



Rx Only

# **cobas<sup>®</sup> SARS-CoV-2**

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## **Nucleic acid test for use on the cobas<sup>®</sup> Liat<sup>®</sup> System**

*For use under the Emergency Use Authorization (EUA) only*

*For in vitro diagnostic use*

*Rx only*

**cobas<sup>®</sup> SARS-CoV-2**

P/N: 09408592190

**cobas<sup>®</sup> SARS-CoV-2 Quality Control Kit**

P/N: 09408835190

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## Intended use

The **cobas**®SARS-CoV-2 Nucleic acid test for use on the **cobas**®Liat®System (**cobas**®SARS-CoV-2) is an automated real-time RT-PCR assay intended for the rapid in vitro qualitative detection of nucleic acid from SARS-CoV-2 in self-collected anterior nasal (nasal) swabs (collected in a healthcare setting with instruction by a healthcare provider) and healthcare provider-collected nasopharyngeal, mid-turbinate and anterior nasal (nasal) swabs from either individuals suspected of COVID-19 by their healthcare provider or from any individual, including individuals without symptoms or other reasons to suspect COVID-19.

Results are for the identification of SARS-CoV-2 nucleic acids. SARS-CoV-2 RNA is generally detectable in respiratory 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 bacterial infection or co-infection with other viruses. Clinical correlation with patient history and other diagnostic information is necessary to determine patient infection status. The agent detected may not be the definite cause of disease.

Negative results do not preclude SARS-CoV-2 infection and should not be used as the sole basis for diagnosis, treatment or other patient management decisions. Negative results must be combined with clinical observations, patient history, and/or epidemiological information.

**cobas**®SARS-CoV-2 is intended for use by health professionals or trained operators who are proficient in using the **cobas**®Liat®System.

In the United States (US), testing with **cobas**®SARS-CoV-2 is authorized for laboratories certified under the Clinical Laboratory Improvement Amendments of 1988 (CLIA), 42 U.S.C. §263a, that meet requirements to perform moderate or high complexity tests. **cobas**® SARS-CoV-2 is also authorized for use at the Point of Care (POC), i.e., in patient care settings operating under a CLIA Certificate of Waiver, Certificate of Compliance, or Certificate of Accreditation.

Laboratories within the U.S. and its territories are required to report all SARS-CoV-2 results to the appropriate public health authorities.

In the U.S., **cobas**®SARS-CoV-2 is only for use under the Food and Drug Administration's Emergency Use Authorization.

## Summary and explanation of the test

### Background

Coronavirus disease 2019 (COVID-19) is a respiratory illness caused by a novel human coronavirus, named SARS-CoV-2 (severe acute respiratory syndrome coronavirus-2) by the World Health Organization.<sup>1-3</sup> COVID-19 has been declared a public health emergency of international concern and is the first pandemic caused by coronavirus.<sup>4,5</sup> COVID-19 is a potentially fatal infection that results in significant worldwide morbidity and mortality.<sup>6</sup>

Rapid and accurate diagnosis of COVID-19 infection is important in individuals suspected of a respiratory infection or in individuals who require screening for COVID-19 infection. The clinical manifestation of COVID-19 can range from asymptomatic or mild "influenza-like" illness (such as fever, cough, shortness of breath, or myalgia) in a majority of individuals to more severe and life-threatening disease.<sup>7-9</sup> Rapid and accurate detection of SARS-CoV-2 can help to inform time-critical medical decision-making, facilitate infection control efforts, promote efficient resourcing, optimize use of targeted therapies and antimicrobials, and reduce ancillary testing or procedures.<sup>10,11</sup>

**Explanation of the test**

**cobas**® SARS-CoV-2 assay uses real-time reverse transcriptase polymerase chain reaction (RT-PCR) technology to rapidly (approximately 20 minutes) detect SARS-CoV-2 virus from nasopharyngeal, mid-turbinate and nasal swabs. The automation, small footprint, and easy-to-use interface of the **cobas**® Liat® System enable performance of this test to occur at the POC or in a clinical laboratory setting.

**Principles of the procedure**

The **cobas**® SARS-CoV-2 assay 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 structural nucleocapsid protein (N) gene that are unique to SARS-CoV-2. An Internal Process Control (IPC) is also included. The IPC is present to control for adequate processing of the target virus through steps of sample purification, nucleic acid amplification, and to monitor the presence of inhibitors in the RT-PCR processes.

## Reagents and materials

The materials provided for cobas® SARS-CoV-2 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 Table 5.


Refer to the **Reagents and materials** section and the **Precautions and handling requirements** section for the hazard information for the product.

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

All unopened assay tubes and controls shall be stored as recommended in Table 1 to Table 3.

**Table 1: cobas® SARS-CoV-2**

<b>cobas® SARS-CoV-2</b> Store at 2-8°C 20 tests (P/N 09408592190) 20 transfer pipettes 1 Package Insert Barcode Card		
Reagents in cobas® SARS-CoV-2 assay tube	Reagent ingredients	Safety symbol and warning <sup>a</sup>
<b>cobas® Liat® Internal Process Control</b>	Tris buffer, tween-80, polyethylene glycol, EDTA, < 0.001% stock bacteriophage MS2 (inactivated), 0.002% carrier RNA, 0.01% ProClin® 300 preservative	EUH210 Safety data sheet available on request. EUH208 Contains Mixture of: 5-chloro-2- methyl-4-isothiazolin-3-one and 2-methyl-2H-isothiazol-3-one (3:1). May produce an allergic reaction.
<b>Proteinase K</b>	100% Proteinase K	N/A
<b>cobas® Liat® Magnetic Glass Particles</b>	Magnetic Glass Particles	N/A

<b>cobas® SARS-CoV-2</b> Store at 2-8°C 20 tests (P/N 09408592190) 20 transfer pipettes 1 Package Insert Barcode Card		
Reagents in cobas® SARS-CoV-2 assay tube	Reagent ingredients	Safety symbol and warning <sup>a</sup>
<b>cobas® Liat® Lysis Buffer</b>	Citric acid, sodium phosphate, 42.6% guanidinium isothiocyanate <sup>b</sup> , 5% decaethylene glycol monododecyl ether <sup>b</sup> , dithiothreitol	 <p><b>DANGER</b></p> <p>H302 + H332 Harmful if swallowed or if inhaled.          H314 Causes severe skin burns and eye damage.          H412 Harmful to aquatic life with long lasting effects.</p> <p>EUH032 Contact with acids liberates very toxic gas.          P261 Avoid breathing dust/fume/gas/mist/vapours/spray.          P273 Avoid release to the environment.          P280 Wear protective gloves/protective clothing/eye protection/face protection/hearing protection.          P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.          P304 + P340 + P310 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/doctor.          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.          593-84-0 Guanidinium thiocyanate          9002-92-0 Brij 35</p>
<b>cobas® Liat® Wash Buffer</b>	Glycine, potassium fluoride, 0.01% ProClin® 300 preservative	N/A
<b>cobas® Liat® Elution Buffer</b>	Trehalose, tris buffer, magnesium sulfate, bovine serum albumin, 0.01% ProClin® 300 preservative	EUH210 Safety data sheet available on request. EUH208 Contains Mixture of: 5-chloro-2- methyl-4-isothiazolin-3-one and 2-methyl-2H-isothiazol-3-one (3:1). May produce an allergic reaction.

<b>cobas® SARS-CoV-2</b> Store at 2-8°C 20 tests (P/N 09408592190) 20 transfer pipettes 1 Package Insert Barcode Card		
Reagents in cobas® SARS-CoV-2 assay tube	Reagent ingredients	Safety symbol and warning <sup>a</sup>
<b>cobas® Liat® SARS-CoV-2 Master Mix-1</b>	Tween-80, tris buffer, trehalose, potassium chloride, bovine serum albumin, dATP, dCTP, dGTP, dUTP, 0.01% ProClin® 300 preservative, < 0.001% Downstream SARS-CoV-2 and Internal Process Control primers	EUH210 Safety data sheet available on request. EUH208 Contains Mixture of: 5-chloro-2- methyl-4-isothiazolin-3-one and 2-methyl-2H-isothiazol-3-one (3:1). May produce an allergic reaction.
<b>cobas® Liat® SARS-CoV-2 Master Mix-2</b>	Tween-80, tween-20, tris buffer, glycerol, potassium chloride, EDTA, dithiothreitol, < 0.01% Z05 polymerase with aptamer, 0.23% MMLV Reverse Transcriptase	N/A
<b>cobas® Liat® SARS-CoV-2 Master Mix-3</b>	Tween-80, tris buffer, EDTA, trehalose, potassium chloride, bovine serum albumin, < 0.001% upstream SARS-CoV-2 and Internal Control primers, < 0.01% fluorescent-labeled SARS-CoV-2 and Internal Control probes, 0.004% Taq DSC 2.0 DNA polymerase, 0.01% ProClin® 300 preservative	EUH210 Safety data sheet available on request. EUH208 Contains Mixture of: 5-chloro-2- methyl-4-isothiazolin-3-one and 2-methyl-2H-isothiazol-3-one (3:1). May produce an allergic reaction.

