# cobas® liat SARS-CoV-2 v2 nucleic acid test

For in vitro diagnostic use

For Rx Use Only

CLIA Complexity: WAIVED

| | |
|---|---|
| **cobas® liat SARS-CoV-2 v2** | P/N: 09049339190 |
| **cobas® liat SARS-CoV-2, Influenza A/B & RSV control kit** | P/N: 09731270190 |

Certificate of Waiver is required to perform the test in a CLIA Waived setting.

Laboratories with a Certificate of Waiver must follow the instructions for performing the test.

# 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.

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.

# Summary

Effective diagnosis of SARS-CoV-2 infections from other respiratory pathogens is needed to address a substantial burden of illness.[1,2] The seasonality and symptoms of COVID-19 overlap with other respiratory diseases and the clinical manifestation can range from asymptomatic to more severe and life-threatening disease.[3,4] To allow for rapid medical management and effective infection control, a fast, accurate, user-friendly and near-patient diagnostic solution is needed to detect SARS-CoV-2 in patients of all ages with and without acute respiratory symptoms.[5,6] Prompt and accurate detection of SARS-CoV-2 can help to target the use of antivirals and implementation of infection control measures, avoid inappropriate antibiotic use, reduce ancillary testing and hospitalizations, and identify local outbreaks of disease sooner.[7] **cobas® liat** SARS-CoV-2 v2 uses real-time PCR to rapidly detect viral RNA from both nasopharyngeal swab (NPS) and anterior nasal swab (ANS) specimens.

# Test principle

The 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 RT-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.

The sample to result time is approximately 20 minutes.

# Precautions and warnings

- For in vitro diagnostic use.
- For prescription use only.
- CLIA Complexity: WAIVED
  A Certificate of Waiver is required to perform this test in a CLIA Waived setting. To obtain CLIA waiver information and a Certificate of Waiver, please contact your state health department. Additional CLIA waiver information is available at the Centers for Medicare and Medicaid website at www.cms.hhs.gov/CLIA. Failure to follow the instructions or modification to the test system instructions will result in the test no longer meeting the requirements for waived classification.
- Before using the **cobas® liat** SARS-CoV-2 v2 nucleic acid test, operator should carefully read all testing instructions, warnings, and precautions in the Instructions for Use and the **cobas® liat** system User Guide.
- Treat all biological samples, including used **cobas® liat** SARS-CoV-2 v2 assay tubes and transfer pipettes, as if capable of transmitting infectious agents. All biological samples should be treated with universal precautions. Guidelines for sample handling are available from the U.S. Centers for Disease Control and Prevention, Clinical and Laboratory Standards Institute, and the World Health Organization.[8,9]
- Follow your institution's safety procedures for working with chemicals and handling biological samples.
- On request, Safety Data Sheets (SDS) are available from your local Roche representative.
- Use only the transfer pipettes contained in the **cobas® liat** transfer pipette pack. Use of alternative transfer pipettes may lead to invalid results.
- Carefully adhere to the procedures specified in this Instructions for Use document. Wear laboratory gloves, laboratory coat, and eye protection when handling samples and reagents. Change gloves before removing transfer pipette from the **cobas® liat** transfer pipette pack and after handling each sample or control. After handling samples and kit reagents, remove gloves and wash hands thoroughly.
- Contamination of the work area with previous positive samples or the **cobas® liat** SARS-CoV-2, Influenza A/B & RSV positive control may cause false positive results. Handle samples with caution. If spills occur on the **cobas® liat** analyzer, follow the appropriate instructions in the **cobas® liat** system User Guide to clean.
- Specimen collection must be performed using the recommended swab types. Inadequate or inappropriate sample collection, storage, and transport may yield incorrect or invalid test results. DO NOT use cotton or calcium alginate swabs, or swabs with wood shafts.
- When using pre-aliquoted 3 mL of sterile 0.9% physiological saline solution, ensure that the swab height is appropriate for the collection and the score mark is not higher than the height of the collection tube.

# Sample collection, transport, and storage

See Table 4 for a list of collection kits for use with **cobas® liat** SARS-CoV-2 v2. Follow the instructions for collecting all swab samples in their respective collection kit instructions for use (IFU).

## Sample collection

- Collect specimen using a sterile flocked swab with a synthetic tip according to applicable manufacturer instructions and/or standard collection technique using 3 mL of viral transport media (VTM) or 0.9% saline.

## Transport and storage

Transportation of collected specimens must comply with all applicable regulations for the transport of etiologic agents.

