

Cleaning of Flight Cable Assemblies

Cables represent one of the most significant sources of contamination of any flight hardware. It is often assumed that if every material used in the cable assembly is approved, then there should be no concern about contamination.

Cable assemblies are usually not fabricated in cleanrooms, and hardly ever with gloved hands. On occasion, these cables are strung along the floor in ordinary work areas for times as long as several months where people can, and often do, walk on them. Not only can they accumulate contamination in this way, the assemblies often weigh many kilograms.

Therefore, even if the materials of construction have a low contamination level, the amount of contamination may be significant due to the large mass of the harness. As a result, there is always the risk of contamination from processing and from the basic materials of fabrication.

To prevent contamination of an instrument or spacecraft, the cables must be cleaned prior to exposing the cables and the payload to vacuum test and/or flight. The best way to clean cables is to first vacuum them thoroughly, then wipe them with alcohol-dampened cloths to reach all accessible areas, and finally to vacuum bake them at about 85 °C for 48 hours with a LN₂ cooled scavenger plate and quartz crystal micro balance (QCM) in place.

Thereafter, when the cables are clean, steps must be taken to keep them clean. As a result, they should be handled with approved gloves and packaged in approved wrap until they are installed and/or in a clean room environment.