

K06 1950

AUG 18 2006

## **Section 2**

### **510(k) Summary of Safety and Effectiveness**

## Submitter Information

Submitter: Hitachi Medical Systems America, Inc.  
1959 Summit Commerce Park  
Twinsburg, Ohio 44080-2371  
ph: (330) 425-1313  
fax: (330) 425-1410

Contact: Douglas J. Thistlethwaite

Date: July 5, 2006

## Device Name

Classification Name: Coil, magnetic resonance, specialty

Classification Number: 90MOS

Trade/Proprietary Name: HHF1™ Echelon™ Multi-purpose Coil

Predicate Device(s): T/R Body coil cleared in HHF1 Echelon MRI System (Cf. K052172)

## Device Intended Use

The MR system is an imaging device and is intended to provide the physician with physiological and clinical information, obtained non-invasively and without the use of ionizing radiation. The general-purpose coil is a receive-only device that detects the MR signal used to produce transverse, coronal, sagittal, oblique, and curved cross-sectional images that display the internal structure of the body. The images produced by the MR system reflect the spatial distribution of protons (hydrogen nuclei) exhibiting magnetic resonance. When interpreted by a trained physician, these images provide information that can be useful in diagnosis determination.

The indications for use are as follows:

*Magnetic resonance imaging (MRI) and magnetic resonance angiography (MRA) of the musculoskeletal structures, soft tissue and vascular structures in various anatomic regions.*

# Device Description

## Function

The HHF Echelon Multi-purpose Coil (hereby referred to as GP coil) is a receive only RF phased array coil, used for obtaining diagnostic images of the abdominal region, in an open Magnetic Resonance Imaging (MRI) system.

## Scientific Concepts

Magnetic Resonance Imaging (MRI) is based on the fact that certain atomic nuclei have electromagnetic properties that cause them to act as small spinning bar magnets. The most ubiquitous of these nuclei is hydrogen, which makes it the primary nuclei currently used in magnetic resonance imaging. When placed in a static magnetic field, these nuclei assume a net orientation or alignment with the magnetic field, referred to as a net magnetization vector. The introduction of a short burst of radiofrequency (RF) excitation of a wavelength specific to the magnetic field strength and to the atomic nuclei under consideration can cause a re-orientation of the net magnetization vector. When the RF excitation is removed, the protons relax and return to their original vector. The rate of relaxation is exponential and varies with the character of the proton and its adjacent molecular environment. This re-orientation process is characterized by two exponential relaxation times, called T1 and T2.

A RF emission or echo that can be measured accompanies these relaxation events. The receive coil detects these emissions which are used to develop a representation of the relaxation events in a three dimensional matrix. Spatial localization is encoded into the echoes by varying the RF excitation, applying appropriate magnetic field gradients in the x, y, and z directions, and changing the direction and strength of these gradients. Images depicting the spatial distribution of the NMR characteristics can be reconstructed by using image processing techniques similar to those used in computed tomography.

## Physical and Performance Characteristics

The General-purpose coil consists of two independent parts A and B. The two parts can be used individually or together. The main body of each coil is housed in a flexible structure to contour to the outline of the body. The coil consists of a single element. The signal output of each part is independently processed by the system to enhance performance.

## Device Technological Characteristics

The technological characteristics of this device are similar to the predicate device.

## Conclusions

It is the opinion of Hitachi Medical Systems America that the HHF1™ Echelon™ Multi-purpose Coil is substantially equivalent to the T/R Body coil cleared in HHF1 Echelon MRI System (Cf. K052172). The technological characteristics and intended use are identical to the Predicate Device.



DEPARTMENT OF HEALTH & HUMAN SERVICES

Food and Drug Administration  
9200 Corporate Blvd.  
Rockville MD 20850

AUG 18 2006

Mr. Douglas Thistlewaite  
Manager of Regulatory Affairs  
Hitachi Medical Systems America  
1959 Summit Commerce Park  
TWINSBURG OH 44087-2371

Re: K061950

Trade/Device Name: HHF1 Echelon Multi-purpose Coil  
Regulation Number: 21 CFR 892.1000  
Regulation Name: Magnetic resonance diagnostic device  
Regulatory Class: II  
Product Code: MOS  
Dated: July 5, 2006  
Received: July 10, 2006

Dear Mr. Thistlewaite:

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 either class II (Special Controls) or class III (Premarket Approval), it may be subject to such 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.



*Protecting and Promoting Public Health*

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); good manufacturing practice requirements as set forth in the quality systems (QS) regulation (21 CFR Part 820); and if applicable, the electronic product radiation control provisions (Sections 531-542 of the Act); 21 CFR 1000-1050.

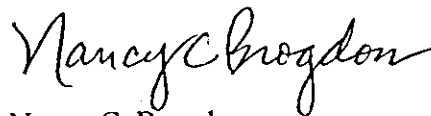
This letter will allow you to begin marketing your device as described in your Section 510(k) premarket notification. The FDA finding of substantial equivalence of your device to a legally marketed predicate device results in a classification for your device and thus, permits your device to proceed to the market.

If you desire specific advice for your device on our labeling regulation (21 CFR Part 801), please contact the Office of Compliance at one of the following numbers, based on the regulation number at the top of this letter:

|                |                                  |              |
|----------------|----------------------------------|--------------|
| 21 CFR 876.xxx | (Gastroenterology/Renal/Urology) | 240-276-0115 |
| 21 CFR 884.xxx | (Obstetrics/Gynecology)          | 240-276-0115 |
| 21 CFR 894.xxx | (Radiology)                      | 240-276-0120 |
| Other          |                                  | 240-276-0100 |

Also, please note the regulation entitled, "Misbranding by reference to premarket notification" (21CFR Part 807.97). 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 (240) 276-3150 or at its Internet address <http://www.fda.gov/cdrh/industry/support/index.html>.

Sincerely yours,



Nancy C. Brogdon  
Director, Division of Reproductive,  
Abdominal, and Radiological Devices  
Office of Device Evaluation  
Center for Devices and Radiological Health

Enclosure

510(k) Number (if known):       K061950      

Device Name:       HHF1 Echelon Multi-purpose Coil      

Indications for Use:

Magnetic resonance imaging (MRI) and magnetic resonance angiography (MRA) of the musculoskeletal structures, soft tissue and vascular structures in various anatomic regions.

Prescription Use       X        
(Part 21 CFR 801 Subpart D)

AND/OR

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

(PLEASE DO NOT WRITE BELOW THIS LINE - CONTINUE ON ANOTHER PAGE IF NEEDED)

Concurrence of CDRH, Office of Device Evaluation (ODE)

      Nancy C Brogdon        
(Division Sign-Off)  
Division of Reproductive, Abdominal,  
and Radiological Devices  
510(k) Number       K061950