



UltraSPECT® Frequently Asked Questions

What is UltraSPECT®?

UltraSPECT® is a corporation that specializes in the development, production, and sale of products dedicated to the enhancement of imaging quality for nuclear medicine cameras.

What are the differences with UltraSPECT® in comparison to current technology used for the past two decades?

UltraSPECT® uses proprietary image reconstruction algorithms called Wide Beam Reconstruction (WBR™) in comparison to current technology called Filtered Back Projection (FBP) and various post-reconstruction processing algorithms. Previous technology has not addressed significant image resolution and noise issues.

Is there any other hardware or software that uses WBR technology?

WBR™ is exclusive to UltraSPECT® and the term WBR™ is a proprietary term for this new emerging technology.

What is WBR™?

WBR™ (Wide-Beam Reconstruction) uses proprietary intelligent and innovative iterative reconstruction algorithms based on accurate modeling of the photon emission to suppress noise and increase count placement accuracy.

What is FBP?

FBP (Filtered Back Projection) is a mathematical and analytical algorithm applied to acquired data (SPECT images) to better depict the organ of interest. This process removes or suppresses non-target data before a final back projection.

What is OSEM?

OSEM (Ordered Subset Expectation Maximization) is a statistical iterative reconstruction algorithm that improves the quality of the reconstructed images over the previous FBP images.

Are there any camera systems that would not be compatible with UltraSPECT® software?

An extensive list of compatible systems is available and updated regularly as new systems are added. To ensure compatibility, only cameras where UltraSPECT systems are currently installed are on the list of compatible cameras.

What are the main reasons that systems would not be compatible?

The camera may not be compatible if the engineers are not able to obtain installation algorithms for specific collimators. Only Low Energy, High Resolution (LEHR) collimators are compatible since Low Energy All Purpose (GAP or LEAP) collimators are not designed to enhance resolution. In very rare instances, some acquisition stations are not compatible or able to upgrade due to the limitations from the camera manufacturer.

Can this technology be used on single head systems?

Yes. For cardiac purposes, as long as the detector acquires SPECT images for a minimum of 3 degrees per stop which is 60-64 stops total. For bone applications, this is only an issue for bone SPECT acquisitions not planar or whole body systems.

What requirements are necessary to consider this technology as an enhancement to my current camera system?

The system must be DICOM compatible. An easy way to check if your system is DICOM compatible is to check if your printer is DICOM compatible or check with your service engineer.

Will UltraSPECT® interfere with my network, system warranties, HIS/RIS, or PACS system?

No, it will not interfere with any of these. Adding UltraSPECT® is similar to adding a DICOM printer. The only compatibility issue is that it must be DICOM compatible.

What does DICOM refer to?

DICOM (Digital Imaging and Communications in Medicine) is a standard for handling, storing, printing, and transmitting medical imaging information.

DICOM files can be exchanged between two entities that are capable of receiving DICOM info.

How many cameras can go on one UltraSPECT® hardware box?

One UltraSPECT® computer system can host up to 4 separate licenses, allowing 4 separate cameras on the system as long as the cameras are on the same network. Multi-site offices will require a complete system for each location.

What is the license?

The license is the actual software designed specifically for each camera system.

What type of computer is used?

The hardware is a Dell computer with Pentium processing which houses the WBR™ software.

How much space will the system take?

The hardware requires minimal space and is positioned between the camera and the processing station. The operation is fully automated and transparent to the department workflow.

How long does it take to install?

The system readily connects to your existing camera and can be installed within hours.

Who is providing technical support for this product?

All technical calls will be referred to the appropriate toll-free number and addressed by UltraSPECT®'s clinical product specialist after installation. Additional staffing may be added as the need increases.

If I have more than one site, can this license be shared among my other sites?

No, each UltraSPECT® system must be purchased separately unless they are all under the same roof. Any questions or concerns regarding this should be forwarded to the clinical specialists.

What is half-time imaging and how does this compare to current standard industry imaging time?

The term half-time refers to how long the total acquisition time takes and is a term being used by camera manufacturers to distinguish the difference. Half-time software is designed to get the same result using half the amount of acquisition time to acquire a study without losing count statistics.

Are there differences in half-time imaging techniques?

Yes, current image enhancement software uses other iterative reconstruction technology which does not depict accurate image resolution and does not accurately address signal-to-noise ratio. Most camera manufacturers are providing this software as part of a new system upgrade, and is not available for older cameras. WBR has been proven to be as good if not better in resolution due to limited iterative reconstruction of the raw data.

What is the signal-to-noise ratio?

It is a ratio describing the relationship between desired and unwanted information. An increased signal-to-noise ratio represents better image quality.

What is iterative reconstruction?

It is a repeated calculation process where the algorithm calculates all of the data several times. Calculations are repeated several times starting with a best guess with each iteration becoming more accurate than the previous ones.

How does over iteration contribute to lower quality images?

It mathematically and continuously smoothes the reconstructed data, which can obscure or mask defects.

What is “first best iteration”?

This iteration is determined automatically by the target signal-to-noise ratio.

Has this type of technology been approved by the accrediting bodies?

It is approved for usage by all accrediting bodies. Refer to www.icanl.org and www.acr.org for the specific requirements.

How can WBR™ software be used to comply with current ICANL guidelines?

Our recommendation is to submit to ICANL the protocols that were designed for use with this product. UltraSPECT® does not recommend using full-time imaging techniques since the algorithms are specific to half-time imaging techniques. If you have any other concerns regarding ICANL, contact your clinical specialist.

How is WBR™ different from resolution recovery software?

WBR™ is noise reduction as well as resolution recovery. UltraSPECT®'s WBR™ is the only technology that does not use post-processing filters due to noise suppression of the reconstructed data.

What are the major benefits of UltraSPECT®'s WBR™?

1. Better image quality, increasing diagnostic confidence
2. More efficient throughput and schedule flexibility
3. Improved patient comfort and safety
4. Can be used on existing camera system, thus minimizing the cost for new technology.
5. Gives practice strong competitive position within your market (i.e., enables labs to market new cutting edge technology to expanded referral base (i.e., pediatric, geriatric, and facilities for the mentally challenged)

How is the calculated LVEF affected by this technology?

The left ventricular ejection fraction calculation is measured by determining the edges of the endocardial borders. These are better depicted due to increased resolution of the valve planes on the reconstructed data.



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Can normal databases be used that were established with FBP technology such as Cedars QPS/QGS, 4DM SPECT, Emory Toolbox, etc? Are there any normal databases being created for WBR technology use?
WBR™ and OSEM are compatible with all of the industry software that originally was designed for FBP technology. There are no plans to have any new normal databases at this time.

Where is the best place to get information on UltraSPECT®?

Your local Cardinal Health sales consultant can provide you with product information brochures. You can also obtain additional information on the UltraSPECT® website (www.ultraSPECT.com).