PHILIPS

Radiation Oncology

Spectral CT 7500 RT

Target with spectral certainty

Groundbreaking innovation in CT simulation

Targeting with spectral certainty is the next big leap for radiation oncology treatment planning.

For the first time, you can have spectral insights and true conventional results in a single scan, on a system designed specifically for radiation oncology. Philips Spectral CT 7500 RT promotes accuracy in planning, while fitting right into your current radiation oncology workflow so you can continue to enhance patient care.

Spectral accuracy in planning

Delineation certainty

Improved visualization and assessment of tumors and organs at risk

Accuracy in photon and proton dose calculation

Improve dose calculation and delivery by creating the stopping-power ratio (SPR) map and direct electron density (ED) results

Personalized planning

Quantitatively assess physiologically active tumor regions for treatment planning and response assessment

Easy radiation oncology workflow

Always on spectral

Layers of rich spectral results – on demand, with no special protocols

Single scan

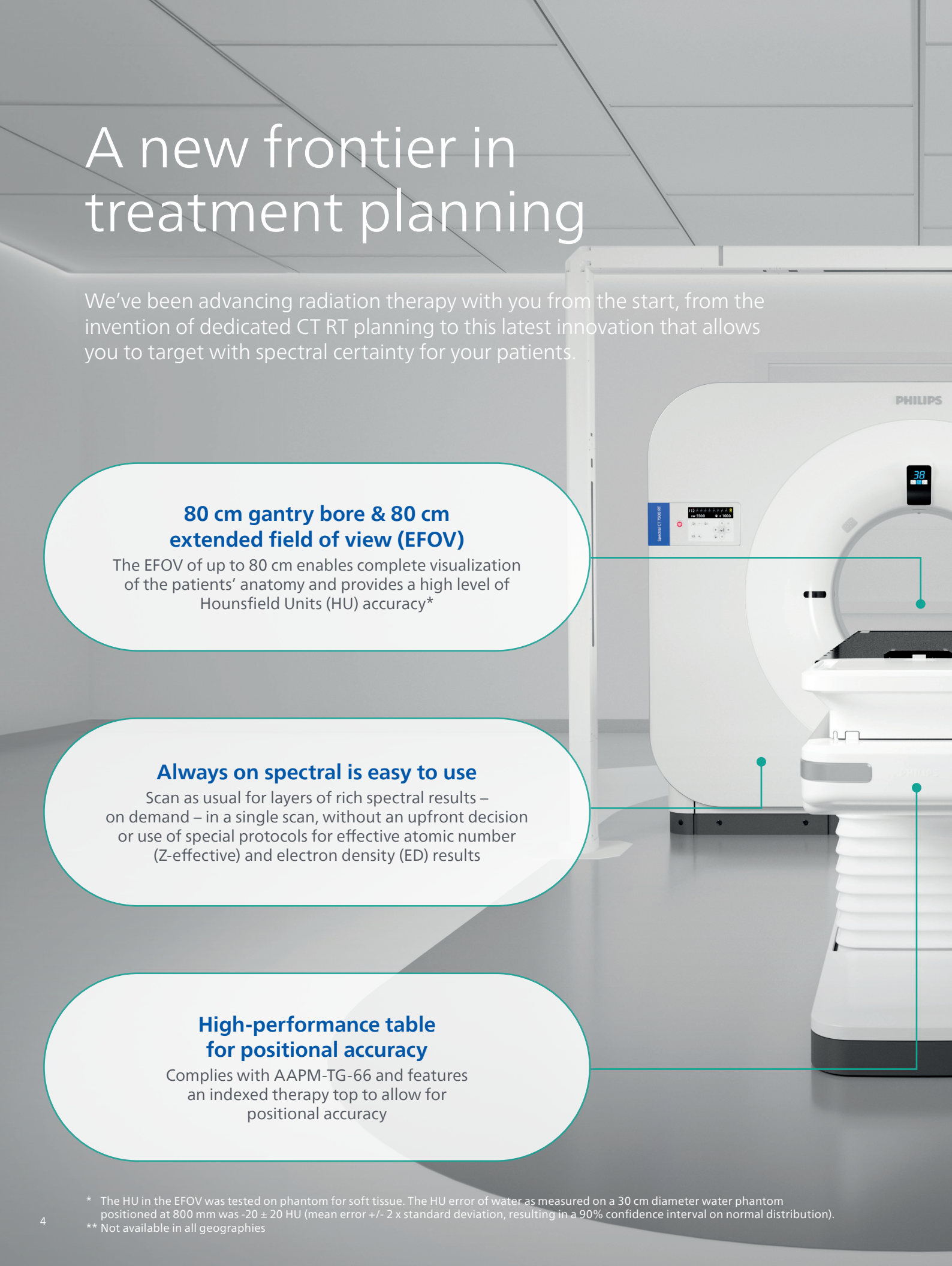
True conventional and spectral results in a single scan, potentially minimizing the need for additional imaging modalities

