

Table S1 Peak noise frequency as a function of image type and radiation dose

Image type	Radiation dose, peak noise frequency (mm^{-1})		
	5 mGy	10 mGy	15 mGy
Linear-blended images	0.184±0.007 (0%)	0.184±0.007 (0%)	0.173±0.003 (0%)
VMI 40 keV	0.079±0.003 (-57%)	0.084±0.007 (-54%)	0.079±0.007 (-55%)
VMI 50 keV	0.184±0.007 (0%)	0.173±0.013 (-6%)	0.173±0.007 (0%)
VMI 60 keV	0.184±0.007 (0%)	0.173±0.013 (-6%)	0.189±0.013 (+9%)
VMI 70 keV	0.189±0.013 (+3%)	0.173±0.013 (-6%)	0.189±0.015 (+9%)
VMI 80 keV	0.173±0.013 (-6%)	0.178±0.015 (-3%)	0.173±0.007 (0%)
VMI 90 keV	0.168±0.015 (-9%)	0.178±0.015 (-3%)	0.173±0.013 (0%)
VMI 130 keV	0.100±0.007 (-46%)	0.084±0.007 (-54%)	0.079±0.013 (-55%)
VMI 190 keV	0.079±0.000 (-57%)	0.079±0.000 (-57%)	0.079±0.013 (-55%)

Absolute and relative peak noise frequency (f_{peak}) values of each VMI-energy compared to the linear-blended images for each of the three radiation doses at the pediatric phantom size (16 cm). Linear-blended images (LBI) served as reference standard. Values are given as mean±standard deviation. Percentage change in noise magnitude of each VMI-energy compared to LBI is given in brackets. VMI, virtual monoenergetic imaging.

Table S2 Peak noise frequency as a function of image type and radiation dose

Image type	Radiation dose, peak noise frequency (mm^{-1})		
	5 mGy	10 mGy	15 mGy
Linear-blended images	0.147±0.007 (0%)	0.163±0.015 (0%)	0.173±0.007 (0%)
VMI 40 keV	0.079±0.003 (-46%)	0.079±0.003 (-52%)	0.079±0.003 (-55%)
VMI 50 keV	0.115±0.020 (-21%)	0.163±0.020 (0%)	0.173±0.007 (0%)
VMI 60 keV	0.136±0.007 (-7%)	0.168±0.020 (+3%)	0.173±0.0013 (0%)
VMI 70 keV	0.147±0.007 (0%)	0.168±0.020 (+3%)	0.173±0.013 (0%)
VMI 80 keV	0.136±0.007 (-7%)	0.168±0.020 (+3%)	0.173±0.015 (0%)
VMI 90 keV	0.131±0.015 (-11%)	0.163±0.015 (0%)	0.173±0.007 (0%)
VMI 130 keV	0.089±0.007 (-39%)	0.094±0.007 (-42%)	0.110±0.013 (-36%)
VMI 190 keV	0.079±0.003 (-46%)	0.079±0.007 (-52%)	0.079±0.013 (-55%)

Absolute and relative peak noise frequency (f_{peak}) values of each VMI-energy compared to the linear-blended images for each of the three radiation doses at the large phantom size (36 cm). Linear-blended images (LBI) served as reference standard. Values are given as mean ± standard deviation. Percentage change in noise magnitude of each VMI-energy compared to LBI is given in brackets. VMI, virtual monoenergetic imaging.

Table S3 Average noise frequency as a function of image type and radiation dose

Image type	Radiation dose, average noise frequency (mm^{-1})		
	5 mGy	10 mGy	15 mGy
Linear-blended images	0.274±0.001 (0%)	0.275±0.002 (0%)	0.274±0.001 (0%)
VMI 40 keV	0.258±0.001 (-6%)	0.259±0.001 (-6%)	0.258±0.001 (-6%)
VMI 50 keV	0.267±0.001 (-2%)	0.269±0.001 (-2%)	0.268±0.001 (-2%)
VMI 60 keV	0.273±0.001 (-0%)	0.274±0.001 (-0%)	0.275±0.001 (+0%)
VMI 70 keV	0.274±0.001 (+0%)	0.275±0.001 (+0%)	0.276±0.002 (+1%)
VMI 80 keV	0.271±0.001 (-1%)	0.272±0.002 (-1%)	0.272±0.002 (-1%)
VMI 90 keV	0.267±0.001 (-2%)	0.268±0.001 (-2%)	0.268±0.001 (-2%)
VMI 130 keV	0.259±0.001 (-5%)	0.258±0.001 (-6%)	0.257±0.001 (-6%)
VMI 190 keV	0.255±0.001 (-7%)	0.253±0.001 (-8%)	0.253±0.001 (-8%)

