



Jet Propulsion Laboratory
California Institute of Technology

Investigating Possible Cracks in a Counterfeit Prevention Program How Suspect Parts Could Sneak In

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The Rules (at JPL)

- Sources of flight parts must be on the JPL Approved Supplier List
- Purchasing from OCMs or their authorized distributors is strongly preferred—with flexibility for R&D, nonflight, or CubeSat parts
- Flight EEE parts must (with few exceptions) be purchased on a purchase order through our formal procurement process
- EEE parts are to be received by JPL Receiving and inspected by Quality Assurance
- Nonflight parts and materials may be purchased on a JPL credit card and delivered without all the formal requirements of QA scrutiny
- As-designed subcontractor part lists are reviewed by JPL part specialists, and as-built lists are reviewed when they become available

No surprises here – this isn't rocket science

Case Study 1: Photodiode for Mars rover

A current project needs a photodiode for an upcoming mission to Mars, and was considering various suppliers

- One authorized distributor boasted at their website that their parts are “Tough Enough for Mars”



Site Search:



[Information Request Form](#)

UV Photodiodes / Photodetectors Silicon Carbide (SiC) Detectors

Silicon carbide SiC photodetectors / photodiodes have a spectral response of approximately 210 – 380 nm and are not sensitive to UV radiation outside this region. This makes them ideal detectors in certain applications for monitoring the UV spectrum without the need for solar rejection filters. SiC photodetectors are extremely durable and have been proven to



Case Study 1: Photodiode for Mars rover

- This distributor's source—the manufacturer—also showed at their website that their parts are used on JPL's Curiosity rover

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Mars Rover "Curiosity"

Flame detector

Erythema sensor

References

Our photodiodes are used worldwide, in manifold applications. Learn some more about some interesting projects:



Our SiC-diodes measure UV radiation on Mars

contributed six SiC-photodiodes for the environmental monitoring station REMS of the Mars rover "Curiosity" for the long term measurement of the surface UV radiation.

[> read more](#)

Case Study 1: Photodiode for Mars rover

- However, a search of purchase order records found no purchases from either this manufacturer or its authorized distributor
- A check of the JPL Approved Supplier List found neither this manufacturer nor the distributor
- A search of credit card purchases found an order from this distributor
- This distributor was verified to be the authorized distributor for this manufacturer

In this case, internal review verified that the parts were legitimate and allowable for a flight project

Case Study 2: Purchases from suspect supplier

A GIDEP Problem Advisory from early 2017 identified a reputable independent distributor that was found to have sold at least 20 different part numbers of counterfeit parts to at least 11 different customers

- A search confirmed that this distributor was not on the JPL ASL
- A search of purchase orders found one purchase of two EEE part numbers, of types typically used on flight missions
- Review of the purchase requisition found that it was for nonflight parts, which would not require QA reviews
- Further research found that the parts were on a CubeSat spacecraft awaiting launch and all had functioned properly

Internal review indicated that the parts in question were almost certainly genuine—but they could easily not have been

Case Study 3 (general): Subcontractor orders

- **As-designed subcontractor part lists** are reviewed by JPL part specialists as soon as they become available, typically lacking the information necessary to determine sources or provenance. And then....
- **As-built lists** are reviewed as soon as they become available, but can differ substantially from as-designed lists, or still lack supply chain information, or be made available too late to permit adequate checking of part sources. This calls for resourcefulness in negotiating reviews, the details of which are determined on a case-by-case basis.

Conclusion: It can happen!

Although JPL has the right processes and procedures in place, we have to be vigilant at every step of the procurement process.

*The best prevention is **TRAINING**,
so that people involved in part procurements
understand the importance of following approved processes*

We offer and require Counterfeit Parts Awareness Training courses to train staff in flight hardware procurement processes and procedures



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