February 11, 2025

Roche Molecular Systems, Inc.
Mounika Kommineni
Regulatory Affairs Manager
4300 Hacienda Drive
Pleasanton, California 94028

Re: K240867
Trade/Device Name: cobas SARS-CoV-2 Qualitative for use on the cobas 5800/6800/8800 Systems
Regulation Number: 21 CFR 866.3981
Regulation Name: Device To Detect And Identify Nucleic Acid Targets In Respiratory Specimens From Microbial Agents That Cause The SARS-Cov-2 Respiratory Infection And Other Microbial Agents When In A Multi-Target Test
Regulatory Class: Class II
Product Code: QQX
Dated: February 11, 2025
Received: February 11, 2025

Dear Mounika Kommineni:

We have reviewed your section 510(k) premarket notification of intent to market the device referenced above and have determined the device is substantially equivalent (for the indications for use stated in the enclosure) to legally marketed predicate devices marketed in interstate commerce prior to May 28, 1976, the enactment date of the Medical Device Amendments, or to devices that have been reclassified in accordance with the provisions of the Federal Food, Drug, and Cosmetic Act (the Act) that do not require approval of a premarket approval application (PMA). You may, therefore, market the device, subject to the general controls provisions of the Act. Although this letter refers to your product as a device, please be aware that some cleared products may instead be combination products. The 510(k) Premarket Notification Database available at https://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfpmn/pmn.cfm identifies combination product submissions. The general controls provisions of the Act include requirements for annual registration, listing of devices, good manufacturing practice, labeling, and prohibitions against misbranding and adulteration. Please note: CDRH does not evaluate information related to contract liability warranties. We remind you, however, that device labeling must be truthful and not misleading.

If your device is classified (see above) into either class II (Special Controls) or class III (PMA), it may be subject to additional controls. Existing major regulations affecting your device can be found in the Code of Federal Regulations, Title 21, Parts 800 to 898. In addition, FDA may publish further announcements concerning your device in the Federal Register.

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

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

Please be advised that FDA's issuance of a substantial equivalence determination does not mean that FDA has made a determination that your device complies with other requirements of the Act or any Federal statutes and regulations administered by other Federal agencies. You must comply with all the Act's requirements, including, but not limited to: registration and listing (21 CFR Part 807); labeling (21 CFR Part 801 and Part 809); medical device reporting (reporting of medical device-related adverse events) (21 CFR Part 803) for devices or postmarketing safety reporting (21 CFR Part 4, Subpart B) for combination products (see https://www.fda.gov/combination-products/guidance-regulatory-information/postmarketing-safety-reporting-combination-products); good manufacturing practice requirements as set forth in the quality systems (QS) regulation (21 CFR Part 820) for devices or current good manufacturing practices (21 CFR Part 4, Subpart A) for combination products; and, if applicable, the electronic product radiation control provisions (Sections 531-542 of the Act); 21 CFR Parts 1000-1050.

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

Also, please note the regulation entitled, "Misbranding by reference to premarket notification" (21 CFR 807.97). For questions regarding the reporting of adverse events under the MDR regulation (21 CFR Part 803), please go to https://www.fda.gov/medical-devices/medical-device-safety/medical-device-reporting-mdr-how-report-medical-device-problems.

For comprehensive regulatory information about medical devices and radiation-emitting products, including information about labeling regulations, please see Device Advice (https://www.fda.gov/medical-devices/device-advice-comprehensive-regulatory-assistance) and CDRH Learn (https://www.fda.gov/training-and-continuing-education/cdrh-learn). Additionally, you may contact the Division of Industry and Consumer Education (DICE) to ask a question about a specific regulatory topic. See the DICE website (https://www.fda.gov/medical-devices/device-advice-comprehensive-regulatory-

assistance/contact-us-division-industry-and-consumer-education-dice) for more information or contact DICE by email (DICE@fda.hhs.gov) or phone (1-800-638-2041 or 301-796-7100).

Sincerely,

Himani Bisht -S

Himani Bisht, Ph.D
Assistant Director
Viral Respiratory and HPV Branch
Division of Microbiology Devices
OHT7: Office of In Vitro Diagnostics
Office of Product Evaluation and Quality
Center for Devices and Radiological Health

Enclosure

DEPARTMENT OF HEALTH AND HUMAN SERVICES
Food and Drug Administration

Indications for Use

Form Approved: OMB No. 0910-0120
Expiration Date: 07/31/2026
See PRA Statement below.

