April 11, 2025

Roche Molecular Systems, Inc.
Deborah Leu
Regulatory Affairs Project Manager
4300 Hacienda Drive
Pleasanton, California 94588

Re: K243346
Trade/Device Name: cobas liat SARS-CoV-2 v2 nucleic acid test
Regulation Number: 21 CFR 866.3982
Regulation Name: Simple Point-Of-Care Device To Directly Detect Sars-Cov-2 Viral Targets From Clinical Specimens In Near-Patient Settings
Regulatory Class: Class II
Product Code: QWR
Dated: October 25, 2024
Received: October 28, 2024

Dear Deborah Leu:

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 (the 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 available 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.

Additional information about changes that may require a new premarket notification are provided in the FDA guidance documents entitled "Deciding When to Submit a 510(k) for a Change to an Existing Device" (https://www.fda.gov/media/99812/download) and "Deciding When to Submit a 510(k) for a Software Change to an Existing Device" (https://www.fda.gov/media/99785/download).

Your device is also subject to, among other requirements, the Quality System (QS) regulation (21 CFR Part 820), which includes, but is not limited to, 21 CFR 820.30, Design controls; 21 CFR 820.90, Nonconforming product; and 21 CFR 820.100, Corrective and preventive action. Please note that regardless of whether a change requires premarket review, the QS regulation requires device manufacturers to review and approve changes to device design and production (21 CFR 820.30 and 21 CFR 820.70) and document changes and approvals in the device master record (21 CFR 820.181).

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 Part 803) for devices or postmarketing safety reporting (21 CFR Part 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 Part 4, Subpart A) for combination products; and, if applicable, the electronic product radiation control provisions (Sections 531-542 of the Act); 21 CFR Parts 1000-1050.

All medical devices, including Class I and unclassified devices and combination product device constituent parts are required to be in compliance with the final Unique Device Identification System rule ("UDI Rule"). The UDI Rule requires, among other things, that a device bear a unique device identifier (UDI) on its label and package (21 CFR 801.20(a)) unless an exception or alternative applies (21 CFR 801.20(b)) and that the dates on the device label be formatted in accordance with 21 CFR 801.18. The UDI Rule (21 CFR 830.300(a) and 830.320(b)) also requires that certain information be submitted to the Global Unique Device Identification Database (GUDID) (21 CFR Part 830 Subpart E). For additional information on these requirements, please see the UDI System webpage at https://www.fda.gov/medical-devices/device-advice-comprehensive-regulatory-assistance/unique-device-identification-system-udi-system.

Also, please note the regulation entitled, "Misbranding by reference to premarket notification" (21 CFR 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,

Joseph Briggs -S

Joseph Briggs, Ph.D.
Deputy Division Director
Division of Microbiology 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: 07/31/2026
See PRA Statement below.

510(k) Number *(if known)*
K243346

Device Name
cobas liat SARS-CoV-2 v2 nucleic acid test

Indications for Use *(Describe)*
The cobas liat SARS-CoV-2 v2 nucleic acid test is an automated real-time reverse transcription polymerase chain reaction (RT-PCR) test intended for the qualitative detection of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) nucleic acids in anterior nasal (nasal) and nasopharyngeal swab specimens collected from individuals exhibiting signs and symptoms of respiratory tract infection (i.e., symptomatic). Additionally, this test is intended to be used with nasal and nasopharyngeal swab specimens collected from individuals without signs and symptoms of COVID-19 (i.e., asymptomatic).

The cobas liat SARS-CoV-2 v2 nucleic acid test is intended for use as an aid in the diagnosis of COVID-19 if used in conjunction with other clinical and epidemiological information and laboratory findings. SARS-CoV-2 RNA is generally detectable in nasal swab and nasopharyngeal swab specimens during the acute phase of infection.