Absolute and relative average noise frequency (f_{av}) values of each VMI-energy compared to the linear-blended images for each of the three radiation doses at the pediatric phantom size (16 cm). Linear-blended images (LBI) served as reference standard. Values are given as mean \pm standard deviation. Percentage change in noise magnitude of each VMI-energy compared to LBI is given in brackets. VMI, virtual monoenergetic imaging.

Table S4 Average noise frequency as a function of image type and radiation dose

Image type	Radiation dose, average noise frequency (mm^{-1})		
	5 mGy	10 mGy	15 mGy
Linear-blended images	0.237±0.002 (0%)	0.264±0.001 (0%)	0.273±0.001 (0%)
VMI 40 keV	0.219±0.001 (-8%)	0.246±0.002 (-7%)	0.255±0.001 (-7%)
VMI 50 keV	0.228±0.001 (-4%)	0.255±0.001 (-4%)	0.264±0.002 (-3%)
VMI 60 keV	0.235±0.001 (-1%)	0.262±0.001 (-1%)	0.270±0.002 (-1%)
VMI 70 keV	0.237±0.001 (+0%)	0.265±0.001 (+0%)	0.273±0.001 (+0%)
VMI 80 keV	0.236±0.001 (-0%)	0.264±0.001 (-0%)	0.272±0.001 (-0%)
VMI 90 keV	0.232±0.001 (-2%)	0.260±0.001 (-2%)	0.269±0.001 (-2%)
VMI 130 keV	0.221±0.001 (-7%)	0.250±0.000 (-6%)	0.258±0.001 (-5%)
VMI 190 keV	0.216±0.001 (-9%)	0.244±0.000 (-8%)	0.253±0.001 (-7%)

Absolute and relative average noise frequency (f_{av}) values of each VMI-energy compared to the linear-blended images for each of the three radiation doses at the large phantom size (36 cm). Linear-blended images (LBI) served as reference standard. Values are given as mean \pm standard deviation. Percentage change in noise magnitude of each VMI-energy compared to LBI is given in brackets. VMI, virtual monoenergetic imaging.

