QUIDEL

Sofia®
S. pneumoniae FIA

FOR USE WITH SOFIA AND SOFIA 2

For *in vitro* diagnostic use.

℞ ONLY

INTENDED USE

The Sofia S. pneumoniae FIA employs immunofluorescence for qualitative detection of *Streptococcus pneumoniae* antigen in urine specimens of patients with pneumonia and in cerebral spinal fluid (CSF) specimens of patients with meningitis. Test results are to be used as an aid in diagnosis of both pneumococcal pneumonia and pneumococcal meningitis. A negative result does not preclude infections with *Streptococcus pneumoniae*. Test results are to be used in conjunction with information obtained from the patient's clinical evaluation and other diagnostic procedures.

The Sofia S. pneumoniae FIA may be used with Sofia or Sofia 2.

SUMMARY AND EXPLANATION

Streptococcus pneumoniae (SPN) is the leading cause of community-acquired pneumonia.[1,2] SPN can cause a wide spectrum of illnesses from upper respiratory tract infection to invasive pneumococcal disease. SPN infection is also associated with high mortality – an estimated 1.6 million people die of pneumococcal diseases each year worldwide and approximately 1 million of these deaths are in children under five years of age.[3]

Pneumococci also cause over 50% of all cases of bacterial meningitis in the United States.[4] Bacterial meningitis is contagious and usually severe, leading to complications such as brain damage, hearing loss, or learning disabilities. Antibiotic treatment for bacterial meningitis can be effective and should be started as soon as possible. Appropriate antibiotic treatment of the most common types of bacterial meningitis should reduce the risk of death from meningitis.[5]

PRINCIPLE OF THE TEST

The Sofia S. pneumoniae FIA is an immunofluorescence-based lateral flow test for use with Sofia or Sofia 2. The test uses purified rabbit polyclonal antibodies specific to *Streptococcus pneumoniae* cell wall polysaccharide antigen (CWPS) types 1 and 2 to capture and detect the CWPS antigens. The CWPS antigens were chosen to ensure broad specificity across all *Streptococcus pneumoniae* serotypes.

To perform the test, a urine or cerebral spinal fluid specimen is collected and dispensed into the sample well of the Test Cassette. The Test Cassette is placed inside of Sofia or Sofia 2 for an automatically defined development time (WALK AWAY Mode) or pre-incubated on the bench top prior to loading into Sofia or Sofia 2 (READ NOW Mode). Sofia or Sofia 2 scans the test strip and analyzes the fluorescent signal using method-specific algorithms. Sofia or Sofia 2 then displays the test result (Positive, Negative, or Invalid) on the screen.

REAGENTS AND MATERIALS SUPPLIED

25-Test Kit:

- Individually Packaged Test Cassettes (25): Rabbit polyclonal anti-*Streptococcus pneumoniae*
- Small, Clear 120 µL Fixed Volume Pipettes (25)
- *Streptococcus pneumoniae* Positive Control (1): Solution contains buffer with non-infectious *Streptococcus pneumoniae* antigen
- Negative Control (1): Solution contains buffer and Streptococcus C antigen
- Package Insert (1)
- Quick Reference Instructions (1)
- QC Card (located on kit box)
- Printer Paper (1)

MATERIALS REQUIRED BUT NOT SUPPLIED IN KIT

- Sofia or Sofia 2
- Calibration Cassette (supplied with the Sofia Installation Pack or Sofia 2)
- Timer or watch for use in READ NOW Mode
- Specimen container

WARNINGS AND PRECAUTIONS

- For *in vitro* diagnostic use.
- Do not use the kit contents beyond the expiration date printed on the outside of the box.
- Use appropriate precautions in the collection, handling, storage, and disposal of patient samples and used kit contents.[6]
- Use of Nitrile or Latex (or equivalent) gloves is recommended when handling patient samples.[6]
- Do not reuse the used Test Cassette or Fixed Volume Pipettes.
- The user should never open the foil pouch of the Test Cassette exposing it to the ambient environment until the Test Cassette is ready for immediate use.
- Discard and do not use any damaged Test Cassette or material.
- To obtain accurate results, the Package Insert instructions must be followed.
- The Calibration Cassette must be kept sealed in the provided foil storage pouch between uses.
- Inadequate or inappropriate specimen collection, storage, and transport may yield false test results.
- Specimen collection and handling procedures require specific training and guidance.
- Do not write on the barcode of the Test Cassette. This is used by Sofia or Sofia 2 to identify the type of test being run.
- Do not attempt to scan a Test Cassette more than one time. The barcode on the Test Cassette contains a unique identifier that will prevent Sofia or Sofia 2 from performing a second read on a previously scanned Test Cassette. An error message will be displayed if a Test Cassette is scanned more than once.
- As the detection reagent is a fluorescent compound, no visible results will form on the test strip. Sofia or Sofia 2 must be used for result interpretation.
- Testing should be performed in an area with adequate ventilation.
- Dispose of containers and unused contents in accordance with Federal, State and Local regulatory requirements.
- Wear suitable protective clothing, gloves, and eye/face protection when handling the contents of this kit.
- Wash hands thoroughly after handling.
- 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 quidel.com.

KIT STORAGE AND STABILITY

Store the kit at room temperature, 59°F to 86°F (15°C to 30°C), out of direct sunlight. Kit contents are stable until the expiration date printed on the outer box. Do not freeze.

QUALITY CONTROL

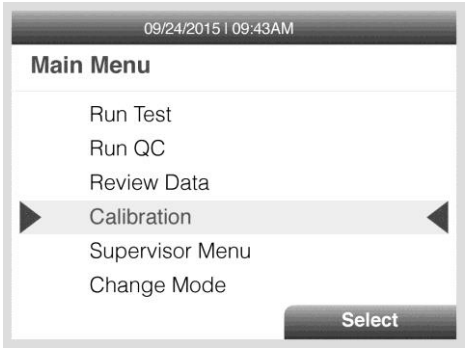
There are three types of Quality Control for Sofia or Sofia 2 and the Test Cassette: Calibration Check Procedure, Built-in Procedural Control features, and External Controls.

Sofia Calibration Check Procedure

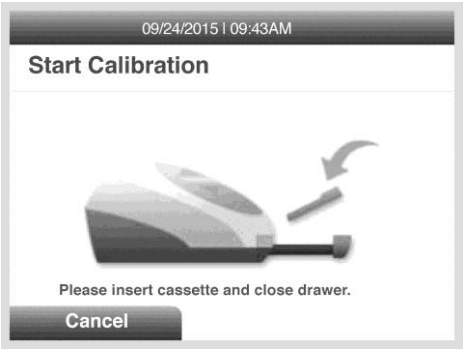
The Calibration Check Procedure is a required function that checks the Sofia optics and calculation systems using a specific Calibration Cassette. A Calibration Cassette is shipped with the Sofia Installation Pack.

