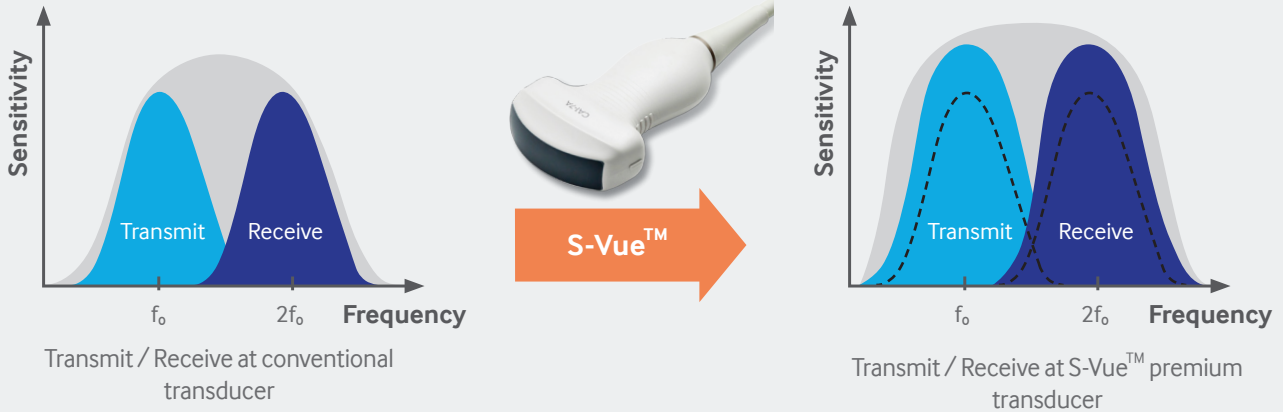


RS80A

The exceptional window of Abdominal ultrasound

: S-Vue™ Premium Transducer

by Clinical Research Group, SAMSUNG MEDISON



Introduction

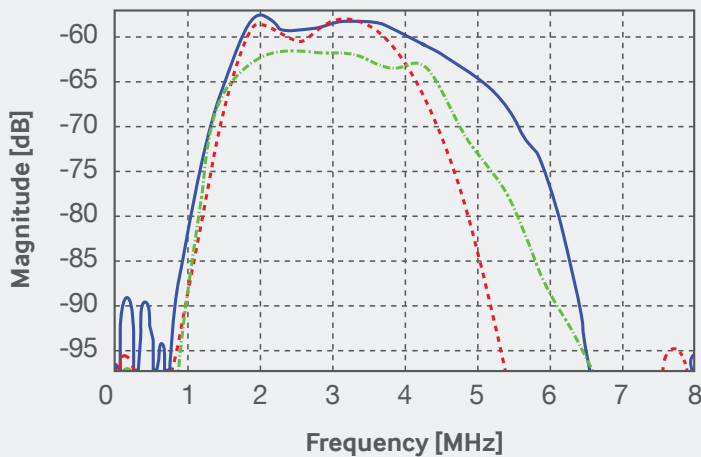
Modern medical ultrasound imaging almost solely relies on transducers that incorporate ceramic PZT which is a polycrystalline composition to convert mechanical to electrical energy and vice versa.

However, one of the drawbacks of these devices is a relatively high impedance mismatching to human tissue. In order to compensate for this phenomenon, the medical imaging industry has implemented a single crystal material called PMN-PT.

This material already was widely being used in energy harvesting, scintillator, actuator and other high technologies, and it was 1997 when a new tier of premium ultrasonic transducers started to develop when this single crystal material was introduced by medical imaging industry.

S-Vue™ - the New Premium Technology

S-Vue™ Premium Transducer provides **wide frequency range & High sensitivity.**



- CA1-7A
- - - Competitor's
- ... Conventional Single crystal

Figure 1. Comparison of conventional and CA1-7A transducers: The graph exhibits the highest sensitivity and the widest frequency range when using the new "S-Vue™" CA1-7A, a premium transducer.

Single crystal transducers are becoming more dominant in the market because of their superior capabilities. Far less voltage needs to be applied to generate the same amount of acoustic signals. This decreases the amount of waste heat and allows the transducer to be less thermally restricted.

On a same note, the single crystal requires less voltage to makes same acoustic signal compared to the ceramic PZT transducers. This leads to better sensitivity, and thus better SNR (Signal to Noise Ratio).

Additionally, the transmitted and received beams have wider bandwidths compared to the conventional ceramic PZT. By covering broader range of frequency, a single crystal transducer can produce images with lower noise present and better contrast resolution.