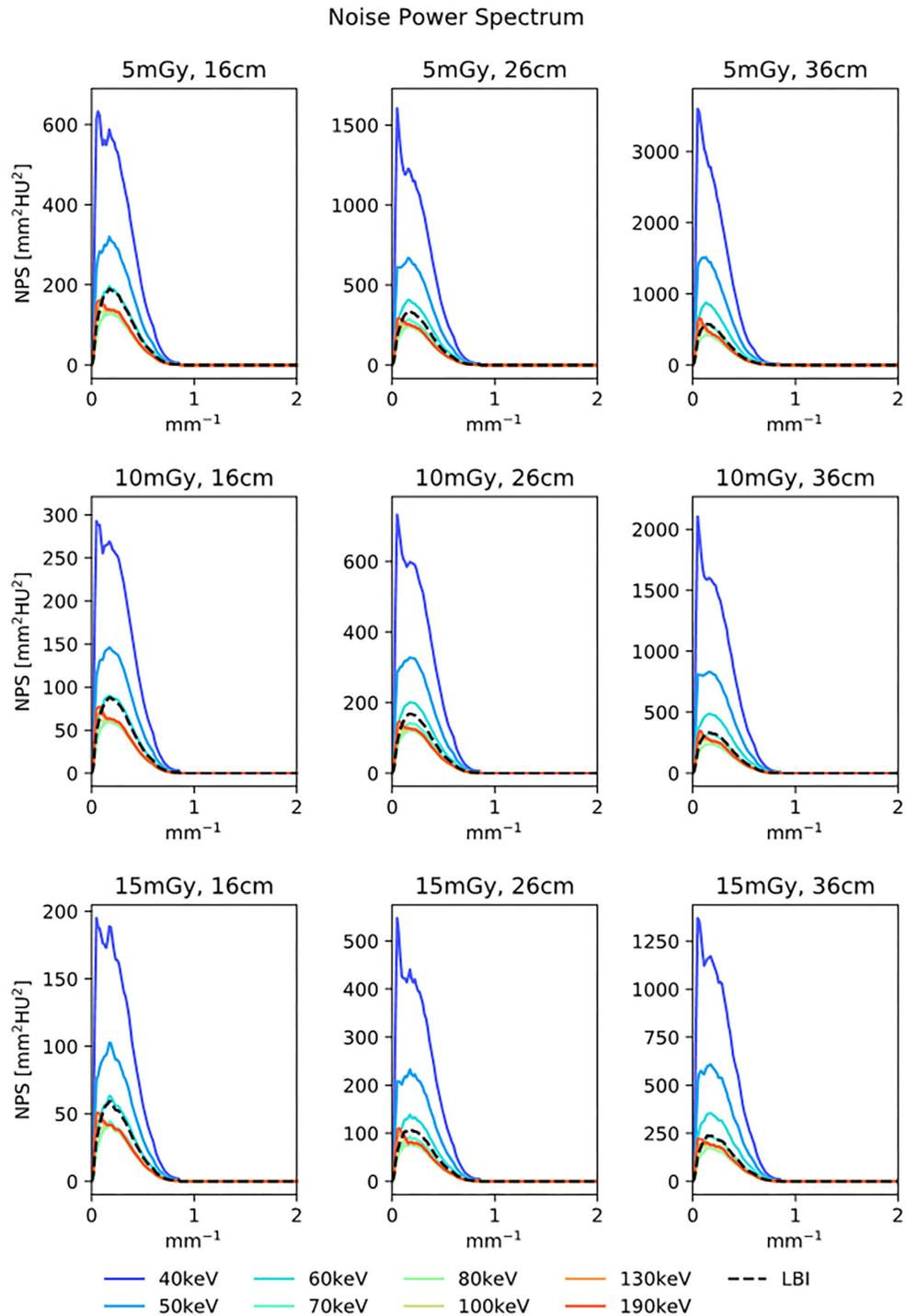


Figure S1 Noise power spectrum. Noise power spectrum as a function of the image type, radiation dose level, and phantom size for the full frequency range. Overall noise magnitude increased with increasing phantom size and decreasing radiation dose. Furthermore, noise magnitude was higher for 40–60 keV compared to the LBI. Please note the differences in the y-axis scale for the NPS. VMI-energies of 90, 110–120, and 140–180 keV are not displayed because they demonstrated similar shape compared to adjacent energies. LBI, linear-blended images; VMI, virtual monoenergetic imaging.

