cobas® SARS-CoV-2 Duo

Qualitative and quantitative assay for use on the cobas® 6800/8800 Systems

For Research Use Only.
Not for use in diagnostic procedures.

cobas® SARS-CoV-2 Duo - 192T	P/N: 09626824190
cobas® SARS-CoV-2 Duo Control Kit	P/N: 09626832190
cobas® Buffer Negative Control Kit	P/N: 07002238190 or P/N: 09051953190

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Proposed use

The **cobas**® SARS-CoV-2 Duo for use on the **cobas**® 6800/8800 Systems (**cobas**® SARS-CoV-2 Duo) is an automated real-time RT-PCR assay for the in vitro qualitative and quantitative detection of SARS-CoV-2 RNA in nasal and nasopharyngeal swab specimens.

cobas® SARS-CoV-2 Duo is intended for **research use only and is not for use in diagnostic procedures**.

Summary and explanation of the test

Explanation of the test

cobas® SARS-CoV-2 Duo is an automated real-time RT-PCR assay for the in vitro qualitative and quantitative detection of SARS-CoV-2 RNA in collected nasal and nasopharyngeal swab specimens collected in Copan Universal Transport Medium System (UTM-RT) or BD™ Universal Viral Transport System (UVT) from individuals suspected of COVID-19. The viral load is quantified against a non-SARS-CoV-2 armored RNA quantitation standard (RNA-QS), which is introduced into each specimen during sample preparation. The RNA-QS also functions as an internal control to monitor the entire sample preparation and PCR amplification process. In addition, the test utilizes three external controls: a high titer positive, a low titer positive, and a negative control. The high positive and low positive external controls are manufactured by dilution from stock material with a titer traceable to the First WHO International Standard for SARS-CoV-2 RNA (NIBSC code: 20/146). Each Amplification/Detection kit lot is calibrated traceable to the First WHO International Standard for SARS-CoV-2 RNA (NIBSC code: 20/146).

Principles of the procedure

cobas® SARS-CoV-2 Duo is based on fully automated sample preparation (nucleic acid extraction and purification) followed by PCR amplification and detection. The **cobas**® 6800/8800 Systems consist of the sample supply module, the transfer module, the processing module, and the analytic module. Automated data management is performed by the **cobas**® 6800/8800 software, which assigns results for all tests. Results can be reviewed directly on the system screen, and printed as a report.

Nucleic acid from patient samples and added RNA QS molecules are simultaneously extracted. Nucleic acid is released by addition of proteinase and lysis reagent to the sample. The released nucleic acid binds to the silica surface of the added magnetic glass particles. Unbound substances and impurities, such as denatured protein, cellular debris and potential PCR inhibitors, are removed with subsequent wash steps and purified nucleic acid is eluted from the magnetic glass particles with elution buffer at elevated temperature.

External controls are processed in the same way with each **cobas**® SARS-CoV-2 Duo run. The test utilizes three external controls: a high titer positive, a low titer positive, and a negative control.

Selective amplification of SARS-CoV-2 target nucleic acid from the sample is achieved by the use of a dual target virus specific approach from highly-conserved regions of SARS-CoV-2 located in the ORF 1a and ORF 1a/b non-structural regions. Selective amplification of RNA QS is achieved by the use of non-competitive sequence specific forward and reverse primers which have no homology with the SARS-CoV-2 genome.

A thermostable DNA polymerase enzyme is used for amplification. The target and RNA QS sequences are amplified simultaneously utilizing a universal PCR amplifaction profile with pre-defined temperature steps and number of cycles.

The master mix includes deoxyuridine triphosphate (dUTP), instead of deoxythimidine triphosphate (dTTP), which is incorporated into the newly synthesized DNA (amplicon). Any contaminating amplicons from previous PCR runs are destroyed by the AmpErase enzyme [uracil-N-glycosylase], which is included in the PCR mix, when heated in the first thermal cycling step. However, newly formed amplicons are not destroyed since the AmpErase enzyme is inactivated once exposed to temperatures above 55°C.