Advantages of S-Vue™ Technology

*S-Vue™ Premium Transducer provides **strong penetration and great contrast resolution.***

S-Vue™ premium technology provides high sensitivity in B-mode which yields excellent SNR. It also results in remarkable improvement in penetration and contrast resolution (Figure 2c , 2d). In addition, great uniformity from near to far field is also achieved.

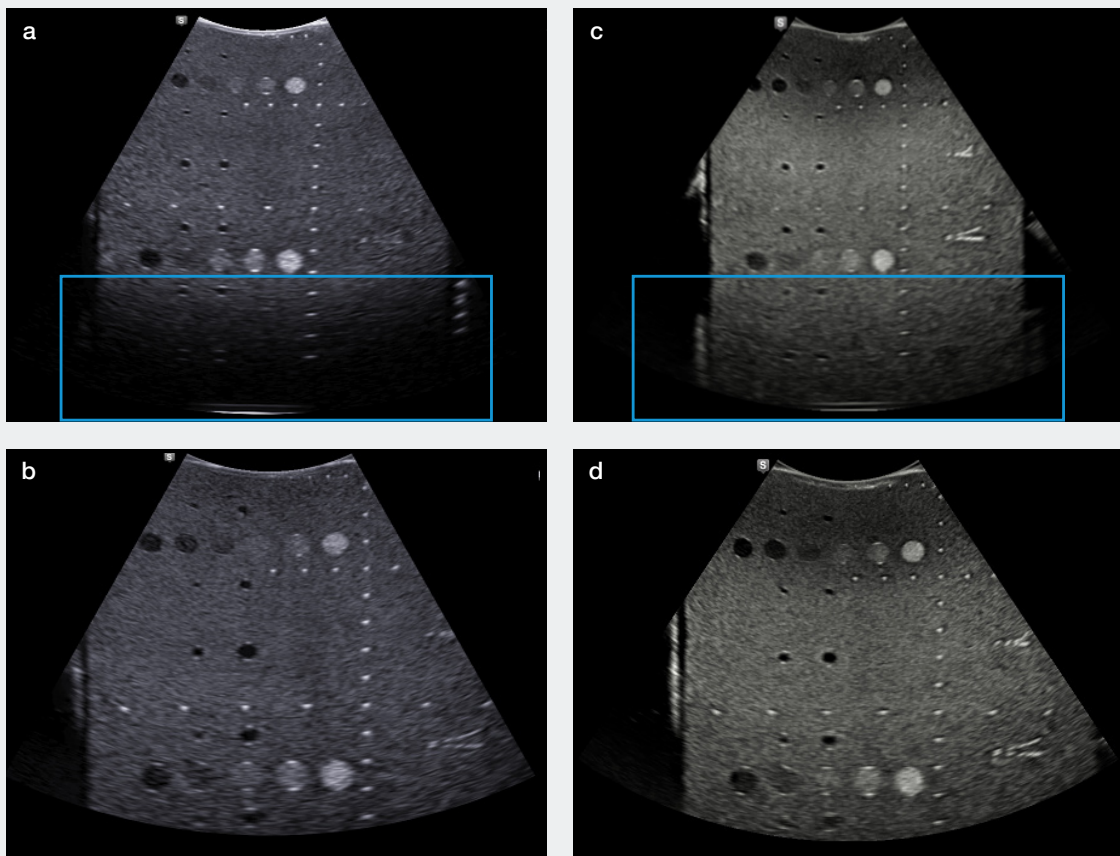


Figure 2. Conventional single crystal transducer (a, b), S-Vue™ premium transducer (c, d)

Clinical benefits of S-Vue™ Technology

S-Vue™ Premium Transducer provides **exceptional of ultrasound images.**

S-Vue™ provides an exceptional clear view of abdominal image as shown in Figure 3(b) and Figure 4(b).

Patient presented in Figure 6, clearly displays fatty tissues infiltrating vast areas of liver. This causes less penetration across the area of interest and consequently lessens the overall quality of diagnostic images.

In comparison with Figure 3(a) and 3(b), which is performed with S-Vue™, clearly shows more uniformity near to far field. It also displays clearer margins of gall bladder, portal vein and liver capsule.

In Figure 4, patient has a suspected focal lesion in liver parenchyma. While it is hard to depict the margins of the lesion in Figure 4(a) and 4(b), an image captured with S-Vue™ clearly demonstrates margins and segmentation of the lesion with more contrast.

