General Guidance

for the use of UC-TIB-Kits with the cobas® omni utility channel on the cobas® x800 Systems

Version 2.1

For Research use only.

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TABLE OF CONTENT

1. INTRODUCTION

Real-time Polymerase Chain Reaction (qPCR) is a sophisticated nucleic acid amplification technique designed for both the detection and quantification of specific DNA sequences. This is achieved either by analyzing DNA directly following extraction, or by reverse transcribing RNA into complementary DNA (cDNA) before amplification. qPCR technology allows a rapid and specific identification of genetic targets, including genes from microorganisms or viruses associated with infectious diseases, as well as tumor-specific genetic markers and genetic variations. **UC-TIB-Kits** use this powerful technology to accurately detect the presence of pathogens, tumor-specific genetic markers and genetic variations.
UC-TIB-Kits use assays with TaqMan® DNA probes that are designed to hybridize specifically to the target DNA sequence. Each probe is labeled with a fluorescent dye that enables real-time measurements throughout the PCR process. The fluorescent signals generated during this process are then detected and analysed.

2. GENERAL INFORMATION

2.1. INTENDED USE

UC-TIB-Kits are automated *in vitro* nucleic acid amplification tests designed for the detection of pathogens, genetic markers or genetic variations from various specimen types. These tests are intended for use on the open channel functionality (**cobas® omni** utility channel) of the **cobas®** x800 systems, and are designated for research use only (RUO).

2.2. PRINCIPLE

The **cobas®** x800 systems offer a fully automated solution for molecular testing, integrating nucleic acid extraction and purification with PCR amplification and detection. **UC-TIB-Kits** are designed for use with the **cobas® omni** utility channel of **cobas®** x800 systems.
UC-TIB-Kits contain target-specific primers and probes. They are used in combination with the **cobas® omni** utility channel master mix reagent 2 (UC MMX-R2) and the **cobas® omni** utilily channel 192 Reagent cassette (192-test cassette, Roche P/N 09052011190), both supplied within the **cobas® omni** utility channel reagent kit from Roche. To prepare for testing, **UC-TIB-Kits** are mixed with UC MMX-R2 and loaded into the cassette. This prepared cassette is then transferred to the **cobas®** x800 system for test-execution.

Detection of pathogens, genetic markers, or genetic variations using the **cobas®** x800 systems with **UC-TIB-Kits** relies on the accurate performance of the kit. To verify this functionality, the following controls are used:

- Internal Control (IC): This control is included within the 192-test cassette and is recognized by specific primers and probes in the UC MMX-R2. It undergoes simultaneous amplification with the target sequences, serving as a monitor for the entire extraction, amplification, and detection process; and ensuring the validity of negative results and the efficiency of the reaction.
- Positive Control (+) Ctrl: This external control contains a known target sequence and is processed alongside the samples. A positive result for this control confirms that the assay reagents are functional, the amplification process is occurring correctly, and the detection system is working as expected.
- Negative Control (-) Ctrl: This external control contains no target nucleic acid but does contain the internal control. A negative result for the target in this control confirms that there is no contamination in the reagents or in the testing environment, and that the assay is specific. This control is supplied by Roche (P/N 09051953190).

Nucleic acids are simultaneously extracted from samples, (-) Ctrl, and (+) Ctrl, each containing the internal control (IC). The process begins with lysing these samples (including controls) by adding lysis reagent and proteinase. The released nucleic acids then bind to the silica surface of magnetic glass particles. Unbound substances and impurities, such as denatured proteins, cell debris, and potential PCR inhibitors, are removed through subsequent washing steps. Finally, the purified nucleic acids are eluted from the glass particles using an elution buffer at an elevated temperature.

Amplification utilizes the thermostable Z05D DNA polymerase enzyme and follows the **cobas**® x800 standard PCR profile. To prevent carryover contamination, the master mix includes deoxyuridine triphosphate (dUTP), which is incorporated into the newly synthesized DNA (amplicon) instead of deoxythimidine triphosphate (dTTP). Uracil N-Glycosylase enzyme (AmpErase) integrated into the PCR mix eliminates any residual amplicon from previous PCR runs before the current amplification begins.
Each probe is labeled with a target-specific fluorescent reporter dye, allowing for the simultaneous detection of target sequences and the IC across different emission channels. The fluorescent signal from an intact probe is suppressed by a quencher dye.
During the PCR amplification step, these probes hybridize to their specific single-stranded DNA templates. The DNA polymerase then cleaves the probes via its 5'-to-3' nuclease activity, which separates the reporter dye from the quencher and generates a fluorescent signal. With every successive PCR cycle, an increasing number of probes are cleaved, resulting in a proportional increase in the cumulative reporter dye signal. Real-time detection and discrimination of PCR products are achieved by measuring the fluorescence emitted by the released reporter dyes for both the product-specific targets and the IC throughout each amplification round.

3. REAGENTS AND MATERIALS (NOT SUPPLIED)

3.1. COBAS® OMNI REAGENTS FOR SAMPLE PREPARATION

Table 1, 2, 3, and Table 4 list the materials and instruments required to run **UC-TIB-Kits** on **cobas**® x800 systems**.**
When not loaded onto the **cobas**® 5800 or **cobas**® 6800/8800 systems, store reagents at the temperature specified in Table 3.
Please note that the **cobas**® **omni** utility channel 192 reagent kit cassette loaded with PCR Mix (consisting of UC-MMX-R2 and the specific **UC-TIB-Kit** Primers and Probes) can be stored for up to seven days at 2 - 8 °C before first use. After its initial use, please refer to expiry conditions of the **cobas**® **omni** utility channel reagent kit in Table 4.

Reagents loaded onto the **cobas**® 5800 system or **cobas**® 6800/8800 systems are stored at appropriate temperatures and their expiration is monitored and enforced by the system. The system allows reagents to be used only if all of the reagent handling conditions shown in Table 4 are met. The system automatically prevents use of expired reagents. Remaining open-kit stability and number of kit uses information for assay specific reagents is accessible to view under the system user interface.