510(k) Number *(if known)*
K240867

Device Name
cobas® SARS-CoV-2 Qualitative for use on the cobas® 5800/6800/8800 Systems

Indications for Use *(Describe)*
cobas® SARS-CoV-2 Qualitative for use on the cobas®5800/6800/8800 Systems is a real-time RT-PCR test intended for the qualitative detection of nucleic acids from SARS-CoV-2 in nasopharyngeal swab specimens collected from individuals with signs and symptoms of COVID-19 and in anterior nasal swab specimens collected from any individuals with or without signs and symptoms of COVID-19.

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 pathogens.

Negative results do not preclude SARS-CoV-2 infection and should not be used as the sole basis for patient management decisions. Results are meant to be used in conjunction with clinical observations, patient history, recent exposures, epidemiological information, and laboratory data, in accordance with the guidelines provided by the relevant public health authorities.

Type of Use *(Select one or both, as applicable)*

☒ Prescription Use (Part 21 CFR 801 Subpart D) ☐ Over-The-Counter Use (21 CFR 801 Subpart C)

CONTINUE ON A SEPARATE PAGE IF NEEDED.

cobas® SARS-CoV-2 Qualitative for use on the **cobas®** 5800/6800/8800 Systems 510(k) Summary

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

Submitter Name	Roche Molecular Systems, Inc.
Address	4300 Hacienda Drive Pleasanton, CA 94588-2722
Contact	Mounika Kommineni Phone: (925) 416-9705 Fax: (925) 225-0207 Email: mounika.kommineni@roche.com
Date Prepared	February 11, 2025
Proprietary Name	**cobas®** SARS-CoV-2 Qualitative for use on **cobas®** 5800/6800/8800 Systems
Classification Name	Device to detect and identify nucleic acid targets in respiratory specimens from microbial agents that cause the SARS-CoV-2 respiratory infection and other microbial agents when in a multi-target test
Product Codes	21 CFR 866.3981
Predicate Devices	**cobas®** SARS-CoV-2 Qualitative for use on **cobas®** 5800/6800/8800 Systems (K231306)
Establishment Registration	Roche Molecular Systems, Inc. (2243471)

1. DEVICE DESCRIPTION

cobas® SARS-CoV-2 Qualitative is based on fully automated sample preparation (nucleic acid extraction and purification) followed by PCR amplification and detection. The **cobas®** 5800 System is designed as one integrated instrument. 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®** 5800 or **cobas®** 6800/8800 Systems software(s), which assigns test 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 internal control RNA (RNA IC) 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 (positive and negative) are processed in the same way.

Selective amplification of target nucleic acid from the sample is achieved by the use of target-specific forward and reverse primers for ORF1 a/b non-structural region that is unique to SARS-CoV-2. Additionally, a conserved region in the structural protein envelope E-gene were chosen for pan-Sarbecovirus detection. The pan-Sarbecovirus detection sets will also detect SARS-CoV-2 virus.

Selective amplification of RNA Internal Control is achieved by the use of non-competitive sequence specific forward and reverse primers which have no homology with the coronavirus genome. A thermostable DNA polymerase enzyme is used for amplification.

The **cobas®** SARS-CoV-2 Qualitative master mix contains detection probes which are specific for the coronavirus type SARS-CoV-2, members of the Sarbecovirus subgenus, and the RNA Internal Control nucleic acid. The coronavirus and RNA Internal Control detection probes are each labeled with unique fluorescent dyes that act as a reporter. Each probe also has a second dye which acts as a quencher. When not bound to the target sequence, the fluorescent signals of the intact probes are suppressed by the quencher dye. During the PCR amplification step, hybridization of the probes to the specific single-stranded DNA template results in cleavage of the probe by the 5' to 3' exonuclease 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. Each reporter dye is measured at defined wavelengths, which enables simultaneous detection and discrimination of the amplified coronavirus target and the RNA Internal Control. 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.

cobas® SARS-CoV-2 Qualitative is a qualitative nucleic acid test for use on the **cobas®** 5800/6800/8800 System for the detection of the 2019 novel coronavirus (SARS-CoV-2)

RNA in individual nasal and nasopharyngeal swab samples collected in Copan Universal Transport Medium System (UTM-RT), BD™ Universal Viral Transport System (UVT), **cobas®** PCR Media, or 0.9% physiological saline. The RNA Internal Control, used to monitor the entire sample preparation and PCR amplification process, is introduced into each specimen.