- Swab samples should be tested as soon as possible. If needed, specimens may be stored at 15-30 °C for up to 4 hours after collection, or at 2-8 °C for up to 72 hours. If needed, specimens collected in VTM may be stored frozen (-70 °C or colder) if testing within 72 hours is not possible.
  **Note:** Specimens collected in saline should not be frozen.
- Once sample has been transferred into a **cobas® liat** SARS-CoV-2 v2 assay tube, start the run on the **cobas® liat** analyzer as soon as possible but no later than 4 hours at room temperature (15-30 °C).

# Materials required, storage and handling

The materials provided for **cobas® liat** SARS-CoV-2 v2 can be found in Table 1 and Table 2. Reagent handling and storage can be found in Table 3. Materials required, but not provided can be found in Table 4 and Instrumentation and software required in Table 5.

## cobas® liat SARS-CoV-2 v2 reagents and controls

All unopened assay tubes and controls shall be stored as recommended in Table 3.

**Table 1: cobas® liat** SARS-CoV-2 v2
Store at 2-8 °C, 20 tests (P/N 09049339190)
2 **cobas® liat** transfer pipette packs (12 pipettes/pack - P/N 09329676001)
1 package insert barcode card

| **Reagents in cobas® liat SARS-CoV-2 v2 nucleic test assay tube** | **Reagent ingredients** | **Safety symbol and warning[a]** |
|---|---|---|
| **cobas® liat Internal Control** | Tris buffer, EDTA, <0.02% non-target related armored RNA construct containing primer and probe specific sequence regions, <0.1% Sodium azide | N/A |
| **cobas® liat Magnetic Glass Particles** | Magnetic Glass Particles | N/A |
| **cobas® liat Lysis Buffer** | Citric acid,<br>Sodium phosphate,<br><40% guanidinium thiocyanate[b],<br>Dibasic sodium phosphate,<br>Dithiothreitol<br>Brij® 35 |  <br>**DANGER**<br>H302: Harmful if swallowed.<br>H314: Causes severe skin burns and eye damage.<br>H412: Harmful to aquatic life with long lasting effects.<br>EUH032: Contact with acids liberates very toxic gas.<br>EUH071: Corrosive to the respiratory tract.<br>P273: Avoid release to the environment.<br>P280: Wear protective gloves/protective clothing/ eye protection/face protection/hearing protection.<br>P301 + P330 + P331: IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.<br>P303 + P361 + P353: IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.<br>P304 + P340 + P310: IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/doctor.<br>P305 + P351 + P338 + P310: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/ doctor.<br>593-84-0 Guanidinium thiocyanate |
| **cobas® liat Wash Buffer** | Sodium Citrate Dihydrate,<br>0.1% Methyl P-Hydroxybenzoate | N/A |

| Reagents in cobas® liat SARS-CoV-2 v2 nucleic test assay tube | Reagent ingredients | Safety symbol and warning[a] |
|---|---|---|
| **cobas® liat Elution Buffer** | Trehalose, Tris buffer, BSA, Magnesium sulfate, 0.01% ProClin® 300 preservative[b]<br><br>EUH210: Safety data sheet available on request<br>EUH208: Contains reaction mass of 5-chloro-2-methyl-2H-isothiazol-3-one and 2-methyl-2H-isothiazol-3-one (3:1). May produce an allergic reaction. | N/A |
| **cobas® liat Master Mix-1** | Tricine buffer, Potassium acetate, Potassium hydroxide, EDTA, DMSO, 0.09% Sodium azide, Tween 20, Glycerol, Recombinant human serum albumin, dATP, dCTP, dGTP, dUTP, Target and Internal Control primers, UNG | N/A |
| **cobas® liat Master Mix-2** | Trizma-base, DTT, EDTA, 0.01% Tween-80, < 0.03% Tween-20, Glycerol, Potassium chloride, <0.01% MMLV Reverse Transcriptase | N/A |
| **cobas® liat Master Mix-3** | Tricine, Potassium acetate, Potassium hydroxide, EDTA, 0.09% Sodium azide, 0.06 % Tween-20, recombinant human serum albumin, < 0.008% Target and Internal Control primers,<br>< 0.01% fluorescent target and Internal Control probes, Aptamer,<br>< 0.03% Z05 DNA polymerase | N/A |

[a] Product safety labeling follows EU GHS guidance and US FDA regulations.

[b] Hazardous substance or mixture

**Table 2: cobas® liat** SARS-CoV-2, Influenza A/B & RSV control kit
Store at 2-8°C
(P/N 09731270190)
1 Control Kit Barcode Card

| Kit components | Reagent ingredients | Quantity per kit | Safety symbol and warning[a] |
|---|---|---|---|
| **cobas® liat SARS-CoV-2, Influenza A/B & RSV positive control (SARS2 Flu A/B & RSV (+) C)** (P/N 09747974001) | Tris buffer, EDTA<br>< 0.003% Poly rA (synthetic),<br>< 0.001% non-infectious armored RNAs containing SARS-CoV-2, influenza A influenza B, & RSV sequences, < 0.1% Sodium azide | 3 X 0.3 mL | N/A |
| **cobas® liat Neg Buf (BUF (–) C)** (P/N 09587373001) | Tris buffer, EDTA, 0.05% Sodium azide,<br>< 0.01% Poly rA RNA (synthetic) | 3 X 0.3 mL | N/A |

[a] Product safety labeling follows EU GHS guidance and US FDA regulations.

