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CSB-1190-3
 Country : UK
 Date : 2/2/2007
 APC : G26
 Repair Level : 3

Title M702iGM702iSMOTORAZR V3xx - 3G - Atlas_Switcher
 Model Effected Izar_Japan, Izar_Global, Izar_Global i-mode and Scorpius

PROBLEM

Problem Description

a. Description

In M702iS and M702iG, we use Switch-Mode supplies topology in powering our Baseband Processor (Argon IC) and Memor switcher supplies is integrated into our Power Management IC, namely, ATLAS IC.

It was found that a small percentage of the ATLAS IC has instable switchers such that when the Switcher supplies goes into mode (PFM mode), the switcher supplies voltage goes out of regulation and the voltage of the supplies drop significantly bel intended voltage and caused undesirable behavior in the phone.

b. Symptoms Observed

When this issue occurred, the phone will panic and reset itself. On some cases, it will appear as white screen on the display. the time, the issues occurs within minutes when the phone power up.

c. How to Duplicate Symptoms

Unit can be subject to "Powering Up" diagnostic test to determine whether units reset repeatedly after powering up or frozen any ability to response to any key presses.

Root Cause

Freescale root caused the problem to an implementation of trim algorithm in the final test. Most of the ATLAS parts don't nee trimming for proper operation of the switcher in the PFM mode, however in a very small percentage of the parts, ATLAS nee trimmed so that the switcher voltage in the PFM mode does not droop.

During load regulation test if the device goes out of regulation, there is a trim bit available inside the IC to correct for offsets. fuse blowing will bring the part back into regulation.

However, on small percentage of parts prior to date code 0645, the fuse was not blown correctly due to an inappropriate app a tester power supply to a capacitor used to blow the fuses. This resulted in potentially not enough energy being provided fo blowing and incomplete opening of the fuse.

After trimming, the switcher is loaded with 50mA in PFM mode which is approximately 50x higher current load than that pulle in the application. The 50x higher current is used to provide significant guard-band to fail marginal devices which would be fu functional in the phone

SOLUTION

Containment Actions

a. Actions Taken

- 1) The ATLAS IC vendor, Freescale was notified and corrected the problem in their Factory ATE test.
- 2) Freescale communicated to Motorola that any Atlas part with date code 0645 or newer will not have this issue.
- 3) Motorola informed Flextronics factory to purge out all the bad datecode parts on 12/28/06
- 4) Motorola informed Flextronics factory on 12/28/06 to use only 0645 or newer datecode for M702iS and M702iG phone.
- 5) Flextronics will send all Atlas parts prior to 0645 to Freescale for re-screening.
- 6) Motorola implemented ATLAS screening to catch all ATLAS IC with this failure.

b. Verification of Containment Actions

- 1) Freescale ATE implementation was verified further by EVB level testing
- 2) Freescale tested 10,000 raw stock parts, 7 hard failures with identical characteristics to the field return were observed. Ho theoretical upper limit for this failure could be as high as 0.8% if we assume that all the parts which should have been trimme trimmed.
- 3) Motorola tested the ATLAS screening on Customer Field Return unit and the test results were in good agreement with the bench test results. This ensure the integrity of the ATLAS screening test.

