

Honeywell: The Path to Affordable Electronics for Commercial Space Constellations

Anthony Casasnovas

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anthony.casasnovas@honeywell.com

The need for a Commercial Space Parts Control Plan is clear in this age of small satellite constellations. This strategy provides the starting point for using commercial, industrial, and automotive grade electronic components in these low-cost programs. Additional requirements may be imposed subject to affordability concerns. The need for a Parts, Materials, and Processes Control Board (PMPCB) and the roles and responsibilities of its members is discussed. Then, the concept of a Part Assessment is presented as a prerequisite for part selection. The part assessment would provide for a review of the electronic component manufacturer, life cycle (obsolescence), part operating and storage temperature ranges, termination finish & solder joint reliability, special handling (if any) and an introduction to the manufacturer's reliability data and remedial tests as needed. It will also provide for handling & storage requirements (electrostatic discharge sensitivity, moisture sensitivity, stray magnetic field sensitivity, etc.), discuss compatibility with production processes, any restrictions, and provide the applicable PCNs, errata's, GIDEP, & Industry Alerts. Other interesting requirements will also be discussed. Radiation effects and "active" electronic component base-line controls will be explained. Finally, derating, and other detailed design analyses should be mandatory, as well as a strong recommendation for robustness testing, environmental stress screening, and redundancy will be provided.