**Table 3:** Materials provided

| P/N | Material description | Quantity | Storage temperature | Storage time |
|---|---|---|---|---|
| 09049339190 | **cobas® liat** SARS-CoV-2 v2 nucleic acid test | 20 tests | 2-8°C* | Stable until expiration date indicated |
| 09731270190 | **cobas® liat** SARS-CoV-2, Influenza A/B & RSV control kit | 3 sets | 2-8°C | Stable until expiration date indicated |

***Note:*** Do not freeze reagents.

*For short-term storage, **cobas® liat** SARS-CoV-2 v2 assay tube kits may be stored for up to five days at room temperature. Kits should be labeled with the start date of room temperature storage and disposed of if not used within five days. The **cobas® liat** transfer pipette pack may be stored at room temperature following first removal from the kit.

**Table 4:** Materials required but not provided

| Specimen Collection Kit | P/N |
|---|---|
| Nasopharyngeal Swab Collection Kits:<br>Flexible minitip FLOQSwab™ with Universal Transport Media™ (UTM®) from Copan Diagnostics OR<br>BD™ Universal Viral Transport (UVT) 3-mL collection kit with a flocked flexible minitip swab | 305C, 307C, 321C, 3C057N, 3C071N<br>220529, 220531 |
| Anterior Nasal Swab Collection Kits:<br>Regular FLOQSwab™ with Universal Transport Media™ (UTM®) from Copan Diagnostics, OR<br>BD™ Universal Viral Transport (UVT) 3-mL collection kit with a regular flocked swab, OR<br>Copan Universal Transport Medium (UTM-RT®), without beads | 306C, 321C, 346C, 3C064N<br>220527, 220528<br>3C047N, 3C075N |
| Thermo Fisher™ Scientific Remel™ M4RT*<br>Thermo Fisher™ Scientific Remel™ M4<br>Thermo Fisher™ Scientific Remel™ M5<br>Thermo Fisher™ Scientific Remel™ M6<br>Thermo Fisher™ Scientific Remel™ M4RT® tube, without beads | R12565, R12566, R12567<br>R12550<br>R12555<br>R12563, R12568, R12569<br>R12622, R12591 |
| Pre-aliquoted 3 mL 0.9% Physiological saline*. Thomas Scientific MANTACC™ 0.9% Saline Solution, 3 mL. | 20A00K984 |

*Anterior nasal and nasopharyngeal swabs collected in 0.9% physiological saline solution, Remel™ M4RT, M4, M5 and M6 are compatible for use with **cobas® liat** SARS-CoV-2 v2 nucleic acid test. However, clinical performance of the assay in these media types was not established.

**Table 5:** Equipment and software required but not provided

| Equipment and Software |
|---|
| **cobas® liat** analyzer (P/N 07341920190)<br>Including **cobas® liat** system software version 3.4 or higher |
| **cobas® liat** SARS-CoV-2 v2 script (CV2A) v1.0 or higher |

**Note:** For additional information regarding the **cobas® liat** analyzer, please refer to the **cobas® liat** system User Guide.

# Test procedure

## Procedural notes

- Do not use **cobas® liat** SARS-CoV-2 v2 assay tube and **cobas® liat** SARS-CoV-2, Influenza A/B & RSV control kit after their expiry dates.
- Do not open individual assay tube packaging until operator is ready to perform testing.
- Do not reuse assay tubes and transfer pipettes. They are for single use only.
- Positive and negative controls contain sufficient volume for single use only. Discard after use.
- Do not use a damaged **cobas® liat** SARS-CoV-2 v2 assay tube. Do not use a **cobas® liat** SARS-CoV-2 v2 assay tube that has been dropped after removal from its foil pouch.
- Ensure there is no sign of leakage from the collection tube prior to running the test.
- Ensure any additional labels are only placed on the back of the tube sleeve or around the side of the cap, do not place labels over barcodes or over the top of the assay tube cap.
- Do not open the cap of the **cobas® liat** SARS-CoV-2 v2 assay tube during or after the run.
- Dispose of all materials that have come in contact with samples and reagents in accordance with country, state, and local regulations.

