

File name:	Radio Frequency Test Engineer
Version:	1.0
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Author:	Nicolas ROCHE



RADIO FREQUENCY TEST ENGINEER

1 CONTEXT

The University Space Center is the French leader in the development and operation of nanosatellites developed by students. It has acquired in-depth competences in the field of design, manufacturing, testing and operation of nanosatellites and their subsystems, as well as in the area of space project management and product assurance in the framework of university space projects. The CSU has an AIT (Assembly Integration and Test) Facility, a CDF (Concurrent Design Facility) and both UHF and S-band Ground Stations. The CSU develops its own 1U and 3U CubeSat nanosatellite platforms with the support of the Van Allen Foundation and both the French and the European space agencies.

2 DESCRIPTION

The Radio Frequency Test Engineer will be the lead of DC and RF cable and harness design and analysis, harness fabrication fixture/mockup design, voltage drop-off and RF loss analysis, test procedure generation for insulation resistance/high-potential (IR/Hi-Pot) testing, EMI/EMC testing, and manufacturing support.

3 ROLES AND RESPONSIBILITIES

Write and release the sub-system specification documenting all requirements, including meeting space charge requirements via proper grounding and shielding techniques and performing trade studies in the respective area.

Establish a plan to generate evidence for requirement verification during program execution.

In accordance with the manufacturer, define interfaces, ensure the released design meets requirements and provides the necessary manufacturing information.

Design, model and test RF harness for space application, filters, signal processing and front-end electronics using appropriate softwares, up to 40 GHz for functional and environmental tests.

Develop RF test benches up to 40 GHz.

Support the assembly, integration & test (AIT) team.

Perform cables testing as required, on the bench, in harness, in environment or in-vehicle. Complete continuity, insulation resistance, dielectric withstanding voltage, RF loss testing on all completed harness.

Harnesses developed may be for flight, ground support, or testing accounting for thermal, radiation, atomic oxygen, vacuum, and cleanroom environments.

Analyse test results.

Present the Flight Harness sub-system status at formal reviews including SRR, PDR, MRR & CDR.

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Support the conduct of research projects to improve and standardize the design process used.

4 QUALIFICATIONS

Be (or become) conversant with RF cable testing on-spacecraft.

The use and operation of a wide range of standard laboratory test equipment.

To operate within strict quality control processes and procedures.

Demonstrated ability to select electrical interconnects and shielding to meet signal integrity and EMI/EMC requirements.

Comprehensive RF design and measurements techniques up to 40GHz.

Experience with CAD software to design the electrical harnesses.

Technical expertise in capabilities, selection and qualification of components used in flight spacecraft cable harness designs. Components include connectors, backshells, wire, contacts, splices, solder, overshields, terminal lugs and coax products.

An understanding of, and experience with, RF waveforms and propagation to include knowing the advantages and disadvantages of different waveform types, how information is encoded, communication signaling theory, and various modulation types.

Be (or become) conversant with electromagnetic modeling (CST STUDIO SUITE or other software).

5 JOB CONSTRAINTS

Work on a computer, require work out-of-business hours during satellite commissioning and long-term testing

6 JOB LOCATION

Montpellier, FRANCE

7 POINT OF CONTACT

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