Amplified target is detected by cleavage of fluorescently labeled oligonucleotide probes. The **cobas**® SARS-CoV-2 Duo master mix contains two detection probes specific for SARS-CoV-2 target sequences and one for the RNA QS. The probes are labeled with target-specific fluorescent reporter dyes allowing simultaneous detection of SARS-CoV-2 target and RNA QS in two different target channels. The fluorescent signal of the intact probe is suppressed by the quencher dye. During the PCR amplification step, hybridization of the probes to the specific single-stranded DNA template results in cleavage by the 5' to 3' nuclease activity of the DNA polymerase resulting in separation of the reporter and quencher dyes and the generation of a fluorescent signal. With each PCR cycle, increasing amounts of cleaved probes are generated and the cumulative signal of the reporter dye increases concomitantly. Real-time detection and discrimination of PCR products are accomplished by measuring the fluorescence of the released reporter dyes for the viral targets and RNA QS.

Reagents and materials

The materials provided for **cobas**® SARS-CoV-2 Duo can be found in Table 1. Materials required, but not provided can be found in Table 2, Table 3, Table 4, Table 7, Table 8 and Table 9.

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

cobas® SARS-CoV-2 Duo reagents and controls

All unopened reagents and controls shall be stored as recommended in Table 1 to Table 4.

Table 1 cobas® SARS-CoV-2 Duo

(SARS-CoV-2 Duo)

Store at 2-8°C
192 test cassette (P/N 09626824190)

Kit components	Reagent ingredients	Quantity per kit 192 tests
Proteinase Solution (PASE)	Tris buffer, < 0.05% EDTA, calcium chloride, calcium acetate, 8% proteinase, glycerol EUH210: Safety data sheet available on request. EUH208: Contains Subtilisin. May produce an allergic reaction.	22.3 mL
RNA Quantitation Standard (RNA-QS)	Tris buffer, < 0.05% EDTA, < 0.001% non-Sarbecovirus related armored RNA construct containing primer and probe specific primer sequence regions (non-infectious RNA in MS2 bacteriophage), < 0.1% sodium azide	21.2 mL
Elution Buffer (EB)	Tris buffer, 0.2% methyl-4 hydroxybenzoate	21.2 mL
Master Mix Reagent 1 (MMX-R1)	Manganese acetate, potassium hydroxide, < 0.1% sodium azide	7.5 mL
SARS-CoV-2 Duo Master Mix Reagent 2 (SARS-CoV-2 Duo MMX-R2)	Tricine buffer, potassium acetate, < 18% dimethyl sulfoxide, glycerol, < 0.1% Tween 20, EDTA, < 0.12% dATP, dCTP, dGTP, dUTPs, < 0.01% upstream and downstream SARS-CoV-2 and primers, < 0.01% Internal Control forward and reverse primers, < 0.01% fluorescent-labeled oligonucleotide probes specific for SARS-CoV-2, and the RNA Internal Control, < 0.01% oligonucleotide aptamer, < 0.1% Z05D DNA polymerase, < 0.10% AmpErase (uracil-N-glycosylase) enzyme (microbial), < 0.1% sodium azide	9.7 mL

Table 2 cobas® SARS-CoV-2 Duo Control Kit

(SARS-CoV-2 Duo CTL)

Store at 2–8°C
(P/N 09626832190)

Kit components	Reagent ingredients	Quantity per kit
SARS-CoV-2 Low Positive Control (SARS-CoV-2 L(+)C)	Tris buffer, < 0.05% Sodium azide, < 0.005% EDTA, < 0.003% Poly rA, < 0.01% Non-infectious plasmid DNA (microbial) containing SARS-CoV-2 sequence	5.2 mL (8 x 0.65 mL)
SARS-CoV-2 High Positive Control (SARS-CoV-2 H(+)C)	Tris buffer, < 0.05% Sodium azide, < 0.005% EDTA, < 0.003% Poly rA, < 0.01% Non-infectious plasmid DNA (microbial) containing SARS-CoV-2 sequence	5.2 mL (8 x 0.65 mL)

Table 3 cobas® Buffer Negative Control Kit

Store at 2-8°C
(P/N 07002238190 or 09051953190)