## Procedural limitations

- **cobas® liat** SARS-CoV-2 v2 has been evaluated only for use in combination with the **cobas® liat** SARS-CoV-2, Influenza A/B & RSV control kit and this Instructions for Use document. Modifications to these procedures may alter the performance of the test.
- This test can be used for the detection of SARS-CoV-2 RNA in nasopharyngeal and anterior nasal swab samples collected in the collection media listed in Table 4. Testing of other sample or media types may lead to inaccurate results.
- Anterior nasal and nasopharyngeal swabs collected in 0.9% physiological saline solution, Remel™ M4RT, M4, M5 and M6 are compatible for use with **cobas® liat** SARS-CoV-2 v2 nucleic acid test. Performance of the **cobas® liat** SARS-CoV-2 v2 nucleic acid test with specimens collected in 0.9% physiological saline, Remel™ M4RT, M4, M5 and M6 has been established in analytical studies, however, clinical performance of the assay in this media types was not established.
- Negative results do not preclude SARS-CoV-2 infection and should not be used as the sole basis for treatment or other patient management decisions.
- A negative test result does not preclude the possibility of infection with other bacteria or viruses. This test cannot rule out diseases caused by other bacterial or viral pathogens.
- Detection of SARS-CoV-2 RNA may be affected by sample collection methods, patient factors (e.g., presence of symptoms), and/or stage or severity of infection.
- False negative results may occur if a specimen is improperly collected, transported, or handled, if there is insufficient RNA to be detected, or if one or more target viruses inhibits amplification of other targets. False negative or invalid results may also occur due to interference. The Internal Control is included in **cobas® liat** SARS-CoV-2 v2 to help identify the specimens containing substances that may interfere with nucleic acid isolation and PCR amplification.
- Invalid results may be obtained if there is insufficient sample volume or if the specimen contains inhibitory substances that prevent nucleic acid target extraction and/or amplification and detection.

- Mutations within the target regions of **cobas® liat** SARS-CoV-2 v2 could affect primer and/or probe binding that results in failure to detect the presence of virus.
- The clinical performance has not been established with all circulating variants but is anticipated to be reflective of the common variants in circulation at the time and location of the clinical evaluation. The evaluation was conducted during September 2023 through March 2024 in the United States. Performance at the time of testing may vary depending on the variants circulating, including newly emerging strains of SARS-CoV-2 and their prevalence, which change over time. Additional testing with a molecular test and/or sequencing should be considered in situations where a new virus strain or variant is suspected.
- For asymptomatic individuals with negative results, results should be considered presumptive. Additionally, a negative result obtained from an asymptomatic patient should be followed up by testing at least twice over three days with at least 48 hours between tests.
- Clinical performance of this test has not been established in hospitalized, severely ill, or immunocompromised patients. For screening asymptomatic patients who are at high risk of medical complications from SARS-CoV-2 (e.g., patients undergoing transplant or chemotherapy) a high-performing nucleic acid test should be used.

# cobas® liat SARS-CoV-2 v2 assay tube Lot Validation

Before using a new lot of **cobas® liat** SARS-CoV-2 v2 assay tubes, a Lot Validation procedure must be performed on the **cobas® liat** analyzer to validate the **cobas® liat** SARS-CoV-2 v2 assay tube lot at your site. The procedure includes running a negative control sample and a positive control sample.

***Note:*** *Refer to the **cobas® liat** system User Guide for detailed operating instructions.*

## Materials needed for Lot Validation

| From **cobas® liat** SARS-CoV-2 v2 nucleic acid test: | From **cobas® liat** SARS-CoV-2, Influenza A/B & RSV control kit: |
|---|---|
| □ 2 **cobas® liat** SARS-CoV-2 v2 assay tubes<br>□ 2 transfer pipettes<br>□ package insert barcode card | □ 1 negative control (NEG BUF) tube<br>□ 1 **cobas® liat** SARS-CoV-2, Influenza A/B & RSV positive control tube<br>□ 1 negative/positive control barcode card* |

*Note: The negative and positive control barcodes for **cobas® liat** SARS-CoV-2 v2 are in Section 3 of the control barcode card.