Positive results are indicative of the presence of SARS-CoV-2 RNA. Positive results do not rule out co-infection with other microorganisms. Negative results do not preclude SARS-CoV-2 infection. Negative results must be combined with clinical observations, patient history, and epidemiological information. The results of this test should not be used as the sole basis for diagnosis, treatment, or other patient management decisions.

A negative result from an asymptomatic individual is presumptive. Additionally, a negative result obtained with a nasal or nasopharyngeal swab collected from an asymptomatic individual should be followed up by testing at least twice over three days with at least 48 hours between tests.

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.

cobas® **liat** SARS-CoV-2 v2 nucleic acid test
510(k) Summary

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

Submitter Name	Roche Molecular Systems, Inc.
Address	4300 Hacienda Drive, Pleasanton, CA 94588-2722
Contact	Deborah Leu Phone: 925-523-8362 Email: deborahleu@roche.com
Date Prepared	Apr 9, 2025
Proprietary Name	**cobas**® **liat** SARS-CoV-2 v2 nucleic acid test
Common Name	**cobas**® **liat** SARS-CoV-2 v2
Classification	21 CFR 866.3982 Simple Point-Of-Care Device to Detect SARS-CoV-2 Nucleic Acid Targets From Clinical Specimens In Near-Patient Settings
Product Codes	QWR
Predicate Devices	**cobas**® SARS-CoV-2 for use on the **cobas**® Liat® System (K223783)
Establishment Registration	Roche Molecular Systems, Inc. (2243471)

1. DEVICE DESCRIPTION

The **cobas® liat** SARS-CoV-2 v2 nucleic acid test is performed on the **cobas® liat** analyzer which automates and integrates sample purification, nucleic acid amplification, and detection of the target sequence in biological samples using real-time PCR assays. The assay targets both the ORF1 a/b non-structural region and membrane protein gene that are unique to SARS-CoV-2. An Internal Control (IC) is included to control for adequate processing of the target virus through all steps of the assay process and to monitor the presence of inhibitors in the RT-PCR processes.

2. INDICATIONS FOR USE

The **cobas® liat** SARS-CoV-2 v2 nucleic acid test is an automated real-time reverse transcription polymerase chain reaction (RT-PCR) test intended for the qualitative detection of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) nucleic acids in anterior nasal (nasal) and nasopharyngeal swab specimens collected from individuals exhibiting signs and symptoms of respiratory tract infection (i.e., symptomatic). Additionally, this test is intended to be used with nasal and nasopharyngeal swab specimens collected from individuals without signs and symptoms of COVID-19 (i.e., asymptomatic).

The **cobas® liat** SARS-CoV-2 v2 nucleic acid test is intended for use as an aid in the diagnosis of COVID-19 if used in conjunction with other clinical and epidemiological information and laboratory findings. SARS-CoV-2 RNA is generally detectable in nasal swab and nasopharyngeal swab specimens during the acute phase of infection.

Positive results are indicative of the presence of SARS-CoV-2 RNA. Positive results do not rule out co-infection with other microorganisms. Negative results do not preclude SARS-CoV-2 infection. Negative results must be combined with clinical observations, patient history, and epidemiological information. The results of this test should not be used as the sole basis for diagnosis, treatment, or other patient management decisions.

A negative result from an asymptomatic individual is presumptive. Additionally, a negative result obtained with a nasal or nasopharyngeal swab collected from an asymptomatic individual should be followed up by testing at least twice over three days with at least 48 hours between tests.

3. TECHNOLOGICAL CHARACTERISTICS

The primary technological characteristics and intended use of the RMS **cobas® liat** SARS-CoV-2 v2 test are substantially equivalent to other legally marketed nucleic acid amplification tests intended for the qualitative detection of SARS-CoV-2.

As indicated in Table 1, the RMS **cobas® liat** SARS-CoV-2 v2 nucleic acid test is substantially equivalent to the identified predicate device, the cleared **cobas®** SARS-CoV-2 for use on the **cobas®** Liat® System (K223783).