Important: Ensure that the Calibration Cassette is stored in the provided storage pouch between uses in order to protect it from exposure to light.

1. To check the calibration of Sofia, select "Calibration" from the Main Menu.



2. Following the prompts, insert the Calibration Cassette into Sofia and close the drawer. Sofia performs the Calibration Check automatically with no user input required.



Sofia indicates when the Calibration Check is completed. Select OK to return to the Main Menu.

NOTE: If the Calibration Check does not pass, notify the on-site Supervisor and Quidel Technical Support for assistance Monday through Friday from 7:00 a.m. to 5:00 p.m. Pacific Time at 800.874.1517 (in the U.S.); 858.552.110 (outside the U.S.); Fax: 858.455.4960; customerservice@quidel.com (Customer Service); technicalsupport@quidel.com (Technical Support); or contact your local distributor.

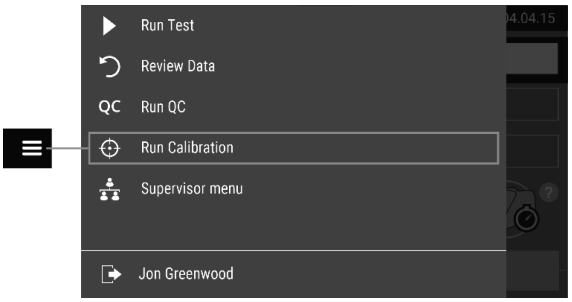
Sofia 2 Calibration Check Procedure

The Calibration Check Procedure should be performed every 30 days. Sofia 2 can be set to remind the user to complete the Calibration Check Procedure.

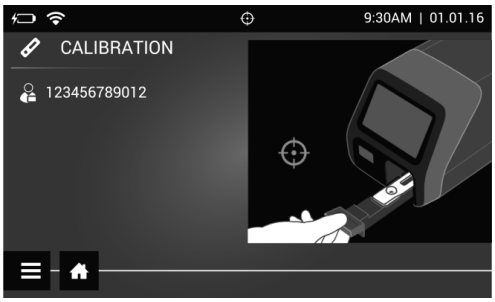
The Calibration Check is a required function that checks Sofia 2 optics and calculation systems using a specific Calibration Cassette. This Calibration Cassette is supplied with Sofia 2. Refer to the Sofia 2 User Manual for details regarding the Calibration Check Procedure.

Important: Ensure that the Calibration Cassette is stored in the provided storage pouch between uses to protect from exposure to light.

1. To check the calibration of Sofia 2, select "Run Calibration" from the Main Menu.



2. Following the prompts, insert the Calibration Cassette into Sofia 2 and close the drawer. Sofia 2 performs the Calibration Check automatically within one minute with no user input required.



Sofia 2 indicates when the Calibration Check is completed. Select to return to the Run Test screen.

NOTE: If the Calibration Check does not pass, notify the on-site Supervisor or contact Quidel Technical Support for assistance Monday through Friday from 7:00 a.m. to 5:00 p.m. Pacific Time at 800.874.1517 (in the U.S.); 858.552.1100 (outside the U.S.); Fax: 858.455.4960; customerservice@quidel.com (Customer Service); technicalsupport@quidel.com (Technical Support); or contact your local distributor.

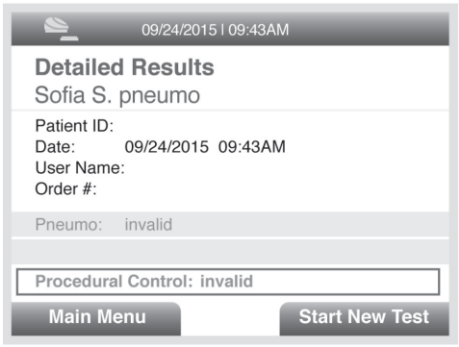
Built-in Procedural Controls

The Sofia S. pneumoniae FIA contains a built-in procedural control feature. Each time a test is run, the procedural control area is scanned by Sofia or Sofia 2 and the result is displayed on the Sofia or Sofia 2 screen.

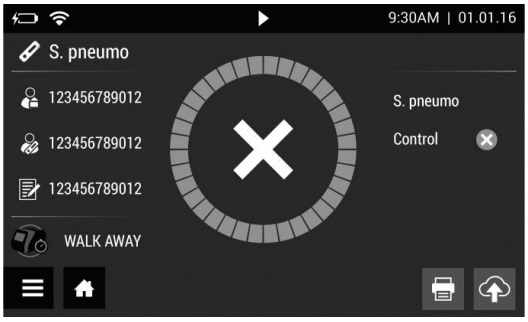
The manufacturer's recommendation for daily control is to document the results of these built-in procedural controls for the first sample tested each day. This documentation is automatically logged in Sofia or Sofia 2 with each test result.

A valid result obtained from the procedural control demonstrates that the test flowed correctly and the functional integrity of the Test Cassette was maintained. **The procedural control is interpreted by Sofia or Sofia 2 after the Test Cassette has developed for 10 minutes. If the test does not flow correctly,**

Sofia or Sofia 2 will indicate that the result is invalid . Should this occur, review the procedure and repeat the test with a new patient sample and a new Test Cassette.



For example: This display shows an invalid result on Sofia.



For example: This display shows an invalid result on Sofia 2.

External Quality Control

External Controls are used to demonstrate that the reagents and assay procedure perform properly. Quidel recommends that Positive and Negative External Controls be run:

- Once for each new untrained operator
- Once for each new shipment of kits – provided that each different lot received in the shipment is tested
- As deemed additionally necessary by your internal quality control procedures, and in accordance with Local, State and Federal regulations or accreditation requirements

For information on how to obtain additional External Controls, contact Quidel Customer Support Services at 800.874.1517 (in the U.S.) or 858.552.1100 (outside the U.S.), or contact your local distributor.

To test external controls, follow the instructions per this Package Insert (as follows), or the Sofia or Sofia 2 User Manual.

EXTERNAL QUALITY CONTROL TEST PROCEDURE

1. From the main menu, select Run QC.

2. Following the prompt on the screen, scan the QC Card (located on the kit box).

3. Sofia or Sofia 2 will prompt the user to select the desired mode (WALK AWAY or READ NOW) and then to run the External Controls.