Kit components	Reagent ingredients	Quantity per kit
cobas® Buffer Negative Control (BUF (–) C)	Tris buffer, < 0.1% sodium azide, EDTA, < 0.002% Poly rA RNA (synthetic)	16 mL (16 x 1 mL)

cobas omni reagents for sample preparation

Table 4 cobas omni reagents for sample preparation*

Reagents	Reagent ingredients	Quantity per kit	Safety symbol and warning**
cobas omni MGP Reagent (MGP) Store at 2–8°C (P/N 06997546190)	Magnetic glass particles, Tris buffer, 0.1% methyl-4 hydroxybenzoate, < 0.1% sodium azide	480 tests	Not applicable
cobas omni Specimen Diluent (SPEC DIL) Store at 2–8°C (P/N 06997511190)	Tris buffer, 0.1% methyl-4 hydroxybenzoate, < 0.1% sodium azide	4 x 875 mL	Not applicable
cobas omni Lysis Reagent (LYS) Store at 2–8°C (P/N 06997538190)	43% (w/w) guanidine thiocyanate***, 5% (w/v) polydocanol***, 2% (w/v) dithiothreitol***, dihydro sodium citrate	4 x 875 mL	 **DANGER** H302 + H332: Harmful if swallowed or if inhaled. H314: Causes severe skin burns and eye damage. H411: Toxic to aquatic life with long lasting effects. 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. P391: Collect spillage. 593-84-0 Guanidinium thiocyanate 9002-92-0 Polidocanol 3483-12-3 (R*,R*)-1,4-dimercaptobutane-2,3-diol
cobas omni Wash Reagent (WASH) Store at 15–30°C (P/N 06997503190)	Sodium citrate dihydrate, 0.1% methyl-4 hydroxybenzoate	4.2 L	Not applicable

* These reagents are not included in the **cobas**® SARS-CoV-2 Duo test kits. See listing of additional materials required (Table 7).

** Product safety labeling primarily follows EU GHS guidance

***Hazardous substance

Reagent storage and handling requirements

Reagents shall be stored and will be handled as specified in Table 5 and Table 6.

When reagents are not loaded on the **cobas**® 6800/8800 Systems, store them at the corresponding temperature specified in Table 5.

Table 5 Reagent storage (when reagent is not on the system)

Reagent	Storage temperature
cobas® SARS-CoV-2 Duo – 192T	2–8°C
cobas® SARS-CoV-2 Duo Control Kit	2–8°C
cobas® Buffer Negative Control Kit	2–8°C
cobas omni Lysis Reagent	2–8°C
cobas omni MGP Reagent	2–8°C
cobas omni Specimen Diluent	2–8°C
cobas omni Wash Reagent	15–30°C

Reagents loaded onto the **cobas**® 6800/8800 Systems are stored at appropriate temperatures and their expiration is monitored by the system. The **cobas**® 6800/8800 Systems allow reagents to be used only if all of the conditions shown in Table 6 are met. The system automatically prevents use of expired reagents. Table 6 allows the user to understand the reagent handling conditions enforced by the **cobas**® 6800/8800 Systems.

Table 6 Reagent expiry conditions enforced by the **cobas**® 6800/8800 Systems

Reagent	Kit expiration date	Open-kit stability	Number of runs for which this kit can be used	On-board stability (cumulative time on board outside refrigerator)
cobas® SARS-CoV-2 Duo – 192T	Date not passed†	90 days from first usage†	Max 40 runs†	Max 40 hours†
cobas® SARS-CoV-2 Duo Control Kit	Date not passed†	Not applicable[a]	Not applicable	Max 8 hours†
cobas® Buffer Negative Control Kit	Date not passed	Not applicable[a]	Not applicable	Max 10 hours
cobas omni Lysis Reagent	Date not passed	30 days from loading*	Not applicable	Not applicable
cobas omni MGP Reagent	Date not passed	30 days from loading*	Not applicable	Not applicable
cobas omni Specimen Diluent	Date not passed	30 days from loading*	Not applicable	Not applicable
cobas omni Wash Reagent	Date not passed	30 days from loading*	Not applicable	Not applicable

[a] Single use reagents

*Time is measured from the first time that reagent is loaded onto the **cobas**® 6800/8800 Systems.

