Food and Drug Administration
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510(k) SUBSTANTIAL EQUIVALENCE DETERMINATION
DECISION SUMMARY

I Background Information:

A 510(k) Number

K190433

B Applicant

Roche Molecular Systems, Inc.

C Proprietary and Established Names

cobas TV/MG for use on cobas 6800/8800 systems, cobas TV/MG Positive Control Kit, cobas Buffer Negative Control Kit

D Regulatory Information

Product Code(s)	Classification	Regulation Section	Panel
QEP	Class II	21 CFR 866.3393 - Device to Detect Nucleic Acids from Non-Viral Microorganism(s) Causing Sexually Transmitted Infections and Associated Resistance Marker(s)	83; MI - Microbiology

II Submission/Device Overview:

A Purpose for Submission:

To determine substantial equivalence for the cobas TV/MG assay for use on cobas 6800/8800 systems for detection of *Trichomonas vaginalis* (TV) and *Mycoplasma genitalium* (MG) DNA in male or female urine, self-collected vaginal swab specimens, clinician-collected vaginal swab specimens, and endocervical specimens, for the detection of TV DNA in cervical specimens collected in PreservCyt solution and for the detection of MG DNA in self-collected meatal swab specimens and clinician-collected meatal swab specimens.

B Measurand:

Trichomonas vaginalis and *Mycoplasma genitalium* DNA

C Type of Test:

Nucleic acid extraction, purification and amplification assay (real-time polymerase chain reaction)

III Intended Use/Indications for Use:

A Intended Use(s):

cobas TV/MG on the cobas 6800/8800 Systems is an automated, qualitative in vitro nucleic acid diagnostic test that utilizes real-time polymerase chain reaction (PCR), for the direct detection of *Trichomonas vaginalis* (TV) and *Mycoplasma genitalium* (MG) DNA in male or female urine, self-collected vaginal swab specimens (collected in a clinical setting), clinician-collected vaginal swab specimens, and endocervical specimens, all collected in cobas PCR Media (Roche Molecular Systems, Inc.). cobas TV/MG also detects TV DNA in cervical specimens collected in PreservCyt solution and MG DNA in self-collected meatal swab specimens (collected in a clinical setting) and clinician-collected meatal swab specimens. This test is intended as an aid in the diagnosis of TV and MG infections in individuals suspected to have TV or MG infection.

A vaginal swab (self-collected or clinician-collected) is the preferred specimen type for MG testing in females due to higher sensitivity compared to endocervical swabs and urine. For males, urine is the preferred specimen type due to higher sensitivity compared to meatal swabs. If vaginal swab or male urine is not used and MG testing is negative, further testing with the preferred specimen type may be indicated if *M. genitalium* infection is strongly suspected.

Ancillary Collection Kits:

The cobas PCR Media Dual Swab Sample Kit is used to collect and transport human specimens. The cobas PCR Media serves as a nucleic acid stabilizing transport and storage medium for human specimens.
Note: This kit has been validated for use with the following tests:

- cobas CT/NG v2.0 Test (for use on the cobas 4800 Systems)
- cobas CT/NG for use on cobas 6800/8800 Systems
- cobas TV/MG for use on the cobas 6800/8800 Systems

The cobas PCR Media Uni Swab Sample Kit is used to collect and transport human specimens. The cobas PCR Media serves as a nucleic acid stabilizing transport and storage medium for human specimens.
Note: This kit has been validated for use with the following tests:

- cobas CT/NG v2.0 Test (for use on the cobas 4800 Systems)
- cobas CT/NG for use on cobas 6800/8800 Systems
- cobas TV/MG for use on the cobas 6800/8800 Systems
- cobas Cdiff Test for use on the cobas 4800 System
- cobas Cdiff for use on the cobas Liat System

The cobas PCR Urine Sample Kit is used to collect and transport urine specimens. The cobas PCR Media serves as a nucleic acid stabilizing transport and storage medium for urine specimens.
Note: This kit has been validated for use with the following tests:

- cobas CT/NG v2.0 Test (for use on cobas 4800 Systems)
- cobas CT/NG for use on cobas 6800/8800 Systems
- cobas TV/MG for use on cobas 6800/8800 Systems

B Indication(s) for Use:
Same as the Intended Use

C Special Conditions for Use Statement(s):
Rx - For Prescription Use Only

D Special Instrument Requirements:
cobas 6800/8800 Systems

IV Device/System Characteristics:

A Device Description:

cobas TV/MG on the cobas 6800/8800 Systems is an automated, qualitative *in vitro* nucleic acid diagnostic test for the direct detection of *Trichomonas vaginalis* (TV) and *Mycoplasma genitalium* (MG) DNA in male or female urine, self-collected vaginal swab specimens (collected in a clinical setting), clinician-collected vaginal swab specimens, and endocervical specimens collected in cobas PCR Media. cobas TV/MG also detects TV DNA in cervical specimens collected in PreservCyt Solution and MG DNA in self-collected meatal swab specimens (collected in a clinical setting) and clinician-collected meatal swab specimens.
The DNA Internal Control, used to monitor the entire sample preparation and PCR amplification process, is introduced into each specimen during sample processing. In addition, the test utilizes external controls (low titer positive control and a negative control).

B Principle of Operation:

cobas TV/MG is based on fully automated sample preparation (nucleic acid extraction and purification) followed by PCR amplification and detection. The cobas 6800/8800 Systems consist of the sample supply module, the transfer module, the processing module, and the analytic module. Automated data management is performed by the cobas 6800/8800 software which assigns test results for all tests as positive, negative, or invalid. Results can be reviewed directly on the system screen, exported, or printed as a report.

Nucleic acid from patient samples and added internal control DNA (DNA-IC) molecules is simultaneously extracted. In summary, nucleic acid is released by addition of proteinase and lysis reagent to the sample. The released nucleic acid binds to the silica surface of the added magnetic glass particles. Unbound substances and impurities, such as denatured protein, cellular debris, and potential PCR inhibitors are removed with subsequent wash steps and purified nucleic acid is eluted from the magnetic glass particles with elution buffer at elevated temperature. External controls (positive and negative) are processed in the same way with each cobas TV/MG run.

Selective amplification of target nucleic acid from the sample is achieved by the use of target-specific forward and reverse primers for TV and MG which are selected from highly-conserved

regions within the respective target organism. TV is detected by one selective set of primers and a probe, while MG is detected by using two sets targeting separate regions (dual-target). Selective amplification of DNA IC is achieved using sequence-specific forward and reverse primers which are selected to have no homology with either the TV or MG target regions. A thermostable DNA polymerase enzyme is used for PCR amplification. The target and DNA-IC sequences are amplified simultaneously utilizing a universal PCR amplification profile with predefined temperature steps and number of cycles. The master mix includes deoxyuridine triphosphate (dUTP), instead of deoxythymidine triphosphate (dTTP), which is incorporated into the newly synthesized DNA amplicon. Any contaminating amplicon from previous PCR runs is eliminated by the AmpErase enzyme, which is included in the PCR master mix, during the first thermal cycling step. However, newly formed amplicons are not eliminated since the AmpErase enzyme is inactivated once exposed to temperatures above 55°C.

The cobas TV/MG master mix contains one detection probe specific for the TV target sequence, two detection probes specific for the MG target sequences and one for the DNA-IC. The probes are labeled with target specific fluorescent reporter dyes allowing simultaneous detection of TV target, MG target, and DNA-IC in three different channels. When not bound to the target sequence, the fluorescent signal of the intact probes is suppressed by a quencher dye. During the PCR amplification step, hybridization of the probes to the specific single-stranded DNA template results in cleavage of the probe by the 5' to 3' exonuclease activity of the DNA polymerase resulting in separation of the reporter and quencher dyes and the generation of a fluorescent signal. With each PCR cycle, increasing amounts of cleaved probes are generated and the cumulative signal of the reporter dye increases concomitantly. Real-time detection and discrimination of PCR products is accomplished by measuring the fluorescence of the released reporter dyes for the TV and MG targets and DNA-IC, respectively.

C Instrument Description Information:

Modes of Operation	Yes	No
Does the applicant's device contain the ability to transmit data to a computer, webserver, or mobile device?	☒	☐
Does the applicant's device transmit data to a computer, webserver, or mobile device using wireless transmission?	☐	☒
Software		
FDA has reviewed applicant's Hazard Analysis and software development processes for this line of product types.	☒	☐

1. Instrument Name:
   cobas 6800 and cobas 8800 Systems

2. Specimen Identification:
   cobas 6800/8800 support multiple types of barcodes. Loaded samples are automatically moved for barcode scanning and processing.

3. Specimen Sampling and Handling:
   Specimens are collected using the appropriate ancillary kits (cobas PCR Media Dual Swab Sample Kit, cobas PCR Media Uni Swab Sample Kit, or cobas PCR Urine Sample Kit) or

PreservCyt Solution as per defined instructions. Swab specimens containing a single swab in the cobas PCR Media tube can be directly processed on the cobas 6800/8800 Systems, or the swab may be removed prior to loading onto the instrument. Urine specimens must show a liquid level between two black indicator lines on the cobas PCR Media tube to proceed to testing. Cervical specimens in PreservCyt Solution are to be aliquoted into barcoded cobas PCR Secondary tubes for processing. Only racks of uncapped tubes may be loaded into the Sample Supply Module of the cobas 6800/8800 Systems for testing. Specimen processing is fully automated.

4. Calibration:
   No calibration is required by the user.

5. Quality Control:
   Please see section VII. A.4.

V Substantial Equivalence Information:

A Predicate Device Name(s):
Aptima Mycoplasma genitalium Assay
Aptima Trichomonas vaginalis assay (reference device)

B Predicate 510(k) Number(s):
DEN180047
K122062 (reference device)

C Comparison with Predicate(s):

Device & Predicate Device(s):	K190433	DEN180047 (predicate)	K122062 (reference device)
Device Trade Name	cobas TV/MG for use on cobas 6800/8800 systems, cobas TV/MG Positive Control Kit, cobas Buffer Negative Control Kit	Aptima Mycoplasma genitalium Assay	Aptima Trichomonas vaginalis assay
General Device Characteristic Similarities			
Intended Use/Indications for Use	cobas TV/MG on the cobas 6800/8800 Systems is an automated, qualitative in vitro nucleic acid diagnostic test that utilizes real-time polymerase chain	The Aptima Mycoplasma genitalium assay is an *in vitro* nucleic acid amplification test (NAAT) for the qualitative detection of ribosomal RNA (rRNA)	The APTIMA Trichomonas vaginalis Assay is an *in vitro* qualitative nucleic acid amplification test (NAAT) for the detection of ribosomal RNA (rRNA) from

	reaction (PCR), for the direct detection of *Trichomonas vaginalis* (TV) and *Mycoplasma genitalium* (MG) DNA in male or female urine, self-collected vaginal swab specimens (collected in a clinical setting), clinician-collected vaginal swab specimens, and endocervical specimens, all collected in cobas PCR Media (Roche Molecular Systems, Inc.). cobas TV/MG also detects TV DNA in cervical specimens collected in PreservCyt solution and MG DNA in self-collected meatal swab specimens (collected in a clinical setting) and clinician-collected meatal swab specimens. This test is intended as an aid in the diagnosis of TV and MG infections in individuals suspected to have TV or MG infection. A vaginal swab (self-collected or clinician-collected) is the preferred specimen type for MG testing in females due to higher sensitivity compared to endocervical swabs and urine. For males, urine is the preferred specimen type due to higher sensitivity compared to meatal swabs. If vaginal swab	from *Mycoplasma genitalium* on the fully automated Panther system. It is intended for use as an aid in the diagnosis of *M. genitalium* urogenital infections in male and female patients suspected of *M. genitalium* infection. The assay may be used to test the following specimens: clinician-collected and self-collected vaginal swabs (in a clinical setting), clinician-collected endocervical swabs, female and male urine, clinician-collected male urethral swabs, and self-collected penile meatal swabs (in a clinical setting). For females, a vaginal swab is the preferred specimen type due to higher clinical sensitivity for detecting *M. genitalium* than other specimen types; however, female urine or clinician-collected endocervical swabs may be used as alternative specimens when vaginal swab specimens are not available. If female urine or clinician-collected endocervical swab specimens test negative, testing with a vaginal swab may be indicated, if *M. genitalium* infection is suspected.	*Trichomonas vaginalis* to aid in the diagnosis of trichomoniasis using the PANTHER System. The assay may be used to test the following specimens from symptomatic or asymptomatic women: clinician-collected endocervical swabs, clinician-collected vaginal swabs, and specimens collected in PreservCyt Solution.

	or male urine is not used and MG testing is negative, further testing with the preferred specimen type may be indicated if *M. genitalium* infection is strongly suspected.		
Sample Types	TV and MG: male and female urine, self-collected vaginal swab specimens (collected in a clinical setting), clinician-collected vaginal swab specimens, and endocervical swab specimens, all collected in cobas PCR Media TV only: cervical specimens collected in PreservCyt solution MG only: self-collected meatal swab specimens (collected in a clinical setting) and clinician-collected meatal swab specimens	Clinician-collected and self-collected vaginal swabs (in a clinical setting), clinician-collected endocervical swabs, female and male urine, clinician-collected male urethral swabs, and self-collected penile meatal swabs (in a clinical setting).	Clinician-collected endocervical swabs, clinician-collected vaginal swabs, and specimens collected in PreservCyt Solution
Conditions for Use	Same	For prescription use	For prescription use
Sample preparation procedure	Same	Automated	Automated
General Device Characteristic Differences			
Amplification Technology	Real-time PCR	Target Capture (TC), Transcription Mediated Amplification (TMA)	Target Capture (TC), Transcription Mediated Amplification (TMA)
Detection Chemistry	Paired reporter and quencher fluorescence labeled probes (TaqMan Technology) using fluorescence resonance energy transfer (FRET)	Hybridization Protection Assay (HPA)	Hybridization Protection Assay (HPA)
Result Analysis	Based on PCR cycle	Based on the analyte	Based on the analyte

	threshold analysis	signal-to-cutoff (S/CO)	signal-to-cutoff (S/CO)
Analyzer	Cobas 6800/8800 systems	PANTHER instrument	PANTHER instrument

VI Standards/Guidance Documents Referenced:

Guideline for Industry and Food and Drug Administration Staff: Class II Special Controls Guideline: Nucleic Acid Amplification Assays for the Detection of *Trichomonas vaginalis*; August 2015.

