Quantitative ultrasound attenuation imaging at the calcaneus has been recently emerged as a new technique for bone characterization. Imaging of the calcaneus enables standardization of a region of interest (ROI). An algorithm selects automatically a circular ROI (ROI<sub>c</sub>) located in the area of lowest attenuation in the posterior tuberosity of the calcaneus. However, ROI<sub>c</sub> employed in this technique uses only a small portion of the information contained in the image of calcaneus. We experimented with the use of an integral ROI (ROI<sub>i</sub>) encompassing more of the trabecular area of the bone. This study compares measurements of broadband ultrasound attenuation (BUA) at ROI<sub>c</sub> and at ROI<sub>i</sub>. BUA imaging of the right calcaneus was performed using a computer-controlled transmission system (Ubis 3000, DMS, France). Software was developed capable of reading ultrasound images and of selecting and analyzing irregular ROIs on the BUA images. Ultrasound attenuation was estimated at ROI<sub>c</sub> and ROI<sub>i</sub> in 31 female subjects. Precision evaluated in 10 patients was better at ROI<sub>c</sub> than at ROI<sub>i</sub>. Correlation between measurements in the two ROIs was high (r = 0.85). BUA was equally correlated with BMD at the lumbar spine at both ROIs (r = 0.53 at ROI<sub>c</sub> versus 0.45 at ROI<sub>i</sub> , p<0.05). In conclusion, we found that ROI<sub>c</sub> with an automated technique for its determination, is the most appropriate choice for BUA measurements.