Jason Heimer
Program Manager
Government Systems
Suface Solutions

Rockwell Collins

400 Collins Road NE
Cedar Rapids, IA 52498
319.295.0521
JJHeimer@rockwellcollins.com

December 1st, 2009

Federal Communications Commission
7435 Oakland Mills Road Columbia, MD 21046

Subject: FCC Class II Permissive Change for FCC ID: XEU2703240

In this memorandum, I am providing details of modifications to the existing Rockwell Collins Model Number, 270-3240-020, FCC ID: XEU2703240, for consideration of Class II Permissive Change.

Overview

The Rockwell Collins Part Number 270-3240-020, has undergone a series of modifications, to improve receive performance, environmental durability and improve production assembly and maintenance. The part in the configuration which was Part 90 and Part 15 tested and certified has not been manufactured. However it is the intent that the changes described in this document for this part, will be the configuration that will be manufactured.

The Part 270-3240-020 consists of:

2 x XR25 7TC Transceiver Circuit Boards (termed VRS1 and VRS2)

Carrier Circuit Board

Daughter Circuit Board

Mechanical Assembly components

RF Cables and Connectors

Heatsinks

External Chassis and covers

In summary Transceiver modifications have been made to passive components to improve receive performance. Mechanical changes have been made to improve manufacturing, mechanical integrity, heat dissipation and maintenance.

Photographs on internal components and changes are described in the following sections.