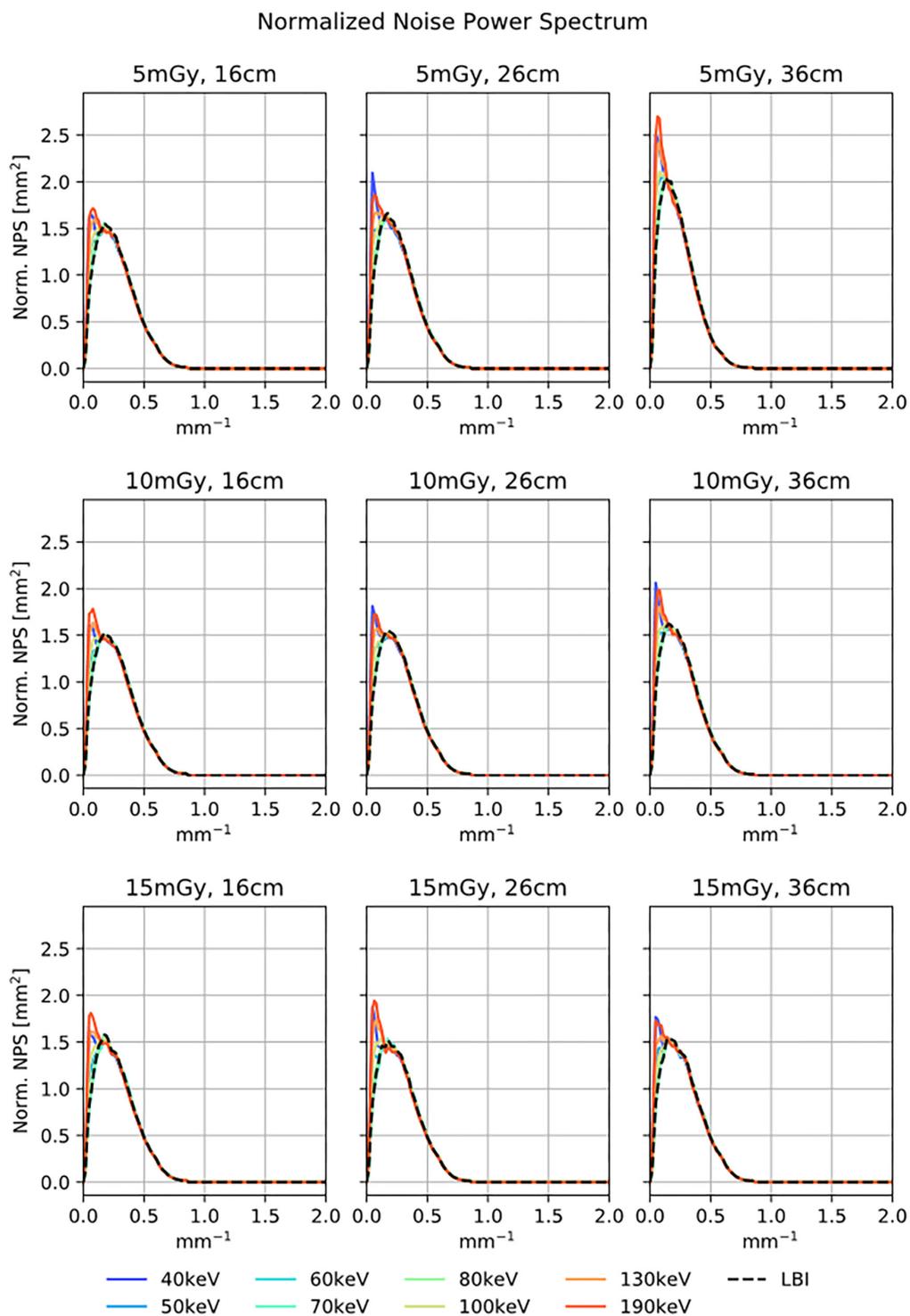
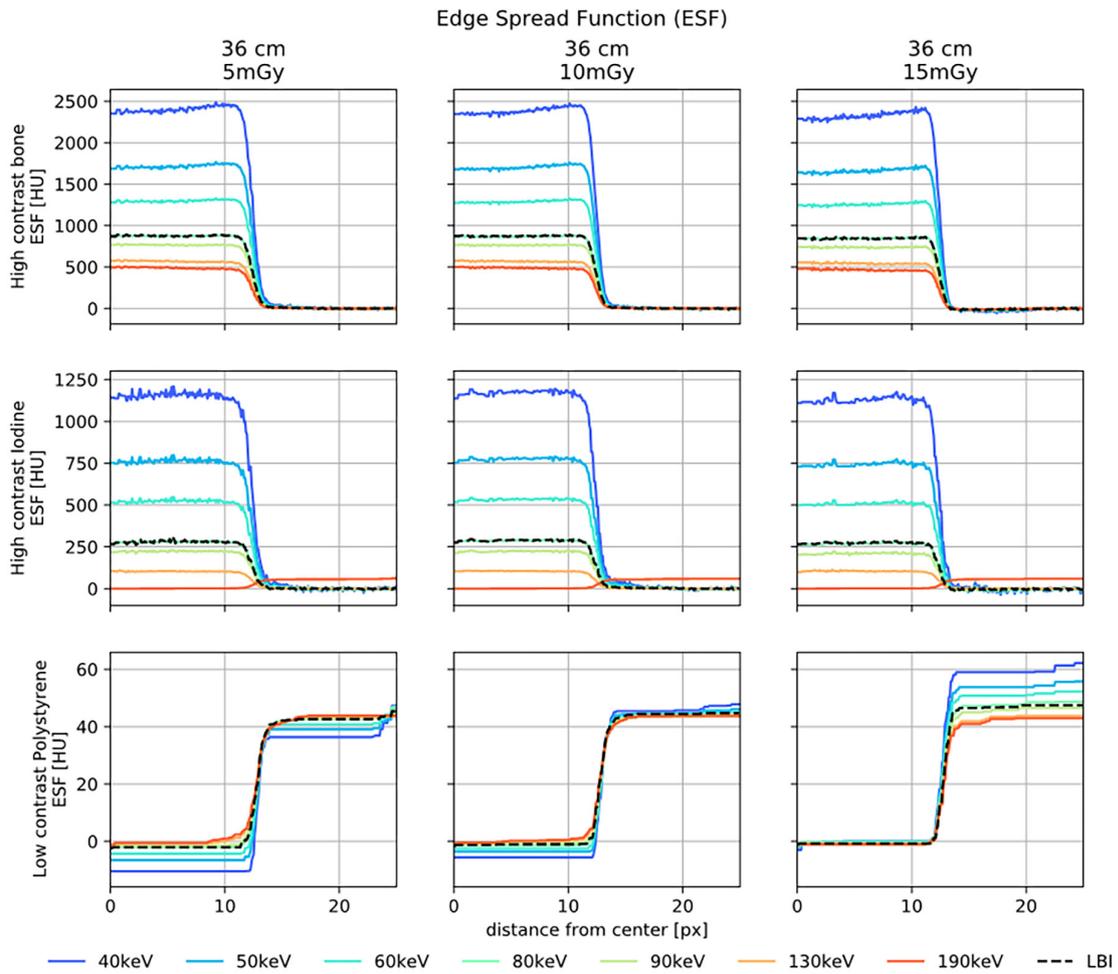