Table 1: **cobas® omni** Utility Channel reagents and controls

Kit components	Reagent ingredients	Quantity per kit
cobas® Buffer Negative Control Kit cassette		
cobas® Buffer Negative Control Kit → **(-) Ctrl**	Tris buffer, < 0.1% sodium azide, EDTA, 0.002% Poly rA RNA (synthetic)	16 mL (16 x 1 mL)
cobas® omni Utility Channel 192 Reagent Kit cassette		
Protease Solution **(PASE)**	Tris buffer, < 0.05% EDTA, calcium chloride, calcium acetate, 8% (w/v) proteinase EUH210: Safety data sheet available on request. EUH208: Contains Subtilisin from *Bacillus subtilis*. May produce an allergic reaction.	22.3 mL
RNA Internal Control **(RNA-QS)**	Tris buffer, < 0.05% EDTA, armored RNA construct containing primer and probe-specific 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
Master Mix Reagent 2 bottle		
cobas® **omni** Utility Channel Master Mix Reagent 2 **(UC MMx-R2)**	Tricine buffer, potassium acetate, < 18% dimethyl sulfoxide, glycerol, <0.1% Tween 20, EDTA, < 0.12% dATP, dCTP, dGTP, dUTPs, < 0.01% internal control forward and reverse primers, < 0.01% fluorescent-labeled oligonucleotide probes specific for RNA-IC, < 0.01% oligonucleotide aptamer, < 0.01% Z05D DNA polymerase, < 0.1% AmpErase (uracil-N-glycosylase) enzyme (microbial), < 0.1% sodium azide	19.6 mL (2 x 9.8 mL)

Table 2: **cobas® omni** reagents for sample preparation

Reagents	Reagent ingerdients	Quantity per kit	Safety symbol and warning*
cobas® omni MGP Reagent (**MGP**)	Magnetic glass particles, Tris buffer, 0.1% methyl-4 hydroxybenzoate, < 0.1% sodium azide	480 tests	Not applicable
cobas® omni Specimen Diluent (**SPEC DIL**)	Tris buffer, 0.1% methyl-4 hydroxybenzoate, < 0.1% sodium azide	4 x 875 mL	Not applicable
cobas® omni Wash Reagent (**WASH**)	Sodium citrate dihydrate, 0.1% methyl-4 hydroxybenzoate	4.2 L	Not applicable
cobas® omni Lysis Reagent (**LYS**)	43% (w/w) guanidine thiocyanate**, 5% (w/v) polydocanol**, 2% (w/v) dithiothreitol**, dihydro sodium citrate	4 x 875 mL	 **DANGER** H302: Harmful if swallowed H314: Causes severe skin burns and eye damagee. H412: Harmful to aquatic life with long lasting effects. EUH032: Contact with acids liberates very toxic gas. EUH071: Corrosive to the respiratory tract. P273: Avoid release to the environment. P280: Wear protective gloves/ protective clothing/ eye protection/ face protection/ hearing protection. P301 + P330 + P331: IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. 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 Polidocanol 3483-12-3 (R*,R*)-1,4-dimercaptobutane-2,3-diol

*Product safty labelling primarly follows EU GHS guidance. **Hazardous substance.

Table 3: Reagent storage (when reagent is not on the system)

Reagents	Storage temperature
cobas® Buffer Negative Control Kit	2 - 8 °C
cobas® omni utility channel 192 reagent kit	2 - 8 °C
cobas® omni MGP Reagent	2 - 8 °C
cobas® omni Lysis Reagent	2 - 8 °C
cobas® omni Specimen Diluent	2 - 8 °C
cobas® omni Wash Reagent	15 - 30 °C

Table 4: **cobas® omni** reagent expiry conditions enforced by the **cobas®** x800 systems

Reagent	P/N	On-Board stability
cobas® Buffer Negative Control Kit	09051953190	36 days from loading* 10 hours**
cobas® omni utility channel 192 reagent kit	09052011190	36 days from loading*, 40 hours**
cobas® omni MGP Reagent	06997538190	30 days from first usage (open-kit stability)
cobas® omni Lysis Reagent	06997546190	30 days from loading (open-kit stability)
cobas® omni Specimen Diluent	06997511190	30 days from loading (open-kit stability)
cobas® omni Wash Reagent	06997503190	30 days from loading (open-kit stability)

*On-board stability for **cobas®** 5800 system. **On-board stability (outside refrigerator) for **cobas®** 6800/8880 system.

3.2. ADDITIONAL MATERIALS REQUIRED

Additional consumables required to run the **cobas**® 5800 system or **cobas**® 6800/8800 systems are listed in Table 5. Materials used for sample collection are listed in Table 6.

Table 5: Consumables for use on the **cobas**® 5800 or **cobas**® 6800/8800 system*

Material for cobas® 5800 system	Material for cobas® 6800/8800 system
cobas® **omni** Processing Plate 24	**cobas**® **omni** Processing Plate
cobas® **omni** Amplification Plate 24	**cobas**® **omni** Amplification Plate
cobas® **omni** Liquid Waste Plate 24	**cobas**® **omni** Pipette Tips
Tip CORE TIPS with Filter, 1 mL	**cobas**® **omni** Liquid Waste Container
Tip CORE TIPS with Filter, 300 µL	Solid Waste Bag or Solid Waste Bag With Insert
cobas® **omni** Liquid Waste Container	**cobas**® **omni** Secondary Tubes 13x75 (optional)
Solid Waste Bag or Solid Waste Bag With Insert	MPA RACK 13 or 16 MM
cobas® **omni** Secondary Tubes 13x75 (optional)	RD5 RACK – RD Standard rack
MPA RACK 13 or 16 MM	
RD5 RACK – RD Standard rack	
16-position tube carrier	
5-position rack carrier	
Repeater pipette with a 10 mL pipette tip	
cobas® PCR Media Tube Replacement Cap Kit	
cobas® PCR Media Disposable Tube Stand (optional)	

* For Part Number please refer to the **cobas**® 5800 or **cobas**® 6800/8800 system User Assistance.

