TEST AND VALIDATION SYSTEMS

ELECTRICAL GROUND SUPPORT EQUIPMENT FOR SATELLITE AND AVIONICS TESTING

CELESTIA | Antwerp

TEST AND VALIDATION SYSTEMS
ELECTRICAL GROUND SUPPORT EQUIPMENT (EGSE)

Celestia Antwerp builds test and validation systems according to customers specifications. We are active within various domains: astrionics, avionics, RF, TTC and payload systems. Our systems are modular and use offthe-shelff and custom made solutions built and integrated to the highest standards. We offer solutions for clean rooms, openair and ATEX environments. The main activity is oriented to RF, TTC and payload SCOE, but other digital test, validation and supporting systems are in our portfolio as well.

Celestia Antwerp has a long legacy in the development of SCOE and complete EGSE, e.g. ERA, Columbus, ATV, Solar, MTG, ExoMars 2020, and others. Our activities range from the development of suitcases to the design of individual SCOE and the integration into central checkout systems.

EGSE AND SCOE

Celestia Antwerp has extensive experience in the development of RF, TTC and payload related SCOE. We have off-the shelff solutions for the integration of various equipment suppliers (TTC and Payload) and have standardized designs for RF-switching units. Together with preferred suppliers we integrate and manufacture the following SCOE:

- RF SCOE: measurement and characterization of RF signals: 70 MHz, Lband to Ka/Kuband
- TTC SCOE: Telemetry Telecommand and Tracking SCOE using various key players as TTC system: Cortex CRT, CSTS IMBU and Celestia Antwerp IBB and VIBB
- Payload SCOE: RF payload SCOE using Safran Cortex HDR and Celestia Antwerp Omnisat HDR
- RF Suitcases

Cornerstone of the RF SCOEs are the inhouse developed, integrated and tested high precision RF switching units. Output levels are controllable locally through the touch display or remotely via TCP/IP.

Frequency bands from L-band up to Ka/Ku-band are available.

SCOE ENGINEERING CAPABILITIES

Celestia Antwerp can provide solutions to other types of SCOE in the form of coengineering and sub-contracting, writing specifications and performing bench mark tests, examples.

- Thermal SCOE: Heaters, Loads
- Avionics SCOE: MIL STD 1553B, RS422, SpaceWire
- Umbilical SCOE
- RF Suitcases
- Simulators in SW and HW

ENGINEERING CAPABILITIES

Celestia Antwerp is active in different domains, the different divisions work closely together to maximise the output. This way we can provide different engineering services:

- Cable & Harness design
- Specify and design of specialized equipment testers: rack based or portable
- Write requirement specifications
- Integrate and upgrade existing systems, re-factoring of existing solutions.
- Turnkey systems where all aspects of the solution are explored and integrated

ENGINEERING APPROACH

Celestia Antwerp adopted an MBSE (Model Based System Engineering) approach. This method allows us to generate design documentation, ICDs SW and continuously validate the design against the requirements.

Interface files, ICDs, SW and MIBs are generated from the model, ensuring consistency between design and implementation.

Furthermore the design models are used in simulation tools to verify the capabilities of the SCOE and test equipment. Together with data obtained from legacy systems this allows us to predict accurately the performance of the test equipment.

PAST EXPERIENCES

- MPCV (Orion, Artemis)
- Columbus EGSE: complete EGSE
- ESA ATV: RFFEE, GPSFEE, PDU, UIS
- ExoMars 2020: RF SCOE, Power SCOE
- MTG Third Generation: RF TTC SCOE
- Galileo GSTBV2
- NAOS TTC and payload SCOE
- PLATiNO TTC and PDT SCOE
- Small GEO RF Suitcase

OUR SYSTEM

Our SW system is fully configurable with respect to command, telemetry and logging. The systems provides scripting capabilities (e.g. Python). All variables within the test system are accessible in the scripts in raw and engineering values. Test reports can be generated at the end of a test session in PDF or Open Document format.

Our software provides interfaces to the following central checkout systems:

- CCS5: SCOS2K (EDEN/PUS)
- Test Centre (PUS based)
- EGSCC: XML files (EDEN/PUS)
- CGS: Oracle DB

The SW can operate with various equipment suppliers: Keysight (preferred), Rohde & Schwartz, MicroWave and others.

SUPPORT

We at Celestia Antwerp value your business and have installed a capable team for providing support during the integration of the test system into your environment. Our engineers are online available to help out and assist on any problem that may occur during the integration activities. Additionally we offer continuous support 24/7 on request.

We also ensur long term support, 3+ years, with obsolescence analysis, system upgrades and training.

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