<sup>a</sup> Product safety labeling primarily follows EU GHS guidance

<sup>b</sup> Hazardous substance or mixture



**Table 2:** cobas® SARS-CoV-2 Quality Control Kit

<b>cobas® SARS-CoV-2 Quality Control Kit</b> Store at 2-8°C (P/N 09408835190) 8 transfer pipettes 1 Control Kit Barcode Card			
Kit components	Reagent ingredients	Quantity per kit	Safety symbol and warning <sup>a</sup>
<b>cobas® SARS-CoV-2 Positive Control</b> <b>SARS-CoV-2 (+) C</b> (P/N 09212078001)	Tris buffer, EDTA, < 0.003% Poly rA (synthetic), < 0.01% non-infectious plasmid DNA (microbial) containing SARS-CoV-2 sequence, < 0.05% sodium azide	3 X 0.25 mL	N/A
<b>cobas® Dilution UTM</b> <b>Dilution UTM (-) C</b> (P/N 08053669001)	N/A	3 X 0.3 mL	N/A

<sup>a</sup> Product safety labeling primarily follows EU GHS guidance<sup>b</sup> Hazardous substance or mixture

## Reagent storage and handling

Reagents shall be stored and will be handled as specified in Table 3.

Do not freeze materials listed below. Do not open individual assay tube packaging until operator is ready to perform testing.

**Table 3:** Reagent storage and handling

Reagent	Storage Temperature	Storage Time
cobas® SARS-CoV-2	2-8°C	Stable until the expiration date indicated
cobas® SARS-CoV-2 Quality Control Kit	2-8°C	Stable until the expiration date indicated

## Additional materials required

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

Specimen Collection Kit	P/N
Nasopharyngeal Swab Collection Kits: Flexible minitip FLOQSwab™ with Universal Transport Media™ (UTM®) from Copan Diagnostics OR BD™ Universal Viral Transport (UVT) 3-mL collection kit with a flocked flexible minitip swab	305C  220531
Nasal Swab Collection Kits: Regular FLOQSwab™ with Universal Transport Media™ (UTM®) from Copan Diagnostics, OR BD™ Universal Viral Transport (UVT) 3-mL collection kit with a regular flocked swab, OR Copan Universal Transport Medium (UTM-RT®), without beads	306C  220528 3C047N
Mid-Turbinate Swab Collection:* Single Contoured Adult Size Nylon® Flocked Swab with Stopper with 80mm Breakpoint in Peel Pouch - Individually Packaged, Sterile 100/Pack; 10 Packs/Case from Copan Diagnostics,	56380CS01
Thermo Fisher™ Scientific Remel™ M4RT Thermo Fisher™ Scientific Remel™ M4 Thermo Fisher™ Scientific Remel™ M5 Thermo Fisher™ Scientific Remel™ M6 Thermo Fisher™ Scientific Remel™ M4RT® tube, without beads	R12565, R12566, R12567 R12550 R12555 R12563, R12568, R12569 R12622, R12591
Pre-aliquotted 3 mL 0.9% or 0.85% Physiological saline Thomas Scientific MANTACC™ 0.9% Saline Solution, 3 mL in 10 mL Tube, 50 Tubes per Pack, or equivalent Millennium LifeSciences, Inc. Culture Media Concepts®, 3 mL Sterile Normal Saline (0.85%) in 10 mL plastic tube (15 x 100 mm)	20A00K984  V468-3

Note: If the viral transport media and saline listed in Table 4 are not available, CLIA certified moderate and high complexity laboratories only may prepare and package equivalent 3 mL of physiological saline (0.9% or 0.85%) for use with cobas® SARS-CoV-2 test. Ensure standard laboratory practices are followed.

\*The use of Mid-Turbinate swab is considered acceptable for use; however, the performance of the test has not been established with this specimen type.

## Instrumentation and software required

The cobas® Liat® System Software is installed on the instrument(s).

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

Equipment and Software
cobas® Liat® Analyzer (P/N 07341920190) Including cobas® Liat® System Software (Core) Version 3.3 or higher
cobas® SARS CoV-2 Assay Script v1.0 or higher

Note: For additional information regarding the cobas® Liat® Analyzer, please refer to the cobas® Liat® System User Guide.

# Precautions and handling requirements

## Warnings and precautions

- For in vitro diagnostic use.
- In the United States:
  - This product has not been FDA cleared or approved but has been authorized for emergency use by FDA under an EUA for use by authorized laboratories certified under the Clinical Laboratory Improvement Amendments of 1988 (CLIA), 42 U.S.C. §263a, to perform moderate or high complexity tests. **cobas**® SARS-CoV-2 is also authorized for use at the Point of Care (POC), i.e., in patient care settings operating under a CLIA Certificate of Waiver, Certificate of Compliance, or Certificate of Accreditation.
  - This product has been authorized only for the detection of nucleic acid from SARS-CoV-2, not for any other viruses or pathogens.
  - The emergency use of this product is only authorized for the duration of the declaration that circumstances exist justifying the authorization of emergency use of in vitro diagnostics for detection and/or diagnosis of COVID-19 under Section 564(b)(1) of the Federal Food, Drug and Cosmetic Act, 21 U.S.C. § 360bbb-3(b)(1), unless the declaration is terminated or authorization is revoked sooner.
- Before using the **cobas**® SARS-CoV-2 test, operator should carefully read Instructions For Use (IFU) and the **cobas**® Liat® System User Guide.
- Treat all biological specimens, including used **cobas**® SARS-CoV-2 assay tubes and transfer pipettes, as if capable of transmitting infectious agents. It is often impossible to know which specimens might be infectious; all biological specimens should be treated with universal precautions. Guidelines for specimen handling are available from the U.S. Centers for Disease Control and Prevention, Clinical and Laboratory Standards Institute and World Health Organization.<sup>12-16</sup>
- Follow your institution's safety procedures for working with chemicals and handling biological samples.
- Do not use a damaged **cobas**® SARS-CoV-2 assay tube.
- Do not use a **cobas**® SARS-CoV-2 assay tube that has been dropped after removal from its foil pouch.
- Do not open the cap of the **cobas**® SARS-CoV-2 assay tube during or after the run on the **cobas**® Liat® Analyzer.
- 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.
- For additional warnings, precautions and procedures to reduce the risk of contamination for the **cobas**® Liat® Analyzer, consult the **cobas**® Liat® System User Guide.
- Dispose of a used **cobas**® SARS-CoV-2 assay tube, pipette and specimen tube according to your institution's safety guidelines for hazardous material.
- On request Safety Data Sheets (SDS) are available from your local Roche representative.
- Due to the high sensitivity of the assays run on the **cobas**® Liat® Analyzer, contamination of the work area with previous positive samples may cause false positive results. Handle samples according to standard laboratory practices. Clean instruments and surrounding surfaces according to instructions provided in the cleaning section of the **cobas**® Liat® System User Guide. 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-aliquotted 3 mL of sterile 0.9% or 0.85% 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.
- Ensure there is no sign of leakage from the collection tube prior to running the test.
- Use only the transfer pipettes contained in the **cobas®** SARS-CoV-2 assay pack and **cobas®** SARS-CoV-2 Quality Control Kit. Use of alternative transfer pipettes may lead to invalid results.
- Good laboratory practices and careful adherence to the procedures specified in this Instructions For Use document are necessary. Wear laboratory gloves, laboratory coats, and eye protection when handling samples and reagents. Gloves must be changed between handling samples and **cobas®**SARS-CoV-2 assay tube, **cobas®**SARS-CoV-2 Quality Control Kit to avoid contamination of reagents.
- After handling samples and kit reagents, remove gloves and wash hands thoroughly.