Table 6: Other materials which may be required for pre-analytic workflow

Material	P/N
cobas® PCR Media Uni Swab Sample Kit	07958030190
cobas® PCR Media Dual Swab Kit	07958021190
cobas® PCR Urine Sample Kit	05170486190
cobas® Whole Blood Collection Tube	08827907001
cobas® Microbial Inactivation Solution (MIS)	08185476001

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.

3.3. INSTRUMENTATION

Table 7 below lists the instruments required to run **UC-TIB-Kits** on **cobas**® x800 systems.

Table 7: Instrumentation

Equipment	Roche P/N
cobas® 5800 system	08707464001
cobas® 6800 system	05524245001 and 09575154001
cobas® 8800 system	05412722001 and 09575146001
Sample Supply Module	05524245001 and 09575154001
TWN3 Legic NFC USB (RFID Reader/Writer)	07450460001
External PC with remote connection provided by the customer	N/A
Barcode Printer	N/A

► Refer to the **cobas**® 5800 system or **cobas**® 6800/8800 systems - User Assistance for additional information.

3.4. SOFTWARE

The **cobas**® 5800 software and **cobas**® 6800/8800 software are pre-installed on their respective **cobas**® x800 systems.

For the **cobas**® 5800 system or **cobas**® 6800/8800 systems with software (sw) 2.0 or higher, the Data Manager software will be provided with the system. For the **cobas**® 6800/8800 systems with sw 1.4, the Instrument Gateway (IG) server will be provided with the system.

Table 8: **cobas**® 5800 system or **cobas**® 6800/8800 systems with sw 2.0 or higher

Instrument	Software	Version
External computer with Data Manager	**cobas**® **omni** CDC file creator, Navify	3.5 or higher
	cobas® **omni** RFID tool	1.1 or higher
	cobas® **omni** utility channel optimization tool	6.0 or higher

Table 9: **cobas**® 6800/8800 systems with sw 1.4

Instrument	Software	Version
External computer with remote connection (also called Remote User Interface, RUI)	**cobas**® **omni** utility channel tool	3.4 or higher
	cobas® **omni** utility channel optimization tool	4.1 or higher

► Refer to the **cobas**® 5800 system or **cobas**® 6800/8800 systems - User Assistance for additional information.

4. PRECAUTIONS AND HANDLING REQUIREMENTS

► **If the package is damaged, please contact your local Roche representative.**

4.1. WARNING AND PRECAUTIONS

Good laboratory practice (GLP) is essential to the proper performance of these tests. Due to their inherent high sensitivity, meticulous care must be taken to ensure reagents and amplification mixtures remain free of contamination. The following restrictions are essential for proper handling of the product:

- For *in vitro* use only.
- Treat all samples as potentially infectious, adhering to guidelines in Biosafety in Microbiological and Biomedical Laboratories and CLSI Document M29-A4.
- Always treat all human-sourced materials as potentially infectious and handle them with universal precautions.
- Only personnel proficient in handling infectious materials and trained in the use of **UC-TIB-Kits** and **cobas**® x800 systems may perform the tests.
- Should a spill occur, immediately disinfect the area using a freshly prepared 0.5% sodium or potassium hypochlorite solution (in distilled or deionized water) or follow your site's established spill procedures.
- Do not freeze whole blood or any samples stored in primary tubes.
- Use only supplied or specified required consumables to ensure optimal test performance.
- Safety Data Sheets are available on request from your local Roche representative.
- To ensure correct test performance, adhere strictly to all procedures and guidelines. Any deviation could compromise optimal results.
- Strict control of sample carryover is required during handling and processing to mitigate the risk of false positive results.

4.2. 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 all reagent cassettes, sample diluents, lysis reagents, and wash reagents for any signs of leakage. Discard and do not test with any material that shows signs of leakage.
- **cobas**® **omni** Lysis Reagent contains guanidine thiocyanate, a potentially hazardous chemical. Avoid contact with skin, eyes, or mucous membranes. In case of contact, immediately wash the affected area with copious amounts of water to prevent burns.
- **UC-TIB-Kits**, **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, wash immediately 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 or potassium 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.

4.3. GOOD LABORATORY PRACTICES

- 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 **UC-TIB-Kits** compounds 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 0.6 % sodium or potassium hypochlorite in distilled or deionized water. Follow by wiping the surface with 70 % ethanol.
- If spills occur on the **cobas**® x800 system, follow the instructions in the "**cobas**® x800 systems User Assistance" to clean and decontaminate the surface of instrument(s) properly.

5. SAMPLE COLLECTION, STORAGE, AND TRANSPORT

Detection of nucleic acid by real-time PCR is dependent upon the quality of the sample collection, timely delivery of the samples to the laboratory in correct containers, and storage under the appropriate conditions before analysis.

- Human samples must be transported according to the regulatory requirements for the transport of potentially infectious substances. To ensure ideal storage and transport conditions, follow the manufacturer's instructions.
- Store all samples at specified temperatures: sample stability is affected by elevated temperatures.
- Repeated freezing and thawing of samples can compromise PCR sensitivity.

