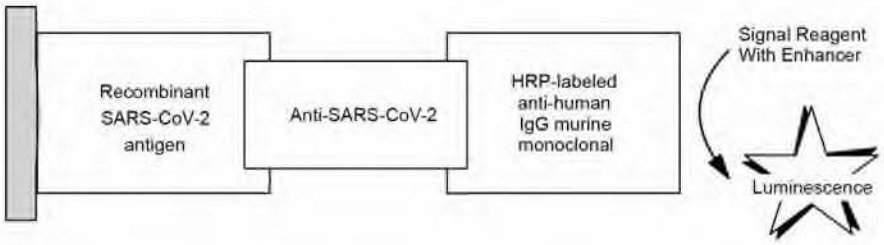
added in the conjugate reagent. The conjugate binds specifically to the antibody portion of the antigen-antibody complex. If complexes are not present, the unbound conjugate is removed by the subsequent wash step.

The bound HRP conjugate is measured by a luminescent reaction. A reagent containing luminogenic substrates (a luminol derivative and a peracid salt) and an electron transfer agent is added to the wells. The HRP in the bound conjugate catalyzes the oxidation of the luminol derivative, producing light. The electron transfer agent (a substituted acetanilide) increases the level of light produced and prolongs its emission. The light signals are read by the system.

Test Type	System *	Incubation Time	Time to first result	Test Temperature	Reaction Sample Volume
Immunometric	ECi/ECiQ, 3600, 5600, XT 7600	37 minutes	48 minutes	37 °C	20 µL

* Not all products and systems are available in all countries.

Figure 1: Reaction Scheme



C Instrument Description Information

1. Instrument Name:
   VITROS Systems (instruments):
   - VITROS ECi/ECiQ Immunodiagnostic System
   - VITROS 3600 Immunodiagnostic System
   - VITROS 5600 Integrated System
   - VITROS XT 7600 Integrated System.

2. Specimen Identification:

   Not applicable

3. Specimen Sampling and Handling:

   Specimen Sampling:
   The specimens recommended for this assay are:
   - Serum
   - K_2-EDTA Plasma
   - K_3-EDTA Plasma

Specimen Handling and Storage:

- Specimens may be stored for up to 24 hours at room temperature (15 – 30°C) or 7 days at 2 – 8°C.
- Specimens may be stored frozen at ≤ -20°C for ≤4 weeks.
- Specimens may be subjected to up to one freeze-thaw cycles.

4. Calibration:

The VITROS Immunodiagnostic Products Anti-SARS-CoV-2 IgG Calibrator is provided together with the VITROS Immunodiagnostic Products Anti-SARS-CoV-2 IgG Reagent Pack.

The VITROS Immunodiagnostic Products Anti-SARS-CoV-2 IgG Calibrator contains anti-SARS-CoV-2 IgG in human serum. In addition, the calibrator contains the lot calibration card, protocol card and 8 calibrator bar code labels.

Calibration is lot-specific; reagent packs and calibrators are linked by lot number. Reagent packs from the same lot may use the same calibration. The calibrator is supplied frozen. The analyzer automatically processes the VITROS Immunodiagnostic Products Anti-SARS-CoV-2 IgG Calibrator in duplicate. Results are calculated as a normalized signal, relative to a cutoff value. During the calibration process a lot-specific parameter is used to determine a valid stored cutoff value for the VITROS Immunodiagnostic and VITROS Integrated Systems.

The VITROS Immunodiagnostic Products Anti-SARS-CoV-2 IgG test should be calibrated:

- When the reagent pack and calibrator lot changes
- Every 28 days
- After specified service procedures have been performed
- If quality control results are consistently outside of the acceptable range.

5. Quality Control:

The VITROS Immunodiagnostic Products Anti-SARS-CoV-2 IgG Controls are provided separately from the VITROS Immunodiagnostic Products Anti-SARS-CoV-2 IgG Reagent Pack, and contains:

- *Control 1:* Anti-SARS-CoV-2 IgG non-reactive human serum or defibrinated plasma.
- *Control 2:* Anti-SARS-CoV-2 IgG reactive human serum or defibrinated plasma.

Quality Control Procedure

- To verify system performance, analyze control materials:
  - After calibration
  - If the system is turned off for more than 2 hours
  - After reloading reagent packs that have been removed from the MicroWell Supply and stored for later use
  - According to local regulations or at least once each day that the test is performed

- After specified service procedures are performed
- If controls results fall outside the acceptance range, investigate the cause before deciding whether to report patient results.

V Standards/Guidance Documents Referenced:

CLSI EP05-A3 Evaluation of Precision of Quantitative Measurement Procedures; Approved Guideline – Third Edition
CLSI EP07 Interference testing in Clinical Chemistry
CLSI EP09 Measurement Procedure Comparison and Bias Estimation Using Patient Samples. Third Edition (2016).
CLSI EP35 Assessment of Equivalence or Suitability of Specimen Type for Medical Laboratory measurement Procedure
CLSI EP37 Supplemental Tables for Interference Testing in Clinical Chemistry

VI Performance Characteristics:

A Analytical Performance:

1. Precision/Reproducibility:

A. Within-Laboratory Precision: The within laboratory precision of the VITROS Immunodiagnostic Products Anti-SARS-CoV-2 IgG test was evaluated with EDTA plasma pools samples (PP4, PP5, and PP6), negative and positive quality control materials (PP1, PP2), and the calibrator (PP3) on the VITROS ECi/ECiQ and 3600 Immunodiagnostics Systems and the VITROS 5600 and XT7600 Integrated Systems following the CLSI document EP05-A3. A total of 3 lots of reagent packs, calibrators and controls were included in the study. For each reagent lot, operators ran two replicates of each precision panel sample on two occasions per day for twenty non-consecutive days.

The data presented are a representation of test performance and are provided as a guideline. Variables such as sample handling and storage, reagent handling and storage, laboratory environment, and system maintenance can affect reproducibility of test results.

Each precision panel was tested in duplicate, in two runs per day, on 20 non-consecutive days, on each instrument for a total of 80 observations per sample and lot. The study included three reagent lots and was evaluated within a single calibration cycle (2 replicates x 2 runs x 20 days x 3 lots= 240 observations total). The VITROS Anti-SARS-CoV-2 IgG's total precision %CV (from the "total" standard deviation) for the S/C values ranged from 3.4% - 32.2%, depending upon the sample and instrument.