# Sample collection, transport, and storage

**Note:** Handle all samples and controls as if they are capable of transmitting infectious agents. Do not use cotton or calcium alginate swab, or swab with wood shafts.

## 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 or sterile 0.9% or 0.85% physiological saline.

## Transport and storage

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

Transport and test specimens as soon as possible after collection.

- If transportation is required, specimens must be packaged, shipped, and transported according to the current edition of the International Air Transport Association (IATA) Dangerous Goods Regulation. Follow shipping regulations for UN 3373 Biological Substance, Category B when sending potential SARS-CoV-2 virus specimens. Store specimens at 2-8°C and ship overnight on ice pack. If a specimen is frozen at  $\leq -70^{\circ}\text{C}$ , ship overnight on dry ice.
- Specimen transferred into the **cobas**® SARS-CoV-2 assay tube should be run as soon as possible on the Analyzer. Once the sample has been added to the **cobas**® SARS-CoV-2 assay tube it may be stored at room temperature for up to 4 hours.
- Specimens collected in transport media (UTM or UVT, M4, M4RT, M5 and M6) may be stored up to 4 hours at room temperature or up to 72 hours at 2-8°C if immediate testing is not possible. Freezing at  $-70^{\circ}\text{C}$  or colder (and transportation on dry ice) is required for specimen storage or transportation beyond 72 hours prior to the specimen being added to the assay tube for testing.
- Specimens collected in 0.9% or 0.85% physiological saline solution may be stored up to 4 hours at room temperature or up to 72 hours at 2-8°C if immediate testing is not possible.

# Instructions for use

## Procedural notes

- Do not use **cobas**®SARS-CoV-2 assay tube and **cobas**®SARS-CoV-2 Quality Control Kit after their expiry dates.
- Do not reuse assay tubes and transfer pipettes. They are for one-time use only.
- Refer to the **cobas**®Liat®System User Guide for detailed operation and routine cleaning of instruments.

## Running **cobas**® SARS-CoV-2

Use the transfer pipette to load approximately 0.2 mL of the specimen into the **cobas**®SARS-CoV-2 assay tube. **cobas**®Liat® Analyzer will adjust the sample volume if more sample was loaded.

*Always use caution when transferring specimens from a sample collection tube to the assay tube.*

*Use transfer pipettes included in the kit to handle specimens.*

*Always use a new transfer pipette for each specimen.*

The test procedure is described in detail in the **cobas**®Liat® System User Guide. Figure 1 below summarizes the procedure.

## Test procedure

**Figure 1:** cobas® SARS-CoV-2 procedure

### “Lot Validation” workflow

1	Start up the system and login
2	Obtain Controls and assay tubes
3	Under “Assay” menu, choose “New Lot”
4	Scan the barcode on the Package Insert ID Barcode card
5	Scan and run Negative Control
6	Scan and run Positive Control

### cobas® SARS CoV-2 workflow

1	Start up the system and login
2	Obtain samples and assay tubes
3	On the Main Menu, choose “Run Assay”
4	Scan <b>cobas</b> ® SARS-CoV-2 assay tube barcode
5	Scan or enter sample ID
6	Add specimen to <b>cobas</b> ® SARS-CoV-2 assay tube using transfer pipette and re-cap the tube
7	Re-scan <b>cobas</b> ® SARS-CoV-2 assay tube barcode
8	Start run
9	Review results*
10	Unload and dispose used <b>cobas</b> ® SARS-CoV-2 assay tube

\* Refer to **cobas**® Liat® System User Guide for details of result uploading to LIS.

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

Before using a new lot of **cobas**®SARS-CoV-2 assay tubes, a Lot Validation procedure must be performed on the **cobas**®Liat® Analyzer to validate the **cobas**®SARS-CoV-2 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

The following materials are needed:

Materials needed to validate Negative Control:	Materials needed to validate Positive Control:
<input type="checkbox"/> 1 Dilution UTM-RT® tube <sup>2</sup> <input type="checkbox"/> 1 <b>cobas</b> ®SARS-CoV-2 assay tubes from this lot <sup>1</sup> <input type="checkbox"/> 1 transfer pipette <sup>1</sup> <input type="checkbox"/> Package Insert Barcode card <sup>1</sup> <input type="checkbox"/> Negative Control Barcode on the Control Kit Barcode Card <sup>2</sup>	<input type="checkbox"/> 1 <b>cobas</b> ®SARS-CoV-2 Positive Control tube <sup>2</sup> <input type="checkbox"/> 1 <b>cobas</b> ®SARS-CoV-2 assay tubes from this lot <sup>1</sup> <input type="checkbox"/> 1 transfer pipette <sup>1</sup> <input type="checkbox"/> Positive Control Barcode on the Control Kit Barcode Card <sup>2</sup>

<sup>1</sup> Contained in **cobas**® SARS-CoV-2 assay tube Kit

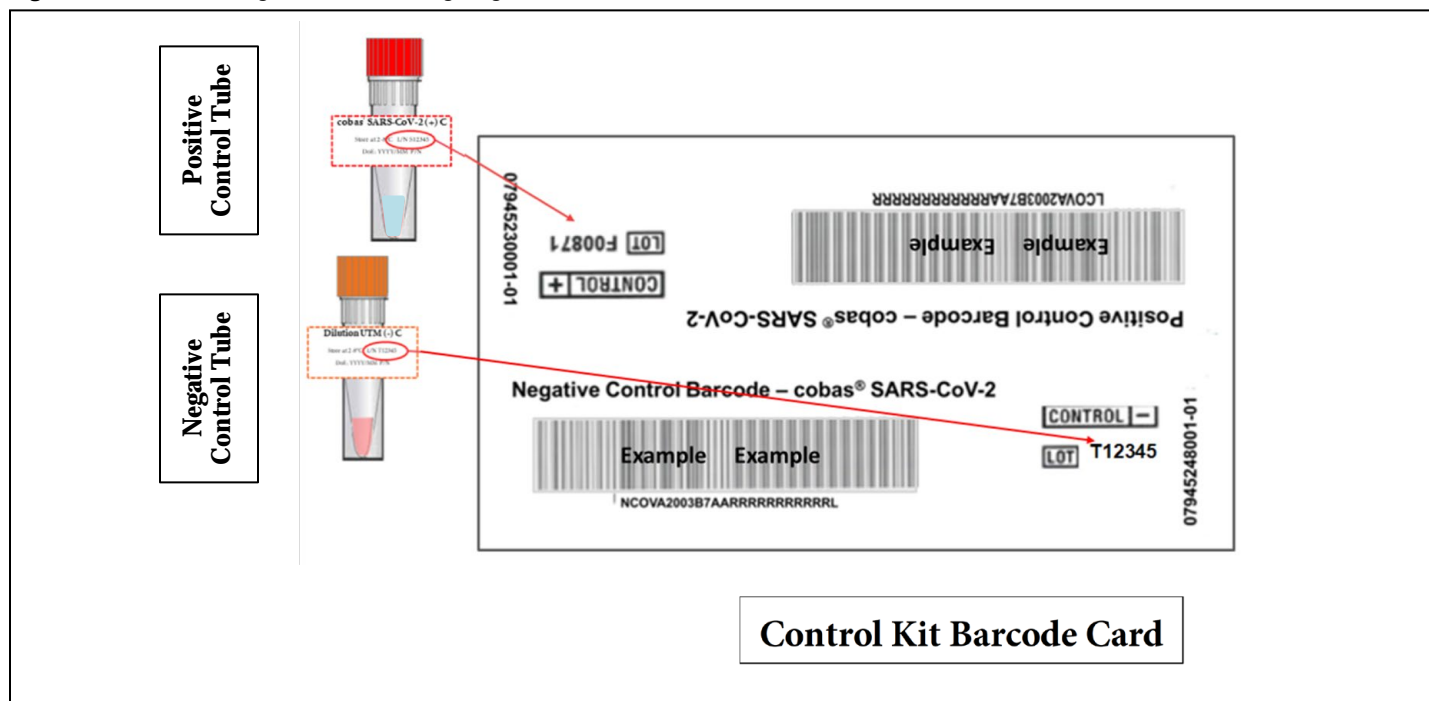
- Package Insert ID Barcode Card: This barcode is lot-specific; match the lot number next to the barcode with the lot number on the **cobas**® SARS-CoV-2 assay tubes.

