





# Veritor™ System For Rapid Detection of SARS-CoV-2

Kit configured for testing anterior nasal swab samples; processed and dispensed directly onto the assay test device.

For use under an Emergency Use Authorization only, in the United States.

30

Determinations



Kit configured for testing anterior nasal swab samples; processed, and dispensed directly onto the assay test device.

For In Vitro Diagnostic Use.

For use with the BD Veritor™ Plus Analyzer running firmware version 5.4 or higher.

In the USA: For use under an Emergency Use Authorization only.

Please read these instructions completely before beginning to test specimens.

#### **INTENDED USE**

The BD Veritor™ System for Rapid Detection of SARS-CoV-2 is a chromatographic digital immunoassay intended for the qualitative detection of nucleocapsid protein antigen from SARS-CoV-2 in direct anterior nasal swab specimens collected by a healthcare provider from individuals suspected of COVID-19 within the first 5 days of symptom onset when tested at least twice over 3 days with at least 48 hours between tests and from individuals without symptoms or other epidemiological reasons to suspect COVID-19 when tested at least three times over 5 days with at least 48 hours between tests. Testing is limited to laboratories certified under the Clinical Laboratory Improvement Amendments of 1988 (CLIA), 42 U.S.C. § 263a, that meet the requirements to perform moderate, high or waived complexity tests. This test is authorized for use at the Point of Care (POC), i.e., in patient care settings operating under a CLIA Certificate of Waiver, Certificate of Compliance, or Certificate of Accreditation.

The BD Veritor™ System for Rapid Detection of SARS-CoV-2 does not differentiate between SARS-CoV and SARS-CoV-2. Results are for the identification of SARS-CoV-2 nucleocapsid protein antigen, which is generally detectable in anterior nasal swab specimens during the acute phase of infection. Positive results indicate the presence of viral antigens, but clinical correlation with past medical history and other diagnostic information is necessary to determine patient infection status. Positive results do not rule out bacterial infection or co-infection with other viruses. The agent detected may not be the definitive cause of disease. Laboratories within the United States and its territories are required to report all results to the appropriate public health authorities.

All negative results are presumptive and confirmation with a molecular assay, if necessary for patient management, may be performed. Negative results do not rule out SARS-CoV-2 infection and should not be used as the sole basis for treatment or patient management decisions, including infection control measures such as isolating from others and wearing masks. Negative results should be considered in the context of an individual's recent exposures, history and the presence of clinical signs and symptoms consistent with COVID-19.

The BD Veritor™ System for Rapid Detection of SARS-CoV-2 is intended for use by healthcare professionals or operators who are proficient in performing tests in point of care settings. The BD Veritor™ System for Rapid Detection of SARS-CoV-2 is only for *in vitro* diagnostic use under the Food and Drug Administration's Emergency Use Authorization. This product has not been FDA cleared or approved.

# **SUMMARY AND EXPLANATION OF THE TEST**

A novel coronavirus (2019-nCoV) was identified in December 2019,¹ which has resulted in hundreds of millions of confirmed human infections worldwide. Cases of severe illness and deaths have been reported. On February 11, 2020 the International Committee for Taxonomy of Viruses (ICTV) renamed the virus SARS-CoV-2.

The median incubation time is estimated to be approximately 5 days<sup>2</sup> with symptoms estimated to be present within 12 days of infection. The symptoms of COVID-19 are similar to other viral respiratory diseases and include fever, cough, and shortness of breath.

The BD Veritor™ System for Rapid Detection of SARS-CoV-2 is a rapid (approximately 15 minutes) chromatographic digital immunoassay for the direct detection of the presence or absence of SARS-CoV-2 antigens in respiratory specimens taken from patients with signs and symptoms who are suspected of COVID-19, or taken from asymptomatic individuals being tested serially, as described in the authorized intended use. The test is intended for interpretation in both laboratory and near patient testing environments only with the BD Veritor™ Plus Analyzer Instrument. The test is not intended to be interpreted visually. Procedures to evaluate test devices depend on the BD Veritor™ Plus Analyzer workflow configuration chosen. In Analyze Now mode, the instrument evaluates assay devices after manual timing of their development. In Walk Away mode, devices are inserted immediately after application of the specimen, and timing of assay development and analysis is automated. Additionally, connection of a BD Veritor™ Plus Analyzer to a printer or IT system is possible if desired. Additional result documentation capabilities are possible with the integration of a BD Veritor™ barcode scanning enabled module. Please refer to the BD Veritor™ Plus Analyzer Instructions for Use for details on how to implement these features

### PRINCIPLES OF THE PROCEDURE

The BD Veritor™ System consists of a dedicated opto-electronic interpretation instrument and immunochromatographic assays for the qualitative detection of antigens from pathogenic organisms in samples processed from respiratory specimens. The BD Veritor™ System for Rapid Detection of SARS-CoV-2 is designed to detect the presence or absence of SARS-CoV-2 nucleocapsid proteins in respiratory samples from patients with signs and symptoms of infection who are suspected of COVID-19 by their healthcare provider, within the first 5 days of the onset of symptoms, or who are asymptomatic and undergoing serial testing, as described in the intended use. When specimens are processed and added to the test device, SARS-CoV-2 antigens present in the specimen bind to antibodies conjugated to detector particles in

the test strip. The antigen-conjugate complexes migrate across the test strip to the reaction area and are captured by a line of antibodies bound on the membrane. A positive result is determined by the BD Veritor<sup>TM</sup> Plus Analyzer when antigen-conjugate is deposited at the Test "T" position and the Control "C" position on the assay device. The instrument analyzes and corrects for non-specific binding and detects positives not recognized by the unaided eye to provide an objective result.

### REAGENTS

The following components are included in the BD Veritor™ System for Rapid Detection of SARS-CoV-2 kit.

## **Materials Provided:**

KIT COMPONENT	QUANTITY	DESCRIPTION	
BD Veritor™ System Test Devices	30 single use test devices	Foil pouched test device containing one reactive strip. Each strip has one line of murine anti-SARS coronavirus monoclonal antibody on the test line, and one of biotin coupled to bovine protein on the positive control line. Murine and Leporine anti-SARS coronavirus and anti-biotin monoclonal antibodies conjugated to detector reagents are bound in the sample delivery area.	
Extraction Reagent	30 single use reaction tubes, each with 325 µL extraction reagent and having an integral dispensing tip	Detergent solution with less than 0.1% sodium azide (preservative).	
Specimen sampling swabs	30 sterile, single use specimen sampling swabs	For sample collection and transfer.	
SARS-CoV-2 (+) Control Swab	1 each – individually wrapped for single use	Non-infectious, recombinant viral protein antigen with less than 0.1% sodium azide.	
SARS-CoV-2 (–) Control Swab	1 each – individually wrapped for single use	Buffer with less than 0.1% sodium azide.	
Assay documentation	each - Instructions for use     each - Quick reference instruction card     each - Nasal sampling instructions		

MATERIALS REQUIRED BUT NOT PROVIDED	OPTIONAL EQUIPMENT		
BD Veritor™ Plus Analyzer running firmware v5.40 or higher (Catalog Number 256066)     BD Veritor™ System Barcode Scanning Module (Catalog Number 256068 or 445010)*     Timer     Tube rack for specimens     Any necessary personal protective equipment	USB Printer cable for BD Veritor™ Plus Analyzer (Catalog Number 443907)     Epson Printer model TM-T20 II     BD Veritor™ Plus Connect (contact your BD representative for details)		

<sup>\*</sup> If required to configure instrument display language

#### WARNINGS AND PRECAUTIONS

- Read all instructions carefully before performing the test. Failure to follow the instructions may result in inaccurate test results.
- 2. For in vitro diagnostic use.
- 3. For prescription use only.
- 4. In the USA, this product has not been FDA cleared or approved; but has been authorized by FDA under an Emergency Use Authorization for use by authorized laboratories; use by laboratories certified under the CLIA, 42 U.S.C. §263a, that meet requirements to perform moderate, high, or waived complexity tests. This product is authorized for use at the Point of Care (POC), i.e., in patient care settings operating under a CLIA Certificate of Waiver, Certificate of Compliance, or Certificate of Accreditation.
- 5. This product has been authorized only for the detection of proteins from SARS-CoV-2, not for any other viruses or pathogens. The emergency use of this product is only authorized for the duration of the declaration that circumstances exist justifying the authorization of emergency use of *in vitro* diagnostics for detection and/or diagnosis of COVID-19 under Section 564(b)(1) of the Federal Food, Drug and Cosmetic Act, 21 U.S.C. § 360bbb-3(b)(1), unless the declaration is terminated or authorization is revoked sooner.
- 6. Serial testing should be performed in individuals with negative results at least twice over 3 days (with 48 hours between tests) for symptomatic individuals and three times over 5 days (with at least 48 hours between tests) for asymptomatic individuals. You may need to purchase additional tests to perform this serial (repeat) testing.

- If you have had symptoms longer than 5 days, you should consider testing at least three times over 5 days with at least 48 hours between tests.
- 8. Do not use this kit beyond the expiration date printed on the outside carton.
- The test device should remain in its original sealed pouch until ready for use. Do not use if any of the test kit components or packaging is damaged. Once opened, the test device must be used within 5 minutes.
- Do not use the kit to evaluate patient specimens if either the positive control swab or negative control swab fail to give expected results.
- Test results are not meant to be visually determined. All test results must be determined using the BD Veritor™
  Plus Analyzer.
- 12. When using the "Analyze Now" mode, do not read test results before 15 minutes or after 20 minutes. Results read before 15 minutes and after 20 minutes may lead to false positive, false negative or invalid result.
- 13. To avoid erroneous results, specimens must be processed as indicated in the assay procedure section.
- 14. Test components are single use. Do not reuse any BD Veritor™ System test device or kit components.
- 15. Do not use components from any other BD Veritor™ test with the BD Veritor™ System for Rapid Detection of SARS-CoV-2. While components from other BD Veritor™ tests may appear similar, they are not the same.
- 16. When collecting the direct anterior nasal swab sample, use the nasal swab supplied in the kit. Do not touch the swab tip.
- 17. Other than the swabs used for specimen collection, kit components should not make contact with the patient.
- 18. Proper specimen collection, storage and transport are critical to the performance of this test.
- The test is intended to be used with direct anterior nasal swabs and is not validated for use with swabs in viral transport media.
- 20. Specific training or guidance is recommended if operators are not experienced with specimen collection and handling procedures. Wear protective clothing such as laboratory coats, disposable gloves, and eye protection when specimens are collected and evaluated. Wear a safety mask or other face-covering when collecting a specimen from a child or another individual
- 21. Pathogenic microorganisms, including hepatitis viruses and Human Immunodeficiency Virus, may be present in clinical specimens. Standard precautions and institutional guidelines should always be followed in handling, storing, and disposing of all specimens and all items contaminated with blood or other body fluids.
- 22. The SARS-CoV-2 positive control swabs have been prepared from recombinant viral proteins and do not contain infectious material.
- Dispose of used BD Veritor™ System test devices and reagents as biohazardous waste in accordance with federal, state and local requirements.
  - Reagents contain sodium azide, which is harmful if inhaled, swallowed or exposed to skin. If there is contact with skin, wash immediately with plenty of water. Contact with acids produces very toxic gas. Dispose of used BD Veritor<sup>TM</sup> System test devices and reagents in accordance with federal, state and local requirements in an approved biohazard waste container. Do not flush reagents down the drain.
- 24. Do not inhale, swallow or ingest any kit components. Avoid contact with your skin and eyes. The reagent solution contains harmful chemicals (see Hazardous Ingredients Table 1 below). If the solution contacts your eyes, flush with large amounts of water. If irritation persists, seek medical advice: https://www.poisonhelp.org or 1-800-222-1222.

