510(k) SUBSTANTIAL EQUIVALENCE DETERMINATION
DECISION SUMMARY

A. 510(k) Number:

K161510

B. Purpose for Submission:

To obtain a substantial equivalence determination for Ceftolozane/Tazobactam for testing non-fastidious gram negative organisms on the VITEK®2 and VITEK®2 Compact Antimicrobial Susceptibility Test (AST) Systems

C. Measurand:

The VITEK 2 AST-Gram Negative card contains the following concentrations of Ceftolozane/Tazobactam: 0.5/4, 1/4, 4/4, 8/4, and 32/4 µg/mL (equivalent standard method concentration by efficacy in µg/mL). The MIC result reporting range for the card is ≤0.25 - ≥32 µg/mL.

D. Type of Test:

Automated quantitative or qualitative antimicrobial susceptibility test for Ceftolozane/Tazobactam

E. Applicant:

bioMérieux, Inc.

F. Proprietary and Established Names:

VITEK 2 AST-GN Ceftolozane/Tazobactam (≤0.25 - ≥32 µg/mL)

G. Regulatory Information:

1. Regulation section:

   221 CFR 866.1645 Fully Automated Short-Term Incubation Cycle Antimicrobial Susceptibility System

2. Classification:

   Class II

3. Product code(s):

LON - Fully automated short-term incubation cycle antimicrobial susceptibility system.
LTW – Susceptibility Test Cards, Antimicrobial
LTT – Panels, Test, Susceptibility, Antimicrobial

4. Panel:

Microbiology (83)

H. Intended Use:

1. Intended use(s):

The VITEK®2 Antimicrobial Susceptibility Test (AST) is intended to be used with the VITEK®2 Systems for the automated quantitative or qualitative susceptibility testing of isolated colonies for the most clinically significant aerobic gram-negative bacilli, *Staphylococcus* spp., *Enterococcus* spp., *Streptococcus* spp. and clinically significant yeast.

2. Indication(s) for use:

VITEK®2 Gram Negative Ceftolozane/Tazobactam is designed for antimicrobial susceptibility testing of Gram negative bacilli and is intended for use with the VITEK®2 and VITEK®2 Compact Systems as a laboratory aid in the determination of in vitro susceptibility to antimicrobial agents. VITEK®2 Gram Negative Ceftolozane/Tazobactam is a quantitative test. Ceftolozane/Tazobactam has been shown to be active against most strains of the microorganisms listed below, according to the FDA label for the antimicrobial.

Active in vitro and in clinical infections:
Enterobacter cloacae
Escherichia coli
Klebsiella oxytoca
Klebsiella pneumoniae
Proteus mirabilis
Pseudomonas aeruginosa

In vitro data available but clinical significance is unknown:
Citrobacter freundii
Citrobacter koseri
Enterobacter aerogenes
Enterobacter cloacae
Proteus vulgaris
Providencia stuartii
Serratia liquefacians
The VITEK®2 Antimicrobial Susceptibility Test (AST) is intended to be used with the VITEK®2 Systems for the automated quantitative or qualitative susceptibility testing of

isolated colonies for the most clinically significant aerobic gram-negative bacilli, *Staphylococcus* spp., *Enterococcus* spp., *Streptococcus* spp. and clinically significant yeast.

3. Special conditions for use statement(s):

   Prescription use only

   Limitation:

   "The ability of the AST card to detect resistance with the following combination(s) is unknown because an insufficient number of resistant strains were available at the time of comparative testing. If such a strain is observed, it should be submitted to a reference laboratory for further testing.
   - *Ceftolozane/Tazobactam: Citrobacter koseri, Proteus mirabilis, Proteus vulgaris, and Serratia Liquefacians."*

4. Special instrument requirements:

   VITEK® 2 and VITEK®2 Compact Systems

I. Device Description:

The VITEK 2 AST card is a miniaturized, abbreviated and automated version of the doubling dilution technique for determining the minimum inhibitory concentration (MIC). Each VITEK 2 test card contains 64 microwells. A control well containing only culture medium is included on all cards, with the remaining wells containing premeasured amounts of a specific antimicrobial agent in a culture medium base. A suspension of organism from a pure culture is prepared in a tube containing 0.45-0.5% sterile saline and standardized to a McFarland 0.5 using the DensiCHEK Plus™. The VITEK 2 System automatically fills seals and places the card into the incubator/reader; manual methods can also be used for the inoculation of test cards for use in the VITEK 2 System. The VITEK 2 Compact has a manual filling and sealing operation. The VITEK 2 Systems monitor the growth of each well in the card over a defined period of time (up to 18 hours). At the completion of the incubation cycle, a report is generated that contains the MIC value along with the interpretive category result for each antimicrobial contained on the card.