<sup>2</sup> Contained in **cobas**® SARS-CoV-2 Quality Control Kit

**Note:** Following Figure 2,

- Match the lot number (L/N) of the Dilution UTM tube label to the lot number (LOT) of the Negative Control Barcode Label on the Control Kit Barcode Card and then use the Negative Control Barcode (on the Control Kit Barcode Card) as the sample ID when performing negative control run.
- Match the lot number (L/N) of the Positive Control tube label for **cobas**® SARS-CoV-2 to the lot number (LOT) of the Positive Control Barcode Label on the Control Kit Barcode Card as shown in Figure 2. Use the Positive Control Barcode (on the Control Kit Barcode Card) as the sample ID when performing positive control run.



**Figure 2:** Schematic diagram for illustrating Negative Control tube, Positive Control tube and Control Kit Barcode Card

## Assay tube Lot Validation workflow

1. Press the power on/off button to start the **cobas®** Liat® Analyzer.
2. Select **“Login”** on the screen of the **cobas®** Liat® Analyzer.
3. Enter user name when prompted, select **“OK”**.
4. Enter user password when prompted, select **“OK”**.  
*Note: You may be prompted to confirm you have read the User Manual, (i.e., cobas®Liat® System User Guide).*
5. Select **“Assay Menu”** on the main menu of a **cobas®**Liat® Analyzer.
6. Select **“New Lot”** at the bottom of the list.
7. When prompted to **Scan the Insert ID**, select **“Scan”** and scan the **cobas®**SARS-CoV-2 Package Insert ID Barcode card. Ensure that the red scan light is over the entire barcode.  
*Note: You may be prompted to confirm you have read Instructions For Use.*
8. When prompted to **scan the Negative Control ID**, select **“Scan”** and scan the Negative Control Barcode card included with the control kit. Ensure that the red scan light is over the entire barcode. Next, the **cobas®** Liat® Analyzer will prompt with the message **“Add negative control & scan tube ID”**.
9. Hold a tube of Negative Control upright and lightly tap on a flat surface to collect liquid at the bottom of the tube. Visually check that the Dilution UTM has pooled at the bottom of the tube.
10. Open up a **cobas®**SARS-CoV-2 assay tube foil pouch (from the lot to be added) and remove the contents.

11. Use the transfer pipette provided in the pouch to add the Negative Control to the **cobas**® SARS-CoV-2 assay tube. Firmly squeeze the bulb of the pipette until the bulb is fully flat, then insert the tip of the pipette into the liquid and draw up the sample by slowly releasing the bulb.

**Note: Only use the transfer pipette provided in the cobas®SARS-CoV-2 assay tube pouch to transfer controls and samples into the cobas®SARS-CoV-2 assay tube.**

12. Carefully remove the cap of the **cobas**® SARS-CoV-2 assay tube and insert the pipette into the opening. Place the pipette tip near the bottom of the open segment.
13. Slowly squeeze the bulb to empty the contents of the pipette into the **cobas**® SARS-CoV-2 assay tube. Avoid creating bubbles in the sample. Do not release the pipette bulb while the pipette is still in the **cobas**® SARS-CoV-2 assay tube.

**Note: Do not puncture the cobas®SARS-CoV-2 assay tube or the seal at the bottom of the sample compartment. If either of these are damaged, discard both the cobas®SARS-CoV-2 assay tube and the transfer pipette, and restart the testing procedure with a new cobas®SARS-CoV-2 assay tube and pipette.**

14. Screw the cap back onto the **cobas**® SARS-CoV-2 assay tube. Dispose of the transfer pipette as biohazardous material.
15. Select **“Scan”** and place the **cobas**® SARS-CoV-2 assay tube horizontally on the table beneath the barcode reader so that the red scan light is over the entire barcode. The tube entry door on top of the **cobas**® Liat® Analyzer will open automatically once the barcode is read.
16. Remove the **cobas**® SARS-CoV-2 assay tube sleeve and immediately insert the **cobas**® SARS-CoV-2 assay tube into the **cobas**® Liat® Analyzer until the tube clicks into place.

**Note: The cobas®SARS-CoV-2 assay tube only fits in one way - the grooved side of the cobas® SARS-CoV- assay tube must be on the left while the cap is on top.**

17. If the tube is not inserted by the time the door closes, re-scan the **cobas**® SARS-CoV-2 assay tube barcode and insert the **cobas**® SARS-CoV-2 assay tube again. Once the **cobas**® SARS-CoV-2 assay tube is properly inserted, the **cobas**® Liat® Analyzer will close the door automatically and begin the test.
18. During the test, the **cobas**® Liat® Analyzer displays the running status and estimated time remaining. Once the test is complete, the **cobas**® Liat® displays the message, *“Remove tube slowly and carefully.”* and opens the tube entry door automatically. Slowly lift the **cobas**® SARS-CoV-2 assay tube out of the **cobas**® Liat® Analyzer. Dispose of the used **cobas**® SARS-CoV-2 assay tube as biohazardous material.
19. If **“Negative control result accepted.”** is displayed at the end of the run, select **“Confirm”**. If the result is rejected, repeat the negative control run (steps 8-19). If repeated control runs do not produce the expected results, contact your local Roche representative.
20. Select **“Back”** to proceed with the **cobas**® SARS-CoV-2 Positive Control test on the same instrument.
21. Similarly, follow steps 8 to 18 with a **cobas**® SARS-CoV-2 Positive Control in place of the **cobas**® Liat® Negative Control.
22. If **“Positive Control Result Accepted. Lot ... added”** is displayed at the end of the run, select **“OK”** and then select **“Back”** to return to Main menu. If the result is rejected, repeat the **cobas**® Liat® SARS-CoV-2 Positive Control test. If repeated control runs do not produce the expected results, contact your local Roche representative.
23. Select **“Assay Menu”** to verify the new lot has been added.

## Transferring assay tube lot information

After Lot Validation workflow is completed on one Analyzer, use the Advanced Tools to transfer the lot information to the other Analyzers at your site. This allows the other Analyzers to use this **cobas® SARS-CoV-2** assay tube lot without performing Lot Validation on each Analyzer. Consult the software specific Advanced Tools guide for details of operation.

## cobas® SARS-CoV-2 on clinical specimens testing

### Material needed for running cobas® SARS-CoV-2

- **cobas® SARS-CoV-2** assay foil pouch which includes the **cobas® SARS-CoV-2** assay tube
- 1 transfer pipette
- 1 specimen in collection media

### Procedure

1. Ensure that the **cobas® Liat®** Analyzer is powered on.
2. Select **“Login”** on the screen of the **cobas® Liat®** Analyzer.
3. Enter user name when prompted, select **“OK”**.
4. Enter user password when prompted, select **“OK”**.

**Note:** You may be prompted to confirm you have read the User Manual (i.e., **cobas®Liat®System User Guide**).

5. From the Main Menu, select **“Run Assay”**.
6. Open up a **cobas® SARS-CoV-2** assay tube pouch and take out the assay tube. When prompted to **scan Liat Tube ID**, select **“Scan”** and place the SARS-CoV-2 assay tube horizontally on the table beneath the barcode reader so that the red scan light is over the entire barcode.
7. When prompted to **scan the sample ID**, select **“Scan”** to scan the sample barcode. In the case that the sample cannot be scanned, select **“Enter”** to manually enter the sample ID.
  - a. **Note:** If patient verification is activated, the Analyzer will display the status of verification.
    - i. If patient verification is successful, the Analyzer may prompt confirmation of entered information before proceeding with running the assay.
    - ii. If patient verification fails, the Analyzer may display a notification that verification failed:
      1. And may require acknowledgement before proceeding with running the assay or
      2. If unable to proceed with running the assay contact your lab administrator.
8. When prompted to add the sample, use the transfer pipette provided in the assay tube pouch to transfer specimen. Firmly squeeze the bulb of the pipette until the bulb is fully flat, then insert the tip of the pipette into the liquid and draw up the sample by slowly releasing the bulb.
9. Carefully remove the cap of the **cobas® SARS-CoV-2** assay tube and insert the pipette into the opening. Place the pipette tip near the bottom of the open segment.
10. Slowly squeeze the bulb to empty the contents of the pipette into the **cobas® SARS-CoV-2** assay tube. Do not release the pipette bulb while the pipette is still in the **cobas® SARS-CoV-2** assay tube.

