

INITIAL IN-ORBIT RADIOMETRIC CALIBRATION RESULT OF GEOSTATIONARY OCEAN COLOR IMAGER

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1. ABSTRACT

The world's 1st ocean observation imager in geostationary orbit, GOCI(Geostationary Ocean Color Imager) has been announced the official launch schedule of GOCI, ocean color observation payload on COMS(Communication, Ocean and Meteorological Satellite), developed by KARI(Korea Aerospace Research Institute) and KORDI in Korea with France's Astrium.

After the successful launch of COMS, GOCI will be operated at Korea Ocean Satellite Center(KOSC) in KORDI, Korea. As a main operation center of the GOCI, KOSC has an own and sole responsibility of the GOCI data receiving, processing and distribution within $\pm 5\%$ radiometric accuracy.

In order to maintain the radiometric accuracy in the GOCI operation period for mission life time(7.7 years), the GOCI implements Solar Diffuser(SD) and Diffuser Aging Monitoring Device(DAMD) as a second solar diffuser for in-orbit solar calibration for in-orbit solar calibration[1]. GOCI selected QVD type solar diffusers[2] made of fused silica which are very well-known for the low solar UV sensitivity[3]. GOCI SD and DAMD are made of same material with same fabrication processes in TNO, Netherlands. The size of diameter between two diffusers are different[2]. Diameter of GOCI SD is 140mm and DAMD is 70mm.

Because GOCI reference radiometric model to retrieve the radiance from DN(Digital Number) of GOCI raw data has been characterized with 3rd order polynomial with 3rd order non-linear gain and linear gain during GOCI ground test campaign, at least two different solar calibration images are required for the GOCI gain estimation in the part of the GOCI in-orbit radiometric calibration The GOCI will be operated to acquire at least one solar calibration image during local night time in KST(Korea Standard Time).

The GOCI linear gain value is about 0.5 for Band 1(412nm) and non-linear gain value is about -1.4E-9 for Band 1(412nm) from the pre-launch GOCI ground test results. The GOCI Radiometric Calibration test in order to determine the initial reference value for GOCI nominal operation and calibration will be evaluated in the GOCI IOT(In-Orbit Test) period. We present the GOCI initial in-orbit radiometric calibration result acquired in the GOCI IOT, and the validation result comparing with the pre-launch ground test results.

2. REFERENCES

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