

# Experiment and Performance Evaluation of Vehicle-mounted SAR Imaging System

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In 2013, the objective of Airborne TaiSAR program is to establish an all-weather high-resolution airborne synthetic aperture radar system. Comparing to optical remote sensing, the SAR (Synthetic Aperture Radar) system has the ability to penetrate clouds and rain, work day and night with high mobility and real-time. Therefore, the SAR system can strengthen the ability of information collection, marine safety and pollution monitoring applications, disaster investigations, follow-up disaster reduction and prevention strategies, and support scientific research related to the issues of regional climate change. The TaiSAR system adopted dual-antenna pulse wave architecture and the dual orthogonally polarized antennas has the advantages of high polarization isolation and good quality of received signals. The pulse wave has the advantages of long-distance operation and simple signal compensation. Due to the problem of the payload aircraft, it has been temporarily placed on the ground. In 2021, the TaiSAR system recovery and vehicle-mounted modification has been accomplished. For the test of long-distance single scene, Guishan Island SAR imaging test has been observed. Guishan Island is 3.1 kilometers wide from east to west, 1.6 kilometers long from north to south, and covers an area of 2.841 square kilometers at Toucheng Township, Yilan County, Taiwan. Execute featured scenes of distributed targets, dual polar imaging/imaging observations, and radiometric resolution analyses are presented.

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