VII Performance Characteristics (if/when applicable):

A Analytical Performance:

1. Precision/Reproducibility:

Precision:

The within laboratory precision of the cobas TV/MG assay was examined using a panel of samples composed of TV and MG strains diluted into the following backgrounds: 1. non-clinical matrix corresponding to vaginal swabs in cobas PCR media, 2. non-clinical matrix corresponding to meatal swabs in cobas PCR media, 3. non-clinical matrix corresponding to cervical swabs in PreservCyt Solution, and 4. negative urine mixed with cobas PCR media. Non-clinical matrices consisted of either cobas PCR media or PreservCyt solution with HCT-15 cells. In addition, 0.15% (w/v) mucin was added to the contrived vaginal and cervical swab specimens. Contrived vaginal swabs were intended to represent both swab specimen types (endocervical and vaginal) collected in cobas PCR Media. Four concentration levels of each analyte were tested using TV strain RP (ATCC 50143) and MG strain Jensen M30 (ATCC 30188) as the target organisms.

The precision panel for each of the matrices contained one negative panel member and panel members with high negative, low positive, and moderate positive concentrations of TV and MG, corresponding to 0.25X LoD, 1X LoD, and 3X LoD, in each panel matrix. Repeat testing of specimens with concentrations of 1X LoD are expected to yield positive results ≥95% of the time and specimens with concentrations of 3X LoD are expected to yield positive results ≥99% of the time. Testing was performed over 12 days with two runs per day for a total of 24 runs. Each run contained 3 replicates of each sample for each specimen type such that a total of 72 replicates were tested for each panel member. Two instruments and three lots of cobas TV/MG reagents were used during testing.

Study results demonstrated the expected percent agreement for all panel members. All negative panel members tested negative throughout the study. Analysis of standard deviation and percent coefficient of variation (CV) of the Ct values from valid tests performed on positive panel members yielded overall CV (%) ranges from 1.5% to 2.8% for TV and from 1.2% to 4.9% for MG. Detailed results for this study are presented in Tables 1-3 below.

Table 1. Summary of TV and MG Positive Panel Members Results

Panel	N Tested	TV Positive	TV Hit Rate	TV 95% CI	MG Positive	MG Hit Rate	MG 95% CI
Vaginal Swabs							
High Negative	72	48	66.7%	54.6%-77.3%	61	84.7%	74.3%-92.1%
Low Positive	71	69	97.2%	90.2%-99.7%	70	98.6%	92.4%-100%
Moderate Positive	72	72	100%	95.0%-100%	72	100%	95.0%-100%
Urine							
High Negative	72	44	61.1%	48.9%-72.4%	53	73.6%	61.9%-83.3%
Low Positive	72	72	100%	95.0%-100%	72	100%	95.0%-100%
Moderate Positive	72	72	100%	95.0%-100%	72	100%	95.0%-100%
Meatal Swabs							
High Negative	72	N/A*	N/A	N/A	41	56.9%	44.7%-68.6%
Low Positive	72	N/A	N/A	N/A	69	95.8%	88.3%-99.1%
Moderate Positive	72	N/A	N/A	N/A	72	100%	95.0%-100%
Cervical Specimens							
High Negative	72	39	54.2%	42.0%-66.0%	N/A	N/A	N/A
Low Positive	72	69	95.8%	88.3%-99.1%	N/A	N/A	N/A
Moderate Positive	72	72	100%	95.0%-100%	N/A	N/A	N/A

*N/A = Not applicable

Table 2. Overall Mean, Standard Deviations and Coefficients of Variation (%) for Cycle Threshold, TV Positive Panel Members

Panel	Mean Ct	Within run		Between run		Between day		Between instrument		Between lot		Total	
		SD	CV%	SD	CV%	SD	CV%	SD	CV%	SD	CV%	SD	CV%
Vaginal Swabs													
High Negative	37.6	0.98	2.6	0	0	0	0	0.26	0.7	0.22	0.7	1.04	2.8
Low	36.5	0.62	1.7	0.22	0.6	0	0	0.6	1.6	0.19	0.5	0.91	2.5
Moderate	35.5	0.38	1.1	0.05	0.2	0.03	0.1	0.74	2.1	0.15	0.4	0.85	2.4
Urine													
High Negative	37.7	0.86	2.3	0	0	0.25	0.7	0	0	0.1	0.3	0.9	2.4
Low	36.7	0.62	1.7	0.31	0.8	0.18	0.5	0.11	0.3	0.16	0.4	0.74	2.0
Moderate	35.6	0.36	1	0.09	0.3	0.14	0.4	0.33	0.9	0.11	0.3	0.53	1.5
Cervical specimens													
High Negative	37.6	0.65	1.7	0.3	0.8	0.29	0.8	0.42	1.1	0	0	0.87	2.3
Low	36.7	0.69	1.9	0.28	0.8	0	0	0.5	1.4	0.06	0.2	0.9	2.4
Moderate	35.6	0.64	1.8	0.15	0.4	0	0	0.64	1.8	0	0	0.92	2.6

Table 3. Overall Mean, Standard Deviations and Coefficients of Variation (%) for Cycle Threshold, MG Positive Panel Members

Panel	Mean Ct	Within run		Between run		Between day		Between instrument		Between lot		Total	
		SD	CV%	SD	CV%	SD	CV%	SD	CV%	SD	CV%	SD	CV%
Vaginal Swabs													
High Negative	37.2	1.29	3.5	0	0	0	0	0.98	2.6	0	0	1.62	4.3
Low	35.6	0.56	1.6	0	0	0.16	0.5	0.71	2	0.05	0.1	0.92	2.6
Moderate	34.7	0.26	0.7	0	0	0.05	0.1	0.73	2.1	0.1	0.3	0.78	2.3
Urine													
High Negative	37.9	1.19	3.2	0	0	0	0	0	0	0.32	0.8	1.24	3.3
Low	36.3	0.66	1.8	0.21	0.6	0	0	0.25	0.7	0.2	0.6	0.76	2.1
Moderate	35.2	0.25	0.7	0.18	0.5	0	0	0.28	0.8	0.09	0.3	0.42	1.2
Meatal Swabs													
High Negative	38.1	1.55	4.1	0.37	1	0	0	0.95	2.5	0	0	1.85	4.9
Low	37.0	0.78	2.1	0	0	0	0	0.39	1.1	0	0	0.87	2.4
Moderate	35.7	0.33	0.9	0	0	0	0	0.32	0.9	0.18	0.5	0.5	1.4

Reproducibility:

A Reproducibility Study was performed across different sites, lots, operators/batches, and days for cobas TV/MG using panels of pooled negative or contrived specimens prepared from vaginal swabs, penile meatal swabs, and urine, each in cobas PCR Media, and cervical specimens in PreservCyt Solution. Testing was performed at one in-house and two external sites. One 72-member panel consisted of the four sample matrices, with six combinations of analyte concentrations per matrix, and three replicates per concentration. Concentrations utilized were as follows, with positive panel members prepared by spiking both TV (strain RP) and/or MG (strain M30) into the respective TV/MG-negative background.

Table 4. Reproducibility Study Panel Members

Panel Member	TV Level	MG Level
1	Negative	Negative
2	~ 0.3 × LoD (High negative)	~ 0.3 × LoD (High negative)
3	~ 1.0 × LoD	Negative
4	Negative	~ 1.0 × LoD
5	~ 3.0 × LoD	~ 1.0 × LoD
6	~ 1.0 × LoD	~ 3.0 × LoD

TV = *Trichomonas vaginalis; LoD = Limit of Detection;* MG = *Mycoplasma genitalium*

A batch was comprised of one 72-sample panel and two controls (one positive control and one negative control). Two operators at each site tested one batch each per day with each lot. Two valid batches were to be completed within a 24-hour period. Each site received two of

the three reagent lots and performed 6 days of testing per reagent lot for a total of 12 days of testing. For each combination of concentrations noted, a total of 216 replicates were tested in each specimen type (urine, vaginal swabs, penile meatal swabs, and PreservCyt cervical specimens) for a total of 1,296 tests performed, with 2 failed tests for MG from meatal swab specimens and 4 failed tests for TV for PreservCyt cervical specimens.

For TV, no false positive results were observed from either urine or PreservCyt specimen types, thus the negative percent agreement (NPA) was 100% for TV in these specimen types. The NPA for TV for vaginal swab specimens was estimated as 99.3%.
For MG, no false positive results were observed from either urine or vaginal swab specimen types corresponding to an NPA of 100%; for meatal swabs the estimated NPA was 99.8%.

For panel members with concentrations at or near the limit of detection (e.g., 1x LoD) of the test, the lower limit of the 2-sided 95% CI of the percentage of correct test results was at least 83.3% for TV and 96.7% for MG. For panel members with concentrations 3-times above the limit of detection (e.g., 3x LoD) of the test, the lower limit of the 2-sided 95% CI of the percentage of correct test results was at least 98.3% for both TV and MG (Table 5).

Table 5. Percent Agreement for Panel Members with Concentration at or Near the LoD (1x LoD) or 3x LoD

		TV		*MG*	
Media Type	**Panel Member**	**Positive Percent Agreement**	**95% Exact CI of Positive Percent Agreement**	**Positive Percent Agreement**	**95% Exact CI of Positive Percent Agreement**
PCR Media/Urine	~1.0xLOD TV, Negative MG	100.0 (216/216)	(98.3, 100.0)	Not Applicable	Not Applicable
	Negative TV, ~1.0xLOD MG	Not Applicable	Not Applicable	100.0 (216/216)	(98.3, 100.0)
	~3.0xLOD TV, ~1.0xLOD MG	100.0 (216/216)	(98.3, 100.0)	99.1 (214/216)	(96.7, 99.9)
	~1.0xLOD TV, ~3.0xLOD MG	99.1 (214/216)	(96.7, 99.9)	100.0 (216/216)	(98.3, 100.0)
PCR Media/ Vaginal Swab	~1.0xLOD TV, Negative MG	99.5 (215/216)	(97.4, 100.0)	Not Applicable	Not Applicable
	Negative TV, ~1.0xLOD MG	Not Applicable	Not Applicable	99.1 (214/216)	(96.7, 99.9)

	~3.0xLOD TV, ~1.0xLOD MG	100.0 (216/216)	(98.3, 100.0)	100.0 (216/216)	(98.3, 100.0)
	~1.0xLOD TV, ~3.0xLOD MG	98.6 (213/216)	(96.0, 99.7)	100.0 (216/216)	(98.3, 100.0)
PCR Media/ Meatal Swab	~1.0xLOD TV, Negative MG	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	Negative TV, ~1.0xLOD MG	Not Applicable	Not Applicable	100.0 (216/216)	(98.3, 100.0)
	~3.0xLOD TV, ~1.0xLOD MG	Not Applicable	Not Applicable	99.5 (215/216)	(97.4, 100.0)
	~1.0xLOD TV, ~3.0xLOD MG	Not Applicable	Not Applicable	100.0 (216/216)	(98.3, 100.0)
PreservCyt/ Cervical	~1.0xLOD TV, Negative MG	88.4 (190/215)	(83.3, 92.3)	Not Applicable	Not Applicable
	Negative TV, ~1.0xLOD MG	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	~3.0xLOD TV, ~1.0xLOD MG	100.0 (215/215)	(98.3, 100.0)	Not Applicable	Not Applicable
	~1.0xLOD TV, ~3.0xLOD MG	97.2 (210/216)	(94.1, 99.0)	Not Applicable	Not Applicable

Assessed based on valid test results; LoD=Limit of Detection;.