**Note: Do not puncture the cobas®SARS-CoV-2 assay tube or the seal at the bottom of the sample compartment. If either of these are damaged, discard both the cobas®SARS-CoV-2 assay tube and the transfer pipette, and restart the testing procedure with a new cobas®SARS-CoV-2 assay tube and pipette.**

11. Re-cap the **cobas®** SARS-CoV-2 assay tube and dispose of the transfer pipette as biohazardous material.

**Note: Avoid contaminating gloves, equipment and work surfaces with the residual contents of the pipette.**

12. Select **“Scan”** and rescan the same **cobas®** SARS-CoV-2 assay tube barcode. The tube entry door on top of the **cobas®** Liat® Analyzer will open automatically.
13. Remove the **cobas®** SARS-CoV-2 assay tube sleeve and immediately insert the **cobas®** SARS-CoV-2 assay tube into the **cobas®** Liat® Analyzer until the tube clicks into place.

**Note: The SARS-CoV-2 assay tube only fits in one way - the grooved side of the cobas® SARS-CoV-2 assay tube must be on the left while the cap is on top.**

14. If the assay tube is not inserted by the time the door closes, re-scan the **cobas®** SARS-CoV-2 assay tube barcode and insert the **cobas®** SARS-CoV-2 assay tube again. Once the **cobas®** SARS-CoV-2 assay tube is properly inserted, the **cobas®** Liat® Analyzer will close the door automatically and begin the test.
15. During the test, the **cobas®** Liat® Analyzer displays the running status and estimated time remaining. Once the test is complete, the **cobas®** Liat® Analyzer displays the message, *“Remove tube slowly and carefully.”* and opens the tube entry door automatically. Slowly lift the **cobas®** SARS-CoV-2 assay tube out of the **cobas®** Liat® Analyzer. Dispose of the used **cobas®** SARS-CoV-2 assay tube as biohazardous material.
16. Select **“Report”** to see the Result Report. If applicable, select **“Print”** to print the report.
17. Select **“Back”**, and then **“Main”** to return to the main menu to perform the next test.

## Performing additional control runs

In accordance with local, state, federal and/or accrediting organization requirements, additional control runs may be performed with a lot of **cobas**® SARS-CoV-2 assay tubes that has already been added through the “Lot Validation” workflow. Use the **cobas**® SARS-CoV-2 Quality Control Kit for use on the **cobas**® Liat® System to conduct these runs.

### Materials needed for additional control runs

- **cobas**® SARS-CoV-2 assay tubes
- 1 Transfer pipette
- **cobas**® Liat® SARS-CoV-2 Positive Control and/or Negative Control
- Corresponding barcodes for the **cobas**® SARS-CoV-2 Positive Control and/or the Negative Control

## Procedure

Use the procedure outlined under the section “**cobas**® SARS-CoV-2 on clinical specimens testing” to perform additional control runs. In step **7**, be sure to use the provided control barcodes included in **cobas**® SARS-CoV-2 Control Kit to scan as sample ID barcode. Interpretation of results for **cobas**® SARS-CoV-2 when running additional **cobas**® SARS-CoV-2 Positive Controls or Negative Controls are shown in the “Interpretation of results” section (Table 6 through Table 8). Using barcodes other than the control barcodes provided may lead to incorrect control results.

# Results

## Quality control and interpretation of results

**Table 6:** Interpretation of results of cobas® SARS-CoV-2 when running “Lot Validation” procedure

cobas® Liat® Analyzer Display	Interpretation
<b>Negative Control Valid</b>	<b>Negative Control Valid</b> Control is negative for the presence of SARS-CoV-2 RNA.
<b>Negative Control Invalid. Repeat Run</b>	<b>Negative Control Invalid</b> Result is Invalid. The Negative Control should be re-tested to obtain valid result. Repeat Run.
<b>Positive Control Valid</b>	<b>Positive Control Valid</b> Control is positive for the presence of SARS-CoV-2 RNA.
<b>Positive Control Invalid. Repeat Run</b>	<b>Positive Control Invalid</b> Result is Invalid. The positive control should be re-tested to obtain valid result. Repeat Run.

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

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

Result Report		Interpretation
SARS-CoV-2	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)
Assay Invalid		Presence or absence of SARS-CoV-2 cannot be determined. Repeat assay with same sample or, if possible, collect new sample for testing.
[Error]. Assay Aborted by System		Run failed or aborted by system. Repeat assay with same sample or, if possible, collect new sample for testing.

**Table 8:** Interpretation of results when running additional controls after following “Lot Validation” procedure**Positive control**

cobas® Liat® Analyzer Display	Interpretation
<b>Positive Control Valid</b>	<b>Positive Control Valid</b> Control is positive for the presence of SARS-CoV-2 RNA.
<b>Positive Control Invalid</b>	<b>Positive Control Invalid</b> Result is Invalid. The Positive Control should be re-tested to obtain valid result. Repeat Run.

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

**Negative control**

cobas® Liat® Analyzer Display	Interpretation
<b>Negative Control Valid</b>	<b>Negative Control Valid</b> Control is negative for the presence of SARS-CoV-2 RNA.
<b>Negative Control Invalid</b>	<b>Negative Control Invalid</b> Result is Invalid. The Negative Control should be re-tested to obtain valid result. Repeat Run.

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

**Procedural limitations**

- **cobas®**SARS-CoV-2 test has been evaluated only for use in combination with the **cobas®**SARS-CoV-2 Quality Control Kit and this Instructions For Use document. Modifications to these procedures may alter the performance of the test.
- Due to inherent differences between technologies, it is recommended that, prior to switching from one technology to the next, users perform method correlation studies in their laboratory to qualify technology differences. One hundred percent agreement between the results should not be expected due to aforementioned differences between technologies. Users should follow their own specific policies/procedures.
- This test is intended to be used for the detection of SARS-CoV-2 RNA in nasopharyngeal, mid-turbinate and nasal swab samples collected in a Copan UTM-RT System (UTM-RT) or BD™ Universal Viral Transport System (UVT) or Thermo Fisher™ Scientific Remel™ media, Thomas Scientific MANTACC™ premeasured 3 mL 0.9% physiological saline solution or Millennium LifeSciences, Inc. Culture Media Concepts® 3mL Sterile Normal Saline (0.85%). Testing of other sample or media types may lead to inaccurate results.
- Users in a point of care environment should not prepare (formulate, measure, aliquot) 0.9% or 0.85% physiological saline. CLIA certified moderate and high complexity laboratories may prepare and package equivalent 3 mL of physiological saline for use with **cobas®** SARS-CoV-2 test, but performance with these alternative solutions has not been established. When using physiological saline solution, ensure that the collection tube is an appropriate height for the swab such that the score mark on the swab is not higher than the height of the tube.
- As with other tests, 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.
- 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.
- 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**® SARS-CoV-2 could affect primer and/or probe binding that results in failure to detect the presence of virus.
- False negative or invalid results may occur due to interference. The Internal Control is included in **cobas**® SARS-CoV-2 to help identify the specimens containing substances that may interfere with nucleic acid isolation and PCR amplification.
- The performance of this test was established based on the evaluation of a limited number of clinical specimens. Clinical performance has not been established with all circulating variants but is anticipated to be reflective of the prevalent variants in circulation at the time and location of the clinical evaluation. 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.

