

Cable and Harnessing Capability

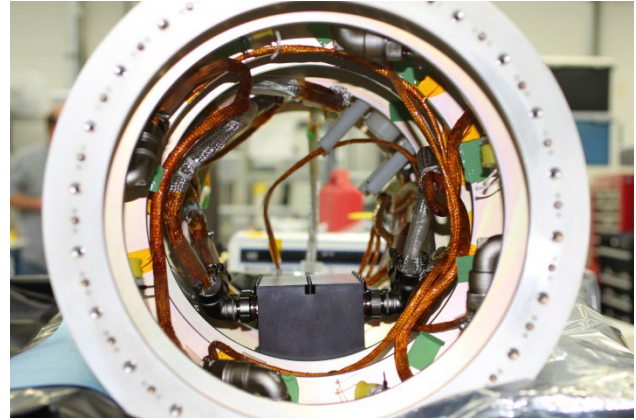
Design Description

Sierra Space maintains an in-house Production and Test Center Cable and Harnessing Laboratory supported by our NASA-certified and trained technicians with more than 25 years of combined experience. Our Cable and Harnessing Lab personnel routinely manufacture, repair, and integrate flight and test harnessing and cables for NASA, commercial, and DOD customers for a variety of applications.

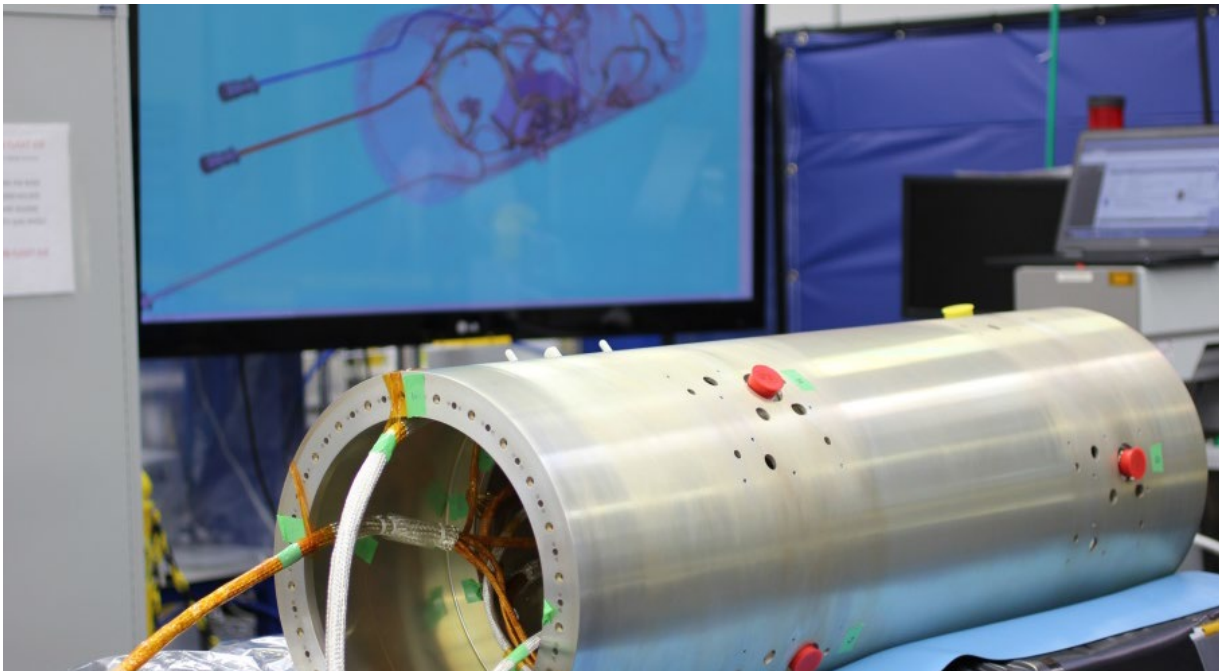
Sierra Space recently completed cable and harnessing for NASA's Cyclone Global Navigation Satellite System (CYGNSS) Deployment Module, which was source inspected and qualified in April 2016. The team completed all CYGNSS cable and harness activities on time and under budget.

Our Cable and Harnessing Laboratory capabilities meet NASA's upper-tier flight cable and harnessing electrical connective requirements including NASA-STD-8739.3, *Soldered Electrical Connections*, or the equivalent standard, IPC-J-Std-001E, *Requirements for Soldered Electrical and Electronic Assemblies*. Our Cable Lab also meets NASA's standard for harnessing and wiring, NASA-STD-8739.4, *Crimping, Interconnecting Cables, Harnesses, and Wiring*.

Sierra Space integration and test production personnel follow stringent guidelines, processes, and procedures to ensure flight-qualification requirements are met. The following electrical tests, including tests to chassis ground (i.e., connector body) and isolated shields, are performed prior to assembly certification. Tests include 1) end-to-end pinout continuity/resistance test; 2) insulation resistance testing in accordance with MIL-STD-202, *Electronic and Electrical Component Parts*, method 302 (250 Vac, 60 second, ≤ 2.5 mA); and 3) dc resistance testing in accordance with MIL-STD-202, method 303 (250 Vdc, 60 sec, ≥ 1 mohm). An example of our harnessing test activities for the CYGNSS electrical interface is shown below.



Cable and harnessing for NASA's CYGNSS Program



Cable and Harnessing Laboratory. Recently completed cable harnessing and testing for the CYGNSS module meeting strict NASA standards.

Cable and Harnessing Features	
<ul style="list-style-type: none"> Fully certified in-house cable and harnessing laboratory Conformance with NASA and government standards 	<ul style="list-style-type: none"> Staffed with 25 plus years of experience

Applications
Space flight harness assemblies for spacecraft and launch vehicles.

Heritage Programs	
<ul style="list-style-type: none"> NASA Cyclone Global Navigation Satellite System (CYGNSS) Deployment Module Space Test Program Satellite (STPSat-5) 	<ul style="list-style-type: none"> ORBCOMM Generation 2 (OG2) NASA Commercial Crew Development (CCDev); Commercial Resupply Services (CRS2) programs—Test harnessing and cables for the <i>Dream Chaser</i>® Engineering Test Article (ETA)

Reference Documents (Process Procedures)			
D20234	Kit Verification Work Instruction	P5009	Staking Procedure
P1001	Cleaning of Flight Hardware	P5013	Torque Procedures for Threaded Fasteners
P2004	Identification and Marking of Hardware	P5014	Kitting Materials and Parts
P3001	Guidelines for Dimensional Inspection of Materials, Parts, and Assemblies	P5016	Shrink Tube Installation
P3007	Criteria for Visual Inspection of Hardware	P5026	Crimping and Installation of Crimp Contacts and Terminals
P4001	Product Certification Post Kit	P8002	General Packaging
P4003	Part Certification, Pre-Kit	P10001	Contamination Control Procedure
P5008	Preparation of Two-Part Compounds	P10002	Electrostatic Discharge (ESD) Control
ISO-4020	Product Realization	ISO-4021	Control of Nonconformances

Note: This data is for information only and subject to change. Contact Sierra Space for design data. "P" and "D" document numbers reference internal Sierra Space procedures.



Typical Harness Process and Flow Procedures.