510(k) SUMMARY AND EFFECTIVENESS

1. DEVICE NAME:
   Generic Name: Magnetic Resonance Diagnostic Device
   Model Name: MRT-1504/A5
   Trade/Proprietary Name: Vantage Titan HSR

2. ESTABLISHMENT REGISTRATION: 2020563

3. U.S. AGENT INFORMATION:
   U.S. Agent Name: Paul Biggins
   (714) 730-5000
   Establishment Name and Address: Toshiba America Medical Systems, Inc.
   2441 Michelle Drive
   Tustin, Ca. 92780

4. MANUFACTURING SITE:
   Toshiba Medical Systems Corporation
   1385 Shimoishigami
   Otawara-shi, Tochigi 324-8550
   Japan

5. DATE OF SUBMISSION: November 14, 2011

6. DEVICE DESCRIPTION:
The Vantage Titan HSR (Model MRT-1504/A5) is a 1.5 Tesla Magnetic Resonance Imaging (MRI) System. The Vantage Titan HSR uses the same magnet as the existing Vantage Titan (K080038). It includes the Toshiba Planissimo™ technology (scan noise reduction technology). The design of the gradient coil and the WB coil of the Vantage Titan HSR provides the maximum field of view of 55 x 55 x 55 cm.

7. SUMMARY OF MAJOR HARDWARE CHANGES
   a. New Gradient amplifier
   b. New Gradient coil
   c. Wireless gating unit is added (optional)
8. SUMMARY OF MAJOR SOFTWARE CHANGES
   a. New Software platform
   b. Modified the data base for distribution correction and dB/dt calculation for new gradient coil.

9. SAFETY PARAMETERS

<table>
<thead>
<tr>
<th>Item</th>
<th>New Vantage Titan HSR (Subject device)</th>
<th>EXCELART Vantage Titan, K080038 (Predicate Device)</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Static field strength</td>
<td>1.5T</td>
<td>1.5T</td>
<td>Same</td>
</tr>
<tr>
<td>Peak and A-weighted acoustic noise</td>
<td>113.0 dB (A-weighted) 121.6 dB (peak)</td>
<td>105.7 dB (A-weighted) 115.7dB (peak)</td>
<td>Same</td>
</tr>
<tr>
<td>Operational Modes</td>
<td>1st Operating Mode</td>
<td>1st Operating Mode</td>
<td>Same</td>
</tr>
<tr>
<td>i. Safety parameter display</td>
<td>SAR dB/dt</td>
<td>SAR dB/dt</td>
<td>Same</td>
</tr>
<tr>
<td>ii. Operating mode access requirements</td>
<td>Allows screen access to 1st level operating mode</td>
<td>Allows screen access to 1st level operating mode</td>
<td>Same</td>
</tr>
<tr>
<td>Maximum SAR</td>
<td>4W/kg for whole body (1st operating mode specified in IEC 60601-2-33(2002))</td>
<td>4W/kg for whole body (1st operating mode specified in IEC 60601-2-33(2002))</td>
<td>Same</td>
</tr>
<tr>
<td>Gradient coil dimensions</td>
<td>760 x 893 x 1405 (inner diameter x outer diameter x length, unit = mm)</td>
<td>760 x 893 x 1405 (inner diameter x outer diameter x length, unit = mm)</td>
<td>Same</td>
</tr>
<tr>
<td>Potential emergency condition and means provided for shutdown</td>
<td>Shut down by Emergency Ramp Down Unit for collision hazard for ferromagnetic objects</td>
<td>Shut down by Emergency Ramp Down Unit for collision hazard for ferromagnetic objects</td>
<td>Same</td>
</tr>
<tr>
<td>Biocompatibility of materials</td>
<td>Confirmed for electrodes and accessories for wireless gating</td>
<td>Not applicable</td>
<td></td>
</tr>
</tbody>
</table>
10. IMAGING PERFORMANCE PARAMETERS

No change from the previous predicate submission (K080038).

11. INTENDED USE

The MRI system is indicated for use as a diagnostic imaging modality that produces cross-sectional transaxial, coronal, sagittal, and oblique images that display anatomic structures of the head or body. In addition, this system supports non-contrast MRA.

MRI (magnetic resonance imaging) images correspond to the spatial distribution of protons (hydrogen nuclei) that exhibit nuclear magnetic resonance (NMR). The NMR properties of body tissues and fluids are:

- Proton density (PD) (also called hydrogen density)
- Spin-lattice relaxation time (T1)
- Spin-spin relaxation time (T2)
- Flow dynamics
- Chemical shift

Contrast agent use is restricted to the approved drug indications. When interpreted by a trained physician, these images yield information that can be useful in diagnosis.

