Modernisation of the EGSE for the EPIC Flight Spare Camera Chain


ABSTRACT

Two Flight Spare (FS) cameras of the EPIC instrument are still available on-ground. The possible existence of the XMM-Newton mission even further than 2014 could require substantial changes in the SW and/or TC & TM database, in order to deal with the expected aging and/or failures of the on-board instrument. It will be very useful to check on-ground these changes, before their on-board uploading. Therefore the two FS cameras must be kept ready to this aim. Currently they can be operated through the original Electrical Ground Support Equipment (EGSE), which was developed about 15 years ago in order to support all the test campaigns up to this moment. It is not suitable to test SW changes, therefore EXS and the EPC Consortium has agreed to replace it with a new equipment named SODS 2000, in order to fully reproduce on-ground the on-board status and to operate the FS cameras with the same tools used by EXS. Here we describe the proposed architecture and the development status.

Central Check-Out Equipment (CCOE)

Instrument Station (IS)

Power Interface Simulator

Interface Simulator Unit (ISU)

Electronic Chain

Camera Head

Electronic Simulation End-front Electronic

OBDB bus
Analog (thermometer)
Heaters
Relay command
Relay status
Secondary power
Primary power
DC/DC Synch clock

Power Interface Simulator

Electrical Chain

Camera Head

Central Check-Out Equipment (CCOE)

Instrument Station (IS)

Power Interface Simulator

Interface Simulator Unit (ISU)

Electronic Chain

Camera Head

In order to ensure the operation level of the current on-ground configuration, EXS and the EPC Consortium agreed to modernize the EGSE, which is the test equipment that has been deployed to manage the on-ground test status of the flight instrument. However, this is a difficult task, for two main reasons:

- In order to keep the same level of test quality, it is necessary to replace the current EGSE test equipment.
- It is necessary to keep the same level of test quality, as it is necessary to reuse the new equipment for the test campaign.

In the proposed new EGSE configuration, both ISU and CCOE will be replaced with a new, modern equipment named System Kit and Electrical Ground Support Equipment (EK SKEGS). The EGSE configuration includes the ISU, the CCOE, and the EK SKEGS. The EGSE configuration also includes a new interface, the ISU Chain, which is designed to improve the test quality and reliability. The EGSE configuration also includes a new interface, the ISU Chain, which is designed to improve the test quality and reliability. The EGSE configuration also includes a new interface, the ISU Chain, which is designed to improve the test quality and reliability.

The EGSE configuration will be used for the test campaign, developed by the EPC Consortium. The ISU Chain is designed to improve the test quality and reliability. The EGSE configuration will be used for the test campaign, developed by the EPC Consortium. The ISU Chain is designed to improve the test quality and reliability. The EGSE configuration will be used for the test campaign, developed by the EPC Consortium. The ISU Chain is designed to improve the test quality and reliability.