Table 1: Hazardous Ingredients

GHS Hazard Statement for Mixture Labeling of Harm(s)		Hazardous Ingredients (%)		
Skin irritation Causes mild skin irritation (H316)		Triton X-100 (CAS# 9036-19-5): 0.5299% (w/w)     Sodium Azide (CAS# 26628-22-8): 0.0945% (w/w)		
Serious eye irritation	Causes serious eye irritation (H319)	Triton X-100 (CAS# 9036-19-5): 0.5299% (w/w)     Sodium Azide (CAS# 26628-22-8): 0.0945% (w/w)		

- 25. Test devices used in a laminar flow hood or in areas with high air flow should be covered during test development to ensure proper sample flow.
- 26. In environments likely to cause electrostatic charge buildup (dry air, synthetic floor coverings, synthetic clothing), touch a metal surface before using the BD Veritor™ Plus Analyzer.
- 27. For additional information on hazard symbols, safety, handling and disposal of the components within this kit, please refer to the Safety Data Sheet (SDS) located at bd.com.
- 28. For more information on EUAs please visit: https://www.fda.gov/emergency-preparedness-and-response/mcm-legal-regulatory-and-policy-framework/emergency-use-authorization.
- 29. For the most up to date information on COVID-19, please visit: www.cdc.gov/COVID-19.

#### STORAGE

Kits may be stored at 2–30 °C. DO NOT FREEZE. Reagents and devices must be at room temperature (15–30 °C) when used for testing.

#### SPECIMEN COLLECTION AND HANDLING

# **Specimen Collection and Preparation**

Acceptable specimens for testing with this kit include direct anterior nasal swab specimens obtained by the dual nares collection method. It is essential that correct specimen collection and preparation methods be followed. Specimens obtained early during symptom onset will contain the highest viral titers; specimens obtained after 5 days of symptoms are more likely to produce negative results when compared to an RT-PCR assay. Inadequate specimen collection, improper specimen handling and/or transport may yield a falsely negative result; therefore, training in specimen collection is highly recommended due to the importance of specimen quality for generating accurate test results.

#### Specimen Transport and Storage

Freshly collected specimens should be processed as soon as possible, but no later than 1 hour after specimen collection. It is essential that correct specimen collection and preparation methods be followed.

#### Anterior Nasal Swab Specimen Collection

The BD Veritor™ System for Rapid Detection of SARS-CoV-2 includes swabs for nasal specimen collection.

- Insert swab into one nostril of the patient.
   The swab tip should be inserted up to
   2.5 cm (1 inch) from the edge of the nostril.
   Roll the swab 5 times along the mucosa inside the nostril to ensure that both mucus and cells are collected. Take approximately 15 seconds to collect the sample.
- Using the same swab, repeat this process for the other nostril to ensure that an adequate sample is collected from both nasal cavities.
- Withdraw the swab from the nasal cavity. The sample is now ready for processing using the BD Veritor<sup>TM</sup> System SARS-CoV-2 kit. The swab should be processed in the extraction reagent vial within 1 hour.







#### DO'S AND DON'TS OF SPECIMEN COLLECTION

- Do test sample immediately.
- · Use only swabs provided with the kit.

In the United States, refer to: Interim Guidelines for Collecting, Handling and Testing Clinical Specimens from persons for COVID-19 at https://www.cdc.gov/coronavirus/2019-ncov/lab/guidelines-clinical-specimens.html.

Outside the United States, refer to applicable guidelines from other national or local authorities.

# **TEST PROCEDURE**

Reagents, specimens, and devices must be at room temperature (15-30 °C) for testing.

This BD Veritor™ System assay kit is only intended for anterior nasal swab specimens that are collected and tested directly (i.e., swabs that have NOT been placed in transport media). The kit includes a pre-diluted processing reagent in a ready to use "unitized" tube. Do not mix components from any other BD Veritor™ test with the components of this kit. While components from other BD Veritor™ tests may appear similar, they are not the same. This kit IS NOT INTENDED for testing liquid samples such as wash or aspirate samples or swabs in transport media as results can be compromised by over dilution.

### **Getting Ready to Test**

The following steps assume that the BD Veritor™ Plus Analyzer is ready to use. To choose or change any BD Veritor™ Plus Analyzer settings, see the BD Veritor™ Plus Analyzer Instructions for Use. A printer is not necessary to display results. However, if your facility has chosen to connect the BD Veritor™ Plus Analyzer to a printer, check that the BD Veritor™ Plus Analyzer is plugged into a power source, paper supply is adequate and any necessary network connections are enabled before testing.

Once the anterior nasal swab has been collected from the nostrils, the swab should be processed within 1 hour.

## Procedural steps for direct anterior nasal swabs or control swabs:

rocedural steps for direct anterior nasal swabs or control s	was.
Remove one extraction reagent tube/tip and one BD Veritor™ System test device from its foil pouch immediately before testing or within 5 minutes of opening. If uncovered, debris may land on the device read window and interfere with line interpretation causing false positive or invalid results.      Label one test device and one extraction reagent tube for each specimen or control to be tested.      Place the labeled extraction reagent tube(s) in a rack in the designated area of the workspace.	Extraction Reagent Tube Test Device
Remove and discard the cap from the extraction reagent tube.	
Carefully insert the swab into the tube and plunge the swab up and down in the fluid for a minimum of 15 seconds, taking care not to splash contents out of the tube.	15 seconds
Remove the swab while squeezing the sides of the tube to extract the liquid from the swab.	
Press the attached tip firmly onto the extraction reagent tube containing the processed sample (threading or twisting is not required). Mix thoroughly by swirling or flicking the bottom of the tube.  Do not mix components from any other BD Veritor™ test with the components of this kit. While components from other BD Veritor™ tests may appear similar, they are not the same.  NOTE: Do not use tubes or tips from any other product, including other products from BD or other manufacturers.	

Once the swab has been processed in the extraction reagent and the tube has been capped, the sample should be added to the test device within 30 minutes.

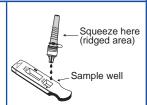
After step 5, choose from the BD Veritor™ Plus Analyzer workflow option below before continuing to step 6:							
	BD Veritor™	BD Veritor™	BD Veritor™ Plus Analyzer with a barcode scanning module installed.				
	Plus Analyzer in Analyze Now mode	Plus Analyzer in <b>Walk Away</b> mode	in <b>Analyze Now</b> mode	in <b>Walk Away</b> mode			
Instructions in section:	Α	В	С	D			

# A Using a BD Veritor™ Plus Analyzer in "Analyze Now" mode\*:

Adding the specimen to the test device (If testing in batches, jump to Step 6A Batch)

- Invert the extraction reagent tube and hold it vertically (approximately one inch above the sample well).
- Gently squeeze the ridged body of the tube, dispensing three (3) drops of the processed specimen into the sample well.
- · Properly dispose of the extraction reagent tube.

**NOTE:** Squeezing the tube too close to the tip may cause leakage. This could result in contamination or insufficient sample to run the assay, potentially resulting in a false positive or invalid result.



# 7A

6A

#### Timing test development

- After adding the sample, allow the test to run for 15 minutes but no longer than 20 minutes before inserting the test device into the BD Veritor™ Plus Analyzer.
- During incubation time, turn the BD Veritor™ Plus Analyzer on by pressing the blue power button once.

NOTE: Test devices used in a laminar flow hood or in areas with high air flow should be covered during test development to prevent sample evaporation and incomplete sample flow which may produce an erroneous false negative, false positive result or control invalid result.



**CAUTION:** Incorrect results may occur if development time is less than 15 minutes. Some lines may appear on the device sooner. Do not read device visually. Do not read test devices before 15 minutes as this could result in a false negative or invalid result. Do not read devices after 20 minutes as false negative, false positive or invalid results may occur.

# A8

## Using the BD Veritor™ Plus Analyzer

- The BD Veritor<sup>™</sup> Plus Analyzer will complete a self-test before it is ready for use. After the self-test the display window shows "INSERT TEST DEVICE OR DOUBLE-CLICK BUTTON FOR WALK AWAY MODE".
- INSERT THE TEST DEVICE when the 15-minute assay development time is complete.
- The status of the assay analysis process appears in the display window.
   Follow the on-screen prompts to complete the procedure. Do not touch the instrument or remove the test device until the result appears.
- When analysis is complete, the test result appears in the display window.



9A

Record the result before removing the test device.

\*ATTENTION: TEST Results are NOT maintained in the display window when the device is removed or if the BD Veritor™ Plus Analyzer is left unattended for more than 15 minutes (60 minutes if AC power adapter is connected).

# **Instructions for Batch Testing**

Processing errors that result in false positive or false negative results may occur when inadequate time is planned between multiple specimens in batch mode. Allow adequate time for each specimen to process in the test device and for obtaining and recording Analyzer results. Follow CDC Guidelines for changing gloves and cleaning work area between specimen handling and processing. https://www.cdc.gov/coronavirus/2019-nCoV/lab/lab-biosafety-guidelines.html. The following recommendations were developed based upon a single replicate of 12 specimens tested by professional operators within 30 minutes. Untrained or inexperienced operators may not be able to accurately process as many specimens in batch mode.

**CAUTION:** Each institution should develop a batch testing protocol to ensure that patient specimens can be tested accurately and in accordance with the instructions for use.

accurately	and in accordance with the instructions for use.	
	A-Batch Batch Sample Collection (10	Tests):
6A Batch	Gather 10 sets of test materials.  Open test device pouches.  Label each set with patient ID (extraction reagent tube and test device).	Extraction 1 1 1 Reagent Tube Test Device
7A Batch	Label the tube tray with the patient ID.  • Set each tube in the tray with the matching patient ID.	
8A Batch	Select extraction reagent tube and remove cap.	
9A Batch	Insert patient sample swab and vigorously plunge the swab up and down for 15 seconds taking care not to splash contents out of the tube.	
10A Batch	Remove swab while squeezing to extract liquid. Properly dispose of swab.	Squeeze
11A Batch	Press dispensing tip on the tube firmly.  Mix the sample by swirling the bottom of the tube.	
12A Batch	Place tube back in tray with matching patient ID.  Repeat steps 8A–12A until all remaining tubes have been prepared.  Specimen processed in the reagent vial must be run within 30 minutes on the test device.	

	A-Batch Batch Preparation and Analysis (1	0 Tests):
13A Batch	Select the extracted Sample and the matching test device for each specimen.  Add 3 drops of the processed sample to the test device sample well, then properly dispose of the extraction reagent tube.  NOTE: Squeezing the tube too close to the tip may cause leakage. This could result in contamination or insufficient sample to run the assay.	Squeeze here (ridged area)  Sample well
14A Batch	Activate a 15-minute timer. Each test device <b>must incubate for 15 minutes</b> before it can be analyzed. <b>NOTE:</b> Do not read test devices before 15 minutes as this could result in a false negative or invalid result. Do not read devices after 20 minutes as false positive, false negative or invalid results may occur.	15 min 1
15A Batch	Repeat steps 13A–14A until all remaining devices <b>have been prepared and are incubating</b> , with a timer running staggering each test by 30 seconds.	
16A Batch	Power on the BD Veritor™ Plus Analyzer by pressing the blue start button once. The device is now ready to be inserted into the Analyzer. Analyzer may remain on until all testing is completed.	
17A Batch	When prompted, insert the test device to read.	
18A Batch	If using the optional barcode reader module, follow the screen prompts to scan operator ID and kit lot number to start the test analysis.  After scans are completed, the BD Veritor™ Plus Analyzer displays a countdown time and test analysis begins.	
19A Batch	<ul> <li>Result will appear on screen and will be stored in the BD Veritor™ Plus Analyzer.</li> <li>Record result.</li> <li>Remove test device and properly dispose.</li> <li>Continue with the next device once it has incubated for 15 minutes.</li> </ul>	CoV2: +

\*ATTENTION: TEST Results are NOT maintained in the display window when the device is removed or if the BD Veritor™ Plus Analyzer is left unattended for more than 15 minutes (60 minutes if AC power adapter is connected).