† The performance has not been established for suggested use cycles and time, but is based on similar reagents used on the same system.

Additional materials required

Table 7 Materials and consumables for use on **cobas**® 6800/8800 Systems

Material	**P/N**
cobas omni Processing Plate	05534917001
cobas omni Amplification Plate	05534941001
cobas omni Pipette Tips	05534925001
cobas omni Liquid Waste Container	07094388001
cobas omni Lysis Reagent	06997538190
cobas omni MGP Reagent	06997546190
cobas omni Specimen Diluent	06997511190
cobas omni Wash Reagent	06997503190
Solid Waste Bag and Solid Waste Container or Solid Waste Bag With Insert and Kit Drawer	07435967001 and 07094361001 or 08030073001 and 08387281001
cobas omni Secondary Tubes 13x75 (optional)	06438776001

Instrumentation and software required

The **cobas**® 6800/8800 software v1.4 and **cobas**® SARS-CoV-2 Duo analysis package must be installed on the instrument(s). The Instrument Gateway (IG) server will be provided with the system.

Table 8 Instrumentation

Equipment	P/N
cobas® 6800 System (Option Moveable)	05524245001 and 06379672001
cobas® 6800 System (Fix)	05524245001 and 06379664001
cobas® 8800 System	05412722001
Sample Supply Module	06301037001
Instrument Gateway	06349595001

For additional information, please refer to the **cobas**® 6800/8800 Systems – User Assistance and/or User Guide.

Note: Contact your local Roche representative for a detailed order list for sample racks, racks for clotted tips and rack trays accepted on the instruments.

Precautions and handling requirements

Warnings and precautions

As with any test procedure, good laboratory practice is essential to the proper performance of this assay. Due to the high sensitivity of this test, care should be taken to keep reagents and amplification mixtures free of contamination.

- For Research Use Only. Not for use in diagnostic procedures.
- All patient samples should be handled as if infectious, using good laboratory procedures as outlined in Biosafety in Microbiological and Biomedical Laboratories and in the CLSI Document M29-A4.[1,2] Only personnel proficient in handling infectious materials and the use of **cobas**® SARS-CoV-2 Duo and **cobas**® 6800/8800 Systems should perform this procedure.
- All human-sourced materials should be considered potentially infectious and should be handled with universal precautions. If spillage occurs, immediately disinfect with a freshly prepared solution of 0.5% sodium hypochlorite in distilled or deionized water (dilute household bleach 1:10) or follow appropriate site procedures.
- The use of sterile disposable pipettes and nuclease-free pipette tips is recommended. Use only supplied or specified required consumables to ensure optimal test performance.
- Safety Data Sheets (SDS) are available on request from your local Roche representative.
- Closely follow procedures and guidelines provided to ensure that the test is performed correctly. Any deviation from the procedures and guidelines may affect optimal test performance.
- False positive results may occur if carryover of samples is not adequately controlled during sample handling and processing.

Reagent handling

- Handle all reagents, controls, and samples according to good laboratory practice in order to prevent carryover of samples or controls.
- Before use, visually inspect each reagent cassette, diluent, lysis reagent, and wash reagent to ensure that there are no signs of leakage. If there is any evidence of leakage, do not use that material for testing.
- **cobas omni** Lysis Reagent contains guanidine thiocyanate, a potentially hazardous chemical. Avoid contact of reagents with the skin, eyes, or mucous membranes. If contact does occur, immediately wash with generous amounts of water; otherwise, burns can occur.
- **cobas**® SARS-CoV-2 Duo test kits, **cobas**® SARS-CoV-2 Duo Control kit, **cobas**® Buffer Negative Control kit, **cobas omni** MGP Reagent, and **cobas omni** Specimen Diluent contain sodium azide as a preservative. Avoid contact of reagents with the skin, eyes, or mucous membranes. If contact does occur, immediately wash with generous amounts of water; otherwise, burns can occur. If these reagents are spilled, dilute with water before wiping dry.
- Do not allow **cobas omni** Lysis Reagent, which contains guanidine thiocyanate, to contact sodium hypochlorite (bleach) solution. This mixture can produce a highly toxic gas.
- Dispose of all materials that have come in contact with samples and reagents in accordance with country, state, and local regulations.

