

Vendor Specific Reference Guide

| Vendor | Siemens |
|----------------------------------|---|
| FOV/ Resolution | Field of View: 5 - 50 |
| | Resolution: Body = B10 - B90 Head = H10 - H90 Ultra High Res = U30 - U90 Topograms = T20 - T81 |
| | Higher Number = sharper Lower Number = smoother |
| | Multiples of 10 are 'basic' kernels, in-between are 'special kernels |
| Pitch | N/A – machine specified |
| AEC/mAs Reference Basis | CARE Dose 4D- based on a Noise Index |
| | AEC should only be used for: Abdomen, Pelvis, Chest, Spine AEC should NOT be used for: Brain CT, Pediatric 50-90kg, Continuous CT, Bolus tracking |
| XY Axis Modulation | Angular Modulation: CARE Dose Angular and Longitudinal: CARE Dose 4D |
| Z Axis Modulation Strength | Longitudinal Modulation: not available separately Angular and Longitudinal: CARE Dose 4D |
| Iterative Recon | Type of IR: SAFIRE (S inogram AF firmed Iterative RE construction) Level of IR: Levels 1 - 5 |
| CTDI-vol (mGy) DLP (mGy – cm) | Diagnostic Reference Values and Achievable Dose |
| | Patient LAT dimCTDI PhantomDRL (nGy)AD (mGy)Adult Head16167557Adult Abd/Pelvis38322517Adult Chest35322114Peds 5yr old Head15164031Peds 5yr old abd/pel20162014 |



Vendor-Specific Filter Recon Algorithms- Siemens:

There are 5 different types of kernels:

- H stands for Head
- **B** stands for Body
- **U** stands for Ultra High Resolution
- C stands for ChildHead
- **S** stands for Special Application, e. g. Osteo CT.

The image sharpness is defined by the numbers:

- the higher the number, the sharper the image
- the lower the number, the smoother the image.

The endings "s" or "f" depend on the rotation time.

Head Kernels

For soft tissue head studies, the standard kernel is H40s; softer images are obtained with H30s or H20s, H10s, sharper images with H50s. The kernels H21s, H31s, H41s yield the same visual sharpness as H20s, H30s or H40s, respectively. The image appearance, however, is more acceptable due to a "fine-grained" noise structure; quite often, the low contrast detectability is improved by using H31s, H 41s instead of H30s, H40s.

In emergency examinations, kernels H22s, H32s, and H42s can be used because they allow fast reconstruction (FR) and easy patient positioning (50 cm FoV). To ensure best performance, special online bone correction (PFO) is not used.

High Resolution head studies should be performed with H60s, H70h (for example, for dental and sinuses). It is essential to position the area of interest in the center of the scan field.

For a better gray-white brain tissue differentiation use the H37f/s, H47f/s or H48f/s kernel.

Child Head Kernels

For head scans of small children, the kernels C20s, C30s (for example, for soft tissue studies) and C60s (for example, provided for sinuses) should be chosen instead of the "adult" head kernels H20s, H30s and H60s.

Body Kernels

As standard kernels for body tissue studies B30s or B40s are recommended; softer images are obtained with B20s or B10s (extremely soft). The kernels B31s or B41s have about the same visual sharpness as B30s respectively, B40s, the image appearance, however, is more acceptable due to a "fine-grained" noise structure; quite often, the low contrast detectability is improved by using B31s, B41s instead of B30s, B40s.



For higher sharpness, as is required for example, in patient protocols for cervical spine, shoulder, extremities, thorax, the kernels B50s, B60s, B70s, B80s are available.

The kernel B25 ("smooth ++") offers the resolution of a standard kernel for body tissue studies implying an advanced noise reduction algorithm. Noise level will be reduced to values comparable with an extremely soft kernel but keeping the standard sharpness at con- tours. The B25 improves the image quality of e.g. MIPs without the drawbacks of the loss of spatial resolution by using a simple extremely soft kernel.

Special Application Kernels and Ultra High Resolution Kernels

For special patient protocols, S80s and U90s are chosen, e. g. for osteo (S80s) and for High Resolution bone studies (U90s).

We recommend using the High Resolution specification kernel U90s only with "small" objects, like the wrist, otherwise artifacts will occur in the images.

Note:

- In the case of a 3D study only, use kernel B10s and at least a 50% overlap for image reconstruction.
- Do not use different kernels for body parts other than what they are designed for.

| BODY KERNELS | description |
|--------------|------------------|
| B10f, B10s | very smooth |
| B18f, B18s | smooth |
| B20f, B20s | smooth |
| B30f, B30s | medium smooth |
| B31f, B31s | medium smooth + |
| B35f, B35s | HeartView medium |
| B36f | HeartView medium |
| B40f, B40s | medium |
| B41f, B41s | medium+ |
| B45f, B45s | medium |
| B46f | HeartView sharp |
| B50f, B50s | medium sharp |
| B60f, B60s | sharp |
| B70f, B70s | very sharp |
| B75f, B75s | very sharp |
| B80f, B80s | ultra sharp |



| HEAD KERNELS | description |
|--------------|--------------------|
| H10f, H10s | very smooth |
| H20f, H20s | smooth |
| H21f, H21s | smooth + |
| H22f, H22s | smooth FR |
| H30f, H30s | medium smooth |
| H31f, H31s | medium smooth + |
| H32f, H32s | medium smooth FR + |
| H37f, H37s | medium smooth |
| H38f, H38s | medium smooth |
| H40f, H40s | medium |
| H41f, H41s | medium + |
| H42f | medium FR + |
| H42s | medium FR |
| H45f, H45s | medium |
| H47f, H47s | medium smooth |
| H48f, H48s | medium smooth |
| H50f, H50s | sharp |
| H60f, H60s | medium |
| H70h | very sharp |

| PEDS HEAD KERNELS | description |
|-------------------|---------------|
| C20f, C20s | smooth |
| C30f, C30s | medium smooth |
| C60s | sharp |

| ULTRA HIGH RESOLUTION | description |
|-----------------------|----------------------|
| U30u | medium smooth |
| U40u | medium |
| U70u | sharp |
| U75u | sharp++ |
| U80u | very sharp |
| U90u | ultra sharp |
| U95u | special applications |