NEED TO VERIFY

<http://z61sp-gitapp01.zebra.lan:8080/#/c/76278/1>

<http://z61sp-gitapp01.zebra.lan:8080/#/c/80142/7>

<http://z61sp-gitapp01.zebra.lan:8080/#/c/82482/>

<http://z61sp-gitapp01.zebra.lan:8080/#/c/83736/>

BOOT LOADER

1. [SD660] Adding Helios CDT xml

* No need to add any method to generate CDT binary and replace default boot\_cdt\_array
* boot\_images/QcomPkg/Sdm660Pkg/Library/XBLLoaderLib/**boot\_cdt\_array.c**

contains the cdt information, we can update JEDEC standard timing parameters on built-in CDT table

<https://docs.oracle.com/cd/E51711_01/DR/Using_DAL_XML_Functions.html> for xml file

1. [Beast] UEFI Boot into different mode by button

* Below actions can be done

Gpio buttons bring up for UEFI

1. Enable gpio buttons

2. Add combo key code

3. Check button's action

In boot\_images/QcomPkg/Sdm660Pkg/Library/ButtonsLib/**ButtonsLib.c** file

Code:

Status = EnableInput(PM\_DEVICE\_1, VOLUME\_DOWN\_BUTTON\_GPIO);

#define VOLUME\_DOWN\_BUTTON\_GPIO 8

Can be added in boot\_images/QcomPkg/Sdm660Pkg/Library/ButtonsLib/**ButtonsLibPrivate.h** file

1. UEFI XBL display

* Below are the changes we can do

1. Add panel ili9881c xml data

2. Change wled pins

3. Modify power sequence

In [boot\_images/QcomPkg/Sdm660Pkg/Library/MDPPlatformLib/MDPPlatformLib.c](http://z61sp-gitapp01.zebra.lan:8080/#/c/76177/2/boot_images/QcomPkg/Sdm660Pkg/Library/MDPPlatformLib/MDPPlatformLib.c)

Code:

PANEL\_CREATE\_ENTRY("helios\_ili9881c\_720p\_video", MDPPLATFORM\_PANEL\_HELIOS\_ILI9881C\_720P\_VIDEO, "qcom,mdss\_dsi\_helios\_ili9881c\_720p\_video", DISP\_INTF\_DSI, Helios\_ili9881c\_720p\_video\_xmldata, DISP\_TOPOLOGY\_CONFIG\_0, PLL\_OVERRIDE\_NONE, DISP\_MODE\_SINGLE\_DSI, DISP\_MODE\_SINGLE\_DSI, DISP\_MODE\_SINGLE\_DSI),

This code can create a new entry in MDPPlatformLib.c

Helios\_ili9881c\_720p\_video\_xmldata this contains the xml data for 720p video

1. To reduce the delay to speed up the booting time we need to add conditional compilation in xbl.

Code:

#ifdef MACRO

#endif

1. Learn about printf, sprint,snprintf(which are used in boot loader xbl,abl,sbl) and we can read the sku info before DDR (double data rate) we can do code changes in boot\_images/QcomPkg/Sdm660Pkg/Library/XBLLoaderLib/**sbl1\_hw.c**

Learn about ddr also.

1. New Boot logo

First, we need to generate a logo file

tool and process used to convert bmp to bin file:

1. follow the steps mentioned in ../device/qcom/common/display/logo/readme.txt

(contains a command python ./logo\_gen.py snapdragon.png)

1. A splash.img will be generated. Rename it to logo1.bin for boot up logo and logo2.bin for fastboot logo.
2. To push the new logo to repo:
3. place the logo1.bin in [device/symbol/falcon](http://ny21gitapp01.am.mot-solutions.com:8080/#/projects/AtlasM/CodeAurora89x6/device/symbol/falcon,dashboards/default)/logo\_images/
4. New fastboot logo