[a] Comparison of panel member average Ct values to those generated in LoD study suggest that panel members were prepared at concentrations lower than the LoD leading to hit rates of <95% at 1x LoD

For each positive panel member, precision was evaluated by sample type in terms of lot, site, day, operator/batch within site, lot and day, and within-batch components on the corresponding analyte cycle threshold (Ct) values of cobas TV/MG.

Trichomonas vaginalis results:

The range of the total coefficient of variation, among positive panel members, was from 1.2% to 2.7%. For all panel members, most of the variability (≥75%) was explained by random error (within-batch).

Detailed results from testing are presented in Tables 6-9 as follows:

Table 6. TV: Overall Mean, Attributable Percentage of Total Variance, Total Precision Standard Deviation, and CV (%) of cobas TV/MG Cycle Threshold (Ct) Values by TV Positive Panel Member for Each Specimen Type

		Mean Ct Value		Percentage of Total Variance (CV %)					Total Precision	
Specimen	Panel Member	N [a]	Mean Estimate [b]	Lot	Site	Day	Operator/ Batch	Within-Batch	SD[b]	CV (%)[c]
PCR Media/ Urine	~0.3x LoD TV, ~0.3x LoD MG	121	38.1	0.0% (0.0)	6.5% (0.5)	0.0% (0.0)	17.6% (0.9)	75.9% (1.8)	0.79	2.1
	~1.0x LoD TV, Negative MG	216	36.7	10.3% (0.6)	3.6% (0.4)	2.3% (0.3)	3.6% (0.4)	80.3% (1.7)	0.69	1.9
	~3.0x LoD TV, ~1.0x LoD MG	216	35.7	10.6% (0.4)	2.4% (0.2)	3.0% (0.2)	2.9% (0.2)	81.1% (1.2)	0.48	1.3
	~1.0x LoD TV, ~3.0x LoD MG	214	36.4	0.0% (0.0)	0.9% (0.3)	0.0% (0.0)	3.9% (0.5)	95.2% (2.7)	0.99	2.7
PCR Media/ Swab	~0.3x LoD TV, ~0.3x LoD MG	103	37.7	0.0% (0.0)	0.0% (0.0)	14.7% (0.8)	0.0% (0.0)	85.3% (1.9)	0.77	2.0
	~1.0xLoD TV, Negative MG	215	36.0	1.5% (0.2)	1.4% (0.2)	0.0% (0.0)	14.5% (0.6)	82.6% (1.5)	0.59	1.6
	~3.0x LoD TV, ~1.0x LoD MG	216	35.0	16.4% (0.5)	2.7% (0.2)	5.4% (0.3)	0.0% (0.0)	75.5% (1.0)	0.40	1.2
	~1.0x LoD TV, ~3.0x LoD MG	213	36.4	0.6% (0.2)	0.0% (0.0)	2.1% (0.3)	0.0% (0.0)	97.3% (2.3)	0.85	2.3
PreservCyt/ Cervical	~0.3x LoD TV, ~0.3x LoD MG	79	37.7	0.0% (0.0)	0.4% (0.1)	0.0% (0.0)	0.0% (0.0)	99.6% (2.3)	0.86	2.3
	~1.0x LoD TV, Negative MG	190	37.2	0.0% (0.0)	1.3% (0.2)	0.0% (0.0)	7.0% (0.6)	91.7% (2.1)	0.81	2.2
	~3.0x LoD TV, ~1.0x LoD MG	215	35.5	3.5% (0.2)	5.8% (0.3)	0.8% (0.1)	0.6% (0.1)	89.3% (1.2)	0.45	1.3
	~1.0x LoD TV, ~3.0x LoD MG	210	36.7	0.6% (0.1)	3.9% (0.4)	0.0% (0.0)	0.0% (0.0)	95.5% (1.8)	0.67	1.8

Note: The table only includes results with detectable analyte.

CV (%) = Percent Coefficient of Variation; LoD = Limit of Detection; MG = *Mycoplasma genitalium*; SD = Standard Deviation; TV = *Trichomonas vaginalis*.

[a]Number of valid tests with a TV positive result that contributed a Ct value to the analysis. Because only positive test results were included, estimates of SD (and CV%) may be underestimated.

[b]Calculated using the total variability from the SAS MIXED procedure.

[c]CV (%) = (standard deviation / mean) × 100%.

Table 7: TV: Percent Agreement by Panel Member for Lot, Site, Day, and Operator/batch – cobas PCR Media/Urine

PCR Media/Urine											
Panel Member	**Observed Descriptive Statistics[a]**				**TV Positive Percent Agreement[b]**						
	Ct Mean	**Ct SD[c]**	**Ct CV (%)[c]**		**Lot**		**Site**		**Day**		**Operator/ Batch**
~0.3x LoD TV, ~0.3x LoD MG	38.1	0.78	2.1	1	55.6% (40/72)	1	51.4% (37/72)	1	47.2% (17/36)	1	56.5% (61/108)
				2	55.6% (40/72)	2	58.3% (42/72)	2	52.8% (19/36)	2	55.6% (60/108)
				3	56.9% (41/72)	3	58.3% (42/72)	3	50.0% (18/36)		
								4	58.3% (21/36)		
								5	61.1% (22/36)		
								6	66.7% (24/36)		
~1.0x LoD TV, Negative MG	36.7	0.68	1.9	1	100.0% (72/72)	1	100.0% (72/72)	1	100.0% (36/36)	1	100.0% (108/108)
				2	100.0% (72/72)	2	100.0% (72/72)	2	100.0% (36/36)	2	100.0% (108/108)
				3	100.0% (72/72)	3	100.0% (72/72)	3	100.0% (36/36)		
								4	100.0% (36/36)		
								5	100.0% (36/36)		
								6	100.0% (36/36)		
~3.0x LoD TV, ~1.0x LoD MG	35.7	0.47	1.3	1	100.0% (72/72)	1	100.0% (72/72)	1	100.0% (36/36)	1	100.0% (108/108)
				2	100.0% (72/72)	2	100.0% (72/72)	2	100.0% (36/36)	2	100.0% (108/108)
				3	100.0% (72/72)	3	100.0% (72/72)	3	100.0% (36/36)		
								4	100.0% (36/36)		
								5	100.0% (36/36)		
								6	100.0% (36/36)		
~1.0x LoD TV, ~3.0x LoD MG	36.4	0.99	2.7	1	100.0% (72/72)	1	98.6% (71/72)	1	100.0% (36/36)	1	98.1% (106/108)
				2	98.6% (71/72)	2	98.6% (71/72)	2	97.2% (35/36)	2	100.0% (108/108)
				3	98.6% (71/72)	3	100.0% (72/72)	3	97.2% (35/36)		
								4	100.0% (36/36)		
								5	100.0% (36/36)		
								6	100.0% (36/36)		

PCR Media/Urine											
Panel Member	Observed Descriptive Statistics[a]			TV Positive Percent Agreement[b]							
	Ct Mean	Ct SD[c]	Ct CV (%)[c]		Lot		Site		Day		Operator/ Batch

Note: Ct = Cycle threshold; CV = Coefficient of Variation; LoD = Limit of Detection; MG = *Mycoplasma genitalium*; SD = Standard Deviation; TV = *Trichomonas vaginalis*.
Note: CV(%) = (standard deviation / mean) × 100%.

[a] Calculated using the SAS MEANS procedure.

[b] TV Positive Percent Agreement = (number of TV positive results / number of valid test results) × 100%.

[c] Because only positive test results were included, estimates of SD (and CV%) may be underestimated.

Table 8: TV: Percent Agreement by Panel Member for Lot, Site, Day, and Operator/batch – cobas PCR Media/Vaginal Swab

PCR Media/Vaginal Swab											
Panel Member	Observed Descriptive Statistics[a]			TV Positive Percent Agreement[b]							
	Ct Mean	Ct SD[c]	Ct CV (%)[c]		Lot		Site		Day		Operator/ Batch
~0.3x LoD TV, ~0.3x LoD MG	37.7	0.77	2.0	1	48.6% (35/72)	1	40.3% (29/72)	1	52.8% (19/36)	1	43.5% (47/108)
				2	40.3% (29/72)	2	61.1% (44/72)	2	52.8% (19/36)	2	51.9% (56/108)
				3	54.2% (39/72)	3	41.7% (30/72)	3	38.9% (14/36)		
								4	50.0% (18/36)		
								5	36.1% (13/36)		
								6	55.6% (20/36)		
~1.0x LoD TV, Negative MG	36.0	0.59	1.6	1	98.6% (71/72)	1	100.0% (72/72)	1	100.0% (36/36)	1	100.0% (108/108)
				2	100.0% (72/72)	2	98.6% (71/72)	2	100.0% (36/36)	2	99.1% (107/108)
				3	100.0% (72/72)	3	100.0% (72/72)	3	97.2% (35/36)		
								4	100.0% (36/36)		
								5	100.0% (36/36)		
								6	100.0% (36/36)		
~3.0x LoD TV, ~1.0x LoD MG	35.0	0.40	1.1	1	100.0% (72/72)	1	100.0% (72/72)	1	100.0% (36/36)	1	100.0% (108/108)
				2	100.0% (72/72)	2	100.0% (72/72)	2	100.0% (36/36)	2	100.0% (108/108)
				3	100.0% (72/72)	3	100.0% (72/72)	3	100.0% (36/36)		
								4	100.0% (36/36)		
								5	100.0% (36/36)		

PCR Media/Vaginal Swab											
Panel Member	Observed Descriptive Statistics[a]			TV Positive Percent Agreement[b]							
	Ct Mean	Ct SD[c]	Ct CV (%)[c]		Lot		Site		Day		Operator/ Batch
								6	100.0% (36/36)		
~1.0x LoD TV, ~3.0x LoD MG	36.4	0.85	2.3	1	97.2% (70/72)	1	100.0% (72/72)	1	100.0% (36/36)	1	98.1% (106/108)
				2	98.6% (71/72)	2	97.2% (70/72)	2	94.4% (34/36)	2	99.1% (107/108)
				3	100.0% (72/72)	3	98.6% (71/72)	3	100.0% (36/36)		
								4	100.0% (36/36)		
								5	100.0% (36/36)		
								6	97.2% (35/36)		

Note: Ct = Cycle threshold; CV = Coefficient of Variation; LoD = Limit of Detection; MG = *Mycoplasma genitalium*; SD = Standard Deviation; TV = *Trichomonas vaginalis*.
Note: CV(%) = (standard deviation / mean) × 100%.
[a] Calculated using the SAS MEANS procedure.
[b] TV Positive Percent Agreement = (number of TV positive results / number of valid test results) × 100%.
[c] Because only positive test results were included, estimates of SD (and CV%) may be underestimated.

Table 9: TV: Percent Agreement by Panel Member for Lot, Site, Day, and Operator/batch – cobas PCR Media/PreservCyt

PreservCyt/Cervical											
	Observed Descriptive Statistics[a]			TV Positive Percent Agreement[b]							
Panel Member	Ct Mean	Ct SD[c]	Ct CV (%)[c]		Lot		Site		Day		Operator/ Batch
~0.3x LoD TV, ~0.3x LoD MG	37.7	0.86	2.3	1	43.1% (31/72)	1	31.0% (22/71)	1	40.0% (14/35)	1	41.5% (44/106)
				2	33.3% (24/72)	2	36.6% (26/71)	2	52.8% (19/36)	2	32.4% (35/108)
				3	34.3% (24/70)	3	43.1% (31/72)	3	38.9% (14/36)		
								4	25.0% (9/36)		
								5	27.8% (10/36)		
								6	37.1% (13/35)		
~1.0x LoD TV, Negative MG	37.2[d]	0.81	2.2	1	91.7% (66/72)	1	87.3% (62/71)	1	88.9% (32/36)	1	85.0% (91/107)
				2	88.7% (63/71)	2	87.5% (63/72)	2	77.8% (28/36)	2	91.7% (99/108)
				3	84.7% (61/72)	3	90.3% (65/72)	3	85.7% (30/35)		
								4	88.9% (32/36)		

PreservCyt/Cervical											
	Observed Descriptive Statistics[a]			TV Positive Percent Agreement[b]							
Panel Member	Ct Mean	Ct SD[c]	Ct CV (%)[c]		Lot		Site		Day		Operator/ Batch
								5	91.7% (33/36)		
								6	97.2% (35/36)		
~3.0x LoD TV, ~1.0x LoD MG	35.5	0.45	1.3	1	100.0% (72/72)	1	100.0% (71/71)	1	100.0% (36/36)	1	100.0% (108/108)
				2	100.0% (71/71)	2	100.0% (72/72)	2	100.0% (36/36)	2	100.0% (107/107)
				3	100.0% (72/72)	3	100.0% (72/72)	3	100.0% (36/36)		
								4	100.0% (36/36)		
								5	100.0% (36/36)		
								6	100.0% (35/35)		
~1.0x LoD TV, ~3.0x LoD MG	36.7	0.67	1.8	1	98.6% (71/72)	1	97.2% (70/72)	1	100.0% (36/36)	1	99.1% (107/108)
				2	95.8% (69/72)	2	97.2% (70/72)	2	94.4% (34/36)	2	95.4% (103/108)
				3	97.2% (70/72)	3	97.2% (70/72)	3	94.4% (34/36)		
								4	97.2% (35/36)		
								5	97.2% (35/36)		
								6	100.0% (36/36)		

Note: Ct = Cycle threshold; CV = Coefficient of Variation; LoD = Limit of Detection; MG = *Mycoplasma genitalium*; SD = Standard Deviation; TV = *Trichomonas vaginalis*.