Sincerely,

Jason J. Heimer
Program Manager
Rockwell Collins

Transceiver Circuit Board Changes

Photographs

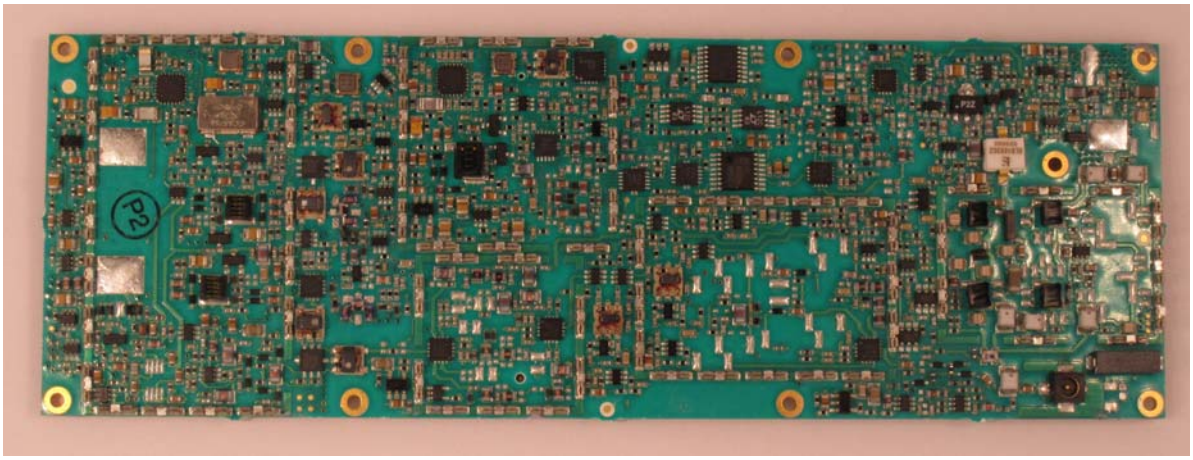

Figure 1 Transceiver Board Top without Shielding

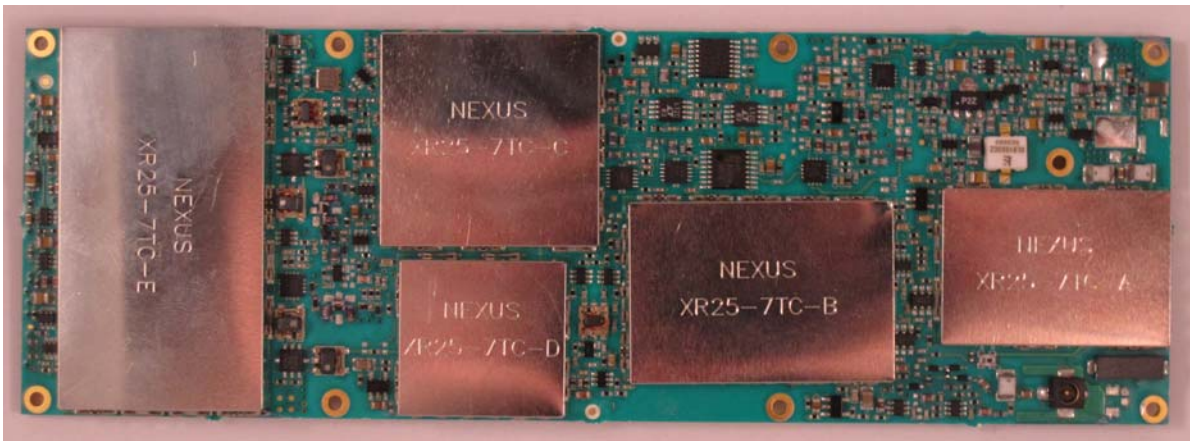

Figure 2 Transceiver Board Top with Shielding

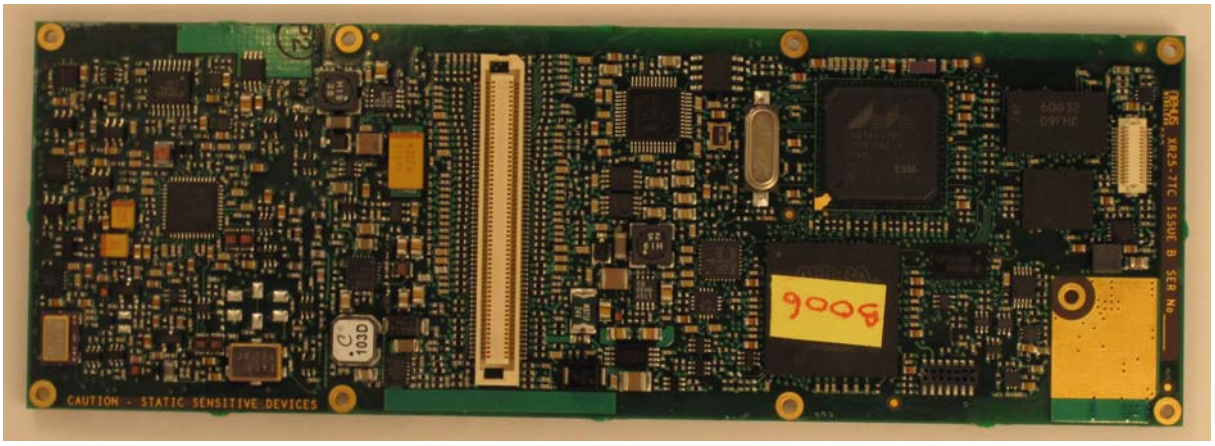

Figure 3 Transceiver Board Bottom

Transceiver Board Schematic Changes

Update	Reason	Details
First Rx RF LNA Optimised	Optimised to improve Inter-modulation performance.	Supply voltage altered.
Second Rx RF LNA	Optimised to improve Inter-modulation performance.	Supply voltage altered, attenuation added.
455MHz Rx LNA	Optimised to improve Inter-modulation performance.	Supply current and transistor matching improved, attenuation added.
455MHz Rx IF Saw Filters replaced by Discrete Filters	Improve Receive Inter-modulation performance	Avoid interaction between SAW filters and active devices.

Transceiver Board Layout Changes

Update	Reason	Details
Tx/Rx switch	Incorporating modifications from previous design on to PCB.	Minor tracking changes.
455MHz Rx LNA	Incorporating modifications from previous design on to PCB.	Layout changed to fit new circuit topology, to improve signal flow and input/output isolation.
455MHz Rx IF Saw Filters replaced by Discrete Filters	Incorporating modifications from previous design on to PCB.	Layout changed for new circuit topology.
TX VCO	Incorporating modifications from previous design on to PCB.	Minor layout change for different sized parts in VCO. Replacing previous transmit path elements with new topology.
TX VCSO	To avoid radiated spurious.	Minor tracking change.

Transceiver Board Mechanical Changes

Update	Reason	Details
Tx VCO RF Shielding extended	Extended shielding to cover Tx VCSO filtering and mixer.	Improved screening & layout.