4) The failure rate will be zero with 0645 or newer date code

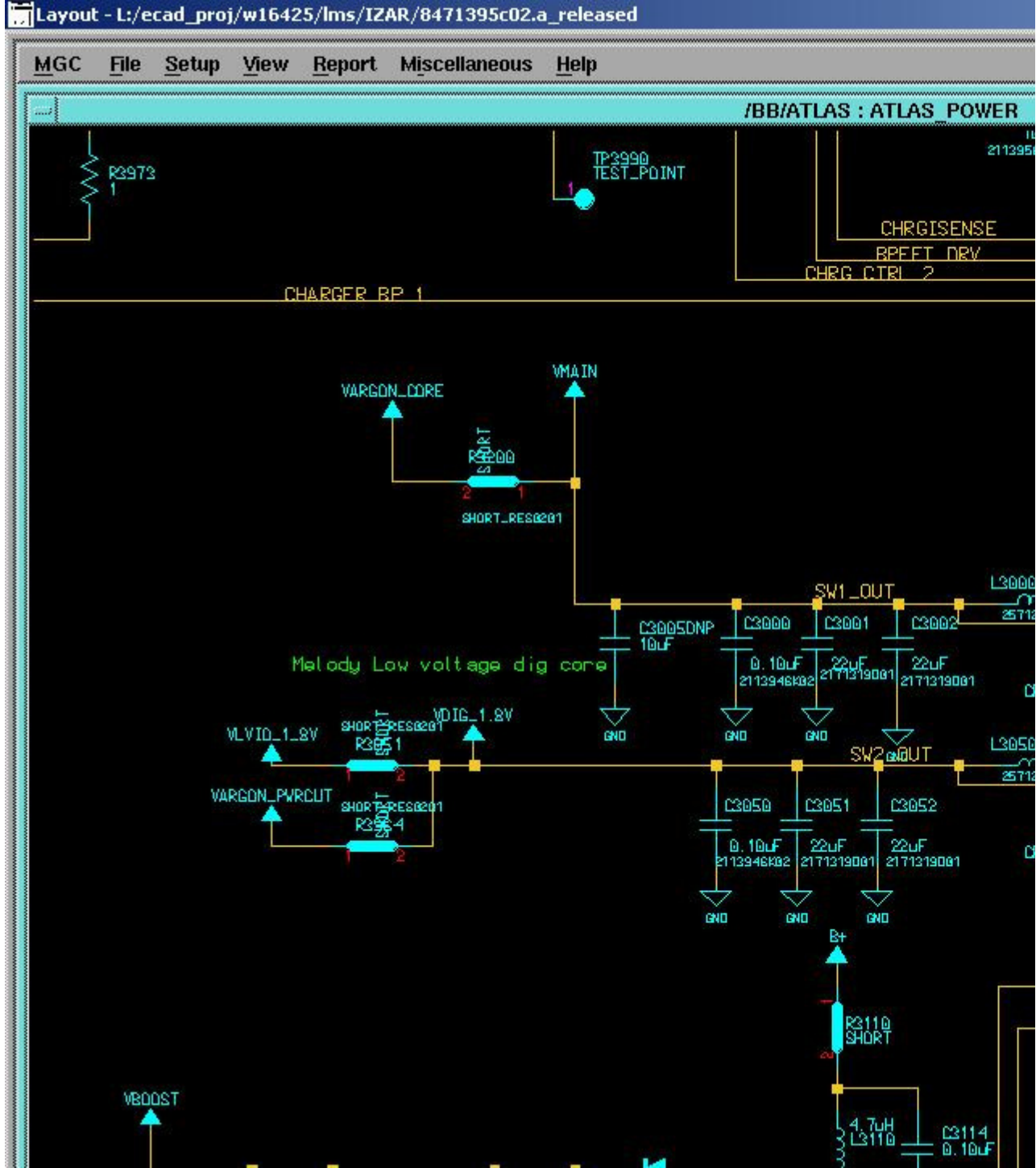
FIELD SERVICE ACTION

Atlas Switcher Test procedure

- 1. Confirm phone panics with white screen after it goes into DSM.
- 2. Confirm phone does not panic when USB cable is plugged in.
- 3. Monitor switcher LX pins to confirm SW1 or SW2 or both fail in PFM mode, and record Atlas date code.
- 4. Determine if the device is functional or if it needs to be replaced.

If the customer complaint is determined not to be related to this issue, then follow normal troubleshooting techniques per the complaint.