Good laboratory practice

- Do not pipette by mouth.
- Do not eat, drink, or smoke in designated work areas.
- 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 Duo kits, **cobas**® SARS-CoV-2 Duo Control kit, **cobas**® Buffer Negative Control kit and **cobas omni** reagents to prevent contamination. Avoid contaminating gloves when handling samples and controls.
- Wash hands thoroughly after handling samples and kit reagents, and after removing the gloves.
- Thoroughly clean and disinfect all laboratory work surfaces with a freshly prepared solution of 0.5% sodium hypochlorite in distilled or deionized water (dilute household bleach 1:10). Follow by wiping the surface with 70% ethanol.
- If spills occur on the **cobas**® 6800/8800 instrument, follow the instructions in the **cobas**® 6800/8800 Systems – User Assistance and/or User Guide to properly clean and decontaminate the surface of instrument(s).

Sample collection, transport, and storage

Note: Handle all samples and controls as if they are capable of transmitting infectious agents.

Sample collection

Ensure that the correct collection device is used with the appropriate sample type by referring to the table below:

Table 9 Overview of collection devices and sample types

Collection Device	**Sample Type** Nasopharyngeal	**Sample Type** Nasal
Copan Universal Transport Media (UTM-RT)	√	√
BD™ Universal Viral Transport (UVT)	√	√

- Collect nasal and nasopharyngeal specimens according to standard collection technique using flocked or polyester-tipped swabs and immediately place in 3 mL of Copan Universal Transport Medium (UTM-RT) or BD™ Universal Viral Transport (UVT).
- Refer to the Instructions for Use of the Collection Devices for hazard information.

Transport and storage

- Transportation of collected specimens must comply with all applicable regulations for the transport of etiologic agents.
- Sample stability when using **cobas**® SARS-CoV-2 Duo has not been established for suggested temperatures and time, but is based on viability data from testing similar viruses in the UTM-RT or UVT Systems as stated in the Copan UTM-RT System Instructions For Use and and in the following bullets::
  - After collection, the specimen should be stored at 2-25°C and processed within 48 hours.
  - If delivery and processing exceed 48 hours, specimens should be transported in dry ice and once in laboratory frozen at -70°C or colder.

Instructions for use

Procedural notes

- Do not use **cobas**® SARS-CoV-2 Duo reagents, **cobas**® SARS-CoV-2 Duo Control Kit, **cobas**® Buffer Negative Control Kit, or **cobas omni** reagents after their expiry dates.
- Do not reuse consumables. They are for one-time use only.
- Refer to the **cobas**® 6800/8800 Systems – User Assistance and/or User Guide for proper maintenance of instruments.

Running cobas® SARS-CoV-2 Duo

cobas® SARS-CoV-2 Duo can be run with a minimum required sample volume of 0.6 mL in the **cobas omni** secondary tube for specimens collected in Copan Universal Transport Medium (UTM-RT) and BD™ Universal Viral Transport (UVT).

Specimens collected in UTM-RT or UVT

Specimens collected in tubes compatible with **cobas**® 6800/8800 Systems may be loaded directly onto the **cobas**® 6800/8800 Systems. The swab must be removed from the sample tube prior to direct loading onto the system. Specimens collected in Copan Universal Transport Medium (UTM-RT) or BD™ Universal Viral Transport (UVT) tubes which are not compatible with the **cobas**® 6800/8800 Systems must be transferred into a secondary tube prior to processing on the **cobas**® 6800/8800 Systems. The **cobas omni** Secondary Tube is the preferred option.

Additional tubes for testing **cobas**® SARS-CoV-2 Duo are available. Contact your local Roche representative for detailed testing instructions and an order list of primary tubes and secondary tubes compatible with the instruments.