4. Use the following procedure to test each of the control solutions. **The Positive Control must be run first, followed by the Negative Control.**
   a. Prepare a ***Positive Control Cassette*** by adding **3 drops** of the Positive Control solution to a Test Cassette sample well. Then follow the Sofia or Sofia 2 screen instructions for developing and analyzing the Positive Control Cassette.

   b. Prepare a ***Negative Control Cassette*** by adding **3 drops** of the Negative Control solution to a Test Cassette sample well. Then follow the Sofia or Sofia 2 screen instructions for developing and analyzing the Negative Control Cassette.

5. After both the Positive and Negative Controls have been run, the results will be displayed as "Passed" or "Failed" on Sofia or ✔ or ✖ on Sofia 2.

Do not perform patient tests or report patient test results if either of the QC test results fail. If both the Positive and Negative Controls fail, repeat testing with new Positive and Negative Controls a second time. If only a single Control fails, the user has the option of repeating both the Positive and Negative Controls OR to repeat only the Control that failed. The user may select "Skip" on the Sofia display or » on the Sofia 2 display to skip the Control test that previously passed. The QC Results will show a skipped Control test as "unknown" on Sofia or » on Sofia 2.

Repeat the test or contact Quidel Technical Support at 800.874.1517 (in the U.S.) or 858.552.1100 (outside the U.S.).

URINE SAMPLE COLLECTION AND STORAGE

Urine specimens should be collected in standard specimen containers. Boric acid may be used as a preservative. If specimens cannot be tested soon after collection, they may be stored at room temperature (15°C to 30°C) and tested within 24 hours of collection. Alternatively, specimens may be refrigerated at 2°C to 8°C or frozen at –20°C and tested anytime up to 15 days. Make sure to fully thaw frozen samples before testing.

CEREBRAL SPINAL FLUID SAMPLE COLLECTION AND STORAGE

CSF specimens should be collected in standard specimen containers. If specimens cannot be tested soon after collection, they may be stored at room temperature (15°C to 30°C) and tested within 24 hours of collection. Alternatively, specimens may be refrigerated at 2°C to 8°C and tested within anytime up to 7 days.

TEST PROCEDURE (URINE AND CEREBRAL SPINAL FLUID)

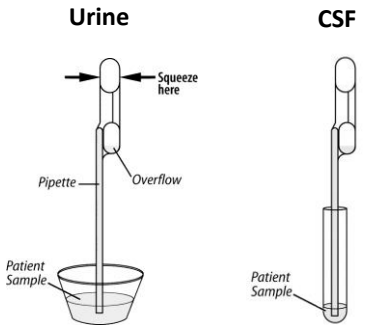
Precautions

DO NOT open the foil pouch containing the Test Cassette until ready to test the sample. Place the Test Cassette on a clean and level surface.

All samples **must be at room temperature** before beginning the assay.

Check expiration date on each individual test package or outer box before using. *Do not use any test past the expiration date on the label.*

1. Verify that Sofia or Sofia 2 is set to the desired Mode: **WALK AWAY** or **READ NOW**. See the "Using Sofia and Sofia 2" section for more information.

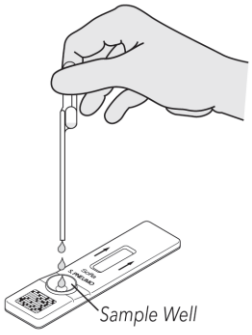


2. Fill the provided Small, Clear 120 µL Fixed Volume Pipette with the patient sample.

   To fill the Fixed Volume Pipette with the patient sample:
   - **a)** FIRMLY squeeze the top bulb.
   - **b)** Still squeezing, place the Pipette tip into the sample.
   - **c)** With the Pipette tip still in the liquid sample, release pressure on bulb to fill the Pipette.

3. Firmly squeeze the top bulb to empty the contents of the Fixed Volume Pipette into the Test Cassette sample well. Extra liquid in the overflow bulb is OK.

   NOTE: The Fixed Volume Pipette is designed to collect and dispense the correct amount of liquid sample. Discard the pipette in your biohazard waste.



4. Proceed to the next section, "Using Sofia and Sofia 2," to complete the test.

USING SOFIA AND SOFIA 2

WALK AWAY/READ NOW Modes

Refer to the Sofia or Sofia 2 User Manual for operating instructions.

Sofia and Sofia 2 may be set to two different modes (WALK AWAY and READ NOW). The procedures for each mode are described below.

WALK AWAY Mode

In WALK AWAY Mode, the user **immediately** inserts the Test Cassette into Sofia or Sofia 2. The user then returns after 10 minutes to get the test result. In this mode, Sofia or Sofia 2 will automatically time the test development before scanning and displaying the test result.

READ NOW Mode

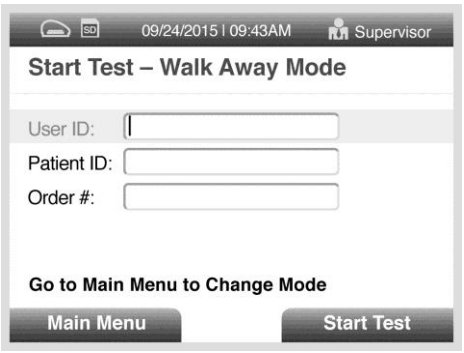
Allow the test to develop for the full 10 minutes BEFORE placing it into Sofia or Sofia 2.

The user must first place the Test Cassette onto the counter or bench top for 10 minutes (outside of Sofia or Sofia 2) and manually time this development step. Then, the user inserts the Test Cassette into Sofia or Sofia 2. In READ NOW Mode, Sofia or Sofia 2 will scan and display the test result within 1 minute. **Note:** Results will remain stable for an additional 10 minutes after the recommended development time of 10 minutes.