Table 1. Within-Laboratory Precision Study Data Summary (for all 4 VITROS analyzers).

VITROS System	Panel member	Number of Observ.	Grand Mean (S/C)	Repeatability (Within Run)		Between-Run		Between-Day		Between-Lot		Within-Laboratory	
				SD	CV(%)	SD	CV(%)	SD	CV(%)	SD	CV(%)	SD	CV(%)
ECi/ ECiQ	PP1	240	0.00	0.000	N/A	0.000	N/A	0.000	N/A	0.001	N/A	0.001	N/A
	PP2	240	0.92	0.018	2.0	0.024	2.6	0.034	3.7	0.030	3.3	0.054	5.9

	PP3	240	0.25	0.007	N/A	0.011	N/A	0.011	N/A	0.013	N/A	0.022	N/A
	PP4	240	0.94	0.027	2.9	0.032	3.4	0.033	3.5	0.091	9.7	0.106	11.3
	PP5	240	3.25	0.086	2.6	0.062	1.9	0.084	2.6	0.169	5.2	0.216	6.6
	PP6	240	7.62	0.063	0.8	0.076	1.0	0.112	1.5	0.208	2.7	0.257	3.4
3600	PP1	240	0.00	0.000	N/A	0.000	N/A	0.001	N/A	0.002	N/A	0.002	N/A
	PP2	240	1.18	0.024	2.0	0.025	2.1	0.021	1.8	0.240	20.3	0.243	20.6
	PP3	240	0.32	0.007	N/A	0.008	N/A	0.006	N/A	0.078	N/A	0.079	N/A
	PP4	240	1.18	0.028	2.4	0.034	2.9	0.033	2.8	0.376	31.9	0.380	32.2
	PP5	240	3.94	0.083	2.1	0.092	2.3	0.072	1.8	1.064	27.0	1.073	27.2
	PP6	240	8.56	0.099	1.2	0.099	1.2	0.105	1.2	1.610	18.8	1.619	18.9
5600	PP1	240	0.00	0.000	N/A	0.000	N/A	0.000	N/A	0.001	N/A	0.001	N/A
	PP2	240	1.03	0.020	1.9	0.027	2.6	0.027	2.6	0.058	5.6	0.072	7.0
	PP3	240	0.28	0.006	N/A	0.010	N/A	0.007	N/A	0.025	N/A	0.028	N/A
	PP4	240	1.02	0.026	2.5	0.036	3.5	0.026	2.5	0.140	13.7	0.149	14.6
	PP5	240	3.43	0.073	2.1	0.074	2.2	0.095	2.8	0.288	8.4	0.321	9.4
	PP6	240	7.51	0.097	1.3	0.105	1.4	0.119	1.6	0.276	3.7	0.333	4.4
XT 7600	PP1	240	0.00	0.000	N/A	0.000	N/A	0.000	N/A	0.001	N/A	0.001	N/A
	PP2	240	1.21	0.043	3.6	0.042	3.5	0.016	1.3	0.153	12.6	0.165	13.6
	PP3	240	0.32	0.009	N/A	0.009	N/A	0.010	N/A	0.052	N/A	0.055	N/A
	PP4	240	1.19	0.034	2.9	0.042	3.5	0.037	3.1	0.239	20.1	0.248	20.8
	PP5	240	3.94	0.078	2.0	0.093	2.4	0.088	2.2	0.604	15.3	0.622	15.8
	PP6	240	8.46	0.113	1.3	0.117	1.4	0.098	1.2	0.896	10.6	0.916	10.8

N/A: Not Applicable, %CV is not meaningful for S/C results <0.5.

B. Reproducibility (Between-Laboratory Precision): The reproducibility of the VITROS Immunodiagnostic Products Anti-SARS-CoV-2 IgG test was determined with EDTA plasma pools samples (GRP4, GRP5, and GRP6), quality controls (GRP1 and GRP2) and customer calibrator (GRP3) using the VITROS ECi/ECiQ and 3600 Immunodiagnostics Systems, and the VITROS 5600 and XT7600 Integrated Systems. Samples were measured in triplicate using 3 reagent lots, in 2 runs per day over 5 days at 3 sites, according to CLSI EP05-A3. Variance components were calculated. The VITROS Anti-SARS-CoV-2 IgG test total reproducibility %CV (from the "total" standard deviation) for the S/C values ranged from 6.1% - 22.8%, depending upon the sample and instrument. The following results were observed per analyzer:

Table 2. Reproducibility of VITROS Immunodiagnostic Products Anti-SARS-CoV-2 IgG test evaluated on VITROS ECi/ECiQ Immunodiagnostic Systems

Panel Member	Number of Observ.	Grand Mean (S/C)	Repeatability (Within Run)		Between Run		Between Day		Between Lot[a]		Within-Laboratory[b]		Between-Site[c]		Reproducibility (Overall)[d]	
			SD	CV (%)	SD	CV (%)	SD	CV (%)	SD	CV (%)	SD	CV (%)	SD	CV (%)	SD	CV (%)
GRP1	270	0.01	0.002	N/A+	0.000	N/A+	0.000	N/A+	0.003	N/A+	0.003	N/A+	0.003	N/A+	0.006	N/A+
GRP2	270	0.98	0.058	5.9	0.000	0.0	0.021	2.2	0.000	0.0	0.062	6.3	0.018	1.8	0.095	9.6
GRP3	270	0.28	0.016	N/A+	0.007	N/A+	0.010	N/A+	0.021	N/A+	0.029	N/A+	0.000	N/A+	0.034	N/A+
GRP4	270	1.08	0.059	5.5	0.011	1.0	0.035	3.2	0.206	19.2	0.217	20.2	0.000	0.0	0.225	21.0
GRP5	270	3.59	0.164	4.6	0.040	1.1	0.071	2.0	0.479	13.3	0.513	14.3	0.024	0.7	0.545	15.2
GRP6	270	7.84	0.220	2.8	0.000	0.0	0.091	1.2	0.425	5.4	0.487	6.2	0.311	4.0	0.665	8.5

[a] Between lot: Variability of the test performance from lot to lot.

[b] Within-Laboratory variability contains the Within Run, Between Run, Between Day and Between Lot variance components.
[c] Between site: Variability of the test performance from site to site.
[d] Reproducibility: Variability of the test incorporating factors of site, lot, run and day.
[+] % CVs are not meaningful for S/C results < 0.50.