Always use caution when transferring specimens from a primary collection tube to a secondary tube.

Use pipettes with aerosol-barrier or positive-displacement tips to handle specimens.

Always use a new pipette tip for each specimen.

Ensure samples are equilibrated to room temperature prior to transfer into a cobas omni Secondary Tube.

Follow the steps below to transfer patient sample from a primary collection tube into a **cobas omni** Secondary Tube:

- Unscrew the primary sample tube cap.
- Lift the cap and any attached swab to allow a pipette to be inserted into the sample tube.
- Transfer 0.6 mL into the prepared barcoded secondary tube.
- Transfer secondary tube to a rack. Close the primary sample tube cap.

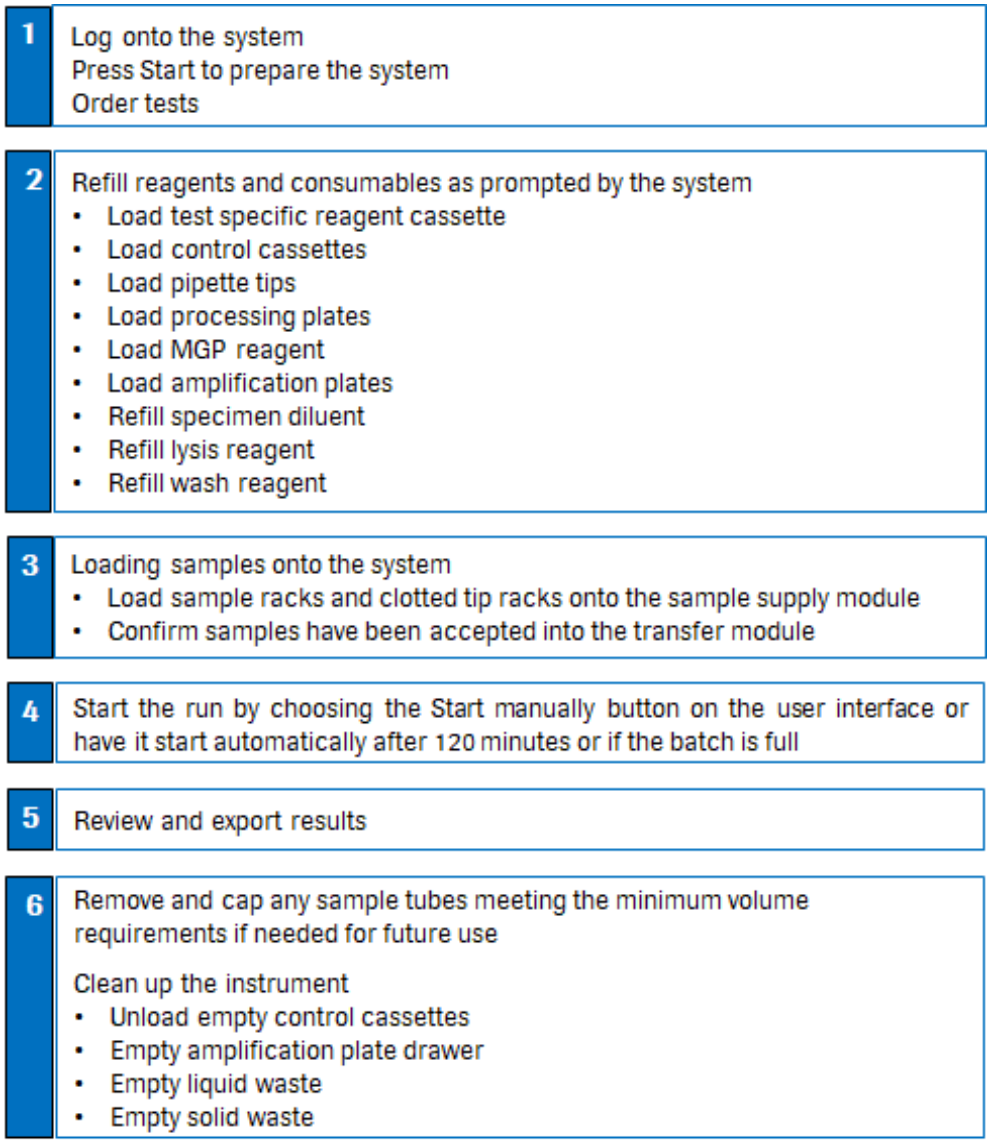
Table 10 Sample type selection in the user interface of the **cobas**® SARS-CoV-2 Duo

