510(k) SUBSTANTIAL EQUIVALENCE DETERMINATION
DECISION SUMMARY

A. 510(k) Number:

k131536

B. Purpose for Submission:

New Device

C. Measurand:

Calibration verification material (CVM) for IMMULITE® 2000 prostate specific antigen (PSA)

D. Type of Test:

Flurorescence innunoassay

E. Applicant:

Siemens Healthcare Diagnostics Inc.

F. Proprietary and Established Names:

IMMULITE® 2000 PSA Calibration Verification Material

G. Regulatory Information:

1. Regulation section:

   21 CFR§862.1660 – Quality Control Material (assayed and unassayed)

2. Classification:

   Class I

3. Product code:

   JJX, Single (Specified) Analyte Controls (Assayed and Unassayed)

4. Panel:

   Clinical Chemistry (75)

H. Intended Use:

1. Intended use(s):

   The IMMULITE® 2000 PSA Calibration Verification Material (CVM) is intended for monitoring system performance of the IMMULITE Immunoassay System for the quantitative measurement of PSA antigen.

2. Indication(s) for use:

   Same as Intended Use

3. Special conditions for use statement(s):

   Prescription use only

4. Special instrument requirements:

   IMMULITE® 2000 Systems

I. Device Description:

The CVM contains one set of four vials of 4 different concentration of PSA (LPTSCVM1 – 4), 3 mL each. LPTSCVM1 contains processed chicken serum/buffer matrix with preservative. LPTSCVM2, LPTSCVM3 and LPTSCVM4 contain low, intermediate and high levels of PSA respectively, in processed chicken serum/buffer matrix with preservative. The CVMs are supplied frozen in liquid form.

J. Substantial Equivalence Information:

1. Predicate device name(s) and 510(K) number(s):

   Access Hybritech p2PSA QC (k112603)

2. Comparison with predicate:

Similarities and Differences		
Item	Device **IMMULITE® 2000 PSA CVM**	Predicate **Access Hybritech p2PSA QC**
Intended use	IMMULITE® 2000 PSA Calibration Verification Material (CVM) is intended for monitoring system performance of the IMMULITE Immunoassay system for the quantitative measurement of	The Access Hybritech PSA QC are tri-level controls intended for monitoring system performance of immunoenzymatic procedures for the quantitative measurement of [-2]pro PSA

Similarities and Differences		
Item	Device **IMMULITE® 2000 PSA CVM**	Predicate **Access Hybritech p2PSA QC**
	PSA antigen.	isoform of Prostate Specific Antigen (PSA) using the Access Immunoassay Systems
Analyte	PSA	[-2]proPSA, isoform of PSA
Function	Quality control material	Same
Form	Liquid	Same
Traceability	Internal reference preparation	Same
Stability	Stable until the expiration date when stored frozen	Same
Storage condition	-20°C	-20°C or colder
Matrix	Buffered salts and processed (pH-treated) chicken serum	Buffered salts and bovine serum albumin
Use	Single use only	Not for single use

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

CEN 13640 Stability Testing of In Vitro Diagnostic Reagents
Guidance for Industry and FDA Staff – Assayed and Unassayed Quality Control Material

L. Test Principle:

Not applicable

M. Performance Characteristics (if/when applicable):

1. Analytical performance:

   a. Precision/Reproducibility:

   Not applicable

   b. Linearity/assay reportable range:

   Not applicable

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

   Traceability:

   The IMMULITE 2000 PSA assay and IMMULITE® PSA CVMs are traceable to WHO NIBSC 1st International Standard 96/670. The CVMs are manufactured using approved reference lot manufactured with qualified materials and measurement procedures.

Value Assignment:

The levels of IMMULITE® CVMs are value assigned using approved reference lot manufactured with qualified materials and measurement procedures. The assigned reference calibrators are prepared using PSA antigen stock and are traceable to WHO 1st International Standard 96/670. Each level of CVMs was tested for 9 runs, 3 replicates per run for a total of 27 replicates using 5 different kit lots on 6 instruments. The values are generated using curve generated by assigned reference calibrators. The average analyte recovered for each CVM level determines the value assigned to the Target Mean. The Guideline Range (95% confidence interval) for each CVM level was established based on the Target Mean and ± 2 Standard Deviation (SD).

The target range for each level of CVMs is shown in the following table:

Level	Catalog number	Target Mean (ng/mL)	SD (ng/mL)	Guideline Range (ng/mL)	
1	LPTSCVM1	0.00		≤ 0.085	
2	LPTSCVM2	1.44	0.08	1.28	1.60
3	LPTSCVM3	49.00	2.45	44.10	53.90
4	LPTSCVM4*	169	N/A	N/A	N/A
	90% LPTSCVM4 + 10% LPTSCVM1	152	7.5	137	167

** LPTCVM4 is used for dilution to ensure the target value for the dilution is within +10% of the top of the reportable range of the assay*

Value assignment is lot specific. For each lot of CVMs, quality control is performed by calculating the recovery of patient samples, spiked patient samples, normal male samples and controls using the assigned values. The controls must fall within their target range.

Stability:

The stability studies were conducted to validate shelf life claim for the IMMULITE® 2000 CVM.

For Real time stability study, three lots of the CVMs were tested for stability when stored at -20°C. Each calibrator was run in duplicate and the PSA concentration determined from reference calibrator curve. The reported testing periods for one lot were 182 days (6 months), and 365 days (12 months). The reported test periods for a second lot were 1 day, 15 days, 30 days, 60 days and 150 days. The reported test periods for the third lot were 1 day, 15 days, 30 days, 60 days and 150 days. The real-time stability study is ongoing.

For accelerated stability study, three lots of the CMVs were stored at room temperature (RT) for 7 days, 37°C for 3 days and with 3 times Freeze/Thaw (F/T). Each calibrator was run in duplicate. The results are directly compared to the samples stored at 2-8°C.

The stability study shows acceptable results up to 60 days when stored frozen at -20°C prior

to opening. Each CVM is for single use only.

Matrix effect:

To investigate potential matrix effects from using processed (pH-treated) Chicken Serum, spiking recovery of PSA was determined. A stock solution of calibrator grade PSA was used to prepare the spiking solutions for studying matrix effects. Three spiking solutions were prepared from the stock solution. Each spiking solutions was spiked into the matrix (chicken serum) and patient sample (1 part spiking solution to 19 parts matrix or sample) to generate two sets of spiked samples (concentrations at 4.86 ng/mL, 18.97 ng/mL and 37.50 ng/mL). All spiked samples were run in assay on the IMMUNLITE 2000 platform. The % recovery of PSA in the spiked matrix was compared to the % recovery in the spiked patient sample. Each of the tested samples met the acceptance criteria: the grand mean of the recoveries must be within 100% ±10% of the expected value with no mean recovery being more than 100% ± 15%. The results from the spiking recovery study have shown no matrix effects.

d. Detection limit:

Not applicable

e. Analytical specificity:

Not applicable

f. Assay cut-off:

Not applicable

2. Comparison studies:

a. Method comparison with predicate device:

Not applicable

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:

See above expected target values for each PSA concentration. The expected values are provided in the IMMULITE® 2000 PSA CVM lot-specific value sheet. Each laboratory should establish their limits for acceptability based on methodology, clinical significance and medical decision levels of the test analyte. The representative total precision, tabulated in the respective assay instructions for use may be considered as one factor when establishing local, acceptable range.

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.