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5200 NE Elam Young Parkway
Hillsboro, OR 97124

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Power-On Failure In Stand-By Mode Observed in Intel® L440GX+ Server Boards Incorporated into Third-Party Reference Chassis Utilizing Certain Power Supplies

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Products Affected

All Intel® L440GX+ server boards and systems containing the Intel® L440GX+ server boards

Description
When the Intel L440GX+ server board is integrated into third-party reference chassis utilizing certain power supplies, instances of power-on failures were observed. This issue was discovered during Intel's thermal testing of the Intel L440GX+ server board. The issue was investigated and root caused to the failure of the third-party power supplies used in the tested configuration

Root Cause

In particular, the investigation revealed that, in the standby mode, (A/C applied to the system, prior to attempting to power system on), the PSOK signal was not in compliance with the ATX Specification, which requires the PSOK signal to be held at a low level (< 0.4 volts).

In the standby mode on the failing power supplies, the PSOK signal was observed to be between 0.6 volts and 2.0 volts (depending on power supply tested). Due to additional loads on the standby line employed in the design of the Intel L440GX+ server board, the inconsistency of the PSOK signal prevented the powering up of the board.

The PSOK signal issue was observed in certain models of power supplies manufactured by Emacs*, Enlight*, Etasis*, and Macase* which are identified in the table below. It is recommended that these particular models not be used with the Intel L440GX+ server board.

Corrective Action / Resolution

Intel has contacted the power supply manufacturers regarding this issue. Corrective action has already been completed for certain power supply models, set forth in the table below, which lists the "Problem" part number and the "Passing" part numbers. Intel has tested the new versions of these power supplies and found them to be acceptable.

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Power Supply Manufacture	"Problem" power supply Order Number	PSOK Meets ATX (Passed/Failed)	"Passing" power supply Order Number (PSOK waveform meets ATX spec**)	Testing of new power supply completed by Intel (Passed/Failed)
Emacs	RPD-5400-RV	Failed	RPD-5400-RV2S	Passed
Emacs	RPD-5300F-RV	Failed	RPD-5300F-RV2S	Passed
Emacs	AP2-5300F-RV2	Failed	AP2-5300F-RV2S	Passed#
Emacs	AP2-5400F-RV2	Failed	AP2-5400F-RV2S	Passed#
Enlight	EN-8309961	Failed	EN-8309962	Passed
Enlight	EN-8307361	Failed	EN-8307362	Passed
Enlight	EN-8409961	Failed	EN-8409962	Passed
Enlight	EN-8407361	Failed	EN-8407362	Passed
Etasis	EPR-2405	Failed	EPR-2405-6D100	Passed
Etasis	EPR-2305	Failed	EPR-2305-6D100	Passed
Macase	EPR-2405	Failed	EPR-2405-6D100	Passed
Macase	EPR-2305	Failed	EPR-2305-6D100	Passed

** Intel analysis of the PSOK signal waveform of the new power supplies indicates proper corrective action taken by the respective power supply vendor. (Note: PSOK waveform as provided to Intel by respective power supply vendors).

These power supply models have a Remote DC On/Off Control (RDIO) option that is required to function correctly with the L440GX+ server board. There is no differentiation in the manufacturer's part number to determine whether or not this option is included. It is up to the customer to request this option at the time of power supply order

In the event you cannot obtain one of the "passing" power supplies listed above, you may choose power supplies provided by additional third party vendors, as set forth in the table below. Intel tested the power supplies in this table with the Intel L440GX+ server board for compliance with the ATX specification for PSOK. Intel found the power supplies functioned properly with the Intel L440GX+ server board when integrated into a reference chassis that was normally obtainable with the power supply in question.

PSOK Complies With ATX Specification

Power Supply Manufacture	Model Number	PSOK Meets ATX (Passed/Failed)
Astec*	SA302-3515	Passed
Emacs	MRN1-6230	Passed
EnLight	ATX-723A	Passed
EverPower*	CWT-235ATX	Passed
EverPower	CWT-300ATX	Passed
MaCase	ST251HR	Passed
Seasonic*	SS300PS	Passed
Seasonic	SSR 300	Passed
Seventeam*	ST-301HR	Passed
Sparkle*	FSP300-60GT	Passed
SunPower*	SAX-6300	Passed

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If you choose to perform independent testing of a power supply you have chosen for the purpose of verifying that the PSOK signal is ATX compliant, you may choose to follow the following procedure.

1) Measure the voltage on pin 8 of the ATX main power connector at the server board input, with the power supply in the standby mode (i.e., plugged in but not powered up).

2) If the voltage level is greater than 0.4 volts, the power supply should be considered non-compliant and may be the cause of the system's failure to power on.

3) At this point, if it is determined that the power supply PSOK signal is non compliant, remove the non compliant power supply from your system and install a supply from the recommended list of ATX, PSOK compliant power supplies set forth in the tables above.

Please contact your Intel Sales Representative if you require more specific information about this issue.

Entry/Mid-range Server Division
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