



Siemens Medical Solutions USA, Inc.
% Tabitha Estes
Regulatory Affairs Specialist
810 Innovation Drive
KNOXVILLE TN 37932

May 12, 2021

Re: K210557
Trade/Device Name: Symbia VA10A Family
Regulation Number: 21 CFR 892.1200
Regulation Name: Emission computed tomography system
Regulatory Class: Class II
Product Code: KPS, JAK
Dated: February 24, 2021
Received: February 25, 2021

Dear Tabitha Estes:

We have reviewed your Section 510(k) premarket notification of intent to market the device referenced above and have determined the device is substantially equivalent (for the indications for use stated in the enclosure) to legally marketed predicate devices marketed in interstate commerce prior to May 28, 1976, the enactment date of the Medical Device Amendments, or to devices that have been reclassified in accordance with the provisions of the Federal Food, Drug, and Cosmetic Act (Act) that do not require approval of a premarket approval application (PMA). You may, therefore, market the device, subject to the general controls provisions of the Act. Although this letter refers to your product as a device, please be aware that some cleared products may instead be combination products. The 510(k) Premarket Notification Database located at <https://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfpmn/pmn.cfm> identifies combination product submissions. The general controls provisions of the Act include requirements for annual registration, listing of devices, good manufacturing practice, labeling, and prohibitions against misbranding and adulteration. Please note: CDRH does not evaluate information related to contract liability warranties. We remind you, however, that device labeling must be truthful and not misleading.

If your device is classified (see above) into either class II (Special Controls) or class III (PMA), it may be subject to additional controls. Existing major regulations affecting your device can be found in the Code of Federal Regulations, Title 21, Parts 800 to 898. In addition, FDA may publish further announcements concerning your device in the Federal Register.

Please be advised that FDA's issuance of a substantial equivalence determination does not mean that FDA has made a determination that your device complies with other requirements of the Act or any Federal statutes and regulations administered by other Federal agencies. You must comply with all the Act's requirements, including, but not limited to: registration and listing (21 CFR Part 807); labeling (21 CFR Part 801); medical device reporting (reporting of medical device-related adverse events) (21 CFR 803) for devices or postmarketing safety reporting (21 CFR 4, Subpart B) for combination products (see

<https://www.fda.gov/combination-products/guidance-regulatory-information/postmarketing-safety-reporting-combination-products>); good manufacturing practice requirements as set forth in the quality systems (QS) regulation (21 CFR Part 820) for devices or current good manufacturing practices (21 CFR 4, Subpart A) for combination products; and, if applicable, the electronic product radiation control provisions (Sections 531-542 of the Act); 21 CFR 1000-1050.

Also, please note the regulation entitled, "Misbranding by reference to premarket notification" (21 CFR Part 807.97). For questions regarding the reporting of adverse events under the MDR regulation (21 CFR Part 803), please go to <https://www.fda.gov/medical-devices/medical-device-safety/medical-device-reporting-mdr-how-report-medical-device-problems>.

For comprehensive regulatory information about medical devices and radiation-emitting products, including information about labeling regulations, please see Device Advice (<https://www.fda.gov/medical-devices/device-advice-comprehensive-regulatory-assistance>) and CDRH Learn (<https://www.fda.gov/training-and-continuing-education/cdrh-learn>). Additionally, you may contact the Division of Industry and Consumer Education (DICE) to ask a question about a specific regulatory topic. See the DICE website (<https://www.fda.gov/medical-devices/device-advice-comprehensive-regulatory-assistance/contact-us-division-industry-and-consumer-education-dice>) for more information or contact DICE by email (DICE@fda.hhs.gov) or phone (1-800-638-2041 or 301-796-7100).