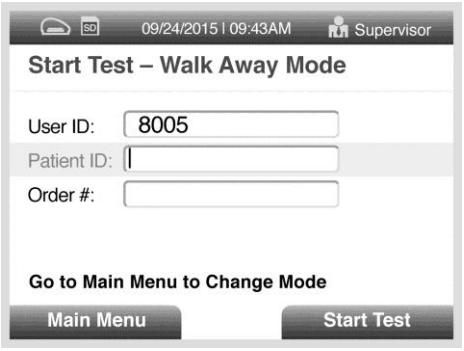
RUN TEST WITH SOFIA

1. Input the user ID using the barcode scanner or manually enter the data using the key pad.

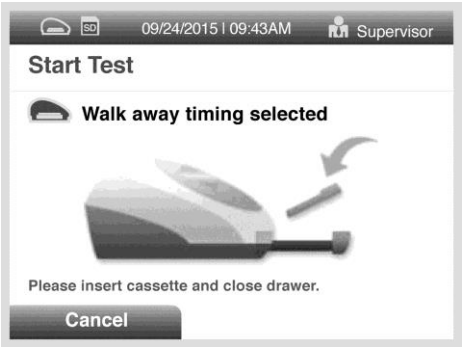
   NOTE: *If you mistakenly scan the incorrect barcode, use the Arrow Buttons on the Sofia key pad to re-highlight the field. Then simply rescan using the correct barcode, and the previous one will be overwritten with the correct barcode.*



2. Input Patient ID or Order # using the barcode scanner or manually enter the data using the key pad.

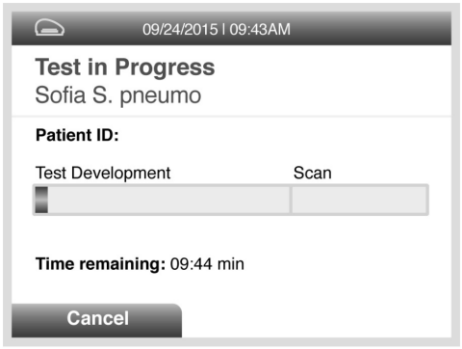


3. Press Start Test and the Sofia drawer will automatically open.



4. Verify that the correct development mode, WALK AWAY or READ NOW, has been selected. Insert the prepared patient Test Cassette into the drawer of Sofia and gently close the drawer.

5. Sofia will start automatically and display the progress. In WALK AWAY Mode, the test results will be displayed on the screen within 10 minutes. In READ NOW Mode, the test results will be displayed on the screen within 1 minute. See Interpretation of Results section.



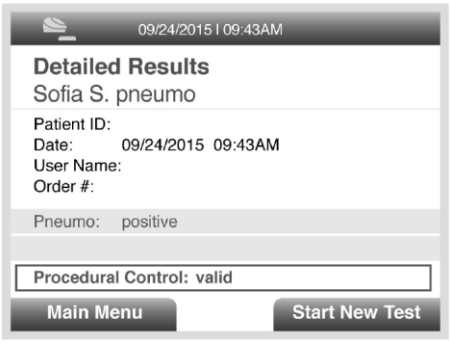
For example: This display shows that the test in WALK AWAY mode has 9 minutes, 44 seconds remaining. Sofia will read and display the results after 10 minutes.

INTERPRETATION OF RESULTS USING SOFIA

When the test is complete, the results will be displayed on the Sofia screen. The results will be automatically printed on the integrated printer if this option is selected. Test Lines, which are fluorescent, cannot be seen with the naked eye.

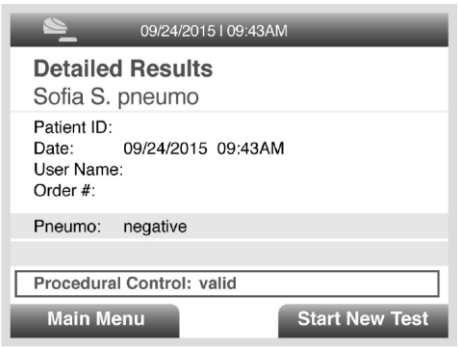
The Sofia screen will display results for the procedural controls as being “valid” or “invalid” and will provide a positive or negative result for the detection of *Streptococcus pneumoniae*. If the procedural controls are “invalid,” retest the patient’s sample with a new Test Cassette.

Positive Results:



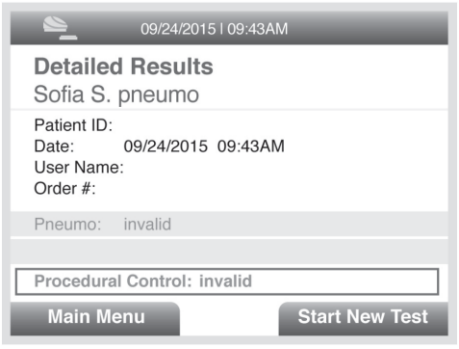
For example: This display shows a valid positive result for *Streptococcus pneumoniae.*

Negative Results:



For example: This display shows a valid negative result for *Streptococcus pneumoniae.*

Invalid Results:



For example: This display shows an invalid result.

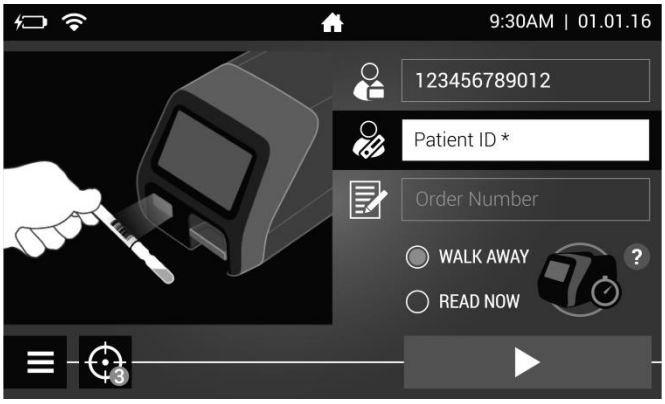
Invalid Results: If the test is invalid, a new test should be performed with a new patient sample and a new Test Cassette.

RUN TEST WITH SOFIA 2

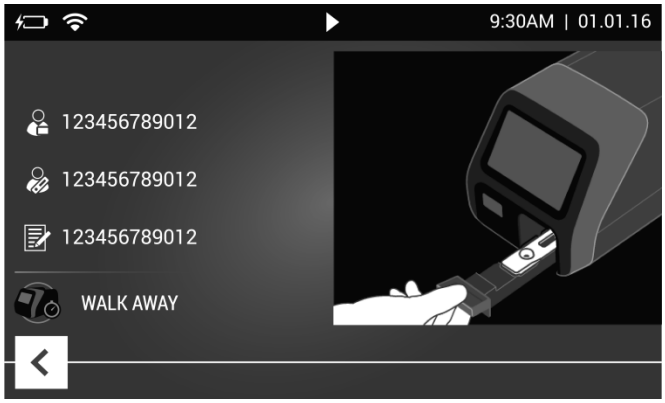
1. Input the User ID using the barcode scanner or manually enter the data using the on-screen key pad.

