

AbstractID: 14225 Title: Experiences of ACR Accreditation with Philips Brilliance CT Series

Purpose:

To illustrate physics phantom testing for Philips Brilliance CT series ranging from 16-slice detector configuration to newly developed iCT technology.

Method and Materials:

Gammex 464 ACR CT Accreditation Phantom was used to collect phantom images and FDA CT dosimetry phantoms were used for radiation dosimetry measurements on Philips Brilliance 16, 40, 64, and iCT scanners.

Results:

Brilliance 64 and Brilliance iCT scanners have coverage of 4 cm and 8 cm scan length respectively. Due to cone beam reconstructions, to measure CT numbers on the ACR CT Accreditation Phantom correctly, it is very important to align the inner laser to the center of Module 1, as stated in the Phantom Testing Instructions. To set up scanning protocols, Philips Brilliance series use mAs/slice, similar to the effective mAs on some other systems, calculated as the product of tube current and tube rotation time for axial scans, and further divided by the helical pitch for helical scans. Therefore, the mAs displayed on images has already taken into the effect of pitch for helical cases. The mA used to measure radiation dosimetry with axial scans in Section 9 through 11 will be different from the mA recorded in Table 1 of the Site Scanning Data Form for helical scans. Special attentions also are needed for the head protocols in Brilliance 16 through 64 scanners, because these axial scans uses 420° rotation angle for the X-ray tube, the actual tube rotation time is 1/6 more than the time per rotation recorded in Table 1. Accordingly, the mA used in Section 9 for adult head needs to be adjusted to be 1/6 more than the mA recorded in Table 1 as well.

Conclusion:

Special attentions are needed to scan ACR CT Accreditation Phantom on volume CT.

Conflict of Interest (only if applicable):

None.