NEED TO VERIFY

<http://ny21gitapp01.am.mot-solutions.com:8080/#/c/99937/5>

<http://z61sp-gitapp01.zebra.lan:8080/#/c/100671/>

<http://z61sp-gitapp01.zebra.lan:8080/#/c/99445/4>

<http://z61sp-gitapp01.zebra.lan:8080/#/c/108562/10>

1. [SD660] need command for MLC2SLC

<https://www.flashmemorysummit.com/English/Collaterals/Proceedings/2012/20120821_TB11_Abraham.pdf> link for MLC2SLC.

1. enable SLC by fastboot  
   fastboot oem mlc2slc
2. eMMC size  
   # dmesg | grep -i mmc0

sdcc – small device C compiler

in [android](http://157.235.208.175:8080/source/xref/SDM660O-PL/LA.UM.6.2/LINUX/android/)/[bootable](http://157.235.208.175:8080/source/xref/SDM660O-PL/LA.UM.6.2/LINUX/android/bootable/)/[bootloader](http://157.235.208.175:8080/source/xref/SDM660O-PL/LA.UM.6.2/LINUX/android/bootable/bootloader/)/[edk2](http://157.235.208.175:8080/source/xref/SDM660O-PL/LA.UM.6.2/LINUX/android/bootable/bootloader/edk2/)/[QcomModulePkg](http://157.235.208.175:8080/source/xref/SDM660O-PL/LA.UM.6.2/LINUX/android/bootable/bootloader/edk2/QcomModulePkg/)/[Library](http://157.235.208.175:8080/source/xref/SDM660O-PL/LA.UM.6.2/LINUX/android/bootable/bootloader/edk2/QcomModulePkg/Library/)/[FastbootLib](http://157.235.208.175:8080/source/xref/SDM660O-PL/LA.UM.6.2/LINUX/android/bootable/bootloader/edk2/QcomModulePkg/Library/FastbootLib/)/[FastbootCmds.c](http://157.235.208.175:8080/source/xref/SDM660O-PL/LA.UM.6.2/LINUX/android/bootable/bootloader/edk2/QcomModulePkg/Library/FastbootLib/FastbootCmds.c) path contains the fastboot related commands we can add here to interact with android because it’s a part of abl.

1. [UEFI] Skip the bootup voltage check in UEFI

Acc criteria

1. Plug in an empty battery.  
 2. Plug in the charger.  
 3. Make sure that device will not show charging status in UEFI, and bring up to Android OS directly.

For that in boot\_images/QcomPkg/Drivers/QcomChargerDxe/**QcomChargerPlatform.c file**

/\* Skip the bootup voltage check in UEFI for now, so we set the voltage to a very low value \*/

gChargerPlatformCfgData.BootToHLOSThresholdInMv = 3000;

means simply Set UEFI bootup voltage to a very low value(3V)

1. Co-work with EE for weak vibrator

Description: Co-work with EE for weak vibrator

Solution: Increase vibrator time to meet correct RMS

In boot\_images/QcomPkg/Library/PmicLib/drivers/haptics/src/**pm\_haptics.c** file add the below line DALSYS\_BusyWait(200000); to generate a delay

1. [SDM660] Emergency download fail using QFIL on secure boot enabled devices

Description: QFIL failed to program on secure boot enabled

devices

solution: Disable firehose validation check according to QCOM DOC 80-P8754-68 C in this boot\_images/QcomPkg/Library/DeviceProgrammerCommonLib/firehose/**deviceprogrammer\_initialize.c** file use the below code

fh.validation\_enabled = FALSE;

1. Modify HW Reset time to 4 seconds

In boot\_images/QcomPkg/Library/PmicLib/target/sdm660\_pm660\_pm660l/system/src/**pm\_sbl\_boot\_oem.c** file

pm\_device\_post\_init(void){

err\_flag |= pm\_app\_pon\_reset\_cfg( PM\_APP\_PON\_RESET\_SOURCE\_RESIN\_AND\_KPDPWR, PM\_APP\_PON\_CFG\_DVDD\_HARD\_RESET, 4000, 0); //PON RESIN\_AND\_KPDPWR PON Reset configuration // modify this to required time delay

}

1. Power on and vibration mismatch

boot\_images/QcomPkg/Drivers/PmicDxe/**Pmic.c** contains checking the valid PON keypress and vibration also etc.