Table 1: Comparison of the cobas® liat SARS-CoV-2 v2 nucleic acid test and the Predicate Device

	Submitted Device: cobas® liat SARS-CoV-2 v2 nucleic acid test	**Predicate Device: cobas® SARS-CoV-2 for use on the cobas® Liat® System (K223783)**
Regulation Name	21 CFR 866.3982	Same
Product Code	QWR	Same
Intended Use	The **cobas® liat** SARS-CoV-2 v2 nucleic acid test is an automated real-time reverse transcription polymerase chain reaction (RT-PCR) test intended for the qualitative detection of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) nucleic acids in anterior nasal (nasal) and nasopharyngeal swab specimens collected from individuals exhibiting signs and symptoms of respiratory tract infection (i.e., symptomatic). Additionally, this test is intended to be used with nasal and nasopharyngeal swab specimens collected from individuals without signs and symptoms of COVID-19 (i.e., asymptomatic). The **cobas® liat** SARS-CoV-2 v2 nucleic acid test is intended for use as an aid in the diagnosis of COVID-19 if used in conjunction with other clinical and epidemiological information and laboratory findings. SARS-CoV-2 RNA is generally detectable in nasal swab and nasopharyngeal swab specimens during the acute phase of infection.	The **cobas®** SARS-CoV-2 Nucleic acid test for use on the **cobas®** Liat® System (**cobas®** SARS-CoV-2) is an automated, real- time reverse transcriptase polymerase chain reaction (RT-PCR) test intended for the rapid in vitro qualitative detection of nucleic acid from severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) in anterior nasal (nasal) and nasopharyngeal swab specimens collected from individuals with signs and symptoms of respiratory tract infection (i.e., symptomatic). Additionally, this test is intended to be used with nasal and nasopharyngeal swab specimens collected from individuals without signs and symptoms suspected of COVID-19 (i.e., asymptomatic). The **cobas®** SARS-CoV-2 performed on the **cobas®** Liat® System is intended for use as an aid in the diagnosis of COVID-19 if used in conjunction with other clinical, epidemiologic, and laboratory findings. SARS-CoV-2 RNA is generally detectable in nasal and nasopharyngeal swab specimens during the acute phase of infection. Positive results are indicative of the presence of SARS-CoV-2 RNA. Positive results do not rule out co-infection with other microorganisms. A negative result from an asymptomatic individual is presumptive. Additionally, a

	Submitted Device: **cobas® liat SARS-CoV-2 v2 nucleic acid test**	**Predicate Device:** **cobas® SARS-CoV-2 for use on the cobas® Liat® System (K223783)**
	Positive results are indicative of the presence of SARS-CoV-2 RNA. Positive results do not rule out co-infection with other microorganisms. Negative results do not preclude SARS-CoV-2 infection. Negative results must be combined with clinical observations, patient history, and epidemiological information. The results of this test should not be used as the sole basis for diagnosis, treatment, or other patient management decisions. A negative result from an asymptomatic individual is presumptive. Additionally, a negative result obtained with a nasal or nasopharyngeal swab collected from an asymptomatic individual should be followed up by testing at least twice over three days with at least 48 hours between tests.	negative result obtained with a nasal swab collected from an asymptomatic patient should be followed up by testing at least twice over three days with at least 48 hours between tests. Negative results do not preclude SARS-CoV-2 infection. The results of this test should not be used as the sole basis for diagnosis, treatment, or other patient management decisions. This test is intended for prescription use only and can be used in Point-of-Care setting
Sample Type	Nasopharyngeal and anterior nasal swabs	Same
Target Analyte	SARS-CoV-2 ORF1 a/b non-structural region and SARS-CoV-2 membrane protein gene	SARS-CoV-2 ORF1 a/b non-structural region and SARS-CoV-2 nucleocapsid protein gene
Ancillary Collection Kits	· Copan FLOQSwabs™ with UTM™, · BD UVT with flocked swab · Sterile flocked swabs with a synthetic tip with other viral transport media (VTM) –M4RT, M4, M5 and M6 · 0.9% Saline	· Copan FLOQSwabs™ with UTM™, UVT and other swabs with other viral transport media (VTM) – e.g., M4RT, M4, M5 and M6 · 0.9% and 0.85% Saline
Amplification Technology	Real-time PCR	Same
Detection Chemistry	Assay using different reporter dyes for target and control	Same
Controls Used	Sample processing control (IC) Positive and negative control	Internal Control (a process control for sample purification, nucleic acid amplification, and for monitoring presence of inhibitors) External Positive and Negative Controls
Instrumentation	**cobas® liat** System	Same