2. INTENDED USE

cobas® SARS-CoV-2 Qualitative for use on the **cobas®**5800/6800/8800 Systems is a real-time RT-PCR test intended for the qualitative detection of nucleic acids from SARS-CoV-2 in nasopharyngeal swab specimens collected from individuals with signs and symptoms of COVID-19 and in anterior nasal swab specimens collected from any individuals with or without signs and symptoms of COVID-19.

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 pathogens.

Negative results do not preclude SARS-CoV-2 infection and should not be used as the sole basis for patient management decisions. Results are meant to be used in conjunction with clinical observations, patient history, recent exposures, epidemiological information, and laboratory data, in accordance with the guidelines provided by the relevant public health authorities.

3. TECHNOLOGICAL CHARACTERISTICS

The primary technological characteristics and intended use of the RMS **cobas®** SARS-CoV-2 Qualitative for use on the **cobas®** 5800/6800/8800 Systems are substantially equivalent to other legally marketed nucleic acid amplification tests intended for the qualitative detection of SARS-CoV-2 virus (SARS-CoV-2).

As indicated in Table 1, **cobas®** SARS-CoV-2 Qualitative for use on the **cobas®** 5800/6800/8800 Systems is substantially equivalent to significant characteristics of the identified predicate device, **cobas®** SARS-CoV-2 Qualitative for use on the **cobas®** 5800/6800/8800 Systems (K213804).

Table 1: Comparison of the cobas® SARS-CoV-2 Qualitative for use on the cobas® 5800/6800/8800 Systems with the Predicate Device

	Submitted Device: cobas® SARS-CoV-2 Qualitative	**Predicate Device: cobas® SARS-CoV-2 Qualitative (K231306)**
Regulation Number	21 CFR 866.3981	Same
Regulation Name	Device to detect and identify nucleic acid targets in respiratory specimens from microbial agents that cause the SARS-CoV-2 respiratory infection and other microbial agents when in a multi-target test	Same
Product Code	QQX	Same
Intended Use	**cobas®** SARS-CoV-2 Qualitative for use on the **cobas®** 5800/6800/8800 Systems is a real-time RT-PCR test intended for the qualitative detection of nucleic acids from SARS-CoV-2 in nasopharyngeal swab specimens collected from individuals with signs and symptoms of COVID-19 and in anterior nasal swab specimens collected from any individuals with or without signs and symptoms of COVID-19. 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 pathogens. Negative results do not preclude SARS-CoV-2 infection and should not be used as the sole basis for patient management decisions. Results are meant to be used in conjunction with clinical observations, patient history, recent exposures, epidemiological information, and laboratory data, in accordance with the	**cobas®** SARS-CoV-2 Qualitative for use on the **cobas®** 5800/6800/8800 Systems is a real-time RT-PCR test intended for the qualitative detection of nucleic acids from SARS-CoV-2 in nasal and nasopharyngeal specimens collected from symptomatic individuals suspected of COVID-19 by their healthcare provider. Results are for the detection of SARS-CoV-2 RNA. Positive results are indicative of the presence of SARS-CoV-2 RNA; clinical correlation with patient history and other diagnostic information is necessary to determine patient infection status. Positive results do not rule out bacterial infection or co-infection with other pathogens. Negative results do not preclude SARS-CoV-2 infection and should not be used as the sole basis for patient management decisions. Results are meant to be used in conjunction with clinical observations,

	Submitted Device: cobas® SARS-CoV-2 Qualitative	Predicate Device: cobas® SARS-CoV-2 Qualitative (K231306)
	guidelines provided by the relevant public health authorities.	patient history, recent exposures and epidemiological information, and laboratory data, in accordance with the guidelines provided by the relevant public health authorities. **cobas®** SARS-CoV-2 Qualitative is intended for use by qualified clinical laboratory personnel specifically instructed and trained in the techniques of real-time PCR and on the use of the **cobas®** 5800/6800/8800 Systems.
Conditions for use	For prescription use	Same
Sample Types	Nasopharyngeal swab specimen Anterior nasal swab specimen	Nasopharyngeal swab specimen Anterior nasal swab specimen
Analyte Targets	SARS-CoV-2	Same
Sample Preparation Procedure	Automated by **cobas®** 5800/6800/8800 Systems	Same
Amplification Technology	Real-time PCR	Same
Detection Chemistry	Paired reporter and quencher fluorescence labeled probes (TaqMan Technology) using fluorescence resonance energy transfer (FRET)	Same
Controls used	Sample processing control (IC) Positive and negative control	Same
Result Analysis	Based on PCR cycle threshold analysis	Same

4. NON CLINICAL PERFORMANCE EVALUATION

4.1. In Silico Analysis

An updated *in-silico* analysis was conducted in January 2025 using all SARS-CoV-2 sequences submitted to the GISAID database till date (as of January 15, 2025). The *in-silico* analysis results indicate that > 99.9% of sequences for SARS-CoV-2 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.