# R

# Using the BD Veritor™ Plus Analyzer in "Walk Away" mode\*: with no barcode scanning module installed

To use Walk Away mode - connect the AC power adapter to the Analyzer and a power source

**6B** 

#### Starting Walk Away Mode

- Turn the BD Veritor™ Plus Analyzer on by pressing the blue power button once
- When the display window reads: "INSERT TEST DEVICE OR DOUBLE-CLICK FOR WALK AWAY MODE", Double-click the blue power button.
- The display window reads "ADD SPECIMEN TO TEST DEVICE AND INSERT IMMEDIATELY".

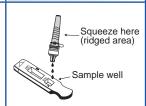


7B

## Adding the specimen to the test device

- Invert the extraction reagent tube and hold it vertically (approximately one inch above the sample well).
- Gently squeeze the ridged body of the tube, dispensing three (3) drops of the processed specimen into the sample well.
- Properly dispose of the extraction reagent tube.

**NOTE:** Squeezing the tube too close to the tip may cause leakage. This could result in contamination or insufficient sample to run the assay, potentially resulting in a false positive or invalid result.



CAUTION: A countdown timer displays the time remaining for test insertion. Walk Away mode must be activated again when this timer expires. Confirm timer is visible and Walk Away mode is activated before inserting test device.

8B

# Starting the development and reading sequence

 Insert the test device into the slot on the right side of the BD Veritor™ Plus Analyzer.

The test device must remain horizontal to prevent spilling the specimen out of the sample well, potentially contaminating the workspace and compromising the integrity of the result.

- "DO NOT DISTURB TEST IN PROGRESS" appears in the display window. Automatic timing of the assay development, image processing and result analysis begins. The status of the assay analysis process appears in the display window. Follow the on-screen prompts to complete the procedure.
  - Do not touch the instrument or remove the test device until the result appears.
- · The display window shows the remaining analysis time.



Do not touch the BD Veritor™ Plus Analyzer or remove the test device during this process. Doing so will abort the assay analysis. If this happens within 5 minutes of starting the assay, restart the BD Veritor™ Plus Analyzer, select Walk Away Now mode and insert the device again for a 15-minute read. If this occurs after 5 minutes, a new swab specimen will be needed.

9B

#### Record the result before removing the test device.

When analysis is complete, the test result appears in the display window. Record the result and discard the
test device appropriately.

\*ATTENTION: TEST Results are NOT maintained in the display window when the device is removed or if the BD Veritor™ Plus Analyzer is left unattended for more than 15 minutes (60 minutes if AC power adapter is connected).

# C

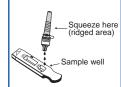
# Using the BD Veritor™ Plus Analyzer In "Analyze Now" mode with a barcode scanning module installed

# 6C

### Adding the specimen to the test device

- Invert the extraction reagent tube and hold it vertically (approximately one inch above the sample well).
- Gently squeeze the ridged body of the tube, dispensing three (3) drops of the processed specimen into the sample well.
- Properly dispose of the extraction reagent tube.

**NOTE:** Squeezing the tube too close to the tip may cause leakage. This could result in contamination or insufficient sample to run the assay, potentially resulting in a false positive or invalid result.



# 7C

### Timing test development

 After adding the sample, allow the test to run for 15 minutes but no longer than 20 minutes before inserting the test device into the BD Veritor™ Plus Analyzer.

NOTE: Test devices used in a laminar flow hood or in areas with high air flow should be covered during test development to prevent sample evaporation and incomplete sample flow which may produce an erroneous false negative, false positive result or control invalid result.



CAUTION: Do not read test device visually. Some lines may appear on the device before the end of the incubation time. Do not read test devices before 15 minutes as this could result in a false negative or invalid result. Do not read devices after 20 minutes as false negative, false positive or invalid results may occur.

# 8C

### Using the BD Veritor™ Plus Analyzer

During the test device incubation time, turn on the BD Veritor  $^{\text{TM}}$  Plus Analyzer by pressing the blue button once.

The display window briefly shows "SCAN CONFIG BARCODE." This is an opportunity to change the configuration of the BD Veritor™ Plus Analyzer. Ignore this message and postpone this process when an assay is awaiting analysis. Please refer to the BD Veritor™ Plus Analyzer Instructions for Use for configuration steps.

 When assay development time is complete and the BD Veritor™ Plus Analyzer display window reads "INSERT TEST DEVICE OR DOUBLE-CLICK FOR WALK AWAY MODE", insert the BD Veritor™ System SARS-CoV-2 device into the slot on the right side of the BD Veritor™ Plus Analyzer.





# 9C

#### Using the barcode scanner

Follow the prompts on the display screen to complete any required barcode scans of:

- OPERATOR ID
- SPECIMEN ID and/or
- KIT LOT NUMBER



- Prompts for each scanning step appear in the display window for only 30 seconds. Failure to complete
  scans during that time will cause the BD Veritor™ Plus Analyzer to default to the beginning of step 8C.
  To restart this step, remove and reinsert the test device to initiate a new reading sequence.
- Move barcodes slowly toward the window until a confirmation tone sounds. The scanned barcode value
  appears in the next display window.
- The BD Veritor™ Plus Analyzer can record the Kit Lot Number and expiration date in the test record but
  does not restrict the use of expired or inappropriate reagents. Management of expired materials is the
  responsibility of the user.

After required scans are completed, the BD Veritor™ Plus Analyzer displays a countdown timer and test analysis begins.

- Do not touch the BD Veritor™ Plus Analyzer or remove the test device during this process. Doing so will
  abort the assay analysis.
- When analysis is complete a result appears in the display window. If configured to display, the specimen ID barcode value also appears. If a printer is connected, specimen ID and result are automatically printed.

If the printer is not connected, record the result before removing the assay device.

ATTENTION: TEST Results are NOT maintained in the display window when the device is removed or if the BD Veritor™ Plus Analyzer is left unattended for more than 15 minutes (60 minutes if AC power adapter is connected).

# 10C

### Removing the test device

Remove and then discard the test device appropriately. The display will show "INSERT TEST DEVICE OR DOUBLE-CLICK BUTTON FOR WALK AWAY MODE" to indicate the BD Veritor™ Plus Analyzer is ready to perform another test.



If the BD Veritor™ Plus Analyzer is connected to an LIS, a steady ENVELOPE symbol will appear to indicate that results are awaiting transmission. If a network connection is not detected while the ENVELOPE symbol is still displayed, the BD Veritor™ Plus Analyzer will queue all untransmitted results and attempt to transmit them when reconnected. If it is powered off during this time, it will attempt to transmit a soon as power is restored, and connection is re-established. A flashing envelope indicates that data are in the process of being transmitted.

# D

Using the BD Veritor™ Plus Analyzer In "Walk Away" mode with a barcode scanning module installed

To use Walk Away mode - connect the AC power adapter to the BD Veritor™ Plus Analyzer and a power source

# 6D

#### Starting Walk Away Mode

- Turn the BD Veritor™ Plus Analyzer on by pressing the blue power button once. The
  display window will briefly show "SCAN CONFIG BARCODE". This is an opportunity
  to change the configuration of the BD Veritor™ Plus Analyzer. Please refer to the
  BD Veritor™ Plus Analyzer Instructions for Use for configuration steps. Ignore this
  message and postpone this process when an assay is awaiting analysis.
- When the display window reads: "INSERT TEST DEVICE OR DOUBLE-CLICK FOR WALK AWAY MODE", Double-click the blue power button.



# **7**D

#### Using the barcode scanner

- Follow the prompts on the display screen to complete any required barcode scans of:
- OPERATOR ID
- SPECIMEN ID and/or
- KIT LOT NUMBER



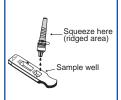
- Prompts for each scanning step appear in the display window for only 30 seconds. Failure to complete
  scans during that time will cause the BD Veritor™ Plus Analyzer to default to the beginning of step 6D.
  To restart this step, remove and reinsert the test device to initiate a new reading sequence.
- Move barcodes slowly toward the window until a confirmation tone sounds. The scanned barcode value
  appears in the next display window.
- The BD Veritor™ Plus Analyzer can record the Kit Lot Number and expiration date in the test record but
  does not restrict the use of expired or inappropriate reagents. Management of expired materials is the
  responsibility of the user.

## 8D

#### Adding the specimen to the test device

- When the display window reads: "ADD SPECIMEN TO TEST DEVICE AND INSERT IMMEDIATELY".
- Invert the tube, holding it vertically (approximately one inch above the BD Veritor™ System SARS-CoV-2 device sample well).
- Gently squeeze the ridged portion of the tube, dispensing three (3) drops of the processed specimen into the sample well.
- Properly dispose of the extraction reagent tube.

**NOTE:** Squeezing the tube too close to the tip may cause leakage. This could result in contamination or insufficient sample to run the assay, potentially resulting in a false positive or invalid result.



**CAUTION:** A countdown timer displays the time remaining for test insertion. Walk Away mode must be activated again when this timer expires. Confirm timer is visible and Walk Away mode is activated before inserting test device.

# 9D

## Starting the development and reading sequence

- Insert the test device into the slot on the right side of the BD Veritor™ Plus Analyzer. The
  test device must remain horizontal to prevent spilling the specimen out of the sample well.
- "DO NOT DISTURB TEST IN PROGRESS" appears in the display window.
   Automatic timing of the assay development, image processing and result analysis begins.
- The display window shows the remaining analysis time.



Do not touch the BD Veritor™ Plus Analyzer or remove the test device during this process. Doing so will abort the assay analysis.

When analysis is complete, a result appears in the display window. If configured to display, the Specimen ID barcode
value also appears. If a printer is connected, specimen ID and result are automatically printed.

If the printer is not connected, record the result before removing the assay device.

ATTENTION: TEST Results are NOT maintained in the display window when the device is removed or if the BD Veritor™ Plus Analyzer is left unattended for more than 15 minutes (60 minutes if AC power adapter is connected).



#### Removing the test device

Remove and then discard the test device appropriately. The display will show "INSERT TEST DEVICE OR DOUBLE-CLICK BUTTON FOR WALK AWAY MODE" to indicate the BD Veritor<sup>TM</sup> Plus Analyzer is ready to perform another test. Note that the BD Veritor<sup>TM</sup> Plus Analyzer returns to Analyze Now mode at the conclusion of each read sequence



If the BD Veritor<sup>TM</sup> Plus Analyzer is connected to an LIS, a steady ENVELOPE symbol will appear to indicate that results are awaiting transmission. If a network connection is not detected while the ENVELOPE symbol is still displayed, the BD Veritor<sup>TM</sup> Plus Analyzer will queue all untransmitted results and attempt to transmit them when reconnected. If it is powered off during this time, it will attempt to transmit as soon as power is restored, and connection is re-established. A flashing envelope indicates that data are in the process of being transmitted.

#### INTERPRETATION OF RESULTS

The BD Veritor™ Plus Analyzer (provided separately) must be used for interpretation of all test results. Operators should not attempt to interpret assay results directly from the test strip contained within the BD Veritor™ assay device.

Display	Interpretation
CoV2: +	Positive Test for SARS-CoV-2 (antigen detected)
CoV2: -	Presumptive Negative Test for SARS-CoV-2 (no antigen detected) Repeat testing is needed to improve test accuracy. Please follow Table 2 below when interpreting tests results.
CONTROL INVALID	Test Invalid.* Repeat the test.

<sup>\*</sup>Invalid Test – If the test is invalid, the BD Veritor<sup>TM</sup> System Instrument will display "CONTROL INVALID" and the test or control must then be repeated. If the "CONTROL INVALID" reading recurs, contact BD.

Repeat testing is needed to improve test accuracy. Please follow the table below when interpreting test results.