1. Displaying dotted lines on the top

In MDPPlatformLib.c file use below code properly

" <HorizontalFrontPorch units=\"Dot Clocks\">40</HorizontalFrontPorch>"

" <HorizontalBackPorch units=\"Dot Clocks\">40</HorizontalBackPorch>"

" <HorizontalSyncPulse units=\"Dot Clocks\">18</HorizontalSyncPulse>"

" <VerticalActive units=\"Dot Clocks\">800</VerticalActive>"

" <VerticalFrontPorch units=\"Lines\">11</VerticalFrontPorch>"

" <VerticalBackPorch units=\"Lines\">11</VerticalBackPorch>"

" <VerticalSyncPulse units=\"Lines\">5</VerticalSyncPulse>"

1. Device entering fastboot/recovery mode during reboot
2. Description: Improve something regarding pressing scan key during booting

solution:

1. In order to boot efficiently, stop checking the usb status if scan key is not pressing.

2. Due to single key, ignore to check other keys.

3. Add delay time between gpio configuring and gpio reading

1. if we have any issue with Qcom we can raise a case

EX:I have raised a QCOM case: 03487143

1. System should reboot while long press scan trigger over 5 seconds with device ON and in cradle

If we enable the qcom,s1-timer = <4480>; in dtsi file,

It should work in recovery mode and android OS (adb) mode but wont work in fastboot mode for that we need to enable in xbl.

boot\_images/QcomPkg/Library/PmicLib/target/sdm660\_pm660\_pm660l/system/src/**pm\_sbl\_boot\_oem.c**

err\_flag |= pm\_app\_pon\_reset\_cfg( PM\_APP\_PON\_RESET\_SOURCE\_KPDPWR, PM\_APP\_PON\_CFG\_DVDD\_HARD\_RESET, 4408, 1000); //PON KPDPWR PON Reset configuration

1. DSLY10 Display Signal Integrity

In framebuffer drivers we should use

MIPI\_OUTP(base + DSIPHY\_LANE\_TEST\_STR, 0x22);

We need below info for display

In file

boot\_images/QcomPkg/Sdm660Pkg/Library/MDPPlatformLib/**MDPPlatformLib.c**

const static int8 Helios\_nt35590\_720p\_video\_xmldata[] =

"<?xml version=\"1.0\" encoding=\"utf-8\"?>"

"<PanelName>nt35590</PanelName>"

"<PanelDescription>Helios nt35590 720p DSI Video Mode Panel (720x1280 24bpp)</PanelDescription>"

"<Group id=\"Active Timing\">"

" <HorizontalActive units=\"Dot Clocks\">720</HorizontalActive>"

" <HorizontalFrontPorch units=\"Dot Clocks\">96</HorizontalFrontPorch>"

" <HorizontalBackPorch units=\"Dot Clocks\">104</HorizontalBackPorch>"

" <HorizontalSyncPulse units=\"Dot Clocks\">8</HorizontalSyncPulse>"

" <VerticalActive units=\"Dot Clocks\">1280</VerticalActive>"

" <VerticalFrontPorch units=\"Lines\">10</VerticalFrontPorch>"

" <VerticalBackPorch units=\"Lines\">1</VerticalBackPorch>"

" <VerticalSyncPulse units=\"Lines\">1</VerticalSyncPulse>"

"</Group>"

"<Group id=\"Display Interface\">"

" <InterfaceType units=\"QDI\_DisplayConnectType\">8</InterfaceType>"

" <InterfaceColorFormat units=\"QDI\_PixelFormatType\">3</InterfaceColorFormat>"

"</Group>"

"<Group id=\"DSI Interface\">"

" <DSIChannelId units=\"DSI\_Channel\_IDType\">1</DSIChannelId>"

" <DSIVirtualId units=\"DSI\_Display\_VCType\">0</DSIVirtualId>"

" <DSIColorFormat units=\"DSI\_ColorFormatType\">36</DSIColorFormat>"