BLOOD SAMPLES

- Blood should be collected in plasma preparation tubes for molecular diagnostic test methods or in sterile tubes using EDTA as the anticoagulant. Follow the instructions of the specimen collection tube manufacturer.
- Whole blood collected in plasma preparation tubes for molecular diagnostic test methods or in sterile tubes using EDTA as the anticoagulant may be stored and/or transported for up to 24 hours at +2 to +25 °C prior to plasma preparation. Centrifugation should be performed according to the manufacturer's instructions.
- After separation, plasma specimen may be stored in secondary tubes for up to 6 days at +2 to +8 °C or up to 12 weeks at -15 to -80 °C.
- Plasma can be used directly on the **cobas**® x800 systems. If whole blood is used for testing on **cobas**® x800 systems, the use of Roche Whole Blood Collection Tube (P/N 08827907001) is recommended. Follow the sample collection tube manufacturer instructions for handling. Alternatively a 1:10 dilution with **cobas**® PCR Media can be used. If other media are used for dilution, ensure that blood cells are lysed to avoid clotted tips during sample-processing.

SWAB SAMPLES

- Nasal, oro- or nasopharyngeal specimens should be collected according to standard collection techniques using flocked swabs and immediately placed in 3 mL of Copan Universal Transport Medium (UTM-RT), BD™ Universal Viral Transport (UVT), Copan Liquid Amies Elution Swab (eSwab) or equivalent. In addition, the **cobas**® PCR Media Uni Swab Sample Kit or **cobas**® PCR Media Dual Swab Sample Kit are also applicable to these standards.
- After collection, specimens can be stored in primary tubes for at least 48 hours at +2 to +25°C followed by up to 3 days at +2 to +8 °C and longterm at ≤ -15° C. The **cobas**® PCR Media tube containing the stabilized specimens can be stored at +2 to +30 ºC.
- Optionally nasopharyngeal samples may be treated with MIS before processing. Transfer 0.4 mL of specimen into a barcode labeled 5 mL polypropylene screw-cap tube 75x13mm, round base and add 0.8 mL of MIS to the specimen.
- Nasopharyngeal specimens diluted in MIS may be stored for up to 8 hours at 37°C or 20 hours at 25°C.
- Endocervical, vaginal or anorectal swab specimens should be collected according to standard collection techniques using the **cobas**® PCR Media Uni Swab Sample Kit or **cobas**® PCR Media Dual Swab Sample Kit.
- Transport and store the collected specimens in **cobas**® PCR Media tubes at +2 to +30 ºC.

URINE SAMPLES

- **Urine** specimens can be collected with the **cobas**® PCR Urine Sample Kit. Urine specimens must be transferred into the **cobas**® PCR Media tube (stabilized) immediately. If specimens cannot be transferred immediately, they can be stored at +2 to +30 ºC for up to 24 hours.
- Transport and store the **cobas**® PCR Media tube containing the stabilized urine specimen at +2 to +30 ºC.

STOOL / FECAL SAMPLES

- **Stool** specimens should be collected according to standard collection techniques. After collection, specimens can be stored in primary tubes according to Instructions for Use of the Collection Devices.
- Before analysis, stool specimens should be transferred into secondary tubes as follows:
    1. Prepare a barcoded **cobas**® PCR Media tube for each sample.
    2. Using a flocked swab, take a **small portion** of the stool-sample.
    3. Remove the cap from the **cobas**® PCR Media tube and lower the swab specimen into the tube until the visible scoreline on the swab is aligned with the tube rim.
    4. Carefully leverage the swab against the tube rim to break the swab shaft at the scoreline and tightly re-cap the tube.
    5. Vortex the **cobas**® PCR Media tube containing the stool specimen for 10 to 20 seconds.
    6. Recommended: centrifuge the tube to remove drops from the inside of the lid and sediment solid particles for 2 to 5 min at 3,000 rpm (1,800 xg).
- Alternative transfer methods and media like FecalSwab, inoculating loop, liquid amies, PBS or 0.9% $NaCl_2$ are suitable as well.
- Stool specimen collected in Cary Blair medium, should be diluted 1:5 in **cobas**® PCR Media, before further processing.
- As an alternative secondary media for sample preparation, **cobas**® Microbial Inactivation Solution (MIS) can also be used. Samples in MIS have to be processed within 6h. Longterm storage in MIS is not recommended!

Stool samples tend to inhibit qPCR, therefore only small portions of the stool specimen should be transferred. It is recommended to dip only the tip of the flocked swab into the sample! Only for very watery stool specimens can the swab be soaked completely.

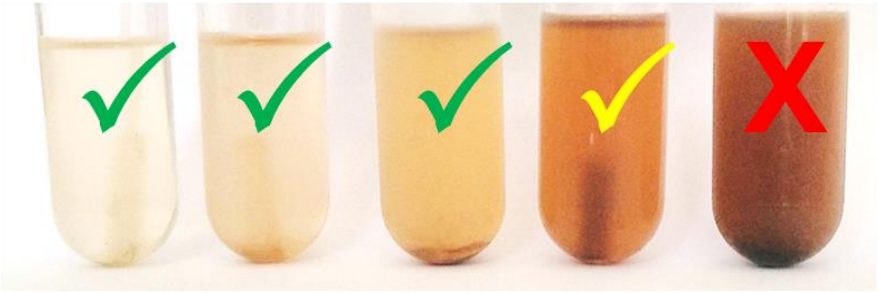


Figure 1. Exemplarily stool specimen preperations for **cobas**® x800 systems, from left (suitable samples) to the right (non-suitable, inhibiting samples).

SPUTUM / BAL

- **Sputum** as well as **BAL** should be collected according to standard collection techniques. After collection, specimens can be stored in primary tubes according to Instructions for Use of the Collection Devices.
- Before analysis viscous samples have to be diluted 1:1 with **cobas**® PCR Media to avoid clotted tips during sample-processing.
- Highly viscous and solid specimen (raw sputum, NALC-NaOH-treated sputum and BAL sediments) can be treated with **cobas**® Microbial Inactivation Solution (MIS).
- Use a minimum of 0.4 mL of raw sputum. Add approximately two parts of MIS to one part of sputum specimen. Close the sputum container tightly and shake vigorously or vortex for 30-60 seconds. Incubate specimen for at least 60 minutes at room temperature (15-30°C). Shake vigorously or vortex for 30-60 seconds or until sample is fully homogenized. Transfer a minimum of 1.2 mL of MIS-treated sputum specimen into a thermostable barcode labeled 5 mL polypropylene screw-cap tube 75x13mm, round base (e.g. Sarstedt - Tube P/N 60.504.010, Cap P/N 65.163).