12. DESIGN CHANGE

The Vantage Titan HSR MRI System is comparable to the existing 1.5T Vantage Titan MRI System (K080038), with the following modifications.

a. Maximum gradient slew rate has been changed.
b. Power requirements have been changed.
c. CPU platform has been changed.

13. SUMMARY OF DESIGN CONTROL ACTIVITIES

PS Risk List for software and hardware of changing unit have been completed and are attached. The test methods used are the same as those submitted in the previously cleared submissions (K0800338). A declaration of conformity with design controls is included in this submission.

14. TRUTHFUL AND ACCURACY CERTIFICATION

A certification of the truthfulness and accuracy of the Vantage Titan HSR described in this submission is provided in this submission.
15. SUBSTANTIAL EQUIVALENCE

Toshiba Medical Systems Corporation believes that the Vantage Titan HSR (model MRT-1504/A5) Magnetic Resonance Imaging (MRI) System is substantially equivalent to the previously cleared predicate devices referenced in this submission.

Testing was done in accordance with applicable recognized consensus standards as listed below. Additionally, human volunteer studies (in Japan) were conducted to verify imaging performance.

List of Applicable Standards

- IEC60601-1-1:2000
- IEC60601-1-6:2004
- IEC60825-1:2007
- IEC60950-1:2001
- IEC62304:2006
- IEC62366:2007
- NEMA MS-1:2008
- NEMA MS-2:2003
- NEMA MS-3:2008
- NEMA MS-4:2006
- NEMA MS-5:2003
Toshiba Medical Systems Corporation
Mr. Paul Biggins
Director Regulatory Affairs/U.S. Agent
% Toshiba America Medical Systems, Inc.
2441 Michelle Drive
TUSTIN CA 92780

Re: K112003
Trade/Device Name: MRT-1504/A5, Vantage Titan HSR
Regulation Number: 21 CFR 892.1000
Regulation Name: Magnetic resonance diagnostic device
Regulatory Class: II
Product Code: LNH
Dated: November 14, 2011
Received: November 15, 2011

Dear Mr. Biggins:

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. 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.

If your device is classified (see above) into class II (Special Controls), it may be subject to such additional controls. Existing major regulations affecting your device can be found in Title 21, Code of Federal Regulations (CFR), Parts 800 to 895. 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 Parts 801 and 809); medical device reporting (reporting of
medical device-related adverse events) (21 CFR 803); and good manufacturing practice requirements as set forth in the quality systems (QS) regulation (21 CFR Part 820). This letter will allow you to begin marketing your device as described in your Section 510(k) premarket notification. The FDA finding of substantial equivalence of your device to a legally marketed predicate device results in a classification for your device and thus, permits your device to proceed to the market.

If you desire specific advice for your device on our labeling regulation (21 CFR Parts 801 and 809), please contact the Office of In Vitro Diagnostic Device Evaluation and Safety at (301) 796-5450. 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 http://www.fda.gov/MedicalDevices/Safety/ReportaProblem/default.htm for the CDRH’s Office of Surveillance and Biometrics/Division of Postmarket Surveillance.

You may obtain other general information on your responsibilities under the Act from the Division of Small Manufacturers, International and Consumer Assistance at its toll-free number (800) 638-2041 or (301) 796-7100 or at its Internet address http://www.fda.gov/cdrh/industry/support/index.html.

Sincerely Yours,

[Signature]

Mary S. Pastel, Sc.D.
Director
Division of Radiological Devices
Office of In Vitro Diagnostic Device Evaluation and Safety
Center for Devices and Radiological Health

Enclosure
Indications for Use

510(k) Number (if known): K112003

Device Name: MRT-1504/A5, Vantage Titan HSR

Indications for Use:

The MRI system is indicated for use as a diagnostic imaging modality that produces cross-sectional transaxial, coronal, sagittal, and oblique images that display anatomic structures of the head or body. In addition, this system supports non-contrast MRA.

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Contrast agent use is restricted to the approved drug indications. When interpreted by a trained physician, these images yield information that can be useful in diagnosis.

Prescription Use **X** AND/OR Over-The-Counter Use 
(Part 21 CFR 801 Subpart D) (21 CFR 807 Subpart C)

(Please do not write below this line—continue on another page if needed)

Concurrence of CDRH, Office of In Vitro Diagnostic Devices (OIVD)

[Signature]

(Division Sign-Off)
Division of Radiological Devices
Office of In Vitro Diagnostic Device Evaluation and Safety

510(k) Number 12003