

**WHO Prequalification of Diagnostics Programme  
PUBLIC ASSESSMENT REPORT**

**Product: Abbott RealTime HIV-1 Qualitative (Manual)  
Number: PQDx 0151-027-00**

The Abbott RealTime HIV-1 Qualitative (Manual) with product code 4N66-90, manufactured by Abbott Molecular Inc., 1300 East Touhy Avenue, Des Plaines, IL 60018, United States of America, Rest-of-World regulatory version, was accepted for the WHO list of prequalified diagnostics and was listed on 30 May 2013. This version of the product is intended to be used in conjunction with the following instruments/reagents: 9K15-01, 4N66-80, 4N66-03 or higher, 6K12-24 and 4N66-66 (optional).

**Summary of prequalification status for Abbott RealTime HIV-1 Qualitative  
(Manual)**

	Date	Outcome
<b>Status on PQ list</b>	30 May 2013	listed
<b>Dossier assessment</b>	20 May 2013	MR
<b>Product performance evaluation</b>	FT	MR

MR: Meets Requirements

FT: Fast-Tracked

**Report amendments and/or product changes**

This public report has since been amended. Amendments may have arisen because of changes to the prequalified product for which WHO has been notified and has undertaken a review. Amendments to the report are summarized in the following table, and details of each amendment are provided below.

Version	Summary of amendment and change request reference, where applicable.	Date of report amendment
2.0	Implemented software change	1 June 2018
3.0	1. The Notified Body number on the Abbott RealTime HIV-1 Quantitative and Qualitative kit labels and package inserts has been updated to reflect the new notified body Polskie Centrum Badan I Certyfikacji S.A. (PCBC) Notified Body number of 1434.	24 July 2019

	<p>2. The word "abbott" has been aligned to the center of the Abbott logo (where applicable). Labelling (labels and IFU) have been revised and version numbers updated.</p> <p>3. Update on manufacturing site inspection commitments.</p>	
4.0	Updated Abbott’s European Authorized Representative (EC Rep) legal entity name from Abbott GmbH & Co. KG to Abbott GmbH. Labeling changes to comply with the labeling requirements for product registered under IVDR.	1 November 2021
5.0	Removal of the CE-marking and any reference of the European Union contained in the product labelling (PQC-IVD-2025-0006).	10 February 2026

**Intended use:**

According to the claim of Abbott Molecular Inc, “*Abbott RealTime HIV-1 Qualitative is an in vitro amplification assay for the qualitative detection of Human Immunodeficiency Virus Type 1 (HIV-1) nucleic acids from human plasma and dried blood spots (DBS). The Abbott RealTime HIV-1 Qualitative is intended to be used as an aid in the diagnosis of HIV-1 infection in pediatric and adult subjects. The Abbott RealTime HIV-1 Qualitative is not intended to be used as a donor screening test for HIV-1.*

*The intended users for the Abbott RealTime HIV-1 Qualitative are laboratory and healthcare professionals”.*

**Assay principle:**

According to the claim of Abbott Molecular Inc, “*Abbott RealTime HIV-1 Qualitative assay uses PCR to generate amplified product from the HIV-1 nucleic acids in clinical specimens. The presence of HIV-1 target sequence is indicated by the fluorescent signal generated through the use of fluorescent-labeled oligonucleotide probes on the Abbott m2000rt instrument. The probes do not generate a signal unless they are specifically bound to the amplified product. An RNA sequence that is unrelated to the HIV-1 target sequence is introduced into each specimen at the beginning of sample preparation. This unrelated RNA sequence is simultaneously amplified, and serves as an internal control (IC) to demonstrate that the process has proceeded correctly for each sample”.*

**Test kit contents:**

Item	Product code(s)
Abbott RealTime HIV-1 Qualitative Amplification Reagent Kit (to reference the new assay CD-ROM version 3)	4N66-90 (4 packs x 24 tests/pack)

**Materials required but not provided:**

Item	Product code(s)
<b>Instrumentation:</b>	
Abbott <i>m2000rt</i> Instrument with software version 3.0 or higher	9K15-01
<b>Reagents:</b>	
Abbott <i>mSample</i> Preparation System <sub>DNA</sub>	6K12-24
Abbott RealTime HIV-1 Internal Control Kit	2G31Y
Abbott RealTime HIV-1 Qualitative Control Kit	4N66-80
<b>Software:</b>	
Abbott RealTime HIV-1 Qualitative <i>m2000</i> System ROW Combined Application CD-ROM, version 3.0	04N66-003 or higher
<b>Optional:</b>	
Abbott RealTime HIV-1 UNG Protocol	4N66-66
Repeat pipette capable of delivering 40-50 µL volumes	n/a
Sterile repeat pipettor tips capable of delivering 40-50 µL volumes	n/a
Disposable transfer pipettes	n/a
96 well polypropylene plate	n/a
<b>Consumables required:</b>	
Abbott <i>m2000rt</i> Optical Calibration kit	4J71-93
5 mL Reaction Vessels	4J71-20
1.5 mL screw top microfuge tubes and caps	04J71-50 or equivalent
Abbott Optical Adhesive Covers	4J71-75
Abbott Adhesive Cover Applicator	9K32-01
Abbott Splash-Free Support Base	9K31-01
Abbott 96-Well Optical Reaction Plate	4J71-70
Calibrated Pipettes capable of delivering 20- 1000 µL	n/a
Aerosol Barrier Pipette Tips for 20-1000 µL Pipettes	n/a
Magnetic stands for 5 mL Reaction Vessels	n/a
Non-magnetic stands for 5 mL Reaction Vessels	n/a
Magnetic stands for 1.5 mL tubes	n/a
Non-magnetic stands for 1.5 mL tubes	n/a
Dry heating block for 5 mL Reaction Vessels (capable of achieving 50°C)	n/a
Dry heating block for 1.5 mL tubes (capable of achieving 75°C)	n/a
Thermometer	n/a
Timer	n/a
Vortex Mixer	n/a
USP Grade 190-200 Proof Ethanol (95%-100% Ethanol). Do not use ethanol that contains denaturants	n/a

Liquid Container for waste (no bleach should be allowed to contact liquid waste)	n/a
Centrifuge capable of 2000g	n/a
Centrifuge capable of 5,000g (for centrifuging the Abbott 96-Well Optical Reaction Plate)	n/a
Bulk <i>m</i> LysisDNA Buffer (for DBS processing only)	2N77-01
50 mL Tubes (NUNC or equivalent) (optional) (for DBS processing only)	n/a
Eppendorf PCR Cooler	n/a
Single-use Rnase/Dnase-free tube or container	n/a

**Storage:**

Item	Temperature ( °C)
Abbott RealTime HIV-1 Qualitative Control Kit	-10°C or colder
Abbott RealTime HIV-1 Qualitative Amplification Reagent Kit	-10°C or colder
Abbott <i>m</i> Sample Preparation System <sub>DNA</sub>	15 – 30 °C
Uracil-N-glycosylase (UNG) required for the Abbott RealTime HIV-1 UNG Protocol (4N66-66)	-15 to -25°C

**Maximum shelf-life upon manufacture<sup>1</sup>:**

Item	Duration
<b>Abbott RealTime HIV-1 Qualitative Amplification Reagent Kit 4N66-90&gt;</b>	
Abbott RealTime HIV-1 Internal Control 2G31Y	18 months
Thermostable rTth Polymerase Enzyme 56685	per control date on vendor certificate of analysis
HIV-1 Oligonucleotide Reagent 2G31L	18 months
Activation Reagent 93591	18 months
<b>Abbott RealTime HIV-1 Qualitative Control Kit 4N66-80:</b>	
Negative Control 2G31Z	18 months
High Positive Control 2G31X	18 months
<b>The Abbott <i>m</i>Sample Preparation System<sub>DNA</sub></b>	18 months

<sup>1</sup> The assigned device shelf-life is based on stability data generated from the date of manufacture. The finished goods shelf-life, calculated from the date of packaging completion, may be shorter depending on the time elapsed between manufacture and final packaging of the device.

## Product dossier assessment

Abbott Molecular Inc. submitted a product dossier for Abbott RealTime HIV-1 Qualitative (Manual) as per the Instructions for compilation of a product dossier (PQDx\_018 v1). The information submitted in the product dossier was reviewed by WHO staff and external experts (assessors) appointed by WHO in accordance with the internal report on the screening and assessment of a product dossier (PQDx\_009 v2). Based on the product dossier screening and assessment findings, a recommendation was made to accept the product dossier for Abbott RealTime HIV-1 Qualitative (Manual) for prequalification.

## Product performance evaluation

Given the regulatory version of the product submitted for prequalification and the quality of the data submitted as part of the product dossier to support the claims for its intended use, the Abbott RealTime HIV-1 Qualitative (Manual) assay was found eligible to undergo the WHO fast track procedure. Subsequently, the product was not required to undergo a laboratory evaluation.

## Labelling review

The labelling submitted for Abbott RealTime HIV-1 Qualitative (Manual) assay was reviewed by WHO staff and external technical experts appointed by WHO. The review evaluated the labelling for clarity and consistency with the information submitted in the product dossier, alignment with international guidance and standards, and suitability for the intended users and settings in WHO Member States, including low- and middle-income countries.

The table below provides traceability of the labelling documents reviewed during the assessment, including document titles, version numbers, approval dates, and control identifiers.

**Controlled Labelling References**

<b>Document Type</b>	<b>Document Title</b>	<b>Version / Revision</b>	<b>Date Approved</b>	<b>Controlled Document No.</b>
<b>Outer box artwork</b>	Abbott RealTime HIV-1 Qualitative Amplification Reagent Kit (4N66-90)	R6	April 2025	51-602454
<b>Outer box artwork</b>	Abbott RealTime HIV-1 Qualitative Control Kit (4N66-80)	R6	April 2025	51-602455
<b>Instructions for Use (IFU)</b>	Abbott RealTime HIV-1 Qualitative Amplification Reagent Kit Package Insert (4N66-90)	R9	April 2025	51-608381
<b>Instructions for Use (IFU)</b>	Abbott RealTime HIV-1 Qualitative Control Kit Package Insert (4N66-80)	R8	April 2025	51-608401
<b>Instructions for Use (IFU)</b>	Abbott RealTime HIV-1 Qualitative Including Uracil-N-Glycosylase (UNG) (04N66-66)	R7	Feb 2025	51-608400
<b>Instructions for Use (IFU)</b>	Abbott RealTime HIV-1 Qualitative m2000 System ROW Combined Application CD-ROM, Version 4.1	R2	Feb 2025	51-608441

**Labels**

# Abbott RealTime HIV-1 Qualitative

## Amplification Reagent Kit

(en) The Abbott RealTime HIV-1 Qualitative is an in vitro amplification assay for the qualitative detection of Human Immunodeficiency Virus Type 1 (HIV-1) nucleic acids from human plasma and dried blood spots (DBS). The Abbott RealTime HIV-1 Qualitative is intended to be used as an aid in the diagnosis of HIV-1 infection in pediatric and adult subjects.

The Abbott RealTime HIV-1 Qualitative is not intended to be used as a donor screening test for HIV-1.

**Contents:**

1. **[INTERNAL CONTROL]** Abbott RealTime HIV-1 Internal Control (4 vials, 1.2 mL per vial). Noninfectious Armored RNA with internal control sequences in negative human plasma. Negative human plasma tested and found to be nonreactive for HBSAg, anti-HIV-1/HIV-2, anti-HCV, HIV RNA, HCV RNA, and HBV DNA. Preservatives: 0.1% ProClin 300 and 0.15% ProClin 950.
2. **[AMPLIFICATION REAGENT PACK]** Abbott RealTime HIV-1 Qualitative Amplification Reagent Pack (4 packs, 24 tests/pack). Each Reagent Pack contains:
  - 1 Bottle (0.141 mL) Thermostable rTth Polymerase Enzyme (2.9 to 3.5 Units/ $\mu$ L) in buffered solution.
  - 1 Bottle (1.10 mL) HIV-1 Oligonucleotide Reagent. < 0.1% synthetic oligonucleotides (4 primers, 2 probes, and 1 quencher oligonucleotide), and < 0.3% dNTPs in a buffered solution with a reference dye. Preservatives: 0.1% ProClin 300 and 0.15% ProClin 950.
  - 1 Bottle (0.40 mL) Activation Reagent. 30 mM manganese chloride solution. Preservatives: 0.1% ProClin 300 and 0.15% ProClin 950.

ProClin is a registered trademark of Rohm and Haas.  
 Armored RNA is a registered trademark of Ambion.  
 Abbott RealTime is a trademark of Abbott.



(en) Caution  
 (fr) Attention  
 (es) Precaución

**REF** 4N66-90

**IVD**



51-602454/R6

**GTIN**

**LOT**



**REF**

(en) Product of USA / (fr) Produit aux Etats-Unis / (es) Producto de EE. UU.

# Abbott RealTime HIV-1 Qualitative

## Amplification Reagent Kit



H317  
 P261, P280, P272, P302 + P352,  
 P333 + P313, P362 + 364, P501

(fr) Abbott RealTime HIV-1 Qualitative est un test d'amplification *in vitro* pour la détection qualitative des acides nucléiques du virus de l'immunodéficience humaine de type 1 (HIV-1) à partir de plasma et d'échantillons de sang sur papier buvard (SBS) humains. Abbott RealTime HIV-1 Qualitative est destiné à être utilisé comme aide dans le diagnostic d'une infection par le VIH-1 chez les adultes et les enfants. Abbott RealTime HIV-1 Qualitative n'est pas destiné à être utilisé comme test de dépistage du VIH-1 dans des échantillons provenant de dons.

**[INTERNAL CONTROL]** Abbott RealTime HIV-1 Internal Control (4 flacons de 1,2 ml chacun). Armored RNA non infectieuse contenant des séquences de contrôle interne dans du plasma humain négatif. Le plasma humain négatif de tests est trouvé non réactif pour l'AgHBs, les anticorps anti-VIH-1/HIV-2 et anti-HCV, l'ARNm VIH, l'ARNm VIH-1 et l'ARNm HBV. Conservateurs: ProClin 300 à 0,1 % et ProClin 950 à 0,15 %.

**[AMPLIFICATION REAGENT PACK]** Abbott RealTime HIV-1 Qualitative Amplification Reagent Pack (4 coffrets, 24 tests/coffret). Chaque coffret-réactif contient :

- 1 flacon (0,141 ml) d'enzyme rTth polymérase thermostable (2,9 à 3,5 unités/ $\mu$ l) dans une solution tampon.
- 1 flacon (1,10 ml) de réactif d'oligonucléotides VIH-1. > 0,3 % d'oligonucléotides synthétiques (4 amorces, 2 sondes et 1 oligonucléotide désactivateur) et < 0,3 % de dNTPs dans une solution tampon avec un fluorochrome de référence.
- 1 flacon (0,40 ml) de réactif d'activation. 30 mM de chlorure de manganèse. Conservateurs: ProClin 300 à 0,1 % et ProClin 950 à 0,15 %.

ProClin est une marque déposée de Rohm and Haas.  
 Armored RNA est une marque déposée d'Ambion.  
 Abbott RealTime est une marque commerciale d'Abbott.

(es) Abbott RealTime HIV-1 Qualitative es un ensayo de amplificación *in vitro* para la detección cualitativa de ácidos nucleicos del virus de la inmunodeficiencia humana de tipo 1 (VIH-1) en muestras humanas de plasma y sangre seca. El ensayo Abbott RealTime HIV-1 Qualitative se utiliza como ayuda en el diagnóstico de la infección por el VIH-1 en niños y adultos. El ensayo Abbott RealTime HIV-1 Qualitative no debe utilizarse como un ensayo de cribado de donantes para el VIH-1.

**[INTERNAL CONTROL]** Abbott RealTime HIV-1 Internal Control (4 viales, 1,2 ml cada uno). Armored RNA no infecciosa con secuencias de control interno en plasma humano negativo. El plasma humano negativo ha sido analizado y no se ha encontrado reactividad para el HBSAg, ni para el RNA del VIH, ni para el RNA del VIH-1, ni para el RNA del HBV, ni reactividad de la inmunodéficencia humana de tipo 1 (HIV-1).  
 Conservadores: ProClin 300 al 0,15% y ProClin 950 al 0,15%.

**[AMPLIFICATION REAGENT PACK]** Abbott RealTime HIV-1 Qualitative Amplification Reagent Pack (envase de reactivo de 4 unidades, 24 tests/cohete). Cada cohete contiene:

- 1 frasco (0,141 ml) de enzima de polimerasa termolabile rTth (2,9 a 3,5 unidades/ $\mu$ l) en solución tampónada.
- 1 frasco (1,10 ml) de reactivo de oligonucleótidos sintéticos (4 cebadores, 2 sondas y 1 oligonucleótido extintor de fluorescencia) y < 0,3% de dNTPs en una solución tampónada con un colorante de referencia.
- 1 frasco (0,40 ml) de reactivo de activación. Solución de cloruro de manganeso 30 mM. Conservadores: ProClin 300 al 0,15% y ProClin 950 al 0,15%.

ProClin es una marca comercial registrada de Rohm and Haas.  
 Armored RNA es una marca comercial registrada de Ambion.  
 Abbott RealTime es una marca comercial de Abbott.


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 ProClin es una marca comercial registrada de Rohm and Haas.  
 Conservantes: ProClin 300 al 0.1% y ProClin 950 al 0.15%.  
 del VIH. El RNA del VIH es la reactividad de anticuerpos anti-VIH-1/VIH-2 ni anti-VHC.  
 cada uno). Armored RNA no interfiere con secuencias de VIH-1 en plasma humano negativo. El plasma  
 humano negativo ha sido analizado y no se ha encontrado reactividad para el HBSAg, ni para el RNA  
 2. **CONTROL H** Abbott RealTime HIV-1 High Positive Control (control positivo alto) (12 viales, 1.8 ml  
 Conservantes: ProClin 300 al 0.1% y ProClin 950 al 0.15%.  
 RNA del VIH, el RNA del VHC, ni el DNA del VIH, ni reactividad de anticuerpos anti-VIH-1/VIH-2, ni anti-VHC.  
 El plasma humano negativo ha sido analizado y no se ha encontrado reactividad para el HBSAg, ni para el  
 1. **CONTROL -** Abbott RealTime HIV-1 Negative Control (control negativo) (12 viales, 1.8 ml cada uno)  
 Contenido:  
 virus de la inmunodeficiencia humana de tipo 1 (VIH-1) en muestras humanas pasadas y sangre seca.  
 (es) Para uso en diagnóstico *in vitro*. Los Abbott RealTime HIV-1 Qualitative Controls se utilizan para establecer la validez  
 del procesamiento con el ensayo Abbott RealTime HIV-1 Qualitative, en la detección cualitativa de ácidos nucleicos del  
 virus de la inmunodeficiencia humana de tipo 1 (VIH-1) a partir de plasma y papel buvard (DBS) humanos.

Abbott RealTime est une marque commerciale d'Abbott.  
 Armored RNA est une marque déposée d'Ambion.  
 ProClin est une marque déposée de Rohm and Haas.  
 Conservants : ProClin 300 à 0,1 % et ProClin 950 à 0,15 %.  
 VIH, l'ARN VIH et l'ADN VHC. Conservants : ProClin 300 à 0,1 % et ProClin 950 à 0,15 %.  
 humain négatif a été testé et trouvé négatif pour l'AgHbs, les anticorps anti-VIH-1/VIH-2 et anti-VHC, l'ARN  
 (ARN encapsulé) non infectieux contenant des séquences de VIH-1 dans du plasma humain négatif. Le plasma  
 2. **CONTROL H** Abbott RealTime HIV-1 High Positive Control (12 récipients de 1,8 ml chacun), Armored RNA  
 négatif testés et trouvé non réactif pour l'AgHbs, les anticorps anti-VIH-1/VIH-2 et anti-VHC, l'ARN VIH, l'ARN  
 VHC et l'ADN VHC. Conservants : ProClin 300 à 0,1 % et ProClin 950 à 0,15 %.  
 1. **CONTROL -** Abbott RealTime HIV-1 Negative Control (12 récipients de 1,8 ml chacun), Plasma humain  
 Composition :  
 Abbott RealTime HIV-1 Qualitative Controls sont utilisés pour établir la validité du test  
 de l'immuno-déficience humaine de type 1 (VIH-1) à partir de plasma et papier buvard (DBS) humains.

# Abbott RealTime HIV-1 Qualitative

## Control Kit

(en) For In Vitro Diagnostic Use. The Abbott RealTime HIV-1 Qualitative Controls are used to establish run validity of the Abbott RealTime HIV-1 Qualitative assay when used for the qualitative detection of Human Immunodeficiency Virus Type 1 (HIV-1) nucleic acids from human plasma and dried blood spots (DBS).  
 Contents:

 (en) Caution  
 (fr) Attention  
 (es) Precaución

**REF** 4N66-80

1. **CONTROL -** Abbott RealTime HIV-1 Negative Control (12 vials, 1.8 mL per vial). Negative human plasma tested and found to be nonreactive for HBsAg, anti-HIV-1/HIV-2, anti-HCV, HIV RNA, HCV RNA, and HBV DNA. Preservatives: 0.1% ProClin 300 and 0.15% ProClin 950.
2. **CONTROL H** Abbott RealTime HIV-1 High Positive Control (12 vials, 1.8 mL per vial). Noninfectious Armored RNA with HIV-1 sequences in negative human plasma. Negative human plasma tested and found to be nonreactive for HBsAg, anti-HIV-1/HIV-2, anti-HCV, HIV RNA, HCV RNA, and HBV DNA. Preservatives: 0.1% ProClin 300 and 0.15% ProClin 950.

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 Abbott RealTime is a trademark of Abbott.



51-602455/R6

**GTIN**

**LOT**




**REF**

(en) Product of USA / (fr) Produit aux Etats-Unis / (es) Producto de EE. UU.

# Abbott RealTime HIV-1 Qualitative

## Control Kit

 H317  
 P261, P280, P272, P302 + P352,  
 P333 + P313, P362 + P364, P501

Abbott Molecular Inc.  
 1300 East Touhy Avenue  
 Des Plaines, IL 60018 USA

www.molecular.abbott



## Instructions for use<sup>2</sup>

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<sup>2</sup> English version of the IFU was the one that was assessed by WHO. It is the responsibility of the manufacturer to ensure correct translation into other languages

# Abbott RealTime HIV-1 Qualitative

en

**REF** 4N66-90







51-608381/R9

Abbott RealTime  
HIV-1 Qualitative

**REF** 4N66-90

51-608381/R9

**NOTE: Changes Highlighted**  
**FOR IN VITRO DIAGNOSTIC USE**  
**IN VITRO TEST**

Key to Symbols Used	
<b>REF</b>	Reference Number
<b>IVD</b>	In Vitro Diagnostic Medical Device
<b>LOT</b>	Lot Number
	Use By
	Upper Limit of Temperature
<b>CONTROL -</b>	Negative Control
<b>CONTROL H</b>	High Positive Control
	Consult instructions for use
	Caution
	Warning
<b>INTERNAL CONTROL</b>	Internal Control
<b>AMPLIFICATION REAGENT PACK</b>	Amplification Reagent Pack
	Manufacturer

## SUMMARY AND EXPLANATION OF THE TEST

HIV-1 is the etiologic agent of Acquired Immunodeficiency Syndrome (AIDS).<sup>1,2,3</sup> It can be transmitted through sexual contact, exposure to infected blood or blood products, prenatal infection of a fetus, or perinatal or postnatal infection of a newborn.<sup>4,5,6</sup> Acute HIV-1 infection usually presents signs and symptoms such as acute febrile illness that start within days to weeks after initial exposure and typically last for less than 14 days.<sup>7</sup> Acute HIV-1 infection is associated with high levels of viremia prior to a detectable immune response.<sup>8,9,10,11</sup> Therefore, HIV-1 nucleic acid testing can be more sensitive than standard serologic testing in detection of acute infection.<sup>7</sup> For pediatric HIV-1 infection, maternal antibody can be transferred passively to infants and may be detectable for up to 18 months;<sup>12,13</sup> therefore, early diagnosis of HIV-1 in infants requires direct detection of the virus or its components.<sup>14</sup> As a result, HIV-1 nucleic acid testing has been recommended for detecting infection in pediatric patients 18 months of age or younger.<sup>13,15,16,17</sup> Human plasma has been widely used as the specimen type for HIV-1 nucleic acid testing. The use of DBS as an alternative specimen type can potentially facilitate the implementation of HIV-1 nucleic acid testing by simplifying sample collection and transportation to the testing laboratory.<sup>15,16,17</sup>

The Abbott RealTime HIV-1 Qualitative assay detects HIV-1 nucleic acids by using Polymerase Chain Reaction (PCR) technology with homogeneous real-time fluorescent detection. Partially double-stranded fluorescent probe design allows detection of diverse HIV-1 groups and subtypes. The assay uses either human plasma or DBS specimen type and reports a qualitative result.