Collection kit/Matrix type	Minimum volume (mL) Processing tube	Process as Sample Type
Copan Universal Transport Medium BD™ Universal Viral Transport	0.6 mL **cobas omni** Secondary tube	VTM

cobas® SARS-CoV-2 Duo procedure

The test procedure is described in detail in the **cobas**® 6800/8800 Systems – User Assistance and/or User Guide. Figure 1 below summarizes the procedure.

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



Results

The **cobas**® 6800/8800 Systems automatically detect the SARS-CoV-2 RNA and determine the RNA concentration, for each sample and control. Individual target results for samples as well as test validity and overall results for controls are displayed on the user interface The SARS-CoV-2 RNA concentration is expressed in International Units per milliliter (IU/mL).

Quality control and validity of results

- One **cobas**® Buffer Negative Control [(-) Ctrl] and two positive controls, a low positive control [SARS-CoV-2 L (+) C] and a high positive control [SARS-CoV-2 H (+) C] are processed with each batch.
- In the **cobas**® 6800/8800 software and/or report, check for flags and their associated results to ensure the batch validity.
- All flags are described in the **cobas**® 6800/8800 Systems User Guide.
- The batch is valid if no flags appear for any controls. If the batch is invalid, repeat testing of the entire batch.

Validation of results is performed automatically by the **cobas**® 6800/8800 software based on negative and positive control performance.

Interpretation of results

cobas® SARS-CoV-2 Duo for System Software v1.4 or higher

Display examples for **cobas**® SARS-CoV-2 Duo for System Software v1.4 or higher are shown in Figure 2.

Figure 2 Example of **cobas**® SARS-CoV-2 Duo results display for System Software v1.4 or higher

Test	Sample ID	Valid	Flags	Sample Type	Overall Result	Target 1 (Quantitative)	Target 2 (Qualitative)
SARS-CoV-2-Duo	Sample_01	Yes		VTM	Target Not Detected	Target Not Detected	Negative
SARS-CoV-2-Duo	Sample_02	No	Y40T	VTM	Invalid	Invalid	Invalid
SARS-CoV-2-Duo	Sample_03	Yes		VTM	Titer	4.87e+007 IU/ml	Positive
SARS-CoV-2-Duo	Sample_04	Yes		VTM	> Titer max	> Titer max	Positive
SARS-CoV-2-Duo	Sample_05	Yes		VTM	< Titer min	< Titer min	Positive
SARS-CoV-2-Duo	C1614202840904288 28404	Yes		SARS-CoV-2 H (+) C	Titer	17.75*	17.75*
SARS-CoV-2-Duo	C1614202840930095 80264	Yes		SARS-CoV-2 L (+) C	Titer	32.98*	32.98*
SARS-CoV-2-Duo	C1614202840930095 54953	Yes		(-) Ctrl	Target Not Detected	-	-

* Illustrative Ct values

For a valid batch, check each individual sample for flags in the **cobas**® 6800/8800 software and/or report. The result interpretation should be as follows:

A valid batch may include both valid and invalid sample results.

Table 11 Target results for individual target result interpretation

Results (quantitative)	Results (qualitative)	Interpretation
Target Not Detected	Negative	SARS-CoV-2 RNA not detected. Report results as "SARS-CoV-2 not detected."
< Titer min	Positive	SARS-CoV-2 RNA is detected. Calculated titer is below the Lower Limit of Quantitation (LLoQ) of the assay. Report results as "SARS-CoV-2 detected, less than (Titer min)" Titer min = 100 IU/mL
Titer (IU/mL)	Positive	SARS-CoV-2 RNA is detected. Calculated titer is within the Linear Range of the assay – greater than or equal to Titer min and less than or equal to Titer max. Report results as "(Titer) of SARS-CoV-2 detected."
> Titer max[a]	Positive	SARS-CoV-2 RNA is detected. Calculated titer is above the Upper Limit of Quantitation (ULoQ) of the assay. Report results as "SARS-CoV-2 detected, greater than (Titer max)." Titer max = 1.00E+09 IU/mL
Invalid	Invalid	Results are invalid. Sample should be retested. If the result is still invalid, a new specimen should be obtained.