Table 2: Test Results Interpretation

Status on First Day of Testing	First Result Day 1	Second Result Day 3	Third Result Day 5	Interpretation	
	Positive	N/A	N/A	Positive for COVID-19	
With Symptoms	Negative	Positive N/A		Positive for COVID-19	
	Negative	Negative	N/A	Negative for COVID-19	
	Positive	N/A	N/A	Positive for COVID-19	
Without Committee	Negative	Positive	N/A	Positive for COVID-19	
Without Symptoms	Negative	Negative	Positive	Positive for COVID-19	
	Negative	Negative	Negative	Negative for COVID-19	

Results should be considered in the context of an individual's recent exposures, history, and the presence of clinical signs and symptoms consistent with COVID-19.

# REPORTING OF RESULTS

Positive Test – Positive for the presence of SARS-CoV-2 antigen.

Repeat testing does not need to be performed if patients have a positive result at any time.

A positive test result means that the virus that causes COVID-19 was detected in the sample, and it is very likely the individual has COVID-19 and is contagious. Please instruct your patient to adhere to the local guidelines regarding self-isolation. There is a very small chance that this test can give a positive result that is incorrect (a false positive).

Positive results do not rule out bacterial infection or co-infection with other viruses. The agent detected may not be the definite cause of disease. In some cases, additional confirmatory testing with a molecular test for positive results may also be necessary, if there is a low likelihood of COVID-19, such as in individuals without known exposures to COVID-19 or residing in communities with low prevalence of infection.

Negative Test - Negative results are presumptive.

To increase the chance that the negative result for COVID-19 is accurate, you should:

- . Test again in 48 hours if the individual has symptoms on the first day of testing.
- Test 2 more times at least 48 hours apart if the individual does not have symptoms on the first day of testing.

A negative test result indicates that the virus that causes COVID-19 was not detected in the sample. A negative result does not rule out COVID-19. There is a higher chance of false negative results with antigen tests compared to laboratory-based

tests such as PCR tests. If the test is negative but COVID-19-like symptoms; e.g., fever, cough, and/or shortness of breath continue, follow up testing for SARS-CoV-2 with a molecular test or testing for other respiratory disease should be considered.

All negative results should be treated as presumptive and confirmation with a molecular assay may be necessary if there is a high likelihood of SARS-CoV-2 infection, such as in an individual with a close contact with COVID-19 or with suspected exposure to COVID-19 or in communities with high prevalence of infection. Negative results do not rule out SARS-CoV-2 infection and should not be used as the sole basis for treatment or patient management decisions, including infection control decisions.

**Control Invalid** – Do not report results. Re-test with a new test device. It may be necessary to collect a fresh patient specimen, if more than 1 hour has passed since specimen collection, or more than 30 minutes since the specimen was placed into extraction buffer or if insufficient volume of extraction reagent remains.

**Batch Testing** – Processing errors, including false positive or false negative results, may occur when inadequate time is planned between multiple specimens in batch mode. Allow adequate time for each specimen to process in the test device and for obtaining and recording Analyzer results.

See the BD Veritor™ Plus Analyzer Instructions for Use for recommendations on instrument cleaning. Follow CDC Guidelines for changing gloves and cleaning work area between specimen handling and processing. It is recommended to follow your institution's requirements for decontamination procedures or if a spill occurs. Follow CDC guidelines for best practices to limit contamination.

https://www.cdc.gov/coronavirus/2019-nCoV/lab/lab-biosafety-guidelines.html

#### **QUALITY CONTROL**

Each BD Veritor™ System SARS-CoV-2 test device contains both positive and negative internal/procedural controls:

- The internal positive control line validates the immunological integrity of the device, proper reagent function, and assures correct test procedure.
- . The membrane area surrounding test lines functions as a background check on the assay device.

The BD Veritor™ System Instrument evaluates the positive and negative internal/procedural controls after insertion of each test device. The BD Veritor™ Plus Analyzer prompts the operator if a quality issue occurs during assay analysis. Failure of the internal/procedural controls will generate an invalid test result.

NOTE: The internal controls do not assess proper sample collection technique.

#### **External Positive and Negative Controls**

Positive and Negative control swabs are supplied with each kit. These controls provide additional quality control material to assess that the test reagents and the BD Veritor<sup>TM</sup> System Instrument perform as expected. Prepare kit control swabs and test using the same procedure as used for patient specimens.

BD recommends controls be run once for:

- · each new kit lot.
- each new operator,
- · each new shipment of test kits,
- as required by internal quality control procedures and in accordance with local, state and federal regulations or accreditation requirements.

If the kit controls do not perform as expected, do not report patient results. Contact your local BD representative.

#### LIMITATIONS OF THE PROCEDURE

- The performance of this test has not yet been clinically validated for use in patients without signs and symptoms of respiratory infection, or for serial screening applications and performance may differ in these populations.
- Clinical performance was evaluated with frozen samples from symptomatic patients, and test performance may be different with fresh samples.
- The performance of this test was established based on the evaluation of a limited number of clinical specimens
  collected during the month of June, 2020. The clinical performance has not been established in all circulating
  variants but is anticipated to be reflective of the prevalent variants in circulation at the time and location of the
  clinical evaluation. Performance at the time of testing may vary depending on the variants circulating, including
  newly emerging strains of SARS-CoV-2 and their prevalence, which change over time.
- Users should test specimens as quickly as possible after specimen collection and always within 1 hour of specimen collection or 30 minutes after placement of swab into the extraction reagent.
- Positive test results do not rule out co-infections with other pathogens.
- Results from the BD Veritor<sup>TM</sup> System for Rapid Detection of SARS-CoV-2 test should be correlated with the clinical history, epidemiological data, and other data available to the clinician evaluating the patient.
- There is a higher chance of false negative results with antigen tests than with laboratory-based molecular tests
  due to the sensitivity of the test technology. This means that there is a higher chance this test will give a false
  negative result in an individual with COVID-19 as compared to a molecular test, especially in samples with low
  viral load.
- A false-negative test result may occur if the level of viral antigen in a sample is below the detection limit of the test
  or if the sample was collected or transported improperly; therefore, a negative test result does not eliminate the
  possibility of SARS-CoV-2 infection.
- Based on in vitro testing, false positive results cannot be ruled out if patients with rheumatoid factor higher than 12.5 IU/mL in nasal fluid, although it is unclear if such concentrations are clinically relevant.

- False positive results can occur due to contamination. Users should disinfect instrument between specimens and batch testing and follow careful disinfection procedures to limit contamination.
- Do not read test devices before 15 minutes as this could result in a false negative or invalid result. Do not read
  devices after 20 minutes as false positive, false negative or invalid results may occur.
- The amount of antigen in a sample may decrease as the duration of illness increases. Specimens collected after day 5 of illness are more likely to be negative compared to a RT-PCR assay.
- Incorrect test results may occur if a specimen is incorrectly collected or handled. Failure to follow the test
  procedure may adversely affect test performance and/or invalidate the test result.
- The contents of this kit are to be used for the qualitative detection of SARS-CoV-2 antigens from nasal swab specimens only.
- This test detects both viable (live) and nonviable SARS-CoV-2. Test performance depends on the amount of virus (antigens) in the sample and may or may not correlate with viral culture results performed on the same sample.
- Negative test results are not intended to rule in other non-SARS-CoV-2 viral or bacterial infections.
- Positive and negative predictive values are highly dependent on prevalence rates. Positive test results are more
  likely to represent false positive results during periods of little/no SARS-CoV-2 activity when disease prevalence is
  low. False negative test results are more likely when prevalence of disease caused by SARS-CoV-2 is high.
- This device has been evaluated for use with human specimen material only.
- Monoclonal antibodies may fail to detect, or detect with less sensitivity, SARS-CoV-2 viruses that have undergone
  minor amino acid changes in the target epitope region.
- Sensitivity of the test after the first 5 days of the onset of symptoms has been demonstrated to decrease as compared to a RT-PCR SARS-CoV-2 assay.
- All SARS-CoV-2 antigen test negative results should be treated as presumptive and confirmation with a molecular assay may be necessary. Outside the United States, a molecular assay cleared for diagnostic use in the country of use is recommended.
- If the patient continues to have symptoms of COVID-19, and both the patient's first and second tests are negative, the patient may not have COVID-19, however additional follow-up may be needed.
- If the test is positive, then proteins from the virus that causes COVID-19 have been found in the sample and the individual likely has COVID-19.
- The validity of the BD Veritor™ System for Rapid Detection of SARS-CoV-2 test has not been proven for identification/confirmation of tissue culture isolates and should not be used in this capacity.

#### CONDITIONS OF AUTHORIZATION FOR THE LABORATORY (APPLICABLE IN THE USA)

The BD Veritor™ System for Rapid Detection of SARS-CoV-2 Letter of Authorization, along with the authorized Fact Sheet for Healthcare Providers, the authorized Fact Sheet for Patients, and authorized labeling are available on the FDA website: https://www.fda.gov/medical-devices/coronavirus-disease-2019-covid-19-emergency-use-authorizations-medical-devices/in-vitro-diagnostics-euas

However, to assist clinical laboratories using the BD Veritor<sup>TM</sup> System for Rapid Detection of SARS-CoV-2 ("your product" in the conditions below), the relevant Conditions of Authorization are listed below.

- Authorized laboratories\* using your product must include with test result reports, all authorized Fact Sheets.
   Under exigent circumstances, other appropriate methods for disseminating these Fact Sheets may be used, which may include mass media.
- Authorized laboratories using your product must use your product as outlined in the BD Veritor™ System for
  Rapid Detection of SARS-CoV-2 Instructions for Use. Deviations from the authorized procedures, including the
  authorized instruments, authorized clinical specimen types, authorized control materials, authorized other ancillary
  reagents and authorized materials required to use your product are not permitted.
- Authorized laboratories that receive your product must notify the relevant public health authorities of their intent to run your product prior to initiating testing.
- Authorized laboratories using your product must have a process in place for reporting test results to healthcare
  providers and relevant public health authorities, as appropriate.
- Authorized laboratories will collect information on the performance of your product and report to DMD/OHT7-OIR/ OPEQ/CDRH (via email: CDRH-EUA-Reporting@fda.hhs.gov) and to BD by contacting BD Customer Support Services at 800.638.8663 (in the U.S.) any suspected occurrence of false positive or false negative results and significant deviations from the established performance characteristics of your product of which they become
- All operators using your product must be appropriately trained in performing and interpreting the results of
  your product, use appropriate personal protective equipment when handling this kit, and use your product in
  accordance with the authorized labeling.
- Becton, Dickinson and Company authorized distributors, and authorized laboratories and patient care settings
  using your product must ensure that any records associated with this EUA are maintained until otherwise notified
  by FDA. Such records will be made available to FDA for inspection upon request.

\* The letter of authorization refers to, "Laboratories certified under the Clinical Laboratory Improvement Amendments of 1988 (CLIA), 42 U.S.C. §263a, that meet the requirements to perform high, moderate, or waived complexity tests." This test is authorized for use at the Point of Care (POC), i.e., in patient care settings operating under a CLIA Certificate of Waiver, Certificate of Compliance, or Certificate of Accreditation as "authorized laboratories".

#### CLINICAL PERFORMANCE

The performance of the BD Veritor™ System for Rapid Detection of SARS-CoV-2 was established with 226 direct nasal swabs prospectively collected and enrolled from individual symptomatic patients<sup>a</sup> (within 5 days of onset) who were suspected of COVID-19. As with all antigen tests, performance may decrease as days since symptom onset increases, due to lower viral loads later in the patient's disease course. Samples were collected by qualified personnel in 21 geographically diverse areas across the United States.