- For the use of 0.2 mL of NALC-NaOH-treated sputum or BAL sediment, vortex sediment sample for a minimum of 10 seconds. Transfer a minimum of 0.2 mL of sediment specimen into a barcode labeled 5 mL polypropylene screw-cap tube 75x13mm, round base. Add five parts of MIS to one part of specimen. Close the tube tightly and shake vigorously or vortex for 30-60 seconds.
- Ensure that the entire specimen is mixed with MIS. Sonicate inactivated specimen prior to testing.

► Refer to the Instructions for Use of the Collection Devices for specific storage conditions and hazard information.

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

6. WORKFLOW OVERVIEW

Follow the the workflow detailed in Table 10. For further information, refer to the paragraphs below and the **cobas® omni** utility channel User Assistance.

Table 10: Workflow overview

Step	Action	Required material	Reference Document
1	Define Tests Ordering		**cobas®** x800 User Assistance
2	Prepare a UCAP		**cobas® omni** utility channel for **cobas®** 5800/6800/8800 system User Assistance
2	Prepare Reagent Cassette		
3	Load Reagents, Consumables and Reagent Cassette	**cobas®** x800 systems	**cobas®** x800 systems User Assistance
4	Prepare Samples and Control (if available: Standard Curve Points)		
5	Start Run		
6	View Results		
7	Unload Consumables		

► Do not use **cobas® omni** utility channel reagent kit, **cobas®** Buffer Negative Control kit, **UC-TIB-Kits**, or **cobas® omni** reagents after their expiry dates.
► Do not reuse consumables which are designed for single use only.

6.1. DEFINE TEST ORDERING

This guide outlines the steps for ordering and processing an **UC-TIB-Kit** on the **cobas®** x800 system. Follow the instructions for creating a test order as described in the **cobas® omni** systems user documentation. You can order the **UC-TIB-Kit** using any of the standard system methods:

1. Create a Test Order:
   - From the LIS (Laboratory Information System).
   - As a manually entered test order.
   - As a rack-based order (**cobas®** 6800/8800 systems sw 1.4 and cobas 5800 and cobas 6800/8800 sw 2.0 systems connected to Data Manager v2.3).

► In the Sample type field, select the appropriate sample material.

2. Configure Test Parameters (Tests Group Box):
   - Select Utility Channel Analysis Package (UCAP): From the options in the Test field, choose the relevant UCAP.
   - Specify Sample Volume: In the Volume field, select the desired sample volume. The available volumes are defined within the chosen UCAP.

► Multiple UCAPs with identical PCR parameters can be assigned to the same run. **UC-TIB-Kit** tests typically use the same PCR parameters.

3. Save and Perform the Test:
   - Save the test order and initiate the test run as described in the cobas® x800 systems user documentation.

► Refer to the **cobas®** 5800 system or **cobas®** 6800/8800 systems – User Assistance for more details.

6.2. PREPARE A UCAP

► Create a unique UCAP for each **UC-TIB-Kit** using the kit-specific parameters provided in its Instructions For Use (IFU). Do not create multiple UCAPs for a single **UC-TIB-Kit!**

About sample types and pipetting parameters:
When programing the UCAP in the x800 CDC workspace, make sure to select the correct sample type (Table 11) according to the sample material used for testing.

Table 11: Sample Types

Sample Type	Sample Material	Volume (ul)	ADC	ADC* warm/dry	Mixing
Plasma	Plasma	200, 350, 500	No	Yes	-
		850	No	No	-
PreservCyt®	PreservCyt® Media	400	Yes	No	3x
Roche Cell Collection Media (RCCM)	RCCM	400	Yes	No	3x
Serum	Serum	200, 500	No	Yes	-
		850	No	No	-
Swab	UTM, VTM, Saline with swab	400	No	No	-
U_simple_sample	Plasma/Serum	150, 200, 350, 500	No	Yes	-
		850	No	No	-
U_sample with swab	UTM, VTM, Saline with swab	150, 200, 400, 850	No	No	-
U_alcohol-based sample	cMIS (Diluted in cobas MIS) BAL/Sediment BAL/Sediment (1:2MIS) Raw Sputum (1:5MIS) PreservCyt®	150, 200, 400, 850	Yes	No	-
U_buffer-based sample	UTM, VTM, Saline, cobas PCR Media	150, 200, 400, 850	No	Yes	-
Urine	Urin	400	No	Yes	-
Viral Transport Media	VTM	400	No	Yes	-
Whole Blood	diluted whole blood	500	No	Yes	-
cobas PCR media swab	cobas PCR Media with swab	400	No	No	-
Raw Sputum	Raw Sputum (1:5MIS)	850	Yes	No	-
Sediment	Raw Sputum (1:5MIS)	850	Yes	No	-
Diluted in cobas MIS	cMIS (Diluted in cobas MIS)	850	Yes	No	3x

The **cobas**® 5800 system and **cobas**® 5800 systems and **cobas**® 6800/8800 systems with sw 2.0 allow for the creation of quantitative UCAPs when required. Follow these steps to upgrade a qualitative UCAP:

1. Initial Qualitative UCAP Creation & Data Export:
    - Create Qualitative UCAP: Develop a qualitative UCAP as per standard procedures.
    - Run Standard Samples: Run the prepared standard samples on the analytical system.
    - Export Results: Export the result data from the data manager as a .ZIP file.
2. Upgrade UCAP to Quantitative in CDC File Creator:
    - Duplicate UCAP: In the CDC File Creator, duplicate the qualitative UCAP.
    - Access Quantitative Parameters: Select the "Quantitative parameters" tab for the duplicated UCAP.
    - Import Result Data: Choose the "Import" button and select the .ZIP file containing the result data to upload it into the quantitative UCAP.