   NOTE: *If you mistakenly scan the incorrect barcode, select the field again to re-highlight it. Then simply rescan using the correct barcode, and the previous one will be overwritten with the correct barcode.*

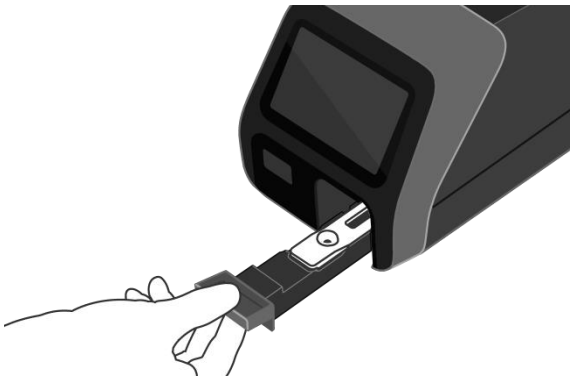
2. Input the Patient ID and Order #, if applicable, using the barcode scanner or manually enter the data using the on-screen key pad.



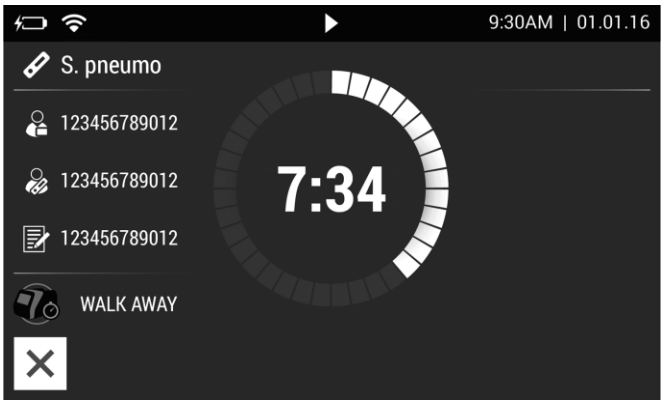
3. Verify that the correct development mode, WALK AWAY or READ NOW, has been selected. Press ▶ and open the Sofia 2 drawer.



4. Insert the prepared patient Test Cassette into the drawer of Sofia 2 and gently close the drawer.



5. Sofia 2 will start automatically and display the progress as shown in the example below. In WALK AWAY Mode, the test results will be displayed on the screen within 10 minutes. In READ NOW Mode, the test results will be displayed on the screen within 1 minute. See Interpretation of Results section.



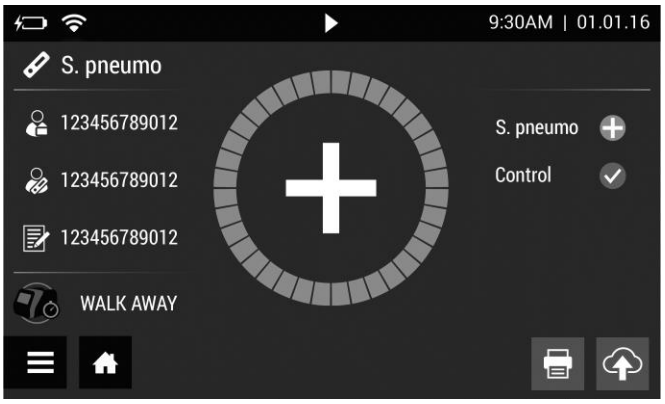
For example: This display shows that the test in WALK AWAY Mode has 7 minutes, 34 seconds remaining. Sofia 2 will read and display the results after 10 minutes.

INTERPRETATION OF RESULTS USING SOFIA 2

When the test is complete, the results will be displayed on the Sofia 2 screen. Test Lines, which are fluorescent, cannot be seen with the naked eye.

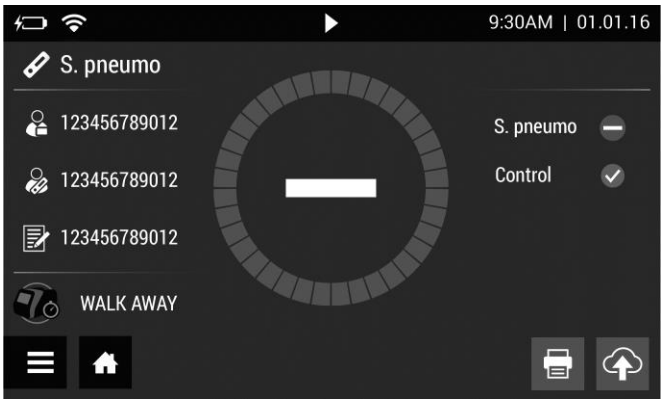
The Sofia 2 screen will display results for the procedural controls as being ✓ or ✗ and will provide a ⊕ or ⊖ result for the detection of *Streptococcus pneumoniae*. If the procedural controls are ✗, retest the patient's sample with a new Test Cassette.

Positive Results:



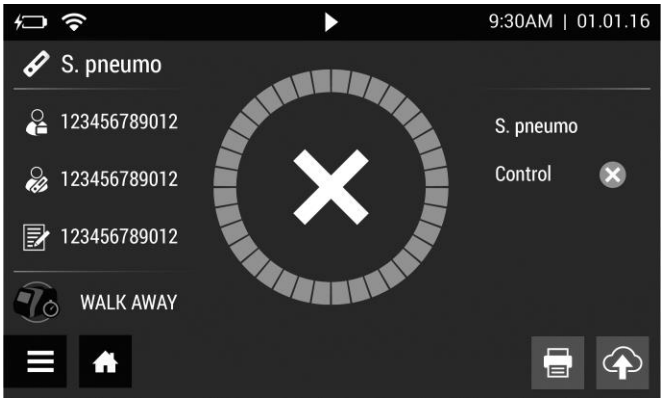
For example: This display shows a valid <u>positive result for *Streptococcus pneumoniae.*</u>

Negative Results:



For example: This display shows a valid <u>negative result for *Streptococcus pneumoniae.*</u>

Invalid Results:



This display shows an invalid result.

If the test is invalid, a new test should be performed starting with Step 1 and a new Test Cassette.