Nasal swabs were collected following the dual nares method and handled as described in the package insert of the collection device. Specimens were frozen within 30 minutes of collection and stored until tested. All specimens within a pre-specified date range were selected and then sequentially tested in a blinded fashion. The performance of the BD Veritor™ System Assay was compared to results of a nasopharyngeal or oropharyngeal swab stored in 3 mL viral transport media tested with an Emergency Use Authorized molecular (RT-PCR) test for detection of SARS-CoV-2.

<sup>a</sup> Symptoms included new loss of taste or smell, fever, shortness of breath or difficulty breathing, headache, cough, sore throat, muscle pain, chills and repeated shaking with chills.

**Table 3:** Summary of the Performance of the BD Veritor™ System for Rapid Detection of SARS-CoV-2 Compared to RT-PCR for Nasal Swabs

BD Veritor™ Results	Reference RT-PCR Results			
	POS	NEG	Total	
POS	26	0	26	
NEG	5	195	200	
Total	31	195	226	

PPA: 84% (C.I. 67%-93%) NPA: 100% (C.I. 98%-100%)

While the clinical performance of BD Veritor™ System for Rapid Detection of SARS-CoV-2 does not meet the 95% confidence interval lower bound of 70%, supplemental clinical data was submitted for the BD Veritor™ System for the Rapid Detection of SARS-CoV-2 and Flu A+B, in which the clinical performance did exceed the 95% confidence interval lower bound of 70% to support serial testing.

#### **EXPLANATION OF TERMS:**

C.I.: Confidence Interval

PPA: Positive Percent Agreement = True Positives / (True Positives + False Negatives)
NPA: Negative Percent Agreement = True Negatives / (True Negatives + False Positives)

#### Serial Screening

A prospective clinical study was conducted between January 2021 and May 2022 as a component of the Rapid Acceleration of Diagnostics (RADx®) initiative from the National Institutes of Health (NIH). A total of 7,361 individuals were enrolled via a decentralized clinical study design, with a broad geographical representation of the United States. Per inclusion criteria, all individuals were asymptomatic upon enrollment in the study and at least 14 days prior to it and did not have a SARS-CoV-2 infection in the 3 months prior to enrollment. Participants were assigned to one of three EUA authorized SARS-CoV-2 OTC rapid antigen tests to conduct serial testing (every 48 hours) for 15 days. If an antigen test was positive, the serial-antigen testing result is considered positive.

At each rapid antigen testing time point, study subjects also collected a nasal swab for comparator testing using a home collection kit (using a 15-minute normalization window between swabs). SARS-CoV-2 infection status was determined by a composite comparator method on the day of the first antigen test, using at least two highly sensitive EUA RT-PCRs. If results of the first two molecular test were discordant a third highly sensitive EUA RT-PCR test was performed, and the final test result was based upon the majority rule.

Study participants reported symptom status throughout the study using the MyDataHelps app. Two-day serial antigen testing is defined as performing two antigen tests 36–48 hours apart. Three-day serial antigen testing is defined as performing three antigen tests over 5 days with at least 48 hours between each test.

Out of the 7,361 participants enrolled in the study, 5,609 were eligible for analysis. Among eligible participants, 154 tested positive for SARS-CoV-2 infection based on RT-PCR, of which 97 (62%) were asymptomatic on the first day of their infection, whereas 57 (39%) reported symptoms on the first day of infection. Pre-symptomatic subjects were included in the positive percent agreement (PPA) of asymptomatic individuals, if they were asymptomatic on the first day of antigen testing, regardless of whether they developed symptoms at any time after the first day of testing.

Performance of the antigen test with serial testing in individuals is described in Table 4.

**Table 4:** Data establishing PPA of COVID-19 antigen serial testing compared to the molecular comparator single day testing throughout the course of infection with serial testing. Data is from all antigen tests in study combined.

DAYS AFTER FIRST RT-PCR POSITIVE TEST RESULT	ASYMPTOMATIC ON FIRST DAY OF TESTING SYMPTOMATIC ON FIRST DAY OF TESTING			Y OF TESTING		
	Ag Positive/RT-PCR Positive (Antigen Test Performance % PPA)					
	1 Test	2 Tests	3 Tests	1 Test	2 Tests	3 Tests
0	9/97 9.3%	35/89 39.3%	44/78 56.4%	34/57 59.6%	47/51 92.2%	44/47 93.6%
2	17/34 50%	23/34 67.6%	25/32 78.1%	58/62 93.5%	59/60 98.3%	43/43 100%

DAYS AFTER FIRST					Y OF TESTING		
RT-PCR POSITIVE	Ag Positive/RT-PCR Positive (Antigen Test Performance % PPA)						
TEST RESULT	1 Test	2 Tests	3 Tests	1 Test	2 Tests	3 Tests	
4	16/21 76.2%	15/20 75.0%	13/15 86.7%	55/58 94.8%	53/54 98.1%	39/40 97.5%	
6	20/28 71.4%	21/27 77.8%	16/18 88.9%	27/34 79.4%	26/33 78.8%	22/27 81.5%	
8	13/23 56.5%	13/22 59.1%	4/11 36.4%	12/17 70.6%	12/17 70.6%	7/11 63.6%	
10	5/9 55.6%	5/8 62.5%	-	4/9 44.4%	3/7 42.9%	-	

- 1 Test = one (1) test performed on the noted days after first RT-PCR positive test result. Day 0 is the first day of documented infection with SARS-CoV-2.
- 2 Tests = two (2) tests performed an average of 48 hours apart. The first test performed on the indicated day and the second test performed 48 hours later.
- 3 Tests = three (3) tests performed an average of 48 hours apart. The first test performed on the indicated day, the second test performed 48 hours later, and a final test performed 48 hours after the second test.

#### ANALYTICAL PERFORMANCE

#### LIMIT OF DETECTION (ANALYTICAL SENSITIVITY)

The LoD for the BD Veritor™ System for Rapid Detection of SARS-CoV-2 was established using limiting dilutions of a viral sample inactivated by gamma irradiation. The material was supplied at a concentration of 2.8 x 10⁵ TCID<sub>so</sub>/mL. In this study, designed to estimate the LoD of the assay when using a direct nasal swab, the starting material was spiked into a volume of pooled human nasal matrix obtained from healthy donors and confirmed negative for SARS-CoV-2. An initial range finding study was performed testing devices in triplicate using a 10-fold dilution series. At each dilution, 50 µL samples were added to swabs and then tested in the BD Veritor™ assay using the procedure appropriate for patient nasal swab specimens. A concentration was chosen between the last dilution to give three positive results and the first to give three negative results. Using this concentration, the LoD was further refined with a 2-fold dilution series. The last dilution demonstrating 100% positivity was then tested in an additional 20 replicates tested in the same way.

Based upon the testing procedure for this study, the LoD of 1.4 x 10<sup>2</sup> TCID<sub>ex</sub>/mL equates to 7.00 TCID<sub>ex</sub>/swab.

Starting Material Concentration	Estimated LoD	No. Positive/Total	% Positive
2.8 x 10 <sup>5</sup> TCID <sub>50</sub> /mL	1.4 x 10 <sup>2</sup> TCID <sub>50</sub> /mL 7.00 TCID <sub>50</sub> /swab	19/20	95%

#### NIH/RADx® VARIANT TESTING

The performance of this device in the detection of the Omicron variant of SARS-CoV-2 was evaluated in a dilution series of clinical specimens which were positive for the Omicron variant. This testing was conducted by the National Institutes of Health (NIH) as a component of the Rapid Acceleration of Diagnostics (RADx®) initiative. Specimen pools were prepared by the RADx® team using clinical pooled samples from currently circulating Omicron strains and tested by RADx® to assess performance with the Omicron variant. Results from this dilution series cannot be compared to other specimen pools and do not indicate that a test will have different clinical performance compared to other EUA authorized tests. Compared to an EUA authorized RT-PCR method, this test detected 100% of live virus Omicron samples at a Ct-value of 22.7 (n=5). Testing was also compared to two additional EUA-authorized OTC antigen tests (Assay #1 and Assay #2). Omicron dilutions at lower viral concentrations (Ct-values greater than 23.6) were not detected by this test in this study.

Omicron Pool 2 - Live Omicron Clinical Samples	Average N2 Ct (n = 9)	Assay #1 Percent Positive (n = 5)	Assay #2 Percent Positive (n = 5)	BD Veritor™ System for Rapid Detection of SARS-CoV-2 Test Percent Positive (n = 5)
Dilution 1	19.8	100	100	100
Dilution 2	20.8	100	100	100
Dilution 3	21.5	100	100	100
Dilution 4	22.7	100	100	100
Dilution 5	23.6	100	0	20
Dilution 6	24.0	60	0	0

Omicron Pool 2 - Live Omicron Clinical Samples	Average N2 Ct (n = 9)	Assay #1 Percent Positive (n = 5)	Assay #2 Percent Positive (n = 5)	BD Veritor™ System for Rapid Detection of SARS-CoV-2 Test Percent Positive (n = 5)
Dilution 7	24.8	0	0	0
Dilution 8	25.8	0	0	0
Dilution 9	27.4	0	0	0
Dilution 10	28.1	0	0	0
Dilution 11	29.1	0	0	0

# CROSS-REACTIVITY (ANALYTICAL SPECIFICITY)

Cross-reactivity of the BD Veritor™ System for Rapid Detection of SARS-CoV-2 was evaluated by testing a panel of high prevalence respiratory pathogens that could potentially cross-react with the BD Veritor™ System for Rapid Detection of SARS-CoV-2 in a negative and a 5x LoD sample. Each organism and virus was tested in triplicate. The final concentration of each organism is documented in the following table.

Potential Cross-Reacting Organism	Concentration Tested	Cross-Reactivity (Yes/No)
Human coronavirus 229E (heat inactivated)	1.0 <b>x</b> 10⁵ U/mL	No
Human coronavirus OC43	1.0 x 10 <sup>5</sup> TCID <sub>50</sub> /mL	No
Human coronavirus NL63	1.0 x 10 <sup>5</sup> TCID <sub>50</sub> /mL	No
Adenovirus	1.0 x 10 <sup>5</sup> TCID <sub>50</sub> /mL	No
Human Metapneumovirus	1.0 x 10 <sup>5</sup> TCID <sub>50</sub> /mL	No
Parainfluenza virus 1	1.0 x 10⁵ TCID <sub>50</sub> /mL	No
Parainfluenza virus 2	1.0 x 10 <sup>5</sup> TCID <sub>50</sub> /mL	No
Parainfluenza virus 3	5.2 x 10⁵ TCID <sub>50</sub> /mL	No
Parainfluenza virus 4	1.6 x 10 <sup>4</sup> TCID <sub>50</sub> /mL	No
Influenza A	2.5 x 10 <sup>5</sup> TCID <sub>50</sub> /mL	No
Influenza B	2.9 x 10 <sup>5</sup> TCID <sub>50</sub> /mL	No
Enterovirus	4.0 x 10 <sup>5</sup> TCID <sub>50</sub> /mL	No
Respiratory syncytial virus	4.0 x 10 <sup>5</sup> TCID <sub>50</sub> /mL	No
Rhinovirus	1.1 x 10⁵ PFU/mL	No
SARS-coronavirus	4.5 x 10 <sup>5</sup> PFU/mL	No
MERS-coronavirus	1.5 x 10 <sup>5</sup> TCID <sub>50</sub> /mL	No
Haemophilus influenzae	1.4 x 10 <sup>6</sup> CFU/mL	No
Streptococcus pneumoniae	1.0 x 10 <sup>6</sup> CFU/mL	No
Streptococcus pyogenes	1.6 x 10 <sup>6</sup> CFU/mL	No
Candida albicans	1.8 x 10 <sup>6</sup> CFU/mL	No
Pooled human nasal wash	100%	No
Bordetella pertussis	1.4 x 106 CFU/mL	No
Mycoplasma pneumoniae	1.0 x 106 CFU/mL	No
Chlamydia pneumoniae	1.0 x 10 <sup>6</sup> IFU/mL	No
Legionella pneumophila	1.0 x 10 <sup>6</sup> CFU/mL	No

To estimate the likelihood of cross-reactivity with SARS-CoV-2 of organisms that were not available for wet testing, in silico analysis using the Basic Local Alignment Search Tool (BLAST) managed by the National Center for Biotechnology Information (NCBI) was used to assess the degree of protein sequence homology.