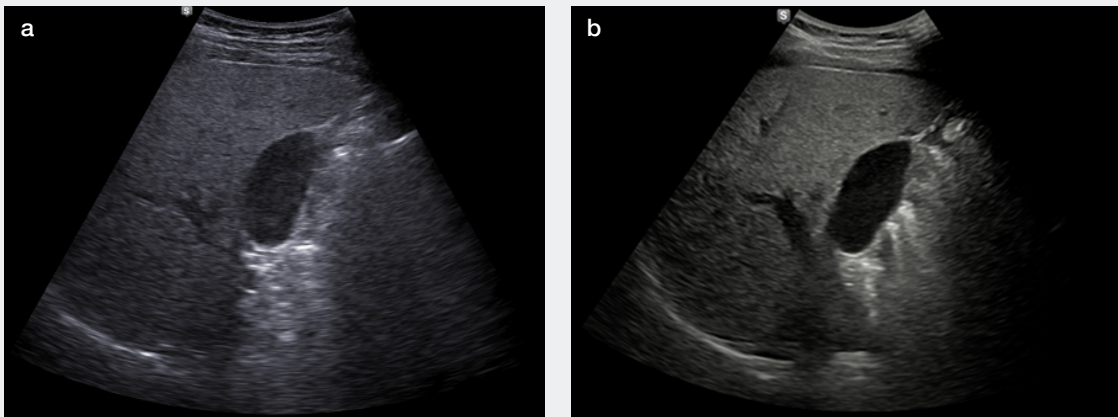


Figure 3. Fatty liver : Conventional Single crystal transducer (a), S-Vue™ premium transducer (b)

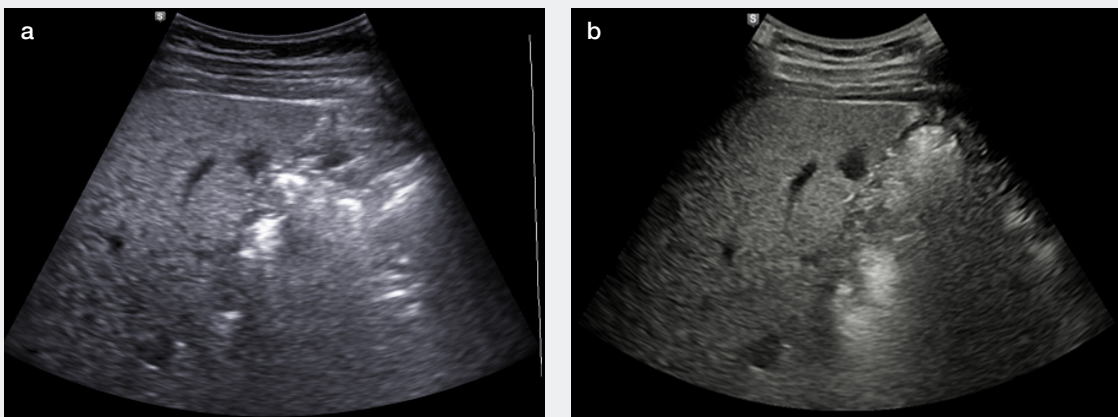


Figure 4. Liver Parenchyma image - focal lesion in segment 6 : Conventional Single crystal transducer (a), S-Vue™ premium transducer (b)

As single crystal technology is evolving rapidly, Samsung Medison's exclusive technology, S-Vue™ has taken a step further in the evolution. By reducing the thickness of PMN-PT by 50 percent and by combining single crystal and patented Enhanced-layer technology, S-Vue™ can demonstrate the Quarter Wave mechanics, which results in even better execution of a forementioned advantages. For this, S-Vue™ certainly is on its way to serve as the most premier transducer available in the market, and satisfy the needs of a true premium ultrasonic transducer for premium and high-end ultrasound systems.

Conclusion

S-Vue™ Premium Transducer Technology that helps you to scan easily on routine exams to technically challenging cases. S-Vue™ Premium Transducer Technology provides following benefits.

Exceptional Image Quality - by overcoming the issue of limitations of penetration and fundamental signal level in conventional transducers, S-Vue™ is capable of providing great penetration and remarkable contrast resolution.

Increased Productivity - with improved visibility using S-Vue™ technology, examination time can be reduced drastically which consequently lessens fatigue for both operators and patients during the examination. This especially can be useful with obese and/or technically difficult cases.

Diagnostic Confidence - with better signal and reduced noise level, resulting in improved SNR, a greater confidence in a diagnosis can be achieved. This also benefits patients financially by avoiding unnecessarily repeated exams for subpar image quality.

Supported System

(1) RS80A