Purpose: To assess quality of cone beam computed tomography (CBCT) images obtained by an image-guided, robotic-arm based small animal conformal radiation therapy device (SACRTD).Method and Materials: The SACRTD is equipped with a 40-225 kV X-ray tube mounted on a custom made gantry, a 1024x1024 pixels flat panel detector (200 μm resolution), a programmable six degrees of freedom robot for CBCT imaging and conformal delivery of radiation doses. A series of 2D radiographic projection images were recorded in cone beam mode by placing and rotating microCT phantoms on the “palm” of the robotic arm. Reconstructed images were studied for image quality (spatial resolution, image uniformity, CT number linearity, voxel noise and artifacts.Results: The Shelley microCT QA phantom was used to assess image quality. Distances between the 5 beads in the geometric calibration plate were measured to within 0.3%. CT-numbers measured using the CT-number plate were linear with iodine density (R2>=0.995). Qualitative evaluation of reconstructed axial CT slices using the resolution plate resolved 200 μm clearly. Quantitative spatial resolution was assessed using the slanted edge plate and found to be 3.16 lp/mm. Uniformity of the system was measured with the QRM microCT water phantom; the noise measured was 34 HU (average standard deviation of measured signal intensity). Finally, CBCT images of the QRM multidisk phantom had minimal artifacts or distortions. Conclusions: Results showed that the SACRTD is capable of producing CBCT images of high quality and sufficiently small spatial resolution for precise and conformal small animal dose delivery. With its combined dose delivery and imaging capabilities, the SACRTD is powerful tool for small animal research.