- For P. jirovecii one area of sequence similarity shows 45.4% homology across 9% of the sequence, making
  cross-reactivity in the BD Veritor™ sandwich immunoassay highly unlikely.
- No protein sequence homology was found between SARS-CoV-2 and M. tuberculosis, and thus homology-based cross-reactivity can be ruled out.
- The comparison between SARS-CoV-2 nucleocapsid protein and human coronavirus HKU1 revealed that the only
  potential for homology is with the HKU1 nucleocapsid phosphoprotein. Homology is relatively low, at 36.7% across
  82% of sequences, but cross-reactivity cannot be ruled out.

### **ENDOGENOUS INTERFERING SUBSTANCES**

Various substances were evaluated with the BD Veritor™ System for Rapid Detection of SARS-CoV-2. The substances tested included whole blood 4%, mucin and various medications. No interference was noted with this assay for any of the substances tested.

Substance	Concentration Tested	Interference (Yes/No)
Afrin Nasal Spray (Oxymetazoline)	5% v/v	No
Flonase (Fluticasone)	5% v/v	No
Nasacort (Triamcinolone)	5% v/v	No
Neo-Synephrine (Phenylephrine hydrochloride)	5% v/v	No
Oseltamivir	2.2 μg/mL	No
Mucin protein	2.5 mg/mL	No
Rhinocort (Budesonide)	5% v/v	No
Saline nasal spray	15% v/v	No
Zanamivir	282 ng/mL	No
Zicam Cold Remedy (Galphimia glauca, Luffa operculata, Sabadilla)	5% v/v	No
Whole blood	4% v/v	No
Cepacol (Menthol/Benzocaine)	1.5 mg/mL	No
Ricola (menthol)	1.5 mg/mL	No
Tobramycin	4 μg/mL	No
Sucrets (Dyclonine/Menthol)	1.5 mg/mL	No
NeilMed Naso Gel	5% v/v	No
Zicam nasal spray (Oxymetazoline)	10% v/v	No
Alkalol nasal wash	10% v/v	No
Fisherman's Friend (menthol)	1.5 mg/mL	No
Chloraseptic (Phenol Spray)	15% v/v	No
Mupirocin	10 mg/mL	No

Additionally, the following were tested for interference in a negative and a 3x LoD sample. No interference was noted at the levels tested.

Substance	Concentration Tested	Interference (Yes/No)
Afrin Nasal Spray (Oxymetazoline)	15% v/v	No
Neo-Synephrine (Phenylephrine hydrochloride)	15% v/v	No
Oseltamivir	2.2 μg/mL	No
Mucin protein	5 mg/mL	No
Mupirocin	10 mg/mL	No
Rheumatoid Factor	12.5 IU/mL	No

**NOTE:** Based on *in vitro* testing, false positive results may occur in patients with rheumatoid factor higher than 12.5 IU/mL in nasal fluid, although it is unclear if such concentrations are clinically relevant.

# MICROBIAL INTERFERENCE

The BD Veritor™ System for Rapid Detection of SARS-CoV-2 assay was evaluated with various organisms at the concentrations indicated below in a negative and 5x LoD sample. No interference was noted.

Human coronavirus OC43	Potential Microbial Interferent	Concentration Tested	Interference (Yes/No)
Human coronavirus NL63	Human coronavirus 229E	1.0 x 10 <sup>5</sup> U/mL	No
Adenovirus  1.0 × 10 <sup>5</sup> TCID <sub>ss</sub> /mL  No  Parainfluenza virus 1  1.0 × 10 <sup>5</sup> TCID <sub>ss</sub> /mL  No  Parainfluenza virus 2  1.0 × 10 <sup>5</sup> TCID <sub>ss</sub> /mL  No  Parainfluenza virus 3  5.2 × 10 <sup>5</sup> TCID <sub>ss</sub> /mL  No  Parainfluenza virus 3  5.2 × 10 <sup>5</sup> TCID <sub>ss</sub> /mL  No  Parainfluenza virus 4a  1.5 × 10 <sup>4</sup> TCID <sub>ss</sub> /mL  No  Influenza A  2.5 × 10 <sup>5</sup> TCID <sub>ss</sub> /mL  No  Influenza B  2.9 × 10 <sup>5</sup> TCID <sub>ss</sub> /mL  No  Respiratory syncytial virus  4.0 × 10 <sup>5</sup> TCID <sub>ss</sub> /mL  No  Respiratory syncytial virus  4.0 × 10 <sup>5</sup> TCID <sub>ss</sub> /mL  No  SARS-coronavirus  4.5 × 10 <sup>5</sup> PFU/mL  No  MERS-coronavirus  1.5 × 10 <sup>5</sup> PCID <sub>ss</sub> /mL  No  MERS-coronavirus  1.5 × 10 <sup>5</sup> TCID <sub>ss</sub> /mL  No  MERS-coronavirus  1.5 × 10 <sup>5</sup> TCID <sub>ss</sub> /mL  No  Mers-coronavirus  1.5 × 10 <sup>5</sup> TCID <sub>ss</sub> /mL  No  Mers-coronavirus  1.5 × 10 <sup>5</sup> TCID <sub>ss</sub> /mL  No  Mers-coronavirus  1.6 × 10 <sup>5</sup> CFU/mL  No  Streptococcus pneumoniae  1.0 × 10 <sup>6</sup> CFU/mL  No  Mycoplasma pneumoniae  1.0 × 10 <sup>6</sup> CFU/mL  No  Chlamydia pneumoniae  1.0 × 10 <sup>5</sup> CFU/mL  No  Chlamydia pneumoniae  1.0 × 10 <sup>5</sup> CFU/mL  No  No  Pooled human nasal wash  No  No	Human coronavirus OC43	1.0 x 10⁵ TCID <sub>50</sub> /mL	No
Human Metapneumovirus	Human coronavirus NL63	1.0 x 10⁵ TCID <sub>50</sub> /mL	No
Parainfluenza virus 1         1.0 x 10⁵ TCID s₀/mL         No           Parainfluenza virus 2         1.0 x 10⁵ TCID s₀/mL         No           Parainfluenza virus 3         5.2 x 10⁵ TCID s₀/mL         No           Parainfluenza virus 4a         1.5 x 10⁴ TCID s₀/mL         No           Influenza A         2.5 x 10⁵ TCID s₀/mL         No           Influenza B         2.9 x 10⁵ TCID s₀/mL         No           Enterovirus D68         4.0 x 10⁵ TCID s₀/mL         No           Respiratory syncytial virus         4.0 x 10⁵ TCID s₀/mL         No           Respiratory syncytial virus         1.1 x 10⁵ PFU/mL         No           Respiratory syncytial virus         4.5 x 10⁵ TCID s₀/mL         No           Respiratory syncytial virus         1.1 x 10⁵ PFU/mL         No           Respiratory syncytial virus         1.1 x 10⁵ PFU/mL         No           Respiratory syncytial virus         1.0 x 10⁵ TCID s₀/mL         No           MERS-coronavirus         1.1 x 10⁵ PFU/mL         No           MERS-coronavirus         1.5 x 10⁵ TCID s₀/mL         No           Haemophilus influenzae         1.4 x 10˚ CFU/mL         No           Streptococcus pneumoniae         1.0 x 10˚ CFU/mL         No           Bordetella pertussis         1.4 x 10˚ CFU/mL         <	Adenovirus	1.0 x 10 <sup>5</sup> TCID <sub>50</sub> /mL	No
Parainfluenza virus 2  1.0 × 10 <sup>5</sup> TCID <sub>so</sub> /mL  No  Parainfluenza virus 3  5.2 × 10 <sup>5</sup> TCID <sub>so</sub> /mL  No  Parainfluenza virus 4a  1.5 × 10 <sup>4</sup> TCID <sub>so</sub> /mL  No  Influenza A  2.5 × 10 <sup>5</sup> TCID <sub>so</sub> /mL  No  Influenza B  2.9 × 10 <sup>5</sup> TCID <sub>so</sub> /mL  No  Enterovirus D68  4.0 × 10 <sup>5</sup> TCID <sub>so</sub> /mL  No  Respiratory syncytial virus  4.0 × 10 <sup>5</sup> TCID <sub>so</sub> /mL  No  Rhinovirus 3  1.1 × 10 <sup>5</sup> PFU/mL  No  SARS-coronavirus  4.5 × 10 <sup>5</sup> PFU/mL  No  MERS-coronavirus  1.5 × 10 <sup>5</sup> TCID <sub>so</sub> /mL  No  MERS-coronavirus  1.0 × 10 <sup>5</sup> CFU/mL  No  Streptococcus pneumoniae  1.0 × 10 <sup>6</sup> CFU/mL  No  Bordetella pertussis  1.4 × 10 <sup>6</sup> CFU/mL  No  Mycoplasma pneumoniae  1.0 × 10 <sup>6</sup> CFU/mL  No  Chlamydia pneumoniae  1.0 × 10 <sup>6</sup> CFU/mL  No  Pooled human nasal wash  N/A  No	Human Metapneumovirus	1.0 x 10⁵ TCID <sub>50</sub> /mL	No
Parainfluenza virus 3         5.2 x 10 <sup>5</sup> TCID <sub>so</sub> /mL         No           Parainfluenza virus 4a         1.5 x 10 <sup>4</sup> TCID <sub>so</sub> /mL         No           Influenza A         2.5 x 10 <sup>5</sup> TCID <sub>so</sub> /mL         No           Influenza B         2.9 x 10 <sup>5</sup> TCID <sub>so</sub> /mL         No           Enterovirus D68         4.0 x 10 <sup>5</sup> TCID <sub>so</sub> /mL         No           Respiratory syncytial virus         4.0 x 10 <sup>5</sup> TCID <sub>so</sub> /mL         No           Rhinovirus 3         1.1 x 10 <sup>5</sup> PFU/mL         No           SARS-coronavirus         4.5 x 10 <sup>5</sup> PFU/mL         No           MERS-coronavirus         1.5 x 10 <sup>5</sup> TCID <sub>so</sub> /mL         No           Haemophilus influenzae         1.4 x 10 <sup>6</sup> CFU/mL         No           Streptococcus pneumoniae         1.0 x 10 <sup>6</sup> CFU/mL         No           Bordetella pertussis         1.4 x 10 <sup>6</sup> CFU/mL         No           Mycoplasma pneumoniae         1.0 x 10 <sup>6</sup> CFU/mL         No           Chlamydia pneumoniae         1.0 x 10 <sup>6</sup> CFU/mL         No           Legionella pneumophila         1.0 x 10 <sup>6</sup> CFU/mL         No           Pooled human nasal wash         N/A         No	Parainfluenza virus 1	1.0 x 10 <sup>5</sup> TCID <sub>50</sub> /mL	No
Parainfluenza virus 4a         1.5 x 10⁴ TCID₅₀/mL         No           Influenza A         2.5 x 10⁵ TCID₅₀/mL         No           Influenza B         2.9 x 10⁵ TCID₅₀/mL         No           Enterovirus D68         4.0 x 10⁵ TCID₅₀/mL         No           Respiratory syncytial virus         4.0 x 10⁵ TCID₅₀/mL         No           Rhinovirus 3         1.1 x 10⁵ PFU/mL         No           SARS-coronavirus         4.5 x 10⁵ PFU/mL         No           MERS-coronavirus         1.5 x 10⁵ TCID₅₀/mL         No           Haemophilus influenzae         1.4 x 10⁵ CFU/mL         No           Streptococcus pneumoniae         1.0 x 10⁵ CFU/mL         No           Streptococcus pyogenes         1.6 x 10⁵ CFU/mL         No           Bordetella pertussis         1.4 x 10⁵ CFU/mL         No           Mycoplasma pneumoniae         1.0 x 10⁵ CFU/mL         No           Chlamydia pneumoniae         1.0 x 10⁵ CFU/mL         No           Legionella pneumophila         1.0 x 10⁶ CFU/mL         No           Pooled human nasal wash         N/A         No	Parainfluenza virus 2	1.0 x 10⁵ TCID <sub>50</sub> /mL	No
Influenza A	Parainfluenza virus 3	5.2 x 10⁵ TCID <sub>50</sub> /mL	No
Influenza B	Parainfluenza virus 4a	1.5 x 10 <sup>4</sup> TCID <sub>50</sub> /mL	No
### A 10° TCID   ### A 10° CFU/mL   ### A 10° CFU	Influenza A	2.5 x 10 <sup>5</sup> TCID <sub>50</sub> /mL	No
Respiratory syncytial virus         4.0 x 10⁵ TCID₅₀/mL         No           Rhinovirus 3         1.1 x 10⁵ PFU/mL         No           SARS-coronavirus         4.5 x 10⁵ PFU/mL         No           MERS-coronavirus         1.5 x 10⁵ TCID₅₀/mL         No           Haemophilus influenzae         1.4 x 10⁶ CFU/mL         No           Streptococcus pneumoniae         1.0 x 10⁶ CFU/mL         No           Streptococcus pyogenes         1.6 x 10⁶ CFU/mL         No           Bordetella pertussis         1.4 x 10⁶ CFU/mL         No           Mycoplasma pneumoniae         1.0 x 10⁶ CFU/mL         No           Chlamydia pneumoniae         1.0 x 10⁶ CFU/mL         No           Legionella pneumophila         1.0 x 10⁶ CFU/mL         No           Pooled human nasal wash         N/A         No	Influenza B	2.9 x 10 <sup>5</sup> TCID <sub>50</sub> /mL	No
Rhinovirus 3         1.1 x 10⁵ PFU/mL         No           SARS-coronavirus         4.5 x 10⁵ PFU/mL         No           MERS-coronavirus         1.5 x 10⁵ TCID <sub>ss</sub> /mL         No           Haemophilus influenzae         1.4 x 10⁵ CFU/mL         No           Streptococcus pneumoniae         1.0 x 10⁵ CFU/mL         No           Streptococcus pyogenes         1.6 x 10⁵ CFU/mL         No           Bordetella pertussis         1.4 x 10⁵ CFU/mL         No           Mycoplasma pneumoniae         1.0 x 10⁵ CFU/mL         No           Chlamydia pneumoniae         1.0 x 10⁵ CFU/mL         No           Legionella pneumophila         1.0 x 10⁵ CFU/mL         No           Pooled human nasal wash         N/A         No	Enterovirus D68	4.0 x 10 <sup>5</sup> TCID <sub>50</sub> /mL	No
SARS-coronavirus         4.5 x 10 <sup>5</sup> PFU/mL         No           MERS-coronavirus         1.5 x 10 <sup>5</sup> TCID <sub>sg</sub> /mL         No           Haemophilus influenzae         1.4 x 10 <sup>6</sup> CFU/mL         No           Streptococcus pneumoniae         1.0 x 10 <sup>6</sup> CFU/mL         No           Streptococcus pyogenes         1.6 x 10 <sup>6</sup> CFU/mL         No           Bordetella pertussis         1.4 x 10 <sup>6</sup> CFU/mL         No           Mycoplasma pneumoniae         1.0 x 10 <sup>6</sup> CFU/mL         No           Chlamydia pneumoniae         1.0 x 10 <sup>6</sup> CFU/mL         No           Legionella pneumophila         1.0 x 10 <sup>6</sup> CFU/mL         No           Pooled human nasal wash         N/A         No	Respiratory syncytial virus	4.0 x 10 <sup>5</sup> TCID <sub>50</sub> /mL	No
MERS-coronavirus         1.5 x 10 <sup>5</sup> TCID <sub>so</sub> /mL         No           Haemophilus influenzae         1.4 x 10 <sup>6</sup> CFU/mL         No           Streptococcus pneumoniae         1.0 x 10 <sup>6</sup> CFU/mL         No           Streptococcus pyogenes         1.6 x 10 <sup>6</sup> CFU/mL         No           Bordetella pertussis         1.4 x 10 <sup>6</sup> CFU/mL         No           Mycoplasma pneumoniae         1.0 x 10 <sup>6</sup> CFU/mL         No           Chlamydia pneumoniae         1.0 x 10 <sup>6</sup> CFU/mL         No           Legionella pneumophila         1.0 x 10 <sup>6</sup> CFU/mL         No           Pooled human nasal wash         N/A         No	Rhinovirus 3	1.1 x 10⁵ PFU/mL	No
Haemophilus influenzae	SARS-coronavirus	4.5 x 10⁵ PFU/mL	No
Streptococcus pneumoniae         1.0 x 10° CFU/mL         No           Streptococcus pyogenes         1.6 x 10° CFU/mL         No           Bordetella pertussis         1.4 x 10° CFU/mL         No           Mycoplasma pneumoniae         1.0 x 10° CFU/mL         No           Chlamydia pneumoniae         1.0 x 10° CFU/mL         No           Legionella pneumophila         1.0 x 10° CFU/mL         No           Pooled human nasal wash         N/A         No	MERS-coronavirus	1.5 x 10 <sup>5</sup> TCID <sub>50</sub> /mL	No
Streptococcus pyogenes         1.6 x 10° CFU/mL         No           Bordetella pertussis         1.4 x 10° CFU/mL         No           Mycoplasma pneumoniae         1.0 x 10° CFU/mL         No           Chlamydia pneumoniae         1.0 x 10° CFU/mL         No           Legionella pneumophila         1.0 x 10° CFU/mL         No           Pooled human nasal wash         N/A         No	Haemophilus influenzae	1.4 x 10 <sup>6</sup> CFU/mL	No
Bordetella pertussis         1.4 x 10 <sup>6</sup> CFU/mL         No           Mycoplasma pneumoniae         1.0 x 10 <sup>6</sup> CFU/mL         No           Chlamydia pneumoniae         1.0 x 10 <sup>6</sup> CFU/mL         No           Legionella pneumophila         1.0 x 10 <sup>6</sup> CFU/mL         No           Pooled human nasal wash         N/A         No	Streptococcus pneumoniae	1.0 x 10 <sup>6</sup> CFU/mL	No
Mycoplasma pneumoniae         1.0 x 106 CFU/mL         No           Chlamydia pneumoniae         1.0 x 106 CFU/mL         No           Legionella pneumophila         1.0 x 106 CFU/mL         No           Pooled human nasal wash         N/A         No	Streptococcus pyogenes	1.6 x 10 <sup>6</sup> CFU/mL	No
Chlamydia pneumoniae         1.0 x 10° CFU/mL         No           Legionella pneumophila         1.0 x 10° CFU/mL         No           Pooled human nasal wash         N/A         No	Bordetella pertussis	1.4 x 10 <sup>6</sup> CFU/mL	No
Legionella pneumophila         1.0 x 10° CFU/mL         No           Pooled human nasal wash         N/A         No	Mycoplasma pneumoniae	1.0 x 10 <sup>6</sup> CFU/mL	No
Pooled human nasal wash N/A No	Chlamydia pneumoniae	1.0 x 10 <sup>6</sup> CFU/mL	No
	Legionella pneumophila	1.0 x 10 <sup>6</sup> CFU/mL	No
Candida albicans 1.8 x 10 <sup>6</sup> CFU/mL No	Pooled human nasal wash	N/A	No
	Candida albicans	1.8 x 10 <sup>6</sup> CFU/mL	No