Advanced RadOnc capabilities

Perform spectral respiratory gated scans with the world's-first spectral 4D CT

A new frontier in treatment planning

We've been advancing radiation therapy with you from the start, from the invention of dedicated CT RT planning to this latest innovation that allows you to target with spectral certainty for your patients.



80 cm gantry bore & 80 cm extended field of view (EFOV)

The EFOV of up to 80 cm enables complete visualization of the patients' anatomy and provides a high level of Hounsfield Units (HU) accuracy*

Always on spectral is easy to use

Scan as usual for layers of rich spectral results – on demand – in a single scan, without an upfront decision or use of special protocols for effective atomic number (Z-effective) and electron density (ED) results

High-performance table for positional accuracy

Complies with AAPM-TG-66 and features an indexed therapy top to allow for positional accuracy

* The HU in the EFOV was tested on phantom for soft tissue. The HU error of water as measured on a 30 cm diameter water phantom positioned at 800 mm was -20 ± 20 HU (mean error +/- 2 x standard deviation, resulting in a 90% confidence interval on normal distribution).
** Not available in all geographies

Spectral CT has been shown to

reduce proton SPR error by more than 50%

compared to conventional CT, resulting in a mean error below 1%[1]

Multimodality Simulation Workspace (MM SIM)**

MM SIM* is a multi-modality image platform which supports the conversion of ED and Z-effective spectral results into stopping-power ratio (SPR) maps

Compatible with leading third-party solutions for streamlined treatment workflows

Enables streamlined workflow with treatment solutions, including respiratory gated systems and lasers for consistency and ease of use throughout the workflow from simulation to treatment

World's-first spectral 4D CT

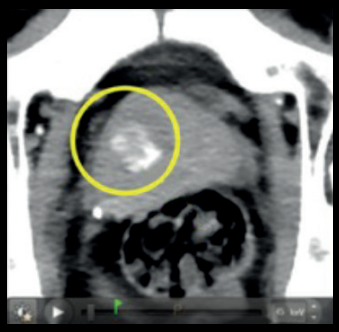
The only scanner with the ability to perform spectral respiratory gated scans. Spectral results can be used on moving organs

Spectral CT accuracy in planning

Enhance the accuracy of data to calculate treatment dose by using additional information about the patient's material composition that detector-based spectral CT alone provides. Differentiate active and necrotic areas of the lesion so that treatment dose can be adjusted to target the most physiologically active part of the tumor and to aid in assessing treatment response.

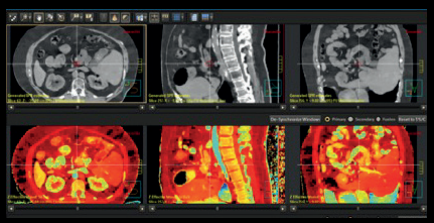
Enhanced visibility for greater delineation confidence
Improved visualization and assessment of tumors and organs at risk.

Conventional CT

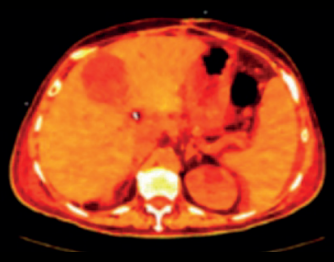


MonoE 45 keV

Accuracy in photon and proton dose calculation
Improve dose calculation and delivery by creating the stopping-power ratio (SPR) map, and direct ED results.