4. SPECIAL CONTROLS/STANDARDS/GUIDANCE REFERENCED

Class II Special Controls as per 21 CFR 866.3982.

5. NON-CLINICAL PERFORMANCE EVALUATION

5.1. Analytical Sensitivity (Limit of Detection)

Limit of detection (LoD) studies determine the lowest detectable concentration of SARS-CoV-2 at which equal to or greater than 95% of all replicates test positive. Two strains of SARS-CoV-2 were evaluated. To determine the LoD, panels were formulated using inactivated viral material diluted in pooled negative nasopharyngeal swab matrix. Twenty-one replicates per lot of assay tubes per dilution were tested for five or six 2-fold dilutions using three lots of assay tubes. The strains evaluated, as well as their corresponding LoD values are shown in Table 2.

Table 2: LoD determination for SARS-CoV-2 strains

Virus	Strain	Concentration at LoD	Hit rate (Mean Ct)
SARS-CoV-2	USA-WA1/2020	0.0350 $TCID_{50}$/mL	20/21 (35.5)
SARS-CoV-2	WHO International Standard 20/146, v3, 11/2021	65.1 IU/mL	21/21 (34.9)

5.2. Reactivity/inclusivity

The inclusivity study evaluates the ability of the test to detect SARS-CoV-2 isolates/variants. The reactivity/inclusivity was evaluated with 10 SARS-CoV-2 isolates/variants. All strains were individually tested at 3x LoD in 3 replicates to evaluate inclusivity.

The SARS-CoV-2 isolates/variants were tested as inactivated viruses in the study and the lowest concentrations detected are listed in Table 3.

In silico analysis on January 15, 2025 indicates 99.9% detection of all available SARS-CoV-2 sequences in the GISAID (>7.94M sequences) and NCBI (>15.04M sequences) databases.

Table 3: Results of Testing SARS-CoV-2 Isolate/Variants

Lineage/Subtype	Isolate/Variant*	Test Concentration ($TCID_{50}$/mL)	Relative to LoD
Alpha	Hong Kong/VM20001061/2020	0.105	3x

Lineage/Subtype	Isolate/Variant*	Test Concentration ($TCID_{50}$/mL)	Relative to LoD
Beta, B.1.595_2020 (was B.1.2)	NY-Wadsworth-33126-01/2020	0.105	3x
Delta, B.1.617.2	USA/MD-HP05285/2021	0.105	3x
Epsilon, B.1.427	USA/CA/VRLC009/2021	0.105	3x
Gamma, P.1	Japan/TY7-503/2021	0.105	3x
Iota, B.1.526_2021	USA/NY-Wadsworth-21025952-01/2021	0.105	3x
Kappa, B.1.617.1	USA/CA-Stanford-15_S02/2021	0.105	3x
Omicron, B.1.1.529, CH.1.1	USA/MD-HP41275/2022	0.105	3x
Omicron, B.1.1.529, XBB.1.5	USA/MD-HP40900/2022	0.105	3x
Zeta, P2_2021	USA/NY-Wadsworth-21006055-01/2021	0.105	3x

*These strains are in addition to the SARS-CoV-2 USA-WA1/2020 and WHO Standard 20/146, v3, 11/2021 used in the analytical sensitivity study.