Note: CV(%) = (standard deviation / mean) × 100%.

[a] Calculated using the SAS MEANS procedure.

[b] TV Positive Percent Agreement = (number of TV positive results / number of valid test results) × 100%.

[c] Because only positive test results were included, estimates of SD (and CV%) may be underestimated.

[d] Comparison of average Ct values to those generated in LoD study suggest that panel members were prepared at concentrations lower than the LoD leading to hit rates of <95% at 1x LoD.

Mycoplasma genitalium results:

The range of the total coefficient of variation, among positive panel members, was from 0.8% to 4.0%. The maximum total coefficient of variation was observed in the lowest concentration of positive panel members (0.3x LoD TV, 0.3x LoD MG) and most of that variability (75.8% for urine, 100% for vaginal swab and 83.7% for meatal swab) was explained by random error (within-batch).

Detailed results from testing are presented in Tables 10-13.

Table 10. MG: Overall Mean, Attributable Percentage of Total Variance, Total Precision Standard Deviation, and CV (%) of cobas TV/MG Cycle Threshold (Ct) Values by MG Positive Panel Member for Each Specimen Type

				Percentage of Total Variance CV (%)					Total Precision	
Media Type	**Panel Member**	**N[a]**	**Mean Estimate[b]**	**Lot**	**Site**	**Day**	**Operator/ Batch**	**Within-Batch**	**SD[b]**	**CV (%)[c]**
PCR Media/Urine	~0.3x LoD TV, ~0.3x LoD MG	154	38.1	2.4% (0.4)	0.0% (0.0)	7.7% (0.7)	14.1% (1.0)	75.8% (2.3)	1.01	2.6
	Negative TV, ~1.0x LoD MG	216	36.5	10.2% (0.5)	0.0% (0.0)	0.0% (0.0)	5.7% (0.4)	84.1% (1.3)	0.54	1.5
	~3.0x LoD TV, ~1.0x LoD MG	214	36.3	3.9% (0.4)	2.8% (0.3)	9.4% (0.6)	0.0% (0.0)	83.9% (1.7)	0.69	1.9
	~1.0x LoD TV, ~3.0x LoD MG	216	29.7	7.7% (0.2)	15.3% (0.3)	10.2% (0.3)	20.1% (0.4)	46.7% (0.6)	0.26	0.9
PCR Media/ Vaginal Swab	~0.3x LoD TV, ~0.3x LoD MG	107	37.9	0.0% (0.0)	0.0% (0.0)	0.0% (0.0)	0.0% (0.0)	100.0% (4.0)	1.50	4.0
	Negative TV, ~1.0x LoD MG	214	35.7	0.0% (0.0)	0.0% (0.0)	0.0% (0.0)	0.0% (0.0)	100.0% (2.3)	0.84	2.3
	~3.0x LoD TV, ~1.0x LoD MG	216	35.2	4.7% (0.3)	2.6% (0.2)	0.0% (0.0)	0.4% (0.1)	92.3% (1.1)	0.42	1.2
	~1.0x LoD TV, ~3.0x LoD MG	216	34.4	5.6% (0.2)	17.2% (0.3)	0.0% (0.0)	0.0% (0.0)	77.2% (0.7)	0.29	0.8
PCR Media/ Meatal Swab	~0.3x LoD TV, ~0.3x LoD MG	115	38.2	0.0% (0.0)	0.0% (0.0)	0.0% (0.0)	16.3% (1.1)	83.7% (2.6)	1.09	2.8
	Negative TV, ~1.0x LoD MG	216	35.9	11.7% (0.4)	5.3% (0.3)	7.6% (0.3)	0.0% (0.0)	75.4% (1.0)	0.42	1.2
	~3.0x LoD TV, ~1.0x LoD MG	215	36.7	0.0% (0.0)	0.0% (0.0)	0.0% (0.0)	0.0% (0.0)	100.0% (2.2)	0.81	2.2
	~1.0x LoD TV, ~3.0x LoD MG	216	35.8	16.3% (0.4)	1.0% (0.1)	0.0% (0.0)	2.0% (0.2)	80.7% (1.0)	0.40	1.1

Note: The table only includes results with detectable analyte.
CV(%) = Percent Coefficient of Variation; LoD = Limit of Detection; MG = *Mycoplasma genitalium;*
SD = Standard Deviation; TV = *Trichomonas vaginalis.*
[a] Number of valid tests with an MG positive result that contributed a Ct value to the analysis. Because only positive test results were included, estimates of SD (and CV%) may be underestimated.
[b] Calculated using the total variability from the SAS MIXED procedure.
[c] CV(%) = (standard deviation / mean) × 100%.

Table 11. MG: Percent Agreement by Panel Member for Lot, Site, Day, and Operator/batch – cobas PCR Media/Urine

PCR Media/Urine											
Panel Member	**Observed Descriptive Statistics[a]**			**MG Positive Percent Agreement[b]**							
	Ct Mean	**Ct SD[c]**	**Ct CV (%)[c]**		**Lot**		**Site**		**Day**		**Operator /Batch**
~0.3x LoD TV, ~0.3x LoD MG	38.1	1.01	2.6	1	75.0% (54/72)	1	70.8% (51/72)	1	63.9% (23/36)	1	74.1% (80/108)
				2	68.1% (49/72)	2	75.0% (54/72)	2	83.3% (30/36)	2	68.5% (74/108)
				3	70.8% (51/72)	3	68.1% (49/72)	3	80.6% (29/36)		
								4	72.2% (26/36)		
								5	63.9% (23/36)		
								6	63.9% (23/36)		
Negative TV, ~1.0x LoD MG	36.5	0.53	1.4	1	100.0% (72/72)	1	100.0% (72/72)	1	100.0% (36/36)	1	100.0% (108/108)
				2	100.0% (72/72)	2	100.0% (72/72)	2	100.0% (36/36)	2	100.0% (108/108)
				3	100.0% (72/72)	3	100.0% (72/72)	3	100.0% (36/36)		
								4	100.0% (36/36)		
								5	100.0% (36/36)		
								6	100.0% (36/36)		
~3.0x LoD TV, ~1.0x LoD MG	36.3	0.68	1.9	1	98.6% (71/72)	1	100.0% (72/72)	1	100.0% (36/36)	1	99.1% (107/108)
				2	100.0% (72/72)	2	97.2% (70/72)	2	100.0% (36/36)	2	99.1% (107/108)
				3	98.6% (71/72)	3	100.0% (72/72)	3	97.2% (35/36)		
								4	100.0% (36/36)		
								5	100.0% (36/36)		
								6	97.2% (35/36)		
~1.0x LoD TV, ~3.0x LoD MG	29.7	0.26	0.9	1	100.0% (72/72)	1	100.0% (72/72)	1	100.0% (36/36)	1	100.0% (108/108)
				2	100.0% (72/72)	2	100.0% (72/72)	2	100.0% (36/36)	2	100.0% (108/108)
				3	100.0% (72/72)	3	100.0% (72/72)	3	100.0% (36/36)		

PCR Media/Urine											
Panel Member	Observed Descriptive Statistics[a]			MG Positive Percent Agreement[b]							
	Ct Mean	Ct SD[c]	Ct CV (%)[c]		Lot		Site		Day		Operator /Batch
								4	100.0% (36/36)		
								5	100.0% (36/36)		
								6	100.0% (36/36)		

Note: Ct = Cycle threshold; CV = Coefficient of Variation; LoD = Limit of Detection;
MG = *Mycoplasma genitalium;* SD = Standard Deviation; TV = *Trichomonas vaginalis*.

Note: CV (%) = (standard deviation / mean) × 100%.

[a] Calculated using the SAS MEANS procedure.

[b] MG Positive Percent Agreement = (number of MG positive results / number of valid test results) × 100%.

[c] Because only positive test results were included, estimates of SD (and CV%) may be underestimated.

Table 12. MG: Percent Agreement by Panel Member for Lot, Site, Day, and Operator/batch – cobas PCR Media/Vaginal Swab

PCR Media/Vaginal Swab											
Panel Member	Observed Descriptive Statistics[a]			MG Positive Percent Agreement[b]							
	Ct Mean	Ct SD[c]	Ct CV (%)[c]		Lot		Site		Day		Operator /Batch
~0.3x LoD TV, ~0.3x LoD MG	37.9	1.50	4.0	1	37.5% (27/72)	1	58.3% (42/72)	1	44.4% (16/36)	1	50.0% (54/108)
				2	56.9% (41/72)	2	51.4% (37/72)	2	63.9% (23/36)	2	49.1% (53/108)
				3	54.2% (39/72)	3	38.9% (28/72)	3	38.9% (14/36)		
								4	52.8% (19/36)		
								5	52.8% (19/36)		
								6	44.4% (16/36)		
Negative TV, ~1.0x LoD MG	35.7	0.84	2.3	1	97.2% (70/72)	1	100.0% (72/72)	1	100.0% (36/36)	1	98.1% (106/108)
				2	100.0% (72/72)	2	100.0% (72/72)	2	100.0% (36/36)	2	100.0% (108/108)
				3	100.0% (72/72)	3	97.2% (70/72)	3	100.0% (36/36)		
								4	97.2% (35/36)		
								5	100.0% (36/36)		

PCR Media/Vaginal Swab											
Panel Member	**Observed Descriptive Statistics[a]**			**MG Positive Percent Agreement[b]**							
	Ct Mean	**Ct SD[c]**	**Ct CV (%)[c]**		**Lot**		**Site**		**Day**		**Operator /Batch**
								6	97.2% (35/36)		
~3.0x LoD TV, ~1.0x LoD MG	35.2	0.42	1.2	1	100.0% (72/72)	1	100.0% (72/72)	1	100.0% (36/36)	1	100.0% (108/108)
				2	100.0% (72/72)	2	100.0% (72/72)	2	100.0% (36/36)	2	100.0% (108/108)
				3	100.0% (72/72)	3	100.0% (72/72)	3	100.0% (36/36)		
								4	100.0% (36/36)		
								5	100.0% (36/36)		
								6	100.0% (36/36)		
~1.0x LoD TV, ~3.0x LoD MG	34.4	0.29	0.8	1	100.0% (72/72)	1	100.0% (72/72)	1	100.0% (36/36)	1	100.0% (108/108)
				2	100.0% (72/72)	2	100.0% (72/72)	2	100.0% (36/36)	2	100.0% (108/108)
				3	100.0% (72/72)	3	100.0% (72/72)	3	100.0% (36/36)		
								4	100.0% (36/36)		
								5	100.0% (36/36)		
								6	100.0% (36/36)		

Note: Ct = Cycle threshold; CV = Coefficient of Variation; LoD = Limit of Detection;
MG = *Mycoplasma genitalium*; SD = Standard Deviation; TV = *Trichomonas vaginalis*.

Note: CV (%) = (standard deviation / mean) × 100%.

[a] Calculated using the SAS MEANS procedure.

[b] MG Positive Percent Agreement = (number of MG positive results / number of valid test results) × 100%.

[c] Because only positive test results were included, estimates of SD (and CV%) may be underestimated.