3. Configure Quantitative Parameters:
    - Unit of Concentration: Configure the unit of concentration (e.g., IU/mL or copies/mL).
    - Ct Method: Define the Ct method and select "Target Ct."
    - Dilution Factor: Define the dilution factor. Use '1' if only one sample volume will be used for quantitative analysis.
    - Quantification Range (LLoQ & ULoQ): Define the Lower Limit of Quantification (LLoQ) and Upper Limit of Quantification (ULoQ). *Note:* These limits must be user-defined. A common range is 1E2 - 1E8 IU/mL or copies/mL.
4. Enter Standard Concentrations:
    - Standards Group Box: In the "Standards" group box, enter the concentration for each standard.
    - Calculate: Choose the "Calculate" button.
5. Save and Deploy Quantitative UCAP:
    - Save: Choose the "Save" button.
    - Deploy: Publish, upload, and install the quantitative UCAP.

► Refer to the **cobas**® 5800 system or **cobas**® 6800/8800 systems – User Assistance and/or User Guides for additional information.
► Refer to the **cobas**® **omni** utility channel for **cobas**® 5800/6800/8800 system User Assistance Version 1.1 or higher for additional information.

Please Note: Quantification with the cobas® 6800/8800 systems sw 1.4 have to be performed manually!

6.3. PREPARE THE REAGENT CASSETTE

Note: Refer to the **cobas**® **omni** utility channel User Assistance for details on transfer options steps.

6.3.1. PREPARE MASTER MIX

Mix the Utility Channel Master Mix Reagent 2 (UC-MMX-R2) with **UC-TIB-Kit** Parameter Specific Reagent (PSR), then load the resulting PCR-Mix into the 192-test cassette.

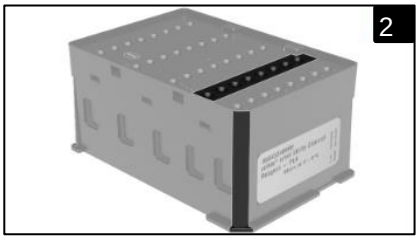
1. Retrieve reagents
    - Remove the UC-MMX-R2 bottles (see Image 1), the 192-test cassette from **cobas**® **omni** utility channel 192 reagent kit and the **UC-TIB-Kit** PSR from their 2 °C to 8 °C storage location.
2. Prepare UC-MMX-R2:
    - Mix the UC-MMX-R2 by slowly inverting the bottles 20 times.
    - Transfer 10 mL UC-MMX-R2 to a light-protected polypropylene tube.
3. Prepare UC-TIB-Kit PSR:
    - Vortex the **UC-TIB-Kit** PSR tube thoroughly, then centrifuge.
4. Combine Reagents:
    - Add 0.6 mL of the **UC-TIB-Kit** PSR to the polypropylene tube contaning the 10 mL UC-MMX-R2.
    - Mix the polypropylene tube by inverting 20 times.


1

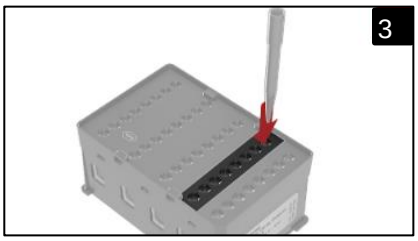
6.3.2. FILL THE REAGENT CASSETTE

The reagent cassette is prepared by loading the PCR-Mix into the reagent cassette from the **cobas**® **omni** utility channel 192 reagent kit.

1. Position the reagent cassette:
    - Position the reagent cassette by placing the slanted edge in the lower right corner (see Image 2).
    - The second row from the right now contains the empty container.


2

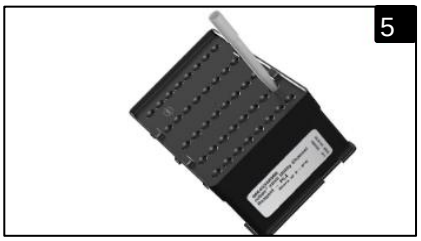
2. Insert air Vent pipette tip:
    - Insert a 1 mL plastic pipette tip into the top septum hole of row 2 (see Image 3). This pipette tip allows air pressure in the container to adjust while the prepared PCR-Mix is added.
3. Load PCR Mix into UC-cassette:


3

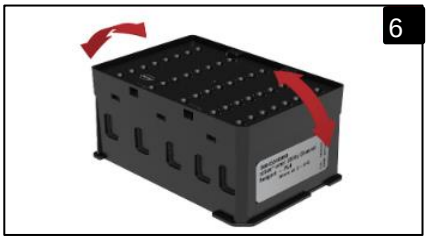
    - Take a repeater pipette with a 10 mL pipette tip. Load the pipette tip with 9.7 mL of the prepared PCR-Mix.
    - Insert the loaded pipette into the bottom septum hole of the reagent cassette. Puncture the septum deeply enough to avoid spillage in row 2 (see Image 4).
    - Tilt the reagent cassette to a 45° angle lengthwise from the bottom. Ensure the cassette is tipped along the edge where the pipette with the 10.0 mL tip is inserted (see Image 5; 10 ml tip is not depicted).