Sincerely,

For

Thalia T. Mills, Ph.D.
Director
Division of Radiological Health
OHT7: Office of In Vitro Diagnostics
and Radiological Health
Office of Product Evaluation and Quality
Center for Devices and Radiological Health

Enclosure

Indications for Use

510(k) Number (if known)

K210557

Device Name

Symbia VA10A Family

Indications for Use (Describe)

The Siemens Symbia VA10A Family is intended for use by appropriately trained health care professionals to aid in detecting, localizing, diagnosing, staging and restaging of lesions, tumors, disease and organ function for the evaluation of diseases and disorders such as, but not limited to, cardiovascular disease, neurological disorders and cancer. The images produced by the system can also be used by the physician to aid in radiotherapy treatment planning or additional uses.

SPECT: The SPECT component is intended to detect or image the distribution of radionuclides in the body or organ (physiology), using the following techniques: planar imaging, whole body imaging, and tomographic imaging for isotopes with energies up to 588 keV.

CT: The CT component is intended to produce cross-sectional images of the body by computer reconstruction of x-ray transmission data (anatomy) from either the same axial plane taken at different angles or spiral planes taken at different angles.

SPECT+CT: The SPECT and CT components used together acquire SPECT/CT images. The SPECT images can be corrected for attenuation with the CT images, and can be combined (image registration) to merge the patient's physiological (SPECT) and anatomical (CT) images.

Software: The SPECTsyngo software is an acquisition, display and analysis package intended to aid the clinician in the assessment and quantification of pathologies in images produced from SPECT, PET, CT, and other imaging modalities.

Type of Use (Select one or both, as applicable)

Prescription Use (Part 21 CFR 801 Subpart D)

Over-The-Counter Use (21 CFR 801 Subpart C)

CONTINUE ON A SEPARATE PAGE IF NEEDED.

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Section 5

K210557

510(k) Summary

as required by 21 CFR Part 807.87(h)

Identification of the Submitter

Submitter: Tabitha Estes
Regulatory Affairs Specialist
Siemens Molecular Solutions USA, Inc.
810 Innovation Drive
Knoxville, TN 37932

Manufacturer: Siemens Medical Solutions USA, Inc.
Molecular Imaging
2501 North Barrington Road
Hoffman Estates, IL 60192

Telephone Number: (865) 804 - 4553

Date of Submission: February 24th, 2021

Identification of the product

Device Proprietary Name: Symbia VA10A Family

Common Name: Single-Photon Emission Computed Tomography (SPECT)
System
Computed Tomography (CT) System

Classification Name: Emission Computed Tomography System per 21 CFR
892.1200
Computed Tomography X-Ray System per 21 CFR
892.1750

Product Code: KPS and JAK

Classification Panel: Radiology

Device Class: Class II

Marketed Devices to which Equivalence is claimed

Predicate Device:

Device Proprietary Name: Symbia Intevo Bold

Common Name: Single-Photon Emission Computed Tomography (SPECT) System
Computed Tomography (CT) System

Classification Name: Emission Computed Tomography System per 21 CFR 892.1200
Computed Tomography X-Ray System per 21 CFR 892.1750

Manufacturer: Siemens Medical Solutions USA, Inc.

Product Code: KPS and JAK

Classification Panel: Radiology

Device Class: Class II

510(k) Number: K200474

Reference Devices:

Device Proprietary Name: Scan&GO, SOMATOM Go.Platform

Common Name: Computed Tomography X-ray system

Classification Name: Computed Tomography X-ray system per 21 CFR 892.1750
Picture Archiving and Communications System per 21 CFR 892.2050

Manufacturer: Siemens Healthcare GmbH

Product Code: LLZ, JAK

Classification Panel: Radiology

Device Class: Class II

510(k) Number: K200524

Reference Devices:

Device Proprietary Name : MI View&Go VA10A

Common Name: Image Processing Software

Classification Name: Picture Archiving and Communications System per 21 CFR
892.2050

Manufacturer: Siemens Medical Solution, USA, Inc.