## Conditions of Authorization for the Laboratory

- The **cobas**® SARS-CoV-2 nucleic acid test for use on the **cobas**® Liat System Letter of Authorization, along with the authorized Fact Sheet for Healthcare Providers, the authorized Fact Sheet for Patients, and authorized labeling are available on the FDA website:

<https://www.fda.gov/medical-devices/coronavirus-disease-2019-covid-19-emergency-use-authorizations-medical-devices/in-vitro-diagnostics-euas>

However, to assist clinical laboratories using the **cobas**® SARS-CoV-2 nucleic acid test for use on the **cobas**® Liat System (“**cobas**® SARS-CoV-2” in the conditions below), the relevant Conditions of Authorization are listed below:

- Authorized laboratories<sup>1</sup> using **cobas**® SARS-CoV-2 must include with test result reports, all authorized Fact Sheets. Under exigent circumstances, other appropriate methods for disseminating these Fact Sheets may be used, which may include mass media.
- Authorized laboratories using **cobas**® SARS-CoV-2 must use **cobas**® SARS-CoV-2 as outlined in the authorized labeling. Deviations from the authorized procedures, including the authorized instruments, authorized extraction methods, authorized clinical specimen types, authorized control materials, authorized other ancillary reagents and authorized materials required to use **cobas**® SARS-CoV-2 are not permitted.
- Authorized laboratories that receive **cobas**® SARS-CoV-2 must notify the relevant public health authorities of their intent to run **cobas**® SARS-CoV-2 prior to initiating testing.
- Authorized laboratories using **cobas**® SARS-CoV-2 must have a process in place for reporting test results to healthcare providers and relevant public health authorities, as appropriate.
- Authorized laboratories must collect information on the performance of **cobas**® SARS-CoV-2 and report to DMD/OHT7-OIR/OPEQ/CDRH (via email: CDRH-EUA-Reporting@fda.hhs.gov) and Roche ([https://www.roche.com/about/business/roche\\_worldwide.htm](https://www.roche.com/about/business/roche_worldwide.htm)) any suspected occurrence of false positive or false negative results and significant deviations from the established performance characteristics of **cobas**® SARS-CoV-2 of which they become aware.
- All laboratory personnel using **cobas**® SARS-CoV-2 must be appropriately trained in PCR techniques, the specific processes and instruments used in the **cobas**® SARS-CoV-2 and use appropriate laboratory and personal protective equipment when handling this kit, and use **cobas**® SARS-CoV-2 in accordance with the authorized labeling.
- Roche, authorized distributors, and authorized laboratories using **cobas**® SARS-CoV-2 must ensure that any records associated with this EUA are maintained until otherwise notified by FDA. Such records will be made available to FDA for inspection upon request.

<sup>1</sup> The letter of authorization refers to, “laboratories certified under CLIA, to perform moderate or high complexity tests and use at the Point of Care (POC), i.e., in patient care settings operating under a CLIA Certificate of Waiver, Certificate of Compliance, or Certificate of Accreditation” as “authorized laboratories.”



# Non-clinical performance – SARS-CoV-2

## Key performance characteristics

### Analytical sensitivity

Limit of detection (LoD) studies determine the lowest detectable concentration of SARS-CoV-2 at which greater or equal to 95% of all (true positive) replicates test positive.

To determine the LoD for SARS-CoV-2, a heat inactivated cultured virus of an isolate from a US patient (USA-WA1/2020, lot number 324047, ZeptoMetrix, NY, USA) was serially diluted in pooled negative nasopharyngeal swab matrix. Five concentration levels were tested with 20 replicates except for the highest concentration level, which was tested with 10 replicates. Three lots of assay tubes (approximately equal numbers of replicates per lot) and two independent dilution series (equal numbers of replicates per dilution series) were used in the study.

As shown in Table 9, the lowest concentration level with observed hit rates greater than or equal to 95% was 0.012 TCID<sub>50</sub>/mL (12 copies/mL) for SARS-CoV-2.

**Table 9:** LoD determination using USA-WA1/2020 strain

Strain	Concentration [TCID <sub>50</sub> /mL]	Concentration [copies/mL]*	Total valid results	Hit rate [%]	Mean Ct**
USA-WA1/2020 (stock concentration 3.16E+06 TCID <sub>50</sub> /mL)	0.048	49	10	100	33.0
	0.024	24	20	100	33.6
	0.012	12	20	95	34.7
	0.006	6	20	90	35.4
	0.003	3	20	55	35.5

\*Concentration of each viral stock in copies/mL was quantified using Reverse transcriptase digital PCR with target specific PCR primers and probe sets designed to amplify SARS-CoV-2. \*\*Calculations only include positive results.

### Reactivity/inclusivity

In silico analysis concluded that **cobas**®SARS-CoV-2 will detect all analyzed SARS-CoV-2 sequences in NCBI and GISAID databases by using a dual target design. The mismatch analysis and predicted assay impact for the dual target designs are summarized in Table 10. In silico analysis (> 120K in NCBI and > 1 million in GISAID) indicates that > 99.97% (NCBI) and > 99.97% (GISAID) of sequences for SARS-CoV-2 (taxonomy ID 2697049) have no changes in primer/probe binding sites at both target regions simultaneously. All sequences are predicted to be detected by at least one of the two targets designs.

Also included in the assessment are sequences from the variants reported in the UK (B.1.1.7), South African (B.1.351), Brazil/Japan (B.1.1.248), USA-California (B.1.427, B.1.429), USA-Ohio (B.1.1), USA-NY (B.1.526, B.1.526.1) and India (B.1.617, B.1.618) lineages. The rising number of mutations in the Spike gene does not affect **cobas**®SARS-CoV2 test as this gene is not used as a target region of this test.

**Table 10:** In silico inclusivity analysis of SARS-CoV-2

Target	ORF1ab				N gene				Orf1ab and N gene			
Database	NCBI		GISAID		NCBI		GISAID		Database		NCBI	
Number of sequences	120,700	100%	1,072,158	100%	120,700	100%	1,072,158	100%	120,700	100%	1,072,158	100%
Sequences with mutation	993	0.82%	8,079	0.75%	4,353	3.61%	33,306	3.11%	33	0.03%	317	0.03%
Predicted no detection	1	0.00%	24	0.00%	11	0.01%	90	0.01%	0	0.00%	0	0.00%

## Cross reactivity

The in silico analysis for possible cross reactions with all the organisms listed in Table 11 was conducted by mapping binding regions of the primers and probes in **cobas® SARS-CoV-2** to the sequences available from NCBI and GISAID databases. In silico analysis revealed only one potential cross-reactant (i.e.,  $\geq 80\%$  homology between one of the primers or the probe to SARS-coronavirus). Wet testing was performed in nasopharyngeal swab matrix with SARS-coronavirus (SARS-CoV-1) concentration at  $1.00\text{E}+05$  pfu/mL and cross-reactivity was not found.

No other potential unintended cross reactivity is expected based on this in silico analysis.

**Table 11:** Cross-reactivity: list of organisms analyzed in silico

Other high priority pathogens from the same genetic family	High priority organisms likely in the circulating area
Human coronavirus 229E	Adenovirus (e.g., C1 Ad. 71)
Human coronavirus OC43	Human metapneumovirus (hMPV)
Human coronavirus HKU1	Parainfluenza virus 1-4
Human coronavirus NL63	Influenza A
SARS-coronavirus (SARS-CoV-1)	Influenza B
MERS-coronavirus	Enterovirus (e.g., EV68)
	Respiratory syncytial virus (RSV)
	Rhinovirus
	<i>Chlamydia pneumoniae</i>
	<i>Haemophilus influenzae</i>
	<i>Legionella pneumophila</i>
	<i>Mycobacterium tuberculosis</i>
	<i>Streptococcus pneumoniae</i>
	<i>Streptococcus pyogenes</i>
	<i>Bordetella pertussis</i>
	<i>Mycoplasma pneumoniae</i>
	<i>Pneumocystis jirovecii</i> (PJP)
	<i>Candida albicans</i>
	<i>Pseudomonas aeruginosa</i>
	<i>Staphylococcus epidermidis</i>
	<i>Streptococcus salivarius</i>

## Clinical performance evaluation

The clinical performance of **cobas**®SARS-CoV-2 test was separately evaluated using clinical samples from two testing populations: 1) individuals suspected of COVID-19, and 2) asymptomatic individuals being screened for COVID-19.

### Clinical evaluation using specimens from individuals suspected of COVID-19

The clinical performance of **cobas**®SARS-CoV-2 test for the detection of SARS-CoV-2 was evaluated using a total of 230 nasopharyngeal clinical samples collected in UTM from individuals with suspected of having a COVID-19 infection, including those with signs and symptoms of a respiratory infection. Testing of clinical samples was performed with **cobas**®SARS-CoV-2 test and a highly sensitive EUA molecular assay that has been FDA authorized for diagnostic testing of COVID-19.