## BIOLOGICAL PRINCIPLES OF THE PROCEDURE

The Abbott RealTime HIV-1 Qualitative assay consists of 2 reagent kits:

- Abbott RealTime HIV-1 Qualitative Amplification Reagent Kit
- Abbott RealTime HIV-1 Qualitative Control Kit

The Abbott RealTime HIV-1 Qualitative assay uses PCR<sup>18</sup> to generate amplified product from the HIV-1 nucleic acids in clinical specimens. The presence of HIV-1 target sequence is indicated by the fluorescent signal generated through the use of fluorescent-labeled oligonucleotide probes on the Abbott *m2000rt* instrument. The probes do not generate a signal unless they are specifically bound to the amplified product. An RNA sequence that is unrelated to the HIV-1 target sequence is introduced into each specimen at the beginning of sample preparation. This unrelated RNA sequence is simultaneously amplified, and serves as an internal control (IC) to demonstrate that the process has proceeded correctly for each sample.

## Sample Preparation

The purpose of sample preparation is to extract, concentrate, and purify the target nucleic acids for amplification. The Abbott *mSample Preparation System<sub>DNA</sub>* uses magnetic particle technology to capture target nucleic acids and washes the particles to remove unbound sample components. The bound nucleic acids are eluted and are then ready for amplification. The IC is taken through the entire sample preparation procedure along with the controls and specimens. The Abbott *m2000sp* automated sample preparation system can be used to prepare samples for the Abbott RealTime HIV-1 Qualitative assay. Alternatively, samples can be prepared manually.

**NOTE: One Abbott *mSample Preparation System<sub>DNA</sub>* kit is sufficient to complete 4 x 24 (96) sample preparations.**

## CUSTOMER SERVICE INTERNATIONAL: CALL YOUR ABBOTT REPRESENTATIVE

This package insert must be read carefully prior to use. Package insert instructions must be followed accordingly. Reliability of assay results cannot be guaranteed if there are any deviations from the instructions in this package insert.

See **REAGENTS** section for a full explanation of symbols used in reagent component naming.

## NAME

Abbott RealTime HIV-1 Qualitative

## INTENDED USE

The Abbott RealTime HIV-1 Qualitative is an in vitro amplification assay for the qualitative detection of Human Immunodeficiency Virus Type 1 (HIV-1) nucleic acids from human plasma and dried blood spots (DBS). The Abbott RealTime HIV-1 Qualitative is intended to be used as an aid in the diagnosis of HIV-1 infection in pediatric and adult subjects. The Abbott RealTime HIV-1 Qualitative is not intended to be used as a donor screening test for HIV-1.

## INTENDED USER

The intended users for the Abbott RealTime HIV-1 Qualitative are laboratory and healthcare professionals.

## Reagent Preparation and Reaction Plate Assembly

The Abbott *m2000sp* combines the Abbott RealTime HIV-1 Qualitative amplification reagent components (HIV-1 Oligonucleotide Reagent, Thermostable rTth Polymerase Enzyme, and Activation Reagent). The Abbott *m2000sp* dispenses the resulting master mix to the Abbott 96-Well Optical Reaction Plate along with aliquots of the nucleic acid samples prepared by the Abbott *m2000sp*. After manual application of the optical seal, the plate is ready for transfer to the Abbott *m2000rt*. Alternatively, manual sample preparation method users combine the Abbott RealTime HIV-1 Qualitative amplification reagent components manually to create the amplification master mix and transfer aliquots of the master mix and the nucleic acid samples to the Abbott 96-Well Optical Reaction Plate. After manual application of the optical seal, the plate is ready for transfer to the Abbott *m2000rt*.

### Amplification

During the amplification reaction on the Abbott *m2000rt*, target DNA is amplified by the DNA polymerase activity of the thermostable rTth DNA polymerase. If target RNA is present, it is first converted to cDNA by the reverse transcriptase activity of the enzyme and subsequently amplified. Amplification of HIV-1 and IC targets takes place simultaneously in the same reaction. The target sequence for the Abbott RealTime HIV-1 Qualitative assay is in the *pol* integrase region of the HIV-1 genome. This region is highly conserved.<sup>19</sup> The IC sequence is derived from the hydroxypyruvate reductase gene from the pumpkin plant, *Cucurbita pepo*, and is delivered in an Armored RNA<sup>®</sup> particle that has been diluted in negative human plasma.

### Detection

During the read cycles of amplification on the Abbott *m2000rt*, the temperature is lowered to allow fluorescent detection of amplification products as the HIV-1 and IC probes anneal to their respective targets (real-time fluorescence detection). The HIV-1 probe has a fluorescent moiety that is covalently linked to the 5' end. A short quencher oligonucleotide is complementary to the 5' end of the HIV-1 probe and has a quencher moiety at its 3' end. In the absence of HIV-1 target, the HIV-1 probe fluorescence is quenched through hybridization to the quencher oligonucleotide. In the presence of the HIV-1 target sequence, the HIV-1 probe preferentially hybridizes to the target sequence, dissociating from the quencher oligonucleotide and allowing fluorescent detection. The IC probe is a single stranded DNA oligonucleotide with a fluorophore at the 5' end and a quencher at the 3' end. In the absence of IC sequences, the IC probe adopts a series of random conformations, some of which bring the quencher close enough to the excited fluorophore to absorb its energy before it can be fluorescently emitted. When the IC probe binds to its complementary sequence in the target, the fluorophore and the quencher are held apart, allowing fluorescent emission and detection by the Abbott *m2000rt*. The HIV-1 and IC specific probes are each labeled with a different fluorophore, thus allowing simultaneous detection of both amplified products.

### Assay Results

The Abbott RealTime HIV-1 Qualitative assay results are reported as either "HIV-1 Detected" or "Not Detected." Refer to the **RESULTS** section of this package insert for further details.

## PREVENTION OF NUCLEIC ACID CONTAMINATION

The possibility of nucleic acid contamination is minimized because:

- Reverse transcription, PCR amplification, and oligonucleotide hybridization occur in a sealed Abbott 96-Well Optical Reaction Plate.
- Detection is carried out automatically without the need to open the Abbott 96-Well Optical Reaction Plate.
- Pipettes with aerosol barrier tips or disposable transfer pipettes are used for all pipetting. The disposable pipettes or pipette tips are discarded after use.
- Separate dedicated areas are used to perform the Abbott RealTime HIV-1 Qualitative assay. Refer to the **Contamination Precautions** section of this package insert.

## REAGENTS

### Abbott RealTime HIV-1 Qualitative Amplification Reagent Kit (List No. 4N66-90)

1. **INTERNAL CONTROL** Abbott RealTime HIV-1 Internal Control (List No. 2G31Y) (4 vials, 1.2 mL per vial)  
< 0.01% Noninfectious Armored RNA with internal control sequences in negative human plasma. Negative human plasma tested and found to be nonreactive for HBsAg, anti-HIV-1/HIV-2, anti-HCV, HIV RNA, HCV RNA, and HBV DNA. Preservatives: 0.1% ProClin<sup>®</sup> 300 and 0.15% ProClin 950.

2. **AMPLIFICATION REAGENT PACK** Abbott RealTime HIV-1 Qualitative Amplification Reagent Pack (List No. 4N66) (4 packs, 24 tests/pack)

- 1 bottle (0.141 mL) Thermostable rTth Polymerase Enzyme (2.9 to 3.5 Units/ $\mu$ L) in buffered solution.
- 1 bottle (1.10 mL) HIV-1 Oligonucleotide Reagent.  
< 0.1% synthetic oligonucleotides (4 primers, 2 probes, and 1 quencher oligonucleotide), and < 0.3% dNTPs in a buffered solution with a reference dye. Preservatives: 0.1% ProClin 300 and 0.15% ProClin 950.
- 1 bottle (0.40 mL) Activation Reagent.  
30 mM manganese chloride solution.  
Preservatives: 0.1% ProClin 300 and 0.15% ProClin 950.

### Abbott RealTime HIV-1 Qualitative Control Kit

#### (List No. 4N66-80)

1. **CONTROL -** Abbott RealTime HIV-1 Negative Control (List No. 2G31Z) (12 vials, 1.8 mL per vial)  
Negative human plasma tested and found to be nonreactive for HBsAg, anti-HIV-1/HIV-2, anti-HCV, HIV RNA, HCV RNA, and HBV DNA. Preservatives: 0.1% ProClin 300 and 0.15% ProClin 950.
2. **CONTROL H** Abbott RealTime HIV-1 High Positive Control (List No. 2G31X) (12 vials, 1.8 mL per vial)  
Noninfectious Armored RNA with HIV-1 sequences in negative human plasma. Negative human plasma tested and found to be nonreactive for HBsAg, anti-HIV-1/HIV-2, anti-HCV, HIV RNA, HCV RNA, and HBV DNA. Preservatives: 0.1% ProClin 300 and 0.15% ProClin 950.

## WARNINGS AND PRECAUTIONS

### **IVD** In Vitro Diagnostic Medical Device

This assay is not intended to be used as a screening test for HIV-1.

### Safety Precautions

Refer to the Abbott *m2000sp* and Abbott *m2000rt* Operations Manuals, Hazards Section, for instructions on safety precautions.



**CAUTION:** This preparation contains human sourced and/or potentially infectious components. Components sourced from human blood have been tested and found to be nonreactive by FDA-licensed tests for antibody to HCV, antibody to HIV-1, antibody to HIV-2, and HBsAg. The material is also tested and found to be negative by FDA-licensed PCR methods for HIV-1 RNA and HCV RNA. No known test method can offer complete assurance that products derived from human sources or inactivated microorganisms will not transmit infection. These reagents and human specimens should be handled as if infectious using safe laboratory procedures, such as those outlined in Biosafety in Microbiological and Biomedical Laboratories,<sup>20</sup> OSHA Standards on Bloodborne Pathogens,<sup>21</sup> CLSI Document M29-A4,<sup>22</sup> and other appropriate biosafety practices.<sup>23</sup> Therefore all human sourced materials should be considered infectious.

These precautions include, but are not limited to, the following:

- Wear gloves when handling specimens or reagents.
  - Do not pipette by mouth.
  - Do not eat, drink, smoke, apply cosmetics, or handle contact lenses in areas where these materials are handled.
  - Clean and disinfect spills of specimens by including the use of a tuberculocidal disinfectant such as 1.0% (v/v) sodium hypochlorite or other suitable disinfectant.<sup>20</sup>
  - Decontaminate and dispose of all potentially infectious materials in accordance with local, state, and federal regulations.<sup>23</sup>
- Components of the Abbott RealTime HIV-1 Qualitative Control Kit (List No. 4N66-80) and the Abbott RealTime HIV-1 Qualitative Amplification Reagent Kit (List No. 4N66-90) contain the following components:
- 2-Methyl-2H-isothiazol-3-one
  - Reaction mass of: 5-chloro-2-methyl-4-isothiazolin-3-one (EC no. 247-500-7) and 2-methyl-2H-isothiazol-3-one (EC no. 220-239-6)(3:1)
  - Reaction mass of: 5-chloro-2-methyl-4-isothiazolin-3-one (EC no. 247-500-7) and 2-methyl-4-isothiazolin-3-one (EC no. 220-239-6)(3:1)

The following warnings apply:



**Warning**

- |           |  |
|-----------|--|
| H317      | May cause an allergic skin reaction.                                   |
| P261      | Avoid breathing mist / vapours / spray.                                |
| P280      | Wear protective gloves / protective clothing / eye protection.         |
| P272      | Contaminated work clothing should not be allowed out of the workplace. |
| P302+P352 | IF ON SKIN: Wash with plenty of water.                                 |
| P333+P313 | If skin irritation or rash occurs: Get medical advice / attention.     |
| P362+P364 | Take off contaminated clothing and wash it before reuse.               |
| P501      | Dispose of contents / container in accordance with local regulations.  |

**Specimen Collection and Handling Precautions**

The Abbott RealTime HIV-1 Qualitative assay is only for use with plasma and DBS specimens that have been collected and handled as described in the **SPECIMEN COLLECTION AND HANDLING INSTRUCTIONS** section.

**Laboratory Precautions**

- During preparation of samples, compliance with good laboratory practices is essential to minimize the risk of cross-contamination between samples as well as the inadvertent introduction of nucleases into samples during and after the extraction procedure. Proper aseptic technique should always be used when working with RNA or DNA.
- Work area and instrument platforms must be considered potential sources of contamination. Change gloves after having contact with potential contaminants (such as RNases, DNases, specimens, eluates, and/or amplified product) before handling unopened reagents, negative control, positive control, or specimens. Refer to the Abbott *m2000sp* and Abbott *m2000rt* Operations Manuals and the instructions in the **POST PROCESSING PROCEDURES** section of this package insert for cleaning procedures.
- Wear appropriate personal protective equipment at all times.
- Use powder-free gloves.
- To reduce the risk of nucleic acid contamination due to aerosols formed during pipetting, pipettes with aerosol barrier tips or disposable transfer pipettes must be used for all pipetting. The length of the tip should be sufficient to prevent contamination of the pipette barrel. While pipetting, care should be taken to avoid touching the pipette barrel to the inside of the sample tube or container. The use of extended aerosol barrier pipette tips is recommended.
- Change aerosol barrier pipette tips between ALL manual liquid transfers.
- Clean and disinfect spills of specimens and reagents as stated in the Abbott *m2000sp* and Abbott *m2000rt* Operations Manuals and the instructions in the **POST PROCESSING PROCEDURES** section of this package insert.

**Contamination Precautions**

- Amplification reactions such as PCR are sensitive to accidental introduction of product from previous amplification reactions. Incorrect results could occur if either the clinical specimen or the reagents used become contaminated by accidental introduction of even a few molecules of amplification product. Measures to reduce the risk of contamination in the laboratory include physically separating the activities involved in performing PCR in compliance with good laboratory practices.
- The use of 2 dedicated areas within the laboratory is recommended for performing the Abbott RealTime HIV-1 Qualitative assay with the automated Abbott *m2000sp* and Abbott *m2000rt*:
  - The **Sample Preparation Area** is dedicated to processing samples (specimens, Abbott RealTime HIV-1 Qualitative Controls) and to adding processed specimens and controls to the Abbott 96-Well Optical Reaction Plate. All reagents used in the Sample Preparation Area should remain in this dedicated area at all times. Laboratory coats, pipettes, pipette tips, and vortex mixers used in the Sample Preparation Area must remain in this area and not be moved to the Amplification Area. Do not bring amplification product into the Sample Preparation Area.
  - The **Amplification Area** is dedicated to the amplification and the detection of amplified product. Laboratory coats and equipment used in the Amplification Area must remain in this area and not be moved to the Sample Preparation Area.


- The use of 3 dedicated areas within the laboratory is recommended for performing the Abbott RealTime HIV-1 Qualitative assay with the manual sample preparation method and the Abbott *m2000rt*:
  - The **Reagent Preparation Area** is dedicated to combining the Abbott RealTime HIV-1 Qualitative amplification reagent components to create the amplification master mix and transferring aliquots of the master mix to the Abbott 96-Well Optical Reaction Plate. Laboratory coats, pipettes, and pipette tips used in the Reagent Preparation Area must remain in this area and not be moved to either the Sample Preparation Area or the Amplification Area. Do not bring target or amplification product into the Reagent Preparation Area.
  - The **Sample Preparation Area** is dedicated to processing samples (specimens, Abbott RealTime HIV-1 Qualitative Controls) and to adding processed specimens and controls to the Abbott 96-Well Optical Reaction Plate. All reagents used in the Sample Preparation Area should remain in this dedicated area at all times. Laboratory coats, pipettes, pipette tips, and vortex mixers used in the Sample Preparation Area must remain in this area and not be moved to either the Reagent Preparation Area or the Amplification Area. Do not bring amplification product into the Sample Preparation Area.
  - The **Amplification Area** is dedicated to the amplification and the detection of amplified product. Laboratory coats and equipment used in the Amplification Area must remain in this area and not be moved to either the Reagent Preparation Area or the Sample Preparation Area.
- If the Abbott *m2000sp* run is aborted, dispose of all commodities and reagents according to the Abbott *m2000sp* Operations Manual.
- If the manual sample preparation procedure is incorrectly performed or is interrupted at any point so that the timing of the steps exceeds the recommended timing per the protocol instructions, dispose of all commodities and reagents according to the instructions in the **POST PROCESSING PROCEDURES** section of this package insert.
- If the Abbott *m2000sp* master mix addition protocol is aborted after amplification reagents are added to the Abbott 96-Well Optical Reaction Plate, seal the Abbott 96-Well Optical Reaction Plate and put in a sealable plastic bag and dispose of according to the Abbott *m2000sp* Operations Manual, Hazards section, along with the gloves used to handle the plate.
- If manual preparation of the PCR reaction mix is aborted after amplification reagents are added to the Abbott 96-Well Optical Reaction Plate, seal the Abbott 96-Well Optical Reaction Plate in a sealable plastic bag and dispose of according to laboratory guidelines, along with the gloves used to handle the plate.
- For all completed, interrupted or aborted Abbott *m2000rt* runs, dispose of the Abbott 96-Well Optical Reaction Plate in a sealable plastic bag according to the Abbott *m2000rt* Operations Manual along with the gloves used to handle the plate.
- **Autoclaving the sealed Abbott 96-Well Optical Reaction Plate will not degrade the amplified product and may contribute to the release of the amplified product by opening the sealed plate. The laboratory area can become contaminated with amplified product if the waste materials are not carefully handled and contained.**
- Decontaminate and dispose of all specimens, reagents, and other potentially biohazardous or contaminated materials in accordance with local, state, and federal regulations.<sup>20,23</sup> All materials should be handled in a manner that minimizes the chance of potential contamination of the work area.

**Contamination from External Deoxy-Uracil (dU)-Containing Amplified Product**


HIV-1 amplification assays containing dU may cause contamination and inaccurate results in the Abbott RealTime HIV-1 Qualitative assay. When negative controls are persistently reactive or where contamination with dU-containing HIV-1 amplified product is likely to have occurred, it is recommended that the laboratory use an additional contamination control procedure. This procedure (List No. 04N66-66) is available through your Abbott representative.

**REAGENT STORAGE AND HANDLING INSTRUCTIONS**

**Abbott RealTime HIV-1 Qualitative Amplification Reagent Kit (List No. 4N66-90)**

 **-10°C** The Abbott RealTime HIV-1 Qualitative Amplification Reagent Packs and Internal Control vials must be stored at -10°C or colder when not in use. Care must be taken to separate the Abbott RealTime HIV-1 Qualitative Amplification Reagent Pack that is in use from direct contact with specimens and controls. Reagents are shipped on dry ice.

### Abbott RealTime HIV-1 Qualitative Control Kit (List No. 4N66-80)

 The Abbott RealTime HIV-1 Qualitative Negative and Positive Control must be stored at  $-10^{\circ}\text{C}$  or colder. Reagents are shipped on dry ice.

### INDICATION OF INSTABILITY OR DETERIORATION OF REAGENTS

When a positive or negative control value is out of the expected range, it may indicate deterioration of the reagents. Associated test results are regarded as invalid and specimens must be retested.

### INSTRUMENT METHODS

The Abbott RealTime HIV-1 Qualitative assay is performed using the Abbott *m2000sp* or the manual sample preparation method for sample processing, and the Abbott *m2000rt* for amplification and detection. Refer to the appropriate Assay Protocol instructions in this package insert or to the Abbott *m2000sp* or Abbott *m2000rt* Operations Manuals for detailed operating procedures. The Abbott RealTime HIV-1 Qualitative application files must be installed on the Abbott *m2000sp* and Abbott *m2000rt* systems from the Abbott RealTime HIV-1 Qualitative *m2000* System Combined Application CD-ROM (List No. 4N66-003 or higher) prior to performing the assay. For detailed information on application file installation, refer to the Abbott *m2000sp* and Abbott *m2000rt* Operations Manuals, Operating Instructions section.

### SPECIMEN COLLECTION AND HANDLING INSTRUCTIONS

#### Plasma Specimen Collection and Storage

Human plasma (ACD-A and EDTA) specimens may be used with the Abbott RealTime HIV-1 Qualitative assay. Follow the manufacturer's instructions for processing plasma collection tubes. Freshly drawn specimens (whole blood) may be held at  $15^{\circ}\text{C}$  to  $30^{\circ}\text{C}$  for up to 6 hours or at  $2^{\circ}\text{C}$  to  $8^{\circ}\text{C}$  for up to 24 hours, prior to preparing plasma specimens through centrifugation or preparing DBS specimens. After centrifugation, remove plasma from cells and pipette plasma into a separate tube for immediate testing or storage. Plasma specimens may be stored at  $15^{\circ}\text{C}$  to  $30^{\circ}\text{C}$  for up to 24 hours or at  $2^{\circ}\text{C}$  to  $8^{\circ}\text{C}$  for up to 5 days. If longer storage is required, plasma specimens may be stored at  $-10^{\circ}\text{C}$  to  $-30^{\circ}\text{C}$  for up to 30 days, or at  $-70^{\circ}\text{C}$  or lower.<sup>24,25</sup> Multiple freeze-thaw cycles should be avoided and should not exceed 3 freeze-thaw cycles. Thaw plasma specimens at  $15^{\circ}\text{C}$  to  $30^{\circ}\text{C}$  or at  $2^{\circ}\text{C}$  to  $8^{\circ}\text{C}$ . Once thawed, if plasma specimens are not being processed immediately, they can be stored at  $2^{\circ}\text{C}$  to  $8^{\circ}\text{C}$  for up to 6 hours.

#### DBS Specimen Collection and Storage

DBS may be made on a Whatman 903 card (or equivalent) using blood obtained from a heel- or finger-stick or collected in a blood collection tube. Freshly drawn specimens (whole blood) may be held at  $15^{\circ}\text{C}$  to  $30^{\circ}\text{C}$  for up to 6 hours or at  $2^{\circ}\text{C}$  to  $8^{\circ}\text{C}$  for up to 24 hours. DBS are made by following these steps:

- Spot whole blood onto a minimum of 2 one-half-inch (12-millimeter) circles on a Whatman 903 filter paper card (or equivalent), ensuring that the entire circle is covered (approximately 50  $\mu\text{L}$ ). If the whole blood has been collected in a blood collection tube, the blood should be mixed prior to spotting using a pipette.
- Air dry the card at room temperature.
- Package each card in a bag with desiccant packs. The cards may be stored at  $15^{\circ}\text{C}$  to  $30^{\circ}\text{C}$  for up to 12 weeks. Alternatively, cards may be stored at  $2^{\circ}\text{C}$  to  $8^{\circ}\text{C}$  or  $-10^{\circ}\text{C}$  or colder for up to 12 weeks.

#### Specimen Transport

Ship plasma specimens frozen on dry ice. Ship DBS specimens under ambient conditions, packaged in bags with desiccant packs. For DBS specimens, total time under ambient conditions during transport and storage should not exceed 12 weeks. For domestic and international shipments, specimens should be packaged and labeled in compliance with applicable state, federal, and international regulations covering the transport of clinical, diagnostic, or biological specimens.