" <DSITrafficMode units=\"DSI\_TrafficModeType\">2</DSITrafficMode>"

" <DSILanes units=\"integer\">4</DSILanes>"

" <DSILowPowerModeInBLLPEOF units='Bool'>True</DSILowPowerModeInBLLPEOF>\n"

" <DSILowPowerModeInBLLP units='Bool'>True</DSILowPowerModeInBLLP>\n"

" <DSIRefreshRate units='integer Q16.16'>0x3C0000</DSIRefreshRate>\n"

" <DSIInitMasterTime units='integer'>1</DSIInitMasterTime>\n"

" <DSIControllerMapping>\n"

" 00\n"

" </DSIControllerMapping>\n"

"</Group>"

"<DSIInitSequence>"

" 39 FF 00\n"

" 39 C2 03\n"

" 39 BA 03\n"

" 39 FB 01\n"

" 39 11 00\n"

" FF 96\n"

" 39 29 00\n"

" FF 64\n"

"</DSIInitSequence>"

"<DSITermSequence>\n"

" 39 28 00\n"

" FF 14\n"

" 39 10 00\n"

" FF 78\n"

"</DSITermSequence>\n"

"<Group id='Backlight Configuration'>"

" <BacklightType units='MDP\_Panel\_BacklightType'>1</BacklightType>\n"

" <BacklightPmicControlType units='MDP\_PmicBacklightControlType'>2</BacklightPmicControlType>\n"

"</Group>\n";

The same should be update in kernel dtsi files

1. USB Host mode should limit current output to 500mA

When turning on 5V USB output in host mode SW needs to ensure the current is limited to 500mA. This should be done in the PMIC configuration.

In boot\_images/QcomPkg/Library/PmicLib/target/sdm660\_pm660\_pm660l/system/src/**pm\_sbl\_boot\_oem.c** file we need to usebelow function to read the data

pm\_comm\_write\_byte\_mask(0, 0x1152, 0x7, data, 0); and should to set the current limit in boot\_images/QcomPkg/Sdm660Pkg/Library/XBLLoaderLib/**sbl1\_hw.c**

1. Configure the charging safety timer in XBL

Charging safety timer belongs to dvdd domain. It will be lost if we perform dvdd shutdown/reset, battery removal or power source removal.

According to Qualcomm's suggestion, we should configure the safety timer in XBL

Description: update fast charging safety timeout to 768min

Solution: update in pm\_config\_target

boot\_images/QcomPkg/Sdm660Pkg/Settings/PMIC/**pm\_config\_target.c**

file there is an array called sbl\_schg\_specific\_data[1] here we can change the configurations

1. Disable Jeita in UEFI

Below is the function call should use in boot\_images/QcomPkg/Drivers/QcomChargerDxe/**QcomChargerPlatform.c**

Status |= ChargerLib\_EnableHWJeita(FALSE);

1. Device is not entering into fastboot mode on pressing hard keys Vol\_down + Power in ABL

In abl directory QcomModulePkg/Application/LinuxLoader/**LinuxLoader.c** file contains code related to device will move to fastboot or recovery mode

There

/\* Ref QC Case: 03426792 UEFI scans pwr+vol\_down as SCAN\_DELETE and pwr+vol\_up as SCAN\_HOME \*/

if ((KeyPressed == SCAN\_DOWN) || (KeyPressed == SCAN\_DELETE))

BootIntoFastboot = TRUE;

if ((KeyPressed == SCAN\_UP) || (KeyPressed == SCAN\_HOME))

BootIntoRecovery = TRUE;

// This function is used to Deactivate MDTP by entering recovery UI

STATIC EFI\_STATUS MdtpDisable(VOID)

Device is not entering into fastboot mode on pressing hard keys Vol\_down + Power in XBL

1. To add a new key in xbl in below function should add a EFI scan code

Like #define new\_key\_scan 0x0138

boot\_images/MdePkg/Include/Protocol/**SimpleTextInEx.h**

Simple Text Input Ex protocol from the UEFI 2.0 specification.

