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Design and test of MROD, a 2 Channels Video Chain Mixed-Signal ASIC for High Resolution Mission

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THALES ALENIA SPACE is the European leader for Satellite Systems and since 1993 the company has been designing and developing an important series of space used Mixed-Analog ASICs. Major actor for high resolution electronics for Earth Observation and Scientific missions, THALES ALENIA SPACE has been granted a CNES contract for the development of a high performance, low voltage CMOS integrated circuit to perform the video chain for CCD and CMOS signals. This circuit is therefore part of the pre-development of the OTOS project (post-pleiades)..

This circuit, named MROD, has been released on the XFAB BiCMOS 0,35 μm technology and specific tasks of design hardening have been performed in order to stand for the space radiation environment.

MROD design is based on high performances analog block functions (i.e. 12 Mhz/12-14bits) for signal conditioning and digital block functions for DDR signal interfacing and configuration signal interface. It includes 2 fully independent video channels.

The present findings will address the following topics:

- Missions for MROD (CNES source)
- Main specification of MROD
- Selection of the CMOS technology
- Methodology, design tools
- Architecture and Design of mixed signal ASIC MROD
- Electrical and radiation test results versus specifications and simulation

Primary author: Mr AYZAC, Philippe (THALES ALENIA SPACE, France)

Co-authors: Mr NEVEU, Claude (THALES ALENIA SPACE, France); Mr BIFFI, Jean-Marc (CNES); Ms DI SANTO, Sophie (THALES ALENIA SPACE, France)

Presenter: Mr AYZAC, Philippe (THALES ALENIA SPACE, France)

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