Fastboot logo should update for both xbl and abl

In xbl, in to add header in below

boot\_images/QcomPkg/Include/Library/**QcomLib.h**

and we need to add logoID DPM\_PARTITION\_NAME2 in below

boot\_images/QcomPkg/Library/MDPLib/**MDPDataPartition.c**

boot\_images/QcomPkg/Library/MDPLib/**MDPLib.c**

in this file we need to use the /\* Initialize logo1 Data \*/

if (EFI\_SUCCESS != (eStatus = MDP\_DataPartitionInit(LOGO1\_ID)))

in boot\_images/QcomPkg/Library/QcomLib/**BitmapUtils.c** file need to set the variables

if(logoID == 2){

eStatus = gRT->SetVariable (L"Logo2ImageStorageInfo",

&gQcomTokenSpaceGuid,

EFI\_VARIABLE\_RUNTIME\_ACCESS | EFI\_VARIABLE\_BOOTSERVICE\_ACCESS,

sizeof(SplashInfo),

&SplashInfo);

1. Xbl will device to go the flow to recovery mode or AOSP boot mode,

Abl is the boot process for AOSP fastboot is the part of abl,

Pmic is the part of xbl.

Description: Do hardware reset, in "ZEBRA" logo page will flash a white line.

Solution: xbl Set Led Duty Cycle = 0 when wled init

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

**if (EFI\_SUCCESS != PmicWledProtocol->SetLedDutyCycle(PMIC\_PMI\_DEV\_INDEX, pPowerParams->uWledStringsPrimary, 0))**

1. Learn about **low-dropout** (**LDO**) **voltage regulator,** **rpm-regulator-ldoa18**

Add pm660\_l18 setting in xbl and kernel

Adding

// START: STK ZEBRA - Add LDO18A for display power

{ PMIC\_DEV\_RSRC\_NAME\_VEC\_IN( A, ldo, 18), "ldoa\x12\x00\x00\x00" },

In pmic\_npa\_ldo\_remote\_resources [] array in the file name of boot\_images/QcomPkg/Sdm660Pkg/Settings/PMIC/core/**pm\_config\_appsbl\_npa\_node\_rsrcs.c** andboot\_images/QcomPkg/Sdm660Pkg/Settings/PMIC/core/**pm\_config\_appsbl\_npa\_pam.c**

1. [pm\_err\_flag\_type](http://157.235.208.175:8080/source/s?defs=pm_err_flag_type&project=SDM660O-PL) **[pm\_comm\_write\_byte\_mask](http://157.235.208.175:8080/source/s?refs=pm_comm_write_byte_mask&project=SDM660O-PL)**([uint32](http://157.235.208.175:8080/source/s?defs=uint32&project=SDM660O-PL) **[slave\_id](http://157.235.208.175:8080/source/s?refs=slave_id&project=SDM660O-PL)**, [uint16](http://157.235.208.175:8080/source/s?defs=uint16&project=SDM660O-PL) **[addr](http://157.235.208.175:8080/source/s?refs=addr&project=SDM660O-PL)**, [uint8](http://157.235.208.175:8080/source/s?defs=uint8&project=SDM660O-PL) **[mask](http://157.235.208.175:8080/source/s?refs=mask&project=SDM660O-PL)**, [uint8](http://157.235.208.175:8080/source/s?defs=uint8&project=SDM660O-PL) **[value](http://157.235.208.175:8080/source/s?refs=value&project=SDM660O-PL)**, [uint8](http://157.235.208.175:8080/source/s?defs=uint8&project=SDM660O-PL) **[priority](http://157.235.208.175:8080/source/s?refs=priority&project=SDM660O-PL)**)
2. Device behavior when external power is supplied without main Battery installed

big board can't boot up without battery because CBL\_PWR\_N pin can't pull down. (can't rework on big board)

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

pm\_busy\_wait(10000); // waiting for vbatt detection stable

1. Read SKU from devinfo and write into SMEM

In boot\_images/QcomPkg/Sdm660Pkg/Library/XBLLoaderLib/**sbl1\_mc.c** file

sku\_smem = smem\_get\_addr(SMEM\_SKU, &buf\_size\_ret);

this will read the static memory

1. Bigboard with ImproveTouch[SKU 11] is not charging through usb cable

Some devices wont charge because in boot\_images/QcomPkg/Sdm660Pkg/Library/XBLLoaderLib/**sbl1\_hw.c** file