## Assay tube Lot Validation workflow

| | |
|---|---|
| 1 | Press the power on/off button to start the **cobas® liat** analyzer. |
| 2 | Choose **"Logon**". Enter user name and password when prompted, choose **"Enter".** |
| 3 | From the **Main** menu, choose **Assay Menu**. From the Assay Menu, choose [**New Lot**]. |
| 4 | Choose **Scan**, and scan the Package Insert barcode from the package insert barcode card. |
| 5 | Choose **Scan** and scan the negative control barcode from the negative/positive control barcode card (Section 3) included with the control kit.<br>***Note: Ensure the lot number on the control tube matches the lot number on the negative/positive control barcode card.*** |
| 6 | Remove the cap of the **cobas® liat** SARS-CoV-2 v2 assay tube. Using one of the transfer pipettes provided, firmly squeeze the bulb of the transfer pipette, lower it into the liquid in the negative control (NEG BUF) tube, and release the bulb to slowly draw up the control and slowly transfer the control into the opening of the assay tube by squeezing the bulb. Recap the assay tube and dispose the transfer pipette and control tube.<br>***Note: Hold the NEG BUF vial upright and lightly tap on a flat surface to collect liquid at the bottom of the vial. Visually check that the NEG BUF has pooled at the bottom of the vial.***<br>***Note: Only use the transfer pipette provided in the cobas® liat transfer pipette pack to transfer controls into the cobas® liat SARS-CoV-2 v2 assay tube.***<br>***Note: Reseal the cobas® liat transfer pipette pack immediately after removing the necessary pipette(s).***<br>***Note: Do not puncture the cobas® liat SARS-CoV-2 v2 assay tube or the seal at the bottom of the sample compartment. If either of these are damaged, discard both the cobas® liat SARS-CoV-2 v2 assay tube and the transfer pipette, and restart the testing procedure with a new cobas® liat SARS-CoV-2 v2 assay tube, negative control, and pipette.*** |
| 7 | Choose **Scan**, and scan the **cobas® liat** SARS-CoV-2 v2 assay tube barcode. Remove the assay tube sleeve and insert the assay tube into the analyzer tube entry door until the tube clicks into place. Processing begins automatically. |
| 8 | Once the test is complete, if the **cobas® liat** analyzer displays **"Negative control result accepted."**, choose **Confirm**. Then, remove and dispose the **cobas® liat** SARS-CoV-2 v2 assay tube. Choose **Back** and repeat Steps 5-8 for the positive control.<br>***Note: In Step 5, Scan the positive control barcode from the negative/positive control barcode card.***<br>When the positive control result is accepted, you can begin using the lot. ***Note: If the result is rejected, repeat the control run. If repeated control run does not produce the expected result, contact your local Roche representative.*** |
| 9 | ***Optional*:** To transfer the lot information to other **cobas® liat** analyzers at your site, refer to the **cobas® liat** system User Guide. |

# cobas® liat SARS-CoV-2 v2 sample testing workflow

## Materials needed for a sample run

- □ 1 **cobas® liat** SARS-CoV-2 v2 assay tube
- □ 1 transfer pipette
- □ 1 sample in appropriate collection media tube

### Sample testing workflow

| | |
|---|---|
| 1 | Press the power on/off button to start the **cobas® liat** analyzer. |
| 2 | Choose **"Logon"**. Enter user name and password when prompted, choose **"Enter"**. |
| 3 | Obtain clinical sample, **cobas® liat** SARS-CoV-2 v2 assay tube, and one of the transfer pipettes provided in the **cobas® liat** transfer pipette pack. |
| 4 | From the **Main** menu, choose **Run Assay**. Then **Scan** the **cobas® liat** SARS-CoV-2 v2 assay tube barcode. |
| 5 | **Scan** the sample ID barcode or choose **Enter** to enter the ID manually.<br>***Note: Depending on analyzer configuration, if required to confirm the received patient information, choose the Confirm button.*** |
| 6 | Remove the cap of the **cobas® liat** SARS-CoV-2 v2 assay tube. Using a transfer pipette provided in the **cobas® liat** transfer pipette pack, firmly squeeze the bulb of the transfer pipette, lower it into the liquid in the sample collection media tube and release the bulb to draw up the sample and slowly transfer the sample into the opening of the test assay tube by squeezing the bulb. Recap the test assay tube and dispose the transfer pipette.<br>***Note: Only use the transfer pipette provided in the cobas® liat transfer pipette pack to transfer sample into the cobas® liat SARS-CoV-2 v2 assay tube.***<br>***Note: Reseal the cobas® liat transfer pipette pack immediately after removing the necessary pipette(s).***<br>***Note: Do not puncture the cobas® liat SARS-CoV-2 v2 assay tube or the seal at the bottom of the sample compartment. If either of these are damaged, discard both the cobas® liat SARS-CoV-2 v2 assay tube and the transfer pipette, and restart the testing procedure with a new cobas® liat SARS-CoV-2 v2 assay tube and pipette.*** |
| 7 | Choose **Scan**, and rescan the **cobas® liat** SARS-CoV-2 v2 assay tube barcode. Remove the assay tube sleeve and insert the assay tube into the analyzer tube entry door until the tube clicks into place. Processing begins automatically. ***Note: Processing of the assay tube must begin within 4 hours of sample addition to the cobas® liat SARS-CoV-2 v2 assay tube when stored at room temperature (step 6).*** |
| 8 | When the assay test run is complete, remove and dispose the used **cobas® liat** SARS-CoV-2 v2 assay tube. |
| 9 | Choose the **Report** button to view the result report for validity.*<br>***Note: For result interpretation please refer to Interpretation of results section.*** |

*Refer to **cobas® liat** system User Guide for details of result uploading to LIS.