4

    - **Slowly and carefully** pipette 9.7 mL of the prepared PCR-Mix through the bottom septum into the empty container in row 2 (see Image 4). If possible, dispense the prepared PCR Mix in a single movement. Ensure that the correct volume of the prepared PCR-Mix is pipetted. Insufficient reagent volume carries a risk of false negative results.
4. Remove pipette tips:


5

    - Carefully remove the empty 10 mL pipette tip.
    - Ensure that there is no fluid in the 1 mL vent pipette tip and then remove it from the septum. Note: If there is fluid in the tip, carefully rotate the tip to release the fluid from the tip back into the cassette.
    - Slowly tilt the reagent cassette 20 times to remove any air bubbles from the newly filled container (see Image 6).
5. Label Cassette:


6

    - On the label of the 192-test cassette from the **cobas® omni** utility channel reagent kit, document the product name (**UC-TIB-Kit**), the date the cassette was prepared, the lot number of the used kit (PP Mix Lot) and check the box “P&P Added” to confirm primers and probes mix has been added.
6. Write the UCAP onto the RFID tag:
    - Transcribe the **UC-TIB-Kit** specific UCAP onto the RFID tag of the 192-test cassette. Refer to Table for detailed instructions.
7. Load the prepared reagent cassette onto the **cobas®** x800 system.
    - The prepared reagent cassette can be stored for up to seven days at 2-8 °C before first usage.
    - After first usage, please refer to expiry conditions of the **cobas® omni** utility channel reagent kit in Table 4.

Table 12: Manual for transferring UCAPs to the **cobas® omni** utility channel 192 reagent cassette RFID tag

cobas® 6800/8800 systems sw 1.4	cobas® 5800 and cobas® 6800/8800 systems with sw 2.0)
Using the **cobas® omni** utility channel tool: 1. Connect the RFID reader/writer to an available USB port on the PC. 2. Start the **cobas® omni** utility channel tool. 3. Choose “Open a published UCAP” to write a reagent cassette RFID tag button. 4. Select the UCAP zip.file in the new window and then click “open”. 5. Add the **UC-TIB-Kit** lot number to the RFID tag. This field can also be used for additional relevant details.	Using the RFID tool: 1. Connect the RFID reader/writer to an available USB port on the PC. 2. Open the RFID tool, navigate to the "Writing data on RFID tag" section, and select the "Reagent cassette ID" field. 3. Enter the UCAP ID (*U_Name_#.ucap*), defined in the Reagent cassette ID field of the UCAP in the CDC File Creator, from the **UC-TIB-KIT**. 4. Fill the “Custom information field” with the lot number of the **UC-TIB-Kit.** Additional information can be added at will.
To transcribe the UCAP onto the RFID tag of a 192-test reagent cassette, follow these steps using the RFID writer/reader: 1. Place the RFID reader/writer in close proximity to the RFID tag located on the reagent cassette. 2. Select the “Write data on RFID tag” button. 3. To confirm that the RFID tag has been successfully transcribed, select the “Read data from RFID tag” button.	

6.4. LOAD REAGENTS, CONSUMABLES AND REAGENT CASSETTE

►For **cobas®** 6800/8800 systems sw 1.4: Navigate to the "Monitoring" tab and select "Reagents and Consumables".
► For **cobas®** 5800 systems and **cobas®** 6800/8800 systems with sw 2.0: Go to "Run Manager" and select "Supplies".
Check their status and if necessary:

- Load the empty solid waste bag and liquid waste container.
- Load the Wash Reagent, Lysis Reagent and Specimen Diluent.
- Load the processing plates and amplification plate cassette.
- Load the MGP cassette.
- Load the Negative Control cassette.
- Load missing consumables.
- Place the rack for clotted tips onto the sample supply module.

► Refer to the **cobas®** 5800 system or **cobas®** 6800/8800 systems – User Assistance and/or User Guides for additional information.
► Refer to the **cobas® omni** utility channel for **cobas®** 5800/6800/8800 system User Assistance Version 1.1 or higher for additional information.

6.5. PREPARE SAMPLES AND CONTROL

6.5.1. SAMPLE PREPARATIONS

When preparing samples and the **UC-TIB-Kit** (+) Ctrl, the following requirements must be met:

- **Sample Volume**: Ensure the sample volume exceeds the UCAP-defined volume by at least 150 µL to account for the **cobas®** x800 systems dead volume. For samples in alcoholic solutions, a minimum of 300 µL extra sample volume is recommended.
- **Frozen Samples**: Place samples at room temperature until completely thawed. Vortex for 3 to 5 seconds before use.
- **Viscous Samples**: Avoid using samples that are too viscous for pipetting. Mix viscous samples with an appropriate buffer to minimize viscosity (refer to Sputum / Bal on page 9).

► Always follow the Instructions for Use of the Collection Devices for specific storage conditions and hazard information.
► Refer to the **cobas®** x800 systems User Assistance for instructions on how to identify sample tubes with barcodes.

6.5.2. CONTROL PREPARATIONS

A Positive Control [(+) Ctrl] should be included as a sample with each run and with each new reagent cassette. To ensure a (+) Ctrl is consistently present, it is recommended to fully deplete the current **cobas® omni** utility channel 192 reagent kit cassette before loading a new one.

Preparing UC-TIB-Kit (+) Ctrl:

1. Prepare secondary tubes for the **UC-TIB-Kit** (+) Ctrl with the corresponding barcode (Refer to the **cobas®** x800 systems User Assistance for instructions on how to identify sample tubes with barcodes).
2. Vortex the (+) Ctrl tube thoroughly, then spin down.
3. Transfer 20 µL of (+) Ctrl into 1 mL of negative matrix (e.g. water, PBS or known negative specimen) in a PCR performance tested reaction tube. Mix by vortexing and spin down.
4. Transfer the required volumes into the prepared secondary tubes to run the (+) Ctrl as a sample on a **cobas®** x800 system.

Automated Controls:

- On the open channel a negative control [(-) Ctrl, **cobas®** buffer negative control kit, Roche P/N 09 051 953 190] is automatically performed with every run on **cobas®** x800 systems.
- An Internal Control (IC) is automatically added to each sample. It functions as an extraction control and is detected in channel 5.