Table 3. Reproducibility of VITROS Immunodiagnostic Products Anti-SARS-CoV-2 IgG test evaluated on VITROS 3600 Immunodiagnostic Systems

PanelMember	Number of Observ.	Grand Mean (S/C)	Repeatability (Within Run)		Between Run		Between Day		Between Lot[a]		Within-Laboratory[b]		Between-Site[c]		Reproducibility (Overall)[d]	
			SD	CV (%)	SD	CV (%)	SD	CV (%)	SD	CV (%)	SD	CV (%)	SD	CV (%)	SD	CV (%)
GRP1	270	0.00	0.001	N/A+	0.000	N/A+	0.001	N/A+	0.001	N/A+	0.002	N/A+	0.001	N/A+	0.002	N/A+
GRP2	270	1.05	0.046	4.4	0.000	0.0	0.029	2.8	0.051	4.9	0.074	7.1	0.010	1.0	0.089	8.5
GRP3	270	0.29	0.012	N/A+	0.003	N/A+	0.012	N/A+	0.026	N/A+	0.032	N/A+	0.008	N/A+	0.038	N/A+
GRP4	270	1.08	0.043	4.0	0.012	1.1	0.017	1.5	0.230	21.4	0.235	21.9	0.033	3.1	0.245	22.8
GRP5	270	3.57	0.108	3.0	0.040	1.1	0.049	1.4	0.575	16.1	0.588	16.5	0.082	2.3	0.615	17.3
GRP6	270	7.53	0.132	1.8	0.031	0.4	0.055	0.7	0.445	5.9	0.468	6.2	0.000	0.0	0.509	6.8

[a] Between lot: Variability of the test performance from lot to lot.
[b] Within-Laboratory variability contains the Within Run, Between Run, Between Day and Between Lot variance components.
[c] Between site: Variability of the test performance from site to site.
[d] Reproducibility: Variability of the test incorporating factors of site, lot, run and day.
[+] %CVs are not meaningful for S/C results < 0.50

Table 4. Reproducibility of VITROS Immunodiagnostic Products Anti-SARS-CoV-2 IgG test evaluated on VITROS 5600 Integrated Systems

PanelMember	Number of Observ.	Grand Mean (S/C)	Repeatability (Within Run)		Between Run		Between Day		Between Lot[a]		Within-Laboratory[b]		Between-Site[c]		Reproducibility (Overall)[d]	
			SD	CV (%)	SD	CV (%)	SD	CV (%)	SD	CV (%)	SD	CV (%)	SD	CV (%)	SD	CV (%)
GRP1	270	0.00	0.000	N/A+	0.000	N/A+	0.001	N/A+	0.001	N/A+	0.001	N/A+	0.002	N/A+	0.002	N/A+
GRP2	270	1.05	0.085	8.1	0.000	0.0	0.000	0.0	0.045	4.3	0.097	9.2	0.000	0.0	0.119	11.3
GRP3	270	0.29	0.015	N/A+	0.002	N/A+	0.004	N/A+	0.020	N/A+	0.025	N/A+	0.002	N/A+	0.031	N/A+
GRP4	270	1.08	0.050	4.6	0.009	0.8	0.027	2.5	0.204	18.9	0.212	19.7	0.000	0.0	0.221	20.5
GRP5	270	3.58	0.103	2.9	0.017	0.5	0.099	2.8	0.483	13.5	0.504	14.1	0.000	0.0	0.538	15.1
GRP6	270	7.55	0.137	1.8	0.006	0.1	0.161	2.1	0.251	3.3	0.328	4.3	0.000	0.0	0.484	6.4

[a] Between lot: Variability of the test performance from lot to lot.
[b] Within-Laboratory variability contains the Within Run, Between Run, Between Day and Between Lot variance components.
[c] Between site: Variability of the test performance from site to site.
[d] Reproducibility: Variability of the test incorporating factors of site, lot, run and day.
[+] % CVs are not meaningful for S/C results < 0.50.

Table 5. Reproducibility of VITROS Immunodiagnostic Products Anti-SARS-CoV-2 IgG test evaluated on VITROS XT 7600 Integrated Systems

PanelMember	Number of Observ.	Grand Mean (S/C)	Repeatability (Within Run)		Between Run		Between Day		Between Lot[a]		Within-Laboratory[b]		Between-Site[c]		Reproducibility (Overall)[d]	
			SD	CV (%)	SD	CV (%)	SD	CV (%)	SD	CV (%)	SD	CV (%)	SD	CV (%)	SD	CV (%)
GRP1	270	0.00	0.001	N/A+	0.000	N/A+	0.001	N/A+	0.001	N/A+	0.001	N/A+	0.001	N/A+	0.002	N/A+
GRP2	270	1.06	0.035	3.4	0.000	0.0	0.010	0.9	0.039	3.7	0.053	5.1	0.009	0.9	0.061	5.7
GRP3	270	0.29	0.012	N/A+	0.000	N/A+	0.007	N/A+	0.023	N/A+	0.027	N/A+	0.003	N/A+	0.029	N/A+
GRP4	270	1.09	0.037	3.4	0.000	0.0	0.013	1.2	0.220	20.2	0.224	20.6	0.013	1.1	0.229	21.1
GRP5	270	3.59	0.097	2.7	0.000	0.0	0.000	0.0	0.510	14.2	0.519	14.5	0.018	0.5	0.537	15.0
GRP6	270	7.54	0.118	1.6	0.000	0.0	0.032	0.4	0.380	5.0	0.399	5.3	0.000	0.0	0.457	6.1

[a] Between lot: Variability of the test performance from lot to lot
[b] Within-Laboratory variability contains the Within Run, Between Run, Between Day and Between Lot variance components.

[c] Between site: Variability of the test performance from site to site.
[d] Reproducibility: Variability of the test incorporating factors of site, lot, run and day.
[+] % CVs are not meaningful for S/C results < 0.50.

2. Linearity:

Not applicable

3. Analytical Specificity:

A. *Cross-Reactivity*: Cross-reactivity of the VITROS Immunodiagnostic Products Anti-SARS-CoV-2 IgG test was evaluated by testing serum samples with antibodies to other microorganisms or underlying conditions which could cause false positive results. Cross-reactivity was evaluated in the VITROS 5600 Integrated system, with samples tested in singlicate. No cross-reactivity was observed with any of the cross-reactants evaluated. The results for cross-reactivity are presented in Table 6 below.