**Note**: When performing additional positive control and/or negative control runs (with materials provided in the **cobas® liat** SARS-CoV-2, Influenza A/B & RSV control kit), in accordance with local, state, federal and/or accrediting organization requirements, follow the procedures outlined under the section "**cobas® liat** SARS-CoV-2 v2 sample testing workflow". In step 5, be sure to use the provided control barcodes (Section 3) included in **cobas® liat** SARS-CoV-2, Influenza A/B & RSV control kit to scan as sample ID barcode. Interpretation of results for **cobas® liat** SARS-CoV-2 v2 when running additional **cobas® liat** SARS-CoV-2, Influenza A/B & RSV positive controls or negative controls are shown in the "Interpretation of results" section (Table 6). Using barcodes other than the control barcodes provided may lead to incorrect control results.

# Interpretation of results

**Table 6**: Interpretation of results of **cobas® liat** SARS-CoV-2 v2 when running "Lot Validation" procedure or additional control runs

| cobas® liat analyzer Display | Result Interpretation |
|---|---|
| **Negative Control Valid** | **Negative Control Valid**<br>Control is negative for the presence of SARS-CoV-2 RNA. |
| **Negative Control Invalid. Repeat Run** | **Negative Control Invalid**<br>Result is Invalid. The negative control should be re-tested to obtain a valid result. Repeat Run.* |
| **Positive Control Valid** | **Positive Control Valid**<br>Control is positive for the presence of SARS-CoV-2 RNA. |
| **Positive Control Invalid. Repeat Run** | **Positive Control Invalid**<br>Result is Invalid. The Positive Control should be re-tested to obtain a valid result. Repeat Run.* |

If the repeated run is still invalid, contact your Roche representative.

*For additional control runs, "Repeat Run" will not be part of the result report in the case of an invalid result.

**Table 7:** Interpretation of results of **cobas® liat** SARS-CoV-2 v2 when running a sample

| cobas® liat analyzer Display | Result Interpretation |
|---|---|
| **SARS-CoV-2 Not Detected** | Negative test for SARS-CoV-2 (no SARS-CoV-2 RNA detected). |
| **SARS-CoV-2 Detected** | Positive test for SARS-CoV-2 (SARS-CoV-2 RNA present). |
| **SARS-CoV-2 Invalid** | Presence or absence of SARS-CoV-2 could not be determined. If clinically indicated, repeat assay with same sample or, if possible, collect new sample for testing. |
| **Assay Invalid** | Presence or absence of SARS-CoV-2 could not be determined. Repeat assay with same sample or, if possible, collect new sample for testing. |
| **Assay Aborted by System** | Run failed or aborted by system. Repeat assay with same sample or, if possible, collect new sample for testing. |
| **Assay Aborted by script: Script aborted** | Run failed or aborted by script. Repeat assay with same sample or, if possible, collect new sample for testing. |
| **Assay Aborted by User** | Run aborted by user. |

# Non-clinical performance evaluation

## 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 8.

**Table 8:** 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) |

## 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 9.

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 9:** 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 |
| 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.

## Cross reactivity and microbial interference

Cross-reactivity and microbial interference were evaluated by testing a panel of microorganisms (Table 10). 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 10:** 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 [ɨ] | 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* [ɨ] |
| 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

[ɨ] Clinical specimens at unknown concentrations were tested.

## 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 11 at the concentrations tested did not interfere with the detection of SARS-CoV-2 nor did they produce invalid results in negative samples.

**Table 11:** 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 |

| Potential Interferent | Concentration Tested |
|---|---|
| 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 |
| 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.

## 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 12.

**Table 12:** Reproducibility results for the **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 13.

**Table 13:** 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.

# 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 14.

**Table 14:** 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%) |

| Characteristics | Symptomatic (N=1729) | Asymptomatic (N=2713) |
|---|---|---|
| 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 15). For the ANS specimens, **cobas® liat** SARS-CoV-2 v2 demonstrated a PPA and NPA of 96.7% and 97.2%, respectively (Table 15). 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 15:** 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 15). For the ANS specimens, **cobas® liat** SARS-CoV-2 v2 demonstrated a PPA and NPA of 89.5% and 98.3%, respectively, (Table 16). 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 16:** 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.

## Expected values

The positivity rate of the **cobas® liat** SARS-CoV-2 v2 nucleic acid assay test observed during the prospective study is shown for each specimen type, by collection site in Table 17 below.

