DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service

Food and Drug Administration
10903 New Hampshire Avenue
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Silver Spring, MD 20993-0002

CareRay Digital Medical System Co., Ltd.
% Ms. Yuling Ding
Manager
A2-201/B3-501, Biobay, 218 Xinghu Street, SuZhou Industrial Park
SunZhou, Jiangsu 215123
CHINA

August 4, 2015

Re: K150929
Trade/Device Name: CareView 1500Cw X-ray Flat Panel Detectors
Regulation Number: 21 CFR 892.1680
Regulation Name: Stationary x-ray system
Regulatory Class: II
Product Code: MQB
Dated: June 24, 2015
Received: June 29, 2015

Dear Ms. Ding:

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. 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); 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.

If you desire specific advice for your device on our labeling regulation (21 CFR Part 801), please contact the Division of Industry and Consumer Education at its toll-free number (800) 638 2041 or (301) 796-7100 or at its Internet address http://www.fda.gov/MedicalDevices/ResourcesforYou/Industry/default.htm. 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 Industry and Consumer Education at its toll-free number (800) 638-2041 or (301) 796-7100 or at its Internet address http://www.fda.gov/MedicalDevices/ResourcesforYou/Industry/default.htm.

Sincerely yours,

Robert A Ochs

Robert Ochs, Ph.D.
Acting Director
Division of Radiological Health
Office of In Vitro Diagnostics
and Radiological Health
Center for Devices and Radiological Health

Enclosure

DEPARTMENT OF HEALTH AND HUMAN SERVICES
Food and Drug Administration

Indications for Use

Form Approved: OMB No. 0910-0120
Expiration Date: January 31, 2017
See PRA Statement below.

510(k) Number *(if known)*
K150929

Device Name
CareView 1500Cw X-ray Flat Panel Detectors

Indications for Use *(Describe)*
The CareView 1500Cw detector is indicated for digital imaging solution designed for providing general radiographic diagnosis of human anatomy. It is intended to replace radiographic film/screen systems in all general-purpose diagnostic procedures. This product is not intended for mammography applications.

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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002_510(k) Summary

510(k) Summary

[As required by 21 CFR 807.92]

1. Date Prepared [21 CFR807.92 (a) (1)]

July 27, 2015

2. Submitter's Information [21 CFR807.92 (a) (1)]

Company Name:	CareRay Digital Medical System Co., Ltd.
Company Address:	A2-201/B3-501, Biobay, 218 Xinghu Street, SuZhou Industrial Park, SuZhou 215123, P. R. China
Contact Person:	Ms. Ding
Phone Number:	(86) 512-86860288
Fax Number:	(86) 512-86860388
E-mail:	yl.ding@careray.com

3. Trade Name, Common Name, Classification [21 CFR807.92(a)(2)]

Trade Name:	X-ray Flat Panel Detectors
Model Name:	CareView 1500Cw
Classification Name:	Stationary X-ray system
Regulation Number:	21 CFR 892.1680
Regulatory Class:	Class II
Product Code:	MQB

4. Identification of Predicate Device(s) [21 CFR 807.92(a)(3)]

The identified predicates within this submission are as follows:

Manufacturer:	Vieworks Co., Ltd.
Trade Name:	ViVIX-S Wireless
Model Name:	FXRD-1417WA
Classification Name:	Stationary X-ray system
Regulation Number:	21 CFR 892.1680

Regulatory Class:	Class II
Product Code:	MQB
FDA 510(k) #:	K122865

5. Description of the Device [21 CFR 807.92(a)(4)]

CareView 1500Cw is a kind of wireless portable digital X-ray flat panel detectors which have 434mm×355mm imaging area. The device communicates by not only the wireless communication but also wired communication feature (Giga-bit Ethernet communication mode by connecting the power box) optionally.

The device intercepts X-ray photons and then the scintillator emits visible spectrum photons that illuminate an array of photo detectors (a-Si) that create electrical signals. After the electrical signals are generated, it is converted to a digital value and an image will be displayed on the monitor.

The detector should be integrated with an operating PC and an X-ray generator to utilize as digitalizing X-ray images and transfer for radiography diagnostic.

The detector can't provide feedback to the generator to terminate the x-ray exposure.

6. Intended Use [21 CFR 807.92(a)(5)]

The CareView 1500Cw detector is indicated for digital imaging solution designed for providing general radiographic diagnosis of human anatomy. It is intended to replace radiographic film/screen systems in all general-purpose diagnostic procedures. This product is not intended for mammography applications.