LIMITATIONS

- Failure to follow the Test Procedure may adversely affect test performance and/or invalidate the test result.
- If a precise measurement of patient sample is not used, an accurate result may not be obtained.
- The contents of this kit are to be used for the qualitative detection of *Streptococcus pneumoniae* antigen from urine and CSF specimens.
- This test detects both viable (live) and non-viable *Streptococcus pneumoniae*. Test performance depends on the amount of antigen in the specimen.
- A negative test result may occur if the level of antigen in a sample is below the detection limit of the test or if the sample was collected or transported improperly.
- Failure to follow the Test Procedure may adversely affect test performance and/or invalidate the test result.
- Test results must be evaluated in conjunction with other clinical data available to the physician.
- Positive test results do not rule out co-infections with other pathogens.
- Positive test results do not identify specific *Streptococcus pneumoniae* serogroups.
- Negative test results are not intended to rule in other non-*Streptococcus pneumoniae* bacterial or viral infections.
- The performance of this test has not been evaluated for use in patients without signs and symptoms of infection.
- Positive and negative predictive values are highly dependent on prevalence. False negative test results are more likely during peak activity when prevalence of disease is high. False positive test results are more likely during periods of low *Streptococcus pneumoniae* activity when prevalence is moderate to low.

EXPECTED VALUES

The rate of positivity observed in *Streptococcus pneumoniae* testing will vary depending on the handling of specimens, detection method utilized, time of year, and disease prevalence.

SOFIA S. PNEUMONIAE FIA PERFORMANCE CHARACTERISTICS ON SOFIA

Sofia S. pneumoniae FIA performance with clinical and spiked specimens

The performance of the Sofia S. pneumoniae FIA was compared to a commercially available rapid *Streptococcus pneumoniae* antigen test using a blinded panel of 251 clinically acquired positive and negative urine specimens. Each specimen was evaluated using the Sofia S. pneumoniae FIA per the Package Insert instructions and the Comparator Test per the Package Insert instructions. The results are presented in Table 1.

Table 1
Sofia S. pneumoniae FIA Performance Compared to a Commercially Available Qualitative Test
Urine Specimens

	Comparator Test	
	Pos	Neg
Sofia Pos	15	10*
Sofia Neg	0	226
Total	15	236

Positive Agreement = 100% (15/15)
(95% CI=76%-100%)

Negative Agreement = 95.8% (226/236)
(95% CI=92%-98%)

Overall Agreement = 96% (241/251)
(95% CI=93%-98%)

*The 10 specimens that were positive by Sofia S. pneumoniae FIA and negative by the Comparator Test were concentrated by filtration and tested again on the Comparator Test. All 10 specimens were positive by the Comparator Test. With discrepant result resolution, percent negative agreement = 100% (226/226).

The performance of the Sofia S. pneumoniae FIA was compared to a commercially available rapid *Streptococcus pneumoniae* antigen test using a panel of 30 *Streptococcus pneumoniae*-negative CSF specimens spiked with intact *Streptococcus pneumoniae* to an approximate concentration of 1.48E+03 CFU/mL. The results are presented in Table 2.

Table 2
Sofia S. pneumoniae FIA Performance Compared to a Commercially Available Qualitative Test CSF Specimens

	Comparator Test	
	Pos	Neg
Sofia Pos	29	1
Sofia Neg	0	0
Total	29	1

Positive Agreement = 100% (29/29)
(95% CI=86%-100%)

Reproducibility Studies

The reproducibility of the Sofia S. pneumoniae FIA was evaluated at two different sites. Two operators at each site tested a series of coded, contrived samples, prepared in a negative urine matrix, including negative, low positive, and moderate positive specimens. The inter- and intra-laboratory agreement for all samples was 100% (180/180).

Limit of Detection

The limit of detection (LOD) for the Sofia S. pneumonia FIA was determined using purified *Streptococcus pneumoniae* cell wall polysaccharides (CWPS) antigen tested in urine and three *Streptococcus pneumoniae* strains tested in CSF (Tables 3 and 4).

Table 3
Limit of Detection with CWPS in Urine

	Limit of Detection (pg/mL)
CWPS Antigen	55

Table 4
Limit of Detection with Bacteria Strains in CSF

	Limit of Detection (CFU/mL)
Serotype 3	3.02E+02
Serotype 14	9.00E+02
Serotype 23F	4.93E+02

Analytical Inclusivity

Analytical inclusivity was demonstrated using 98 Serogroups of *Streptococcus pneumoniae*. All of the strains were detected at the concentrations listed below (Table 5).

Table 5
Serotype Detection Levels

Serotype	Level of Detection
1	5.00E+03 CFU/mL
2	5.00E+03 CFU/mL
3	5.00E+03 CFU/mL
4	5.00E+03 CFU/mL
5	5.00E+03 CFU/mL
6A	3.00E+04 CFU/mL
6B	5.00E+03 CFU/mL
6C	5.00E+03 CFU/mL
6D	5.00E+03 CFU/mL
6F	5.00E+03 CFU/mL
6G	5.00E+03 CFU/mL
6H	5.00E+03 CFU/mL
7F	5.00E+03 CFU/mL
7A	5.00E+03 CFU/mL
7B	5.00E+03 CFU/mL
7C	5.00E+03 CFU/mL
8	5.00E+03 CFU/mL
9A	5.00E+03 CFU/mL
9L	5.00E+03 CFU/mL
9N	5.00E+03 CFU/mL
9V	5.00E+03 CFU/mL
10F	8.99E+03 CFU/mL
10A	5.00E+03 CFU/mL
10B	5.00E+03 CFU/mL
10C	5.00E+03 CFU/mL
11F	5.00E+03 CFU/mL
11A	1.80E+04 CFU/mL
11B	5.00E+03 CFU/mL
11C	5.00E+03 CFU/mL
11D	5.00E+03 CFU/mL
11E	5.00E+03 CFU/mL
12F	5.00E+03 CFU/mL
12A	5.00E+03 CFU/mL
12B	5.00E+03 CFU/mL
13	5.00E+03 CFU/mL
14	5.00E+03 CFU/mL
15F	5.00E+03 CFU/mL
15A	5.00E+03 CFU/mL
15B	5.00E+03 CFU/mL
15C	5.00E+03 CFU/mL
16F	5.00E+03 CFU/mL
16A	5.00E+03 CFU/mL
17F	5.00E+03 CFU/mL
17A	5.00E+03 CFU/mL
18F	5.00E+03 CFU/mL