**Table 17:** Positivity as Determined by the **cobas® liat** SARS-CoV-2 v2 nucleic acid test by Specimen Type and Clinical Site in the Prospective Study

| Collection Site | Symptomatic Subjects | Symptomatic Subjects | Asymptomatic Subjects | Asymptomatic Subjects |
|---|---|---|---|---|
| - | Nasopharyngeal swab | Anterior nasal swab | Nasopharyngeal swab | Anterior nasal swab |
| 1 | 6.0% (4/67) | 7.5% (5/67) | 3.9% (11/283) | 4.2% (12/283) |
| 2 | 12.2% (5/41) | 12.2% (5/41) | 3.6% (11/309) | 2.6% (8/309) |
| 3 | 6.1% (2/33) | 3.0% (1/33) | 0.0% (0/0) | 0.0% (0/0) |
| 4 | 0.0% (0/42) | 0.0% (0/42) | 0.0% (0/55) | 1.8% (1/56) |
| 5 | 17.5% (54/308) | 21.5% (66/307) | 2.9% (2/70) | 7.0% (5/71) |
| 6 | 19.9% (34/171) | 20.2% (35/173) | 12.1% (21/173) | 8.6% (15/175) |
| 7 | 7.1% (13/184) | 8.1% (15/185) | 2.3% (1/43) | 2.3% (1/43) |
| 8 | 3.0% (2/66) | 3.0% (2/66) | 1.9% (2/107) | 2.8% (3/106) |
| 9 | 26.1% (42/161) | 26.1% (42/161) | 4.4% (11/252) | 5.6% (14/251) |
| 10 | 17.3% (29/168) | 16.7% (28/168) | 9.9% (18/182) | 3.9% (7/181) |
| 11 | 14.5% (29/200) | 12.9% (26/201) | 1.7% (5/294) | 1.4% (4/294) |
| 12 | 3.9% (6/154) | 3.9% (6/152) | 2.6% (9/343) | 1.7% (6/344) |
| 13 | 14.3% (8/56) | 12.5% (7/56) | 5.1% (15/293) | 2.7% (8/294) |
| 14 | 25.9% (14/54) | 22.2% (12/54) | 4.1% (12/293) | 4.4% (13/293) |

# Failure codes

The result report may contain failure codes as described in Table 18, depending on potential run failures. For any questions, please contact your Roche Service representative.

**Table 18:** Failure codes and definitions

| Failure Codes | Sample | Negative Control | Positive Control |
|---|---|---|---|
| g0/g1 | IC out of range. | IC out of range. | IC out of range. |
| x4 | SARS-CoV-2 target out of range. | N/A | SARS-CoV-2 target out of range. |
| FP | N/A | SARS-CoV-2 target out of range. | N/A |
| x5 | Low sample volume. | Low sample volume. | N/A |

# CLIA waiver study

Clinical performance characteristics of the **cobas**® **liat** SARS-CoV-2 v2 test were evaluated in a multi-site prospective study during September 2023 to March 2024 in the U.S. Fourteen (14) point of care (POC) testing sites throughout the U.S. participated in the clinical study. All the sites qualified as representative of CLIA waived intended use sites for this device.

Operators at all 14 external POC sites were chosen to represent the intended users. From these sites, 41 operators took part in study testing and were chosen to represent typical POC operators (e.g., nurses, medical assistants, clinical research coordinators).

Please refer to the clinical study section for the clinical performance data.

## Near cutoff study

A Device Performance with Analyte Concentrations Near Cutoff study was performed to assess the capability of CLIA waived site intended operators to test true negative and weak positive samples and obtain accurate results. This was evaluated as a part of the reproducibility study.

Two (2) operators at each of the three (3) sites each tested one (1) panel on five (5) different days for three (3) assay tube lots. All replicates for each panel member were always tested on the same analyzer. For each panel member, approximately 270 results were produced. Percent agreement with expected results are presented in Table 19.

**Table 19:** Results for near cutoff study with **cobas**® **liat** SARS-CoV-2 v2

| Panel Member Concentration | Site 1 Agreement with Expected Results^ | Site 2 Agreement with Expected Results^ | Site 3 Agreement with Expected Results^ | Overall Agreement with Expected Results^ |
|---|---|---|---|---|
| 1x-2x LoD | 100.0%<br>(90/90)<br>(95.9%-100.0%) | 100.0%<br>(90/90)<br>(95.9%-100.0%) | 100.0%<br>(90/90)<br>(95.9%-100.0%) | 100.0%<br>(270/270)<br>(98.6%-100.0%) |
| Negative | 100.0%<br>(86/86)<br>(95.7%-100.0%) | 100.0%<br>(89/89)<br>(95.9%-100.0%) | 100.0%<br>(90/90)<br>(95.9%-100.0%) | 100.0%<br>(265/265)<br>(98.6%-100.0%) |

## Flex studies

Using risk analysis as a guide, analytical flex studies were conducted. The studies demonstrated that the test is insensitive to stresses of environmental conditions and potential user errors.