Carrier Circuit Board Changes

Photographs

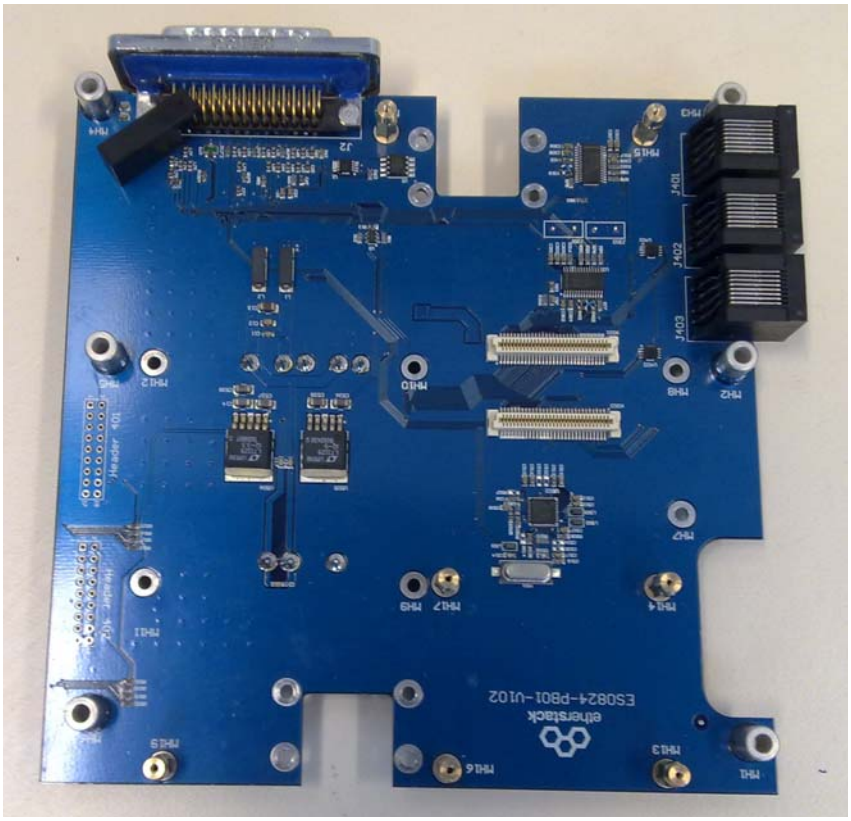

Figure 4 Carrier Board Top

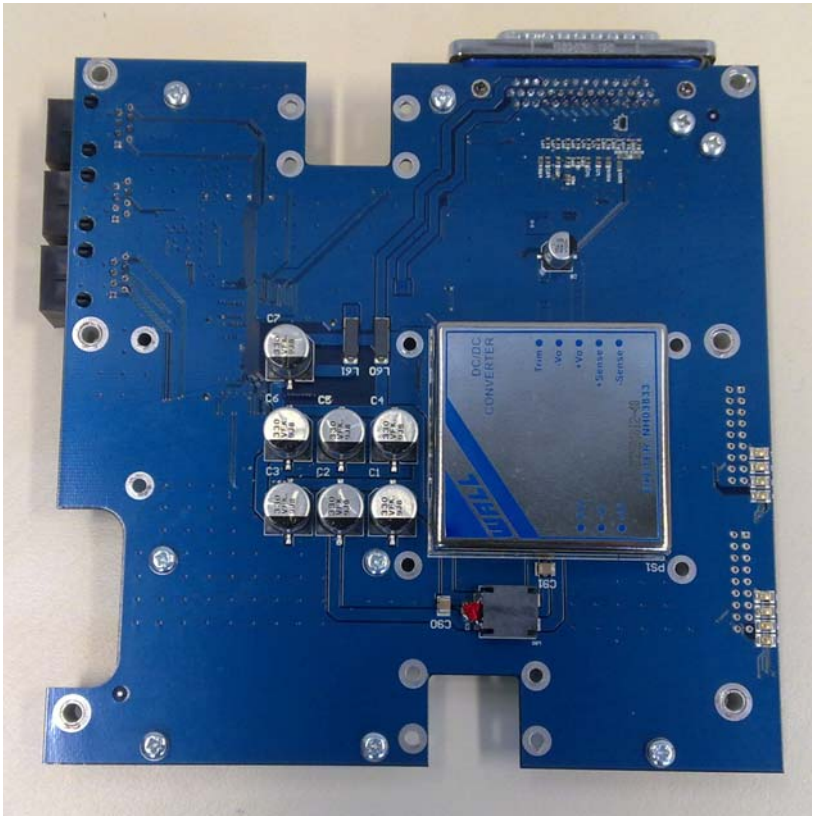

Figure 5 Carrier Board Bottom

Carrier Board Schematic Changes

Update	Reason	Details
RS232 IC changed	Manufacturing and maintenance	2 x MAX3243E replace 2x ISL4243EIRZ
Addition 8 indicator LEDs	Assist product maintenance	Parts. 4 x SML1209-0ER-TR 4 x SML1209-0UG-TR
GPIO Header lines removed	8 GPIO lines removed to allow for LED signals from daughter card	
Power Supply Filtering	To improve Power supply filtering to meet FCC Part 15 class B.	Addition of ACM1211-102-2PL choke to provide additional noise suppression on power lines.
Grounding of all Mounting holes	To provide improved transceiver grounding to chassis	

Carrier Board Layout Changes

Update	Reason	Details
Location of GPIO Headers changed	Location moved closer to side access cover	401 and 402 moved from RF connector side of PCB to opposite board edge near access cover
General	Traces relocated to provide greater clearances between mechanical mounting holes	

	and traces	

Carrier Board Layout Changes

Update	Reason	Details
RF Connector Cut Out	To facilitate production and maintenance	PCB cut out, located under the RF connectors