Table 6. Cross-reactivity study samples and results

Sample Category	Number of Samples Tested	VITROS Immunodiagnostic Products Anti-SARS-CoV-2 IgG test Results	
		Non-reactive	Reactive
Influenza A Antibody	10	10	0
Influenza B Antibody	12	12	0
Hepatitis C Virus (HCV) Antibody	15	15	0
Hepatitis B Virus (HBV) Antibody	12	12	0
Haemophilus influenzae Antibody	12	12	0
Anti-Nuclear Antibody (ANA)	10	10	0
Rheumatoid Factor	11	11	0
Human Anti-Mouse Antibody (HAMA)	10	10	0
Adenovirus Antibody	12	12	0
Coxsackie B Virus Antibody	10	10	0
Echovirus Antibody	10	10	0
Poliovirus Antibody	9	9	0
Respiratory Syncytial Virus (RSV) Antibody	10	10	0
Anti-SARS-coronavirus	13	13	0
Anti-MERS-coronavirus	14	14	0
Human coronavirus HKU1 Antibody	11	11	0
Human coronavirus NL63 Antibody	10	10	0
Human coronavirus OC43 Antibody	21	21	0
Human coronavirus 229E Antibody	24	24	0
Human Immunodeficiency Virus (HIV) Antibody	17	17	0
Human Parainfluenza Virus (HPIV) Antibody	5	5	0
Human Metapneumovirus (HMPV) Antibody	10	10	0

Sample Category	Number of Samples Tested	VITROS Immunodiagnostic Products Anti-SARS-CoV-2 IgG test Results	
		Non-reactive	Reactive
Enterovirus Antibody	10	10	0
Rhinovirus Antibody	11	11	0
Epstein-Barr Virus (EBV) Antibody	11	11	0
Epstein-Barr Virus Nuclear Antigen (EBVNA) Antibody	11	11	0
Rubella Virus Antibody	10	10	0
Legionella pneumophila Antibody	10	10	0
Bordetella pertussis Antibody	15	15	0
Mycoplasma pneumoniae Antibody	14	14	0
Chlamydophila pneumoniae Antibody	10	10	0
Streptococcus pneumoniae Antibody	10	10	0
Streptococcus pyogenes Antibody	10	10	0
Candida albincans Antibody	14	14	0
Pneumocystis jirovecii Antibody	10	10	0
Pseudomonas aeruginosa Antibody	14	14	
Staphylococcus epidermidis	10	10	0
Cytomegalovirus (CMV) Antibody	11	11	0

B. *Interference*: The VITROS Immunodiagnostic Products Anti SARS-CoV-2 IgG test was evaluated for interference consistent with CLSI document EP07. Commonly encountered substances were tested on one lot of reagent using the VITROS 5600 Integrated System in 3 reactive (low positive) and 3 non-reactive (negative) samples.

To evaluate interference, the percent bias was calculated as:

(b)(4)

All substances evaluated have been shown to not interfere (<10% bias for low reactive samples and bias <0.22 S/C for non-reactive samples) with the test performance at the concentration listed in the table below.

Table 7. Endogenous interferants evaluated with VITROS Immunodiagnostic Products Anti-SARS-CoV-2 IgG test

Substance	Test Concentration	
	Conventional	SI Units
Anti-Nuclear Antibody	> 8 AI	N/A
Bilirubin, conjugated	40 mg/dL	475 µmol/L
Bilirubin, unconjugated	40 mg/dL	684 µmol/L
Cholesterol	400 mg/dL	10.3 mmol/L
Hemoglobin	1000 mg/dL	10 g/L
Human anti-Mouse	3600 ng/mL	0.024 µmol/L
Ig (total)	6 g/dL	60 g/L

Substance	Test Concentration	
	Conventional	SI Units
Rheumatoid Factor	35.7 – 61.7 IU/mL	N/A
Total Protein	15 g/dL	150 g/L
Triglycerides	1500 mg/dL	16.94 mmol/L

N/A: Not Applicable (alternative units are not provided)

Table 8. Exogenous interferants evaluated with VITROS Immunodiagnostic Products Anti-SARS-CoV-2 IgG test

Substance	Test Concentration	
	Conventional	SI Units
Abacavir	1.27 mg/dL	44.4 µmol/L
Acetaminophen	15.6 mg/dL	1.03 mmol/L
Amoxicillin	1.35 mg/dL	37 µmol/L
Aspirin	3 mg/dL	0.167 mmol/L
Atorvastatin	75 µg/dL	1.34 µmol/L
Azithromycin	1.1 mg/dL	14.8 µmol/L
Biotin	3510 ng/mL	14.3 µmol/L
Cefoxitin	660 mg/dL	15.5 mmol/L
Ceftriaxone	84 mg/dL	1.51 mmol/L
Dextromethorphan	1.56 µg/dL	0.0575 µmol/L
EDTA	0.099 mg/dL	3.39 µmol/L
Gentamicin	3.0 mg/dL	62.8 µmol/L
Guaifenesin	450 µg/dL	22.7 µmol/L
Heparin	330 units/dL	330 units/dL
Ibuprofen	21.9 mg/dL	1.06 mmol/L
Intralipid	2000 mg/dL	N/A
Levofloxacin	3.6 mg/dL	99.7 µmol/L
Levothyroxine	429 µg/dL	0.552 µmol/L
Lisinopril	24.6 µg/dL	0.607 µmol/L
Lopinavir	57.17 µg/mL	90.89 µmol/L
Loratadine	8.7 µg/dL	0.271 µmol/L
Losartan	1155 ng/mL	2.505 µmol/L
Meropenem	33.9 mg/dL	884 µmol/L
Metformin	1.2 mg/dL	92.9 µmol/L
Metoprolol	150 µg/dL	5.61 µmol/L
Naproxen	36.0 mg/dL	1.56 mmol/L
Omeprazole	840 µg/dL	24.3 µmol/L
Oseltamivir	39.9 µg/dL	1.28 µmol/L
Peramivir	183600 ng/mL	559 µmol/L
Prednisone	10 µg/dL	0.276 µmol/L
Ritonavir	10.98 mg/dL	126.42 mmol/L
Theophylline	6.0 mg/dL	333 µmol/L
Vancomycin	12.0 mg/dL	82.8 µmol/L
Zanamivir	1089 ng/mL	3.28 µmol/L

N/A = Not Applicable (alternative units are not provided)

When amlodipine was tested at a concentration of 1.88 ug/dL, a negative bias (-11.1% change of the S/C value) was observed in reactive samples.

