GLOBE 6 – SW driver Tecnical Specifications

Overview on

Battery Charger driver

and

Charging device

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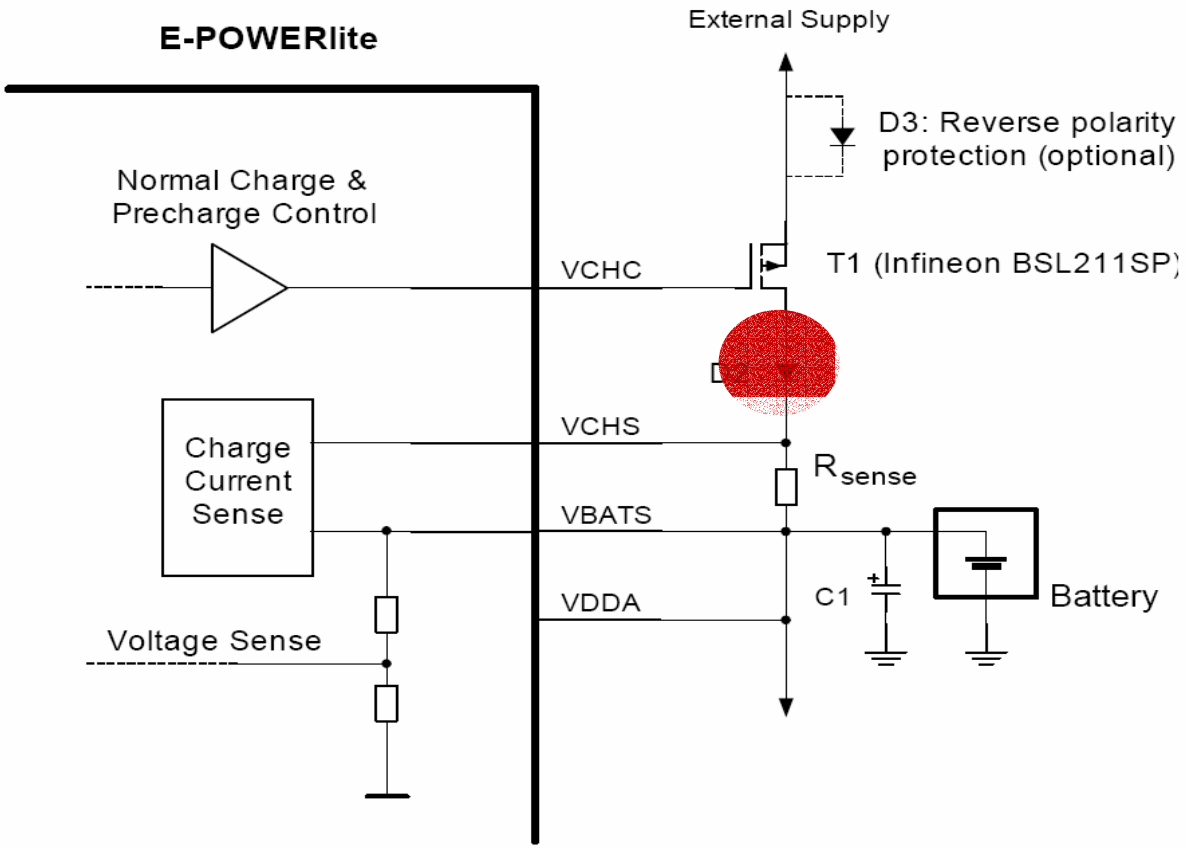
Application circuit for Charge Control



D2 is needed to avoid battery discharge when AC adapter voltage drops below battery voltage.

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Battery technology support

E-POWERlite support following batteries with 4.1, 4.2 or 5.2V

- NiMH (3 cells)
- Li-Ion (1 cell)
- Li-Ion Polymer (1 cell)

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Functionality

When AC adapter is plugged:

- Precharge function for deeply discharged batteries

When AC adapter is plugged and battery voltage has exceeded V_{BATon}

- Constant current Charging (limit from 400mA to 1.1A)
- Charging current monitoring
- Constant voltage charge with 3 programmable voltage levels
- Pulse charging (not used in GLOBE platform)

During precharge SLED1 is always on.

