Abstracts

Test Results of an Experimental Autonomous Aircraft Landing System Utilizing a 94 GHz FM-CW Imaging Radar

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An expermimental system capable of aiding a pilot during adverse weather landings, primarily dense fog, has been built and tested both on the ground and in flight. The system includes a 94 GHz FM-CW radar as the front-end sensor and a back-end digital signal and image processor for image generation, enhancement, and transformation. The high performance 94 GHz radar utilizes a twisted cassegrain reflector, an external ILO, and an HEMT MIMIC LNA/image-reject mixer front end to overcome the low transmitted power and poor receiver noise qualities of typical W-band radar systems. The back-end processing hardware uses a number of processors in a flexible and reconfigurable pipeline architecture for implementation of a variety of different enhancement algorithms. This paper gives a detailed description of this system and the test results which have been recorded on the ground and in flight. The results indicate that this system has future commercial promise.

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