4. Assay Reportable Range:

Not applicable

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

Specimen Stability: The stability of SARS-CoV-2 antibodies in serum, K_2-EDTA plasma, and K_3-EDTA plasma was evaluated with the VITROS Immunodiagnostic Products Anti-SARS-CoV-2 IgG test after various storage conditions with and without freeze-thawing cycles in the VITROS 5600 Integrated Systems. The storage conditions evaluated were room temperature, 2 – 8°C, and ≤-20°C with 5 freeze-thaw cycles.

Freshly drawn whole blood from (b)(4) individual donors was collected. Of the (b)(4) whole blood donors, (b)(4) were unaltered and (b)(4) were spiked using a (b)(4) The whole blood was distributed among the collection tubes used in the study. Each spiked sample was unique.

After centrifugation, each sample from each collection tube was tested in duplicate using one reagent lot on one VITROS 5600 Integrated System, denoted as the fresh timepoint. Aliquots of each sample were prepared and stored at room temperature, 2 – 8°C, and ≤-20°C. For the ≤-20°C samples, (b)(4) aliquots were prepared, (b)(4) subjected to 5 freeze-thaw cycles (F/T) and the other subjected to (b)(4) F/T cycles.

For each sample type and storage temperature the percent difference to baseline was calculated as follows where baseline is considered as the fresh sample before storing at any temperature condition:

(b)(4)

The results support the following specimen storage conditions for serum, K_2-EDTA and K_3-EDTA plasma:

Table 9. Summary of specimen stability

Sample Type	Temperature	Stability	F/T
Serum and plasma (K_2-EDTA and K_3-EDTA)	Room Temperature (15 – 30°C)	≤ 24 hours	N/A
	Refrigerated (2 – 8°C)	≤ 7 days	N/A
	Frozen (≤-20°C)	≤ 4 weeks	N/A

	N/A	N/A	1 cycle

N/A= Not Applicable

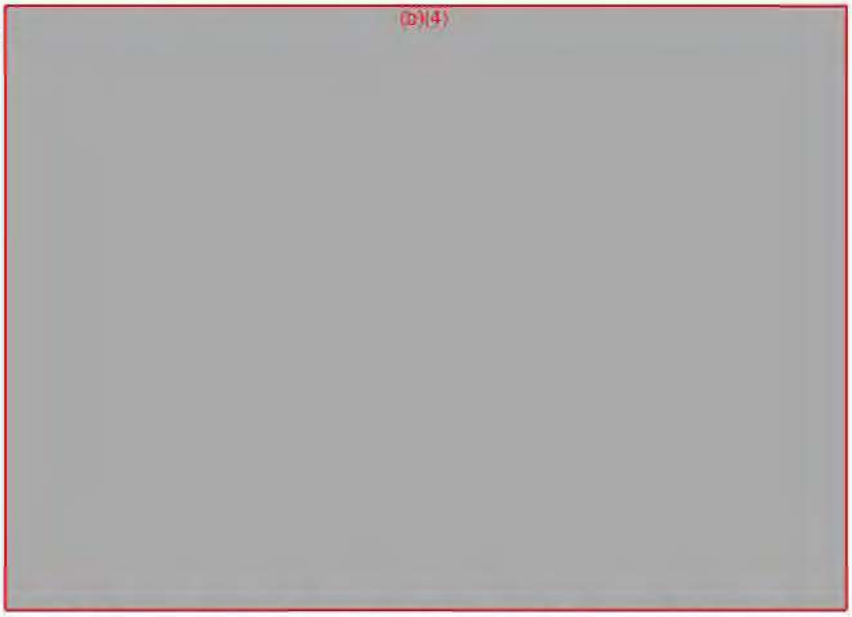
Based upon this study design and the results thereof, the specimen stability data support, storage of all matrices at: 15-30 °C for 24 hours, 2-8°C for up to 7 days, and ≤-20°C or below for up to five freeze-thaw cycle

6. Detection Limit:

Not applicable

7. Assay Cut-Off:

The study was performed to determine the VITROS Immunodiagnostic Products Anti-SARS-CoV-2 IgG test S/C cutoff. The study included the testing of a collection of (b)(4) negative samples collected prior to the COVID-19 pandemic, and (b)(4) samples collected from individuals with a prior SARS-CoV-2 RT-PCR positive result. Additionally, (b)(4) negative samples collected prior to the pandemic were tested with (b)(4) reagent lots. All samples were tested in singlicate using one VITROS Anti-SARS-CoV-2 IgG reagent pack and calibrator lot. A Receiver Operating Characteristic (ROC) curve analyses was performed to optimize for those cutoff values that maximize both sensitivity specificity. At the cutoff S/C = 1.00 the resultant ROC was (b)(4) confirming high sensitivity and specificity of the established S/C cutoff value (Figure 2).

Figure 2: 

Analytical sensitivity at the cutoff using a Certified Reference Material

The analytical sensitivity of the VITROS Immunodiagnostic Products Anti-SARS-CoV-2 IgG test was determined using a series of serial dilutions of the WHO First International Standard for Anti-SARS-CoV-2 Immunoglobulin (human) code 20/136 (Certified Reference

Material or CRM) in negative patient sodium citrate plasma. Samples included in the study were prepared covering a (b)(4) BAU/mL to (b)(4) BAU/mL range (Table 10). Each sample was tested in duplicate using (b)(4) lot of the VITROS Immunodiagnostic Products Anti-SARS-CoV-2 IgG test on two VITROS analyzers (VITROS ECi/ECiQ and VITROS 3600 Immunodiagnostic Systems). In addition, an internal reference calibrator was also included in the assay.

Ortho-Clinical Diagnostics collected both ALU and S/C for each of the CRM samples tested. Ortho-Clinical Diagnostics analyzed the data using the least-squares regression analysis, where the (b)(4) represented the BAU/mL and the (b)(4) the S/C values for each sample. Using the regression equation, Ortho-Clinical Diagnostics calculated the BAU/mL at the cutoff (S/C = 1.00). The data analysis shows that a S/C of 1.00 corresponds to (b)(4) BAU/mL using the VITROS Immunodiagnostic Products Anti-SARS-CoV-2 IgG test.