Table 2 *in silico* analysis of SARS-CoV-2 Qualitative Oligo Design

Target	Orf1ab		E-gene		Orf1ab & E-gene	
Database	**GISAID**		**GISAID**		**GISAID**	
total	16156883	100.00%	16156883	100.00%	16156883	100.00%
with_mismatch	549763	3.40%	87773	0.54%	3560	0.02%
dCp>5 or Tm<65	545	0.00%	1175	0.01%	3*	0.00%

* The three sequences have several frameshifts, significantly long truncations and nucleotide gaps, and thus are considered to be submissions of lower sequencing quality

5. CLINICAL PERFORMANCE EVALUATION

5.1. Asymptomatic Population

The clinical performance of **cobas**® SARS-CoV-2 Qualitative on asymptomatic subjects was assessed using real world data and clinical study data.

5.1.1. Real-world evidence

The clinical performance of the **cobas**® SARS-CoV-2 Qualitative with asymptomatic subjects was assessed using real-world data collected from the 2020 National Football League (NFL) COVID-19 Surveillance Program where samples were collected and tested between August 2020-January 2021 as part of an Occupational Testing protocol. Anterior nasal swab samples were prospectively collected on a near-daily basis from NFL players and staff.

The performance of **cobas**® SARS-CoV-2 Qualitative was estimated using a comparator algorithm that was based on molecular comparator test results and/or clinical adjudication performed within the NFL testing program. A total of 1776 samples were selected for analysis where the **cobas**® SARS-CoV-2 Qualitative candidate test and comparator test results were evaluable to establish the COVID-19 status for each sample. The results are shown in Table 3 below.

Table 3: Performance estimates for the cobas® SARS-CoV-2 Qualitative in anterior nasal swabs in asymptomatic individuals (NFL)

	Comparator Algorithm		Total
	Positive	Negative	
Candidate Positive	11	3	14
Candidate Negative	0	1,762	1,762
Total	11	1,765	1,776
PPA (n/N) (95% Confidence Interval)	100.0% (11/11) (95% CI: 74.1% - 100.0%)		
NPA (n/N) (95% Confidence Interval)	99.8% (1762/1765) (95% CI: 99.5% - 99.9 %)		

Note: CI = confidence interval, PPA = positive percent agreement, NPA = negative percent agreement

5.1.2. Clinical Study

The clinical performance of the **cobas®** SARS-CoV-2 Qualitative with asymptomatic subjects was also assessed using data collected from the 2021 Test Us at Home (TUAH) study where samples were collected and tested for SARS-CoV-2 between October 2021 and April 2022 as part of a longitudinal study. Anterior nasal swab samples were prospectively collected every 48 hours from each participant over 15 days.

The performance of **cobas®** SARS-CoV-2 Qualitative was estimated by using a comparator algorithm where two consecutive test results (molecular comparator) over 48 hours were used to determine comparator result. All samples (38,192) from the TUAH study that had a valid comparator algorithm result and a valid candidate test result were included in the calculation of performance estimates of the **cobas®** SARS-CoV-2 Qualitative. The results are shown in Table 4 below.

Table 4: Performance estimates for the cobas® SARS-CoV-2 Qualitative in anterior nasal swabs in asymptomatic individuals (TUAH study)

	Comparator Algorithm		Total
	Positive	Negative	
Candidate Positive	315	272	587
Candidate Negative	19	37,586	37,605
Total	334	37,858	38,192
PPA (n/N) (95% Confidence Interval)	94.3% (315/334) (95% CI: 91.4% - 96.8%)*		
NPA (n/N) (95% Confidence Interval)	99.2% (37,586/37,858) (95% CI: 99.2% - 99.4%)*		

* Confidence intervals were estimated using a bootstrapping method.
Note: CI = confidence interval, PPA = positive percent agreement, NPA = negative percent agreement

6. CONCLUSIONS

Equivalent performance of the candidate device and the current cleared device has been demonstrated. The candidate device is substantially equivalent to the predicate device.