VITEK 2 AST-GN Ceftolozane/Tazobactam has the following concentrations in the card: 0.5/4, 1/4, 4/4, 8/4, and 32/4µg/mL (equivalent standard method concentration by efficacy in µg/mL). The MIC result range for the VITEK 2 card is ≤0.25 - ≥32 µg/mL.

J. Substantial Equivalence Information:

1. Predicate device name(s):

VITEK®2 AST-GN Doxycycline

2. Predicate 510(k) number(s):

   K121546

3. Comparison with predicate:

Table 1: Comparison with the Predicate Device

Similarities		
Item	Device VITEK 2 AST-GN Ceftolozane/Tazobactam K161510	Predicate VITEK®2 AST-GN Doxycyline K121546
Intended Use	The VITEK®2 Antimicrobial Susceptibility Test (AST) is intended to be used with the VITEK®2 Systems for the automated quantitative or qualitative susceptibility testing of isolated colonies for the most clinically significant aerobic gram-negative bacilli, *Staphylococcus* spp., *Enterococcus* spp., *Streptococcus* spp. and clinically significant yeast.	Same
Test Method	Automated quantitative antimicrobial susceptibility test for use with the VITEK®2 and VITEK®2 Compact Systems to determine the in vitro susceptibility of Gram negative bacilli	Same
Inoculum	Saline suspension of organisms	Same
Test Card	VITEK® 2 Gram Negative Susceptibility Test Card	Same
Instrument	VITEK 2 and VITEK 2 Compact Systems	Same
Detection Method	Light optics using optical scanner	Same
Report	Automatically generated and contains the MIC value with an interpretive category (S, I, R) for each antimicrobial on the test card	Same

Differences		
Item	Device	Predicate
Antimicrobial	Ceftolozane/Tazobactam	Doxycycline
Antimicrobial Concentration	0.5/4, 1/4, 4/4, 8/4, and 32/4 µg/mL	1, 4, 6 µg/mL
Algorithm Analysis	Growth pattern analysis-Unique to Ceftolozane/Tazobactam	Discriminate analysis-Unique to Doxycycline
Reporting Range	≤0.25 - ≥32 µg/mL	≤0.5 - ≥ 16 µg/mL

K. Standard/Guidance Document Referenced (if applicable):

- CLSI M100-S24: Performance Standards for Antimicrobial Susceptibility Testing; Twenty-fourth Informational Supplement, Vol. 33 No. 1 (January 2014)
- CLSI M07-A9: Methods for Dilution Antimicrobial Susceptibility Tests for Bacteria That Grow Aerobically; Approved Standard-Ninth Edition" Vol. 32 No, 2 (January 2012)
- Class II Special Controls Guidance Document: Antimicrobial Susceptibility Test (AST) Systems; Guidance for Industry and FDA (Issued August 28, 2009)

L. Test Principle:

The VITEK 2 and VITEK 2 Compact Systems utilize automated growth-based detection using attenuation of light measured by an optical scanner. The optics used in the systems use visible light to directly measure organism growth. Transmittance optics is based on an initial light reading of a well before significant growth has begun. Periodic light transmittance samplings of the same well measure organism growth by how much light is prevented from going through the well. The VITEK 2 System monitors the growth of each well in the card over a defined period of time. An interpretive call is made between 4 and 16 hours for a "rapid" read but may be extended to 18 hours in some instances. At the completion of the incubation cycle, a report is generated that contains the MIC value along with the interpretive category result for each antibiotic on the card.

M. Performance Characteristics (if/when applicable):

1. Analytical performance:

   a. Precision/Reproducibility:

   A reproducibility study was conducted at three sites using ten isolates of gram negative bacilli that were consistent with the intended use. Isolates were tested in triplicate over three days for a total of 270 data points. The isolates tested in the reproducibility study included *Pseudomonas aeruginosa* (three isolates), *E.coli* (one isolate), *Enterobacter aerogenes* (two isolates), and *Klebsiella pneumonia*e (three isolates). Inocula were prepared both manually and using automatic dilution for

testing in the VITEK 2. Inocula were prepared manually for testing in the VITEK 2 Compact. The mode MIC value was determined and the reproducibility was calculated based on MIC values falling within ± 1 dilution of the mode MIC value.