# Symbols

**The following symbols are used in labeling for Roche PCR diagnostic products.**

**Table 20**: Symbols used in labeling for Roche PCR diagnostic products

| | | |
|---|---|---|
| Age/DOB Age or Date of Birth | Device not for near-patient testing | QS IU/PCR QS IU per PCR reaction, use the QS International Units (IU) per PCR reaction in calculation of the results. |
| SW Ancillary Software | Device not for self-testing | |
| Assigned Range [copies/mL] Assigned Range (copies/mL) | Distributor *(Note: The applicable country/region may be designated beneath the symbol)* | SN Serial number |
| Assigned Range [IU/mL] Assigned Range (IU/mL) | Do not re-use | Site Site |
| EC REP Authorized representative in the European Community | Female | Procedure Standard Standard Procedure |
| BARCODE Barcode Data Sheet | For IVD performance evaluation only | STERILE EO Sterilized using ethylene oxide |
| LOT Batch code | GTIN Global Trade Item Number | Store in dark |
| Biological risks | Importer | Temperature limit |
| REF Catalogue number | IVD In vitro diagnostic medical device | TDF Test Definition File |
| CE CE marking of conformity; this device is in conformity with the applicable requirements for CE marking of an in vitro diagnostic medical device | LLR Lower Limit of Assigned Range | This way up |
| | Male | Procedure UltraSensitive Ultrasensitive Procedure |
| Collect Date Collect date | Manufacturer | UDI Unique Device Identifier |
| Consult instructions for use | CONTROL − Negative control | ULR Upper Limit of Assigned Range |
| Σ Contains sufficient for <*n*> tests | NON STERILE Non-sterile | Urine Fill Line Urine Fill Line |
| CONTENT Content of kit | Patient Name | Rx only For USA: Caution: Federal law restricts this device to sale by or on the order of a physician. |
| CONTROL Control | Patient number | Use-by date |
| Date of manufacture | Peel here | |
| Device for near-patient testing | CONTROL + Positive control | |
| Device for self-testing | QS copies / PCR QS copies per PCR reaction, use the QS copies per PCR reaction in calculation of the results. | |

## Technical support

For technical support (assistance), please reach out to your local affiliate:
https://www.roche.com/about/business/roche_worldwide.htm

## Manufacturer and importer

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1080 US Highway 202 South
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www.roche.com

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Roche Diagnostics
9115 Hague Road
Indianapolis, IN 46250-0457, USA
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## References


1. Murray CJL, Collaborators GBD. Findings from the Global Burden of Disease Study 2021. *Lancet*. 2024;403:2259-62. PMID: 38762327.
2. Group IPC. Global burden associated with 85 pathogens in 2019: a systematic analysis for the Global Burden of Disease Study 2019. *Lancet Infect Dis*. 2024;24:868-95. PMID: 38640940.
3. Wiemken TL, Khan F, Puzniak L, et al. Seasonal trends in COVID-19 cases, hospitalizations, and mortality in the United States and Europe. *Sci Rep*. 2023;13:3886. PMID: 36890264.
4. Munster VJ, Koopmans M, van Doremalen N, van Riel D, de Wit E. A Novel Coronavirus Emerging in China - Key Questions for Impact Assessment. *N Engl J Med*. 2020;382:692-4.
5. Caliendo AM, Gilbert DN, Ginocchio CC, et al. Better tests, better care: improved diagnostics for infectious diseases. *Clin Infect Dis*. 2013;57 Suppl 3:S139-70. PMID: 24200831.
6. McPartlin DA, O'Kennedy RJ. Point-of-care diagnostics, a major opportunity for change in traditional diagnostic approaches: potential and limitations. *Expert Rev Mol Diagn*. 2014;14:979-98.
7. Azar MM, Landry ML. Detection of influenza A and B viruses and respiratory syncytial virus by use of clinical laboratory improvement amendments of 1988 (CLIA)-waived point-of-care assays: a paradigm shift to molecular tests. *J Clin Microbiol*. 2018;56. . PMID: 29695519.
8. Center for Disease Control and Prevention. *Biosafety in Microbiological and Biomedical Laboratories*. 5th ed. HHS Publication No. (CDC) 21-1112. Revised: Dec 2009; accessed: 20 Nov 2023. https ://www.cdc.gov/labs/pdf/CDC-BiosafetyMicrobiologicalBiomedicalLaboratories-2009-P.PDF
9. Clinical and Laboratory Standards Institute (CLSI). *Protection of laboratory workers from occupationally acquired infections.* Approved Guideline-Fourth Edition. CLSI Document M29-A4:Wayne, PA;CLSI, 2014.

# Document revision

| **Document Revision Information** | |
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