Table 13. MG: Percent Agreement by Panel Member for Lot, Site, Day, and Operator/batch – cobas PCR Media/Meatal Swab

PCR Media/Meatal Swab											
	Observed Descriptive Statistics[a]			MG Positive Percent Agreement[b]							
Panel Member	Ct Mean	Ct SD[c]	Ct CV (%)[c]		Lot		Site		Day		Operator /Batch
~0.3x LoD TV, ~0.3x LoD MG	38.2	1.09	2.8	1	48.6% (35/72)	1	52.9% (37/70)	1	69.4% (25/36)	1	60.4% (64/106)
				2	59.7% (43/72)	2	55.6% (40/72)	2	50.0% (18/36)	2	47.2% (51/108)
				3	52.9% (37/70)	3	52.8% (38/72)	3	38.9% (14/36)		
								4	52.8% (19/36)		
								5	57.1% (20/35)		
								6	54.3% (19/35)		
Negative TV, ~1.0x LoD MG	35.9	0.41	1.2	1	100.0% (72/72)	1	100.0% (72/72)	1	100.0% (36/36)	1	100.0% (108/108)
				2	100.0% (72/72)	2	100.0% (72/72)	2	100.0% (36/36)	2	100.0% (108/108)
				3	100.0% (72/72)	3	100.0% (72/72)	3	100.0% (36/36)		
								4	100.0% (36/36)		
								5	100.0% (36/36)		
								6	100.0% (36/36)		
~3.0x LoD TV, ~1.0x LoD MG	36.7	0.81	2.2	1	100.0% (72/72)	1	98.6% (71/72)	1	100.0% (36/36)	1	100.0% (108/108)
				2	100.0% (72/72)	2	100.0% (72/72)	2	100.0% (36/36)	2	99.1% (107/108)
				3	98.6% (71/72)	3	100.0% (72/72)	3	100.0% (36/36)		
								4	97.2% (35/36)		
								5	100.0% (36/36)		
								6	100.0% (36/36)		
~1.0x LoD TV, ~3.0x LoD MG	35.8	0.39	1.1	1	100.0% (72/72)	1	100.0% (72/72)	1	100.0% (36/36)	1	100.0% (108/108)
				2	100.0% (72/72)	2	100.0% (72/72)	2	100.0% (36/36)	2	100.0% (108/108)
				3	100.0% (72/72)	3	100.0% (72/72)	3	100.0% (36/36)		

PCR Media/Meatal Swab											
	Observed Descriptive Statistics[a]			MG Positive Percent Agreement[b]							
Panel Member	Ct Mean	Ct SD[c]	Ct CV (%)[c]		Lot		Site		Day		Operator /Batch
								4	100.0% (36/36)		
								5	100.0% (36/36)		
								6	100.0% (36/36)		

Note: Ct = Cycle threshold; CV = Coefficient of Variation; LoD = Limit of Detection;
MG = *Mycoplasma genitalium*; SD = Standard Deviation; TV = *Trichomonas vaginalis*.

Note: CV (%) = (standard deviation / mean) × 100%.

[a] Calculated using the SAS MEANS procedure.

[b] MG Positive Percent Agreement = (number of MG positive results / number of valid test results) × 100%.

[c] Because only positive test results were included, estimates of SD (and CV%) may be underestimated.

2. Linearity/reportable range:

Not applicable

3. Analytical Specificity/Microbial Interference:

A panel of 102 bacteria, fungi, and viruses, including those commonly found in the male and female urogenital tract, were tested with the cobas TV/MG assay to assess analytical specificity/cross-reactivity (see Table 14). Samples were spiked at concentrations of approximately 1 x 10^6 units/mL for bacteria and approximately 1 x 10^5 units/mL1 for viruses into pooled negative urine stabilized in cobas PCR Media. Testing was performed with each potential interfering organism alone as well as with each organism mixed with TV and MG spiked at approximately 3x LoD. Results indicated that none of these organisms produced false positive results in the TV/MG negative matrices. Detection of MG was not affected by any of the organisms tested; however, *Trichomonas tenax* interfered with detection of TV target at concentration levels above 1 x 10^4 CFU/mL. A limitation is included in the package insert.

Table 14. Microorganisms tested for analytical specificity/cross-reactivity

Microorganism	Microorganism	Microorganism
Acholeplasma laidlawii	*Enterococcus avium*	*Mycoplasma faucium*
Acholeplasma oculi	*Enterococcus faecalis*	*Mycoplasma fermentans*
Achromobacter xerosis	*Enterococcus faecium*	*Mycoplasma hominis*
Acinetobacter lwoffii	*Erysipelothrix rhusiopathiae*	*Mycoplasma orale*
Actinomyces israelii	*Escherichia coli*	*Mycoplasma penetrans*
Aerococcus viridans	*Flavobacterium*	*Mycoplasma pirum*
Aeromonas hydrophila	*Fusobacterium nucleatum*	*Mycoplasma pneumoniae*
Alcaligenes faecalis	*Gardnerella vaginalis*	*Mycoplasma primatum*
Atopobium vaginae	*Gemella haemolysans*	*Mycoplasma salivarium*
Bacillus subtilis	*Giardia intestinalis*	*Mycoplasma spermatophilum*****

Microorganism	Microorganism	Microorganism
Bacteroides fragilis	*Haemophilus ducreyi*	*Neisseria gonorrhoeae*
Bacteroides ureolyticus	Herpes Simplex Virus Type 1*	*Pentatrichomonas hominis*
Bifidobacterium adolescentis	Herpes Simplex Virus Type 2*	*Peptostreptococcus anaerobius*
Branhamella catarrhalis	*Mycoplasma hominis*	*Prevotella bivia*
Brevibacterium linens	Human Immunodeficiency Virus*	*Propionibacterium acnes*
Campylobacter jejuni	Human Papillomavirus type 16	*Proteus mirabilis*
Candida albicans	*Kingella denitrificans*	*Providencia stuartii*
Candida glabrata	*Klebsiella oxytoca*	*Pseudomonas aeruginosa*
Candida parapilosis	*Klebsiella pneumoniae*	*Rahnella aquatilis*
Candida tropicalis	*Lactobacillus acidophilus*	*Rhizobium radiobacter*
Chlamydia trachomatis	*Lactobacillus crispatus*	*Rhodospirillum rubrum*
Chromobacterium violaceum	*Lactobacillus jensenii*	*Saccharomyces cerevisiae*
Citrobacter braakii	*Lactobacillus vaginalis*	*Salmonella minnesota*
Clostrodium perfringens	*Leptotrichia buccalis*	*Serratia marcescens*
*Clostridioides difficile***	*Leuconostoc mesenteroides*	*Staphylococcus aureus*
Corynebacterium genitalium	*Leuconostoc paramensenteroides*	*Staphylococcus epidermidis*
Corynebacterium xerosis	*Listeria monocytogenes*	*Streptococcus agalactiae*
Cryptococcus neoformans	*Micrococcus luteus*	*Streptococcus pneumoniae*
Cytomegalovirus	*Mobiluncus curtisii*	*Streptococcus pyogenes*
Derxia gummosa	*Moraxella osloensis*	*Trichomonas tenax****
Dientamoeba fragilis	*Morexella catarrhalis*	*Ureaplasma urealyticum*****
Eikenella corrodens	*Morexella lacunata*	*Veillonella parvula*
Enterobacter aerogenes	*Morganella morganii*	*Vibrio parahaemolyticus*
Enterobacter cloacae	*Mycobacterium smegmatis*	*Yersinia enterocolitica*

Unless noted (below), bacteria and fungi were quantified as Colony Forming Units (CFU) and viruses were quantified as International Units (IU).
* Quantified in copies/mL
** Previously known as *Clostridium difficile*
*** Interference with TV detection observed when tested at 1 x10^6 CFU/mL and 1 x10^5 CFU/mL. No interference with TV detection observed when tested at 1 x 10^4 CFU/mL.
****Quantified in color changing units (ccu)

4. Traceability, Stability, Expected Values (Controls, Calibrators, or Methods):

Controls:

External controls are provided in the cobas TV/MG Positive Control Kit and the cobas Buffer Negative Control Kit and are required to be included in each run. Validation of results is performed automatically by the cobas 6800/8800 software based on negative and positive control performance. Invalid batches require repeat testing of the entire batch. The TV/MG Positive Control contains non-infectious DNA plasmids of both TV and MG sequences and is used as a run control to monitor target amplification and detection. The cobas Buffer Negative Control Kit contains buffer with no nucleic acid.

In addition, a DNA Internal Control (DNA-IC) is introduced into each specimen during sample processing and monitors specimens for substances that may interfere with nucleic acid isolation and PCR amplification. The DNA Internal Control contains a non-TV/MG related DNA construct containing primer and probe specific sequence regions.

Specimen stability:

Specimen stability during storage was evaluated for the following specimen types:

- Endocervical swabs collected in cobas PCR media
- Vaginal swabs collected in cobas PCR media
- Urine stabilized by cobas PCR media
- Cervical specimens collected in PreservCyt Solution (primary and secondary containers)
- Meatal swabs collected in cobas PCR media

For swab and urine specimen types, for each specimen matrix and target tested, individual positive clinical specimens were diluted using five pools of negative clinical specimens to the concentration corresponding to 5x LoD of the cobas TV/MG. Due to lack of homogeneity of cervical specimens in PreservCyt, for TV, positive specimens were prepared using TV cultures; in addition, ten unique TV positive clinical cervical specimens with a defined range of Ct values (22-35) were included in testing. Testing was performed on the day of sample preparation and at several time points during the storage time period. Study results demonstrated that positive swab and urine samples remained positive for a minimum of 12 months when stored at both 2-8°C and 30°C. Matrix-only samples yielded the expected negative results for the same storage conditions. PreservCyt samples in the collection device were stable for up to 90 days when stored at both 2-8°C and 30°C; those transferred to secondary containers demonstrated stability for up to 31 days when stored at both 2-8°C and 30°C.

5. Detection Limit:

The Limit of Detection (LoD) of the cobas TV/MG test for use on the cobas 6800/8800 Systems was determined by analyzing a dilution series of quantified cultures of *Trichomonas vaginalis* (metronidazole resistant strain CDC085 and metronidazole susceptible strain RP) and *Mycoplasma genitalium* (strains G37 and Jensen M30). Co-formulated panels of TV strain CDC085 with MG strain G37 and of TV strain RP with MG strain Jensen30 were prepared in a matrix of pooled negative specimens for each specimen type:

- Endocervical swabs collected in cobas PCR media
- Vaginal swabs collected in cobas PCR media
- Urine stabilized by cobas PCR media
- Meatal swabs collected in cobas PCR media
- Cervical specimens collected in PreservCyt Solution

TV and MG strain combinations were tested at a minimum of six concentration levels across three reagent lots, with 22-24 replicates for each positive level per reagent lot. Negative pooled specimens were confirmed as such through testing of 10 replicates per pool. The claimed LoD as established by the 95% Hit Rate Analysis represents the lowest concentration level which was detected in ≥ 95% of tested replicates and for which all higher concentration levels also had ≥95% detection. The LoD for TV strains CDC085 and RP and MG strains G37 and Jensen M30 for each matrix are as follows:

Table 15. Analytical Sensitivity (Limit of Detection)

	T. vaginalis (RP strain)		*T. vaginalis* (CDC085 strain)		*M. genitalium* (MG37 strain)		*M. genitalium* (M30 strain)	
Specimen Type	**LoD (cells/mL)**	**Mean Ct Value**	**LoD (cells/mL)**	**Mean Ct Value**	**LoD (cp/mL)**	**Mean Ct Value**	**LoD (cp/mL)**	**Mean Ct Value**
ES	0.2	36.3	0.2	35.6	2	35.3	2	36.5
VS	0.3	35.5	0.075	36.3	4	34.5	4	35.3
UR	0.1	35.7	0.03	35.6	0.5	35.6	1	35.8
MS	N/A	N/A	N/A	N/A	0.5	36.0	0.5	36.6
CS	0.1	36.8	0.05	36.6	N/A	N/A	N/A	N/A

LoD= Limit of Detection; Ct=Cycle threshold; cp = copies
ES = endocervical swab; VS = vaginal swab; UR = urine; MS = meatal swab; CS = cervical swab

Inclusivity:

Inclusivity and verification of the LoD were performed for eight TV and five MG strains using one lot of reagents. Specimen types evaluated were: a) vaginal swab specimens collected in cobas PCR media (intended to represent both endocervical and vaginal swab specimens), b) urine mixed with cobas PCR media, c) meatal swabs collected in cobas PCR media, and d) cervical specimens collected in PreservCyt Solution. Initial inclusivity testing was performed using TV and MG cultures concurrently spiked to concentrations corresponding to approximately 3x LoD levels determined in the Limit of Detection study into pooled pre-screened specimens negative for both TV and MG. LoD verification was then performed in either pooled urine negative for both TV and MG or, for the other matrices, contrived negative matrix, with TV and MG spiked to concentrations corresponding to 1x LoD. Acceptance criteria required detection of at least three out of eight tested TV strains and three out of five tested MG strains at 1x LoD, with detection considered verified if the upper bound of the two-sided 95% CI for the hit rate exceeded 95%. Twenty-four replicates per dilution level were tested for each strain in each matrix. Results are shown in the Tables 16 and 17 below.

Table 16. TV strain LoD verification

Strain	**Swabs***		**Urine Specimens**		**PreservCyt Specimens**	
	cells/mL	**% Pos**	**cells/mL**	**% Pos**	**cells/mL**	**% Pos**
C-1:NIH	0.24	100	0.07	100	0.11	100
123414	0.24	100	0.07	100	0.11	100
129155-8	0.24	100	0.07	100	0.11	100
CDC337	0.24	100	0.07	100	0.11	100
NYH 209	0.24	100	0.07	100	0.11	100
PRA-98	0.24	100	0.07	100	0.11	100
801805	0.24	100	0.07	100	0.11	100
BACT-053LR01	0.24	100	0.07	100	0.11	100

* Contrived vaginal swab matrix was used to represent vaginal and endocervical swab specimens.