Serotype	Level of Detection
18A	5.00E+03 CFU/mL
18B	5.00E+03 CFU/mL
18C	5.00E+03 CFU/mL
19F	5.00E+03 CFU/mL
19A	5.00E+03 CFU/mL
19B	1.20E+04 CFU/mL
19C	5.00E+03 CFU/mL
20	5.00E+03 CFU/mL
20A	5.00E+03 CFU/mL
20B	1.00E+04 CFU/mL
21	5.00E+03 CFU/mL
22F	1.00E+04 CFU/mL
22A	5.00E+03 CFU/mL
23F	5.00E+03 CFU/mL
23A	1.00E+04 CFU/mL
23B	5.00E+03 CFU/mL
24F	5.00E+03 CFU/mL
24A	5.00E+03 CFU/mL
24B	5.00E+03 CFU/mL
25F	5.00E+03 CFU/mL
25A	5.00E+03 CFU/mL
27	1.00E+04 CFU/mL
28F	5.00E+03 CFU/mL
28A	5.00E+03 CFU/mL
29	5.00E+03 CFU/mL
31	5.00E+03 CFU/mL
32F	1.00E+04 CFU/mL
32A	5.00E+03 CFU/mL
33F	5.00E+03 CFU/mL
33A	5.00E+03 CFU/mL
33B	5.00E+03 CFU/mL
33C	5.00E+03 CFU/mL
33D	5.00E+03 CFU/mL
34	5.00E+03 CFU/mL
35F	5.00E+03 CFU/mL
35A	5.00E+03 CFU/mL
35B	5.00E+03 CFU/mL
35C	5.00E+03 CFU/mL
36	5.00E+03 CFU/mL
37	5.00E+03 CFU/mL
38	5.00E+03 CFU/mL
39	5.00E+03 CFU/mL
40	5.00E+03 CFU/mL
41F	5.00E+03 CFU/mL
41A	5.00E+03 CFU/mL
38	5.00E+03 CFU/mL
39	5.00E+03 CFU/mL
40	5.00E+03 CFU/mL

Serotype	Level of Detection
41F	5.00E+03 CFU/mL
41A	5.00E+03 CFU/mL
42	5.00E+03 CFU/mL
43	5.00E+03 CFU/mL
44	5.00E+03 CFU/mL
45	5.00E+03 CFU/mL
46	5.00E+03 CFU/mL
47F	5.00E+03 CFU/mL
47A	5.00E+03 CFU/mL
48	5.00E+03 CFU/mL

Analytical Specificity

Cross Reactivity

The Sofia S. pneumoniae FIA was evaluated for performance in the presence of potential cross-reactive and interfering organisms commonly found in urine samples. This study demonstrated that the organisms and concentrations listed below do not affect the performance of the Sofia S. pneumoniae FIA (Table 6).

Table 6
Analytical Specificity and Cross Reactivity

Organism/Virus	**Concentration CFU/mL (Bacteria), $TCID_{50}$/mL (Virus)**
Acinetobacter baumannii (2)	1.0E+06
Acinetobacter lwoffii	1.0E+06
Acinetobacter sp	1.0E+06
Adenovirus 3	1.0E+05
Alcaligenes faecalis	1.0E+06
Bacillus subtilis	1.0E+06
Blastomyces dermatitidis	1:200 dilution from stock*
Bordetella pertussis	1.0E+06
Moraxella catarrhalis	1.0E+06
Candida albicans (3)	1.0E+06
Candida albicans stellatoides	1.0E+06
Corynebacterium diphtheriae	1.0E+06
Corynebacterium pseudodiphtheriticum	1.0E+06
Corynebacterium striatum	1.0E+06
Enterobacter cloacae (4)	1.0E+06
Enterococcus avium	1.0E+06
Enterococcus durans	1.0E+06
Enterococcus faecalis (6)	1.0E+06
Escherichia coli (7)	1.0E+06
Escherichia hermannii (2)	1.0E+06
Flavobacterium meningosepticum	1.0E+06
Flavobacterium sp	1.0E+06
Gardnerella vaginalis	1.0E+06
Haemophilus influenzae, type a	1.0E+06
Haemophilus influenzae, type b	1.0E+06
Haemophilus influenzae, type c	1.0E+06

Organism/Virus	Concentration CFU/mL (Bacteria), $TCID_{50}$/mL (Virus)
Haemophilus influenzae, type d	1.0E+06
Haemophilus influenzae, type e	1.0E+06
Haemophilus influenzae, type f	1.0E+06
Haemophilus influenzae, nontypable (4)	1.0E+06
Haemophilus parahaemolytica	1.0E+06
Klebsiella oxytoca (2)	1.0E+06
Klebsiella pneumonia (3)	1.0E+06
Lactobacillus casei	1.0E+06
Lactobacillus plantarum	1.0E+06
Lactobacillus acidophilus	1.0E+06
Lactobacillus fermentum	1.0E+06
Lactobacillus leichmanni	1.0E+06
Legionella pneumophila	1.0E+06
Listeria monocytogenes	1.0E+06
Micrococcus luteus (2)	1.0E+06
Moraxella osloensis	1.0E+06
Morganell morganii	1.0E+06
Mycobacterium kansasii	1.0E+06
Mycobacterium tuberculosis	1.0E+06
Mycoplasma bovis	1.0E+06
Mycoplasma pneumoniae	1.0E+06
Neisseria cinerea	1.0E+06
Neisseria gonorrhoeae (3)	1.0E+06
Neisseria lactamica	1.0E+06
Neisseria meningitidis	1.0E+06
Neisseria ploysaccharea	1.0E+06
Neisseria subflava	1.0E+06
Nocardia farcinica	1:200 dilution from stock*
Paracoccidiodes brasiliensis	1:200 dilution from stock*
Parainfluenzae 1	1.0E+05
Parainfluenzae 4a	1.0E+05
Proteus mirabilis (2)	1.0E+06
Proteus vulgaris (2)	1.0E+06
Providencia stuartii	1.0E+06
Pseudomonas aeruginosa (4)	1.0E+06
Pseudomonas fluorescens	1.0E+06
Pseudomonas stutzeri	1.0E+06
Respiratory Syncitial Virus	1.0E+05
Rhinovirus	1.0E+05
Salmonella enterica (3)	1.0E+06
Salmonella enterica subsp arizonae	1.0E+06
Serratia marcescens	1.0E+06
Sphingobacterium multivorum	1.0E+06
Staphylococcus aureus (6)	1.0E+06
Staphylococcus epidermidis	1.0E+06
Staphylococcus haemolyticus	1.0E+06
Staphylococcus intermedius	1.0E+06

Organism/Virus	Concentration CFU/mL (Bacteria), $TCID_{50}$/mL (Virus)
Staphylococcus saprophyticus	1.0E+06
Staphylococcus warneri	1.0E+06
Staphylococcus xylosus	1.0E+06
Staphylococcus sciuri	1.0E+06
Staphylococcus lentus	1.0E+06
Stenotrophomonas maltophilia	1.0E+06
Streptococcus anginosus	1.0E+06
Streptococcus bovis	1.0E+06
Streptococcus pyogenes (2)	1.0E+06
Strep Group B (7)	1.0E+06
Streptococcus agalactiae (Grp B)	1.0E+06
Strep Group C	1.0E+06
Strep Group F	1.0E+06
Strep Group G	1.0E+06
Streptococcus mutans	1.0E+06
Streptococcus parasanginis	1.0E+06
Streptococcus sanguinis	1.0E+06
Trichomonas vaginalis	1.0E+06

*High amount of ag, fungus in hypaeal form

Interfering Substances

The following substances commonly found in urine were determined not to affect the performance of the Sofia S. pneumoniae FIA at the concentrations listed below (Table 7).