Figure S2 Normalized noise power spectrum. Normalized noise power spectrum as a function of the image type, radiation dose level, and phantom size for the full frequency range. A low frequency peak was observed for low (40–60 keV) and high keVs (130–190 keV). Of note, VMI-energies of 90, 110–120, and 140–180 keV are not displayed because they demonstrated similar shape compared to adjacent energies. VMI, virtual monoenergetic imaging.

A



B

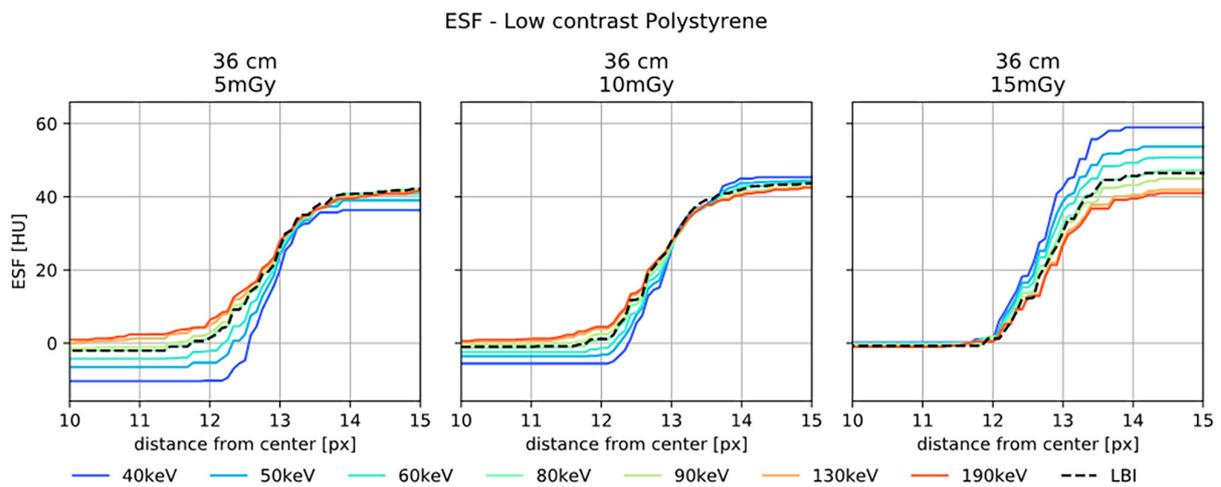


Figure S3 Edge spread function. ESF as a function of the contrast task, image type and radiation dose level for the 36 cm section (A). Magnified graphs with a limited x-axis range are given in (B) to highlight the differences between the VMI-energies for the polystyrene insert. Please note the increase in the slope of the ESF at low VMI-energies of 40–60 keV for the polystyrene insert indicating improved spatial resolution. ESF, edge spread function; VMI, virtual monoenergetic imaging.