This protocol defines an extension to the EFI\_SIMPLE\_TEXT\_INPUT\_PROTOCOL

which exposes much more state and modifier information from the input device,

also allows one to register a notification for a particular keystroke.

1. In boot\_images/QcomPkg/Sdm660Pkg/Library/ButtonsLib/**ButtonsLibPrivate.h** file add gpio key number

#define new\_but\_GPIO 42

1. In boot\_images/QcomPkg/Include/Library/**ButtonsLib.h** we need to add NEW\_KEY in typedef enum
2. In boot\_images/QcomPkg/Sdm660Pkg/Library/ButtonsLib/**ButtonsLib.c**

bPttKeyPressed = FoundAKey(pKeysPressed, sizeOfPressedReleasedArray, NEW\_KEY);

enable the gpio number using Status = TlmmEnableInput(new\_but\_GPIO);

Status = TlmmReadGpioStatus(new\_but\_GPIO, &ButtonPressed );

\*(pButtonArray + 3) = ButtonPressed;

1. 32 kHz Noise in Beep\_PWM during terminal boot up.

Description: 1) A 32 kHz of noise is getting injected in to Beep\_PWM during terminal boot up Process.

2) Beep\_PWM looks noisy until the home screen popping out after terminal boot.

Acceptance Criteria:

beep\_PWM should be driven low during the entire terminal boot up process.

Solution: Set PMIC PM660L GPIO\_6 output source selection in XBL during boot.

In boot\_images/QcomPkg/Library/PmicLib/target/sdm660\_pm660\_pm660l/system/src/**pm\_sbl\_boot\_oem.c**

//Set PM660L GPIO06 GPIO06\_DIG\_OUT\_SOURCE\_CTL to 0x02 for Beep\_pwm initial low

err\_flag |= pm\_comm\_write\_byte\_mask(2, 0xC544, 0xFF, 0x02, 0);

1. Verify charger is present or not

In boot\_images/QcomPkg/Library/PmicLib/app/chg/src/**pm\_app\_chgr.c**

//checking charger is presented or not

err\_flag |= pm\_schg\_misc\_get\_power\_path(device\_index, &charger\_power\_path);

1. To disable the charging we need to use the below code in boot\_images/QcomPkg/Library/PmicLib/target/sdm660\_pm660\_pm660l/system/src/**pm\_sbl\_boot\_oem.c**

pm\_comm\_write\_byte\_mask(0, 0x1042, 0x01, 0x00, 0);//Disable Charging

1. Over-charge preventing

Description:

We have set FCC in XBL, no need to set it again in UEFI

Solution:

Ignore to set FCC in UEFI

We need to disable below code in boot\_images/QcomPkg/Drivers/PmicDxe/**PmicSchgProtocol.c**

/\* errFlag |= pm\_schg\_chgr\_set\_charge\_current(PmicDeviceIndex, PM\_SCHG\_CHGR\_FAST\_CHARGE\_CURRENT, SchgCfgData.ChgFccMax); \*/

1. Change code conditional based on display instead of the SKU number.

Description: Use the panel ID instead of the SKU number. Solution: Use the panel ID instead of the SKU number.

In boot\_images/QcomPkg/Library/HALDSILib/**HALdsi\_Phy\_2\_1\_0.c**

Instead of sku id we can use below code

SelectedPanelID = pDisplayOverride->sPrimary.psDTInfo->ePanel; for device condition

1. CDP platform configure GPIO59 affect EC's boot\_0 (EC\_FW\_UPDATE\_EN)

Description: CDP platform configure GPIO59 affect EC's boot\_0 (EC\_FW\_UPDATE\_EN)

We need to config the proper gpio number

1. Rotate boot logo to landscape mode

Description: change Tianma 8 inch Orientation to 0

Solution: change PanelOrientation to 0

In boot\_images/QcomPkg/Sdm660Pkg/Library/MDPPlatformLib/**MDPPlatformLib.c**

Change the code like below

" <PanelOrientation>0</PanelOrientation>"



POWER

POWER ISSUES

Story 1:

fix device stability issue

Description: system shutdown due to battery low, correct eMMC power rails

Solution: change L8 to L13, this is HW changes not follow ref design.