Table 7
Non-interfering Substances

Substance	Concentration
Acetylsalicylic Acid	3.62 mmol/L
Amoxicilin	206 µmol/L
Ascorbic Acid	100 mg/dL
Bilirubin	20 mg/dL
Ciprofloxacin	0.22 mg/mL
Erythromycin	0.067 mg/mL
Glucose	2000 mg/dL
Hemoglobin	1000 µg/dL
Ibuprofen	2.425 mmol/L
Minocycline	34 µmol/L
Penicillin	2 µg/mL
Protein - BSA	500 mg/dL
Rifampicin	0.09 mg/mL
Tetracycline	34 µmol/L
Triglycerides	37 mmol/L
Urea	2000 mg/dL
Urine	pH 5 to pH 9

SOFIA S. PNEUMONIAE FIA PERFORMANCE CHARACTERISTICS ON SOFIA 2

Analytical Method Comparison of Sofia S. pneumoniae FIA with Sofia and Sofia 2 Comparative Performance

The performance of Sofia S. pneumoniae FIA when used with Sofia vs. Sofia 2 was compared using a panel of urine samples at one site. Negative urine samples were pooled and spiked with different concentrations of S. pneumo positive control stock solution. Panel members spanned a broad range of negative and positive samples distributed across the dynamic range of the assay.

The Sofia vs. Sofia 2 comparison results are shown below in Table 8. Positive agreement was 96.5% and negative agreement was 98.5%.

Table 8
Sofia S. pneumo FIA – Sofia vs. Sofia 2 Comparison

		Sofia Pos	Sofia Neg	
Sofia 2	Pos	110	1**	Positive Agreement = 110/113 = 97.3% (95% CI = 92% – 99%)
	Neg	3*	66	Negative Agreement = 66/67 = 98.5% (95% CI = 92% – 100%)
	Total	113	67	Overall Agreement = 176/180 = 97.8% (95% CI = 94% – 99%)

*There were 3 discordant Sofia 2 negative/Sofia positive results which were near the cutoff specimens.
**There was 1 discordant Sofia 2 positive/Sofia negative results which was a near the cutoff specimen.

Sofia S. pneumoniae FIA performance with clinical urine specimens

The performance of the Sofia S. pneumoniae FIA was compared to two commercially available rapid *Streptococcus pneumoniae* antigen tests using a panel of 158 frozen archival clinical specimens of 84 known positives and 74 known negatives. Each specimen was evaluated using the Sofia S. pneumoniae FIA per the Package Insert instructions and the Comparator Tests' Package Insert instructions. The results are presented in Tables 9 and 10.

Table 9
Sofia S. pneumoniae FIA Performance Compared to a Commercially Available Qualitative Test Urine Specimens

		Comparator Test 1 Pos	Comparator Test 1 Neg	
Sofia S. pneumoniae	Pos	84	3	Positive Agreement = 100% (84/84) (95% CI = 96% - 100%)
	Neg	0	71	Negative Agreement = 95.9% (71/74) (95% CI = 89%-99%)
	Total	84	74	Overall Agreement = 98.1% (155/158) (95% CI = 95%-99%)

Table 10
Sofia S. pneumoniae FIA Performance Compared to a Commercially Available Qualitative Test
Urine Specimens

		Comparator Test 2	
		Pos	Neg
Sofia S. pneumoniae	Pos	84	3
	Neg	2	69
	Total	86	72

Positive Agreement =	97.7% (84/86) (95% CI = 92% - 99%)
Negative Agreement =	95.8% (69/72) (95% CI = 89% - 99%)
Overall Agreement =	96.8% (153/158) (95% CI = 93%-97%)

Sofia S. pneumoniae FIA performance with spiked CSF specimens

The performance of the Sofia S. pneumoniae FIA was compared to a commercially available rapid *Streptococcus pneumoniae* antigen test using a panel of 50 *Streptococcus pneumoniae*-negative CSF and 50 CSF specimens spiked with *Streptococcus pneumoniae* cell wall polysaccharide antigen (CWPS) to an approximate concentration of 1.65E+02 pg/mL. The results are presented in Table 11.

Table 11
Sofia S. pneumoniae FIA Performance Compared to a Commercially Available Qualitative Test
CSF Specimens

		Comparator Test	
		Pos	Neg
Sofia S. pneumonia	Pos	50	0
	Neg	0	50
	Total	50	50

Positive Agreement =	100% (50/50) (95% CI = 93% - 100%)
Negative Agreement =	100% (50/50) (95% CI = 93 – 100)
Overall Agreement =	100% (100/100) (95% CI = 96% - 100%)

Reproducibility Studies

The reproducibility of the Sofia S. pneumoniae FIA was evaluated at two different sites. Two operators at each site tested a series of coded, contrived samples, prepared in negative urine matrix, including negative, low positive, and moderate positive specimens. The overall agreement for negative samples was 100% (60/60), for the low positive samples combined was 90% (54/60), and 100% (60/60) for the moderate positive samples.

ASSISTANCE

If you have any questions regarding the use of this product or if you want to report a test system problem, please call Quidel's Technical Support Number 800.874.1517 (in the U.S.) or 858.552.1100, Monday through Friday, from 7:00 a.m. to 5:00 p.m., Pacific Time. If outside the United States contact your local distributor or technicalsupport@quidel.com.

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IVD

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REF Catalogue number	CE CE mark of conformity
EC REP Authorized Representative in the European Community	LOT Batch code
 Use by	 Manufacturer
 Temperature limitation	 Intended use
Rx ONLY Prescription use only	 Consult instructions for use
IVD For *In Vitro* diagnostic use	 Contains sufficient for 25 determinations
CONT Contents/Contains	CONTROL + Positive control
CONTROL – Negative control	