Table 17. MG strain LoD verification

Strain	Swabs*		Urine Specimens		Meatal Swab	
	copies/mL	% Pos	copies/mL	% Pos	copies/mL	% Pos
SEA-1	5.0	100	0.8	95.8	0.5	100
M2288	5.0	100	0.8	100	0.5	100
M2300	5.0	100	0.8	100	0.5	83.3
M2321	5.0	100	1.6	100	1.0	87.5
M2341	5.0	100	0.8	95.8	0.5	95.8

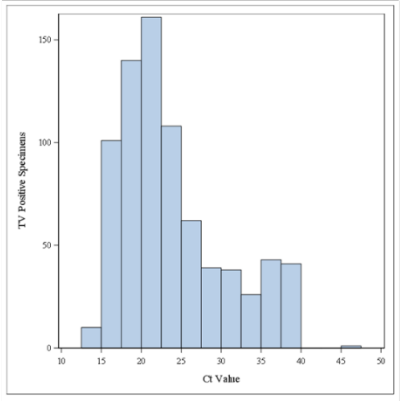
* Contrived vaginal swab matrix was used to represent vaginal and endocervical swab specimens.

6. Assay Cut-Off:

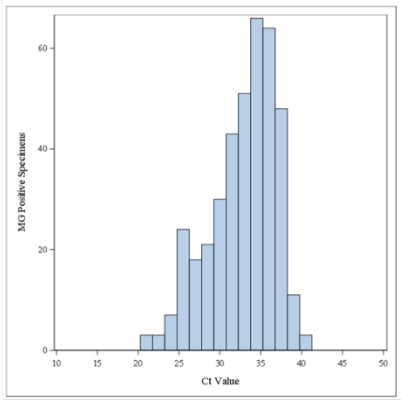
An assay cut-off at Ct value = 50, where 50 is the last PCR profile cycle, was established for the cobas TV/MG for use on the cobas 6800/8800 Systems. Negative results occur when amplification does not occur after 50 amplification cycles and fails to result in adequate signal, such that no Ct value is reported. The cut-off was verified through analysis of TV and MG cycle threshold (Ct) value distribution for all specimens from the US clinical study and selected analytical studies, as evidenced by a clear distinction between the Ct values of positive results and the end of the PCR profile. Analytical studies were included in this assessment to enrich the dataset with results from samples with a low target concentration. Stability and interference studies data were not included in this analysis, since those studies are designed to stress the system thereby potentially producing invalid results.

Assessed for these studies as described, the difference between the latest Ct value in positive specimens and assay cut-off was 4.2 cycles for TV and 6 cycles for MG. For specimens from the clinical study only, to assess performance in a typical patient population, the difference between the latest Ct value in positive specimens and assay cut-off was 4.2 cycles for TV and 9.3 cycles for MG (shown below). The following graphs illustrate the distribution of Ct values from the clinical study.

Cycle threshold distribution of TV positive specimens



Cycle threshold distribution of MG positive specimens



7. Contamination:

Sample-to-sample and run-to-run cross-contamination studies were performed to evaluate potential cross contamination on the cobas 6800/8800 Systems using the cobas TV/MG assay. Contrived sample backgrounds were prepared with cobas PCR media (to represent swab specimens) and PreservCyt Solution (corresponding to cervical specimens). Positive samples were prepared by co-spiking TV and MG plasmids, targeting concentrations expected to generate Ct values earlier than those observed in 95% of positive results in the intended use population. Multiple runs consisting of a checkerboard pattern of positive TV and MG samples alternating with negative samples were performed, followed by a full run of TV and MG negative samples to assess run-to-run contamination. Four TV/MG negative samples out of 576 total negative samples tested positive for TV within the checkerboard runs, corresponding to a total sample-to-sample cross-contamination rate for TV of 0.7% (4/576). Sample-to-sample cross-contamination was not observed for MG. Run-to-run cross-contamination was not observed (0/188).

8. Competitive Inhibition Studies

To assess competitive inhibition between TV and MG, contrived specimens were tested with low and moderate concentrations of one target mixed with very high concentrations of the second target. Low and moderate concentrations were defined as ~1x LoD and ~3x LoD, respectively, and high concentrations were defined as generating a Ct value that was lower than the value observed in 95% of TV and MG positive clinical specimens. Positive test samples were prepared by spiking TV and MG cultures into negative matrices. Specimen types evaluated were: 1. urine mixed with cobas PCR media 2. non-clinical matrix corresponding to endocervical swabs in cobas PCR media (intended to represent both endocervical and vaginal swab samples), 3. non-clinical matrix corresponding to meatal swabs in cobas PCR media, and 4. non-clinical matrix corresponding to cervical specimens in PreservCyt Solution. Ten replicates of each panel member were tested.

Results indicated that TV was detected at and above the LoD in all specimen types even when MG was present at a high concentration. Results also indicated that when TV was present at a high concentration, MG was detected in all specimen types at and above LoD.

9. Interferences:

Testing of Exogenous Substances:

Performance of the cobas TV/MG test for use on the cobas 6800/8800 Systems was evaluated in the presence of potentially interfering exogenous substances including over-the counter products and prescription drugs that may be present in patient specimens. Specimen types evaluated were: a) vaginal swabs collected in cobas PCR media (intended to represent both endocervical and vaginal swab samples), b) urine mixed with cobas PCR media, c) meatal swabs collected in cobas PCR media, and d) cervical specimens collected in PreservCyt Solution. For evaluating the effect of exogenous substances in the presence of TV and MG targets, testing was performed using negative background matrix prepared for each specimen type by pooling pre-screened specimens negative for both TV and MG. These specimen pools were co-spiked with TV and MG targets at ~3x LoD. Non-clinical (contrived) matrices were used to assess the impact of exogenous substances in the absence

of TV and MG targets. The applicable matrices were spiked with potential interferents at levels expected from normal patient usage. For each specimen type, three replicates of each sample were tested for the potential interferents in the presence of target organisms, except for Replens, RepHresh Clean Balance, and Metronidazole Vaginal Gel for which additional replicates were tested to assess observed interference. In addition, one sample for each specimen type was tested for each substance in the absence of target organisms.

Results of the study demonstrate that 18 of the 21 exogenous substances tested did not interfere with the performance of the assay for detection of TV and MG when tested at concentrations of 1% v/v (glacial acetic acid) or 1.0mg/mL. Replens Long-Lasting Vaginal Moisturizer, RepHresh Clean Balance and Metronidazole Vaginal Gel showed interference leading to false negative and invalid results in urogenital specimens at levels that may be present in patient specimens. Limitations are included in the package insert describing assay interference.

Table 18. Products that do not interfere with cobas TV/MG test performance in urogenital specimens

Product Name		
Clindamycin Phosphate Vaginal Cream	Monistat Complete Care Itch Relief Cream	Yeast Guard Advanced
CVS tioconazole 1 (Equate tioconazole 1)	Gyne-Lotrimin 7	Glacial acetic acid
Equate Vagicaine Anti-Itch Cream	Norforms Suppositories	Azo Standard
Estrace	Premarin	Arilin rapid vaginal suppositories
K-Y UltraGel (Replaces KY Silk E)	Summer's Eve Feminine Deodorant Spray	Vagi Metro Cream
Monistat 3 Vaginal Antifungal Combination Pack	Vaginal Contraceptive Foam	Nidazea Gel

Table 19. Products that interfere with cobas TV/MG test performance above the stated concentration

Product Name	Swabs*	Urine Specimens	Meatal Swab	PreservCyt Specimens
	mg/mL	mg/mL	mg/mL	mg/mL
Replens Long-Lasting Vaginal Moisturizer	1.0	0.5	0.3	2.0
RepHresh Clean Balance	2.0	1.0	0.5	2.0
Metronidazole Vaginal Gel by Sandoz	1.0	0.2	0.3	1.0

* Vaginal swab samples were used as a representative swab sample type for vaginal and endocervical swab specimens.

Testing of Endogenous Substances:

Performance of cobas TV/MG was evaluated in the presence of elevated levels of potentially-interfering endogenous substances including whole blood, peripheral blood mononuclear cells (PBMC), and mucus. Sample types included in the study were: a) endocervical swabs collected in cobas PR media (intended to represent both endocervical and vaginal swab samples), b) urine mixed with cobas PCR media, c) meatal swabs collected in cobas PCR media, and d) cervical specimens collected in PreservCyt Solution. Interferents were tested in TV/MG negative contrived matrices as well as in negative clinical specimen pools spiked with TV and MG at ~ 3x LoD. At least twelve replicates were tested in total for each substance per condition across all matrices.

None of the substances interfered with the test performance by generating false-negative or false-positive results. Levels of endogenous substances tolerated by the assay for all specimen types are shown in Table 20.

Table 20. Summary of endogenous substance concentrations that do not show interference

Interferent	Swabs**	Meatal Swab	PreservCyt Specimens	Urine
Albumin (% w/v)	NT	NT	NT	0.5%
Bilirubin (% w/v)	NT	NT	NT	1.0%
Mucus*	present	present	present	present
Glucose (% w/v)	NT	NT	NT	1.0 %
Peripheral Blood Mononuclear Cells	1.0E+06 cells/mL	NT	1.0E+06 cells/mL	1.0E+06 cells/mL
pH (acidic and alkaline)	NT	NT	NT	pH 4 and pH 9
Semen***	22 mg/mL	20 mg/mL	4 mg/mL	13 mg/mL
Whole Blood (% v/v)	10%	NT	10%	10%

* One mucus swab per sample reflecting the maximum level that could be found in patient sample.
**Endocervical swab samples were used as a representative swab sample type for vaginal and endocervical swab specimens.
*** Semen tested from swab dipped in fluid. Swab was weighed before and after to determine concentration
NT = Not tested

B Comparison Studies:

1. Method Comparison with Predicate Device:

   Not applicable

2. Matrix Comparison:

   A study was performed to demonstrate equivalence between clinical and non-clinical (simulated) matrices via a head-to-head LoD study. Simulated matrix consisting of cobas

PCR media and HCT-15 cells was used to represent endocervical swabs and meatal swabs. Such matrix with 0.15% (w/v) mucin added was used to represent vaginal swab specimens. Simulated cervical swab specimens consisted of PreservCyt solution with HCT-15 cells and 0.15% (w/v) mucin. Corresponding clinical matrix was created by pooling TV and MG negative clinical specimens. Co-formulated TV and MG panels were prepared by spiking a quantified stock solution with TV strain RP and MG strain Jensen M30 into the corresponding clinical and simulated matrices at six concentrations relative to the assay LoD: 2x LoD, 1x LoD, 0.5x LoD, 0.25 LoD, 0.125x LoD, and 0.0625x LoD. For each specimen type, and for both clinical and non-clinical matrices, 24 replicates were tested per concentration level and ten replicates were tested for the matrix which lacked both analytes.

The Probit estimate for 95% hit rate and the corresponding 95% confidence intervals were determined for clinical and non-clinical specimen matrices for TV and MG. For all specimen types, the LoDs for clinical and non-clinical specimen matrices were similar and demonstrated overlapping 95% confidence intervals for the Probit estimate of the 95% hit rate. None of the negative panel members (matrix without the target analytes, clinical and non-clinical) tested positive for either analyte. For each of the contrived specimen types, TV and MG were detected in 100% of the 24 replicates either at 1x LoD or 2x LoD. These results demonstrate matrix equivalency for the purposes of the analytical studies conducted within this submission.

C Clinical Studies:

The clinical performance of cobas TV/MG was established in a multi-site, prospective study by comparing the results to a Patient Infected Status (PIS) that used a combination of FDA-cleared TV NAATs, TV culture, and three validated laboratory developed MG NAATs. Female and male urogenital specimens were collected at ten geographically diverse sites in the US, which included family planning and obstetrics/gynecology (OB/GYN) clinics and sexually transmitted disease (STD) clinics. The testing was performed at six laboratory testing sites (five external and one internal).

Female subjects provided the following urogenital specimens: first-void urine, five vaginal swabs, one endocervical swab in cobas PCR Media, and one cervical sample in PreservCyt Solution. If the female was in the clinician-collected vaginal swab arm of the study, the five vaginal swabs were placed in the respective transport media collection devices. If the female subject was in the self-collected vaginal swab arm of the study, then one vaginal swab was self-collected first and placed into cobas PCR Media, followed by four clinician-collected vaginal swabs placed in the respective transport media collection devices.

Male subjects provided the following urogenital specimens: 1 self-collected penile meatal swab (self-collection arm of the study) and first catch urine, or 1 clinician-collected penile meatal swab (clinician-collected arm of the study) and first catch urine. Each meatal swab was collected in advance of urine and was placed in cobas PCR media; urine was then collected from each subject and was placed in cobas PCR media and the respective transport media collection devices.