Additionally, the following potential cross-reacting organisms were tested using a negative and 3x LoD sample at the following levels. No interference was noted.

Potential Microbial Interferent	Concentration Tested	Interference (Yes/No)
Rhinovirus 3	1.1 x 10 <sup>5</sup> PFU/mL	No
SARS-coronavirus	4.5 <b>x</b> 10⁵ PFU/mL	No
MERS-coronavirus	1.5 <b>x</b> 10 <sup>5</sup> TCID <sub>50</sub> /mL	No
Haemophilus influenzae	1.4 x 10 <sup>6</sup> CFU/mL	No
Streptococcus pneumoniae	1.0 x 10 <sup>6</sup> CFU/mL	No
Streptococcus pyogenes	1.6 x 10° CFU/mL	No
Bordetella pertussis	1.4 x 10 <sup>6</sup> CFU/mL	No

#### INTRA-SITE VARIABILITY

Another study was designed to assess the capability of users to test seeded swab samples across the range of the assay with three (3) users, over three (3) days, with three (3) lots of devices. The following table shows the performance.

Sample	Operator #1		ample Operator #1 Operator #2		Operator #3		Total	
	% Positive	95% C.I.	% Positive	95% C.I.	% Positive	95% C.I.	% Positive	95% C.I.
Negative	0% (0/27)	(0.0%,12.5%)	0% (0/27)	(0.0%,12.5%)	0% (0/27)	(0.0%,12.5%)	0% (0/81)	(0.0%, 4.5%)
Low Positive (3x LoD)	100% (27/27)	(87.5%,100%)	100% (27/27)	(87.5%,100%)	100% (27/27)	(87.5%,100%)	100% (81/81)	(95.5%, 100%)
Low Positive (5x LoD)	100% (27/27)	(87.5%,100%)	100% (27/27)	(87.5%,100%)	100% (27/27)	(87.5%,100%)	100% (81/81)	(95.5%, 100%)
Moderate Positive (10x LoD)	100% (27/27)	(87.5%,100%)	100% (27/27)	(87.5%,100%)	100% (27/27)	(87.5%,100%)	100% (81/81)	(95.5%, 100%)
High Positive (40x LoD)	100% (27/27)	(87.5%,100%)	100% (27/27)	(87.5%,100%)	100% (27/27)	(87.5%,100%)	100% (81/81)	(95.5%, 100%)

## **HIGH DOSE HOOK EFFECT**

No high dose hook effect was observed up to 2.8  $\times$  10<sup>5</sup> TCID<sub>50</sub>/mL of gamma-inactivated SARS-CoV-2 with the BD Veritor<sup>TM</sup> System for Rapid Detection of SARS-CoV-2 test.

#### **TECHNICAL SUPPORT**

For questions, or to report a problem, please call Technical Support at 1.800.638.8663 or visit bd.com.

Test system problems may also be reported to the FDA using the MedWatch reporting system:

Phone: 1.800.FDA.1088; Fax: 1.800.FDA.1078 or visit http://www.fda.gov/medwatch.

Outside the United States, contact your local BD representative.

#### REFERENCES

- Centers for Disease Control and Prevention. https://www.cdc.gov/coronavirus/2019-ncov/index.html. Accessed March 30, 2020.
- 2. https://www.cdc.gov/flu/symptoms/flu-vs-covid19.htm

**Change History** 

Revision	Date	Change Summary
07	2021-09	Added Australian and New Zealand sponsor addresses.
08	2023-04	Added or modified the following sections to highlight need for serial testing, in line with FDA's recommendations in updated Letter of Authorization: Intended Use, Summary and Explanation of the Test, Warnings and Precautions, Test Procedure, Interpretation of Results, Reporting of Results, Limitations of the Procedure, Clinical Performance, and NIH/RADx® Variant Testing.
09	2023-05	CAS # and composition % for Triton X-100 and formatting of the Hazardous Ingredients Table have been updated. Minor typographical and formatting changes.