As shown in Table 12, the results demonstrated 96.1% positive percent agreement (PPA) and 96.8% negative percent agreement (NPA) between the **cobas**® SARS-CoV-2 test on **cobas**® Liat System and comparator method. All 8 discordant specimens (5 positives by the **cobas**® Liat® SARS-CoV-2 test and 3 positives by the comparator method) were very low positive specimens at or below the limit of detection for the respective assay yielding a positive result.

**Table 12:** Clinical performance comparison with comparator EUA molecular assay in individuals suspected of COVID-19

		Comparator Method	
		Positive	Negative
<b>cobas</b> ® SARS-CoV-2 on <b>cobas</b> ® Liat® System	Positive	73	5
	Negative	3	149

PPA 96.1% (95% CI: 89.0% - 98.6%)

NPA 96.8% (95% CI: 92.6% - 98.6%)

## Clinical evaluation using specimens from asymptomatic individuals being screened for COVID-19

The clinical performance of **cobas**®SARS-CoV-2 test for the detection of SARS-CoV-2 was evaluated using a total of 207 nasopharyngeal clinical samples collected in saline from asymptomatic individuals presenting to a single testing facility for COVID-19 screening. Testing of clinical samples was performed with **cobas**®SARS-CoV-2 test and a highly sensitive EUA molecular assay that has been FDA authorized for COVID-19 screening.

As shown in Table 13, the results demonstrated 100% positive agreement with lower bound of the two-sided 95% confidence interval of 84.5%; 98.9% negative agreement with lower bound of the two-sided 95% confidence interval of 96.2% against the comparator assay.

**Table 13:** Clinical performance comparison with comparator EUA molecular assay in asymptomatic individuals being screened for COVID-19

		Comparator Method	
		Positive	Negative
<b>cobas</b> ® SARS-CoV-2 on <b>cobas</b> ® Liat® System	Positive	21	2
	Negative	0	184

PPA	100% (95% CI: 84.5% - 100%)
NPA	98.9% (95% CI: 96.2% - 99.7%)

## Failure codes

The result report may contain failure codes as described in Table 14, depending on potential run failures. For any questions, please contact your Roche Service representative.

**Table 14:** Failure codes and definitions

Failure Code Summary			
Failure Codes	Sample	Negative Control	Positive Control
g0*	IPC out of range. Repeat run.	IPC out of range. Repeat run.	IPC out of range. Repeat run.
g1			
g2			
g3			
g4			
x4	SARS-CoV-2 target out of range. Repeat run.	N/A	N/A
FP	N/A	SARS-CoV-2 target out of range. Repeat run.	N/A
r1	N/A	N/A	SARS-CoV-2 target out of range. Repeat run.
r2			
r3			
r4			

Note: \* Failure code g0 does not appear for Positive Control

## Additional information
































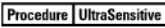




















### Key test features

<b>Sample type</b>	Nasopharyngeal, Mid-turbinate and Nasal swab samples collected in the Copan UTM-RT System or the BD™ UVT System or Thermo Fischer™ Remel (M4®, M4RT®, M5®, M6®), and premeasured 3 mL 0.9% or 0.85% physiological saline.
<b>Minimum amount of sample required</b>	Approximately 0.2 mL
<b>Test duration</b>	Results are available within approximately 20 minutes after loading the sample on the instrument.

## Symbols

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

**Table 15:** Symbols used in labeling for Roche PCR diagnostics products

 Age/DOB	 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.
 Ancillary Software	 Device not for self-testing		
 Assigned Range [copies/mL]	 Distributor <i>(Note: The applicable country/region may be designated beneath the symbol)</i>	 SN	Serial number
 Assigned Range [IU/mL]	 Do not re-use	 Site	Site
 Authorized representative in the European Community	 Female	 Procedure Standard	Standard Procedure
 Barcode Data Sheet	 For IVD performance evaluation only	 STERILE EO	Sterilized using ethylene oxide
 Batch code	 Global Trade Item Number	 Store in dark	
 Biological risks	 Importer	 Temperature limit	
 Catalogue number	 In vitro diagnostic medical device	 Test Definition File	
 CE marking of conformity; this device is in conformity with the applicable requirements for CE marking of an in vitro diagnostic medical device	 Lower Limit of Assigned Range	 This way up	
 Collect date	 Male	 Procedure UltraSensitive	Ultrasensitive Procedure
 Consult instructions for use	 Manufacturer	 UDI	Unique Device Identifier
 Contains sufficient for <n> tests	 Negative control	 ULR	Upper Limit of Assigned Range
 Content of kit	 Non-sterile	 Urine Fill Line	
 Control	 Patient Name	 Rx Only	US Only: Federal law restricts this device to sale by or on the order of a physician.
 Date of manufacture	 Patient number	 Use-by date	
 Device for near-patient testing	 Peel here		
 Device for self-testing	 Positive control		
	 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](https://www.roche.com/about/business/roche_worldwide.htm)

## Manufacturer and distributor

Table 16: Manufacturer and distributor



Roche Molecular Systems, Inc.  
1080 US Highway 202 South  
Branchburg, NJ 08876 USA  
[www.roche.com](http://www.roche.com)

Made in USA

Distributed by Roche Diagnostics  
9115 Hague Road  
Indianapolis, IN 46250-0457 USA  
(For Technical Assistance call the  
Roche Response Center  
toll-free: 1-800-526-1247)

## Trademarks and patents

This product is covered by US Patent Nos. 6727067, 6780617, 7799521, 6964862, 7935504, 8148116, 9662652, 7337072, 7718421, 8936933, 9708599, and 10443050, and foreign equivalent patents owned by Roche.

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## Document revision

Document Revision Information	
Doc Rev. 1.0 06/2021	First Publishing.
Doc Rev. 2.0 01/2022	Updated to address additional conditions of EUA authorization set forth by FDA. Updated the harmonized symbol page. Updated distributors addresses. Updated <b>Trademarks and patents</b> section. Please contact your local Roche Representative if you have any questions.

## Quick Reference Instructions

**cobas® SARS-CoV-2**Nucleic acid test for use on the **cobas® Liat®** System

For use under the Emergency Use Authorization (EUA) only

IVD

Rx only

In the United States:

- This product has not been FDA cleared or approved but has been authorized for emergency use by FDA under an EUA for use by authorized laboratories certified under the Clinical Laboratory Improvement Amendments of 1988 (CLIA), 42 U.S.C. §263a, to perform moderate or high complexity tests. cobas® SARS-CoV-2 is also authorized for use at the Point of Care (POC), i.e., in patient care settings operating under a CLIA Certificate of Waiver, Certificate of Compliance, or Certificate of Accreditation.
- This product has been authorized only for the detection of nucleic acid from SARS-CoV-2, not for any other viruses or pathogens.
- The emergency use of this product is only authorized for the duration of the declaration that circumstances exist justifying the authorization of emergency use of *in vitro* diagnostics for detection and/or diagnosis of COVID-19 under Section 564(b)(1) of the Federal Food, Drug, and Cosmetic Act, 21 U.S.C § 360bbb-3(b)(1), unless the declaration is terminated or authorization revoked sooner.

Read the **cobas® SARS-CoV-2** instructions for use from the Package Insert and the **cobas® Liat®** System User Guide for Intended Use, complete test procedure, result interpretation and further assay information before proceeding with the test.

**Specimen Collection into Transport Media**

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 or premeasured 3 mL physiological saline solution (0.85% or 0.9%). Part numbers for collection kits can be found in the **cobas® SARS-CoV-2** Package Insert. This test is only for nasopharyngeal, mid-turbinate and nasal swab specimens.

**cobas® SARS-CoV-2 test procedure for clinical specimens**

Obtain the following materials:

- ☐ 1 **cobas® SARS-CoV-2** assay tube in foil pouch
- ☐ 1 transfer pipette
- ☐ 1 specimen in collection media tube

**Step 1:**

From the **Main** menu, choose **Run Assay** and choose the **Select** button. Then **Scan** the assay tube barcode.

**Step 2:**

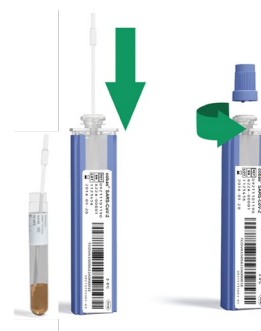
**Scan** the sample ID on specimen collection media tube barcode, or choose **Enter** to enter the ID manually.