### ABBOTT REALTIME HIV-1 QUALITATIVE ASSAY PROCEDURE

This Abbott RealTime HIV-1 Qualitative package insert contains 4 assay protocols:

**ASSAY PROTOCOL I:** PLASMA SPECIMENS USING ABBOTT *m2000sp* AUTOMATED SAMPLE PREPARATION SYSTEM

**ASSAY PROTOCOL II:** DBS SPECIMENS USING ABBOTT *m2000sp* AUTOMATED SAMPLE PREPARATION SYSTEM.

**ASSAY PROTOCOL III:** PLASMA SPECIMENS USING MANUAL SAMPLE PREPARATION METHOD

**ASSAY PROTOCOL IV:** DBS SPECIMENS USING MANUAL SAMPLE PREPARATION METHOD

### Materials Provided

- Abbott RealTime HIV-1 Qualitative Amplification Reagent Kit (List No. 4N66-90)

### Materials Required But Not Provided

- Abbott RealTime HIV-1 Qualitative Control Kit (List No. 4N66-80)
- Abbott RealTime HIV-1 Qualitative *m2000* System Combined Application CD-ROM (List No. 4N66-003 or higher)

### SAMPLE PREPARATION AREA

#### Materials for Abbott *m2000sp* (ASSAY PROTOCOLS I and II)

- Abbott *m2000sp* instrument with software version 4.0 or higher
- Abbott *mSample* Preparation System<sub>DNA</sub> (List No. 06K12-24)  
**NOTE: One kit is sufficient to complete 96 sample preparations.**
- 5 mL Reaction Vessels (List No. 04J71-20)
- Calibrated Pipettes capable of delivering 20 to 1000  $\mu\text{L}$
- Aerosol Barrier Pipette Tips for 20 to 1000  $\mu\text{L}$  Pipettes
- 1000  $\mu\text{L}$  Disposable Tips
- 200  $\mu\text{L}$  Disposable Tips
- Vortex Mixer
- USP Grade 190 to 200 Proof Ethanol (95 to 100% Ethanol).  
**Do not use ethanol that contains denaturants.**
- Abbott Optical Adhesive Covers (List No. 4J71-75)
- Abbott Adhesive Cover Applicator (List No. 9K32-01)
- Abbott Splash-Free Support Base (List No. 9K31-01)
- Master Mix Tube (List No. 04J71-80)
- 13 mm Sample Racks (List No. 04J72-82)
- 200 mL Reagent Vessels (List No. 04J71-60)
- Abbott 96-Deep-Well Plate (List No. 04J71-30)
- Abbott 96-Well Optical Reaction Plate (List No. 4J71-70)
- Centrifuge capable of 2000g
- Bulk *mLysis*<sub>DNA</sub> Buffer (List No. 2N77-01) (for DBS processing only)
- 50 mL Tubes (NUNC or equivalent) (optional) (for DBS processing only)

#### Materials for Manual Sample Preparation (ASSAY PROTOCOLS III and IV)

- Abbott *mSample* Preparation System<sub>DNA</sub> (List No. 06K12-24)  
**NOTE: One kit is sufficient to complete 96 sample preparations.**
- Calibrated Pipettes capable of delivering 20 to 1000  $\mu\text{L}$
- Aerosol Barrier Pipette Tips for 20 to 1000  $\mu\text{L}$  Pipettes
- 5 mL Reaction Vessels (List No. 04J71-20)
- 1.5 mL screw top microfuge tubes and caps (List No. 04J71-50 or equivalent)
- Magnetic stands for 5 mL Reaction Vessels
- Non-magnetic stands for 5 mL Reaction Vessels
- Magnetic stands for 1.5 mL tubes
- Non-magnetic stands for 1.5 mL tubes
- Dry heating block for 5 mL Reaction Vessels (capable of achieving  $50^{\circ}\text{C}$ )
- Dry heating block for 1.5 mL tubes (capable of achieving  $75^{\circ}\text{C}$ )
- Thermometer
- Timer
- Vortex Mixer
- USP Grade 190 to 200 Proof Ethanol (95 to 100% Ethanol).  
**Do not use ethanol that contains denaturants.**
- Liquid Container for waste (no bleach should be allowed to contact liquid waste).  
See the instructions in the **POST PROCESSING PROCEDURES** section of this package insert for warning and precaution information.
- Abbott Optical Adhesive Covers (List No. 4J71-75)
- Abbott Adhesive Cover Applicator (List No. 9K32-01)
- Abbott Splash-Free Support Base (List No. 9K31-01)
- Centrifuge capable of 2000g
- Centrifuge capable of 5000g (for centrifuging the Abbott 96-Well Optical Reaction Plate)
- Repeat pipettor capable of delivering 40 to 50  $\mu\text{L}$  volumes (optional)
- Sterile repeat pipettor tips capable of delivering 40 to 50  $\mu\text{L}$  volumes (optional)
- Disposable transfer pipettes (optional)
- 96-well polypropylene plate (optional)
- Bulk *mLysis*<sub>DNA</sub> Buffer (List No. 2N77-01) (for DBS processing only)
- 50 mL Tubes (NUNC or equivalent) (optional) (for DBS processing only)

## REAGENT PREPARATION AREA

### Materials for Manual Sample Preparation (ASSAY PROTOCOLS III and IV)

- StrataCooler® 96 Benchtop Cooler or Eppendorf PCR Cooler
- Abbott 96-Well Optical Reaction Plate (List No. 4J71-70)
- Calibrated Pipettes capable of delivering 20 to 1000 µL
- Aerosol Barrier Pipette Tips for 20 to 1000 µL Pipettes
- Single-use RNase/DNase-free tube or container

**NOTE:** Magnetic stands for 5 mL Reaction Vessels, magnetic stands for 1.5 mL tubes, and Eppendorf PCR Cooler can be ordered as *m2000 mSample Preparation System Start Up Kit* (List No. 02N28-03).

## AMPLIFICATION AREA

### Materials for Abbott *m2000sp* and Manual Sample Preparation (ASSAY PROTOCOLS I, II, III and IV)

- Abbott *m2000rt* instrument with software version 3.0 or higher
- Abbott *m2000rt* Optical Calibration Kit (List No. 04J71-93)

### Other Materials (ASSAY PROTOCOLS I, II, III and IV)

- Biological safety cabinet approved for working with infectious materials
- Lab coat
- Powder-free disposable gloves
- Protective eyewear
- Solid waste container
- Sealable plastic bags
- RNase/DNase-free water (Eppendorf or equivalent)†
- Cotton Tip Applicators (Puritan or equivalent)†

†These items are used in the procedure in the section **Monitoring the Laboratory for the Presence of Contamination** section.

### Procedural Precautions

- Read the instructions in the package insert carefully before processing samples.
- The Abbott RealTime HIV-1 Qualitative reagents are intended to be used on the Abbott *m2000sp* or with the manual sample preparation method for sample processing and the Abbott *m2000rt* for amplification and detection.
- Do not use kits or reagents beyond expiration date.
- Control kit lots and amplification reagent kit lots can be used interchangeably. However, components contained within a kit are intended to be used together. For example, do not use the negative control from control kit lot X with the positive control from control kit lot Y.
- Amplification reagent components (enzyme, oligonucleotide reagent and activation reagent), Controls, and *mSample Preparation System<sub>DNA</sub>* Reagents are for single-use only and should be discarded after use. Use new reagent vessels and new reaction vessels, for every new Abbott RealTime HIV-1 Qualitative assay run. At the end of each run, discard all these remaining reagents as stated in the Abbott *m2000sp* Operations Manual and the **POST PROCESSING PROCEDURES** section of this package insert.
- The amplification reagent kit and control kit can be thawed and refrozen up to 3 times before use.
- The Abbott RealTime HIV-1 Qualitative Controls must be processed with the specimens to be tested. The use of the Abbott RealTime HIV-1 Qualitative Controls is integral to the performance of the Abbott RealTime HIV-1 Qualitative assay. Refer to the **QUALITY CONTROL PROCEDURES** section in the package insert for details.
- Use only USP Grade 190 to 200 Proof Ethanol (95 to 100% Ethanol) to prepare the *mLysis<sub>DNA</sub>*, *mWash<sub>1DNA</sub>*, and *mWash<sub>2DNA</sub>* sample preparation reagents. **Do not use ethanol that contains denaturants.**
- Replace any empty or partially used 200 µL and 1000 µL disposable tips on the Abbott *m2000sp* with full trays before every run. Refer to the Abbott *m2000sp* Operations Manuals, Operating Instructions section.
- Monitoring procedures for the presence of amplification product can be found in the **QUALITY CONTROL PROCEDURES** section in the package insert.
- To reduce the risk of nucleic acid contamination, clean and disinfect spills of specimens, reagents and controls by using a detergent solution followed by a tuberculocidal disinfectant such as 1.0% (v/v) sodium hypochlorite or other suitable disinfectant.

## ASSAY PROTOCOL I: PLASMA SPECIMENS USING ABBOTT *m2000sp* AUTOMATED SAMPLE PREPARATION SYSTEM

For a detailed description of how to operate the Abbott *m2000sp* and

Abbott *m2000rt* instruments, refer to the Abbott *m2000sp* and Abbott *m2000rt* Operations Manuals, Operating Instructions sections. Laboratory personnel must be trained to operate the Abbott *m2000sp* and Abbott *m2000rt* instruments. The operator must have a thorough knowledge of the applications run on the instruments and must follow good laboratory practices.

Refer to the **WARNINGS AND PRECAUTIONS** section of the package insert before preparing samples.

1. Thaw assay controls and IC at 15°C to 30°C or at 2°C to 8°C; see **QUALITY CONTROL PROCEDURES** section of the package insert.
  - Once thawed, assay controls and IC can be stored at 2°C to 8°C for up to 24 hours before use.
  - Vortex each assay control 3 times for 2 to 3 seconds before use. Ensure that the contents of each vial are at the bottom after vortexing by tapping the vials on the bench to bring liquid to the bottom of the vial. Ensure bubbles or foam are not generated; if present, remove with a sterile pipette tip, using a new tip for each vial.
2. Thaw amplification reagents at 15°C to 30°C or at 2°C to 8°C.
  - Once thawed, the amplification reagents can be stored at 2°C to 8°C for up to 24 hours until required for the amplification master mix procedure.
  - **For up to 24 reactions use:** 1 tube of positive control, 1 tube of negative control, 1 amplification reagent pack, 1 vial of IC, and 1 set of *mSample Preparation System<sub>DNA</sub>* reagents.
  - **For 25 to 48 reactions use:** 1 tube of positive control, 1 tube of negative control, 2 amplification reagent packs, 2 vials of IC, 2 bottles of *mLysis<sub>DNA</sub>* Buffer, and 1 bottle *mWash<sub>1DNA</sub>* Buffer, *mWash<sub>2DNA</sub>* Buffer, *mMicroparticle<sub>DNA</sub>* and *mElution<sub>DNA</sub>* Buffer.
  - **For 49 to 72 reactions use:** 1 tube of positive control, 1 tube of negative control, 3 amplification reagent packs, 3 vials of IC, 3 bottles of *mLysis<sub>DNA</sub>* Buffer, 2 bottles of *mWash<sub>1DNA</sub>* Buffer and *mWash<sub>2DNA</sub>* Buffer, and 1 bottle of *mMicroparticle<sub>DNA</sub>* and *mElution<sub>DNA</sub>* Buffer.
  - **For 73 to 96 reactions use:** 1 tube of positive control, 1 tube of negative control, 4 amplification reagent packs, 4 vials of IC, 4 bottles of *mLysis<sub>DNA</sub>* Buffer, 2 bottles of *mWash<sub>1DNA</sub>* Buffer and *mWash<sub>2DNA</sub>* Buffer, and 1 bottle of *mMicroparticle<sub>DNA</sub>* and *mElution<sub>DNA</sub>* Buffer.
3. Open the *mSample Preparation System<sub>DNA</sub>* reagent pack(s). If crystals are observed in any of the reagent bottles upon opening, allow the reagent to equilibrate at room temperature until the crystals disappear. Do not use the reagents until the crystals have dissolved. Add USP Grade 190 to 200 Proof Ethanol (95 to 100% Ethanol) to the *mLysis<sub>DNA</sub>*, *mWash<sub>1DNA</sub>* and *mWash<sub>2DNA</sub>* bottles as indicated below. **Do not use ethanol that contains denaturants.**
  - Add 35 mL ethanol to each bottle of *mLysis<sub>DNA</sub>* being used.
  - Add 23 mL ethanol to each bottle of *mWash<sub>1DNA</sub>* being used.
  - Add 70 mL ethanol to each bottle of *mWash<sub>2DNA</sub>* being used.
4. Vortex each IC vial 3 times for 2 to 3 seconds before use. Use a calibrated **PRECISION PIPETTE DEDICATED FOR INTERNAL CONTROL USE ONLY** to add 750 µL of IC to each bottle of *mLysis<sub>DNA</sub>* Buffer.
5. Gently invert all the reagent bottles except *mMicroparticles<sub>DNA</sub>* 5 to 10 times to ensure a homogeneous solution and pour the contents into the appropriate reagent vessels as indicated in the table below. Ensure bubbles or foam are not generated in the reagent vessels; if present, remove with a sterile pipette tip, using a new tip for each reagent vessel. For each bottle of *mLysis<sub>DNA</sub>* Buffer being used, measure and gently transfer 95 mL of the mixture of *mLysis<sub>DNA</sub>* Buffer, Ethanol and IC into the appropriate reagent vessel(s) as indicated in the table.

### Sample extraction reagents are distributed as follows:

Samples	1st Vessel	2nd Vessel	3rd Vessel	4th Vessel	5th Vessel	6th Vessel
1 to 24	1 <i>mLysis<sub>DNA</sub></i>	NA	1 <i>mMicroparticle<sub>DNA</sub></i>	1 <i>mWash<sub>1DNA</sub></i>	1 <i>mWash<sub>2DNA</sub></i>	1 <i>mElution<sub>DNA</sub></i>
25 to 48	2 <i>mLysis<sub>DNA</sub></i>	NA	1 <i>mMicroparticle<sub>DNA</sub></i>	1 <i>mWash<sub>1DNA</sub></i>	1 <i>mWash<sub>2DNA</sub></i>	1 <i>mElution<sub>DNA</sub></i>
49 to 72	2 <i>mLysis<sub>DNA</sub></i>	1 <i>mLysis<sub>DNA</sub></i>	1 <i>mMicroparticle<sub>DNA</sub></i>	2 <i>mWash<sub>1DNA</sub></i>	2 <i>mWash<sub>2DNA</sub></i>	1 <i>mElution<sub>DNA</sub></i>
73 to 96	2 <i>mLysis<sub>DNA</sub></i>	2 <i>mLysis<sub>DNA</sub></i>	1 <i>mMicroparticle<sub>DNA</sub></i>	2 <i>mWash<sub>1DNA</sub></i>	2 <i>mWash<sub>2DNA</sub></i>	1 <i>mElution<sub>DNA</sub></i>

**NOTE:** Immediately prior to initiation of the sample extraction protocol, vigorously mix or vortex the *mMicroparticles<sub>DNA</sub>* until they are fully resuspended and pour the *mMicroparticles<sub>DNA</sub>* into the appropriate 200 mL reagent vessel as indicated in the table.

6. A maximum of 96 samples can be processed per run. A negative control and a positive control are included in each run, therefore allowing a maximum of 94 specimens to be processed per run. Prepare the plasma specimens for processing by following these steps:
    - If frozen, thaw specimens at 15°C to 30°C or at 2°C to 8°C. Once thawed, specimens can be stored at 2°C to 8°C for up to 6 hours if not processed immediately.
    - Vortex each specimen 3 times for 2 to 3 seconds.
    - **Centrifuge specimens at 2000g for 5 minutes** before loading on the Abbott *m2000sp* worktable. Aliquot each specimen into a 5 mL Reaction Vessel. Ensure that each newly aliquotted specimen has a minimal volume of 0.3 mL. Avoid touching the inside of the cap when opening tubes. Take care not to disturb contents of the tube while removing the tube from the centrifuge and that the bottom of the tube is not touched by the pipette tip.
  7. Place the negative control, positive control, and the patient specimens into the Abbott *m2000sp* sample rack.
 

**NOTE: Use only 13 mm sample racks. Load specimens and controls into the 13 mm sample racks in consecutive positions.**

    - Insert specimen and control tubes (uncapped) into sample racks carefully to avoid splashing. If used, bar codes on tube labels must face right for scanning. Ensure that each tube is placed securely in the sample rack so that the bottom of the tube reaches the inside bottom of the rack.
    - Load filled sample racks onto the Abbott *m2000sp* in consecutive sample rack positions, with the first rack farthest to the right on the worktable, and any additional rack progressively to the left of the first rack.
  8. Place the 5 mL Reaction Vessels into the Abbott *m2000sp* 1 mL subsystem carrier.
  9. Load the Abbott 96 Deep-Well Plate on the Abbott *m2000sp* worktable as described in the Abbott *m2000sp* Operations Manual, Operating Instructions section.
  10. From the Protocol screen, select the appropriate application file. Initiate the sample extraction protocol as described in the Abbott *m2000sp* Operations Manual, Operating Instruction section.
 

**NOTE: The Abbott *m2000sp* Master Mix Addition protocol (step 12) must be initiated within 1 hour after completion of sample preparation.**

**NOTE: Change gloves before handling the amplification reagents.**

**NOTE: The plate-fill setup will automatically be enabled for batch sizes of 49 or greater. In such case, the reagent vessel for *mElution<sub>DNA</sub>* Buffer (Reagent Carrier 2, location 6) should remain in place.**
  11. Load the amplification reagents and the master mix tube on the Abbott *m2000sp* worktable after sample preparation is completed.
    - Each amplification reagent pack supports up to 24 reactions.
    - Prior to opening the amplification reagents, ensure that the contents are at the bottom of the vials by tapping the vials in an upright position on the bench.
    - Remove and discard the amplification vial caps.
  12. From the Protocol screen, select the appropriate deep well plate from the Run Master Mix Addition screen that matches the corresponding sample preparation extraction. Initiate the Abbott *m2000sp* Master Mix Addition protocol. Follow the instructions as described in the Abbott *m2000sp* Operations Manual, Operating Instructions section.
 

**NOTE: The Abbott *m2000rt* protocol (step 16) must be started within 50 minutes of the initiation of the Master Mix Addition protocol (step 12).**
  13. Switch on and initialize the Abbott *m2000rt* instrument in the Amplification Area.
 

**NOTE: The Abbott *m2000rt* requires 15 minutes to warm-up.**

**NOTE: Remove gloves before returning to the Sample Preparation Area.**
  14. Seal the Abbott 96-Well Optical Reaction Plate after the Abbott *m2000sp* instrument has completed addition of samples and master mix according to the Abbott *m2000sp* Operations Manual, Operating Instructions section.
  15. Place the sealed Abbott 96-well Optical Reaction Plate into the Abbott Splash-Free Support Base for transfer to the Abbott *m2000rt* instrument.
  16. Place the Abbott 96-Well Optical Reaction Plate in the Abbott *m2000rt* instrument and initiate the Abbott RealTime HIV-1 Qualitative assay protocol, as described in the Abbott *m2000rt* Operations Manual, Operating Instructions section. At the completion of the run, assay results are reported on the Abbott *m2000rt*. Refer to the **RESULTS** section of the package insert for further details.
- ## ASSAY PROTOCOL II: DBS SPECIMENS USING ABBOTT *m2000sp* AUTOMATED SAMPLE PREPARATION SYSTEM
- For a detailed description of how to operate the Abbott *m2000sp* and Abbott *m2000rt* instruments, refer to the Abbott *m2000sp* and Abbott *m2000rt* Operations Manuals, Operating Instructions sections. Laboratory personnel must be trained to operate the Abbott *m2000sp* and Abbott *m2000rt* instruments. The operator must have a thorough knowledge of the applications run on the instruments and must follow good laboratory practices. Refer to the **WARNINGS AND PRECAUTIONS** section of the package insert before preparing samples.
1. A maximum of 96 samples can be processed per run. A negative control and a positive control are included in each run, therefore allowing a maximum of 94 DBS specimens to be processed per run. Process the DBS specimens by following these steps:
    - Prepare tubes with 1.7 mL Abbott *mLysis<sub>DNA</sub>* Buffer (from the Bulk *mLysis<sub>DNA</sub>* Buffer).
    - Cut out 2 entire DBS for each specimen from a Whatman 903 filter paper card (or equivalent). Each DBS should be approximately one-half-inch (12 millimeters) in diameter.
    - Place DBS in the tube containing the Abbott *mLysis<sub>DNA</sub>* Buffer. Ensure that the DBS are fully submerged in the *mLysis<sub>DNA</sub>* Buffer.
    - Incubate at room temperature for 20 minutes with intermittent gentle mixing.
    - Carefully pipette all the liquid to a 5 mL Reaction Vessel. Avoid transfer of bubbles. **DO NOT transfer the filter paper.**

**NOTE: The above steps do not apply to controls. Controls should not be spotted on filter paper cards and should be processed directly as liquid samples.**

**NOTE: Avoid direct contact of the cutting surface with DBS specimens. Clean the instrument used to cut DBS between specimens if necessary according to good laboratory practices.**
  2. Thaw assay controls and IC at 15°C to 30°C or at 2°C to 8°C; see **QUALITY CONTROL PROCEDURES** section of the package insert.
    - Once thawed, assay controls and IC can be stored at 2°C to 8°C for up to 24 hours before use.
    - Vortex each assay control 3 times for 2 to 3 seconds before use. Ensure that the contents of each vial are at the bottom after vortexing by tapping the vials on the bench to bring liquid to the bottom of the vial. Ensure bubbles or foam are not generated; if present, remove with a sterile pipette tip, using a new tip for each vial.
  3. Thaw amplification reagents at 15°C to 30°C or at 2°C to 8°C.
    - Once thawed, the amplification reagents can be stored at 2°C to 8°C for up to 24 hours until required for the amplification master mix procedure.
    - **For up to 24 reactions use:** 1 tube of positive control, 1 tube of negative control, 1 amplification reagent pack, 1 vial of IC, and 1 set of *mSample Preparation System<sub>DNA</sub>* reagents.
    - **For 25 to 48 reactions use:** 1 tube of positive control, 1 tube of negative control, 2 amplification reagent packs, 2 vials of IC, 2 bottles of *mLysis<sub>DNA</sub>* Buffer, and 1 bottle *mWash 1<sub>DNA</sub>* Buffer, *mWash 2<sub>DNA</sub>* Buffer, *mMicroparticle<sub>DNA</sub>* and *mElution<sub>DNA</sub>* Buffer.
    - **For 49 to 72 reactions use:** 1 tube of positive control, 1 tube of negative control, 3 amplification reagent packs, 3 vials of IC, 3 bottles of *mLysis<sub>DNA</sub>* Buffer, 2 bottles of *mWash 1<sub>DNA</sub>* Buffer and *mWash 2<sub>DNA</sub>* Buffer, and 1 bottle of *mMicroparticle<sub>DNA</sub>* and *mElution<sub>DNA</sub>* Buffer.
    - **For 73 to 96 reactions use:** 1 tube of positive control, 1 tube of negative control, 4 amplification reagent packs, 4 vials of IC, 4 bottles of *mLysis<sub>DNA</sub>* Buffer, 2 bottles of *mWash 1<sub>DNA</sub>* Buffer and *mWash 2<sub>DNA</sub>* Buffer, and 1 bottle of *mMicroparticle<sub>DNA</sub>* and *mElution<sub>DNA</sub>* Buffer.
  4. Open the *mSample Preparation System<sub>DNA</sub>* reagent pack(s). If crystals are observed in any of the reagent bottles upon opening, allow the reagent to equilibrate at room temperature until the crystals disappear. Do not use the reagents until the crystals have dissolved. Add USP Grade 190 to 200 Proof Ethanol (95 to 100% Ethanol) to the *mLysis<sub>DNA</sub>*, *mWash 1<sub>DNA</sub>*, and *mWash 2<sub>DNA</sub>* bottles as indicated below. **Do not use ethanol that contains denaturants.**

- Add 35 mL ethanol to each bottle of *mLysis<sub>DNA</sub>* being used.
  - Add 23 mL ethanol to each bottle of *mWash<sub>1DNA</sub>* being used.
  - Add 70 mL ethanol to each bottle of *mWash<sub>2DNA</sub>* being used.
5. Vortex each IC vial 3 times for 2 to 3 seconds before use. Use a calibrated **PRECISION PIPETTE DEDICATED FOR INTERNAL CONTROL USE ONLY** to add 750 µL of IC to each bottle of *mLysis<sub>DNA</sub>* Buffer.
  6. Gently invert all the reagent bottles except *mMicroparticles<sub>DNA</sub>* 5 to 10 times to ensure a homogenous solution and pour the contents into the appropriate reagent vessels as indicated in the table below. Ensure bubbles or foam are not generated in the reagent vessels; if present, remove with a sterile pipette tip, using a new tip for each reagent vessel. For each bottle of *mLysis<sub>DNA</sub>* Buffer being used, measure and gently transfer **95 mL** of the mixture of *mLysis<sub>DNA</sub>* Buffer, ethanol and IC into the appropriate reagent vessel(s) as indicated in the table.

**Sample extraction reagents are distributed as follows:**

Samples	1st Vessel	2nd Vessel	3rd Vessel	4th Vessel	5th Vessel	6th Vessel
1 to 24	1 <i>mLysis<sub>DNA</sub></i>	NA	1 <i>mMicroparticle<sub>DNA</sub></i>	1 <i>mWash<sub>1DNA</sub></i>	1 <i>mWash<sub>2DNA</sub></i>	1 <i>mElution<sub>DNA</sub></i>
25 to 48	2 <i>mLysis<sub>DNA</sub></i>	NA	1 <i>mMicroparticle<sub>DNA</sub></i>	1 <i>mWash<sub>1DNA</sub></i>	1 <i>mWash<sub>2DNA</sub></i>	1 <i>mElution<sub>DNA</sub></i>
49 to 72	2 <i>mLysis<sub>DNA</sub></i>	1 <i>mLysis<sub>DNA</sub></i>	1 <i>mMicroparticle<sub>DNA</sub></i>	2 <i>mWash<sub>1DNA</sub></i>	2 <i>mWash<sub>2DNA</sub></i>	1 <i>mElution<sub>DNA</sub></i>
73 to 96	2 <i>mLysis<sub>DNA</sub></i>	2 <i>mLysis<sub>DNA</sub></i>	1 <i>mMicroparticle<sub>DNA</sub></i>	2 <i>mWash<sub>1DNA</sub></i>	2 <i>mWash<sub>2DNA</sub></i>	1 <i>mElution<sub>DNA</sub></i>

**NOTE: Immediately prior to initiation of the sample extraction protocol, vigorously mix or vortex the *mMicroparticles<sub>DNA</sub>* until they are fully resuspended and pour the *mMicroparticles<sub>DNA</sub>* into the appropriate 200 mL Reagent Vessel as indicated in the table.**

7. Place the negative control, positive control, and the patient specimens into the Abbott *m2000sp* sample rack.
 

**NOTE: Use only 13 mm sample racks. Load specimens and controls into the 13 mm sample racks in consecutive positions.**

  - Insert specimen and control tubes (uncapped) into sample racks carefully to avoid splashing. If used, bar codes on tube labels must face right for scanning. Ensure that each tube is placed securely in the sample rack so that the bottom of the tube reaches the inside bottom of the rack.
  - Load filled sample racks onto the Abbott *m2000sp* in consecutive sample rack positions, with the first rack farthest to the right on the worktable, and any additional rack progressively to the left of the first rack.
8. Place the 5 mL Reaction Vessels into the Abbott *m2000sp* 1 mL subsystem carrier.
9. Load the Abbott 96 Deep-Well Plate on the Abbott *m2000sp* worktable as described in the Abbott *m2000sp* Operations Manual, Operating Instructions section.
10. From the Protocol screen, select the appropriate application file. Initiate the sample extraction protocol as described in the Abbott *m2000sp* Operations Manual, Operating Instruction section.
 