Subjects were classified as symptomatic if they self-reported (or if at the discretion of the examining physician were determined to have) symptoms indicative of a TV or MG infection, including:

- Dysuria (pain during urination)
- Coital pain, difficulty or bleeding
- Pelvic pain
- Abnormal vaginal discharge
- Unusual vaginal odor
- Pelvic, uterine or ovarian pain
- Penile discharge
- Testicular pain
- Scrotal pain or swelling, itching, burning, redness, or soreness of genitals

Subjects were classified as asymptomatic based on the absence of such symptoms.

Specimens were tested for TV and MG using cobas TV/MG and the TV or MG comparator assays used to determine PIS. All tests were run according to the respective manufacturers' Instructions for Use or as per laboratory developed Standard Operating Procedures (MG NAATs).

The clinical performance of cobas TV/MG was evaluated by comparing the results from collected specimen types to a pre-specified PIS (Patient Infected Status) algorithm as determined by the combined results from an FDA-cleared NAAT and culture for TV and three laboratory developed NAATs for MG. The PIS algorithms were derived from the results of testing vaginal swabs in women and the results of testing urine in men for the determination of TV PIS and MG PIS, respectively, as shown in Tables 21 and 22.

Table 21. Determination of TV PIS as derived from vaginal swabs for women and male urine

Culture	FDA-Cleared NAAT	Patient Infection Status (PIS)
+	+ / - / Invalid	Infected
+ / - / Invalid	+	Infected
-	-	Non-Infected
-	Invalid	Indeterminate
Invalid	-	Indeterminate
Invalid	Invalid	Indeterminate

Note: At least 1 positive valid result in comparator assays designates the PIS as 'Infected'. Two negative valid results designate the PIS as 'Non-Infected'. A positive valid result in combination with an invalid result designates the PIS as 'Infected'. A negative valid result in combination with an invalid result or two invalid results for the comparator assays were defined as 'Indeterminate' PIS.

Table 22. Determination of MG PIS as derived from vaginal swabs for women and male urine

		Lab developed NAAT2	Lab developed NAAT3		
			+	-	Invalid
Lab developed NAAT1	+	+	Infected	Infected	Infected
		-	Infected	Non-infected	Indeterminate
		Invalid	Infected	Indeterminate	Indeterminate
	-	+	Infected	Non-infected	Indeterminate
		-	Non-infected	Non-infected	Non-infected
		Invalid	Indeterminate	Non-infected	Indeterminate
	Invalid	+	Infected	Indeterminate	Indeterminate
		-	Indeterminate	Non-infected	Indeterminate
		Invalid	Indeterminate	Indeterminate	Indeterminate

Note: A minimum of 2 positive results was required for the PIS to be 'Infected'. A minimum of 2 negative results were required for the PIS to be 'Non-Infected'. Any other combinations of valid results (positive or negative) with invalid results were considered 'Indeterminate'.

Primary objectives for the study included the evaluation of the sensitivity (SENS), specificity (SPEC), positive predictive value (PPV), and negative predictive value (NPV) of cobas TV/MG for the detection of TV or MG using the PIS as the composite reference method and evaluated by gender, sample type, and symptom status.

Of the 2,194 subjects enrolled, 2,154 were eligible for inclusion. Of the 2,154 eligible subjects contributing specimens, all 2,154 (100%) (1,108 females and 1,046 males) were evaluable and were included in the data analyses for TV and/or MG. For TV, a total of 2,064 subjects (95.8%) were evaluable; 90 were classified as non-evaluable for TV. For MG, a total of 2,150 subjects (99.8%) were evaluable; 4 were classified as non-evaluable. Non-evaluable subjects were excluded from all statistical analyses because of deviations rendering samples non-evaluable, indeterminate PIS, or invalid cobas TV/MG results after initial testing and/or retesting.

Of the 6,807 samples tested in this study, 12 samples exhibited invalid results for TV and/or MG on the first run (invalid rate of 0.18% (95% CI: 0.10%; 0.31%)). Upon repeat testing, 5 samples exhibited valid results.

Clinical study results for *Trichomonas vaginalis* (TV)

Tables 23 and 24 summarize the results from symptomatic and asymptomatic female and male subjects designated as infected or non-infected with TV according to the PIS algorithm. A total of 171 females and 23 males were infected with TV. Symptoms were reported in 67.8% (116/171) of infected and 56.0% (509/909) of non-infected women. Similarly, symptoms were reported in 56.5% (13/23) of infected and 31.5% (302/960) of non-infected men.

Table 23. TV Positive/Negative Analyses for Female Patient Infected Status

	NAAT	Culture	cobas TV/MG				Symptom Status		
Patient Infected Status	**VS**	**VS**	**UR**	**VS-C/ VS-S**	**PC**	**ES**	**Symp**	**Asymp**	**Total**
Infected	+	N/A	+	+	+	-	1	0	1
Infected	+	N/A	+	+	+	+	4	6	10
Infected	+	-	-	-	-	-	0	1	1
Infected	+	-	+	+	-	-	1	0	1
Infected	+	-	+	+	+	-	1	0	1
Infected	+	-	+	+	-	+	3	1	4
Infected	+	-	+	+	+	+	8	2	10
Infected	+	+	-	+	-	+	1	0	1
Infected	+	+	-	+	+	+	2	0	2
Infected	+	+	+	+	+	Failed	1	0	1
Infected	+	+	+	+	Failed	+	1	0	1
Infected	+	+	+	+	-	+	2	0	2
Infected	+	+	+	+	+	+	91	45	136
Total Infected							**116**	**55**	**171**
Non-Infected	-	-	N/A	-	-	-	1	0	1
Non-Infected	-	-	Invalid	-	-	-	2	0	2
Non-Infected	-	-	-	N/A	-	N/A	1	0	1
Non-Infected	-	-	-	Failed	-	N/A	1	0	1
Non-Infected	-	-	-	-	-	N/A	0	1	1
Non-Infected	-	-	-	-	+	N/A	1	0	1
Non-Infected	-	-	-	-	N/A	-	1	3	4
Non-Infected	-	-	-	Invalid	-	-	0	1	1
Non-Infected	-	-	-	-	-	-	476	368	844
Non-Infected	-	-	-	+	-	-	12	10	22
Non-Infected	-	-	-	-	+	-	1	2	3
Non-Infected	-	-	-	+	+	-	1	0	1
Non-Infected	-	-	-	-	-	+	5	6	11
Non-Infected	-	-	-	+	-	+	1	0	1
Non-Infected	-	-	-	-	+	+	0	1	1
Non-Infected	-	-	-	+	+	+	0	2	2
Non-Infected	-	-	+	-	-	-	5	3	8
Non-Infected	-	-	+	+	+	-	1	1	2
Non-Infected	-	-	+	-	-	+	0	1	1
Non-Infected	-	-	+	+	-	+	0	1	1
Total Non-Infected							**509**	**400**	**909**

Note: Asymp = asymptomatic; Symp = symptomatic.
Note: Any positive result in vaginal swab specimen from females determines the PIS as 'Infected'. When both results are negative, the PIS is defined as 'Non-Infected'. Any subject with an invalid test result with either test must still have a positive test result for the remaining comparator test to be interpreted as PIS 'Infected'. If the remaining valid test is negative, in conjunction with an invalid test result, then the PIS is considered 'Indeterminate'.
Note: Subjects with a designated patient infection status (Infected or Non-Infected) and a valid test result with **cobas** TV/MG for TV are considered evaluable and included in this summary table.
Note: + denotes Positive, - denotes Negative, N/A = data not available.
Note: VS = vaginal swab; VS-C = clinician-collected vaginal swab; VS-S = self-collected vaginal swab; UR = urine; PC = PreservCyt; ES = endocervical swab.
Note: NAAT = nucleic acid amplification test; TV = *Trichomonas vaginalis*; MG = *Mycoplasma genitalium*.
Note: "Invalid" is a sample that either had an instrument amplification/detection error or whose result was excluded due to a protocol deviation.

Note: "Failed" is a sample that had an instrument processing error.

Table 24. TV Positive/Negative Analyses for Male Patient Infected Status

	NAAT	Culture	cobas TV/MG	Symptom Status		
Patient Infected Status	**UR**	**UR**	**UR**	**Symp**	**Asymp**	**Total**
Infected	+	N/A	+	0	1	1
Infected	+	-	+	3	3	6
Infected	+	+	+	10	6	16
Total Infected				**13**	**10**	**23**
Non-Infected	-	-	-	297	648	945
Non-Infected	-	-	+	5	10	15
Total Non-Infected				**302**	**658**	**960**

Note: Asymp = asymptomatic; Symp = symptomatic.
Note: Any positive result in urine specimen from males determines the PIS as 'Infected'. When both results are negative, the PIS is defined as 'Non-Infected'. Any subject with an invalid test result with either test must still have a positive test result for the remaining comparator test to be interpreted as PIS 'Infected'. If the remaining valid test is negative, in conjunction with an invalid test result, then the PIS is considered 'Indeterminate'.
Note: Subjects with a designated patient infection status (Infected or Non-Infected) and a valid test result with cobas TV/MG for TV are considered evaluable and included in this summary table.
Note: + denotes Positive, - denotes Negative, N/A = data not available.
Note: UR = urine.
Note: MG = *Mycoplasma genitalium*, NAAT = nucleic acid amplification test, TV = *Trichomonas vaginalis*.

Sensitivity, specificity, and predictive values of cobas TV/MG for TV as defined by PIS are presented by gender, sample type, and symptom status in Table 25.

Table 25. TV Clinical Performance Compared with Patient Infected Status by Gender, Sample Type, and Symptom Status

Sample Type[a]	Symptom Status[b]	Total (n)	SENS	95% Score CI	SPEC	95% Score CI	PREV (%)	PPV (%)	NPV (%)
Female									
UR	Symp	622	97.4% (113/116)	(92.7%, 99.1%)	98.8% (500/506)	(97.4%, 99.5%)	18.6	95.0	99.4
	Asymp	455	98.2% (54/55)	(90.4%, 99.7%)	98.5% (394/400)	(96.8%, 99.3%)	12.1	90.0	99.7
	Overall	1077	97.7% (167/171)	(94.1%, 99.1%)	98.7% (894/906)	(97.7%, 99.2%)	15.9	93.3	99.6
VS-C/ VS-S	Symp	623	100.0% (116/116)	(96.8%, 100.0%)	97.0% (492/507)	(95.2%, 98.2%)	18.6	88.5	100.0
	Asymp	454	98.2% (54/55)	(90.4%, 99.7%)	96.5% (385/399)	(94.2%, 97.9%)	12.1	79.4	99.7
	Overall	1077	99.4% (170/171)	(96.8%, 99.9%)	96.8% (877/906)	(95.4%, 97.8%)	15.9	85.4	99.9
PC	Symp	622	93.9% (108/115)	(88.0%, 97.0%)	99.2% (503/507)	(98.0%, 99.7%)	18.5	96.4	98.6
	Asymp	452	96.4% (53/55)	(87.7%, 99.0%)	98.5% (391/397)	(96.7%, 99.3%)	12.2	89.8	99.5
	Overall	1074	94.7% (161/170)	(90.2%, 97.2%)	98.9% (894/904)	(98.0%, 99.4%)	15.8	94.2	99.0
ES	Symp	620	97.4% (112/115)	(92.6%, 99.1%)	98.8% (499/505)	(97.4%, 99.5%)	18.5	94.9	99.4
	Asymp	454	98.2% (54/55)	(90.4%, 99.7%)	97.2% (388/399)	(95.1%, 98.5%)	12.1	83.1	99.7
	Overall	1074	97.6% (166/170)	(94.1%, 99.1%)	98.1% (887/904)	(97.0%, 98.8%)	15.8	90.7	99.6
Male									
UR	Symp	315	100.0% (13/13)	(77.2%, 100.0%)	98.3% (297/302)	(96.2%, 99.3%)	4.1	72.2	100.0
	Asymp	668	100.0% (10/10)	(72.2%, 100.0%)	98.5% (648/658)	(97.2%, 99.2%)	1.5	50.0	100.0
	Overall	983	100.0% (23/23)	(85.7%, 100.0%)	98.4% (945/960)	(97.4%, 99.1%)	2.3	60.5	100.0

[a] ES = endocervical swab; PC = PreservCyt; UR = urine; VS-C = clinician-collected vaginal swab; VS-S = self-collected vaginal swab.

[b] Asymp = asymptomatic; Symp = symptomatic.

Note: Subjects with a designated patient infection status (Infected or Non-Infected) and a valid test result with cobas TV/MG for TV are considered evaluable and included in this summary table.

Note: CI = confidence interval; NPV = negative predictive value; PPV = positive predictive value; PREV = prevalence;
SENS = sensitivity; SPEC = specificity.

Clinical study results for *Mycoplasma genitalium* (MG)

Tables 26 and 27 summarize the results from symptomatic and asymptomatic female and male subjects designated as infected or non-infected with MG according to the PIS algorithm. A total of 59 females and 60 males were infected with MG. Symptoms were reported in 67.8% (40/59) of infected and 57.5% (601/1045) of non-infected women. Similarly, symptoms were reported in 51.7% (31/60) of infected and 31.6% (312/986) of non-infected men.