By SLED2 we can choose for different values of precharging current (60 or 120mA)

E-POWERlite's Charger REGISTERS

Charger is controlled by 2 write only registers

- CHCTRL1 (address 0x04h)
- CHCTRL2 (address 0x08h)

Charger status is stored in 1 read only register

- CHST (address: 0x82h)

CHCTRL1

ON	PCH	VMAX	VL	PL

ON/OFF State

0 Charger OFF

1 Charger ON

Maximum charging voltage

00 V_{CHmax1} (4.10 V typ)

01 V_{CHmax2} (4.20 V typ)

10 RESERVED

11 V_{CHmax3} (5.15 V typ)

Charging Pulse Length

000 2048 ms

001 4096 ms

010 8196 ms

...

111 262 ms

Charge Mode

0 Continuous

1 Pulse

Voltage limit handle (in pulse charge mode)

0 Shutdown

1 Voltage limit

CHCTRL2

RVM	PREOFF	RESERVED	CHCLIM

Reference Voltage Multiplier

000 0mA

001 100mA

010 200 mA

...

111 700 mA

0 Precharging OFF

1 Precharging ON

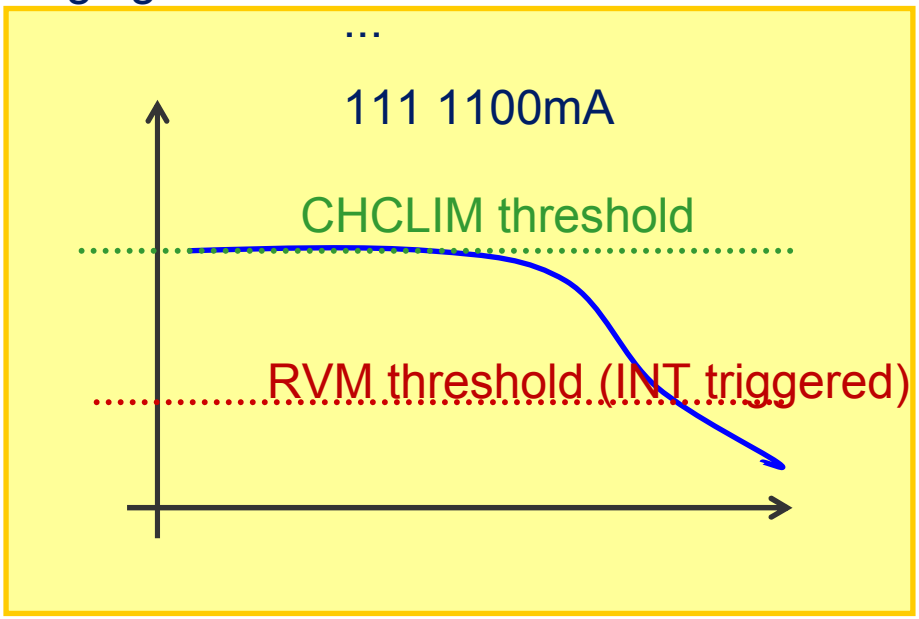
Battery Charge current limit

000 400mA

001 500mA

...