5.3. Cross reactivity and microbial interference

Cross-reactivity and microbial interference were evaluated by testing a panel of microorganisms (Table 4). High titer stocks of the potentially cross-reacting microorganisms were tested for cross-reactivity, and also in the presence of SARS-CoV-2 at 3x LoD concentrations for microbial interference. Three (3) replicates in target negative background and three (3) replicates in target positive background were tested for each non-target microorganism. The testing concentrations for potentially interfering viruses are ≥1.0E+05 units/mL except for three viruses (SARS Coronavirus, Urbani, Human Rhinovirus Type 1A, and Human Parainfluenza Virus Type 4A) which were tested at a concentration less than 1.0e+5, but higher than 1.0e+4 units/mL due to their low stock concentration. Other microorganisms (non virus) were tested at ≥1.0E+06 units/mL. Clinical specimens containing Human Coronavirus HKU1 and *Pneumocystis jirovecii* were also tested (concentration was unknown). None of the organisms tested cross reacted or interfered with **cobas® liat** SARS-CoV-2 v2 performance at the concentrations tested.

Table 4: Microorganisms Tested for Cross-reactivity and Microbial Interference

Adenovirus Type 1 β	Influenza A (Darwin/6/2021)	Legionella pneumophila
Adenovirus Type 7	Influenza B (Austria/1359417/2021)	*Moraxella catarrhalis*
Cytomegalovirus	Influenza B (Phuket/3073/2013)	*Mycobacterium tuberculosis*
Epstein-Barr virus β	MERS-Coronavirus β	*Mycoplasma genitalium* β
Human Coronavirus OC43	Measles	*Mycoplasma pneumoniae*

Human Coronavirus 229E	Mumps	*Neisseria elongata*
Human Coronavirus HKU [ł]	RSV (Long/Subtype A)	*Neisseria flava*
Human Coronavirus NL63 [β]	RSV (9320/Subtype B)	*Neisseria meningitidis*
Human Enterovirus 68	SARS Coronavirus, Urbani* [β]	*Pneumocystis jirovecii* [ł]
Human Metapneumovirus 27	*Bordetella parapertussis*	*Pseudomonas aeruginosa*
Human Parainfluenza Virus Type 1 [β]	*Bordetella pertussis*	*Staphylococcus aureus*
Human Parainfluenza Virus Type 2	*Chlamydophila pneumoniae*	*Staphylococcus epidermidis*
Human Parainfluenza Virus Type 3	*Corynebacterium flavescens*	*Streptococcus pneumoniae*
Human Parainfluenza Virus Type 4A* [β]	*Escherichia coli*	*Streptococcus pyogenes*
Human Rhinovirus Type 1A* [β]	*Fusobacterium necrophorum subsp. necrophorum*	*Streptococcus salivarius*
Human Rhinovirus B	*Haemophilus influenzae*	*Aspergillus flavus var. flavus*
Influenza A (Brisbane/02/2018)	*Lactobacillus crispatus*	*Candida albicans*

* Tested at highest concentration available

[β] Inactivated virus

[ł] Clinical specimens at unknown concentrations were tested.

5.4. Endogenous and exogenous interference

Potentially interfering substances that may be commonly encountered in respiratory specimens were evaluated. Each substance was tested, by introducing potential interferents. Five (5) replicates were tested with and five (5) replicates were tested without 3x LoD SARS-CoV-2 target. The substances listed in Table 5 at the concentrations tested did not interfere with the detection of SARS-CoV-2 nor did they produce invalid results in negative samples.