Product Code: LLZ

Classification Panel: Radiology

Device Class: Class II

510(k) Number: K201202

Device Description:

The Siemens Symbia VA10A Family consists of Single-Photon Emission Computed Tomography (SPECT) scanner and integrated hybrid x-ray Computed Tomography (CT) and SPECT scanner.

The SPECT subsystem images and measures the distribution of radiopharmaceuticals in humans for the purpose of determining various metabolic (molecular) and physiologic functions within the human body and integrates CT's anatomical detail for precise reference of the location of the metabolic activity.

The CT component produces cross-sectional images of the body by computer reconstruction of x-ray transmission data from either the same axial plane taken at different angles or spiral planes taken at different angles.

The system can be used as an integrated SPECT and CT modality while also enabling independent functionality of SPECT and CT as stand-alone diagnostic imaging devices.

Siemens Symbia VA10A Family maintains the same intended use and indications for use as the commercially available Intevo Bold System of Symbia 6.7 (K200474).

Symbia VA10A Family introduces hybrid modality imaging systems comprised of two separate but integrated components: a gamma camera (SPECT) and a CT. The gamma camera is based on hardware and software features that generate nuclear medicine images based on the uptake of radioisotope tracers in a patient's body. The CT system (spiral CT) is designed to produce cross-sectional images of the body by computer reconstruction of x-ray transmission data from either the same axial plane taken at different angles or spiral planes taken at different angles.

The combination of SPECT and CT in a single device has several benefits. The SPECT subsystem images biochemical function while the CT subsystem images anatomy. The combination enables scans that not only indicate function, e.g. how active a tumor is, but precise localization, e.g. the precise location of that tumor in the body.

In addition, CT can be used to correct for the attenuation in SPECT acquisitions. Attenuation in SPECT is an unwanted side effect of the gamma rays scattering and being absorbed by tissue. This can lead to errors in the final image. The CT directly measures attenuation and can be used to create a 3D attenuation map of the patient which can be used to correct the SPECT images. The SPECT-CT scanner can be used to image and track how much dose was delivered to both the target and the surrounding tissue.

The systems consist of display equipment, data storage devices, patient and equipment supports and component parts and accessories.

The Symbia VA10A project will integrate the aCTivate platform within this release.

“Symbia VA10A” is the product name for a new line of Siemens MI SPECT-CT products. The Symbia VA10A Family devices are based on the Symbia Intevo Series. The difference lies in the new name and updated CT. The Intended Purpose, Indications for Use and fundamental scientific technology remains unchanged. The changes included in this submission do not affect the safety and effectiveness of the device.

Proposed New Features

- New CT Subsystem with the integration of SOMATOM go.Now, go.Up and go.All
- Lowest room dose producing CT scans limited to 50mAs and 110kV with Tin Filter
- Post-processing applications with MI View&Go VA10A
- Improved Workflow
- Improved Cardiac and Neuro Studies
- Improved calibrations
- Ultra-low dose CT scan or AC correction with Tin Filter
- Small room supported configuration
- WB SPECT Enhanced Package
- Ease of Use
- Improved Power Architecture

At a high level, the Symbia VA10A series (subject) and Intevo Bold (predicate) devices are based on the following same technological elements:

- The go.Now is a 16 data acquisition slice CT; similar to the Symbia Intevo 16 and Symbia Intevo Bold
- Scanner Principle- Whole body X-Ray Computed Tomography Scanner
- System Acquisition – Continuously rotating tube detector system
- Iterative Reconstruction – Support of various iterative reconstruction methods
- Workplaces – Support of workplaces that include reconstruction and image evaluation software

The following technological differences are introduced with the CT for the Symbia VA10A series (subject device) compared to Symbia Intevo Bold (predicate) device:

- The go.Up and go.All have 32 acquisition slice CT
- Software version SOMARIS/X syngo CT VA30A
- CT Detector: the go.Now has a 16-slice x 0.7mm detector, the go.Up and go.All has a 32-slice x 0.7mm detector,
- Chronon X-ray Tube (Symbia VA10A Q3 and X3)
- Athlon X-ray Tube (Symbia VA10A X7)
- 32 kW maximum power Generator (Symbia VA10A Q3 and X3)
- 75 kW maximum power Generator (Symbia VA10A X7)
- Selective photon shield: Tin Filter Technology
- Modified gantry that supports the housing of the computers

Intended Use:

The Symbia VA10A Family device is a radiological imaging system that combines a single photon emission computed tomography (SPECT) camera system for nuclear medicine images, and a computed tomography (CT) camera system for x-ray images.