Table 10: CRM serial dilutions S/C results and calculation of BAU/mL at the cutoff

CRM concentrations (BAU/mL)	VITROS ECi/ECiQ (S/C)	VITROS 3600 (S/C)	VITROS System Average S/C
(b)(4)			

Figure 3: Analytical sensitivity regression analysis.

(b)(4)

B Comparison Studies:

8. Method Comparison:

Not Applicable

9. Matrix Comparison:

A matrix equivalency study was conducted to support equivalent performance of the VITROS Immunodiagnostic Products Anti-SARS-CoV-2 IgG test between serum, K_2-EDTA plasma, and K_3-EDTA plasma. The study was conducted using 1 lot for the reagent pack, calibrator and controls in the VITROS 5600 Integrated Systems.

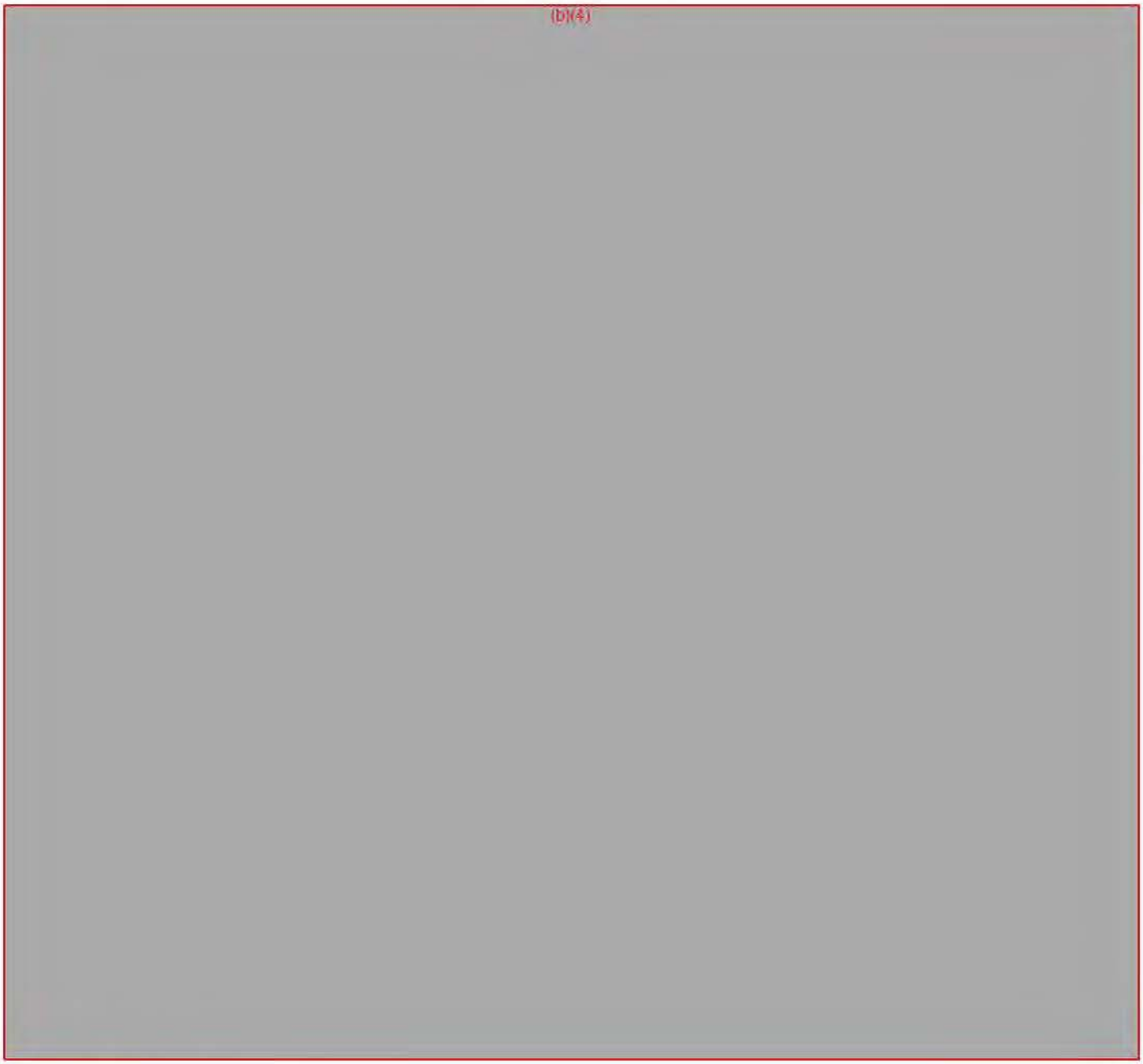
For this study (b)(4) unique paired clinical samples were evaluated (spiked samples prepared using a high titer convalescent plasma pool and non-spiked samples) with SARS-CoV-2 IgG antibodies levels representing the whole assay range (from low negative to high positive, including a (b)(4) of samples near the cutoff). After centrifugation, the matched serum, K_2-EDTA, and K_3-EDTA samples were tested in duplicate using one reagent lot on (b)(4) VITROS 5600 Integrated System. Sample distribution is summarized in Table 11 below.

Table 11. Sample distribution: negative, near the cutoff and positive

Group	S/C Result	Number of specimens (% total)
Negative	(b)(4)	
Near cutoff		
Moderate Positive		
High Positive		
Total		(b)(4)

A weighted Deming regression analysis comparing K_2-EDTA plasma (the comparator matrix) to K_3-EDTA plasma and to serum was conducted. The Deming regression analysis did not demonstrate significant deviation from the comparator matrix (Figure 4 – 5). Therefore, the study demonstrated equivalency between serum, K_2-EDTA plasma, and K_3-EDTA plasma.

Figure 4: Weighted Deming linear regression analysis between K_2-EDTA plasma and serum



C Clinical Studies:

10. Clinical Sensitivity:

    Not applicable

11. Clinical Specificity:

    Not applicable

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

***Clinical Agreement Study*:**
The clinical performance of VITROS Immunodiagnostic Products anti SARS- CoV-2 IgG test was evaluated at three testing sites using 642 unique retrospective clinical samples acquired from two populations. Population 1 consisted of 338 samples collected from individuals previously infected with SARS-CoV-2 with a prior SARS-CoV-2 positive test result using a comparator that FDA determined is appropriate (RT PCR test). Population 2 consisted of 304 samples collected prior to December 2019 (before the widespread outbreak of COVID-19). Of the 304 samples, 30% of the tested samples were collected from blood donor centers.