**NOTE: The Abbott *m2000sp* Master Mix Addition protocol (step 12) must be initiated within 1 hour after completion of sample preparation.**

**NOTE: Change gloves before handling the amplification reagents.**

**NOTE: The plate-fill setup will automatically be enabled for batch sizes of 49 or greater. In such case, the reagent vessel for *mElution<sub>DNA</sub>* Buffer (Reagent Carrier 2, location 6) should remain in place.**
11. Load the amplification reagents and the master mix tube on the Abbott *m2000sp* worktable after sample preparation is completed.
  - Each amplification reagent pack supports up to 24 reactions.
  - Prior to opening the amplification reagents, ensure that the contents are at the bottom of the vials by tapping the vials in an upright position on the bench.
  - Remove and discard the amplification vial caps.
12. From the Protocol screen, select the appropriate deep well plate from the Run Master Mix Addition screen that matches the corresponding sample preparation extraction. Initiate the Abbott *m2000sp* Master Mix Addition protocol. Follow the instructions as described in the Abbott *m2000sp* Operations Manual, Operating Instructions section.

**NOTE: The Abbott *m2000rt* protocol (step 16) must be started within 50 minutes of the initiation of the Master Mix Addition protocol (step 12).**

13. Switch on and initialize the Abbott *m2000rt* instrument in the Amplification Area.
 

**NOTE: The Abbott *m2000rt* requires 15 minutes to warm-up.**

**NOTE: Remove gloves before returning to the sample preparation area.**
14. Seal the Abbott 96-Well Optical Reaction Plate after the Abbott *m2000sp* instrument has completed addition of samples and master mix according to the Abbott *m2000sp* Operations Manual, Operating Instructions section.
15. Place the sealed Abbott 96-Well Optical Reaction Plate into the Abbott Splash-Free Support Base for transfer to the Abbott *m2000rt* instrument.
16. Place the Abbott 96-Well Optical Reaction Plate in the Abbott *m2000rt* instrument and initiate the Abbott RealTime HIV-1 Qualitative assay protocol, as described in the Abbott *m2000rt* Operations Manual, Operating Instructions section. At the completion of the run, assay results are reported on the Abbott *m2000rt*. Refer to the **RESULTS** section of the package insert for further details.

**ASSAY PROTOCOL III: PLASMA SPECIMENS USING MANUAL SAMPLE PREPARATION METHOD**

For a detailed description of how to operate the Abbott *m2000rt* instrument, refer to the Abbott *m2000rt* Operations Manual, Operating Instructions section. Laboratory personnel must be trained to operate the Abbott *m2000rt* instrument. The operator must have a thorough knowledge of the application run on the instrument and must follow good laboratory practices. Refer to the **WARNINGS AND PRECAUTIONS** section of the package insert before preparing samples.

**Reagent Preparation Area**

**Set Up**

1. Thaw amplification reagents at 15°C to 30°C or at 2°C to 8°C.
  - Once thawed, the amplification reagents can be stored at 2°C to 8°C for up to 24 hours until required for the amplification master mix procedure.
  - **For up to 24 reactions use:** 1 tube of positive control, 1 tube of negative control, 1 amplification reagent pack, 1 vial of IC, and 1 set of *mSample Preparation System<sub>DNA</sub>* reagents.
  - **For 25 to 48 reactions use:** 1 tube of positive control, 1 tube of negative control, 2 amplification reagent packs, 2 vials of IC, 2 bottles of *mLysis<sub>DNA</sub>* Buffer, and 1 bottle *mWash<sub>1DNA</sub>* Buffer, *mWash<sub>2DNA</sub>* Buffer, *mMicroparticle<sub>DNA</sub>* and *mElution<sub>DNA</sub>* Buffer.
  - **For 49 to 72 reactions use:** 1 tube of positive control, 1 tube of negative control, 3 amplification reagent packs, 3 vials of IC, 3 bottles of *mLysis<sub>DNA</sub>* Buffer, 2 bottles of *mWash<sub>1DNA</sub>* Buffer and *mWash<sub>2DNA</sub>* Buffer, and 1 bottle of *mMicroparticle<sub>DNA</sub>* and *mElution<sub>DNA</sub>* Buffer.
  - **For 73 to 96 reactions use:** 1 tube of positive control, 1 tube of negative control, 4 amplification reagent packs, 4 vials of IC, 4 bottles of *mLysis<sub>DNA</sub>* Buffer, 2 bottles of *mWash<sub>1DNA</sub>* Buffer and *mWash<sub>2DNA</sub>* Buffer, and 1 bottle of *mMicroparticle<sub>DNA</sub>* and *mElution<sub>DNA</sub>* Buffer.

**NOTE: Refer to step 3 for thawing assay controls and IC.**

**Sample Preparation Area**

**Set Up**

2. A maximum of 96 samples can be processed per run. A negative control and a positive control are included in each run, therefore allowing a maximum of 94 plasma specimens to be processed per run. Prepare the plasma specimens for processing by following these steps:
  - If frozen, thaw specimens at 15°C to 30°C or at 2°C to 8°C. Once thawed, specimens can be stored at 2°C to 8°C for up to 6 hours if not processed immediately.
  - Vortex each specimen 3 times for 2 to 3 seconds.
  - **Centrifuge specimens at 2000g for 5 minutes** before adding to the reaction vessels. Avoid touching the inside of the cap when opening tubes. Take care not to disturb contents of the tube while removing the tube from the centrifuge and that the bottom of the tube is not touched by the pipette tip.
3. Thaw assay controls and IC at 15°C to 30°C or at 2°C to 8°C; see **QUALITY CONTROL PROCEDURES** section of the package insert.
  - Once thawed, assay controls and IC can be stored at 2°C to 8°C for up to 24 hours before use.

- Vortex each assay control 3 times for 2 to 3 seconds before use. After vortexing, ensure that the contents of each vial are at the bottom by tapping the vials on the bench to bring liquid to the bottom of the vial. Ensure bubbles or foam are not generated; if present, remove with a sterile pipette tip, using a new tip for each vial.
4. Open the *mSample Preparation System*<sub>DNA</sub> reagent pack(s). If crystals are observed in any of the reagent bottles upon opening, allow the reagent to equilibrate at room temperature until the crystals disappear. Do not use the reagents until the crystals have dissolved. Add USP Grade 190 to 200 Proof Ethanol (95 to 100% Ethanol) to the *mLysis*<sub>DNA</sub>, *mWash 1*<sub>DNA</sub>, and *mWash 2*<sub>DNA</sub> bottles as indicated below. **Do not use ethanol that contains denaturants.**
    - Add 35 mL ethanol to each bottle of *mLysis*<sub>DNA</sub> being used.
    - Add 23 mL ethanol to each bottle of *mWash 1*<sub>DNA</sub> being used.
    - Add 70 mL ethanol to each bottle of *mWash 2*<sub>DNA</sub> being used.
  5. Vortex each IC vial 3 times for 2 to 3 seconds before use. Use a calibrated **PRECISION PIPETTE DEDICATED FOR INTERNAL CONTROL USE ONLY** to add 750 µL of IC to each bottle of *mLysis*<sub>DNA</sub> Buffer.
  6. Gently invert all the reagent bottles except *mMicroparticles*<sub>DNA</sub> 5 to 10 times to ensure a homogeneous solution prior to use.
  7. Turn on the temperature controlled dry heating blocks.
    - Set the 5 mL Reaction Vessel block to 50°C.
    - Set the 1.5 mL tubes block to 75°C.

**NOTE: Check the temperature of the heating blocks. Do not proceed until the heating blocks are at the correct temperature.**

**WARNING: To avoid personal injury, follow manufacturer's instructions for dry heating block. To avoid burns, turn off the power and allow the heating blocks to cool to 35°C or below before handling.**
  8. Label all necessary tubes.
    - One 5 mL Reaction Vessel per sample for the *mLysis*<sub>DNA</sub> and *mWash 1*<sub>DNA</sub> steps.
    - One 1.5 mL screw top microfuge tube per sample for the *mWash 2*<sub>DNA</sub> and *mElution*<sub>DNA</sub> Buffer steps.
    - One 1.5 mL screw top microfuge tube per sample or a 96-well polypropylene plate for the eluate.

#### *mLysis*<sub>DNA</sub>

9. Resuspend *mMicroparticles*<sub>DNA</sub> by vortexing or vigorously shaking until particles are in suspension and settled particles are no longer seen on the bottom of the bottle.
10. Place the 5 mL Reaction Vessels in a non-magnetic rack at room temperature. After the particles are resuspended, use a precision pipettor and a sterile 200 µL aerosol barrier pipette tip to add 40 µL of *mMicroparticles*<sub>DNA</sub> to each reaction vessel. A calibrated repeat pipettor may be used.
11. Using a precision pipettor and a sterile 1000 µL aerosol barrier pipette tip, add 2.4 mL of *mLysis*<sub>DNA</sub> to each reaction vessel in the non-magnetic rack.
12. Using a precision pipettor and a fresh, sterile 200 µL or 1000 µL aerosol barrier pipette tip for each sample, **add 0.2 mL of the controls and specimens to the reaction vessels.** Mix the sample-*mLysis*<sub>DNA</sub> mixture by aspiration and dispense until a uniform suspension is obtained.
 

**NOTE: Aspirate and dispense liquid slowly to avoid foaming.**
13. Place the reaction vessels in the 50°C heating block, start the timer and incubate for 20 minutes.
14. Remove the reaction vessels from the 50°C heating block. Using a fresh, sterile 1000 µL aerosol barrier pipette tip for each sample, mix the sample-*mLysis*<sub>DNA</sub> mixture by aspiration and dispense until a uniform suspension is obtained.
15. Place the reaction vessels back in the 50°C heating block, start the timer and incubate for 10 minutes.
16. After the incubation is complete, place the reaction vessels in a magnetic capture stand for 2 minutes to allow the particles to be captured on the side of the reaction vessels.
17. With the reaction vessels in the magnetic capture stand, use a fresh, sterile 1000 µL aerosol barrier pipette tip or disposable transfer pipette for each sample to carefully remove the lysate from each reaction vessel and discard the fluid into a liquid waste container. Remove the fluid as completely as possible. **DO NOT disturb or aspirate the captured magnetic particles.**
18. Remove the reaction vessels from the magnetic rack and transfer to a non-magnetic rack.

#### *mWash 1*<sub>DNA</sub>

19. Using a precision pipettor and a fresh, sterile 1000 µL aerosol barrier pipette tip for each sample, add 700 µL of *mWash 1*<sub>DNA</sub> to the samples and resuspend the magnetic particles in the wash fluid by gentle aspiration and dispense with the pipette tip. Wash the particles from the side of the reaction vessel, if necessary.
 

**NOTE: When adding wash buffers, dispense liquid slowly to avoid splashing.**
20. Place the reaction vessels in the 50°C heating block, start the timer and incubate for 5 minutes.
21. Remove the reaction vessels from the 50°C heating block. Using a fresh, sterile 1000 µL aerosol barrier pipette tip for each sample, mix the sample-*mWash 1*<sub>DNA</sub> mixture by aspiration and dispense until a uniform suspension is obtained.
22. Place the reaction vessels in a magnetic capture stand for 1 minute to allow the particles to be captured on the side of the tubes.
23. With the reaction vessels in the magnetic capture stand, use a fresh, sterile 1000 µL aerosol barrier pipette tip or disposable transfer pipette for each sample to carefully remove the *mWash 1*<sub>DNA</sub> from each reaction vessel and discard the fluid into a liquid waste container. Remove the fluid as completely as possible. **DO NOT disturb or aspirate the captured magnetic particles.**
24. Remove the reaction vessels from the magnetic rack and transfer to a non-magnetic rack.

#### *mWash 2*<sub>DNA</sub> First Wash

25. Using a precision pipettor and a fresh, sterile 1000 µL aerosol barrier pipette tip for each sample, add 800 µL of *mWash 2*<sub>DNA</sub> to the samples and resuspend the magnetic particles in the wash fluid by gentle aspiration and dispense with the pipette tip. Wash the particles from the side of the reaction vessel, if necessary.
 

**NOTE: When adding wash buffers, dispense liquid slowly to avoid splashing.**
26. Transfer the wash fluid and particles to a labeled 1.5 mL screw top microfuge tube.
27. Place the tubes in a magnetic capture stand for 1 minute to allow the particles to be captured on the side of the tubes.
28. With the tubes in the magnetic capture stand, use a fresh, sterile 1000 µL aerosol barrier pipette tip for each sample to carefully remove the *mWash 2*<sub>DNA</sub> from each tube and discard fluid into a liquid waste container. Remove the fluid as completely as possible. **DO NOT disturb or aspirate the captured magnetic particles.**
29. Remove the tubes from the magnetic rack and transfer to a non-magnetic rack.

#### *mWash 2*<sub>DNA</sub> Second Wash

30. Using a precision pipettor and a fresh, sterile 1000 µL aerosol barrier pipette tip for each sample, add 800 µL of *mWash 2*<sub>DNA</sub> to the samples and resuspend the magnetic particles in the wash fluid by gentle aspiration and dispense with the pipette tip. Wash the particles from the side of the tube, if necessary.
 

**NOTE: When adding wash buffers, dispense liquid slowly to avoid splashing.**
31. Place the tubes in a magnetic capture stand for 1 minute to allow the particles to be captured on the side of the tubes.
32. With the tubes in the magnetic capture stand, use a fresh, sterile 1000 µL aerosol barrier pipette tip for each sample to carefully remove the *mWash 2*<sub>DNA</sub> from each tube and discard fluid into a liquid waste container. Remove the fluid as completely as possible. **DO NOT disturb or aspirate the captured magnetic particles.**
33. Remove the tubes from the magnetic rack and transfer to the 75°C heating block and incubate for 10 minutes to allow for the evaporation of the ethanol.

#### *mElution*<sub>DNA</sub> Buffer

34. Remove the tubes from the 75°C heating block. Using a precision pipettor and a fresh, sterile 200 µL aerosol barrier pipette tip for each sample, add 88 µL of *mElution*<sub>DNA</sub> Buffer to the samples and resuspend the magnetic particles in the fluid by aspiration and dispense with the pipette tip. Wash the particles from the side of the tube, if necessary.
35. Place the tubes in the 75°C heating block, start the timer and incubate for 5 minutes.
36. Remove the tubes from the 75°C heating block. Using a fresh, sterile 200 µL aerosol barrier pipette tip for each sample, mix the sample-*mElution*<sub>DNA</sub> Buffer mixture by aspiration and dispense until a uniform suspension is obtained.

37. Place the tubes back in the 75°C heating block, start the timer and incubate for 5 minutes.
38. Remove the tubes from the 75°C heating block and place in a magnetic capture stand for 1 minute to allow the particles to be captured on the side of the tubes.
39. With the tubes in the magnetic capture stand, use a fresh, sterile 200 µL aerosol barrier pipette tip for each sample to carefully remove the eluted sample from the tubes. **DO NOT disturb or aspirate the captured microparticles.** The eluted sample(s) can be placed into a fresh, labeled 1.5 mL screw top microfuge tube or a 96-well polypropylene plate.

**NOTE: The assembly of the amplification master mix and sample eluates into the Abbott 96-Well Optical Reaction Plate (step 43) must be initiated within 1 hour after completion of sample preparation.**

#### Amplification Area

40. Switch on and initialize the Abbott *m2000rt* instrument.
 

**NOTE: The Abbott *m2000rt* requires 15 minutes to warm-up.**
41. Create the Abbott *m2000rt* test order. Refer to the Operating Instructions section of the Abbott *m2000rt* Operations Manual. From the Protocol screen, select the appropriate application file.
 

**NOTE: Remove gloves before returning to the Reagent Preparation Area.**

#### Reagent Preparation Area

42. Place a new Abbott 96-Well Optical Reaction Plate in a StrataCooler 96 Benchtop Cooler or Eppendorf PCR Cooler stored as indicated in the StrataCooler 96 Benchtop Cooler instruction manual or Eppendorf PCR Cooler Instructions for Use, respectively. **DO NOT touch the surface or bottom of the plate. IF APPLICABLE:** For batch sizes between 49 and 95 (samples plus controls), prior to preparation of the amplification master mix, fill the wells that will be empty with distilled or deionized water using the following instructions:
  - Using a calibrated pipette, add 100 µL of distilled or deionized water to empty wells based on batch size:

Batch/Sample Size	Empty Well(s) to fill
49 to 56	Full columns 8 through 12; partial column 7
57 to 64	Full columns 9 through 12; partial column 8
65 to 72	Full columns 10 through 12; partial column 9
73 to 80	Full columns 11 and 12; partial column 10
81 to 88	Full columns 12; partial column 11
89 to 95	Partial column 12

**NOTE: The order of adding PCR reactions (master mix and sample eluate) to the Abbott 96-Well Optical Reaction Plate starts with column 1 (from top to bottom) and moves to each consecutive column from left to right. Be sure to read the column numbers on the top of the Abbott 96-Well Optical Reaction Plate to ensure that correct well(s) are filled with water.**

43. Prepare the amplification master mix.
 

**NOTE: All reagent preparation must take place in the dedicated Reagent Preparation Area. Refer to the Contamination Precautions section of the package insert before preparing reagents. Change gloves before handling the amplification reagents.**

  - Each amplification reagent pack supports up to 24 reactions.
  - Prior to opening the amplification reagents, ensure that the contents of the amplification reagent pack are at the bottom by tapping the amplification reagent pack in an upright position on the bench to bring the liquid to the bottom of the vials.
  - Identify the amplification reagents as follows:
    - Activation Reagent (Reagent 1): clear bottle, teal cap
    - Oligonucleotide Reagent (Reagent 2): black bottle, white cap
    - Thermostable rTth DNA Polymerase Enzyme (Reagent 3): clear bottle, white cap
  - Remove and discard caps.
  - Prepare the master mix by using a **PRECISION PIPETTE DEDICATED FOR REAGENT USE ONLY** to add 271 µL of the HIV-1 Activation Reagent (Reagent 1) and 949 µL of the HIV-1 Oligonucleotide Reagent (Reagent 2) to the Thermostable rTth DNA Polymerase Enzyme bottle (Reagent 3). Mix the Enzyme vial containing the reaction mixture (master mix) by gently pipetting up and down 5 to 7 times. Avoid creating foam.

- If performing 25 to 48 reactions, prepare the amplification master mix from 2 amplification reagent packs.
- If performing 49 to 72 reactions, prepare the amplification master mix from 3 amplification reagent packs.
- If performing 73 to 96 reactions, prepare the amplification master mix from 4 amplification reagent packs.

**NOTE: The Abbott *m2000rt* protocol (step 50) must be started within 50 minutes of the addition of the activation reagent into the first enzyme bottle (step 43).**

44. Pipette the contents of the master mix from the enzyme bottle(s) into a single-use RNase/DNase-free tube or container. Mix by gently pipetting up and down 5 to 7 times. Avoid creating foam.
45. Using a **PRECISION PIPETTE DEDICATED FOR REAGENT USE ONLY**, dispense 50 µL aliquots of the amplification master mix into each well of the Abbott 96-Well Optical Reaction Plate that will be used to run the samples and controls. A calibrated repeat pipettor may be used.
  - Add the master mix in an order starting with column 1 (from top to bottom), and moving to each consecutive column from left to right.
  - Visually verify that 50 µL has been dispensed into each well.
  - Transfer the Abbott 96-Well Optical Reaction Plate on the StrataCooler 96 Benchtop Cooler or Eppendorf PCR Cooler to the Sample Preparation Area.

#### Sample Preparation Area

46. Using a precision pipettor and a fresh, sterile 200 µL aerosol barrier pipette tip for each sample, transfer 50 µL of each eluted sample to the Abbott 96-Well Optical Reaction Plate on the StrataCooler 96 Benchtop Cooler or Eppendorf PCR Cooler. During the transfer of each sample, mix the reaction by pipetting up and down 3 to 5 times. Visually verify that a total of 100 µL has been dispensed into each well.
47. Seal the Abbott 96-Well Optical Reaction Plate according to the instructions in the Abbott *m2000rt* Operations Manual, Operating Instructions section.
48. Remove the Abbott 96-Well Optical Reaction Plate from the StrataCooler 96 Benchtop Cooler or Eppendorf PCR Cooler and place in the Abbott Splash-Free Support Base. **Centrifuge the Abbott 96-Well Optical Reaction Plate in the Abbott Splash-Free Support Base at 5000g for 5 minutes.**
49. Transfer the Abbott 96-Well Optical Reaction Plate in the Abbott Splash-Free Support Base to the Amplification Area.
 

**NOTE: Do not transfer the StrataCooler 96 Benchtop Cooler or Eppendorf PCR Cooler to the Amplification Area.**

#### Amplification Area

50. Place the Abbott 96-Well Optical Reaction Plate in the Abbott *m2000rt* instrument, select the test order created (step 41), and initiate the Abbott RealTime HIV-1 Qualitative assay protocol, as described in the Abbott *m2000rt* Operations Manual, Operating Instructions section. At the completion of the run, assay results are reported on the Abbott *m2000rt*. Refer to the **RESULTS** section of the package insert for further details.

### ASSAY PROTOCOL IV: DBS SPECIMENS USING MANUAL SAMPLE PREPARATION METHOD

For a detailed description of how to operate the Abbott *m2000rt* instrument, refer to the Abbott *m2000rt* Operations Manual, Operating Instructions section. Laboratory personnel must be trained to operate the Abbott *m2000rt* instrument. The operator must have a thorough knowledge of the application run on the instrument and must follow good laboratory practices.

Refer to the **WARNINGS AND PRECAUTIONS** section of the package insert before preparing samples.

#### Reagent Preparation Area

##### Set Up

1. Thaw amplification reagents at 15°C to 30°C or at 2°C to 8°C.
  - Once thawed, the amplification reagents can be stored at 2°C to 8°C for up to 24 hours until required for the amplification master mix procedure.
  - **For up to 24 reactions use:** 1 tube of positive control, 1 tube of negative control, 1 amplification reagent pack, 1 vial of IC, and 1 set of *mSample Preparation System<sub>DNA</sub>* reagents.
  - **For 25 to 48 reactions use:** 1 tube of positive control, 1 tube of negative control, 2 amplification reagent packs, 2 vials of IC, 2 bottles of *mLysis<sub>DNA</sub>* Buffer, and 1 bottle *mWash 1<sub>DNA</sub>* Buffer, *mWash 2<sub>DNA</sub>* Buffer, *mMicroparticle<sub>DNA</sub>* and *mElution<sub>DNA</sub>* Buffer.

- **For 49 to 72 reactions use:** 1 tube of positive control, 1 tube of negative control, 3 amplification reagent packs, 3 vials of IC, 3 bottles of *mLysis<sub>DNA</sub>* Buffer, 2 bottles of *mWash 1<sub>DNA</sub>* Buffer and *mWash 2<sub>DNA</sub>* Buffer, and 1 bottle of *mMicroparticle<sub>DNA</sub>* and *mElution<sub>DNA</sub>* Buffer.
- **For 73 to 96 reactions use:** 1 tube of positive control, 1 tube of negative control, 4 amplification reagent packs, 4 vials of IC, 4 bottles of *mLysis<sub>DNA</sub>* Buffer, 2 bottles of *mWash 1<sub>DNA</sub>* Buffer and *mWash 2<sub>DNA</sub>* Buffer, and 1 bottle of *mMicroparticle<sub>DNA</sub>* and *mElution<sub>DNA</sub>* Buffer.

**NOTE: Refer to step 3 for thawing assay controls and IC.**

### Sample Preparation Area

#### Set Up

2. A maximum of 96 samples can be processed per run. A negative control and a positive control are included in each run, therefore allowing a maximum of 94 DBS specimens to be processed per run. Prepare the DBS specimens for processing by following these steps:
  - Prepare tubes with 1.7 mL Abbott *mLysis<sub>DNA</sub>* Buffer (from the Bulk *mLysis<sub>DNA</sub>* Buffer).
  - Cut out 2 entire DBS for each specimen from a Whatman 903 filter paper card (or equivalent). Each DBS should be approximately one-half-inch (12 millimeters) in diameter.
  - Place DBS in the tube containing the Abbott *mLysis<sub>DNA</sub>* Buffer. Ensure that DBS are fully submerged in the *mLysis<sub>DNA</sub>* Buffer.
  - Incubate at room temperature for 20 minutes with intermittent gentle mixing.