vdd-io-supply = <&pm660\_l13>;

search in google for “vdd io supply chain”

<https://gerrit.zebra.com/#/c/82538/>

<https://gerrit.zebra.com/#/c/86245/5>

story 2:

<https://gerrit.zebra.com/#/c/86263/>

implement interface to set/read charging and fuel gauge parameters

Description: implement interface to set/read charging and fuel gauge parameters

Solution: Add new parameters in power\_supply sysfs

POWER\_SUPPLY\_ATTR(temp\_cold), is the parameter to add for power supply sysfs

Path: /sys/class/power\_supply/battery

File: drivers/power/**power\_supply\_sysfs.c**

drivers/tty/serial/msm\_serial.c file contains the function static void msm\_shutdown(struct uart\_port \*port) to shut down the device

story 3:

Description: Wakeup on external power source

from BSM when AC/USB charger connected.

Solution: Remove usbin and dcin from ignore list.

[drivers/power/supply/qcom/qpnp-smb2.c](https://gerrit.zebra.com/#/c/90315/2/drivers/power/supply/qcom/qpnp-smb2.c) file contains the function called

enable\_irq\_wake(smb2\_irqs[i].irq);

in above function if we add “*usbin-plugin, dcin-plugin”* those string(irq controls interrupt name)

system will wakeup.

 drivers/power/supply/qcom/**qpnp-smb2.c** contains the function called set\_property\_on\_fg which is used to update the fg related information

drivers/power/supply/qcom/**qpnp-smb2.c** contains **smb2\_get\_battery\_error\_status**

story 4:

Add new entry /sys/class/power\_supply/battery/error\_status

Using POWER\_SUPPLY\_ATTR(error\_status), in below file

drivers/power/**power\_supply\_sysfs.c**

story 5:

"Charging wirelessly" when the device is placed in single slot cradle with power supply.

Description:"Charging wirelessly" when the device is placed in single slot cradle with power supply.

Solution: Changing default charing when dc is pluggedin charging to Mains.

In drivers/power/supply/qcom/**qpnp-smb2.c** file add val->intval = POWER\_SUPPLY\_TYPE\_MAINS;

To enable the charging we need to add g\_chip->charging\_disable = false; in drivers/power/supply/qcom/**qpnp-smb2.c**

To read the legacy data(battery related data) from eeprom

We use the drivers/power/supply/qcom/**qpnp-smb2.c**

To enable and disable the wake up source we need to add functions like disable\_irq\_wake , enable\_irq\_wake in drivers/power/supply/qcom/**qpnp-smb2.c**

hwconfig\_kobj = kobject\_create\_and\_add("hardware\_config", NULL);

above function creates a entryyin /sys directory

ret = sysfs\_create\_group(hwid\_kobj, &hwid\_attr\_group); function will addthe attributes in the hardware\_config directory

<https://gerrit.zebra.com/#/c/103874/3>

story 6:

Description: Current QC PMIC implementation is not working on Thunder design to support host mode

and charging using external power supply. When external regulator is enabled and device removed from cradle.

PMIC is not generating any interrupt as it consider that device is still charging due to VBUS is not powered by External 5V.

This issue is present with QC PMIC if MicroUSB mode is enabled. To overcome this PM660 GPIO 4 will be used for cradle detection and trigger Host mode accordingly.

Solution: 1. Enabled External 5V supply

2. Configured GPIO 04 to detect cradle

3. Moved host mode logic into cradle detection interrupt.

4. Other register changes as required.

<https://gerrit.zebra.com/#/c/104318/16>

Learn about vbus

Learn about spikes in power supply

Story 7:

Description: Fix Bluetooth can't work.

Solution: The Vdd of touch is from VPH\_PWR not pm660\_l19.

It will influence Bluetooth power.

vdd-supply = <&pm660\_l19>; in dtsi file

if we use more printk functions in driver file device will goes to the download mode

FASTBOOT

* To print anything in the screen while fastboot mode there is a function called

AsciiSPrint(); in **FastbootCmds.c file**

* There is a separate device tree

Bootloader should able to read programmed SKU and load corresponding DTB, Bootloader should be able to read sku from devinfo parition and match with. dtb and load it