Of the 338 samples in Population 1, 24 samples were collected 0 – 7 days from COVID-19 symptom onset, 21 samples collected between 8 – 14 days from symptom onset, and 293 samples were collected ≥15 days from COVID-19 symptom onset. Table 12 below shows the sample distribution and the respective percentages from the total of samples tested per "Days post-symptoms onset" time bin.

Table 12. Sample distribution within each "Days post symptoms onset" time bin.

Time bin (n= total number samples tested)	Days post-symptom onset	Percent Samples (per time bin)
0 – 7 days (n = 24)	0 - 4	70.83%
	5 - 7	29.17%
8 – 14 days (n = 21)	8 - 11	47.62%
	12 - 14	52.38%
≥ 15 days (n = 293)	15 - 21	10.58%
	22 - 30	10.92%
	31 - 60	40.61%
	61 -90	26.62%
	91 - 195	11.26%

Tables 13 and 14 below represents sample distribution per matrix tested for each study population (Population 1 and Population 2).

Table 13. Distribution of Population 1 samples by matrix and days post-symptom onset.

Matrix	Days post-symptom onset			Total
	≤7 days	8 – 10 days	≥15 days	
EDTA plasma	(b)(4)			**169**
Serum				**169**
Total				**338**

Table 14. Distribution of Population 2 samples by matrix.

Matrix	Samples tested

EDTA plasma	138
Serum	166
Total	**304**

Ortho conducted the clinical agreement study at 3 testing sites: one internal site and 2 external sites.

Positive Percent Agreement (PPA)

A total of 338 samples collected from individual patients confirmed to have a prior SARS-CoV-2 positive result by RT-PCR were tested. Blood samples were collected within the United States between April 2020 and March 2021. Samples were tested with the VITROS Immunodiagnostic Products Anti SARS-CoV-2 IgG test in each analyzer (except with the VITROS XT7600 Integrated System where one sample was not tested due to limited volume). Of the 338 samples included in the study, 169 were EDTA plasma samples and 169 were serum samples.

The performance of the VITROS Immunodiagnostic Products Anti-SARS-CoV-2 IgG test and 95% Confidence Interval for each VITROS analyzer is summarized in the tables below.

PPA performance of the VITROS Immunodiagnostic Products Anti-SARS-CoV-2 IgG test and 95% Confidence Interval by system:

Table 15. In the VITROS ECi/ECiQ Immunodiagnostic Systems.

		VITROS Immunodiagnostic Products Anti-SARS-CoV-2 IgG test Results		
Days from Symptom Onset	**Number of Subjects Tested (with prior RT-PCR Positive)**	**Reactive**	**PPA**	**95% CI (Wilson score)**
0-7 days	24	11	45.83%	27.89% – 64.93%
8-14 days	21	11	52.38%	32.37% - 71.66%
≥15 days	293	275	93.86%	90.50% – 96.10%
Total	338	--	--	--

Table 16. In the VITROS 3600 Immunodiagnostic Systems and the VITROS 5600 Integrated Systems

		VITROS Immunodiagnostic Products Anti-SARS-CoV-2 IgG test Results		
Days from Symptom Onset	**Number of Subjects Tested (with prior RT-PCR Positive)**	**Reactive**	**PPA**	**95% CI (Wilson score)**
0-7 days	24	10	41.67%	24.47% - 61.17%
8-14 days	21	11	52.38%	32.37% - 71.66%
≥15 days	293	274	93.52%	90.10% – 95.81%
Total	338	--	--	--

Table 17. In the VITROS XT 7600 Integrated Systems

		VITROS Immunodiagnostic Products Anti-SARS-CoV-2 IgG test Results		
Days from Symptom Onset	**Number of Subjects Tested (with prior RT-PCR Positive)**	**Reactive**	**PPA**	**95% CI (Wilson score)**
0-7 days	24	10	41.67%	24.47% - 61.17%
8-14 days	21	11	52.38%	32.37% - 71.66%
≥15 days	292	273	93.49%	90.10% – 95.80%
Total	337	--	--	--

Negative Percent Agreement (NPA)

Three hundred and four (304) presumed SARS-CoV-2 negative samples collected prior to the COVID-19 pandemic within the United States were tested. Of the 304 samples, 138 were EDTA plasma samples and 166 serum samples. All samples were tested using VITROS ECi/ECiQ/3600 Immunodiagnostic Systems and the VITROS 5600/XT 7600 Integrated Systems "(except the samples that were not tested on one or more analyzers due to limited volume). The performance of the VITROS Immunodiagnostic Products Anti-SARS-CoV-2 IgG test and 95% Confidence Interval for each VITROS analyzer is summarized in the table below:

Table 18: NPA performance of the VITROS Immunodiagnostic Products Anti-SARS-CoV-2 IgG test and 95% confidence interval in all VITROS analyzers

		VITROS Immunodiagnostic Products Anti-SARS-CoV-2 IgG test Results		
Analyzer	**Presumed Negative (Collected Pre-COVID)**	**Non-Reactive**	**NPA**	**95% CI (Wilson score)**
VITROS ECi/ECiQ/VITROS 3600/VITROS 5600	304	301	99.01%	97.14% – 99.66%
VITROS XT 7600	303	300	99.01%	97.13% - 99.66%

D Clinical Cut-Off:

Not applicable

E Expected Values/Reference Range:

Not applicable

F Other Supportive Performance Characteristics Data:

Calibration Cycle Stability

The purpose of this study was to establish the calibration interval, or how frequently the assay should be calibrated. The calibration interval was established by testing samples on the VITROS Immunodiagnostic Products Anti-SARS-CoV-2 IgG test using a single calibration over time.

In the study, Ortho-Clinical Diagnostics included a panel of 6 precision pool samples. Each panel member was prepared as follows:

- Precision Pool 1 (PP1): Control level 1 (Non-Reactive)
- Precision Pool 2 (PP2): Control level 2 (Reactive)
- Precision Pool 3 (PP3): Calibrator
- Precision Pool 4 (PP4): High negative EDTA plasma sample
- Precision Pool 5 (PP5): Low Positive EDTA plasma sample
- Precision Pool 6 (PP6): High Positive EDTA plasma sample

After a single initial calibration on Day (b)(4) samples were tested on Day (b)(4) and up to Day (b)(4) on the VITROS ECi/ECiQ, VITROS 3600, VITROS 5600, and VITROS XT7600.