[a] Sample result > Titer max refers to SARS-CoV-2 positive samples detected with titers above the upper limit of quantitation (ULoQ). If a quantitative result is desired, the original sample should be diluted with SARS-CoV-2-negative transport media depending on the type of the original sample, and the test should be repeated. Multiply the reported result by the dilution factor.

Procedural limitations

- **cobas**® SARS-CoV-2 Duo has been evaluated only for use in combination with the **cobas**® SARS-CoV-2 Duo Control Kit, **cobas**® Buffer Negative Control Kit, **cobas omni** MGP Reagent, **cobas omni** Lysis Reagent, **cobas omni** Specimen Diluent, and **cobas omni** Wash Reagent for use on the **cobas**® 6800/8800 Systems.
- Reliable results depend on proper sample collection, storage and handling procedures.
- This test can be used for the detection of SARS-CoV-2 RNA in nasal and nasopharyngeal swab samples collected in a Copan UTM-RT System (UTM-RT) or BD™ Universal Viral Transport System (UVT). Testing of other sample types with **cobas**® SARS-CoV-2 Duo may result in inaccurate results.
- Detection of SARS-CoV-2 RNA may be affected by sample collection methods, patient factors (e.g., presence of symptoms), and/or stage of infection.
- As with any molecular test, mutations within the target regions of **cobas**® SARS-CoV-2 Duo could affect primer and/or probe binding resulting in failure to detect the presence of virus.
- 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.
- False negative or invalid results may occur due to interference. The Internal Control is included in **cobas**® SARS-CoV-2 Duo to help identify the specimens containing substances that may interfere with nucleic acid isolation and PCR amplification.
- The addition of AmpErase enzyme into the **cobas**® SARS-CoV-2 Duo Master Mix reagent enables selective amplification of target RNA; however, good laboratory practices and careful adherence to the procedures specified in this Instructions For Use document are necessary to avoid contamination of reagents.

Additional information

Key test features

Sample type	Nasopharyngeal swab samples collected in the Copan UTM-RT System or the BD™ UVT System Nasal swab samples collected in the Copan UTM-RT System or the BD™ UVT System
Minimum amount of sample required	0.6 mL*
Sample processing volume	0.4 mL

*Dead volume of 0.2 mL should be considered for the **cobas omni** Secondary tubes. Other tubes compatible with **cobas**® 6800/8800 Systems (consult User Assistance Guide) may have different dead volume and require more or less minimum volume.

Symbols

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

Table 12 Symbols used in labeling for Roche PCR diagnostics 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 US Only: 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, importer, and distributor

Table 13 Manufacturer, importer, and distributor

	Distributed by
Roche Molecular Systems, Inc. 1080 US Highway 202 South Branchburg, NJ 08876 USA www.roche.com Made in USA	Roche Diagnostics 9115 Hague Road Indianapolis, IN 46250-0457 USA (For Technical Assistance call the Roche Response Center toll-free: 1-800-526-1247)
Roche Diagnostics GmbH Sandhofer Strasse 116 68305 Mannheim, Germany EC Importer[1]	1 Symbol text required by USA only. 2 For USA only.

Trademarks and patents

See http://www.roche-diagnostics.us/patents

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References

1. Centers for Disease Control and Prevention. Biosafety in Microbiological and Biomedical Laboratories, 6th ed. U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention, National Institutes of Health HHS Publication No. (CDC) 300859, revised June 2020.

2. Clinical and Laboratory Standards Institute (CLSI). Protection of Laboratory Workers From Occupationally Acquired Infections; Approved Guideline, 4th ed. CLSI Document M29-A4. Wayne, PA: CLSI, 2014.

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