Using VITEK 2 (automatic and manual dilution), and the VITEK 2 Compact (manual dilution), best case and worst case reproducibility was 100%.

The reproducibility results were acceptable.

b. Linearity/assay reportable range:

Not applicable

c. Traceability, Stability, Expected values (controls, calibrators, or methods):

Inoculum Density Check:
The inoculum density was monitored using the DensiCHEK Plus™ instrument during the trial. The DensiCHEK Plus™ was standardized daily with all results recorded at each site. Calibration values were within the expected range

Purity Check:
A purity check of all organisms was performed at the time of VITEK2 card inoculation. Only results obtained with pure cultures were evaluated.

Growth Failure Rate:
Out of 859 clinical isolates, 840 (97.78%) isolates grew in the VITEK 2 Ceftolozane/Tazobactam test.

All 224 challenge organisms grew in the VITEK 2 automatic dilution method and in the VITEK 2 Compact manual dilution method (100%). In the VITEK 2 manual dilution method, 223 of 224 (99.5%) of the challenge organisms grew.

Quality Control (QC) Testing:
Organisms recommended by both the FDA and the CLSI, namely *Escherichia coli* ATCC 25922, *Escherichia coli* ATCC 35218, *Klebsiella pneumoniae* ATCC 700603, and *Pseudomonas aeruginosa* ATCC 27853 were tested against Ceftolozane/Tazobactam. These recommended QC organisms were tested a minimum of 20 times/site by both the VITEK 2 AST-GN card and with the with CLSI broth microdilution reference method. Both the automatic dilution and the manual dilution methods were used for the VITEK 2 and the manual dilution method was used for the VITEK 2 Compact. The following table (Table 2) provides a summary of the QC results.

Table 2: Quality Control Results for VITEK 2 with Automatic and Manual Dilution Inoculation Methods and for VITEK 2 Compact with the Manual Dilution Inoculation Method.

		VITEK 2 Automatic-Dilution		VITEK 2 Manual Dilution		VITEK 2 Compact Manual Dilution	
Organism	**Conc.[a] (µg/mL)**	**Test**	**Ref.**	**Test**	**Ref.**	**Test**	**Ref.**
E. coli ATCC 25922 Expected Range (0.12- 0.5 µg/mL)	≤0.03						
	0.06						
	0.125		121		70		70
	≤0.25*	225	101	112	42	112	42
	0.5		3				
	1						
	2						
	4						
	8						
	16						
	32						
	≥64						
E. coli ATCC 35218 Expected Range (0.06- 0.25 µg/mL)	≤0.03						
	0.06						
	0.125		208		103		103
	≤0.25*	220	12	107	4	107	4
	0.5						
	1						
	2						
	4						
	8						
	16						
	32						
	≥64						
K. pneumoniae ATCC 700603 Expected Range (0.5- 2 µg/mL)	≤0.03						
	0.06						
	0.125						
	0.25						
	0.5	0	25	0	9	0	9
	1	225	193	112	98	112	98
	2	0	7	0	5	0	5
	4						
	8						
	16						
	32						
	≥64						
P. aeruginosa ATCC 27853 Expected Range	≤0.03						
	0.06						
	0.125						
	≤**0.25**	0	3	0	3	0	3

0.25- 1 µg/mL	0.5	216	209	103	97	102	97
	1	4	8	4	7	4	7
	2						
	4						
	8						
	16						
	32						
	≥64						

[a]*MIC for Ceftolozane in the presence of a fixed concentration of 4 mg/L of Tazobactam.*
*The lowest dilution of the VITEK 2 Ceftolozane/Tazobactam MIC range is 0.25 µg/mL. Obtaining ≤0.25 µg/mL was considered as an indicator that the quality control results were acceptable.