6.6. START RUN

Run initiation on cobas® 6800/8800 systems sw 1.4:

For **cobas®** 6800/8800 systems sw 1.4, sample recognition functions via a rack-based ordering system. Racks must be predefined in the software with their designated test /UCAP prior to system startup. Samples are then loaded onto these configured racks and placed onto a **cobas®** 6800/8800 system. The system will automatically commence after 120 minutes, or once the plate is full, provided samples are loaded and all reagents/consumables are available. Alternatively, the system can be started manually by following the subsequent instructions:

1. Verify the system status is "Ready."
2. From the "Monitoring" tab (adjacent to the system overview), click the "Batches" button.
   Important: Confirm all samples are scanned before proceeding!
3. Select the "Start manually" button.

Run initiation on cobas® 5800 systems and cobas® 6800/8800 systems with sw 2.0:

A run on the **cobas®** x800 systems can be initiated once all necessary supplies are loaded, samples are placed on the system, and tests have been assigned. The system is designed to begin automatically if the 96-well amplification plate is filled or after a 30-minute timeout. Alternatively, a run can also be started manually by following these steps:

1. Navigate to either the Run manager > Overview or Run manager > Scheduling tabs.
2. Select the Start processing button.
3. Confirm the start of the processing in the dialog box that appears.

When the samples are processed, remove the rack tray with the sample racks or carriers from the output buffer of the sample supply module or sample loading area.

6.7. REVIEW AND RELEASE RESULTS

Table 13: Once the run is completed, all the results obtained are reviewed according to these procedures:

cobas® 6800/8800 systems sw 1.4	cobas® 5800 systems and cobas® 6800/8800 systems with sw 2.0
Viewing test results in the **cobas®** software	
Go to “Routine” tab and select “Control batch”. The **cobas®** 6800/8800 systems report run and sample validity based on the (-) Ctrl and IC. The operator must manually analyze the (+) Ctrl to validate or invalidate a run. Ct values for each target are reported for samples with a positive and valid reaction.	Go to “Results” app and select “Ready to review”. To release the results, click the "Release" button. Alternatively, you can enable automated release in the Data Manager settings. To reject the result, choose the “Reject” button. The **cobas®** x800 System report run and sample validity based on the (-) Ctrl and IC. The operator must manually analyze the (+) Ctrl to validate or invalidate a run. Ct values for each target are reported for samples with a positive and valid reaction.
Exporting Results and Reports	
Exporting results for analysis with the “**cobas® omni** utility channel optimization tool v4.1”: 1. Go to the “Routine” tab and select “Control batch”. 2. Select all required test results. Click the "Export" button and provide a file name. An XML data file (.xml) will be created and stored on the IG server. 3. Optional: Create a PDF report file (.pdf) by clicking the printer logo and selecting "Save as PDF”. This report file will also be stored on the IG server. 4. Connect to the **cobas®** 6800/8800 systems from an external computer using the remote user interface (RUI). 5. Go to the "Administration" tab and choose “File management” to download the generated reports (.pdf) and data files (.xml). 6. Open the “**cobas® omni** utility channel optimization tool v4.1”. 7. Import the .xml data file. The tool will display PCR data and curves for the selected test. 8. Optional: Data can optionally be exported as an XLS file (.xls) for further analysis.	Exporting results for analysis with the “**cobas® omni** utility channel optimization tool v6.0”: 1. From the “App manager”, go to the “Results” app and choose the “Released” tab. 2. Select all required test results and click the "Data Export for cobas Omni Utility Channel Tool" button. A data report will be created and stored in the “Reports” app. 3. Switch to the “Reports” app and download the data report as a ZIP file (.zip). 4. Optional: A PDF report file (.pdf) can be generated by navigating to the Reports app and clicking on the “Result Report” button. Select the desired date and time range, instrument, and test. Then click the “Generate report” button. 5. Open the “**cobas®** omni utility channel optimization tool v6.0”. 6. Import the .zip data file. The tool will display PCR data and curves for the selected test. 7. Optional: Data can optionally be exported as an XLS file (.xls) for further analysis.

6.8. UNLOAD CONSUMABLES

System cleanup after use.

Table 14: System cleanup after use

cobas® 6800/8800 systems sw 1.4	cobas® 5800 and cobas® 6800/8800 systems with sw 2.0
On the “Monitoring” tab, choose the drawer for consumables to be discharged • Unload the amplification plates from the analytic module • Unload empty control cassettes • Empty solid waste bag • Empty liquid waste container	For detailed information on supplies, choose Run manager > Supplies • Unload used amplification plates. • Unload empty control mini racks. • Unload empty reagent cassettes. • Remove solid waste bag and insert new. • Empty liquid waste containers.

7. LIMITATIONS

UC-TIB-Kits have been evaluated only for use in combination with the **cobas® omni** 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®** x800 systems.

Reliable results depend on correct sample collection, storage, extraction method and other handling procedures. Negative results do not preclude the presence of the analyzed target, and additional testing may be warranted if the target is still under consideration.

Due to inherent differences between technologies, it is recommended that, prior to switching from one technology to another, users perform method correlation studies in their laboratory to qualify technology differences. Users should follow their own specific policies/procedures.

8. NOTICE TO PURCHASER

- **UC-TIB-Kits** are manufactured by TIB Molbiol Syntheselabor GmbH, exclusively distributed worldwide by Roche Diagnostics GmbH
- **cobas®** and **cobas® omni** are trademarks of Roche

9. CHANGE HISTORY

Notes in red mark: events requiring changes in procedures.

Version	Effective Date	Revision Summary and/or Change Rationale	Author
1.0	18.01.2024	Release version	M. Kaiser
1.1	09.08.2024	quantitiative analysis added	M. Kaiser
2.0	21.08.2025	Editorial changes, Reagents and Materials rearranged, **cobas®** x800 system V2 added, sample collection and pre-tratment methods specified for whole blood, sputum and BAL	M. Sorg
2.1	03.02.2026	Editorial changes, and Table 11 Sample Types added	M. Kaiser