**NOTE: The above steps do not apply to controls. Controls should not be spotted on filter paper cards and should be processed directly as liquid samples.**

**NOTE: Avoid direct contact of the cutting surface with DBS specimens. Clean the instrument used to cut DBS between specimens if necessary according to good laboratory practices.**

3. Thaw assay controls and IC at 15°C to 30°C or at 2°C to 8°C; see **QUALITY CONTROL PROCEDURES** section of the package insert.
  - Once thawed, assay controls and IC can be stored at 2°C to 8°C for up to 24 hours before use.
  - Vortex each assay control 3 times for 2 to 3 seconds before use. After vortexing ensure that the contents of each vial are at the bottom by tapping the vials on the bench to bring liquid to the bottom of the vial. Ensure bubbles or foam are not generated; if present, remove with a sterile pipette tip, using a new tip for each vial.
4. Open the *mSample Preparation System<sub>DNA</sub>* reagent pack(s). If crystals are observed in any of the reagent bottles upon opening, allow the reagent to equilibrate at room temperature until the crystals disappear. Do not use the reagents until the crystals have dissolved. Add USP Grade 190 to 200 Proof Ethanol (95 to 100% Ethanol) to the *mLysis<sub>DNA</sub>*, *mWash 1<sub>DNA</sub>*, and *mWash 2<sub>DNA</sub>* bottles as indicated below. **Do not use ethanol that contains denaturants.**
  - Add 35 mL ethanol to each bottle of *mLysis<sub>DNA</sub>* being used.
  - Add 23 mL ethanol to each bottle of *mWash 1<sub>DNA</sub>* being used.
  - Add 70 mL ethanol to each bottle of *mWash 2<sub>DNA</sub>* being used.
5. Vortex each IC vial 3 times for 2 to 3 seconds before use. Use a calibrated **PRECISION PIPETTE DEDICATED FOR INTERNAL CONTROL USE ONLY** to add 750 µL of IC to each bottle of *mLysis<sub>DNA</sub>* Buffer.
6. Gently invert all the reagent bottles except *mMicroparticles<sub>DNA</sub>* 5 to 10 times to ensure a homogeneous solution prior to use.
7. Turn on the temperature controlled dry heating blocks.
  - Set the 5 mL Reaction Vessel block to 50°C.
  - Set the 1.5 mL tubes block to 75°C.

**NOTE: Check the temperature of the heating blocks. Do not proceed until the heating blocks are at the correct temperature.**

**WARNING: To avoid personal injury, follow manufacturer's instructions for dry heating block. To avoid burns, turn off the power and allow the heating blocks to cool to 35°C or below before handling.**
8. Label all necessary tubes.
  - One 5 mL Reaction Vessel per sample for the *mLysis<sub>DNA</sub>* and *mWash 1<sub>DNA</sub>* steps.
  - One 1.5 mL screw top microfuge tube per sample for the *mWash 2<sub>DNA</sub>* and *mElution<sub>DNA</sub>* Buffer steps.
  - One 1.5 mL screw top microfuge tube per sample or a 96 well polypropylene plate for the eluate.

#### *mLysis<sub>DNA</sub>*

9. Resuspend *mMicroparticles<sub>DNA</sub>* by vortexing or vigorously shaking until particles are in suspension and settled particles are no longer seen on the bottom of the bottle.
10. Place the 5 mL Reaction Vessels in a non-magnetic rack at room temperature. After the particles are resuspended, use a precision pipettor and a sterile 200 µL aerosol barrier pipette tip to add 40 µL of *mMicroparticles<sub>DNA</sub>* to each reaction vessel. A calibrated repeat pipettor may be used.
11. Using a precision pipettor and a sterile 1000 µL aerosol barrier pipette tip, add 2.4 mL of *mLysis<sub>DNA</sub>* to each reaction vessel in the non-magnetic rack.
12. Using a precision pipettor and a fresh, sterile 1000 µL aerosol barrier pipette tip for each sample, **add 1.0 mL of the controls and specimens to the reaction vessels. DO NOT transfer the filter paper.** Mix the sample-*mLysis<sub>DNA</sub>* mixture by aspiration and dispense until a uniform suspension is obtained.
 

**NOTE: Aspirate and dispense liquid slowly to avoid foaming.**
13. Place the reaction vessels in the 50°C heating block, start the timer and incubate for 20 minutes.
14. Remove the reaction vessels from the 50°C heating block. Using a fresh, sterile 1000 µL aerosol barrier pipette tip for each sample, mix the sample-*mLysis<sub>DNA</sub>* mixture by aspiration and dispense until a uniform suspension is obtained.
15. Place the reaction vessels back in the 50°C heating block, start the timer and incubate for 10 minutes.
16. After the incubation is complete, place the reaction vessels in a magnetic capture stand for 2 minutes to allow the particles to be captured on the side of the reaction vessels.
17. With the reaction vessels in the magnetic capture stand, use a fresh, sterile 1000 µL aerosol barrier pipette tip or disposable transfer pipette for each sample to carefully remove the lysate from each reaction vessel and discard the fluid into a liquid waste container. Remove the fluid as completely as possible. **DO NOT disturb or aspirate the captured magnetic particles.**
18. Remove the reaction vessels from the magnetic rack and transfer to a non-magnetic rack.

#### *mWash 1<sub>DNA</sub>*

19. Using a precision pipettor and a fresh, sterile 1000 µL aerosol barrier pipette tip for each sample, add 700 µL of *mWash 1<sub>DNA</sub>* to the samples and resuspend the magnetic particles in the wash fluid by gentle aspiration and dispense with the pipette tip. Wash the particles from the side of the reaction vessel, if necessary.
 

**NOTE: When adding wash buffers, dispense liquid slowly to avoid splashing.**
20. Place the reaction vessels in the 50°C heating block, start the timer and incubate for 5 minutes.
21. Remove the reaction vessels from the 50°C heating block. Using a fresh, sterile 1000 µL aerosol barrier pipette tip for each sample, mix the sample-*mWash 1<sub>DNA</sub>* mixture by aspiration and dispense until a uniform suspension is obtained.
22. Place the reaction vessels in a magnetic capture stand for 1 minute to allow the particles to be captured on the side of the tubes.
23. With the reaction vessels in the magnetic capture stand, use a fresh, sterile 1000 µL aerosol barrier pipette tip or disposable transfer pipette for each sample to carefully remove the *mWash 1<sub>DNA</sub>* from each reaction vessel and discard the fluid into a liquid waste container. Remove the fluid as completely as possible. **DO NOT disturb or aspirate the captured magnetic particles.**
24. Remove the reaction vessels from the magnetic rack and transfer to a non-magnetic rack.

#### *mWash 2<sub>DNA</sub>* First Wash

25. Using a precision pipettor and a fresh, sterile 1000 µL aerosol barrier pipette tip for each sample, add 800 µL of *mWash 2<sub>DNA</sub>* to the samples and resuspend the magnetic particles in the wash fluid by gentle aspiration and dispense with the pipette tip. Wash the particles from the side of the reaction vessel, if necessary.
 

**NOTE: When adding wash buffers, dispense liquid slowly to avoid splashing.**
26. Transfer the wash fluid and particles to a labeled 1.5 mL screw top microfuge tube.
27. Place the tubes in a magnetic capture stand for 1 minute to allow the particles to be captured on the side of the tubes.

28. With the tubes in the magnetic capture stand, use a fresh, sterile 1000  $\mu$ L aerosol barrier pipette tip for each sample to carefully remove the *mWash 2<sub>DNA</sub>* from each tube and discard fluid into a liquid waste container. Remove the fluid as completely as possible. **DO NOT disturb or aspirate the captured magnetic particles.**
29. Remove the tubes from the magnetic rack and transfer to a non-magnetic rack.

#### ***mWash 2<sub>DNA</sub>* Second Wash**

30. Using a precision pipettor and a fresh, sterile 1000  $\mu$ L aerosol barrier pipette tip for each sample, add 800  $\mu$ L of *mWash 2<sub>DNA</sub>* to the samples and resuspend the magnetic particles in the wash fluid by gentle aspiration and dispense with the pipette tip. Wash the particles from the side of the tube, if necessary.

**NOTE: When adding wash buffers, dispense liquid slowly to avoid splashing.**

31. Place the tubes in a magnetic capture stand for 1 minute to allow the particles to be captured on the side of the tubes.
32. With the tubes in the magnetic capture stand, use a fresh, sterile 1000  $\mu$ L aerosol barrier pipette tip for each sample to carefully remove the *mWash 2<sub>DNA</sub>* from each tube and discard fluid into a liquid waste container. Remove the fluid as completely as possible. **DO NOT disturb or aspirate the captured magnetic particles.**
33. Remove the tubes from the magnetic rack and transfer to the 75°C heating block and incubate for 10 minutes to allow for the evaporation of the ethanol.

#### ***mElution<sub>DNA</sub>* Buffer**

34. Remove the tubes from the 75°C heating block. Using a precision pipettor and a fresh, sterile 200  $\mu$ L aerosol barrier pipette tip for each sample, add 88  $\mu$ L of *mElution<sub>DNA</sub>* Buffer to the samples and resuspend the magnetic particles in the fluid by aspiration and dispense with the pipette tip. Wash the particles from the side of the tube, if necessary.
35. Place the tubes in the 75°C heating block, start the timer and incubate for 5 minutes.
36. Remove the tubes from the 75°C heating block. Using a fresh, sterile 200  $\mu$ L aerosol barrier pipette tip for each sample, mix the sample-*mElution<sub>DNA</sub>* Buffer mixture by aspiration and dispense until a uniform suspension is obtained.
37. Place the tubes back in the 75°C heating block, start the timer and incubate for 5 minutes.
38. Remove the tubes from the 75°C heating block and place in a magnetic capture stand for 1 minute to allow the particles to be captured on the side of the tubes.
39. With the tubes in the magnetic capture stand, use a fresh, sterile 200  $\mu$ L aerosol barrier pipette tip for each sample to carefully remove the eluted sample from the tubes. **DO NOT disturb or aspirate the captured microparticles.** The eluted sample(s) can be placed into a fresh, labeled 1.5 mL screw top microfuge tube or a 96-well polypropylene plate.

**NOTE: The assembly of the amplification master mix and sample eluates into the Abbott 96-Well Optical Reaction Plate (step 43) must be initiated within 1 hour after completion of sample preparation.**

#### **Amplification Area**

40. Switch on and initialize the Abbott *m2000rt* instrument.
- NOTE: The Abbott *m2000rt* requires 15 minutes to warm-up.**
41. Create the Abbott *m2000rt* test order. Refer to the Operating Instructions section of the Abbott *m2000rt* Operations Manual. From the Protocol screen, select the appropriate application file.

**NOTE: Remove gloves before returning to the Reagent Preparation Area.**

#### **Reagent Preparation Area**

42. Place a new Abbott 96-Well Optical Reaction Plate in a StrataCooler 96 Benchtop Cooler or Eppendorf PCR Cooler stored as indicated in the StrataCooler 96 Benchtop Cooler instruction manual or Eppendorf PCR Cooler Instructions for Use, respectively. **DO NOT touch the surface or bottom of the plate.** **IF APPLICABLE:** For batch sizes between 49 and 95 (samples plus controls), prior to preparation of the amplification master mix, fill the wells that will be empty with distilled or deionized water using the following instructions:
  - Using a calibrated pipette, add 100  $\mu$ L of distilled or deionized water to empty wells based on batch size:

Batch/Sample Size	Empty Well(s) to fill
49 to 56	Full columns 8 through 12; partial column 7
57 to 64	Full columns 9 through 12; partial column 8
65 to 72	Full columns 10 through 12; partial column 9
73 to 80	Full columns 11 and 12; partial column 10
81 to 88	Full columns 12; partial column 11
89 to 95	Partial column 12

**NOTE: The order of adding PCR reactions (master mix and sample eluate) to the Abbott 96-Well Optical Reaction Plate starts with column 1 (from top to bottom) and moves to each consecutive column from left to right. Be sure to read the column numbers on the top of the Abbott 96-Well Optical Reaction Plate to ensure that correct well(s) are filled with water.**

43. Prepare the amplification master mix.

**NOTE: All reagent preparation must take place in the dedicated Reagent Preparation Area. Refer to the Contamination Precautions section of the package insert before preparing reagents. Change gloves before handling the amplification reagents.**

- Each amplification reagent pack supports up to 24 reactions.
- Prior to opening the amplification reagents, ensure that the contents of the amplification reagent pack are at the bottom by tapping the amplification reagent pack in an upright position on the bench to bring the liquid to the bottom of the vials.
- Identify the amplification reagents as follows:
  - Activation Reagent (Reagent 1): clear bottle, teal cap
  - Oligonucleotide Reagent (Reagent 2): black bottle, white cap
  - Thermostable rTth DNA Polymerase Enzyme (Reagent 3): clear bottle, white cap
- Remove and discard caps.
- Prepare the master mix by using a **PRECISION PIPETTE DEDICATED FOR REAGENT USE ONLY** to add 271  $\mu$ L of the HIV-1 Activation Reagent (Reagent 1) and 949  $\mu$ L of the HIV-1 Oligonucleotide Reagent (Reagent 2) to the Thermostable rTth DNA Polymerase Enzyme bottle (Reagent 3). Mix the enzyme vial containing the reaction mixture (master mix) by gently pipetting up and down 5 to 7 times. Avoid creating foam.
- If performing 25 to 48 reactions, prepare the amplification master mix from 2 amplification reagent packs.
- If performing 49 to 72 reactions, prepare the amplification master mix from 3 amplification reagent packs.
- If performing 73 to 96 reactions, prepare the amplification master mix from 4 amplification reagent packs.

**NOTE: The Abbott *m2000rt* protocol (step 50) must be started within 50 minutes of the addition of the activation reagent into the first enzyme bottle (step 43).**

44. Pipette the contents of the master mix from the enzyme bottle(s) into a single-use RNase/DNase-free tube or container. Mix by gently pipetting up and down 5 to 7 times. Avoid creating foam.
45. Using a **PRECISION PIPETTE DEDICATED FOR REAGENT USE ONLY**, dispense 50  $\mu$ L aliquots of the amplification master mix into each well of the Abbott 96-Well Optical Reaction Plate that will be used to run the samples and controls. A calibrated repeat pipettor may be used.
  - Add the master mix in an order starting with column 1 (from top to bottom), and moving to each consecutive column from left to right.
  - Visually verify that 50  $\mu$ L has been dispensed into each well.
  - Transfer the Abbott 96-Well Optical Reaction Plate on the StrataCooler 96 Benchtop Cooler or Eppendorf PCR Cooler to the Sample Preparation Area.

#### **Sample Preparation Area**

46. Using a precision pipettor and a fresh, sterile 200  $\mu$ L aerosol barrier pipette tip for each sample, transfer 50  $\mu$ L of each eluted sample to the Abbott 96-Well Optical Reaction Plate on the StrataCooler 96 Benchtop Cooler or Eppendorf PCR Cooler. During the transfer of each sample, mix the reaction by pipetting up and down 3 to 5 times. Visually verify that a total of 100  $\mu$ L has been dispensed into each well.
47. Seal the Abbott 96-Well Optical Reaction Plate according to the instructions in the Abbott *m2000rt* Operations Manual, Operating Instructions section.

48. Remove the Abbott 96-Well Optical Reaction Plate from the StrataCooler 96 Benchtop Cooler or Eppendorf PCR Cooler and place in the Abbott Splash-Free Support Base. **Centrifuge the Abbott 96-Well Optical Reaction Plate in the Abbott Splash-Free Support Base at 5000g for 5 minutes.**
49. Transfer the Abbott 96-Well Optical Reaction Plate in the Abbott Splash-Free Support Base to the Amplification Area.  
**NOTE: Do not transfer the StrataCooler 96 Benchtop Cooler or Eppendorf PCR Cooler to the Amplification Area.**

#### Amplification Area

50. Place the Abbott 96-Well Optical Reaction Plate in the Abbott *m2000rt* instrument, select the test order created (step 41), and initiate the Abbott RealTime HIV-1 Qualitative assay protocol, as described in the Abbott *m2000rt* Operations Manual, Operating Instructions section. At the completion of the run, assay results are reported on the Abbott *m2000rt*. Refer to the **RESULTS** section of the package insert for further details.

#### POST PROCESSING PROCEDURES

1. At the end of each run, clear and clean all work areas:
  - For Abbott *m2000sp* Automated Sample Preparation System users (Protocols I and II), clean the Abbott *m2000sp* worktable as stated in the Abbott *m2000sp* Operations Manual.
  - For Abbott Manual Sample Preparation Method users (Protocols III and IV), clean sample racks, temperature blocks, and magnetic racks by soaking in a 0.5% sodium hypochlorite solution for approximately 10 minutes and then rinsing completely with water and thoroughly air drying. Decontaminate and wipe work area according to laboratory guidelines. Clean the StrataCooler 96 Benchtop Cooler or Eppendorf PCR Cooler as described in the StrataCooler 96 Benchtop Cooler instruction manual or Eppendorf PCR Cooler Instructions for Use and return to the Reagent Preparation Area.
2. Clean the Abbott *m2000rt* and the Abbott Splash-Free Support Base according to the Abbott *m2000rt* Operations Manual.
3. Decontaminate and dispose of all specimens, controls, reagents, and other potentially contaminated materials in accordance with local, state, and federal regulations.
4. Abbott *mSample* Preparation System *DNA* reagents are single use only. The remaining reagents and liquid waste must be discarded in accordance with local, state, and federal regulations.

**WARNING: Do not mix any oxidizing agents, such as sodium hypochlorite, with the *mLysis<sub>DNA</sub>*, *mMicroparticles<sub>DNA</sub>*, and *mWash 1<sub>DNA</sub>* in the *mSample* Preparation System *DNA* reagents. Do not mix any oxidizing agents, such as sodium hypochlorite, with the liquid waste. Toxic gases may be generated from these mixtures. Pressure may build up in the closed container of the mixtures. It is the responsibility of each facility to characterize its waste and ensure that it is handled and disposed of in accordance with local, state and federal regulations.**

5. Remove and discard all disposables and solid waste in accordance with local, state, and federal regulations.
6. Place the Abbott 96-Well Optical Reaction Plate in a sealable plastic bag and dispose of according to the Abbott *m2000rt* Operations Manual along with the gloves used to handle the plate.

#### QUALITY CONTROL PROCEDURES

##### Abbott *m2000rt* Optical Calibration

Refer to the Calibration Procedures section in the Abbott *m2000rt* Operations Manual for a detailed description of how to perform an Abbott *m2000rt* Optical Calibration. Optical calibration of the Abbott *m2000rt* instrument is required for the accurate measurement and discrimination of dye fluorescence during the Abbott RealTime HIV-1 Qualitative assay. The following Abbott *m2000rt* Optical Calibration Plates are used to calibrate the Abbott *m2000rt* instrument for the Abbott RealTime HIV-1 Qualitative assay:

- FAM™ Plate (Carboxyfluorescein)
- ROX™ Plate (Carboxy-X-rhodamine)
- VIC® Plate (Proprietary dye)

##### Detection of Inhibition

A defined, consistent quantity of IC is introduced into each specimen and control at the beginning of sample preparation and detected on the Abbott *m2000rt* instrument to demonstrate proper specimen processing and assay validity. The IC is comprised of an RNA sequence unrelated to the HIV-1 target sequence. A flag or an error code is displayed when IC cycle number (CN) value of a specimen or control exceeds the validity range. Refer to the Abbott *m2000rt* Operations Manual for an explanation of the corrective actions for errors.

#### Negative and Positive Controls

A negative control and a positive control are required for every run to verify that the sample processing, the amplification, and the detection steps are performed correctly. The Abbott RealTime HIV-1 Qualitative Controls need to be processed together with the specimens prior to running the amplification portion of the assay.

A flag is displayed when a control result is out of range. If negative control or positive control is out of range, all of the specimens and controls from that run must be reprocessed, beginning with sample preparation. HIV-1 must not be detected in the negative control. HIV-1 detected in the negative control is indicative of contamination from other specimens or amplified product introduced during sample preparation or during preparation of the Abbott 96-Well Optical Reaction Plate. To remove contamination, clean the Abbott *m2000sp* and Abbott *m2000rt* and all work areas according to the Abbott *m2000sp* and Abbott *m2000rt* Operations Manuals and the instructions in the **POST PROCESSING PROCEDURES** section of this package insert. Following cleaning, repeat sample processing for controls and specimens. If negative controls are persistently reactive, contact your Abbott representative.

IC results for the negative control and positive control that are outside the validity limit indicate the occurrence of inhibition during sample preparation or during the amplification reaction steps of the assay. Repeat the processing for controls and specimens.

#### Monitoring the Laboratory for the Presence of Contamination

It is recommended that the following procedure be done at least once a month to monitor laboratory surfaces and equipment for contamination. It is very important to test all areas that may have been exposed to processed specimens and controls and/or amplification product. These include routinely handled objects such as pipettes, the Abbott *m2000sp* and Abbott *m2000rt* function keys, bench surfaces and other equipment that may be present in the work areas.

1. Add 1.5 mL RNase/DNase-free water to a new master mix tube.
2. Saturate the cotton tip of an applicator (Puritan or equivalent) in the RNase/DNase-free water from the master mix tube.
3. Using the saturated cotton tip of the applicator, wipe the area to be monitored using a sweeping motion. Place the applicator into the master mix tube.
4. Swirl the cotton tip in RNase-free water 10 times, then press the applicator along the inside of the tube so that the liquid drains back into the solution at the bottom of the master mix tube. Discard the applicator.
5. Cap the master mix tube and vortex.
6. Remove the caps from the master mix tubes and test the samples according to the appropriate assay protocol instructions in this package insert.
7. Contamination is indicated by the detection of HIV-1 in the swab samples.
  - If contamination is present, the instrument will report "HIV-1 Detected."
  - If there is no contamination, the instrument will report "Not Detected."
8. If contamination is detected on the equipment, follow the cleaning and decontaminating guidelines given in that equipment's operations manual and in the instructions in the **POST PROCESSING PROCEDURES** section of this package insert. If HIV-1 is detected on surfaces, clean the contaminated areas with 1.0% (v/v) sodium hypochlorite solution, followed by 70% ethanol or water.

**NOTE: Chlorine solutions may pit equipment and metal. Use sufficient amounts or repeated applications of 70% ethanol until chlorine residue is no longer visible.**

9. Repeat testing of the contaminated area by following steps 1 through 6.
10. If the presence of contamination is detected again, repeat steps 8 and 9 until no HIV-1 amplification is detected.

#### RESULTS

A specimen tested by the Abbott RealTime HIV-1 Qualitative assay will have a result of "HIV-1 Detected" or "Not Detected." When using the dried blood spot application, "HIV-1 Detected" specimen results will also display the Cycle Number (CN) value. The Cycle Number value is the PCR cycle at which the fluorescence has risen above the predefined fluorescence threshold established for determining HIV-1 detected specimens with the Abbott RealTime HIV-1 Qualitative assay. No Cycle Number will be reported for HIV-1 "Not Detected" dried blood spot specimens. The Cycle Number will not be reported for any plasma specimens.

Caution: the Cycle Number value displayed with HIV-1 Detected samples using dried blood spots should not be used for quantitative determination of HIV-1 viral load. Refer to World Health Organization Guideline WHO/CDS/HIV/18.51 UPDATED RECOMMENDATIONS ON FIRST-LINE AND SECOND-LINE ANTIRETROVIRAL REGIMENS AND POST-EXPOSURE PROPHYLAXIS AND RECOMMENDATIONS ON EARLY INFANT DIAGNOSIS OF HIV, December, 2018.

A minimum of 1 negative control and 1 positive control are required with each run. The negative control serves to verify that HIV-1 contamination of the negative control did not occur during the sample preparation and set-up of the amplification reaction. If HIV-1 signal is detected for the negative control, the -QC flag is displayed next to all specimen results for the run. Specimens with the -QC flag may have been similarly contaminated with analyte during processing. If the negative control is not processed, the -QC flag is also indicated next to all specimen results for that run.

The IC signal in specimens serves to confirm that each specimen was processed correctly and to indicate whether inhibitors of amplification are present. If the IC is out of range (ie, IC CN not generated or greater than or equal to a fixed cutoff cycle) and HIV-1 is detected, the specimen will have a result of "HIV-1 Detected." An IC flag will be reported next to the result. If the IC is out of range and HIV-1 is not detected, no result will be reported and an error code will be generated. The specimen with an error code must be retested starting with sample preparation. For more information about error codes and flags, refer to the Abbott *m2000rt* Operations Manual Version 3.0, Operations Manual Addendum Version 3.0, or higher versions.

