

IPad Fire Tests



Federal Aviation
Administration



Presented to: Systems Working Group

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[1]

Background

- **There is use of iPads as an airline supplied personal entertainment device aboard passenger aircraft.**
- **Lithium aircraft incidents**
 - There have been more than 63 other Lithium and Lithium-ion cell related aviation incidents from 1991 to 2012 [2]



Related Tests

- **FAA**

- The effect of iPad battery overheating was observed under various conditions.
- Tests have been done with other Lithium-Ion devices and cells to understand propagation and heat release.



Objective

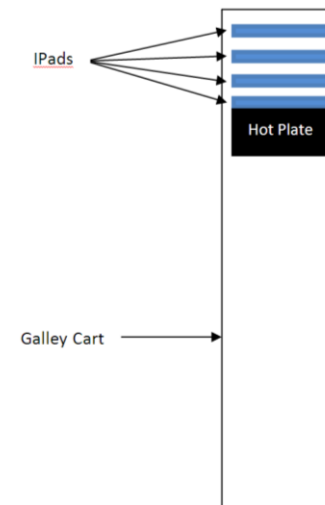
- **Perform experiments to understand the fire hazard of transporting large quantities of tablets.**
 - Variation of tablet spacing.
 - Variation of the separation material between the tablets.
 - Air
 - An insulator



Planned Tests

- **Galley Cart Tests**

- 4 tablets are stacked in the galley cart.
- Heat from a hot plate or alcohol fire is applied.
- The effect of thermal runaway of a tablet is observed and recorded with temperature and pressure measurement.
 - Thermocouples would be positioned on the top and bottom of each tablet.
 - A pressure port would be installed on the cart.
 - An IR camera would observe the galley cart outside surface temperature.
- Option: The experiments could be done in the passenger area of an aircraft to observe and record the smoke and gasses released.



Planned Tests (Test Matrix)

	¼ inch separation Hot Plate Ignition	2 inch separation Hot Plate Ignition	¼ inch separation Alcohol Fire Ignition	2 inch separation Alcohol Fire Ignition
Ambient air between the iPads				
An insulator between the iPads				
Ambient air between the iPads with the test area closed-off and insulated.				

Citations

- [1] Griffith, Chris. "News." *PC Locs IN THE MEDIA Firm Sells iPad Charging Carts to Qantas Comments*. N.p., 14 Nov. 2012. Web. 27 Feb. 2013.

