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PRELIMINARY RESULTS FROM THE PORTABLE IMAGERY QUALITY ASSESSMENT TEST FIELD (PIQuAT) OF UAV IMAGERY FOR IMAGERY RECONNAISSANCE PURPOSES

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Abstract. The article presents a set of initial results of a quality assessment study of 2 different types of sensors mounted on an unmanned aerial vehicle, carried out over an especially designed and constructed test field. The PIQuAT (Portable Imagery Quality Assessment Test Field) field had been designed especially for the purposes of determining the quality parameters of UAV sensors, especially in terms of the spatial, spectral and radiometric resolutions and chosen geometric aspects. The sensor used include a multispectral framing camera and a high-resolution RGB sensor. The flights were conducted from a number of altitudes ranging from 10 m to 200 m above the test field. Acquiring data at a number of different altitudes allowed the authors to evaluate the obtained results and check for possible linearity of the calculated quality assessment parameters. The radiometric properties of the sensors were evaluated from images of the grayscale target section of the PIQuAT field. The spectral resolution of the imagery was determined based on a number of test samples with known spectral reflectance curves. These reference spectral reflectance curves were then compared with spectral reflectance coefficients at the wavelengths registered by the miniMCA camera. Before conducting all of these experiments in field conditions, the interior orientation parameters were calculated for the MiniMCA and RGB sensor in laboratory conditions. These parameters include: the actual pixel size on the detector, distortion parameters, calibrated focal length (CFL) and the coordinates of the principal point of autocollimation (miniMCA - for each of the six channels separately).

[Conference paper](#) (PDF, 773 KB)

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