Table 26. MG Positive/Negative Analyses for Female Patient Infected Status

	NAAT1	NAAT2	NAAT3	cobas TV/MG			Symptom Status		
Patient Infected Status	**VS**	**VS**	**VS**	**UR**	**VS-C/ VS-S**	**ES**	**Symp**	**Asymp**	**Total**
Infected	-	+	+	-	-	-	0	1	1
Infected	-	+	+	-	+	+	4	1	5
Infected	-	+	+	+	+	-	4	1	5
Infected	-	+	+	+	+	+	7	4	11
Infected	+	-	+	-	-	-	1	0	1
Infected	+	-	+	+	+	+	1	1	2
Infected	+	+	+	-	+	+	1	0	1
Infected	+	+	+	+	+	-	1	2	3
Infected	+	+	+	+	+	+	21	9	30
Total Infected							**40**	**19**	**59**
Non-Infected	-	-	Invalid	-	-	+	1	0	1
Non-Infected	-	-	-	N/A	-	-	1	0	1
Non-Infected	-	-	-	Invalid	Invalid	-	1	0	1
Non-Infected	-	-	-	Invalid	-	-	3	0	3
Non-Infected	-	-	-	-	Failed	N/A	1	0	1
Non-Infected	-	-	-	-	-	N/A	1	0	1
Non-Infected	-	-	-	-	-	Failed	1	0	1
Non-Infected	-	-	-	-	Invalid	-	0	1	1
Non-Infected	-	-	-	-	-	-	533	422	955
Non-Infected	-	-	-	-	-	+	1	0	1
Non-Infected	-	-	-	+	-	-	3	0	3
Non-Infected	-	-	+	-	-	-	12	2	14
Non-Infected	-	-	+	-	+	-	6	2	8
Non-Infected	-	-	+	-	-	+	2	1	3
Non-Infected	-	-	+	-	+	+	1	1	2
Non-Infected	-	-	+	+	-	-	6	1	7
Non-Infected	-	-	+	+	+	-	6	5	11
Non-Infected	-	-	+	+	+	+	9	1	10
Non-Infected	-	+	-	-	-	N/A	0	1	1
Non-Infected	-	+	-	-	-	-	7	1	8
Non-Infected	+	-	-	-	-	-	6	6	12
Total Non-Infected							**601**	**444**	**1045**

Note: Symp = symptomatic, Asymp = asymptomatic.
Note: Two or more positive results in vaginal swab specimens from females determines the PIS as 'Infected'. Any other combination of valid results defines their PIS as 'Non-Infected'. If one of the NAATs is invalid, the two remaining NAAT results must be concordant positive (+) or concordant negative (-) for the PIS to be 'Infected' or 'Non-Infected', respectively. For any other combination of invalid results PIS is considered 'Indeterminate'.
Note: Subjects with a designated patient infection status (Infected or Non-Infected) and a valid test result with cobas TV/MG for MG are considered evaluable and included in this summary table.
Note: + denotes Positive, - denotes Negative, N/A = data not available.
Note: UR = urine, VS = vaginal swab, VS-C = clinician-collected vaginal swab, VS-S = self-collected vaginal swab, ES = endocervical swab.
Note: NAAT = nucleic acid amplification test, TV = *Trichomonas vaginalis*, MG = *Mycoplasma genitalium*.
Note: "Invalid" is a sample that either had an instrument amplification/detection error or whose result was excluded due to a protocol deviation.
Note: "Failed" is a sample that had an instrument processing error.

Table 27. MG Positive/Negative Analyses for Male Patient Infected Status

	NAAT1	NAAT2	NAAT3	cobas TV/MG		Symptom Status		
Patient Infected Status	**UR**	**UR**	**UR**	**UR**	**MS-C/ MS-S**	**Symp**	**Asymp**	**Total**
Infected	-	+	+	+	-	1	1	2
Infected	-	+	+	+	+	1	1	2
Infected	+	-	+	+	-	0	1	1
Infected	+	-	+	+	+	3	5	8
Infected	+	+	-	+	+	0	1	1
Infected	+	+	+	+	-	2	4	6
Infected	+	+	+	+	+	24	16	40
Total Infected						**31**	**29**	**60**
Non-Infected	N/A	-	-	-	-	2	1	3
Non-Infected	-	Invalid	-	-	-	0	2	2
Non-Infected	-	-	N/A	-	-	0	1	1
Non-Infected	-	-	-	N/A	-	0	1	1
Non-Infected	-	-	-	-	N/A	0	4	4
Non-Infected	-	-	-	-	Failed	0	1	1
Non-Infected	-	-	-	-	Invalid	0	2	2
Non-Infected	-	-	-	-	-	288	634	922
Non-Infected	-	-	-	-	+	3	3	6
Non-Infected	-	-	-	+	+	1	1	2
Non-Infected	-	-	+	-	-	0	2	2
Non-Infected	-	-	+	-	+	1	0	1
Non-Infected	-	-	+	+	Invalid	0	1	1
Non-Infected	-	-	+	+	-	2	6	8
Non-Infected	-	-	+	+	+	5	6	11
Non-Infected	-	+	-	-	-	1	4	5
Non-Infected	-	+	-	+	-	1	0	1
Non-Infected	+	-	-	-	-	7	5	12
Non-Infected	+	-	-	+	+	1	0	1
Total Non-Infected						**312**	**674**	**986**

Note: Asymp = asymptomatic; Symp = symptomatic.
Note: Two or more positive results in urine specimens from males determines the PIS as 'Infected'. Any other combination of valid results defines their PIS as 'Non-Infected'. If one of the NAATs is invalid, the two remaining NAAT results must be concordant positive (+) or concordant negative (-) for the PIS to be 'Infected' or 'Non-Infected', respectively. For any other combination of invalid results PIS is considered 'Indeterminate'.
Note: Subjects with a designated patient infection status (Infected or Non-Infected) and a valid test result with cobas TV/MG for MG are considered evaluable and included in this summary table.
Note: + denotes Positive, - denotes Negative, N/A = data not available.
Note: MS-C = clinician-collected meatal swab; MS-S = self-collected meatal swab; UR = urine.
Note: MG = *Mycoplasma genitalium;* NAAT = nucleic acid amplification test; TV = *Trichomonas vaginalis*.
Note: "Invalid" is a sample that either had an instrument amplification/detection error or whose result was excluded due to a protocol deviation.
Note: "Failed" is a sample that had an instrument processing error.

Sensitivity, specificity, and predictive values of cobas TV/MG for MG as defined by PIS are presented by gender, sample type, and symptom status in Table 28.

Table 28. MG Clinical Performance Compared with Patient Infected Status by Gender, Sample Type, and Symptom Status

Sample Type[a]	Symptom Status[b]	Total (n)	SENS	95% Score CI	SPEC	95% Score CI	PREV (%)	PPV (%)	NPV (%)
Female									
UR	Symp	636	85.0% (34/40)	(70.9%, 92.9%)	96.0% (572/596)	(94.1%, 97.3%)	6.3	58.6	99.0
	Asymp	463	89.5% (17/19)	(68.6%, 97.1%)	98.4% (437/444)	(96.8%, 99.2%)	4.1	70.8	99.5
	Overall	1099	86.4% (51/59)	(75.5%, 93.0%)	97.0% (1009/1040)	(95.8%, 97.9%)	5.4	62.2	99.2
VS-C/ VS-S	Symp	639	97.5% (39/40)	(87.1%, 99.6%)	96.3% (577/599)	(94.5%, 97.6%)	6.3	63.9	99.8
	Asymp	462	94.7% (18/19)	(75.4%, 99.1%)	98.0% (434/443)	(96.2%, 98.9%)	4.1	66.7	99.8
	Overall	1101	96.6% (57/59)	(88.5%, 99.1%)	97.0% (1011/1042)	(95.8%, 97.9%)	5.4	64.8	99.8
ES	Symp	637	85.0% (34/40)	(70.9%, 92.9%)	97.7% (583/597)	(96.1%, 98.6%)	6.3	70.8	99.0
	Asymp	462	78.9% (15/19)	(56.7%, 91.5%)	99.3% (440/443)	(98.0%, 99.8%)	4.1	83.3	99.1
	Overall	1099	83.1% (49/59)	(71.5%, 90.5%)	98.4% (1023/1040)	(97.4%, 99.0%)	5.4	74.2	99.0
Male									
UR	Symp	343	100.0% (31/31)	(89.0%, 100.0%)	96.8% (302/312)	(94.2%, 98.2%)	9.0	75.6	100.0
	Asymp	702	100.0% (29/29)	(88.3%, 100.0%)	97.9% (659/673)	(96.5%, 98.8%)	4.1	67.4	100.0
	Overall	1045	100.0% (60/60)	(94.0%, 100.0%)	97.6% (961/985)	(96.4%, 98.4%)	5.7	71.4	100.0
MS-C/ MS-S	Symp	343	90.3% (28/31)	(75.1%, 96.7%)	96.5% (301/312)	(93.8%, 98.0%)	9.0	71.8	99.0
	Asymp	695	79.3% (23/29)	(61.6%, 90.2%)	98.5% (656/666)	(97.3%, 99.2%)	4.2	69.7	99.1
	Overall	1038	85.0% (51/60)	(73.9%, 91.9%)	97.9% (957/978)	(96.7%, 98.6%)	5.8	70.8	99.1

[a] ES = endocervical swab; MS-C = clinician-collected meatal swab; MS-S = self-collected meatal swab; UR = urine; VS-C = clinician-collected vaginal swab; VS-S = self-collected vaginal swab.
[b] Asymp = asymptomatic; Symp = symptomatic.

Note: Subjects with a designated patient infection status (Infected or Non-Infected) and a valid test result with cobas TV/MG for MG are considered evaluable and included in this summary table.
Note: CI = confidence interval; NPV = negative predictive value; PPV = positive predictive value; PREV = prevalence; SENS = sensitivity; SPEC = specificity.

Specimen-specific Agreements for *Mycoplasma genitalium*:

A study was conducted with prospectively collected female and male urogenital specimens from 836 subjects (412 females and 424 males) to assess specimen specific-agreements for *Mycoplasma genitalium* detection. Specimen-specific agreements were calculated by comparing

the cobas TV/MG assay results against results of an anatomic site-specific composite reference standard (for example, cobas TV/MG assay MG results testing urine specimens were compared to a urine-specific composite reference, and the same for other female and male specimen types). The composite reference standard was comprised of three validated MG NAATs; the determination of truth was based on any two positive tests out of the three MG reference NAATs used. The positive (PPA) and negative (NPA) percent agreement of the cobas TV/MG assay for *Mycoplasma genitalium* detection as demonstrated in this study was as follows:

Table 29: Specimen-specific Agreements

Sample Type[a]	ASCR[b]+/ cobas +	ASCR[b]-/ cobas +	ASCR[b]-/ cobas -	ASCR[b]+/ cobas -	PPA (95% Exact CI)	NPA (95% Exact CI)
Female						
UR	29	6	377	0	100% (88.1%, 100%)	98.4% (96.6%, 99.4%)
VS-C/ VS-S	27	2	381	2	93.1% (77.2%, 99.2%)	99.5% (98.1%, 99.9%)
ES	18	2	391	1	94.7% (74.0%, 99.9%)	99.5% (98.2%, 99.9%)
Male						
UR	39	5	380	0	100% (91.0%, 100%)	98.7% (97.0%, 99.6%)
MS-C/ MS-S	25	3	396	0	100% (86.3%, 100%)	99.2% 97.8%, 99.8%)

[a] ES = endocervical swab, MS-C = clinician-collected meatal swab, MS-S = self-collected meatal swab; UR = urine, VS-C = clinician-collected vaginal swab, VS-S = self-collected vaginal swab.
[b] ASCR = Anatomic Site-specific Composite Reference (i.e., cobas TV/MG urine results were compared to a urine-specific composite reference, and the same for the other female and male specimen types).
Note: CI = confidence interval, PPA = positive percent agreement; NPA = negative percent agreement.

D Clinical Cut-Off:

Not applicable

E Expected Values/Reference Range:

For TV, the observed expected values (number of positive results detected by the cobas TV/MG assay) in this prospective clinical study were 16.6% in female urine, 18.5% in vaginal swab samples (clinician-collected and self-collected), 15.9% in cervical specimens collected in PreservCyt, 17.0% in endocervical swab samples, and 3.9% in male urine samples.

For MG, the observed expected values (number of positive results detected by the cobas TV/MG assay) in this prospective clinical study were 8.0% in vaginal swab samples (clinician-collected and self-collected), 6.0% in endocervical swab samples, 7.5% in female urine, 6.9% in penile meatal swab samples (clinician-collected and self-collected), and 8.0% in male urine samples.

VIII Proposed Labeling:

The labeling supports the finding of substantial equivalence for this device.

IX Conclusion:

The submitted information in this premarket notification is complete and supports a substantial equivalence decision.