### LIMITATIONS OF THE PROCEDURE

- FOR IN VITRO DIAGNOSTIC USE
- Optimal performance of this test requires appropriate specimen collection, handling, preparation, and storage (refer to the **SPECIMEN COLLECTION AND HANDLING INSTRUCTIONS** section of this package insert).
- Human plasma specimens collected in ACD-A or EDTA tubes may be used with the Abbott RealTime HIV-1 Qualitative assay. The use of other anticoagulants has not been validated with the Abbott RealTime HIV-1 Qualitative assay.
- Use of the Abbott RealTime HIV-1 Qualitative assay is limited to personnel who have been trained in the procedures of a molecular diagnostic assay and the Abbott *m2000sp* and the Abbott *m2000rt* instruments, and/or the manual sample preparation method for Abbott RealTime HIV-1 Qualitative.
- The instruments and assay procedures reduce the risk of contamination by amplification product. However, nucleic acid contamination from the positive controls or specimens must be controlled by good laboratory practice and careful adherence to the procedures specified in this package insert.
- A specimen with a result of "Not Detected" cannot be presumed to be negative for HIV-1.
- As with any diagnostic test, results from the Abbott RealTime HIV-1 Qualitative assay should be interpreted in conjunction with other clinical and laboratory findings.
- The Abbott RealTime HIV-1 Qualitative is not intended to be used as a screening test for HIV-1.

### SPECIFIC PERFORMANCE CHARACTERISTICS

The performance characteristics were determined using the Abbott RealTime HIV-1 Qualitative assay with the Abbott *m2000sp* sample preparation system unless otherwise specified.

#### Limit of Detection (LoD)

LoD is defined by the HIV-1 concentration detected with a probability of 95%. LoD was determined for both the plasma and DBS procedures by testing dilutions of a viral standard from the Virology Quality Assurance (VQA) Laboratory of the AIDS Clinical Trial Group. Dilutions were made in HIV-1 negative human plasma or in HIV-1 negative human whole blood that was spotted on filter paper cards to create dried blood spots. Testing was performed with 3 lots of amplification reagents on 3 Abbott *m2000* Systems. The results, representative of the performance of the Abbott RealTime HIV-1 Qualitative assay, are summarized in **Tables 1 and 2** for the plasma and DBS procedures, respectively.

**Table 1. Plasma Procedure, VQA Viral Standard**

Concentration (copies/mL)	Number Tested	Number Detected	Percent Detected
30	45	32	71
50	45	36	80
75	45	42	93
100	45	44	98
150	45	45	100
200	45	45	100

Probit analysis of the data determined that the concentration of HIV-1 RNA in plasma detected with 95% probability was 80 copies/mL (95% Confidence Interval (CI) 65 - 118 copies/mL). The LoD of the Abbott RealTime HIV-1 Qualitative assay is 110 copies/mL in plasma using the plasma procedure.

**Table 2. DBS Procedure, VQA Viral Standard**

Concentration (copies/mL)	Number Tested	Number Detected	Percent Detected
800	45	31	69
1000	45	32	71
1500	45	41	91
2000	45	41	91
2500	45	42	93
3000	45	44	98

Probit analysis of the data determined that the concentration of HIV-1 RNA in whole blood detected with 95% probability was 2,469 copies/mL (95% CI 1,939 - 4,040 copies/mL). The LoD of the Abbott RealTime HIV-1 Qualitative assay is 2,500 copies/mL in whole blood using the DBS procedure.

#### Detection of WHO 2<sup>nd</sup> International Standard (NIBSC 97/650)

Assay performance was also evaluated by testing dilutions of WHO 2<sup>nd</sup> International Standard for HIV-1 (NIBSC 97/650). The results are summarized in **Tables 3 and 4** for the plasma and DBS procedures, respectively.

**Table 3: Plasma Procedure, WHO 2<sup>nd</sup> International Standard for HIV-1 (NIBSC 97/650)**

Concentration (IU/mL)	Number Tested	Number Detected	Percent Detected
50	45	27	60
80	45	39	87
120	45	39	87
160	45	44	98
240	45	44	98
320	45	45	100

Probit analysis of the data determined that the concentration of HIV-1 RNA in plasma detected with 95% probability was 149 IU/mL (95% CI 120 - 217 IU/mL) using the plasma procedure.

**Table 4: DBS Procedure, WHO 2<sup>nd</sup> International Standard for HIV-1 (NIBSC 97/650)**

Concentration (IU/mL)	Number Tested	Number Detected	Percent Detected
1600	45	28	62
2400	45	39	87
3000	45	42	93
5000	45	45	100
7000	45	45	100
9000	45	45	100

Probit analysis of the data determined that the concentration of HIV-1 RNA in whole blood detected with 95% probability was 3,085 IU/mL (95% CI 2,644 - 4,199 IU/mL) using the DBS procedure.

#### Seroconversion Sensitivity

The diagnostic sensitivity of the Abbott RealTime HIV-1 Qualitative assay was evaluated by testing sequential plasma specimens from 13 HIV seroconversion panels. These panels are commercially available and pre-characterized for HIV infection.

The Abbott RealTime HIV-1 Qualitative assay detected HIV-1 in 57 out of 82 total number of bleeds compared with 16 out of 82 that were detected by an HIV-1 antibody test (Abbott HIVAB HIV-1/HIV-2 (rDNA) EIA List No. 3A77). The first reactive bleed (ie panel member) for Abbott RealTime HIV-1 Qualitative assay occurred earlier in all 13 panels (median 10.0 days) compared to the Abbott HIVAB HIV-1/HIV-2 (rDNA) EIA. The seroconversion sensitivity is presented in **Table 5**.

**Table 5. Seroconversion Sensitivity**

Panel ID	Number of Panel Members Tested	Number of Reactive Panel Members		Days to First Reactive Result		Difference in Days to First Reactive Result (Based on Bleed Date) <sup>b</sup>
		Abbott RealTime HIV-1 Qualitative	Abbott HIVAB HIV-1/HIV-2 (rDNA) EIA <sup>a</sup>	Abbott RealTime HIV-1 Qualitative	Abbott HIVAB HIV-1/HIV-2 EIA <sup>a</sup>	
PRB943	7	6	3	5	14	9
PRB950	4	3	1	18	28	10
PRB951	6	4	1	8	19	11
PRB952	6	5	2	7	17	10
PRB954	7	4	0	10	21 <sup>d</sup>	11
PRB955	5	5	2	0 <sup>c</sup>	12	12
PRB956	5	4	0	40	50 <sup>d</sup>	10
PRB957	7	4	2	14	23	9
PRB962	6	4	0	7	17 <sup>d</sup>	10
PRB963	7	4	0	9	21 <sup>d</sup>	12
PRB964	6	3	0	15	22 <sup>d</sup>	7
PRB965	6	6	3	0 <sup>c</sup>	12	12
PRB966	10	5	2	35	48	13
<b>Total</b>	<b>82</b>	<b>57</b>	<b>16</b>			<b>Median = 10.0</b> <b>Mean = 10.5</b>

<sup>a</sup> Based on data from the vendor.

<sup>b</sup> The dates of the first reactive test results were compared in the Abbott HIVAB HIV-1/HIV-2 (rDNA) EIA and the Abbott RealTime HIV-1 Qualitative.

<sup>c</sup> All bleeds in these panels were detected with the Abbott RealTime HIV-1 Qualitative. Zero was used as the "Days to First Reactive Result."

<sup>d</sup> All bleeds in these panels were nonreactive with the Abbott HIVAB HIV-1/HIV-2 (rDNA) EIA. The last bleed day was used as the "Days to First Reactive Result."

#### Performance for Detection of HIV-1 Infection in Infants

The performance of the Abbott RealTime HIV-1 Qualitative assay in detecting HIV-1 infection was evaluated by testing specimens randomly collected from infants approximately 6 weeks to 18 months old who were born to HIV-1 positive mothers. The plasma samples from 367 subjects and DBS samples from 288 subjects were tested with the Abbott RealTime HIV-1 Qualitative assay. The whole blood sample from each subject was tested with Roche Amplicor HIV-1 DNA Test version 1.5 following instructions for use.

The overall agreement between the Abbott RealTime HIV-1 Qualitative results and the Roche Amplicor HIV-1 DNA Test version 1.5 results was 95.5% and 97.8% for the DBS and plasma assay procedures, respectively (Table 6 and Table 7).

**Table 6. Agreement Between Abbott RealTime HIV-1 Qualitative DBS Procedure and Roche Amplicor HIV-1 DNA Test Version 1.5**

Roche Amplicor HIV-1 DNA Test Version 1.5	Abbott RealTime HIV-1 Qualitative DBS Procedure	
	Detected	Not Detected
Detected	54	1
Not Detected	12	221

Agreement = 95.5% (275/288)

95% CI: (92.40 - 97.57)

**Table 7. Agreement Between Abbott RealTime HIV-1 Qualitative Plasma Procedure and Roche Amplicor HIV-1 DNA Test Version 1.5**

Roche Amplicor HIV-1 DNA Test Version 1.5	Abbott RealTime HIV-1 Qualitative Plasma Procedure	
	Detected	Not Detected
Detected	72	0
Not Detected	8	287

Agreement = 97.8% (359/367)

95% CI: (95.75 - 99.05)

**NOTE: Neither pregnant nor postpartum women were included as subjects in this study. The Abbott RealTime HIV-1 Qualitative assay has not been evaluated in pregnant women.**

#### Detection of HIV-1 Subtypes and Groups

The performance of the Abbott RealTime HIV-1 Qualitative assay with HIV-1 subtypes/groups was evaluated by testing 10 clinical specimens of Group M subtypes A, B, C, D, CRF01-AE, F, CRF02-AG, and G, 10 clinical specimens of Group O, and purified RNA transcripts of Group M subtype H and Group N (10 replicates of each transcript). The results are summarized in Table 8.

**Table 8: Subtype Detection**

Group/Subtypes	n <sup>a</sup>	Detected by Abbott RealTime HIV-1 Qualitative assay
Group M/Subtype A	10	10
Group M/Subtype B	10	10
Group M/Subtype C	10	10
Group M/Subtype D	10	10
Group M/Subtype AE	10	10
Group M/Subtype F	10	10
Group M/Subtype AG	10	10
Group M/Subtype G	10	10
Group M/Subtype H	10	10
Group O	10	10
Group N	10	10

<sup>a</sup> "n" represents the number of clinical specimens tested. For Group M/Subtype H and Group N, "n" represents the number of replicates of transcript samples tested.

The Abbott RealTime HIV-1 Qualitative assay detected all groups and subtypes tested.

#### Specificity

The specificity of the Abbott RealTime HIV-1 Qualitative assay was evaluated for both the plasma and DBS procedures by testing 550 HIV-1 seronegative plasma specimens and 550 HIV-1 seronegative whole blood specimens. Both plasma and whole blood specimens were collected from each of the 550 subjects. For each assay procedure, the specimens were tested on 2 Abbott m2000 Systems with 4 lots of amplification reagents. HIV-1 was not detected for 550 out of 550 samples in both specimen types, resulting in 100.0% specificity (95% CI 99.33 - 100.00%) for both the plasma and DBS assay procedures in this representative study.

The specificity of the Abbott RealTime HIV-1 Qualitative assay was further evaluated by testing plasma specimens that had been either obtained from individuals diagnosed or screened for an autoimmune disorder or serologically characterized as positive for the following markers: systemic lupus erythematosus (n=10), anti-nuclear antibodies (n=10), rheumatoid factor (n=10), multiple sclerosis (n=7), multiple myeloma (n=10), HBsAg (n=10), anti-HTLV-I (n=10), anti-HCV (n=10). Also tested were flu vaccinees (n=10) and HBV vaccinees (n=10). HIV-1 was not detected in any of the specimens tested. In addition, HIV-1 was detected in all the specimens that had been spiked with HIV-1 RNA. The results demonstrated that the presence of an autoimmune disorder or serologic markers for autoimmune disease or viral pathogens other than HIV-1 did not affect the Abbott RealTime HIV-1 Qualitative assay.

#### Reproducibility

The reproducibility of the Abbott RealTime HIV-1 Qualitative assay was evaluated using the Abbott m2000sp. A four-member HIV-1 RNA panel was prepared consisting of 1 negative member and 3 positive members at 1,000,000, 100,000 and 10,000 copies/mL. The panel was tested by 3 operators. Each operator, using a unique combination of reagent

lot and instrument pair, tested 10 replicates of each panel member once per day for 5 days, for a total of 50 replicates per operator (150 total replicates per panel member). The Abbott RealTime HIV-1 Qualitative assay detected HIV-1 in all 450 HIV-1 positive samples (150 samples at each high, medium and low concentration). The assay results in all negative samples were "Not Detected." The overall agreement for 600 results compared with expected results was 100.0% (95% CI 99.39 – 100.00%).

### Reproducibility Between Manual and Automated *m2000sp* Sample Preparation Methods

In addition to the automated Abbott *m2000sp* sample preparation method, the Abbott RealTime HIV-1 Qualitative assay also provides a manual sample preparation option. The reproducibility between the manual and the automated sample preparation methods was determined by testing the same HIV-1 RNA panel as evaluated in the Reproducibility study. The panel was tested by a single operator using both sample preparation methods and using 1 reagent lot and 1 Abbott *m2000rt* instrument. For each method, the operator tested 10 replicates of each panel member once per day for 5 days, for a total of 50 replicates (200 total replicates for all panel members). The overall agreement between the manual and Abbott *m2000sp* sample preparation methods was 99.0% (95% CI 96.43 – 99.88%).

### Cross-Reactivity

The following viruses and microorganisms were evaluated for potential cross-reactivity in the Abbott RealTime HIV-1 Qualitative assay. Each potential cross-reactant (purified nucleic acids, viral lysate, clinical specimen, or cloned plasmid DNA) was added to HIV-1 negative samples and samples that contained 1,000 copies/mL HIV-1 RNA.

Human Immunodeficiency virus 2	Human herpesvirus 8
Human T-lymphotropic virus 1	Varicella-zoster virus
Hepatitis B virus	Vaccinia virus
Hepatitis C virus	BK human polyomavirus
Epstein-Barr virus	<i>Neisseria gonorrhoeae</i>
Cytomegalovirus	<i>Chlamydia trachomatis</i>
Human papillomavirus 16	<i>Staphylococcus aureus</i>
Human papillomavirus 18	<i>Staphylococcus epidermidis</i>
Herpes simplex virus 1	<i>Mycobacterium gordonae</i>
Herpes simplex virus 2	<i>Mycobacterium smegmatis</i>
Human herpesvirus 6B	<i>Candida albicans</i>

No interference in the Abbott RealTime HIV-1 Qualitative assay results (HIV-1 Detected or Not Detected) was observed in the presence of the potential cross-reactants for all positive and negative samples tested.

### Potentially Interfering Substances

The susceptibility of the Abbott RealTime HIV-1 Qualitative assay to interference by elevated levels of endogenous substances was evaluated for the DBS procedure. HIV-1 negative samples (human whole blood) and samples spiked with 10,000 copies/mL of HIV-1 RNA were made into DBS and further tested.

No interference in the Abbott RealTime HIV-1 Qualitative assay results (HIV-1 Detected or Not Detected) was observed in the presence of the following substances for all positive and negative samples tested:

- Hemoglobin 2 g/L
- Triglycerides 37 mM
- Bilirubin 342 µM
- Protein 120 g/L

### Carryover

Potential sample carryover in the automated Abbott *m2000* systems when used with the Abbott RealTime HIV-1 Qualitative assay was evaluated by testing high titer HIV-1 positive samples (with a target concentration of 1,000,000 copies/mL) interspersed with negative samples. The Abbott RealTime HIV-1 Qualitative assay did not exhibit detectable carryover from high positive samples to negative samples.

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## TECHNICAL ASSISTANCE

For technical assistance, call Abbott Technical Services at 1-800-553-7042 (within the US) or +49-6122-580 (outside the US), or visit the Abbott website at [www.molecular.abbott](http://www.molecular.abbott).

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Abbott RealTime HIV-1 Qualitative Amplification Reagent Kit

(List No. 4N66-90) and Abbott RealTime HIV-1 Qualitative Control Kit

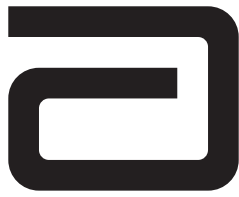
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51-608381/R9



# Abbott RealTime HIV-1 Qualitative Including Uracil-N-Glycosylase (UNG)

IVD

REF 04N66-66  
51-608400/R7

**(en)** *Instructions for use in conjunction with Abbott RealTime HIV-1 Qualitative (List No. 04N66)*

NOTE: Specific instructions for the optional amplification reagent extended use feature including UNG are highlighted along with all new changes.

**(fr)** *Instructions d'utilisation à utiliser avec le test Abbott RealTime HIV-1 Qualitative (réf. 04N66)*

REMARQUE : les instructions spécifiques à l'option d'utilisation prolongée des réactifs d'amplification avec l'UNG ainsi que toutes les nouvelles modifications apportées sont mises en surbrillance.















**(es)** *Instrucciones para su uso junto con Abbott RealTime HIV-1 Qualitative (n.º de referencia 04N66)*

NOTA: las instrucciones específicas para el uso ampliado de los reactivos de amplificación opcional con UNG aparecen marcadas junto con todas las modificaciones nuevas.



Abbott Molecular Inc.  
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 **Abbott**

Key to Symbols Used	
	Global Trade Item Number
	Reference Number
	Lot Number
	In Vitro Diagnostic Medical Device
	Use By <b>Date</b>
	Upper <b>Limit</b> of <b>Temperature</b>
	Temperature <b>Limit</b>
	High Positive Control
	Negative Control
	Internal Control
<b>AMPLIFICATION REAGENT PACK</b>	
	Amplification Reagent Pack
	Caution
	Consult instructions for use
	Manufacturer

## CUSTOMER SERVICE INTERNATIONAL: CALL YOUR ABBOTT REPRESENTATIVE

### INTENDED USE

This procedure is to be used in conjunction with the Abbott RealTime HIV-1 Qualitative assay, List No. 04N66. Refer to the Abbott RealTime HIV-1 Qualitative (List No. 04N66) package insert for intended use. This procedure is being provided as an optional contamination control measure for customer laboratories that are currently using or have previously used amplification technologies that incorporate uracil into the amplification product.

### INTENDED USER

The intended users for the Abbott RealTime HIV-1 Qualitative Including Uracil-N-Glycosylase (UNG) procedure List No. 04N66-66 are laboratory and healthcare professionals.

### OVERVIEW

This procedure differs from the procedure provided in the Abbott RealTime HIV-1 Qualitative package insert (List No. 04N66) in the following ways:

- Uracil-N-glycosylase (UNG) is added at the master mix preparation stage.
- An additional 10-minute incubation is required at room temperature after reaction assembly and sample addition.

### PREVENTION OF NUCLEIC ACID CONTAMINATION

The possibility of nucleic acid contamination is minimized because:

- Reverse transcription, PCR amplification, and oligonucleotide hybridization occur in a sealed Abbott 96-Well Optical Reaction plate.
- Detection is carried out automatically without the need to open the Abbott 96-Well Optical Reaction Plate.
- Aerosol barrier pipette tips are used for all pipetting. The pipette tips are discarded after use.
- Separate dedicated areas are used to perform the Abbott RealTime HIV-1 Qualitative assay.

Refer to the Abbott RealTime HIV-1 Qualitative package insert for specific instruction.

## REAGENTS

Uracil-N-glycosylase (UNG), List No. 6L87-02 (1 tube, 112  $\mu$ L, 1 U/ $\mu$ L)

Refer to the Abbott RealTime HIV-1 Qualitative package insert (List No. 04N66) for all other required reagents.

### Description

UNG removes uracil residues from the sugar moiety of single- and double-stranded DNA without destroying the phosphodiester backbone, preventing its use as a hybridization target or as a template for DNA polymerases.


UNG will not remove uracil from RNA.

### Active Ingredients

- Uracil-N-glycosylase (UNG; < 0.1%)
- Tween 20 (< 0.1%)

### Storage and Handling

The product is shipped on dry ice.

 -15°C  
Store at -25°C to -15°C.

### Limited License

The product is authorized for use by the purchaser only for contamination control as indicated in the accompanying protocol. No rights are conveyed for use in reactions that incorporate dUTP or any patents owned or controlled by Life Technologies.

## WARNINGS AND PRECAUTIONS

This procedure must be used in conjunction with the Abbott RealTime HIV-1 Qualitative assay.

Refer to the Abbott RealTime HIV-1 Qualitative assay package insert for additional **WARNINGS AND PRECAUTIONS**.

Refer to MSDS for uracil-N-glycosylase.

### Special Precautions

Refer to the Abbott RealTime HIV-1 Qualitative package insert (List No. 04N66) for handling precautions, including work area definitions and detailed precautions for contamination and inhibition.

## ASSAY PROCEDURE

For ease of use, the instructions provided in this section include the amplification steps within the Assay Protocols section of the Abbott RealTime HIV-1 Qualitative package insert (List No. 04N66). The Abbott RealTime HIV-1 Qualitative package insert (List No. 04N66) contains 4 assay protocols:

**ASSAY PROTOCOL I: PLASMA SPECIMENS USING ABBOTT *m2000sp* AUTOMATED SAMPLE PREPARATION SYSTEM**

**ASSAY PROTOCOL II: DBS SPECIMENS USING ABBOTT *m2000sp* AUTOMATED SAMPLE PREPARATION SYSTEM.**

**ASSAY PROTOCOL III: PLASMA SPECIMENS USING MANUAL SAMPLE PREPARATION METHOD**

**ASSAY PROTOCOL IV: DBS SPECIMENS USING MANUAL SAMPLE PREPARATION METHOD**

Key differences from the Abbott RealTime HIV-1 Qualitative package insert procedure are highlighted. Step numbering is maintained from the package insert for convenience.

### ASSAY PROTOCOL I: PLASMA SPECIMENS USING ABBOTT *m2000sp* AUTOMATED SAMPLE PREPARATION SYSTEM

#### ASSAY PROTOCOL II: DBS SPECIMENS USING ABBOTT *m2000sp* AUTOMATED SAMPLE PREPARATION SYSTEM.

11. Load the amplification reagents and the Master Mix Tube on the Abbott *m2000sp* worktable after sample preparation is completed.

- Each Amplification Reagent Pack supports up to 24 reactions.
- Prior to opening the amplification reagents, ensure that the contents are at the bottom of the vials by tapping the vials in an upright position on the bench.
- Remove and discard the amplification vial caps.
- Use a **PIPETTE DEDICATED FOR REAGENT USE ONLY** to add 27  $\mu$ L of UNG to each Thermostable rTth Polymerase Enzyme bottle being used (Reagent 3).

12. From the Protocol screen, select the appropriate deep well plate from the Run Master Mix Addition screen that matches the corresponding sample preparation extraction. Initiate the Abbott *m2000sp* Master Mix Addition protocol. Follow the instructions as described in the Abbott *m2000sp* Operations Manual, Operating Instructions section.

**NOTE: The Abbott *m2000rt* protocol (step 16) must be started within 50 minutes of the initiation of the Master Mix Addition protocol (step 12). This 50 minutes includes the 10-minute incubation at room temperature (step 15, below).**

13. Switch on and initialize the Abbott *m2000rt* instrument in the Amplification Area.  
**NOTE: The Abbott *m2000rt* requires 15 minutes to warm-up.**  
**NOTE: Remove gloves before returning to the sample preparation area.**
14. Seal the Abbott 96-Well Optical Reaction Plate after the Abbott *m2000sp* instrument has completed addition of samples and master mix according to the Abbott *m2000sp* Operations Manual, Operating Instructions section.
15. Place the sealed optical reaction plate into the Abbott Splash-Free Support Base and incubate at room temperature (15°C to 30°C) for 10 minutes. Following the incubation, transfer the Abbott 96-Well Optical Reaction Plate to the Abbott *m2000rt* instrument.
16. Place the Abbott 96-Well Optical Reaction Plate in the Abbott *m2000rt* instrument and initiate the Abbott RealTime HIV-1 Qualitative assay protocol, as described in the Abbott *m2000rt* Operations Manual, Operating Instructions section. At the completion of the run, assay results are reported on the Abbott *m2000rt*. Refer to the **RESULTS** section of the package insert for further details.
17. Continue processing per the Abbott RealTime HIV-1 Qualitative package insert **POST PROCESSING PROCEDURES** section.

