

To: Avionics
 From: Ann Engineer
 Subject: Video camera qualification rationale: Dragon and Falcon 9
 Date: 11/10/2009

Outline

This memo describes our rationale that the on board video cameras are qualified for flight on Dragon and Falcon 9. This means that we won't subject the video cameras to additional testing.

Background

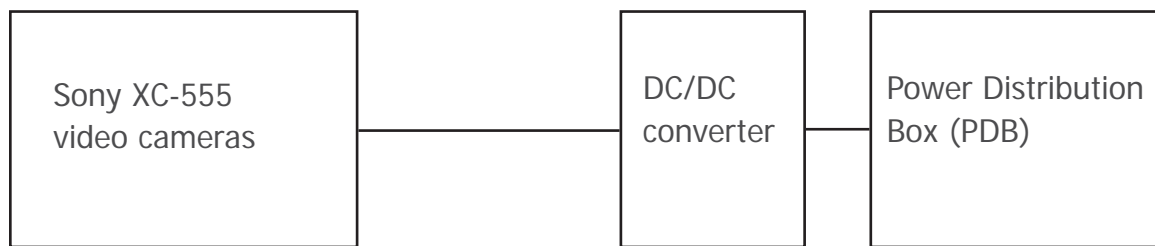
We use video cameras to see what's happening after launch. The on board video camera system is a non mission critical system that's designed to stop operating in the event of a hardware fault to protect the rest of the system. In worst case scenarios, an anomaly in a camera results in the removal of power from it.

All five SpaceX Falcon 1 missions used two Sony XC-555 cameras located in the second stage raceway. The cameras were exposed to the resultant ascent and orbital environments with no hardware anomalies.

Rationale

The Dragon and Falcon 9 vehicles use Sony XC-555 video cameras with a Sony VCL-03S12XM or VCL-06S12XM 35mm lens. The cameras receive power from a dedicated switchable channel in the Power Distribution Box (PDB) through a fused DC/DC converter.

The DC/DC converter has built-in output overcurrent protection. The converter has a fuse on its power input to protect the PDB output from anomalies downstream. The switch card channel on the PDB also has a built-in fuse to protect the main power bus from anomalies downstream.



A fuse on the converter protects it from overcurrent or other anomalies.

A fuse on the PDB switch card channel also provides protection from downstream anomalies.