7. Technological Characteristics [21 CFR 807.92(a)(6)]

Item	**Proposed Device: X-ray Flat Panel Detectors**	**Predicate Device: ViVIX-S Wireless**
510(K) Number	To be assigned	K122865
Model	CareView 1500Cw	FXRD-1417WA
Classification Name	Stationary X-ray system	Stationary X-ray system
Product Code	MQB	MQB
Regulation Number	892.1680	892.1680
Panel	Radiology	Radiology
Class	II	II
X-ray Absorber	CsI Scintillator	CsI Scintillator
Installation Type	Wireless, Portable	Wireless, Portable
Readout Mechanism	Thin Film Transistor	Thin Film Transistor

Image Matrix Size	2304 × 2816 pixels	2560 × 3072 pixels
Pixel Pitch	154μm	140μm
Effective Imaging Area	355 mm × 434 mm	358 mm × 430 mm
Grayscale	16 bit, 65536 grayscale	14 bit, 16,384 grayscale
Spatial Resolution	Min. 3.3 line pair/mm	Min. 3.5 line pair/mm
Rated Power Supply Wireless Wired	DC +24 V, Max.1.5 A Powered by the battery pack Powered by the power box using interface cable	DC +24 V, Max. 0.5 A Powered by the battery pack Powered by the SCU using tether interface
Power Consumption	Max. 36 W	Max. 12 W
Wireless Communications	IEEE 802.11a/b/g/n (2.4 GHz / 5 GHz)	IEEE 802.11a/b/g/n (2.4 GHz / 5 GHz)
Imaging Plate	Carbon Fiber Plate	Carbon Fiber Plate
Cooling	Air cooling	Air cooling
Dimensions	384 mm × 460 mm × 15 mm	384 mm × 460 mm × 15 mm
Operation	Temperature: +5 ~ +35℃ Humidity: 30 ~ 75% (Non-Condensing) Atmospheric pressure: 70 ~ 106 kPa Altitude: Max. 3000 meters	Temperature: +10 ~ +35℃ Humidity: 30 ~ 85% (Non-Condensing) Atmospheric pressure: 70 ~ 106 kPa Altitude: Maximum 2000 meters
Storage and transportation	Temperature: -20 ~ +55℃ Humidity: 10 ~ 90% (Non-Condensing) Atmospheric pressure: 70 ~ 106 kPa Altitude: Max. 3000 meters	Temperature: -15 ~ +55℃ Humidity: 10 ~ 90% (Non-Condensing) Atmospheric pressure: 50 ~ 106 kPa Altitude: Maximum 2000 meters

8. System requirements to operate with other radiographic system components

1) Recommended Generator Specification:

Energy range: 40~150kVp

mA range: 10~1000mA (depending on the generator power)

ms range: 10~6300ms to produce 0.1~1000mAs (depending on the generator power)

Note: To our best knowledge, the detector is compatible with the X-ray generators with the specifications described above. If you have questions regarding the compatibility issue for other generators, please contact your distributor or CareRay.

2) Application Program Interface (API) for system integration manufacturer

Peripheral hardware: CareView detector connected via wireless or wired communication.

CPU: Intel (R) Core (TM) 2 Duo, 2.93GHz or above

RAM: 2 GB or higher

Hard disk: 160 GB or higher

Monitor: 1280 x 1024 or higher

OS: Windows XP or Windows 7

Development environment: MS Visual Studio 2005

3) X-ray exposure mode

The synchronous connection mode is the signal transfer mode between the X-ray generator which sends the X-ray and the detector which receives the X-ray.

CareView 1500Cw supported typical sync mode contains soft sync, manual sync and auto sync containing FFAED mode.

9. Substantial Equivalence [21 CFR 807.92(b) (1) and 807.92(b)(2)]

- Electrical safety and EMC testing

  Electrical, mechanical, environmental safety and performance testing according to IEC/ES 60601-1 was performed, and EMC testing was also conducted in accordance with IEC/EN 60601-1-2. All test results are satisfactory.

- Biological evaluation

  The materials of the detector which intact of human skin has been evaluated with the ISO 10993-1. And the test results assured the safety the same as the predicate device.

- Nonclinical considerations

  The following non-clinical studies have been performed and the results have shown that the CareView 1500Cw X-ray flat panel detector is substantially equivalent to the predicate devices on the Market (ViVIX-S Wireless FXRD-1417WA).

  -Detective quantum efficiency (DQE), Quantum limited performance, Modulation transfer function (MTF), Effects of aliasing, Sensitivity linearity, Lag(Erasure thoroughness), Change in detection sensitivity, Dose requirement and reciprocity changes, Stability of device characteristics with time, Uniformity of device characteristic, Noise power spectrum(NPS), Spatial resolution, Image Acquisition time, & Black level

- Clinical considerations

  A concurrence study of 30 clinical images was conducted to compare the performance of the CareView 1500Cw to that of the predicate device (K122865).

  Clinical images were provided; these images were not necessary to establish substantial equivalence based on the differences from the predicate but they provide further evidence

in addition to the laboratory performance data to show that the complete system works as intended.

There was no significant difference between the images of the CareView 1500Cw and those of the predicate device.

10. Conclusion [21 CFR 807.92(b) (3)]

In accordance with the Federal Food, Drug and Cosmetic Act, 21 CFR Part 807 and based on the information provided in this premarket notification, CareRay Digital Medical System Co., Ltd. concludes that CareView 1500Cw X-ray Flat Panel Detectors is substantially equivalent to predicate device with regard to safety and effectiveness.