**Note:** Depending on analyzer configuration, if required to confirm the received patient information, choose the **Confirm** button.

**Step 3:**

Firmly squeeze the bulb of the transfer pipette, lower it into the liquid in the specimen collection media tube and release the bulb to draw up the sample. Slowly transfer the sample into the assay tube, by squeezing the bulb and then recap the assay tube.

**Note:** Do not puncture the assay tube or the seal at the bottom of the sample compartment

**Step 5:**

Turn and remove the assay tube sleeve and then insert the assay tube into the analyzer tube entry door. Processing begins automatically.



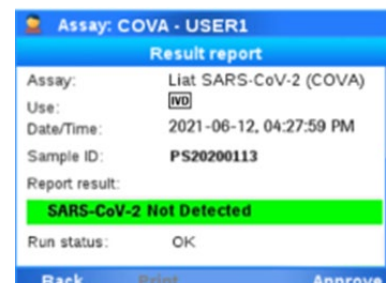
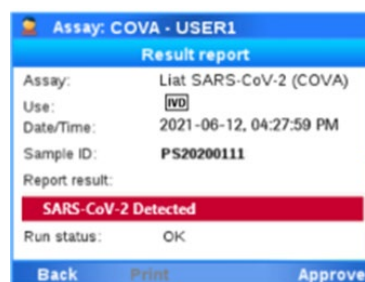
**Step 6:**

When the assay run is complete, remove and discard the assay tube.

**Step 7:**

Choose the **Report** button to view the result report.

To return to the **Main** menu, select **Back** and then choose the **Main** button.



**Table 1:** Interpretation of results of **cobas®** SARS-CoV-2 when running a sample

Result Report		Interpretation
SARS-CoV-2	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)
Assay Invalid		Presence or absence of SARS-CoV-2 cannot be determined. Repeat assay with same sample or, if possible, collect new sample for testing.
[Error]. Assay Aborted by System		Run failed or aborted by system. Repeat assay with same sample or, if possible, collect new sample for testing.

### Quality Control: Performing Lot Validation

External Controls must be run for each new lot of **cobas®** Liat® assay tubes.

Follow the Lot Validation procedure to validate assay tube lots on the **cobas®** Liat® Analyzer (see Package Insert for full procedure).

Obtain the following materials:

From **cobas®** SARS-CoV-2 assay tube Kit:

- ☐ 2 **cobas®** SARS-CoV-2 assay tubes
- ☐ 2 transfer pipettes
- ☐ Package Insert Barcode card

From **cobas®** SARS-CoV-2 Quality Control Kit:

- ☐ 1 Dilution UTM tube
- ☐ 1 **cobas®** SARS-CoV-2 Positive Control tube
- ☐ Negative/Positive Control Barcode card

### Add Lot Negative and Positive Control

#### Step 1:

From the **Main** menu, select **Assay Menu**. From the **Assay Menu**, select **[New Lot]**.



#### Step 2:

Select **Scan**, and scan the Package Insert barcode from the Package Insert Barcode Card.

**Note:** You may be prompted to confirm that you have read the Package Insert, i.e., Instruction For Use.



**Step 3:**

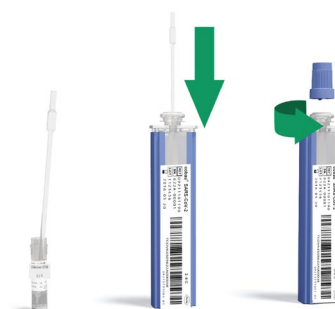
Check that the lot number on the Control Kit Barcode Card matches the control tube lot number.

Select **Scan** and scan the Negative Control barcode from the Control Kit Barcode Card

**Step 4:**

Firmly squeeze the bulb of the transfer pipette, lower it into the liquid and release the bulb to draw up the sample. Slowly transfer the sample into the assay tube, by squeezing the bulb and then recap the assay tube.

**Note:** Do not puncture the assay tube or the seal at the bottom of the sample compartment.

**Step 5:**

Select **Scan**, and scan the assay tube barcode.

**Step 6:**

Turn and remove the assay tube sleeve and insert the assay tube into the analyzer tube entry door. Processing begins automatically.





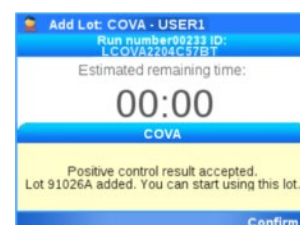
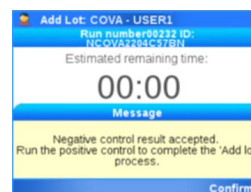
**Step 7:**

Once the Negative Control result is accepted, choose **Confirm**. Then, remove and discard the assay tube. Select **Back** and repeat Steps 3-7 for the Positive Control.

**Note:** In Step 3, **Scan** the Positive Control barcode from the Control Kit Barcode Card.

When the Positive Control result is accepted, you can begin using the lot. Choose **Confirm** and navigate **Back** to the **Main** menu.

**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.*



## Warnings and Precautions



Treat all biological specimens with universal precautions, including used **cobas®** Liat® tubes and pipettes.

Follow your institution's safety procedures for working with chemicals and handling biological samples.

### Document Information

P/N: 09408827001

Software version 3.3 or higher

### Technical support

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

### Trademarks and Patents:

<http://www.roche-diagnostics.us/patents>



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Made in USA

**Rx Only**



Emergency Use Authorization (EUA)



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# cobas<sup>®</sup> SARS-CoV-2



## Rx Only

### For USA Only: Emergency Use Authorization

For USA Only: This product has not been FDA cleared or approved, but has been authorized for emergency use by FDA under an EUA for use by authorized laboratories. This product has been authorized only for the detection of nucleic acid from SARS-CoV-2, not for any other viruses or pathogens. The emergency use of this product is only authorized for the duration of the declaration that circumstances exist justifying the authorization of emergency use of *in vitro* diagnostics for detection and/or diagnosis of COVID-19 under Section 564(b)(1) of the Federal Food, Drug, and Cosmetic Act, 21 U.S.C § 360bbb-3(b)(1), unless the declaration is terminated or authorization revoked sooner.

**This card is for Add Lot purposes. Do not throw away./** Diese Karte wird benötigt, wenn Sie Chargen hinzufügen möchten. Nicht entsorgen./ Cette carte est destinée à l'ajout de lots. Ne pas jeter./ Questa scheda è richiesta durante l'aggiunta di un lotto. Non gettarla via./ Esta tarjeta se utiliza en el procedimiento para añadir lotes. No la tire./ Este cartão é para efeitos de adição de lotes. Não deitar fora./ Dette kort er til brug ved tilføjelse af lot. Det må ikke bortskaffes./ Du behöver det här kortet när du registrerar nya loter. Kasta inte bort det./  
Deze kaart is bedoeld ten behoeve van Partij toevoegen. Niet weggooien.

PLACE PACKAGE INSERT BARCODE HERE

USA:



website: <http://e-labdoc.roche.com>

Please contact your local Roche representative at 1-800-800-5973 if you require a printed copy free of charge or need technical support to access the package insert.

Non-USA:



website: <http://e-labdoc.roche.com>

**Please contact your local Roche representative if you require a printed copy free of charge or need technical support to access the package insert.** / Bei Ihrer zuständigen Roche-Vertretung erhalten Sie einen kostenfreien Ausdruck oder technische Unterstützung für den Zugriff auf die Packungsbeilage. / Veuillez contacter votre représentant Roche local pour obtenir un exemplaire papier gratuit ou une assistance technique pour accéder à la notice. / Contattare il rappresentante Roche locale per ottenere gratuitamente una copia stampata o richiedere istruzioni per reperire il foglio illustrativo. / Póngase en contacto con su representante local de Roche si necesita una copia impresa gratuita o ayuda del servicio técnico para acceder al boletín técnico. / Se desejar uma cópia impressa gratuita ou necessitar de assistência técnica para aceder ao folheto informativo, entre em contacto com o representante local da Roche. / Kontakt den lokale Roche-repræsentant, hvis du ønsker en gratis skriftlig kopi eller har brug for teknisk support for at få adgang til indlægssedlen. / Kontakta din Roche-representant om du vill ha en pappersversion kostnadsfritt eller om du behöver teknisk support för att komma åt bipacksedeln.



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