Switcher LX pins in schematic

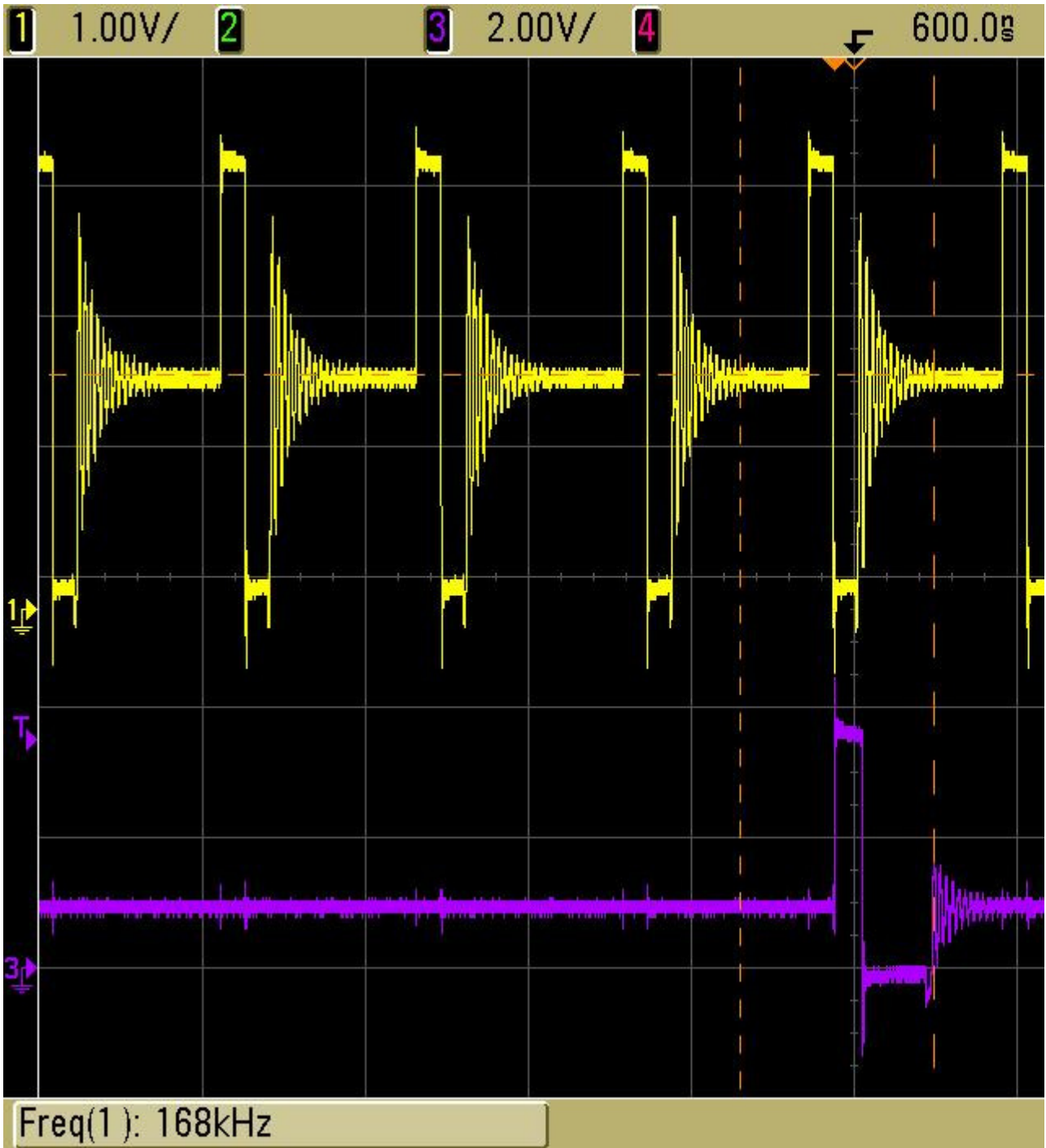


Good Unit

Channel 1: SW1 LX

Channel 2: SW2 LX

When phone goes into DSM, Atlas SW1 and SW2 LX pin switches normally at KHz range in PFM mode.



Bad Unit

Channel 1: SW1 output

Channel 2: SW1 LX

Channel 3: SW2 LX

Channel 4: SW2 output

When phone goes into DSM, Atlas SW1 LX pin switches normally at KHz range and SW2 LX pin switches abnormally at MH PFM mode.



Service Inventory

CALL CENTER ACTION

When responding to customer inquiries on this complaint, please direct the customers to have their phones serviced as per t

SERVICE ENTRY CODE

Global Service Codes

Complaint Code: DIM01 - Display Main - No display
TON03 - Turn on/off - Auto power down in standby

Problem Found Code: DIS01 - Display Secondary - No display
TON03 - Turn on/off - Auto power down in standby

Reference Designator: U - Integrated Circuit And

Repair Code: RTH02 - Replace Level 3 part - CSB/FSB

If applicable, note this bulletin number on warranty claim forms and make necessary changes to service manuals.2007-31
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