The expected range for *E. coli* ATCC 25922 with Ceftolozane/Tazobactam is 0.12 – 0.5 µg/mL. Even though the Ceftolozane/Tazobactam concentrations included in the VITEK 2 AST-Gram Negative card are 0.5/4, 1/4, 4/4, 8/4, and 32/4 µg/mL, the reporting range is ≤0.25 - ≥32 µg/mL. Therefore, all results for the QC strain were off-scale for the VITEK 2 and VITEK 2 Compact Systems as both VITEK systems report the lowest end of the scale as ≤0.25 µg/mL (See Table 2 above). *E. coli* ATCC 35218 was also tested to verify the performance of the device. Many results of this QC strain were also off scale (≤0.25 µg/mL). However, *Klebsiella pneumoniae* ATCC 700603 and *Pseudomonas aeruginosa* ATCC 27853 were also tested to verify the performance of the device and all results were on-scale (See Table 2 above).

The quality control results were acceptable.

Detection limit:

Not applicable

e. Analytical specificity:

Not applicable

f. Assay cut-off:

Not applicable

2. Comparison studies:

a. Method comparison with predicate device:

Results obtained with the bioMérieux VITEK 2 AST - Gram Negative card with Ceftolozane/Tazobactam were compared to results obtained with the CLSI broth microdilution reference panel. The VITEK 2 AST-Gram Negative card with Ceftolozane/Tazobactam contains the following concentrations of Ceftolozane/Tazobactam: 0.5/4, 1/4, 4/4, 8/4, and 32/4µg/mL (equivalent standard

method concentration by efficacy in µg/mL) and the reporting range is ≤0.25 - ≥32 µg/mL. The reference panel contained two-fold serial dilutions with a range of 0.0313 to 128 µg/mL.

Test inocula were standardized using the DensiCHEK Plus instrument. VITEK 2 AST – Gram Negative cards were inoculated using automatic dilution (for reading on the VITEK 2 instrument) or using a manual dilution method (for reading on the VITEK 2 instrument or on the VITEK 2 COMPACT instrument). Reference panels were inoculated as outlined in the CLSI document M07-A9.

A total of 859 (*Enterobacteriaceae* and *Pseudomonas aeruginosa*) clinical isolates were evaluated at three sites with VITEK 2 AST – Gram Negative cards inoculated by automatic dilution and interpreted using the VITEK 2 instrument. 840 isolates grew in the VITEK 2 Ceftolozane/Tazobactam test. Complete test results are available for 840 in Table 3. The majority of isolates were fresh specimens (779/859 isolates, 90.68%); 80 of the clinical isolates tested (80/859 9.3%) were stock isolates.

A total of 76 challenge isolates were tested at one external site. In response to a request from FDA, 148 additional challenge isolates were evaluated internally at bioMérieux as well as at an external site which resulted in a total of 224 challenge isolates. The challenge set was tested with both card inoculation options (automatic dilution and manual dilution) on the VITEK 2 System and with the manual dilution on the VITEK 2 COMPACT system.

Results from the 1064 clinical and challenge isolates are summarized in Table 3. The overall performance using the VITEK 2 System and inoculated using the automatic dilution method was acceptable, with an EA of 94.8% and CA of 98.4%, and a minor discrepancy rate of 1 % (11/1064), a major error discrepancy rate of 0.4% (4/907) and a very major error discrepancy rate of 1.4% (2/141).

Table 3: Performance of Clinical and Challenge Isolates, VITEK 2 Automatic Dilution Method

	Tot	No. EA	EA %	Eval Tot	No. Eval EA	Eval EA %	No. CA	CA %	No. R	min	maj	vmj
Enterobacteriaceae												
Clinical	694	671	96.7	104	82	78.8	685	98.7	31	7	2	0
Challenge	156	135	86.5	35	27	77.1	152	97.4	83	2	1	1
Combined	850	806	94.8	139	109	78.4	837	98.5	114	9	3	1
Pseudomonas aeruginosa												
Clinical	146	138	94.5	140	132	94.3	145	99.3	3	1	0	0
Challenge	68	65	95.6	47	45	95.7	65	95.6	24	1	1	1
Combined	214	203	94.9	187	177	94.7	210	98.1	27	2	1	1
All Organisms												
Clinical	840	809	96.3	244	214	87.7	830	98.8	34.0	8	2	0
Challenge	224	200	89.3	82	72	87.8	217	96.9	107	3	2	2
Combined	1064	1009	94.8	326	286	87.7	1047	98.4	141	11	4	2

EA – Essential Agreement (+/- 2 dilutions)
CA – Category Agreement
EVAL – Evaluable isolates
R or NS – Resistant or non-susceptible isolates
min – minor discrepancies
maj – major discrepancies
vmj – very major discrepancies

Essential Agreement (EA) occurs when there is agreement between the result of the reference method and that of VITEK 2 test card within plus or minus one serial two-fold dilution of the antibiotic. Evaluable results are those that are on scale for both the VITEK 2 test card and the reference method. Category Agreement (CA) occurs when the interpretation of the result of the reference method agrees exactly with the interpretation of the VITEK 2 test card.