The SPECT system is intended to detect the location and distribution of gamma ray radionuclides in the body and produce cross-sectional images through computer reconstruction of the data, and the CT system is intended to produce cross-sectional images of the body by computer reconstruction of x-ray transmission data from the same axial plane taken at different angles. The nuclear medicine images and the x-ray images may be registered and displayed in a fused format (overlaid in the same orientation) for the anatomical localization of the nuclear medicine data (that is, distribution of radiopharmaceuticals). The SPECT and CT portions of the system may be used independently or in combination, and may include signal analysis and display equipment, patient and equipment support, radionuclide anatomical markers, component parts, and accessories. The SPECT and CT images may be transferred to other systems for radiation therapy planning or additional uses.

Indications for Use:

The Siemens Symbia VA10A Family is intended for use by appropriately trained health care professionals to aid in detecting, localizing, diagnosing, staging and restaging of lesions, tumors, disease and organ function for the evaluation of diseases and disorders such as, but not limited to, cardiovascular disease, neurological disorders and cancer. The images produced by the system can also be used by the physician to aid in radiotherapy treatment planning or additional uses.

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SPECT+CT: The SPECT and CT components used together acquire SPECT/CT images. The SPECT images can be corrected for attenuation with the CT images, and can be combined (image registration) to merge the patient's physiological (SPECT) and anatomical (CT) images.

Software: The SPECTsyngo software is an acquisition, display and analysis package intended to aid the clinician in the assessment and quantification of pathologies in images produced from SPECT, PET, CT, and other imaging modalities.

There are no known contraindications.

With the introduction of new software features and CT gantries (K200524), the Intended Use and Indications for Use remain the same as compared to the predicate device Symbia Intevo Bold (K200474).

Technological Characteristics:

Performance Testing:

Performance testing for the CT subsystem was included in the original premarket notification for the CT subsystems (K200524) and there have been no changes affecting this testing.

Each CT subsystem is tested and passes the Applicable Performance

Standards prior to shipment:

- 21 CFR 1020.30 (a) Applicability
- 21 CFR 1020.30 (b)(36)(iii)-(v) Technique Factors
- 21 CFR 1020.30 (b)(58)-(62) CT, Scan, Scan Time, Tomogram, Dose

- 21 CFR 1020.30 (h)(3)(vi)-(viii) Information to be provided for users
- 21 CFR 1020.33 Computed Tomography (CT) equipment
- 21 CFR 1040.10 Laser Products
- 21 CFR 1040.11 Specific purpose laser products

Symbia VA10A Family systems are designed in accordance with the 60601-1 series including all relevant collateral standards general (IEC 60601-1, 1-2, 1-3, etc.) and specific (IEC 60601-2-44). Performance testing is conducted according to NEMA NU-1. All Performance testing met the predetermined acceptance values.

