

# News Release

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## **Hitachi to launch “ALOKA ARIETTA 850”, the flagship model of the ARIETTA series diagnostic of ultrasound platforms**

**This premium model features superior image quality, seamless workflow, and advanced applications**



ALOKA ARIETTA 850

**Vienna, March 2, 2017** -- Hitachi, Ltd. today announced that Hitachi launches ALOKA ARIETTA 850, the flagship model of the ARIETTA series of diagnostic ultrasound platforms.

Hitachi introduced the world's first\*<sup>1</sup> practical implementation of the CMUT (Capacitive Micro-machined Ultrasound Transducer) silicon wafer technology in 2009. ALOKA ARIETTA 850 exploits the next-generation of CMUT technology, and, combined with eFocusing, a dynamic transmission and reception technology, achieves outstanding clarity of imaging from near to far field. Additionally, this platform contributes to remarkable patient comfort and enhanced treatment efficiency through an ergonomic design of the monitor arm, functions to improve workflow, and advanced applications including support for liver cancer treatment.

Ultrasound is used across many clinical disciplines, from prevention through to

diagnosis and treatment, because of its non-invasive nature, lack of ionizing radiation, and ability to visualize internal organs in real-time. Ultrasound examinations are being performed not only for traditional applications such as the abdomen, cardiac, and OB/GYN, but also in other specialty areas such as breast, thyroid, orthopedics, and surgery, thanks to the availability of high frequency transducers and dedicated applications. As a result, ultrasound has become an essential part of modern healthcare.

Hitachi released the world's first "diagnostic ultrasound system" in 1960; the world's first real-time color flow Doppler in 1983. Continuing this tradition of innovation, in 2003 Hitachi developed Elastography to display a real-time color map of tissue stiffness, and RVS to merge real-time ultrasound with previously acquired CT, MR images. Hitachi continues to offer products and technologies that further enhance diagnostic accuracy.

The concept of ALOKAARIETTA 850 has been the optimization of three key functional areas:

- "Pure Image"
- "Seamless Workflow" and
- "Your Application".

Leading-edge technologies have been incorporated that generate premium performance in each aspect: imaging quality, operability, and advanced applications.

Hitachi offers solutions to meet users' requirements and contributes to the development of healthcare as a leading company of diagnostic ultrasound platforms.

ALOKAARIETTA 850 is to be exhibited at the ECR (European Congress of Radiology) held in Vienna, Republic of Austria, from March 2 to 5, 2017.

ALOKAARIETTA 850 features the following, outstanding benefits:

**1. Linear<sup>\*2</sup> CMUT and Convex single crystal transducers with high quality imaging adapted for a variety of examinations: "Pure Image"**

Conventionally, the superior resolution obtained with high frequency ultrasound is only used for superficial examinations due to its limited penetration. Lower frequencies are needed to examine deeper structures, thus multiple transducers are required to cover the full range of examinations. The world's first practical use of the CMUT<sup>\*3</sup> silicon wafer technology for breast application, was introduced by Hitachi in 2009. In the next-generation technology, a further widening of the bandwidth and increase in sensitivity, in addition to support for display modes such as Doppler<sup>\*4</sup> and Color Doppler<sup>\*5</sup> to image blood flow have been realized. CMUT now delivers a one-probe solution for a wide range of ultrasound examinations.

In addition, Hitachi have developed a new convex abdominal probe using single crystal piezoelectric elements. With single crystal technology, the direction of the mechanical strains in the material are correctly aligned to produce a highly efficient piezoelectric effect, with resultant enhancement in sensitivity.

**2. eFocusing, a new transmission and reception technology resulting in high definition imaging from the near to far field: “Pure Image”**

eFocusing, a newly developed transmission and reception technology achieves high definition imaging from the near to far field. The ultrasound beams are focused with subsequent improvement in image definition throughout the depth of field. Patient-dependent variability is reduced and accuracy of focal settings no longer user-dependent. Additionally, the multiple transmit and receive cycles used to synthesize each scan line mean that eFocusing improves S/N ratio (the ratio of intensity between the received signal and background noise) and further enhances image quality.

**3. OLED monitor achieving high contrast resolution: “Pure Image”**

ALOKA ARIETTA 850 has adopted the latest technology, 22 inch wide OLED (Organic Light Emitting Diode) monitor for an optimum image display. The self-luminous OLED displays true black so a previously unattainable contrast resolution can be achieved, offering a significant improvement in the diagnostic quality of the display.

**4. Ergonomic design and the function of Protocol Assistant for high operability comfort, enhancing workflow : “Seamless Workflow”**

The physical impact of maintaining an unnatural posture, repetitive movements or using an extended reach for a long period of time, places significant stress on the operator. The monitor arm and operating console of ALOKA ARIETTA 850 have both been developed to provide a wide range of movement allowing ergonomic alignment so that the users' comfort is maintained even during lengthy examinations. Additionally, Protocol Assistant<sup>\*3</sup>, enabling prior examination protocol registration, promotes efficient workflow.

**5. Treatment support using a synchronized display with CT/MR images: “Your Application”**

RVS<sup>\*3\*6</sup> offers superior real-time navigation for treatment, merging real-time ultrasound with previously acquired CT, MR images. 3D Sim-Navigator<sup>\*3\*7</sup>, an advanced function of RVS, provides assessment of the three-dimensional positional relationship between multiple electrode needles and the target lesion at

the time of Radio Frequency Ablation (RFA) <sup>\*8</sup>. A new development, the E-field Simulator<sup>\*3\*9</sup> provides a pre-treatment simulation of the treatment area superimposed on the CT or MR, from the given location of the multiple electrodes. Advancements in real-time RFA needle guidance can bring significant improvements to the treatment technique .

Note

\*1: According to our research.

\*2: Linear and Convex are different probe types.

\*3: Optional

\*4: Doppler: Displays the distribution of blood flow velocity with time.

\*5: Color Doppler: A color display of blood flow velocity and direction superimposed on the ultrasound image.

\*6: RVS (Real-time Virtual Sonography) :

RVS detects the position and angle of the ultrasound transducer, enabling a real-time synchronized display of the corresponding multiplanar reconstructed plane from the CT or MRI.

\*7: 3D Sim-Navigator: A navigation function used at the time of electrode needle placement for RFA treatment.

\*8: RFA (Radiofrequency Ablation) : A cancer treatment method whereby electrode needles are inserted into the organ, generating heat by radio frequency, causing tumor necrosis.

\*9: E-field Simulator: A function to superimpose a simulation of the electric field (E-field) originating from the tip of the ablation needle from the given location of the multiple electrodes, on the CT image.

(Remark) The distribution of electric field (E-field) is determined from experimental data, and does not necessarily reflect the exact distribution in vivo.

**About Hitachi, Ltd.**

Hitachi, Ltd. (TSE: 6501), headquartered in Tokyo, Japan, delivers innovations that answer society's challenges. The company's consolidated revenues for fiscal 2015 (ended March 31, 2016) totaled 10,034.3 billion yen (\$88.8 billion). The Hitachi Group is a global leader in the Social Innovation Business, and it has approximately 335,000 employees worldwide. Through collaborative creation, Hitachi is providing solutions to customers in a broad range of sectors, including Power / Energy, Industry / Distribution / Water, Urban Development, and Finance / Government & Public / Healthcare.

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