Enzyme Groups Characterization:
Enzyme characterization was conducted for *Pseudomonas aeruginosa* and for *Enterobacteriaceae* to cover the majority of beta lactamase enzyme groups and other resistance markers noted in the FDA drug label. The performance of the VITEK 2 and the VITEK 2 Compact (automatic and manual dilution) with Ceftolozane/Tazobactam was evaluated using the characterized *Pseudomonas aeruginosa* and *Enterobacteriaceae* isolates.

***Pseudomonas aeruginosa*:**
Enzyme characterization was conducted for *Pseudomonas aeruginosa* isolates for the following ESBLs: chromosomal AmpC, and loss of OprD. Enzyme characterization was also performed for *Pseudomonas aeruginosa* isolates that produce serine carbapenemases [*K. pneumoniae* carbapenemase (KPC)] and metallo-beta lactamases.

During the additional testing, one Very Major Error was observed for *Pseudomonas aeruginosa* with a VMJ rate of 3.7% (1/27). This *P. aeruginosa* isolate lacked the OprD porin and contained OXA-101 enzyme which has been shown to confer

resistance to Ceftolozane/Tazobactam for *P. aeruginosa*. This VMJ was addressed by adding the following footnote in the labeling (Product Information Manual):

> "*One Pseudomonas aeruginosa isolate tested during the clinical evaluation lacked the OprD porin and contained the OXA-101 enzyme which has been reported as being resistant to Ceftolozane/Tazobactam and resulted in a Very Major Error for the VITEK® 2 AST-GN Ceftolozane/Tazobactam test*"

Pseudomonas isolates with MexXY and MexAB up-regulation enzymes were not evaluated as this information was not available at the time of testing. This was addressed by adding the following footnote in the labeling (Product Information Manual):

> "*Enzyme group characterization was not available for the following organisms at the time of comparative testing, and therefore the performance of the AST card with Ceftolozane/Tazobactam is unknown: Pseudomonas aeruginosa (up-regulation of MexXY and MexAB)"*.

Enterobacteriaceae (*ESBLs*):
Enzyme characterization was conducted for claimed *Enterobacteriaceae* isolates for the following ESBLs: TEM, SHV and CTX-M. However, information on *Enterobacteriaceae* isolates with OXA enzymes was not available at the time of testing and was not provided. This was addressed by adding the following footnote in the labeling (Product Information Manual):

> *"Enzyme group characterization was not available for the following organisms at the time of comparative testing, and therefore the performance of the AST card with Ceftolozane/Tazobactam is unknown: Enterobacteriaceae (OXA)*

***Enterobacteriaceae* (KPC and β-lactamases):**
Enzyme characterization was also conducted for claimed *Enterobacteriaceae* isolates that produce serine carbapenemases [*K. pneumoniae* carbapenemase (KPC)]. However, testing was not conducted against *Enterobacteriaceae* isolates that are known to produce serine metallo-beta lactamases. Therefore, the following footnote was added in the labeling (Product Information Manual):

> "*Ceftolozane/Tazobactam is not active against Enterobacteriaceae bacteria that produce metallo-beta lactamases"*.

Resistant Organisms:
A total of 141 resistant organisms were identified out of 1064 organisms tested (13.2%) in the combined challenge and clinical study for Ceftolozane/Tazobactam for the VITEK 2 with the automatic dilution. However, the following organisms had an insufficient number of resistant strains available during the comparative study: *Citrobacter koseri*, *Proteus vulgaris* and *Serratia liquefacians*. This was addressed by adding the following limitation in the package insert:

"The ability of the AST card to detect resistance with the following combination(s) is unknown because an insufficient number of resistant strains were available at the time of comparative testing. If such a strain is observed, it should be submitted to a reference laboratory for further testing.