DSUB44 Cut Out	To prevent physical interference with the rubber seal of DSUB44	PCB cut out, located under DSUB44
Updated Transceiver and Daughter card mounting	Improve mechanical integrity, grounding and assembly.	Added 2 Carrier to VRS2 Transceiver standoffs to replace above standoffs. Added new Carrier to VRS1 Transceiver standoff Moved location of the six Carrier to daughter board standoffs

Daughter Circuit Board Changes

Photographs

Figure 6 Daughter Board Top

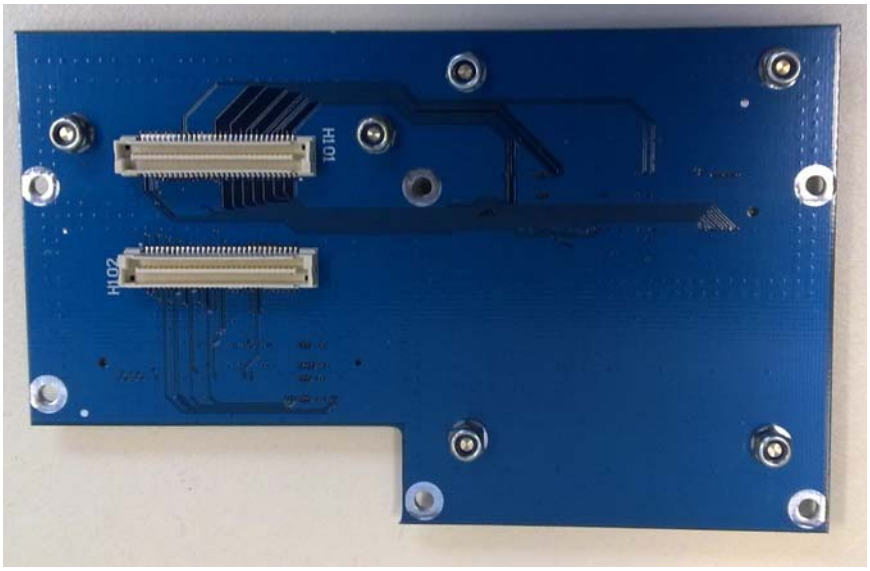

Figure 7 Daughter Board Bottom

Daughter Board Schematic Changes

Update	Reason	Details
LED Signals Added	New GPIO signals to control LEDs added, and unused GPIO signals removed	
Mounting Holes grounded	Mounting holes grounded to provide improved Transceiver grounding	

Daughter Board Layout Changes

Update	Reason	Details
Updates to reflect Schematic changes		

Daughter Mechanical Changes

Update	Reason	Details
RF Connector Cut Out Added	RF Connector cut out added to improve assembly	
Location Change of Daughter to Carrier Mounting holes	Mounting holes moved to due to updated Daughter board dimensions as a result of daughter board cut out.	