Detector Specifications		
Intrinsic spatial resolution - Tc99m	SPECT	3/8"
FWHM in CFOV	SPECT	≤3.8 mm
FWHM in UFOV	SPECT	≤3.9 mm
FWTM in CFOV	SPECT	≤7.5 mm
FWTM in UFOV	SPECT	≤7.7 mm
Intrinsic spatial linearity - Tc99m	SPECT	
Differential in CFOV	SPECT	≤0.2 mm
Differential in UFOV	SPECT	≤0.2 mm
Absolute in CFOV	SPECT	≤0.4 mm
Absolute in UFOV	SPECT	≤0.7 mm
Intrinsic energy resolution	SPECT	
FWHM in CFOV	SPECT	≤9.9%
Intrinsic flood field uniformity (uncorrected) - Tc99m	SPECT	
Differential in CFOV	SPECT	≤2.5%
Differential in UFOV	SPECT	≤2.7%
Integral in CFOV	SPECT	≤2.9%
Integral in UFOV	SPECT	≤3.7%

Existing NEMA detector and collimator performance specifications do not change between the commercially available Symbia Bold systems and proposed Symbia VA10A systems. There are no changes in the system design that could impact the SPECT performance specifications, and the commercially available specifications still apply.

Bench testing performed on the CT subsystem is conducted in accordance with IEC 60601-2-44 and in accordance with US regulations including 21 CFR1020.33, Computed Tomography (CT) equipment. This is unchanged from the commercially available SOMATOM go CT systems (K200524).

Risk analyses performed at Siemens Medical Solutions USA, Inc. are in compliance with the requirements of:

- IEC/ISO 14971 Medical Devices – Application of Risk Management to Medical Devices
- IEC 62304 Medical device software – Software life-cycle processes

There is no significant difference in the risks imposed by this system and the risks associated with the predicate devices. The product Risk Management Team has reviewed and verified that all risks identified in the Symbia VA10A Product Risk Analysis has been adequately mitigated and the individual and overall residual risks are reduced as far as possible.

Verification and validation of Siemens software is performed in accordance with documented procedures, test plans and specifications. Traceability of the requirements specified in the requirement specifications and functional specifications is ensured during component integration, software verification, and system testing.

System and System Integration testing (validation) was carried out for all features of the project, and all planned test cases were executed.

Verification and Validation is performed to:

- ensure the functionality described in the specifications are met,
- ensure the quality in the planning documentation is adhered to,
- ensure mitigations required by risk analysis are implemented, and appropriate
- identify additional issues that may be related to patient / operator safety, or effectiveness
- assure that the specifications are appropriate to fulfill the intended use of the system.

Safety and Effectiveness:

The device labeling contains instructions for use and any necessary cautions and warnings to provide for safe and effective use of the device.

Risk Management is ensured via a risk analysis in compliance with ISO 14971 to identify and provide mitigation to potential hazards beginning early in the design cycle and continuing throughout the development of the product.

Cybersecurity information in accordance with FDA Guidance documents issued on October 2, 2014 has been provided. The Symbia VA10A Family systems software has specific cybersecurity controls to prevent unauthorized access, modifications, misuse or denial of use.

Additionally, controls are enabled to prevent the unauthorized use of information that is stored, accessed or transferred between the Symbia VA10A family systems and external devices.

Siemens Medical Solutions, USA Inc. adheres to recognized and established industry standards such as IEC 60601-1 series and 21 CFR 1020.30 and 21 CFR 1020.33 to minimize electrical, mechanical and radiation hazards.

Symbia VA10A Family conforms to applicable FDA recognized and international IEC, ISO and NEMA standards with regards to performance and safety as required by the respective SPECT FDA Guidance Documents. SPECT detector and CT performance is conducted according to NEMA NU1, and the performance does not change from the predicate device.

Verification and validation of Siemens systems is performed in accordance with documented procedures, design and code reviews, test plans and specifications. Traceability of the requirements specified in the requirement specifications and functional specifications is ensured during component integration, software validation and system testing.

Statement regarding Substantial Equivalence:

Symbia VA10A Family systems are based on the commercially available Symbia Intevo Bold and have the same intended use as well as utilizes the same fundamental scientific technology as the predicate device. The software updates are based on predicate device features and commercially available software applications which pose no new issues of safety and / or efficacy. Siemens considers the Symbia VA10A Series to be as safe and effective as the commercially available predicate device with substantially equivalent performance.