Table 5: Endogenous and Exogenous Interference

Potential Interferent	Concentration Tested
Peripheral blood mononuclear cell (PBMC)	1.00E+06 cell/mL
Mucin: bovine submaxillary gland, type I-S	5 mg/mL
Human Whole Blood	5% v/v
Nasal spray - Afrin / Anefrin	15% v/v
Nasal corticosteroids - Flonase	5% (v/v)
Nasal gel - Zicam	5% (v/v)
Throat lozenges, oral anesthetic and analgesic – Cepacol*	5 mg/mL
Antibiotic, nasal ointment - Bactroban mupirocin ointment	5 mg/mL
Antiviral drug – Relenza	5 mg/mL

Potential Interferent	Concentration Tested
Antiviral drug - Tamiflu	7.5 mg/mL
Antimicrobial, systemic- Tobramycin	4 µg/mL
Intranasal Vaccine – FluMist	6.25% (v/v)

* One invalid result was obtained in the presence of SARS-CoV-2. Repeat testing was performed and SARS-CoV-2 was detected. The one invalid result was most likely caused by other factors such as general tube processing error, lot variation, etc. that are not related to the interference test condition.

5.5. Reproducibility study

A reproducibility study assessed the total variability of the assay in detecting SARS-CoV-2 across operators, study sites, testing days, analyzers, and assay tube lots. The reproducibility was evaluated at three (3) study sites representative of intended use settings. Two (2) operators at each of the three sites tested a 3-member reproducibility panel in triplicate on five different days for three assay tube lots. The reproducibility panel comprises a low positive (1-2x LoD) and a moderate positive (3-5x LoD) for SARS-CoV-2 in addition to negative samples. The expected result for the true negative panel member is “Not Detected,” while the expected result for the low positive and moderate positive panel members is “Detected.” Percent agreement with expected result is shown in Table 6.

Table 6: Reproducibility Results for cobas® liat SARS-CoV-2 v2 nucleic acid test

Target Analyte	Expected Panel Member Concentration	Valid Tests (N)	Results in Agreement with Target Analyte (n)	Percent Agreement n/N x 100	95% Score CI
Negative	0	265	265	100.0	(98.6, 100.0)
SARS-CoV-2	1x-2x LoD	270	270	100.0	(98.6, 100.0)
SARS-CoV-2	3x-5x LoD	267	267	100.0	(98.6, 100.0)

Note: Results were in agreement when a positive panel member had a valid result of “Detected” for the analyte or when the negative panel member had a valid result of “Not Detected” for the analyte.

The means, standard deviations, and coefficients of variation (%) for cycle threshold (Ct) values by target analyte and expected concentration (Positive Panel Members) are shown in Table 7.

Table 7: Overall Mean Estimate, Standard Deviations, and Coefficients of Variation (%) for Cycle Threshold Values by Target Analyte and Expected Concentration (Positive Panel Members) for the cobas® liat SARS-CoV-2 v2 nucleic acid test

Expected Concen-tration	n/N [a]	Mean Ct	Site SD	Site CV%	Lot SD	Lot CV%	Day SD	Day CV%	Run SD[b]	Run CV%	Within-Run (Residual) SD	Within-Run (Residual) CV%	Total SD	Total CV%
1x-2x LoD	270/270	33.8	0.00	0.0	0.38	1.1	0.17	0.5	0.36	1.1	1.03	3.0	1.16	3.4
3x-5x LoD	267/267	32.4	0.13	0.4	0.54	1.7	0.27	0.8	0.00	0.0	1.00	3.1	1.18	3.6

Note: Ct = cycle threshold; LoD = Limit of Detection; SD = standard deviation; CV% = percent coefficient of variation.

[a] n is the number of positive tests, which contribute Ct values to the analysis. N is the total number of valid tests for the panel member.

[b] In the reproducibility study, each panel member was tested in triplicate, defining one run.