### ASSAY PROTOCOL III: PLASMA SPECIMENS USING MANUAL SAMPLE PREPARATION METHOD

### ASSAY PROTOCOL IV: DBS SPECIMENS USING MANUAL SAMPLE PREPARATION METHOD

#### Reagent Preparation Area

42. Place a new Abbott 96-Well Optical Reaction Plate in a StrataCooler 96 or Eppendorf PCR Cooler that was previously stored as indicated in the StrataCooler 96 instruction manual or Eppendorf PCR Cooler Instructions for Use, respectively. **DO NOT touch the surface or bottom of the plate.**

**IF APPLICABLE:** For batch sizes between 49 and 95 (samples plus controls), prior to preparation of the amplification master mix, fill the wells that will be empty with distilled or deionized water using the following instructions:

- Using a calibrated pipette, add 100 µL of distilled or deionized water to empty wells based on batch size:

Batch/Sample Size	Empty Well(s) to Fill
49-56	Full columns 8 through 12; partial column 7
57-64	Full columns 9 through 12; partial column 8
65-72	Full columns 10 through 12; partial column 9
73-80	Full columns 11 and 12; partial column 10
81-88	Full columns 12; partial column 11
89-95	Partial column 12

**NOTE: The order of adding PCR reactions (master mix and sample eluate) to the Abbott 96-Well Optical Reaction Plate starts with column 1 (from top to bottom) and moves to each consecutive column from left to right. Be sure to read the column numbers on the top of the Abbott 96-Well Optical Reaction Plate to ensure that correct well(s) are filled with water.**

43. Prepare the amplification master mix.

**NOTE: All reagent preparation must take place in the dedicated Reagent Preparation Area. Refer to the Contamination Precautions section of the package insert before preparing reagents. Change gloves before handling the amplification reagents.**

- Each Amplification Reagent Pack supports up to 24 reactions.
- Prior to opening the amplification reagents, ensure that the contents of the Amplification Reagent Pack are at the bottom by tapping the Amplification Reagent Pack in an upright position on the bench to bring the liquid to the bottom of the vials.
- Identify the amplification reagents as follows:
  - Activation Reagent (Reagent 1): clear bottle, teal cap
  - HIV-1 Oligonucleotide Reagent (Reagent 2): black bottle, white cap
  - Thermostable rTth Polymerase Enzyme (Reagent 3): clear bottle, white cap
- Remove and discard caps.
- Use a **PIPETTE DEDICATED FOR REAGENT USE ONLY** to add 27 units of UNG to each Thermostable rTth Polymerase Enzyme bottle being used (Reagent 3).

- Prepare the master mix by using a **PRECISION PIPETTE DEDICATED FOR REAGENT USE ONLY** to add 271 µL of the Activation Reagent (Reagent 1) and 949 µL of the HIV-1 Oligonucleotide Reagent (Reagent 2) to the Thermostable rTth Polymerase Enzyme bottle (Reagent 3). Mix the Enzyme vial containing the reaction mixture (master mix) by gently pipetting up and down 5 to 7 times. Avoid creating foam.
- If performing 25 to 48 reactions, prepare the amplification master mix from 2 Amplification Reagent Packs.
- If performing 49 to 72 reactions, prepare the amplification master mix from 3 Amplification Reagent Packs.
- If performing 73 to 96 reactions, prepare the amplification master mix from 4 Amplification Reagent Packs.

**NOTE: The Abbott *m2000rt* protocol (step 50) must be started within 50 minutes of the addition of the Activation Reagent into the first enzyme bottle (step 43). This 50 minutes includes the 10 minute incubation at room temperature (step 48, below).**

44. Pipette the contents of the master mix from the enzyme bottle(s) into a single-use RNase/DNase-free tube or container. Mix by gently pipetting up and down 5 to 7 times. Avoid creating foam.
45. Using a **PRECISION PIPETTE DEDICATED FOR REAGENT USE ONLY**, dispense 50-µL aliquots of the amplification master mix into each well of the Abbott 96-Well Optical Reaction Plate that will be used to run the samples and controls. A calibrated repeat pipettor may be used.
  - Add the master mix in an order starting with column 1 (from top to bottom), and moving to each consecutive column from left to right.
  - Visually verify that 50 µL has been dispensed into each well.
  - Transfer the Abbott 96-Well Optical Reaction Plate on the StrataCooler 96 or Eppendorf PCR Cooler to the Sample Preparation Area.

#### Sample Preparation Area

46. Using a precision pipettor and a fresh, sterile 200-µL aerosol barrier pipette tip for each sample, transfer 50 µL of each eluted sample to the Abbott 96-Well Optical Reaction Plate on the StrataCooler 96 or Eppendorf PCR Cooler. During the transfer of each sample, mix the reaction by pipetting up and down 3 to 5 times. Visually verify that a total of 100 µL has been dispensed into each well.
47. Seal the Abbott 96-Well Optical Reaction Plate according to the instructions in the Abbott *m2000rt* Operations Manual, Operating Instructions section.
48. Remove the Abbott 96-Well Optical Reaction Plate from the StrataCooler 96 or Eppendorf PCR Cooler and place in the Abbott Splash-Free Support Base. Incubate at room temperature (15°C to 30°C) for 10 minutes. **Centrifuge the Abbott 96-Well Optical Reaction Plate in the Abbott Splash-Free Support Base at 5,000 g for 5 minutes.** Centrifugation may take place during the 10-minute incubation.
49. Transfer the Abbott 96-Well Optical Reaction Plate in the Abbott Splash-Free Support Base to the Amplification Area.

**NOTE: Do not transfer the StrataCooler 96 or Eppendorf PCR Cooler to the Amplification Area.**

#### Amplification Area

50. Place the Abbott 96-Well Optical Reaction Plate in the Abbott *m2000rt* instrument, select the test order created (step 41), and initiate the Abbott RealTime HIV-1 Qualitative assay protocol, as described in the Abbott *m2000rt* Operations Manual, Operating Instructions section. At the completion of the run, assay results are reported on the Abbott *m2000rt*. Refer to the **RESULTS** section of the Abbott RealTime HIV-1 Qualitative package insert (List No. 04N66) for further details.
51. Continue processing per the Abbott RealTime HIV-1 Qualitative package insert **POST PROCESSING PROCEDURES** section.

### QUALITY CONTROL PROCEDURES

Refer to the Abbott RealTime HIV-1 Qualitative package insert (List No. 04N66) for information on quality control procedures.

When performing the procedure in the **Monitoring the Laboratory for the Presence of Contamination** section of the package insert, do not use UNG in the amplification reaction. Continue to monitor facility and equipment contamination levels as well as the impact to the assay (evaluation of Negative Controls using the standard procedure without UNG). Removal of the source of the contamination issue and continued cleaning should resolve contamination issues in the laboratory. Discontinuation of the UNG procedure is recommended when contamination is reduced to a level where it no longer impacts assay results, as measured by Negative Control response in the absence of UNG.

## RESULTS

### Interpretation of Results and Limitations of the Procedure

Refer to the Abbott RealTime HIV-1 Qualitative package insert (List No. 04N66).

### TECHNICAL ASSISTANCE

For technical assistance, call Abbott Technical Services at 1-800-553-7042 (within the US) or +49-6122-580 (outside the US), or visit the Abbott website at [www.molecular.abbott](http://www.molecular.abbott)

StrataCooler is a registered trademark of Stratagene.








Eppendorf is a registered trademark of Eppendorf AG.

Abbott RealTime, *m*, *m2000*, *m2000rt*, and *m2000sp* are trademarks of Abbott.

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### Légende des symboles utilisés

<b>GTIN</b>	Code article international
<b>REF</b>	Référence
<b>LOT</b>	Numéro de lot
<b>IVD</b>	Dispositif médical de diagnostic <i>in vitro</i>
	Date de péremption
	Limite supérieure de température
	Conserver à
<b>CONTROL H</b>	Contrôle positif haut
<b>CONTROL -</b>	Contrôle négatif
<b>INTERNAL CONTROL</b>	Contrôle interne
<b>AMPLIFICATION REAGENT PACK</b>	
	Coffret de réactifs d'amplification
	Attention
	Consulter les instructions d'utilisation
	Fabricant

### POUR DE PLUS AMPLES INFORMATIONS, CONTACTER LE SERVICE CLIENTS ABBOTT

#### DOMAINE D'APPLICATION

Cette procédure doit être utilisée avec le test Abbott RealTime HIV-1 Qualitative, réf. 04N66. Consulter la notice du test Abbott RealTime HIV-1 Qualitative (réf. 04N66) pour connaître le domaine d'application. Cette procédure est fournie en tant que contrôle facultatif de contamination pour les laboratoires utilisant actuellement ou ayant utilisé des techniques d'amplification incluant l'uracile dans le produit d'amplification.

#### UTILISATEURS CONCERNES

La procédure Abbott RealTime HIV-1 Qualitative Including Uracil-N-Glycosylase (UNG) réf. 04N66-66 est destinée au personnel de laboratoire et aux professionnels de santé.

#### GENERALITES

Cette procédure diffère de la procédure fournie dans la notice du test Abbott RealTime HIV-1 Qualitative (réf. 04N66) sur les plans suivants :

- L'uracile-ADN-glycosylase (UNG) est ajoutée pendant la préparation du master mix.
- 10 minutes supplémentaires d'incubation à température ambiante sont requises suite à l'assemblage réactionnel et à l'ajout des échantillons.

#### PREVENTION DE LA CONTAMINATION PAR DES ACIDES NUCLEIQUES

La probabilité d'une contamination par les acides nucléiques est réduite au minimum car :

- La transcription inverse, l'amplification par PCR et l'hybridation des oligonucléotides s'effectuent dans une Abbott 96-Well Optical Reaction Plate (plaque de réaction optique à 96 puits) scellée.
- La détection est automatiquement effectuée sans qu'il soit nécessaire d'ouvrir l'Abbott 96-Well Optical Reaction Plate.
- Tous les pipetages sont effectués à l'aide de pipettes à embouts munis de protection contre les aérosols. Les embouts de pipette sont jetés après utilisation.
- Le test Abbott RealTime HIV-1 Qualitative est effectué dans des zones de travail bien distinctes.

Se référer à la notice du test Abbott RealTime HIV-1 Qualitative pour des instructions spécifiques.

#### REACTIFS

Uracile-N-glycosylase (UNG), réf. 6L87-02 (1 tube, 112 µl, 1 U/µl)

Se référer à la notice du test Abbott RealTime HIV-1 Qualitative (réf. 04N66) pour connaître tous les autres réactifs requis.

#### Description



L'UNG élimine les résidus d'uracile du fragment de sucre de l'ADN simple brin et double brin sans détruire la structure phosphodiester, ce qui prévient son utilisation en tant que cible d'hybridation ou comme matrice pour des polymérase d'ADN. L'UNG n'élimine pas l'uracile de l'ARN.

#### Composants actifs

- Uracile-ADN-glycosylase (UNG ; < 0,1 %)
- Tween 20 (< 0,1 %)

#### Conservation et manipulation

Le produit est expédié sur de la carboglace.

 -15°C  
-25°C  Conserver entre -25 °C et -15 °C.

#### Licence limitée

L'utilisation du produit est réservée à l'acheteur à des fins de contrôle de la contamination comme indiqué dans le protocole joint. Aucun droit n'est conféré pour l'utilisation dans des réactions incorporant du dUTP ou tout brevet détenu ou contrôlé par Life Technologies.

#### MISES EN GARDE ET PRECAUTIONS

Cette procédure doit être utilisée avec le test Abbott RealTime HIV-1 Qualitative.

Se référer à la notice du test Abbott RealTime HIV-1 Qualitative pour des **MISES EN GARDE ET PRECAUTIONS** supplémentaires.

Se référer à la fiche de données de sécurité de l'uracile-ADN-glycosylase.

#### Précautions particulières

Se référer à la notice du test Abbott RealTime HIV-1 Qualitative (réf. 04N66) pour connaître les précautions de manipulation, y compris la définition des zones de travail et les précautions particulières en matière de contamination et d'inhibition.

#### PROCEDURE DU TEST

Pour plus de commodité, les instructions fournies dans cette partie comprennent les étapes d'amplification décrites à la partie Procédure du test de la notice du test Abbott RealTime HIV-1 Qualitative (réf. 04N66). La notice du test Abbott RealTime HIV-1 Qualitative (réf. 04N66) contient 4 protocoles de test :

**PROCOLE DE TEST I : ECHANTILLONS DE PLASMA PREPARES A L'AIDE DU SYSTEME AUTOMATISE DE PREPARATION DES ECHANTILLONS ABBOTT m2000sp**

**PROCOLE DE TEST II : ECHANTILLONS DBS PREPARES A L'AIDE DU SYSTEME AUTOMATISE DE PREPARATION DES ECHANTILLONS ABBOTT m2000sp**

**PROCOLE DE TEST III : ECHANTILLONS DE PLASMA PREPARES A L'AIDE DE LA METHODE DE PREPARATION MANUELLE DES ECHANTILLONS**

**PROCOLE DE TEST IV : ECHANTILLONS DBS PREPARES A L'AIDE DE LA METHODE DE PREPARATION MANUELLE DES ECHANTILLONS**

Les principales différences par rapport à la procédure contenue dans la notice du test Abbott RealTime HIV-1 Qualitative sont mises en surbrillance. La numérotation des étapes de la notice est maintenue pour plus de commodité.

**PROCOLE DE TEST I : ECHANTILLONS DE PLASMA PREPARES A L'AIDE DU SYSTEME AUTOMATISE DE PREPARATION DES ECHANTILLONS ABBOTT m2000sp**

**PROCOLE DE TEST II : ECHANTILLONS DBS PREPARES A L'AIDE DU SYSTEME AUTOMATISE DE PREPARATION DES ECHANTILLONS ABBOTT m2000sp**

11. Charger les réactifs d'amplification et le tube de master mix sur le plan de travail de l'Abbott m2000sp une fois la préparation des échantillons terminée.

- Chaque coffret de réactifs d'amplification permet de traiter 24 réactions maximum.
- Avant d'ouvrir les réactifs d'amplification, s'assurer que le contenu se trouve bien au fond du flacon en le tapotant légèrement à la verticale sur la paillasse.

- Enlever les bouchons des flacons de réactifs d'amplification et les jeter.
  - À l'aide d'une **PIPETTE DESTINEE UNIQUEMENT AUX REACTIFS**, ajouter 27 µl d'UNG dans chaque flacon d'enzyme polymérase rTth thermostable utilisé (réactif 3).
12. Depuis l'écran Protocol (Protocoles), sélectionner la plaque à puits profonds appropriée dans l'écran Run Master Mix Addition (Effectuer l'ajout du master mix) qui correspond à l'extraction de la préparation des échantillons correspondante. Lancer le protocole Master Mix Addition (Ajout du master mix) de l'Abbott m2000sp. Suivre les instructions décrites à la partie Mode opératoire du Manuel Technique Abbott m2000sp.
- REMARQUE :** le protocole Abbott m2000rt (étape 16) doit être initié dans les 50 minutes suivant le lancement du protocole d'ajout du master mix (étape 12). Ces 50 minutes comprennent la période d'incubation de 10 minutes à température ambiante (étape 15 ci-dessous).
13. Mettre en marche et initialiser l'Abbott m2000rt dans la zone d'amplification.
- REMARQUE :** l'Abbott m2000rt nécessite un préchauffage de 15 minutes.
- REMARQUE :** retirer les gants avant de retourner dans la zone de préparation des échantillons.
14. Sceller l'Abbott 96-Well Optical Reaction Plate une fois que l'Abbott m2000sp a terminé l'ajout des échantillons et du master mix selon la partie Mode opératoire du Manuel Technique Abbott m2000sp.
15. Placer la plaque de réaction optique scellée sur le support antiprojections Abbott Splash-Free Support Base et l'incuber à température ambiante (15 °C à 30 °C) pendant 10 minutes. Après l'incubation, transférer l'Abbott 96-Well Optical Reaction Plate dans l'Abbott m2000rt.
16. Placer l'Abbott 96-Well Optical Reaction Plate dans l'Abbott m2000rt et lancer le protocole de test Abbott RealTime HIV-1 Qualitative tel que décrit à la partie Mode opératoire du Manuel Technique Abbott m2000rt. Une fois la série terminée, les résultats du test sont rendus sur l'Abbott m2000rt. Se référer à la partie **RESULTATS** de la notice pour de plus amples détails.
17. Poursuivre le traitement conformément à la partie **PROCEDURES POST-TRAITEMENT** de la notice du test Abbott RealTime HIV-1 Qualitative.

### PROTOCOLE DE TEST III : ECHANTILLONS DE PLASMA PREPARES A L'AIDE DE LA METHODE DE PREPARATION MANUELLE DES ECHANTILLONS

### PROTOCOLE DE TEST IV : ECHANTILLONS DBS PREPARES A L'AIDE DE LA METHODE DE PREPARATION MANUELLE DES ECHANTILLONS

#### Zone de préparation des réactifs

42. Placer une nouvelle Abbott 96-Well Optical Reaction Plate dans un StrataCooler 96 ou un Eppendorf PCR Cooler précédemment conservé selon les indications du manuel technique du StrataCooler 96 ou du mode d'emploi de l'Eppendorf PCR Cooler. **NE PAS toucher la surface ou le fond de la plaque.**
- LE CAS ECHEANT :** pour des séries de 49 à 95 (échantillons et contrôles), remplir les puits qui seront vides avec de l'eau distillée ou déionisée en suivant les instructions suivantes avant la préparation du master mix d'amplification :
- À l'aide d'une pipette calibrée, ajouter 100 µl d'eau distillée ou déionisée dans les puits vides selon le nombre d'échantillons de la série :

Série / nombre d'échantillons	Puits vide(s) à remplir
49 à 56	Colonnes 8 à 12 entièrement ; colonne 7 partiellement
57 à 64	Colonnes 9 à 12 entièrement ; colonne 8 partiellement
65 à 72	Colonnes 10 à 12 entièrement ; colonne 9 partiellement
73 à 80	Colonnes 11 et 12 entièrement ; colonne 10 partiellement
81 à 88	Colonne 12 entièrement ; colonne 11 partiellement
89 à 95	Colonne 12 partiellement

**REMARQUE :** l'ordre d'ajout des réactions PCR (master mix et éluat d'échantillon) dans l'Abbott 96-Well Optical Reaction Plate est le suivant : commencer à la colonne 1 (et la remplir du haut vers le bas) et passer à chaque colonne consécutive, de gauche à droite. Bien lire les numéros de colonnes en haut de l'Abbott 96-Well Optical Reaction Plate afin de remplir le(s) puits correct(s) avec de l'eau.

43. Préparer le master mix d'amplification.

**REMARQUE :** l'intégralité de la préparation des réactifs doit se dérouler dans la zone destinée à la préparation des réactifs. Se référer au paragraphe Précautions contre les risques de contamination de la notice avant de commencer la préparation des réactifs. Changer de gants avant de manipuler les réactifs d'amplification.

- Chaque coffret de réactifs d'amplification permet de traiter jusqu'à 24 réactions.
- Avant d'ouvrir les réactifs d'amplification, s'assurer que le contenu du coffret de réactifs d'amplification se trouve bien au fond en tapotant légèrement le coffret à la verticale sur la paillasse afin de faire descendre le liquide au fond des flacons.
- Identifier les réactifs d'amplification comme suit :
  - Réactif d'activation (réactif 1) : flacon transparent, bouchon vert canard
  - Réactif d'oligonucléotides VIH-1 (réactif 2) : flacon noir, bouchon blanc
  - Enzyme polymérase rTth thermostable (réactif 3) : flacon transparent, bouchon blanc
- Enlever les bouchons et les jeter.
- À l'aide d'une **PIPETTE DESTINEE UNIQUEMENT AUX REACTIFS**, ajouter 27 unités d'UNG dans chaque flacon d'enzyme polymérase rTth thermostable utilisé (réactif 3).
- Pour préparer le master mix, utiliser une **PIPETTE DE PRECISION DESTINEE UNIQUEMENT AUX REACTIFS** pour ajouter 271 µl de réactif d'activation (réactif 1) et 949 µl de réactif d'oligonucléotides VIH-1 (réactif 2) dans le flacon d'enzyme polymérase rTth thermostable (réactif 3). Mélanger le flacon d'enzyme contenant le mélange réactionnel (master mix) en l'aspirant et en le refoulant délicatement 5 à 7 fois à l'aide de la pipette. Eviter la formation de mousse.
- Pour l'analyse de 25 à 48 réactions, préparer le master mix d'amplification à l'aide de 2 coffrets-réactifs d'amplification.
- Pour l'analyse de 49 à 72 réactions, préparer le master mix d'amplification à l'aide de 3 coffrets-réactifs d'amplification.
- Pour l'analyse de 73 à 96 réactions, préparer le master mix d'amplification à l'aide de 4 coffrets-réactifs d'amplification.

**REMARQUE :** le protocole Abbott m2000rt (étape 50) doit être initié dans les 50 minutes suivant l'ajout du réactif d'activation dans le premier flacon d'enzyme (étape 43). Ces 50 minutes comprennent la période d'incubation de 10 minutes à température ambiante (étape 48 ci-dessous).

44. Transférer le contenu du master mix à l'aide d'une pipette du ou des flacons d'enzyme dans un tube ou un récipient exempt de RNase/DNase à usage unique. Mélanger en aspirant et en refoulant délicatement 5 à 7 fois à l'aide de la pipette. Eviter la formation de mousse.
45. À l'aide d'une **PIPETTE DE PRECISION DESTINEE UNIQUEMENT AUX REACTIFS**, distribuer des aliquots de 50 µl du master mix d'amplification dans chaque puits de l'Abbott 96-Well Optical Reaction Plate qui sera utilisé pour l'analyse des échantillons et des contrôles. Il est possible d'utiliser une pipette à répétition calibrée.
- Ajouter le master mix en commençant par la colonne 1 (de haut en bas) et en se déplaçant systématiquement vers la colonne suivante, en évoluant de la gauche vers la droite.
  - Vérifier visuellement que chaque puits a bien reçu 50 µl.
  - Transférer l'Abbott 96-Well Optical Reaction Plate se trouvant sur le StrataCooler 96 ou l'Eppendorf PCR Cooler dans la zone de préparation des échantillons.

#### Zone de préparation des échantillons

46. À l'aide d'une pipette de précision et d'un nouvel embout de pipette stérile de 200 µl muni d'une protection contre les aérosols pour chaque échantillon, transférer 50 µl de chaque éluat d'échantillon sur l'Abbott 96-Well Optical Reaction Plate se trouvant sur le StrataCooler 96 ou l'Eppendorf PCR Cooler. Durant le transfert de chaque échantillon, mélanger la réaction en l'aspirant et en la refoulant 3 à 5 fois à l'aide de la pipette. Vérifier visuellement que chaque puits a bien reçu au total 100 µl.

47. Sceller l'Abbott 96-Well Optical Reaction Plate conformément aux instructions du Chapitre Mode opératoire du Manuel Technique Abbott *m2000rt*.
48. Retirer l'Abbott 96-Well Optical Reaction Plate du StrataCooler 96 ou de l'Eppendorf PCR Cooler et la placer dans l'Abbott Splash-Free Support Base. Incuber à température ambiante (15 °C à 30 °C) pendant 10 minutes. **Centrifuger l'Abbott 96-Well Optical Reaction Plate placée dans l'Abbott Splash-Free Support Base à 5 000 g pendant 5 minutes.** La centrifugation peut avoir lieu pendant la période d'incubation de 10 minutes.
49. Transférer l'Abbott 96-Well Optical Reaction Plate placée dans l'Abbott Splash-Free Support Base dans la zone d'amplification.

**REMARQUE : ne pas transférer le StrataCooler 96 ou l'Eppendorf PCR Cooler dans la zone d'amplification.**

#### **Zone d'amplification**

50. Placer l'Abbott 96-Well Optical Reaction Plate sur l'Abbott *m2000rt*, sélectionner la demande de test créée (étape 41) et lancer le protocole de test Abbott RealTime HIV-1 Qualitative comme décrit dans le Manuel Technique Abbott *m2000rt*, Chapitre Mode opératoire. Une fois la série terminée, les résultats du test sont rendus sur l'Abbott *m2000rt*. Pour de plus amples informations, se référer à la partie **RESULTATS** de la notice du test Abbott RealTime HIV-1 Qualitative (réf. 04N66).
51. Poursuivre le traitement conformément à la partie **PROCEDURES POST-TRAITEMENT** de la notice du test Abbott RealTime HIV-1 Qualitative.

#### **PROCEDURES DE CONTROLE DE QUALITE**

Consulter la notice du test Abbott RealTime HIV-1 Qualitative (réf. 04N66) pour des informations sur les procédures de contrôle qualité.

Pendant la réalisation de la procédure décrite à la partie **Contrôle de la contamination dans le laboratoire** de la notice, ne pas utiliser d'UNG dans la réaction d'amplification. Continuer à contrôler les niveaux de contamination de l'établissement et du matériel ainsi que l'impact sur le test (évaluation des contrôles négatifs à l'aide de la procédure standard sans UNG). L'élimination de la source de contamination et un nettoyage constant devraient résoudre les problèmes de contamination au laboratoire. Il est recommandé d'interrompre la procédure UNG lorsque la contamination est ramenée à un niveau qui n'a plus de répercussions sur les résultats du test, tel que mesuré par la réponse du contrôle négatif en l'absence d'UNG.

#### **RESULTATS**

##### **Interprétation des résultats et limites de la méthode**

Consulter la notice du test Abbott RealTime HIV-1 Qualitative (réf. 04N66).

#### **ASSISTANCE TECHNIQUE**

Pour obtenir une assistance technique, appeler le Service Clients Abbott au 1-800-553-7042 (aux Etats-Unis) ou au +49-6122-580 (en dehors des Etats-Unis) ou consulter le site Internet d'Abbott à l'adresse suivante : [www.molecular.abbott](http://www.molecular.abbott).















StrataCooler est une marque déposée de Stratagene.

Eppendorf est une marque déposée de Eppendorf AG.