111 1100mA



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CHST

1 Charging voltage available

0 No charging voltage available

1 Current limited charging

0 Voltage limited charging

1 Charging current above limit

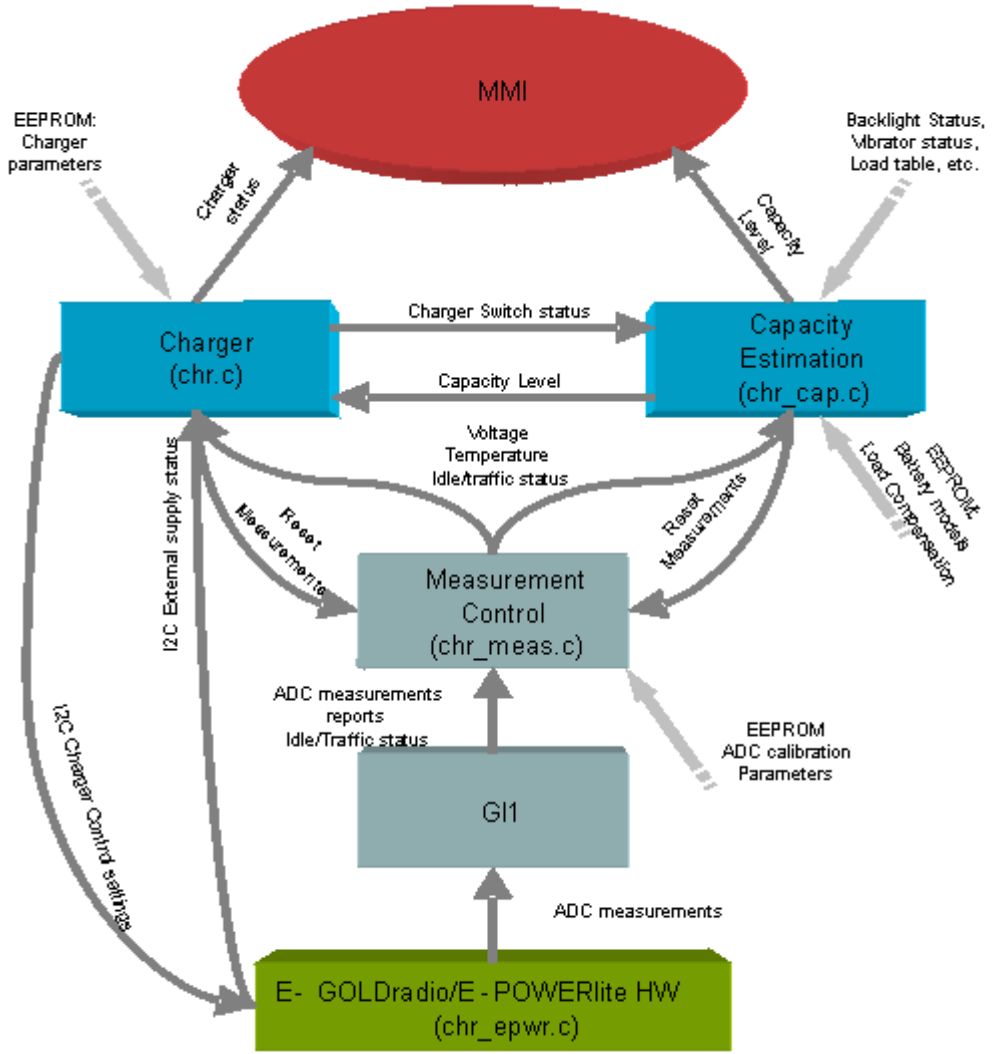
0 Charging current below limit

Power Management Unit Identification

0 Device is SMPower 1.5

1 Device is E-POWERlite

FULL Charger Environment Architecture



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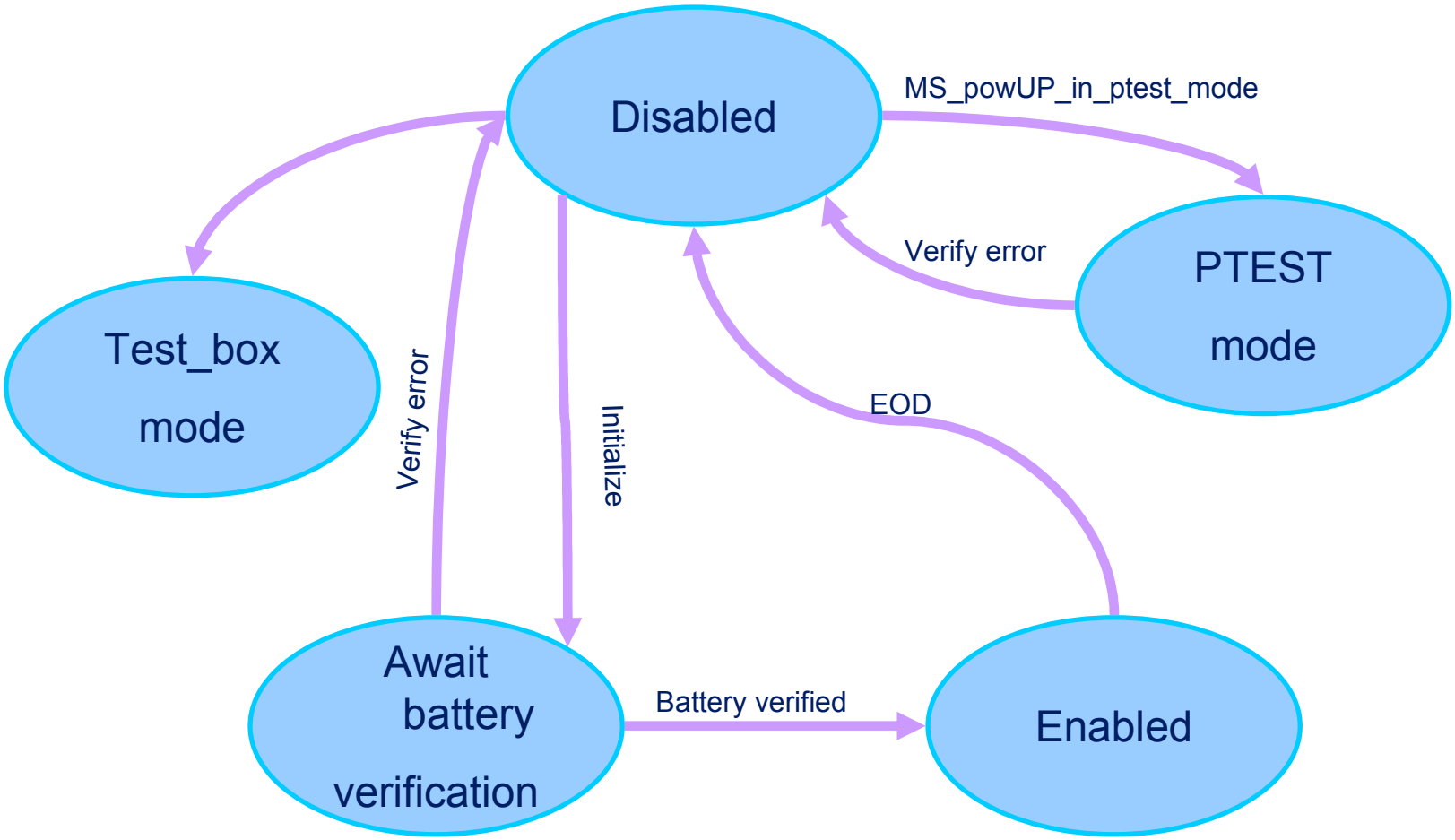