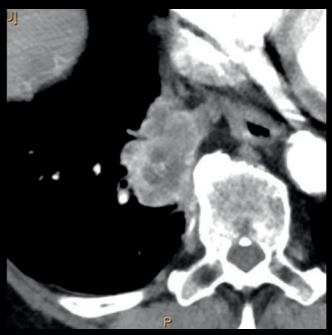


Spectral CT has been shown to reduce proton SPR error by more than 50% compared to conventional CT, resulting in a mean error below 1%[1]

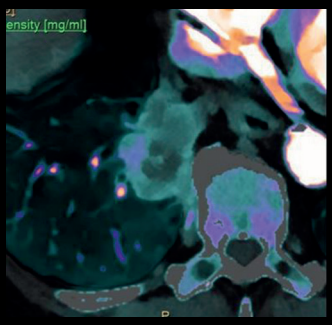


Direct spectral Electron Density (ED) results ED: ~+/- 1% accuracy for soft tissue & bone[2]

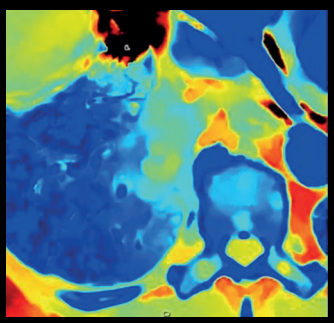
Quantify physiologic activity for patient specific care
Quantitatively assess physiologically active tumor regions for treatment planning and response assessment.



Conventional CT



Iodine Density / Conventional Fusion



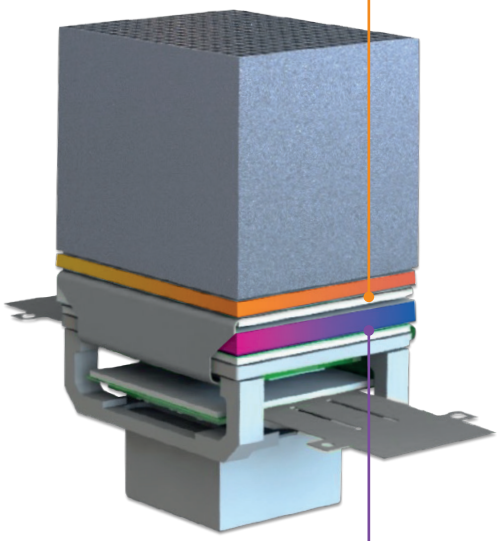
Z-effective

Spectral that is always on

Detector-based spectral delivers true conventional and spectral insights for every patient and every scan with easy workflow for radiation oncology planning.

Top scintillator

Thickness optimized for energy separation and low-energy image noise



Absorbs high-energy spectrum

Bottom scintillator

Low energy raw data

+

High energy raw data

=

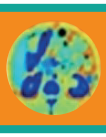
Combined raw data

True conventional 120kVp [HU]

+

Iodine no water [mg/ml]

Virtual non-contrast [HU*]



Z-effective [EAN]

Electron density [%EDW]

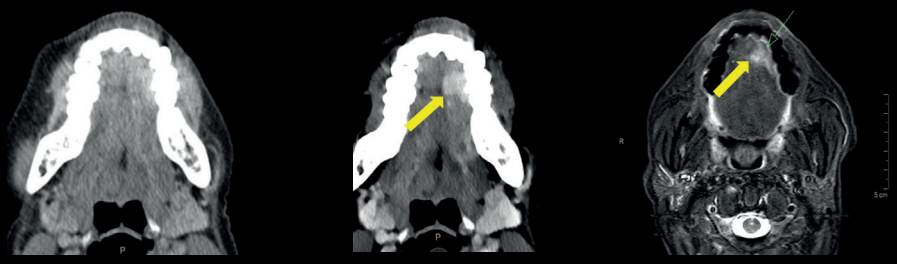
MonoE [HU]

Scan as usual for layers of rich spectral results – on demand – in a single scan, without an upfront decision or use of special protocols for effective atomic number (Z-effective) and electron density (ED) results.