Wont check sku ids for charging function

pm\_sbl\_chg\_pre\_init();

1. UUT cannot perform hardware reset via press scan/volume up/power together.

In boot\_images/QcomPkg/Library/PmicLib/target/sdm660\_pm660\_pm660l/system/src/**pm\_sbl\_boot\_oem.c** filewe need to use err\_flag |= pm\_pon\_reset\_source\_ctl(0, PM\_PON\_RESET\_SOURCE\_KPDPWR, PM\_OFF);

1. SD660 - Create SKU 13 to support SE4710 on bigboard

In boot\_images/QcomPkg/Sdm660Pkg/Library/XBLLoaderLib/**sbl1\_hw.c** filewe need to add the sku

1. Powered off device boots up with a short single press of the power button

In boot\_images/QcomPkg/Sdm660Pkg/Settings/PMIC/**pm\_config\_target.c** file add like below

pm\_pwrkey\_dbnc\_chk\_type pm\_pon\_pwrkey\_dbnc\_chk[] = {{PM\_PON\_PWRKEY\_DBNC\_CHK\_AT\_CORE, 3000}} ; //check power key press at, time in milli sec

1. [Helios] Add correct MIPI parameters for Thunder display

There is a function called PANEL\_CREATE\_ENTRY() in boot\_images/QcomPkg/Sdm660Pkg/Library/MDPPlatformLib/**MDPPlatformLib.c**

1. [SD660\_04-02]Charging LED will flash green color once when press power button to power on UUT.

\*proposed change \*: boot\_enable\_led(DDR\_TRAINING\_LED, TRUE) to boot\_enable\_led(DDR\_TRAINING\_LED, FALSE);

Or else use conditional compilation with keeping two functions

**path:** /BOOT.XF.1.4/boot\_images/QcomPkg/Sdm660Pkg/Library/XBLLoaderLib/sbl1\_hw.c

1. Device boots up automatically upon removing and inserting battery and powering off and inserting USB cable

In boot\_images/QcomPkg/Library/PmicLib/target/sdm660\_pm660\_pm660l/psi/**pm\_config\_target\_sbl\_sequence.c** file

{ 0, ***0x00***, 0x087F, 0xFF, PM\_SBL\_WRITE, 0, 0}, // Line 485 Source: Write(PM660.PON.SMPL\_CTL, 0x00)

Keep data value 0x00 in pm\_sbl\_seq\_type pm\_sbl\_seq [ ] array

1. We can generate delay in boot\_images/QcomPkg/Sdm660Pkg/Library/MDPPlatformLib/**MDPPlatformLib.c**

MDP\_OSAL\_DELAYMS(120); /\* delay 10ms to allow power grid to settle \*/

1. [OOB] Vibrator should be operational when device boot up

In boot\_images/QcomPkg/XBLLoader/**boot\_extern\_pmic\_interface.c** file

There is a function called pm\_err\_flag\_type boot\_pm\_vib\_on(void)

Here we need to do modifications

**GPIO BOOT LOADER**

GPIO CONFIG:

Configure the gpio of the scan key, Implement key detection to enter fastboot and recovery mode can be done using below functions

We should implement in path:  boot\_images/QcomPkg/Sdm660Pkg/Library/ButtonsLib/**ButtonsLib.c**

To detect key there is a array

\*(pButtonArray + 4) = ButtonPressed;

If single device

// due to single key, here ignore to check other keys.