Abbott RealTime, *m*, *m2000*, *m2000rt* et *m2000sp* sont des marques commerciales d'Abbott.

Février 2025

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Símbolos utilizados	
	Código GTIN, número mundial de identificación de artículo
	Número de referencia
	Número de lote
	Producto sanitario para diagnóstico <i>in vitro</i>
	Fecha de caducidad
	Límite superior de temperatura
	Límite de temperatura
	Control positivo alto
	Control negativo
	Control interno
<b>AMPLIFICATION REAGENT PACK</b>	
	Envase de reactivos de amplificación
	Precaución
	Consulte las instrucciones de uso
	Fabricante

## ATENCIÓN AL CLIENTE INTERNACIONAL: PÓNGASE EN CONTACTO CON EL REPRESENTANTE DE ABBOTT

### FINALIDAD DE USO

Este procedimiento debe utilizarse junto con el ensayo Abbott RealTime HIV-1 Qualitative, n° de referencia 04N66. Consulte las instrucciones de uso de Abbott RealTime HIV-1 Qualitative (n° de referencia 04N66) para obtener información sobre la finalidad de uso. Este procedimiento se facilita como un control de contaminación opcional para los laboratorios que utilizan actualmente o que han utilizado en algún momento tecnologías de amplificación que incorporan uracilo en el producto de amplificación.

### USUARIO PREVISTO

Los usuarios previstos para el procedimiento Abbott RealTime HIV-1 Qualitative Including Uracil-N-Glycosylase (UNG), número de referencia 04N66-66, son profesionales del laboratorio y profesionales sanitarios.

### RESUMEN

Este procedimiento difiere del procedimiento descrito en las instrucciones de uso de Abbott RealTime HIV-1 Qualitative (n° de referencia 04N66) en los siguientes aspectos:

- Se añade uracilo-N-glucosilasa (UNG) en el paso de la preparación de la mezcla.
- Se requiere una incubación adicional de 10 minutos a temperatura ambiente después de la adición del conjunto de reacción y de la muestra.

### PREVENCIÓN DE LA CONTAMINACIÓN POR ÁCIDO NUCLEICO

Se minimiza la posibilidad de contaminación por ácido nucleico ya que:

- Los procesos de retrotranscripción, amplificación por PCR e hibridación de los oligonucleótidos se llevan a cabo en una placa de reacción óptica de 96 pocillos de Abbott sellada.
- La detección se realiza de forma automática, sin necesidad de abrir la placa de reacción óptica de 96 pocillos de Abbott.
- Para todos los pipeteos se utilizan puntas de pipeta con filtro antiaerosoles. Las puntas de pipeta se desechan después de su uso.

- Para realizar el ensayo Abbott RealTime HIV-1 Qualitative se utilizan áreas distintas y específicas.

Si desea más información, consulte las instrucciones de uso del ensayo Abbott RealTime HIV-1 Qualitative.

### REACTIVOS

Uracil-N-glycosylase (UNG), n° de referencia 6L87-02 (1 tubo, 112 µl, 1 U/µl)

Consulte las instrucciones de uso del ensayo Abbott RealTime HIV-1 Qualitative (n° de referencia 04N66) para obtener información sobre todos los reactivos necesarios.

#### Descripción


La UNG elimina los residuos de uracilo de la fracción de azúcar del DNA de cadena sencilla o de doble cadena sin destruir el enlace fosfodiéster. Esto evita que el DNA se utilice como diana de hibridación o como sitio de unión para las DNA polimerasas. La UNG no elimina el uracilo del RNA.

#### Componentes activos

- Uracilo-N-glucosilasa (UNG; <0,1 %)
- Tween 20 (<0,1 %)

#### Almacenamiento y manejo

El producto se envía con nieve carbónica (hielo seco).

 -15°C  
Almacénese entre -25 °C y -15 °C.

#### Licencia limitada

Este producto está autorizado para su uso exclusivo por el comprador para el control de la contaminación como se indica en el protocolo adjunto. No se confieren otros derechos de uso en reacciones que incorporen dUTP ni ninguna patente propiedad o controlada por Life Technologies.

### ADVERTENCIAS Y PRECAUCIONES

Este procedimiento se debe utilizar junto con el ensayo Abbott RealTime HIV-1 Qualitative.

Consulte las instrucciones de uso del ensayo Abbott RealTime HIV-1 Qualitative para obtener más información sobre las **ADVERTENCIAS Y PRECAUCIONES**.

Consulte la ficha de datos de seguridad para obtener información sobre la uracilo-N-glucosilasa.

#### Precauciones especiales

Consulte las instrucciones de uso del ensayo Abbott RealTime HIV-1 Qualitative (n° de referencia 04N66) para obtener información sobre las precauciones de manejo, incluida la definición de las áreas de trabajo e información detallada sobre las precauciones de contaminación e inhibición.

### PROCEDIMIENTO DEL ENSAYO

Para facilitar su uso, las instrucciones proporcionadas en este apartado incluyen los pasos de amplificación descritos en el apartado Protocolos del ensayo de las instrucciones de uso del ensayo Abbott RealTime HIV-1 Qualitative (n° de referencia 04N66). En las instrucciones de uso del ensayo Abbott RealTime HIV-1 Qualitative (n° de referencia 04N66) se incluyen 4 protocolos de ensayo:

**PROTOCOLO DE ENSAYO I: MUESTRAS DE PLASMA USANDO EL SISTEMA AUTOMATIZADO DE PREPARACIÓN DE MUESTRAS ABBOTT m2000sp**

**PROTOCOLO DE ENSAYO II: MUESTRAS DE SANGRE SECA USANDO EL SISTEMA AUTOMATIZADO DE PREPARACIÓN DE MUESTRAS ABBOTT m2000sp**

**PROTOCOLO DE ENSAYO III: MUESTRAS DE PLASMA USANDO EL MÉTODO MANUAL DE PREPARACIÓN DE MUESTRAS**

**PROTOCOLO DE ENSAYO IV: MUESTRAS DE SANGRE SECA USANDO EL MÉTODO MANUAL DE PREPARACIÓN DE MUESTRAS**

Se destacan las principales diferencias respecto al procedimiento de las instrucciones de uso del ensayo Abbott RealTime HIV-1 Qualitative. Para mayor comodidad, se mantiene la numeración de los pasos de las instrucciones de uso.

**PROTOCOLO DE ENSAYO I: MUESTRAS DE PLASMA USANDO EL SISTEMA AUTOMATIZADO DE PREPARACIÓN DE MUESTRAS ABBOTT m2000sp**

**PROTOCOLO DE ENSAYO II: MUESTRAS DE SANGRE SECA USANDO EL SISTEMA AUTOMATIZADO DE PREPARACIÓN DE MUESTRAS ABBOTT m2000sp**

11. Una vez completada la preparación de la muestra, cargue los reactivos de amplificación y el tubo de la mezcla en la mesa de trabajo del sistema Abbott m2000sp.

- Con cada envase de reactivos de amplificación se pueden realizar hasta 24 reacciones.
  - Antes de abrir los reactivos de amplificación, asegúrese de que el contenido se encuentre en el fondo de los tubos dando unos golpecitos a los tubos en posición vertical sobre la mesa de trabajo.
  - Retire y deseche los tapones de los tubos de amplificación.
  - Use una **PIPETA ESPECÍFICA PARA USO EXCLUSIVO CON REACTIVOS** y añada 27 µl de UNG a cada frasco de enzima polimerasa termoestable rTth que se utilice (reactivo 3).
12. En la pantalla del protocolo, seleccione la placa de pocillos profundos adecuada en la pantalla Run Master Mix Addition (procesar adición de la mezcla) que corresponda al protocolo de extracción de muestras. Inicie el protocolo de adición de la mezcla del sistema Abbott *m2000sp*. Siga las instrucciones que se describen en la sección Instrucciones de funcionamiento del Manual de funcionamiento del sistema Abbott *m2000sp*.
- NOTA: se debe iniciar el protocolo Abbott *m2000rt* (paso 16) antes de que transcurran 50 minutos desde el inicio del protocolo de adición de la mezcla (paso 12). Estos 50 minutos incluyen la incubación de 10 minutos a temperatura ambiente (paso 15, descrito a continuación).**
13. Encienda e inicie el instrumento Abbott *m2000rt* en el área de amplificación.
- NOTA: el sistema Abbott *m2000rt* tarda 15 minutos en calentarse.**
- NOTA: quítese los guantes antes de regresar al área de preparación de muestras.**
14. Selle la placa de reacción óptica de 96 pocillos de Abbott una vez completada la adición de las muestras y de la mezcla en el instrumento Abbott *m2000sp*, de acuerdo con lo descrito en la sección Instrucciones de funcionamiento del Manual de funcionamiento del sistema Abbott *m2000sp*.
15. Coloque la placa de reacción óptica sellada en la base de soporte para placas de Abbott e incúbela a temperatura ambiente (15 °C a 30 °C) durante 10 minutos. Después de la incubación, transfiera la placa de reacción óptica de 96 pocillos de Abbott al instrumento Abbott *m2000rt*.
16. Coloque la placa de reacción óptica de 96 pocillos de Abbott en el instrumento Abbott *m2000rt* e inicie el protocolo del ensayo Abbott RealTime HIV-1 Qualitative, tal y como se describe en la sección Instrucciones de funcionamiento del Manual de funcionamiento del sistema Abbott *m2000rt*. Una vez finalizado el procesamiento, los resultados del ensayo se visualizan en el sistema Abbott *m2000rt*. Para obtener más información, consulte el apartado **RESULTADOS** de las instrucciones de uso del ensayo.
17. Continúe el procesamiento según lo indicado en el apartado **PROCEDIMIENTOS DESPUÉS DEL PROCESAMIENTO** de las instrucciones de uso del ensayo Abbott RealTime HIV-1 Qualitative.

### PROTOCOLO DE ENSAYO III: MUESTRAS DE PLASMA USANDO EL MÉTODO MANUAL DE PREPARACIÓN DE MUESTRAS

### PROTOCOLO DE ENSAYO IV: MUESTRAS DE SANGRE SECA USANDO EL MÉTODO MANUAL DE PREPARACIÓN DE MUESTRAS

#### Área de preparación de los reactivos

42. Coloque una placa de reacción óptica de 96 pocillos de Abbott nueva en un refrigerador StrataCooler 96 o un Eppendorf PCR-Cooler, tal y como se indica en el manual de instrucciones de uso del StrataCooler 96 o en las instrucciones de uso del Eppendorf PCR-Cooler, respectivamente. **NO toque la superficie o el fondo de la placa.**
- EN CASO NECESARIO:** para series entre 49 y 95 (muestras más controles), antes de la preparación de la mezcla de amplificación, llene los pocillos que estarán vacíos con agua destilada o desionizada de acuerdo con las siguientes instrucciones:
- Con una pipeta calibrada, añada 100 µl de agua destilada o desionizada a los pocillos vacíos según el tamaño de la serie:

Tamaño de la serie de muestras	Pocillos vacíos para llenar
49-56	Columnas completas 8 a 12; columna parcial 7
57-64	Columnas completas 9 a 12; columna parcial 8
65-72	Columnas completas 10 a 12; columna parcial 9
73-80	Columnas completas 11 y 12; columna parcial 10
81-88	Columna completa 12; columna parcial 11
89-95	Columna parcial 12

**NOTA: el orden en el que se añaden reacciones de PCR (mezcla y eluido de muestra) a la placa de reacción óptica de 96 pocillos de Abbott empieza con la columna 1 (de arriba hacia abajo) y se pasa a cada columna consecutiva de izquierda a derecha. Cerciérese de leer los números de las columnas en la parte superior de la placa de reacción óptica de 96 pocillos de Abbott para asegurar que se han llenado con agua los pocillos correctos.**

43. Prepare la mezcla de amplificación.

**NOTA: todas las preparaciones de los reactivos deben realizarse en el área dedicada a la preparación de reactivos. Antes de preparar los reactivos, consulte el apartado Precauciones para evitar la contaminación en las instrucciones de uso del ensayo. Cámbiese los guantes antes de manejar los reactivos de amplificación.**

- Con cada envase de reactivos de amplificación se pueden realizar hasta 24 reacciones.
- Antes de abrir los reactivos de amplificación, asegúrese de que el contenido del envase de reactivos de amplificación se encuentra en el fondo dando unos golpecitos al envase de reactivos de amplificación en posición vertical sobre la mesa de trabajo para que el líquido se desplace al fondo de los viales.
- Identifique los reactivos de amplificación tal y como se describe a continuación:
  - Reactivo de activación (reactivo 1): frasco transparente y tapón verde azulado
  - Reactivo de oligonucleótidos del VIH-1 (reactivo 2): frasco negro y tapón blanco
  - Enzima polimerasa termoestable rTth (reactivo 3): frasco transparente y tapón blanco
- Retire y deseche los tapones.
- Use una **PIPETA ESPECÍFICA PARA USO EXCLUSIVO CON REACTIVOS** para añadir 27 unidades de UNG a cada frasco de enzima polimerasa termoestable rTth que se utilice (reactivo 3).
- Prepare la mezcla utilizando una **PIPETA DE PRECISIÓN ESPECÍFICA PARA USO EXCLUSIVO CON REACTIVOS** para añadir 271 µl del reactivo de activación (reactivo 1) y 949 µl del reactivo de oligonucleótidos del VIH-1 (reactivo 2) al frasco de enzima polimerasa termoestable rTth (reactivo 3). Mezcle el frasco de enzimas que contiene la mezcla de reacción (mezcla) aspirando y dispensando con cuidado de 5 a 7 veces. Evite la formación de espuma.
- Si se van a realizar de 25 a 48 reacciones, prepare la mezcla de amplificación con 2 envases de reactivos de amplificación.
- Si se van a realizar de 49 a 72 reacciones, prepare la mezcla de amplificación con 3 envases de reactivos de amplificación.
- Si se van a realizar de 73 a 96 reacciones, prepare la mezcla de amplificación con 4 envases de reactivos de amplificación.

**NOTA: se debe iniciar el protocolo Abbott *m2000rt* (paso 50) antes de que transcurran 50 minutos desde la adición del reactivo de activación en el primer frasco de enzimas (paso 43). Estos 50 minutos incluyen la incubación de 10 minutos a temperatura ambiente (paso 48, descrito a continuación).**

44. Pipetee el contenido de la mezcla del frasco de enzimas en un tubo o recipiente de un solo uso sin RNAsas/DNAsas. Mezcle el contenido aspirando y dispensando con suavidad de 5 a 7 veces. Evite la formación de espuma.

45. Utilice una **PIPETA DE PRECISIÓN ESPECÍFICA PARA USO EXCLUSIVO CON REACTIVOS** para dispensar alícuotas de 50 µl de mezcla de amplificación en cada pocillo de la placa de reacción óptica de 96 pocillos de Abbott que se utilizará para analizar las muestras y los controles. Puede utilizar una pipeta de repetición calibrada.
- Añada la mezcla por orden empezando por la columna 1 (de arriba hacia abajo) y desplazándose a las columnas consecutivas de izquierda a derecha.
  - Compruebe visualmente que se hayan dispensado 50 µl en cada pocillo.
  - Traslade la placa de reacción óptica de 96 pocillos de Abbott en el refrigerador StrataCooler 96 o Eppendorf PCR-Cooler al área de preparación de muestras.

#### Área de preparación de muestras

46. Con una pipeta de precisión y una punta de pipeta con filtro antiaerosol nueva y esterilizada de 200 µl para cada muestra, transfiera 50 µl de cada muestra eluida a la placa de reacción óptica de 96 pocillos de Abbott en el refrigerador StrataCooler 96 o Eppendorf PCR-Cooler. Durante la transferencia de las muestras, mezcle la reacción pipeteando y dispensando de 3 a 5 veces. Compruebe visualmente que se haya dispensado un total de 100 µl en cada pocillo.
47. Selle la placa de reacción óptica de 96 pocillos de Abbott de acuerdo con la sección Instrucciones de funcionamiento del Manual de funcionamiento del sistema Abbott *m2000rt*.
48. Retire la placa de reacción óptica de 96 pocillos de Abbott del refrigerador StrataCooler 96 o Eppendorf PCR-Cooler y colóquela en la base de soporte para placas de Abbott. Incube a temperatura ambiente (15 °C a 30 °C) durante 10 minutos. **Centrifugue la placa de reacción óptica de 96 pocillos de Abbott en la base de soporte para placas de Abbott a 5 000 g durante 5 minutos.** La centrifugación puede realizarse durante la incubación de 10 minutos.
49. Traslade la placa de reacción óptica de 96 pocillos de Abbott con la base de soporte para placas de Abbott al área de amplificación.

**NOTA: no traslade el refrigerador StrataCooler 96 o Eppendorf PCR-Cooler al área de amplificación.**

#### Área de amplificación

50. Coloque la placa de reacción óptica de 96 pocillos de Abbott en el instrumento Abbott *m2000rt*, seleccione la petición de ensayo creada (paso 41) e inicie el protocolo del ensayo Abbott RealTime HIV-1 Qualitative, tal y como se describe en la sección Instrucciones de funcionamiento del Manual de funcionamiento del sistema Abbott *m2000rt*. Una vez finalizado el procesamiento, los resultados del ensayo se visualizan en el sistema Abbott *m2000rt*. Consulte el apartado **RESULTADOS** de las instrucciones de uso del ensayo Abbott RealTime HIV-1 Qualitative (nº de referencia 04N66) para obtener más información.
51. Continúe el procesamiento según lo indicado en el apartado **PROCEDIMIENTOS DESPUÉS DEL PROCESAMIENTO** de las instrucciones de uso del ensayo Abbott RealTime HIV-1 Qualitative.

#### PROCEDIMIENTOS DE CONTROL DE CALIDAD

Consulte las instrucciones de uso del ensayo Abbott RealTime HIV-1 Qualitative (nº de referencia 04N66) para obtener información sobre los procedimientos de control de calidad.

Para el procedimiento de control de calidad del apartado **Seguimiento del laboratorio para comprobar la presencia de contaminación** de las instrucciones de uso, no utilice UNG en la reacción de amplificación. Continúe con el seguimiento de los niveles de contaminación en sus instalaciones y equipos, así como el impacto que puede tener en el ensayo (evaluación de los controles negativos según el procedimiento estándar, sin UNG). La eliminación de la fuente de contaminación y la limpieza continuada deberían solucionar los problemas de contaminación del laboratorio. Se recomienda dejar de utilizar el procedimiento con UNG cuando se reduzca la contaminación a un nivel en el que ya no afecte a los resultados del ensayo, indicado por la respuesta de los controles negativos en ausencia de UNG.

## RESULTADOS

### Interpretación de los resultados y limitaciones del procedimiento

Consulte las instrucciones de uso del ensayo Abbott RealTime HIV-1 Qualitative (nº de referencia 04N66).

### ASISTENCIA TÉCNICA

Si requiere asistencia técnica, póngase en contacto con el Centro de Asistencia Técnica de Abbott (telf: 1-800-553-7042 si llama desde EE. UU. y telf: +49-6122-580 si llama desde fuera de EE. UU.) o consulte la página web de Abbott en [www.molecular.abbott](http://www.molecular.abbott)

StrataCooler es una marca comercial registrada de Stratagene.

Eppendorf es una marca comercial registrada de Eppendorf AG.

Abbott RealTime, *m*, *m2000*, *m2000rt* y *m2000sp* son marcas comerciales de Abbott.

Febrero de 2025

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## HIV-1 Qualitative Control Kit

**NOTE: Changes Highlighted**

Key to Symbols used	
	Reference Number
	In Vitro Diagnostic Medical Device
	Lot Number
	Expiration Date
	Negative Control
	High Positive Control
	Upper limit of temperature
	Consult instructions for use
	Warning
	Caution
	Manufacturer

### Intended Use

The Abbott RealTime HIV-1 Qualitative Controls are used to establish run validity of the Abbott RealTime HIV-1 Qualitative assay when used for the qualitative detection of Human Immunodeficiency Virus Type 1 (HIV-1) nucleic acids from human plasma and dried blood spots (DBS).

### Intended User

The intended users for the Abbott RealTime HIV-1 Qualitative Controls are laboratory and healthcare professionals.

### Contents

- CONTROL - Abbott RealTime HIV-1 Negative Control (2G31Z) (12 vials, 1.8 mL per vial).** Negative human plasma tested and found to be nonreactive for HBsAg, anti-HIV-1/HIV-2, anti-HCV, HIV RNA, HCV RNA, and HBV DNA. Preservatives: 0.1% ProClin 300 and 0.15% ProClin 950.
  - CONTROL H Abbott RealTime HIV-1 High Positive Control (2G31X) (12 vials, 1.8 mL per vial).** Noninfectious Armored RNA with HIV-1 sequences in negative human plasma. Negative human plasma tested and found to be nonreactive for HBsAg, anti-HIV-1/HIV-2, anti-HCV, HIV RNA, HCV RNA, and HBV DNA. Preservatives: 0.1% ProClin 300 and 0.15% ProClin 950.
- The Abbott RealTime Qualitative Reagents are intended for single-use only and unused reagents should be discarded.
  - The Abbott RealTime HIV-1 Qualitative Control Kit must only be used with the Abbott RealTime HIV-1 Qualitative assay (List No. 4N66-90).

### Precautions

- IVD** In Vitro Diagnostic Medical Device
- For In Vitro Diagnostic Use Only**
- Do not use beyond expiration date.



**CAUTION:** This preparation contains human sourced and/or potentially infectious components. Components sourced from human blood have been tested and found to be nonreactive by FDA-licensed tests for antibody to HCV, antibody to HIV-1, antibody to HIV-2, and HBsAg. The material is also tested and found to be negative by FDA-licensed PCR methods for HIV-1 RNA and HCV RNA. No known test method can offer complete assurance that products derived from human sources or inactivated microorganisms will not transmit infection. These reagents and human specimens should be handled as if infectious using safe laboratory procedures, such as those outlined in Biosafety in Microbiological and Biomedical Laboratories,<sup>1</sup> OSHA Standards on Bloodborne Pathogens,<sup>2</sup> CLSI Document M29-A4,<sup>3</sup> and other appropriate biosafety practices.<sup>4</sup> Therefore all human sourced materials should be considered infectious.

These precautions include, but are not limited to, the following:

- Wear gloves when handling specimens or reagents.
- Do not pipette by mouth.
- Do not eat, drink, smoke, apply cosmetics, or handle contact lenses in areas where these materials are handled.
- Clean and disinfect spills of specimens by including the use of a tuberculocidal disinfectant such as 1.0% sodium hypochlorite or other suitable disinfectant.<sup>1</sup>
- Decontaminate and dispose of all potentially infectious materials in accordance with local, state and federal regulations.<sup>4</sup>

Components of the Abbott RealTime HIV-1 Qualitative Control Kit (List No. 4N66-80) contain the following components:

- 2-Methyl-2H-isothiazol-3-one
- Reaction mass of: 5-chloro-2-methyl-4-isothiazolin-3-one (EC no. 247-500-7) and 2-methyl-2H-isothiazol-3-one (EC no. 220-239-6)(3:1)
- Reaction mass of: 5-chloro-2-methyl-4-isothiazolin-3-one (EC no. 247-500-7) and 2-methyl-4-isothiazolin-3-one (EC no. 220-239-6)(3:1)

The following warnings apply:



### Warning

H317	May cause an allergic skin reaction.
P261	Avoid breathing mist / vapours / spray.
P280	Wear protective gloves / protective clothing / eye protection.
P272	Contaminated work clothing should not be allowed out of the workplace.
P302+P352	IF ON SKIN: Wash with plenty of water.
P333+P313	If skin irritation or rash occurs: Get medical advice / attention.
P362+P364	Take off contaminated clothing and wash it before reuse.
P501	Dispose of contents / container in accordance with local regulations.



Consult instructions for use



Store at ≤ -10°C

## Shipping Conditions

Ship on dry ice.

## BIBLIOGRAPHY

1. US Department of Health and Human Services. *Biosafety in Microbiological and Biomedical Laboratories*. 5th ed. Washington, DC: US Government Printing Office; December 2009.  
[Also available online. Type> [www.cdc.gov](http://www.cdc.gov), search>BMBL5>look up sections III and IV.]
2. US Department of Labor, Occupational Safety and Health Administration. 29 CFR Part 1910.1030. *Bloodborne Pathogens*.
3. Clinical and Laboratory Standards Institute. *Protection of Laboratory Workers from Occupationally Acquired Infections: Approved Guideline—Fourth Edition*. CLSI Document M29-A4. Wayne, PA: Clinical and Laboratory Standards Institute; 2014.
4. World Health Organization. *Laboratory Biosafety Manual*. 3rd ed. Geneva, Switzerland: World Health Organization; 2004.

## Technical Assistance

For technical assistance, call Abbott Technical Services at 1-800-553-7042 (within the US) or +49-6122-580 (outside the US), or visit the Abbott website at [www.molecular.abbott](http://www.molecular.abbott).

Armored RNA is a registered trademark of Ambion.

ProClin is a registered trademark of Rohm and Haas.

Abbott RealTime is a trademark of Abbott.



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