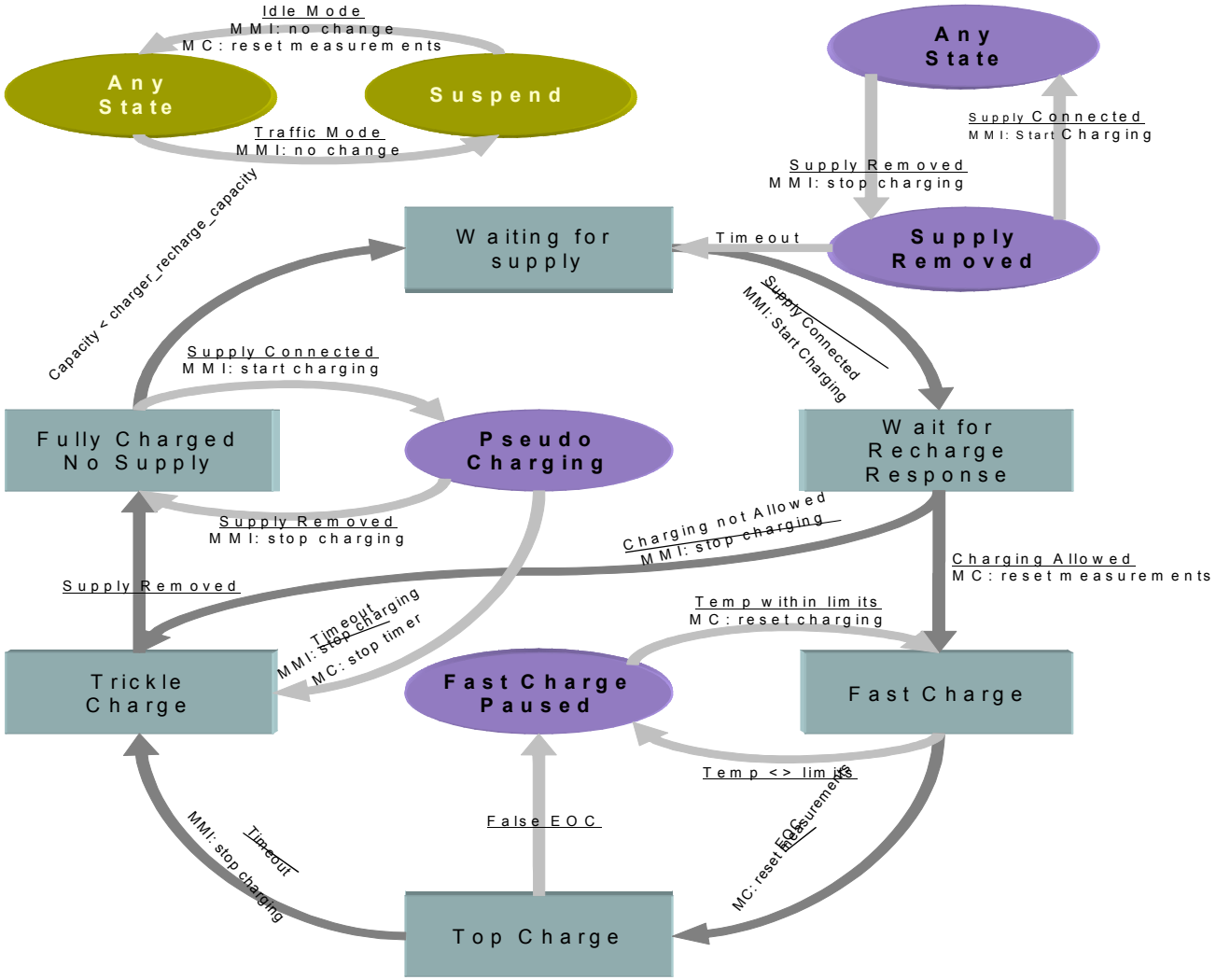
Charger state diagram



Charger Device State Machine



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State and Event interactions

CHARGER events

- chr_no_event,
- chr_initialize,
- chr_power_down,
- chr_trig,
- chr_epwr_int,
- chr_charging_started,
- chr_charging_stopped,
- chr_recharge,
- chr_eoc,
- chr_eod,
- chr_epower_settings_modified,
- chr_update_capacity,
- chr_low_battery,
- chr_battery_verified,
- chr_check_epower_status,
- chr_battery_verification_error

Charger TRIG

Polling of E-POWERlite CHST register

Every 250 framer ticks

If Something has changed, then:

1. **SEND** signal to MMI
2. Process EVENT
3. **DO** action

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Signal sent to MMI

- EPWR_SETTINGS_MODIFIED_IND
- CHR_CHARGE_IND
- CHR_STARTUP_STATUS_IND
- CHR_CHARGE_END_IND
- CHR_STOP_CHARGE_IND
- CHR_LOW_BAT_IND
- CHR_SHUTDOWN_IND
- CHR_CHARGING_PAUSED_IND
- EPWR_BATTERY_LEVEL_AVAIL_IND
- CHR_DATA_CABLE_IND
- CHR_HEADSET_IND
- ATV24_TERMINAL_IND