6. CLINICAL PERFORMANCE EVALUATION

The clinical performance of **cobas® liat** SARS-CoV-2 v2 for the detection of SARS-CoV-2 was evaluated using paired prospective fresh nasopharyngeal swab (NPS) and anterior nasal swab (ANS) specimens collected in Universal Viral Transport medium (UVT) or Universal Transport Medium (UTM) from individuals with and without signs and symptoms of respiratory viral infection. For prospectively enrolled subjects an NPS specimen was collected from each subject along with either a self-collected or a healthcare-provider collected ANS specimen. Positive Percent Agreement (PPA) and Negative Percent Agreement (NPA) were determined by comparing the results of **cobas® liat** SARS-CoV-2 v2 to the results of an FDA-cleared Nucleic Acid Amplification Test (NAAT).

Prospective clinical (Category I) specimens were collected and tested in a non-interventional study between September 2023 and March 2024 at 14 point of care testing sites in the United States (US). Of the 1729 prospective symptomatic subjects enrolled, 1705 NPS specimens were evaluable for analyses, 19 were non-evaluable due to missing or invalid **cobas® liat** test results, and 5 were non-evaluable due to specimen handling issues. Of the 1729 prospective symptomatic subjects enrolled, 1706 ANS specimens were evaluable, 22 were non-evaluable due to missing or invalid **cobas® liat** test results, and 1 was non-evaluable due to specimen handling issues. Of the 2713 prospective asymptomatic subjects enrolled, 2697 NPS specimens were evaluable for analyses, 13 were non-evaluable due to missing or invalid **cobas® liat** test results, and 3 were

non-evaluable due to specimen handling issues. Of the 2713 prospective asymptomatic subjects enrolled, 2700 ANS specimens were evaluable, 10 were non-evaluable due to missing or invalid **cobas® liat** test results, and 3 were non-evaluable due to specimen handling issues. Available demographic data regarding the individuals from whom specimens were obtained are presented in Table 8.

Table 8: Demographics of Prospectively Enrolled Individuals

Characteristics	Symptomatic (N=1729)	Asymptomatic (N=2713)
Sex at Birth	-	-
Male	681 (39.4%)	1086 (40.0%)
Female	1048 (60.6%)	1627 (60.0%)
Age Group (Years)	-	-
<1	33 (1.9%)	11 (0.4%)
1 - <18	434 (25.1%)	205 (7.6%)
18 - <30	381 (22.0%)	791 (29.2%)
30 - <40	246 (14.2%)	453 (16.7%)
40 - <50	200 (11.6%)	393 (14.5%)
50 - <60	181 (10.5%)	394 (14.5%)
>=60	254 (14.7%)	466 (17.2%)
Ethnicity	-	-
Hispanic / Latino	244 (14.1%)	416 (15.3%)
Not Hispanic / Latino	1478 (85.5%)	2288 (84.3%)
Not Reported	4 (0.2%)	6 (0.2%)
Unknown	3 (0.2%)	3 (0.1%)
Race	-	-
American Indian / Alaska Native	8 (0.5%)	10 (0.4%)
Asian	24 (1.4%)	91 (3.4%)
Black / African American	212 (12.3%)	737 (27.2%)
Native Hawaiian / Other Pacific Islander	3 (0.2%)	3 (0.1%)
White	1413 (81.7%)	1774 (65.4%)
Other Race	52 (3.0%)	89 (3.3%)
Not Reported	17 (1.0%)	9 (0.3%)

In symptomatic subjects, for the NPS specimens **cobas® liat** SARS-CoV-2 v2 demonstrated a PPA and NPA of 94.5% and 97.6%, respectively; (Table 9). For the ANS specimens **cobas® liat** SARS-CoV-2 v2 demonstrated a PPA and NPA of 96.7% and 97.2%, respectively (Table 9). The

initial invalid rate of **cobas® liat** SARS-CoV-2 v2 on NPS and ANS symptomatic specimens was 0.5% and 0.7% respectively. Upon repeat testing, the final assay invalid rate on NPS and ANS symptomatic specimens was 0% and 0.1% respectively.