# SYMBOLS GLOSSARY

US Customers only: For symbol glossary, refer to bd.com/symbols-glossary

Symbol	Meaning
LOT	Batch code
&	Biological risks
REF	Catalogue number
$\triangle$	Caution
[]i	Consult instructions for use or consult electronic instructions for use
Σ	Contains sufficient for < <i>n&gt;</i> tests
CONTROL -	Negative control
CONTROL +	Positive control
س	Date of manufacture
(2)	Do not re-use
Ī	Fragile, handle with care
IVD	In vitro diagnostic medical device
<u>l</u>	Manufacturer
R <sub>x</sub> Only	This only applies to US: "Caution: Federal Law restricts this device to sale by or on the order of a licensed practitioner."
<b>E</b>	Recyclable
SN	Serial number
1	Temperature limit
<u> </u>	This way up
	Use-by date

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# **Quick Reference Instructions**

Use of BD Veritor™ System for Rapid Detection of SARS-CoV-2 with the BD Veritor™ Plus Analyzer

In the USA: For use under Emergency Use Authorization (EUA) Only

# **Ouick Reference Instructions**

REF 256082

# Use of BD Veritor™ System for Rapid Detection of SARS-CoV-2 with the BD Veritor™ Plus Analyzer In the USA: For use under Emergency Use Authorization (EUA) Only

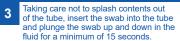
Read the complete test procedure, including recommended QC procedures before performing the test. Refer to the package insert for complete information about the test. Ensure ALL components are at room temperature (15–30 °C) when running the test.

### Sample preparation

Gather test materials and label test device with specimen ID.

> Extraction Reagent

Remove cap from extraction reagent tube. Use only reagent tubes provided with this kit.



Remove swab while squeezing extraction reagent tube to extract liquid. Properly dispose of swab.

Press dispensing tip on the tube firmly. Mix the sample by flicking or swirling the bottom of the tube. Add sample to test device within 30 minutes.









# Using the BD Veritor™ Plus Analyzer to read the assay device

#### **ANALYZE NOW MODE**

Add 3 drops of the processed sample to the test device sample well. Then, properly dispose of the extraction reagent tube.

Test Device



OR

# WALK AWAY MODE (instrument must be plugged in)

Press blue start button once to power on. When prompt appears. double click to enter Walk Away mode. Three-minute countdown timer displays time remaining for test device insertion.



Keen level **CAUTION:** False positive or false negative results can occur if test device is read before 15 minutes or after 20 minutes. Cover test device if working in a drafty environment to ensure proper sample flow.

Allow test to develop for 15 minutes. Do not disturb.



15 minutes

Optional: If using the barcode scanning accessory, follow screen prompts to scan any required barcodes.



When test is ready, power on instrument by pressing blue start button once. When prompted, insert test device to read.



Add 3 drops of the processed sample to the test device sample well Then, properly dispose of the extraction reagent tube.



Optional: If using the barcode scanning accessory, follow screen prompts to scan any required barcodes to start the test analysis.



Result will appear on screen. Record result and remove test device. Properly dispose of test device. Do not re-read test devices.

Confirm timer is visible and Walk Away mode is activated before inserting device. Insert device immediately to start assay timing and analysis. Delay invalidates assay result and requires a repeated test with a new test device. Do not touch instrument during analysis. Keep level.



Result will appear on the screen after analysis is complete (15 minutes). Record result, remove test device and discard properly. Instrument returns to Analyze Now mode when test device is removed.

Serial testing should be performed in all individuals with negative results; individuals with symptoms of COVID-19 and initial negative results should be tested again after 48 hours. Individuals without symptoms of COVID-19, and with initial negative results, should be tested again after 48 hours and, if the second test is also negative, a third time after an additional 48 hours.



# Quick Reference Instructions Use of BD Veritor™ System for Rapid Detection of SARS-CoV-2 with the BD Veritor™ Plus Analyzer In the USA: For use under Emergency Use Authorization (EUA) Only

Display	Interpretation
CoV2: +	Positive Test for SARS-CoV-2 (antigen detected)
CoV2: -	Presumptive Negative Test for SARS-CoV-2 (no antigen detected)
CONTROL INVALID	Test Invalid. Repeat the test.

#### INTERPRETATION OF RESULTS

Test results must **NOT** be read visually. The BD Veritor™ Plus System Analyzer (purchased separately) must be used for interpretation of all test results. Refer to table above

**Positive Test Results** – SARS-CoV-2 antigen present; does not rule out co-infection with other pathogens. Repeat testing does not need to be performed if patients have a positive result at any time.

A positive test result means that the virus that causes COVID-19 was detected in the sample, and it is very likely the individual has COVID-19 and is contagious. Please instruct your patient to adhere to the local guidelines regarding self-isolation. There is a very small chance that this test can give a positive result that is incorrect (a false positive).

Positive results do not rule out bacterial infection or co-infection with other viruses. The agent detected may not be the definite cause of disease. Individuals who test positive with the BD Veritor™ System for Rapid Detection of SARS-CoV-2 should self-isolate. Additional confirmatory testing with a molecular test for positive results may also be necessary, if there is a low likelihood of COVID-19, such as in individuals without known exposures to COVID-19 or residing in communities with low prevalence of infection

Negative Test Results - Negative results are presumptive.

To increase the chance that the negative result for SARS-CoV-2 is accurate, you should:

- Test again in 48 hours if the individual has symptoms on the first day of testing.
- Test two more times at least 48 hours apart if the individual does not have symptoms on the first day of testing.

A negative test result indicates that the virus that causes COVID-19 was not detected in the sample. A negative result does not rule out COVID-19. There is a higher chance of false negative results with antigen tests compared to laboratory-based tests such as PCR tests.

If the test is negative but COVID-19-like symptoms, e.g., fever, cough, and/or shortness of breath continue, follow-up testing for SARS-CoV-2 with a molecular test or testing for other respiratory disease should be considered. All negative results should be treated as presumptive and confirmation with a molecular assay may be necessary if there is a high likelihood of SARS-CoV-2 infection, such as in an individual with a close contact with COVID-19 or with suspected exposure to COVID-19 or in communities with high prevalence of infection. Negative results do not rule out SARS-CoV-2 infection and should not be used as the sole basis for treatment or patient management decisions, including infection control decisions.

Invalid Test – If the test is invalid the BD Veritor™ Plus System Analyzer will display a "CONTROL INVALID" result and the test or control must then be repeated. Re-test with a new test device.

#### EXTERNAL QUALITY CONTROL PROCEDURE

Swab controls are supplied with each kit. These swab controls should be used to ensure that the test reagents work properly and that the test procedure is performed correctly. For kit swab controls, insert the control swab into the extraction reagent tube and vigorously plunge the swab up and down for 15 seconds. Analyze control swabs using the same process and workflow as used for patient specimens. BD recommends running controls for each new kit lot, each new operator, and each new shipment of test kits or at periodic intervals required by your facility. If the kit controls do not perform as expected, do not report patient results and contact BD Technical Support at 1.800.638.8663.

#### SPECIMEN COLLECTION AND HANDLING

Proper specimen collection and handling of direct anterior nasal swabs is required to ensure accurate results (see enclosed specimen collection guide). Additional training or guidance is recommended if operators are not experienced with specimen collection and handling procedures.



# **Ouick Reference Instructions**



# Use of BD Veritor™ System for Rapid Detection of SARS-CoV-2 with the BD Veritor™ Plus Analyzer In the USA: For use under Emergency Use Authorization (EUA) Only

#### WARNINGS AND PRECAUTIONS

- 1. Read all instructions carefully before performing the test. Failure to follow the instructions may result in inaccurate test results.
- 2. For in vitro diagnostic use only.
- 3. All test results must be obtained using the BD Veritor™ Plus Analyzer.
- DO NOT read the test results visually.
- 5. Handle all specimens and related materials as if capable of transmitting infectious agents.
- 6. It is recommended to follow your institution's requirements for decontamination procedures or if spills occur. See the BD Veritor™ Plus Analyzer Instructions for Use for instrument cleaning.
- 7. Dispose of used materials as biohazardous waste in accordance with federal, state and local requirements.
- 8. Ensure all components are at room temperature (15-30 °C) when running the test.
- 9. Keep devices and instrument level and undisturbed for duration of the 15-minute incubation. Cover test device if working in a drafty environment to prevent sample evaporation and incomplete sample flow which may produce an erroneous false positive result or control invalid result.
- 10. Please refer to the package insert for detailed assay instructions, cautions, limitations and warnings.

11. Serial testing should be performed in individuals with negative results at least twice over 3 days (with 48 hours between tests) for symptomatic individuals and three times over 5 days (with at least 48 hours between tests) for asymptomatic individuals.

If you have had symptoms longer than 5 days, you should consider testing at least three times over 5 days with at least 48 hours between tests.

- In the USA, this product has not been FDA cleared or approved; but has been authorized by FDA under an EUA for use by authorized laboratories:
- · This product has been authorized only for the detection of proteins from SARS-CoV-2, not for any other viruses or pathogens; and,
- The emergency use of this product is only authorized for the duration of the declaration that circumstances exist justifying the authorization of emergency use of in vitro diagnostics for detection and/or diagnosis of COVID-19 under Section 564(b)(1) of the Federal Food, Drug and Cosmetic Act, 21 U.S.C. § 360bbb-3(b)(1), unless the declaration is terminated or authorization is revoked sooner.

US Customers only: For symbol glossary, refer to bd.com/symbols-glossary

Technical Information: In the United States contact BD Technical Service and Support at 1 800 638 8663 or bd com







# Veritor™ System for Rapid Detection of SARS-CoV-2

# **Proper Nasal Swab Sample Collection**

In the USA: For use under Emergency Use Authorization (EUA) Only



This BD Veritor™ System SARS-CoV-2 Kit includes swabs for nasal specimen collection.



Carefully insert the swab into one nostril. The swab tip should be inserted up to 2.5 cm (1 inch) from the edge of the nostril. Roll the swab 5 times along the mucosa inside the nostrils to ensure that both mucus and cells are collected. Take approximately 15 seconds to collect sample.



Using the same swab, repeat this process for the other nostril to ensure that an adequate sample is collected from both nasal cavities.



Withdraw the swab from the nasal cavity. Process the swab in the extraction reagent vial within 1 hour using the BD Veritor™ System SARS-CoV-2 Kit.





# Do's and Don'ts of Sample Collection

- Do test sample immediately. Do not touch swab tip.
- Use only swabs provided with the kit.
- Refer to: Interim Guidelines for Collecting, Handling and Testing Clinical Specimens from persons for COVID-19 at https://www.cdc.gov/coronavirus/2019-ncov/lab/auidelines-clinical-specimens.html

US Customers only: For symbol glossary, refer to bd.com/symbols-glossary Technical Service and Support: In the United States contact BD at 1.800.638.8663 or bd.com



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Read all instructions carefully before performing the test. Failure to follow the instructions may result in inaccurate test results.

 In the USA, this product has not been FDA cleared or approved: but has been authorized by FDA under an EUA for use by authorized laboratories; use by laboratories certified under the CLIA. 42 U.S.C. \$263a, that meet requirements to perform moderate, high or waived complexity tests. This product is authorized for use at the Point of Care (POC); i.e., in patient care settings operating under a CLIA Certificate of Waiver, Certificate of Compliance, or Certificate of Accreditation.

• This product has been authorized only for the detection of proteins from SARS-CoV-2, not for any other viruses or pathogens; and,

• In the USA, the emergency use of this product is only authorized for the duration of the declaration that circumstances exist justifying the authorization of emergency use of in vitro diagnostics for detection and/or diagnosis of the virus that causes COVID-19 under Section 564(b)(1) of the Federal Food, Drug and Cosmetic Act, 21 U.S.C. § 360bbb-3(b)(1), unless the declaration is terminated or authorization is revoked sooner.



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