A single scan to save time and cost

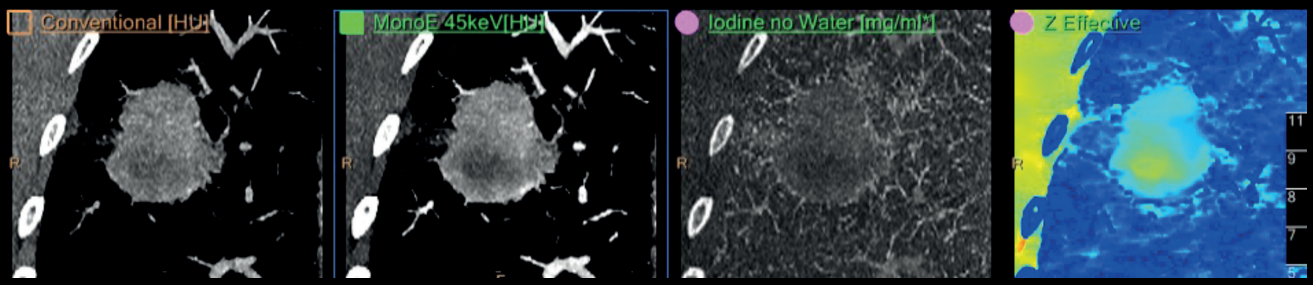
A single spectral scan could potentially save time and costs throughout the treatment cycle by avoiding the need for multiple CT scans, as well scans from other modalities.

Improve lesion detection and characterization with spectral



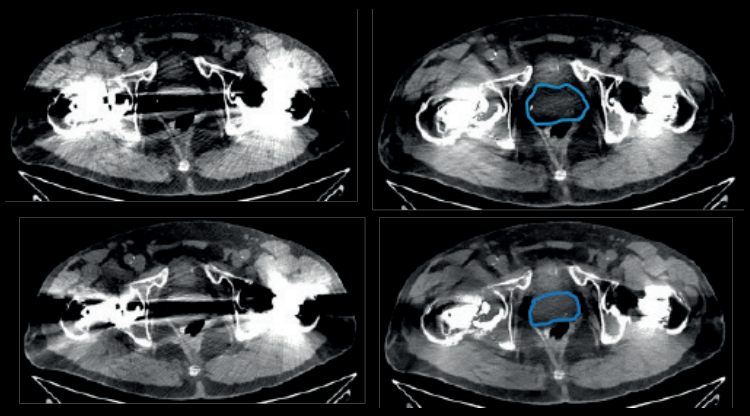
Conventional CT | MonoE 40 keV | MR

Differentiate active and necrotic areas of lesion with spectral
Potentially improve the treatment pathway



Conventional | MonoE | Iodine no water | Z-effective

Reduce beam hardening by pairing spectral and O-MAR
Higher confidence in contouring the prostate with OMAR and high monoE spectral results



Conventional CT without O-MAR | Conventional CT with O-MAR

MonoE 200keV without O-MAR | MonoE 200keV with O-MAR

Greater confidence in contouring the prostate with O-MAR and high monoE spectral results.

Results from case studies are not predictive of results in other cases. Results in other cases may vary.

"The Spectral CT system provides us with several capabilities that conventional CT does not have. It can provide electron density and effective atomic number results, which we can convert to the proton stopping-power ratio. And published data shows that the stopping power ratio obtained this way has fewer uncertainties compared to regular calibration curves. In this way, we can reduce the uncertainty margins during treatment planning."

Dr. Zhong Su, Professor and Director of Medical Physics at the University of Arkansas for Medical Sciences

Lifetime value for radiation oncology

With Philips, it's not just about the system. It's about ongoing support for you so you can do the most for your patients and your staff.

SmartPath Conversions

- Simplifying the evolution to new technology
- Minimize cost, site renovations and transition time

Virtual clinical education

- Continuous training delivered remotely
- Enhance staff skills and productivity

Proactive remote service

- Planning instead of reacting to minimize departmental disruptions
- Continuous monitoring of system health for maximum system availability

Philips CyberSafe

- Technology that is secure by design
- Consultancy, protection, upgrade and recovery services

Technology Maximizer

- Keeping you current over time with a simple, affordable subscription
- Maximize your return on imaging investments

Philips customer services portal

- A single online interface to manage your equipment and services
- 24/7 access to detailed equipment information and service support

1. Longarino FK, Kowalewski A, Tessonnier T, et al. Potential of a Second-Generation Dual-Layer Spectral CT for Dose Calculation in Particle Therapy Treatment Planning. Front Oncol. 2022;12. doi:10.3389/fonc.2022.853495
2. Hua, C., Shapira, N., Merchant, T. E., Klahr, P., & Yagil, Y. (2018). Accuracy of electron density, effective atomic number, and iodine concentration determination with a dual-layer dual-energy computed tomography system. Medical Physics, 45(6), 2486–2497

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