Table 9: Clinical Performance of cobas® liat SARS-CoV-2 v2 in Symptomatic Subjects Relative to the Comparator by Specimen Type

Specimen Type	a/ (a+c)	PPA (%)	PPA 95% CI	d/ (b+d)	NPA (%)	NPA 95% CI
NPS*	207/219	94.5	90.7-96.8	1451/1486	97.6	96.7-98.3
ANS**	208/215	96.7	93.4-98.4	1449/1491	97.2	96.2-97.9

Abbreviations: PPA = Positive Percent Agreement; CI = Confidence Interval; NPA = Negative Percent Agreement; NPS = Nasopharyngeal swab; ANS = Anterior nasal Swab; SARS-CoV-2 = Severe acute respiratory syndrome coronavirus 2.

Note: N = Total number of specimens; a = number of specimens where both **cobas® liat** and the comparator are positive; b = number of specimens where **cobas® liat** is positive and the comparator is negative; c = number of specimens where **cobas® liat** is negative and the comparator is positive; d = number of specimens where both **cobas® liat** and the comparator are negative.

* NPS discrepant NAAT results: Of 12 specimens negative on **cobas® liat** and positive on the comparator, 8 were positive and 4 were negative. Of 35 specimens positive on **cobas® liat** and negative on the comparator, 12 were positive and 23 were negative.

** ANS discrepant NAAT results: Of 7 specimens negative on **cobas® liat** and positive on the comparator, 6 were positive and 1 was negative. Of 42 specimens positive on **cobas® liat** and negative on the comparator, 8 were positive and 34 were negative.

In asymptomatic subjects, for the NPS specimens **cobas® liat** SARS-CoV-2 v2 demonstrated a PPA and NPA of 86.1% and 97.9%, respectively; (Table 9). For the ANS specimens **cobas® liat** SARS-CoV-2 v2 demonstrated a PPA and NPA of 89.5% and 98.3%, respectively, (Table 10). The initial invalid rate of **cobas® liat** SARS-CoV-2 v2 was 0.3% for both NPS and ANS asymptomatic specimens. Upon repeat testing, the final assay invalid rate was 0.0% for both NPS and ANS asymptomatic specimens.

Table 10: Clinical Performance of cobas® liat SARS-CoV-2 v2 in Asymptomatic Subjects Relative to the Comparator by Specimen Type

Specimen type	a/ (a+c)	PPA (%)	PPA 95% CI	d/ (b+d)	NPA (%)	NPA 95% CI
NPS*	62/72	86.1	76.3-92.3	2569/2625	97.9	97.2-98.4
ANS**	51/57	89.5	78.9-95.1	2597/2643	98.3	97.7-98.7

Abbreviations: PPA = Positive Percent Agreement; CI = Confidence Interval; NPA = Negative Percent Agreement; NPS = Nasopharyngeal swab; ANS = Anterior nasal Swab.

Note:N = Total number of specimens; a = number of specimens where both **cobas® liat** and the comparator are positive; b = number of specimens where **cobas® liat** is positive and the comparator is negative; c = number of specimens where **cobas® liat** is negative and the comparator is positive; d = number of specimens where both **cobas® liat** and the comparator are negative.

* NPS discrepant NAAT results: Of 10 specimens negative on **cobas® liat** and positive on the comparator, 6 were positive and 4 were negative. Of 56 specimens positive on **cobas® liat** and negative on the comparator, 17 were positive and 39 were negative.

** ANS discrepant NAAT results: Of 6 specimens negative on **cobas® liat** and positive on the comparator, 3 were positive and 3 were negative. Of 46 specimens positive on **cobas® liat** and negative on the comparator, 6 were positive and 40 were negative.

7. CONCLUSIONS

A comparison of the intended use, technological characteristics, and the results of non-clinical analytical and clinical performance studies demonstrate that **cobas® liat** SARS-CoV-2 v2 nucleic acid test is **substantially equivalent** to the predicate device.