



MTB/RIF ULTRA CONTROL BUNDLE INSTRUCTIONS FOR USE

INTENDED USE:

MTB/RIF Ultra Control Bundle is intended for use as a quality control to monitor analytical performance of *M. tuberculosis* (MTB) on the GeneXpert® System. MTB/RIF Ultra Control Bundle is formulated to monitor the detection of MTB and multi-drug resistant MTB (MDR-TB) mutations.

The World Health Organization (WHO) reports that about 1.7 billion people, 23% of the world's population, are estimated to have a latent TB infection, and are thus at risk of developing active TB disease during their lifetime.¹ There has been major progress in subsequent years – more than 60 million people have been documented as treated and cured since 2000, and case and death rates have fallen steadily. Nevertheless, worldwide, around 10 million people still fall ill with the disease each year (more adults than children, and more men than women), and TB is one of the top 10 causes of death. It is also the leading cause of death from a single infectious agent, ranking above HIV/AIDS.¹

MTB/RIF Ultra Control Bundle is provided for Research Use Only (RUO). It cannot be cloned, sold, or transferred without the explicit written consent of MMQCI.

PRODUCT SUMMARY and PRINCIPLE:

INTROL TBWT-04 and TBMDR1-04 of MTB/RIF Ultra Control Bundle consist of non-infectious, synthetic MTB DNA encapsulated in chemically fixed and killed bacterial cells. The MTB DNA does not include the entire MTB genome but is comprised of the following MTB gene segments: IS6110, hsp65, 16S rRNA, 23S rRNA, inhA, katG, and rpoB. Drug resistance mutations are incorporated in segments inhA, katG, and rpoB, as indicated in Table 1.

Best practice is to establish a quality control program for every assay performed by the laboratory.^{2,3} Routine use of quality controls that are consistent lot to lot and monitor the entire assay assists the laboratory in identifying shifts, trends, and increased frequency of random errors caused by variations in the test system, such as failing reagents and pipetting errors. Early investigation can prevent failed assay runs.

COMPOSITION:

MTB/RIF Ultra Control Bundle is comprised of 10 kits; each kit is comprised of three bottles, 1 mL each. Two bottles contain encapsulated MTB DNA, gene segments IS6110, hsp65, 16S rRNA, 23S rRNA, inhA, katG, and rpoB. The third bottle contains buffer and preservative only. The cells encapsulating the MTB DNA are suspended in buffer with preservative. The presence or absence of drug resistance mutations is specified for each bottle in Table 1.

Table 1. Drug Resistance Mutations found in MTB/RIF Ultra Control Bundle

Control	Drug Resistance Mutation
INTROL TBWT-04	no mutations/ wildtype (H37Rv)
INTROL TBMDR1-04	rpoB: F505L, L511P, D516V, H526Y
	inhA: -15
	katG: S315T (AGC> ACC)
INTROL TBNEG	No MTB DNA, no cells

PRECAUTIONS AND WARNINGS:

MTB/RIF Ultra Control Bundle is for use on the GeneXpert System only. It cannot be cloned, sold, or transferred without the explicit written consent of MMQCI. This product does not contain any biological material of human origin or infectious microorganisms. Do not freeze.

STORAGE and STABILITY:

Upon receipt and after opening, the material should be stored at 2° – 8°C. Do not freeze.

Unopened controls are stable through the expiration date printed on each bottle when stored at 2° – 8°C. Opened material tightly capped and returned to the refrigerator (2° – 8°C) shortly after use is stable for thirty (30) days from the date of opening.

INSTRUCTIONS FOR USE:

- Each bottle contains 1.0mL of control material.
- Allow controls to come to room temperature.
- Thoroughly mix controls by vigorously inverting several times immediately before use.
- Before opening bottle, shake down or tap bottle on hard surface to be sure all liquid is out of cap.
- Add 2 mL Sample Reagent to each control vial.
- Mix by inverting the vial 10 times.
- Let the vial sit at room temperature for 15 minutes. Invert several times half way through incubation period as you would for a sputum sample.
- Open the Xpert® MTB/RIF Ultra cartridge lid and transfer 2.0 mL of respective Sample Reagent treated control, using a sterile transfer pipette. Close lid.
- Transfer cartridge to the GeneXpert system.
- Scan cartridge, enter sample ID and start the run.

LIMITATIONS:

MTB/RIF Ultra Control Bundle is designed for use with MTB amplification assays that target one or more of the following MTB gene segments: hsp65, rpoB, 16S rRNA, 23S rRNA, inhA, katG, and IS6110. Only those segments are present in MTB/RIF Ultra Control Bundle.

EXPECTED VALUES:

Control	Xpert MTB/RIF Ultra Expected result
INTROL TBWT-04	MTB DETECTED Rif Resistance NOT Detected
INTROL TBMDR1-04	MTB DETECTED Rif Resistance DETECTED
INTROL TBNEG	MTB NOT DETECTED

REFERENCES:

- WHO report 2018:
https://www.who.int/tb/publications/global_report/en/
- ISO 15189: Medical laboratories – Particular requirements for quality and competence.
- CAP Molecular Pathology Checklist; Commission on Laboratory Accreditation, Laboratory Accreditation Program, Mol.20000

ORDERING INFORMATION:

MTB/RIF Ultra Control Bundle

Order Number:

CTRL-M114-5 (Cepheid reference)

M114-5 (MMQCI reference)

MTB/RIF Ultra Control Bundle contains: 15 bottles x 1.0mL

5 each TBWT-04, TBMDR1-04 & TBNEG