Internal Mechanical Changes

Photographs

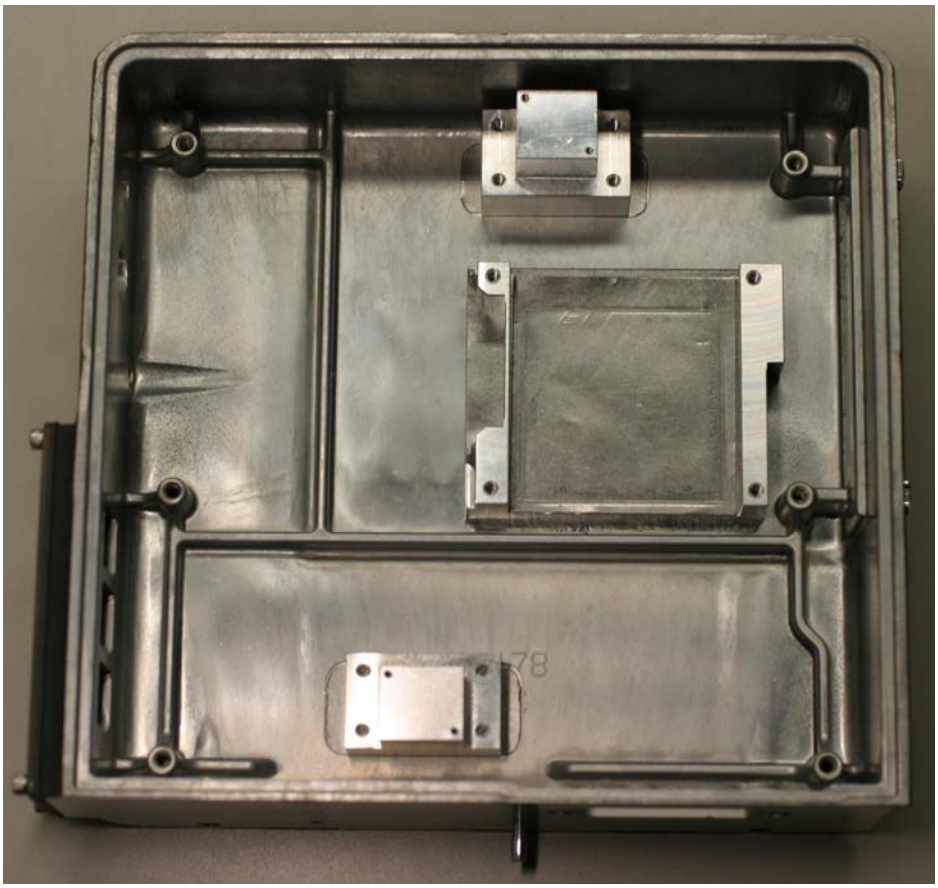

Figure 8 Internal Base showing Heatsinking

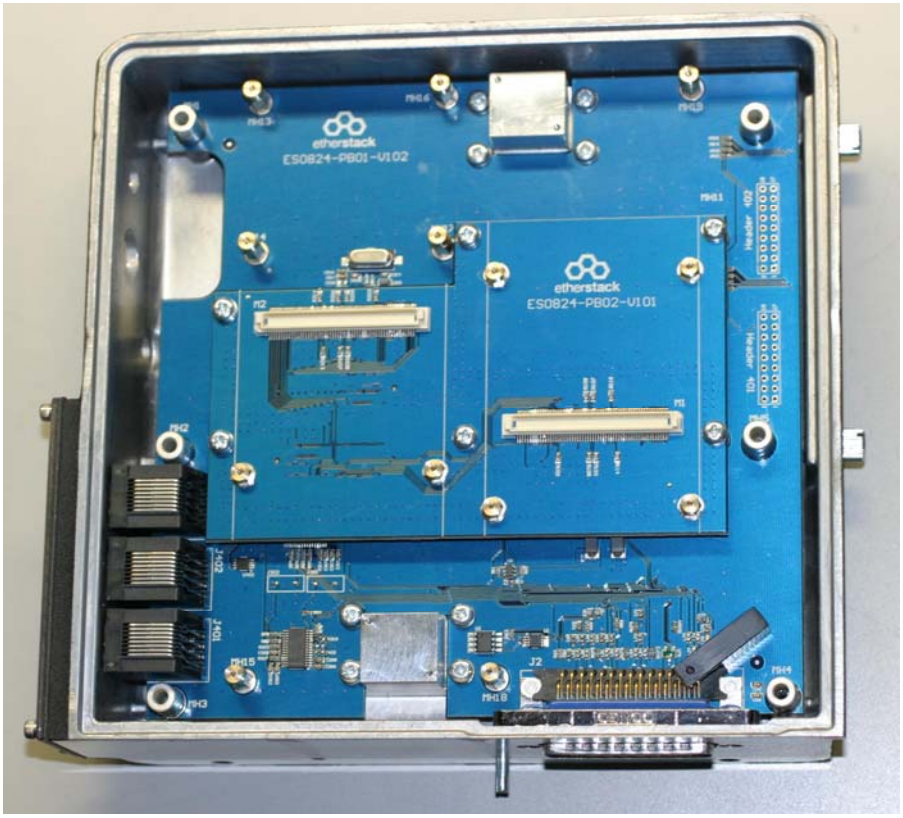

Figure 9 Internal with Carrier and Daughter Board

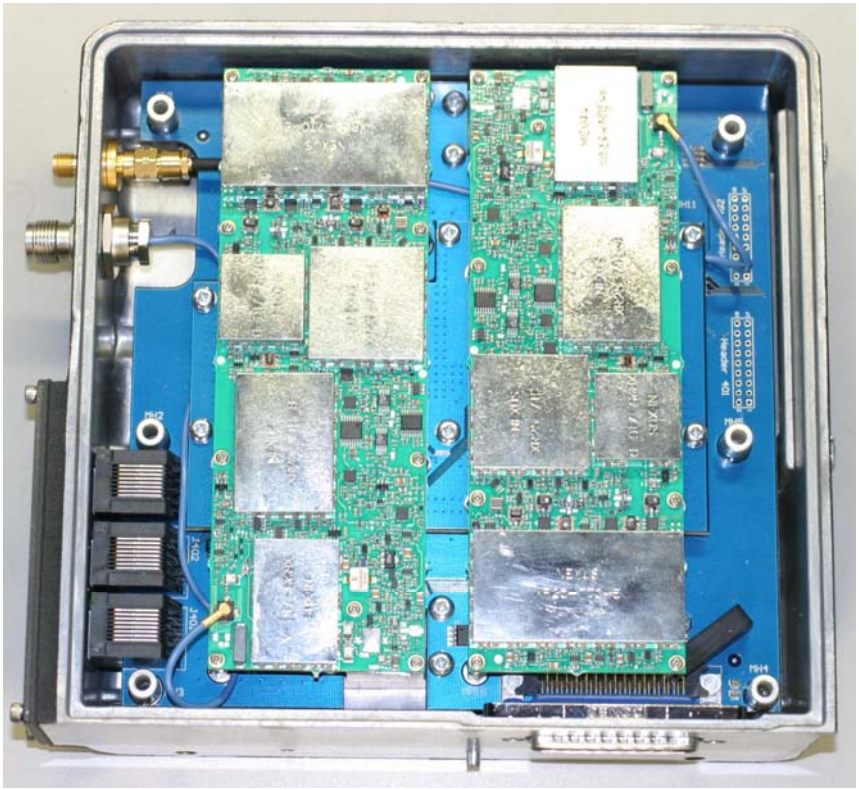

Figure 10 Internal with Carrier/Daughter and Transceiver Boards

Internal Mechanical Changes

Update	Reason	Details
Updated Transceiver and Daughter card mounting	Improve mechanical integrity, grounding and assembly.	Removed two Daughter card to Transceiver standoffs. Added 2 Carrier to VRS2 Transceiver standoffs to replace removed Daughter card to Transceiver standoffs. Added new Carrier to VRS1 Transceiver standoff, using right angle standoff. Moved location of the six Carrier to daughter board standoff.
Power Converter Heatsink	Improve heat dissipation from DC-DC Converter	Added machined aluminium heatsink in place of padded heatsinks.
Heatsink retaining screws	Improve heat dissipation and mechanical integrity	Screws added to fasten heatsinks against chassis.

External Changes

Figure 11 External Top

Figure 12 External Bottom

External Mechanical Changes

Update	Reason	Details
Heatsink retaining screws	Improve heat dissipation and mechanical integrity	Screws added to fasten heatsinks against chassis. External chassis fins machined to allow for fastening of one screw.