- *Ceftolozane/Tazobactam: Citrobacter koseri, Proteus mirabilis, Proteus vulgaris, and Serratia Liquefacians*

Challenge Data

VITEK 2 Manual Dilution:

The challenge set of 223 isolates evaluated using the VITEK 2 and inoculated using the manual dilution method demonstrated an EA of 90.1%, a CA of 96.0 % and a minor discrepancy rate of 2.7 % (6/223), a major error discrepancy rate of 1.8% (2/109) and a very major error discrepancy rate of 0.9% (1/107). A total of 81 isolates were determined to have evaluable results. Of these isolates, 71 were within essential agreement (EA) for a percent EA of evaluable isolates of 87.7%.

The results are summarized in Table 4. The results were acceptable.

Table 4: Performance of Challenge Isolates, VITEK 2 Manual Dilution Method

	Tot	No. EA	EA %	Eval Tot	No. Eval EA	Eval EA %	No. CA	CA %	No. R	min	maj	vmj
Challenge	223	201	90.1	81	71	87.7	214	96.0	107	6	2	1

VITEK 2 COMPACT Manual Dilution:

The challenge set of 224 isolates was also evaluated using the VITEK 2 Compact and inoculated using the manual dilution method demonstrated an EA of 92.9%, a CA of 96.4% and a minor discrepancy rate of 2.7 % (6/224), a major error discrepancy rate of 1.8% (2/109). There were no very major errors. A total of 83 isolates were determined to have evaluable results. Of these isolates, 73 were within essential agreement (EA) for a percent EA of evaluable isolates of 88.0%. The results are summarized in Table 5. The results were acceptable.

Table 5: Performance of Challenge Isolates, VITEK 2 Compact, Manual Dilution Method

	Tot	No. EA	EA %	Eval Tot	No. Eval EA	Eval EA %	No. CA	CA %	No. R	min	maj	vmj
Challenge	224	208	92.9	83	73	88.0	216	96.4	107	6	2	0

Even though the EA of evaluable was low, the overall performance of the VITEK 2 (manual dilution) and the VITEK 2Compact (manual dilution) were considered acceptable based on the acceptable performance in overall EA, the reproducibility study, and QC (Table 2).

MIC Trends:

Using the combined clinical and challenge data for *Pseudomonas aeruginosa*, an analysis of trending was conducted. This trending calculation takes into account MIC values that are determined to be one or more doubling dilution lower or higher compared to the reference method irrespective whether the device MIC values are on-scale or not. The combined data for 189 results constitute the evaluable data for trend analysis which is presented in Table 6.

Table 6: Trending of Clinical and Challenge Isolate Results for the VITEK 2, Automatic Dilution

P. aeruginosa	**# isolates**	**≤1 dilution lower**	**Exact**	**≥1 dilution higher**
Clinical	141	8	75	58
Challenge	48	9	28	11
Combined Clinical and Challenge	189	17	103	69
		*8.99% 95% CI: (5.69% to 13.93)		*36.51% 95% CI: (29.98% to 43.58%)

*Difference: 27.51 95% CI: (19.33 to 35.32)

A higher MIC reading trend was observed in the overall performance of *Pseudomonas aeruginosa* compared to the CLSI broth microdilution reference method, which raises concerns for potential major errors. This trending and the potential for occurrence of major error(s) for Ceftolozane/Tazobactam when testing clinical and challenge isolate results with the VITEK 2 System, was addressed by adding the following footnote in the labeling (Product Information Manual):

"*VITEK 2 Ceftolozane/Tazobactam MIC values tended to be in exact agreement or at least one doubling dilution higher when testing P. aeruginosa compared to the reference broth micro-dilution*".

b. Matrix comparison:

Not Applicable

3. Clinical studies:

a. Clinical Sensitivity:

Not Applicable

b. Clinical specificity:

Not Applicable

c. Other clinical supportive data (when a. and b. are not applicable):

Not Applicable

4. Clinical cut-off**:**

Not Applicable

5. Expected values/Reference range:

Table 7: FDA Interpretive Criteria for Ceftolozane/Tazobactam

Organism	MIC (µg/mL)		
	S	**I**	**R**
Enterobacteriaceae	≤2/4	4/4	≥8/4
Pseudomonas aeruginosa	≤4/4	8/4	≥16/4

N. Proposed Labeling:

The labeling is sufficient and it satisfies the requirements of 21 CFR Part 809.10.

O. Conclusion:

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