For each positive sample (PP2, PP4, PP5, and PP6) linear regression analysis was conducted. In addition, percent difference from baseline was calculated as follows:

(b)(4)

The percent difference to baseline should be (b)(4)

The study results support a calibration interval stability of 28 days for the VITROS Immunodiagnostic Products Anti-SARS-CoV-2 IgG test.

VII Proposed Labeling:

The labeling supports the decision to grant the De Novo request for this device.

VIII Identified Risks and Mitigations:

Risks to Health	Mitigation Measures
Risk of false test results	Certain labeling information including limitations, device descriptions, explanations of procedures and performance information identified in special controls (1), (3), and (5). Use of certain specimen collection devices identified in special control (2). Certain design verification and validation including documentation of device descriptions, certain analytical studies and clinical studies, and risk analysis strategies identified in special control (4). Testing of characterized samples and labeling information identified in special control (6).

Risks to Health	Mitigation Measures
Failure to correctly interpret the test results	Certain labeling information including limitations, device descriptions, explanations of procedures and performance information identified in special controls (1), (3), and (5). Use of certain specimen collection devices identified in special control (2). Certain design verification and validation including documentation of device descriptions, certain analytical studies and clinical studies, and risk analysis strategies identified in special control (4). Testing of characterized samples and labeling information identified in special control (6).
Failure to correctly operate the device	Certain labeling information including limitations, device descriptions, explanations of procedures and performance information identified in special controls (1), (3), and (5). Use of certain specimen collection devices identified in special control (2).

IX Benefit/Risk Assessment:

A Summary of the Assessment of Benefit:

The benefit of the assay is the ability to detect Anti-SARS-CoV-2 IgG antibodies as an aid in identifying individuals with an adaptive immune response to SARS-CoV-2, indicating recent or prior infection. The device could also provide a tool for tracking possible patient exposure.

True positive test results provide additional support for the diagnosis of recent or past SARS-CoV-2 infection. Results could be used in conjunction with clinical and epidemiological information, as well as other laboratory results to guide patient management. The test results may improve infection control measures and may aid in tracking and reducing transmission of infection. There is currently no SARS-CoV-2 antibody test that has undergone full FDA premarket review to most definitively determine clinical truth of the presence or absence of detectable antibodies for the method comparison study, however this uncertainty could be acceptable, particularly because the sponsor used a comparator that FDA determined is appropriate (SARS-CoV-2 RT-PCR devices), which represents the most reasonable alternative to establish clinical truth in the clinical study. This is an acceptable source of uncertainty regarding the benefits of the test.

B Summary of the Assessment of Risk:

The risks associated with the device, when used as intended, are those related to the risk of false test results, which have essentially the same impacts as the risks related to failure to correctly

interpret the test results and failure to correctly operate the device as all would cause the user to rely on incorrect information.

A false negative result could be interpreted as indicating that a person did not recently have COVID-19, which may lead a person to take fewer necessary precautions against spreading the virus to others if they are still shedding the virus from a recent infection. This may increase the risk of transmission. In the context of the current public health emergency, incorrect serological test results used to guide infection control activities could lead to misallocation of resources used for surveillance and prevention. The positive percent agreement performance point estimate of the device observed in the clinical study indicates that false negative results are not likely to occur when the device is used in the intended use population.

A false positive SARS-CoV-2 antibody result could be interpreted as a diagnosis of recent COVID-19, and a clinician may assume a patient may still be shedding the virus, which may result in unnecessary additional testing, quarantine, or self-isolation to prevent the spread of the virus to others. False positive serology test results can lead to an incorrect assessment that the tested person had an immune response to SARS-CoV-2, which may lead the person to take fewer necessary precautions against virus exposure. This may increase the individual's risk of infection and may lead the person to not seek testing if later infected, likely increasing the spread of the disease. In the context of the current public health emergency, incorrect serological test results used to guide infection control activities could lead to misallocation of resources used for surveillance and prevention.

A positive result could be wrongly interpreted as a diagnosis of acute COVID-19 to explain an individual's symptoms and delay correct diagnosis and initiation of appropriate treatment for the actual cause of patient illness. A positive test result could be wrongly interpreted as indicating that the tested person has immunity to SARS-CoV-2, which may lead the person to take fewer precautions against virus exposure. This may increase the individual's risk of infection and may lead the person to not seek testing if later infected, likely increasing the spread of the disease. A negative result may be misinterpreted as ruling out SARS-CoV-2 infection, with a concomitant delay in the correct diagnosis and treatment.

C Patient Perspectives:

This submission did not include specific information on patient perspectives for this device.

D Summary of the Assessment of Benefit-Risk:

The risks associated with the device (risk of false test results, failure to correctly interpret the results, and failure to correctly operate the device) are mitigated by labeling information, which will assist the operator in correctly performing the test and will assist healthcare providers in understanding the intended use of the test and evaluating the predictive value of a result based on the analytical and clinical performance of the test. In addition, those risks are mitigated by the use of certain validated specimen collection devices. Further, the risk of false test results and failure to correctly interpret the results are mitigated by certain design verification and validation, including analytical and clinical studies and risk analysis strategies to reduce the likelihood of such errors. Finally, the risk of false test results due to a disease or disorder that

presents a public health emergency, or a public health emergency that otherwise exists are addressed by special controls requiring certain testing of characterized samples and labeling information in those situations. The special controls help to ensure that errors will be uncommon and will facilitate accurate assay implementation and interpretation of results. In addition, the device's performance observed in the clinical study suggests that errors will be uncommon and that the assay will provide benefits to patients as an aid in identifying individuals with an adaptive immune response to SARS-CoV-2, indicating recent or prior infection. While general controls alone are insufficient to mitigate the risks associated with the device, the benefits outweigh the risks given the special controls.

X Conclusion:

The De Novo request is granted, and the device is classified under the following regulation and subject to the special controls identified in the letter granting the De Novo request:

Product Code(s):	QVP
Device Type:	SARS-CoV-2 serology test
Class:	Class II
Regulation:	21 CFR 866.3983