\*(pButtonArray + 0) = FALSE;

\*(pButtonArray + 2) = FALSE;

\*(pButtonArray + 3) = FALSE;

Enable the GPIO for Input

[Status](http://157.235.208.175:8080/source/s?defs=Status&project=SDM660O-PR) = [**TLMMProtocol**](http://157.235.208.175:8080/source/xref/SDM660O-PR/BOOT.XF.1.4/boot_images/QcomPkg/Sdm660Pkg/Library/ButtonsLib/ButtonsLib.c#TLMMProtocol)->[ConfigGpio](http://157.235.208.175:8080/source/s?defs=ConfigGpio&project=SDM660O-PR)(

  ([UINT32](http://157.235.208.175:8080/source/s?defs=UINT32&project=SDM660O-PR))[EFI\_GPIO\_CFG](http://157.235.208.175:8080/source/s?defs=EFI_GPIO_CFG&project=SDM660O-PR)([GpioNumber](http://157.235.208.175:8080/source/s?defs=GpioNumber&project=SDM660O-PR), 0, [GPIO\_INPUT](http://157.235.208.175:8080/source/s?defs=GPIO_INPUT&project=SDM660O-PR), [GPIO\_PULL\_UP](http://157.235.208.175:8080/source/s?defs=GPIO_PULL_UP&project=SDM660O-PR), [GPIO\_2MA](http://157.235.208.175:8080/source/s?defs=GPIO_2MA&project=SDM660O-PR)),

[TLMM\_GPIO\_ENABLE](http://157.235.208.175:8080/source/s?defs=TLMM_GPIO_ENABLE&project=SDM660O-PR));

Enable the GPIO for Output

[Status](http://157.235.208.175:8080/source/s?defs=Status&project=SDM660O-PR) = [**TLMMProtocol**](http://157.235.208.175:8080/source/xref/SDM660O-PR/BOOT.XF.1.4/boot_images/QcomPkg/Sdm660Pkg/Library/ButtonsLib/ButtonsLib.c#TLMMProtocol)->[ConfigGpio](http://157.235.208.175:8080/source/s?defs=ConfigGpio&project=SDM660O-PR)(

  ([UINT32](http://157.235.208.175:8080/source/s?defs=UINT32&project=SDM660O-PR))[EFI\_GPIO\_CFG](http://157.235.208.175:8080/source/s?defs=EFI_GPIO_CFG&project=SDM660O-PR)([GpioNumber](http://157.235.208.175:8080/source/s?defs=GpioNumber&project=SDM660O-PR), 0, [GPIO\_OUTPUT](http://157.235.208.175:8080/source/s?defs=GPIO_OUTPUT&project=SDM660O-PR), [GPIO\_NO\_PULL](http://157.235.208.175:8080/source/s?defs=GPIO_NO_PULL&project=SDM660O-PR), [GPIO\_2MA](http://157.235.208.175:8080/source/s?defs=GPIO_2MA&project=SDM660O-PR)),

[TLMM\_GPIO\_ENABLE](http://157.235.208.175:8080/source/s?defs=TLMM_GPIO_ENABLE&project=SDM660O-PR));

Read gpio status on TLMM

[Status](http://157.235.208.175:8080/source/s?defs=Status&project=SDM660O-PR) = [**TLMMProtocol**](http://157.235.208.175:8080/source/xref/SDM660O-PR/BOOT.XF.1.4/boot_images/QcomPkg/Sdm660Pkg/Library/ButtonsLib/ButtonsLib.c#TLMMProtocol)->[GpioIn](http://157.235.208.175:8080/source/s?defs=GpioIn&project=SDM660O-PR)(

  ([UINT32](http://157.235.208.175:8080/source/s?defs=UINT32&project=SDM660O-PR))[EFI\_GPIO\_CFG](http://157.235.208.175:8080/source/s?defs=EFI_GPIO_CFG&project=SDM660O-PR)([GpioNumber](http://157.235.208.175:8080/source/s?defs=GpioNumber&project=SDM660O-PR), 0, [GPIO\_INPUT](http://157.235.208.175:8080/source/s?defs=GPIO_INPUT&project=SDM660O-PR), [GPIO\_PULL\_UP](http://157.235.208.175:8080/source/s?defs=GPIO_PULL_UP&project=SDM660O-PR), [GPIO\_2MA](http://157.235.208.175:8080/source/s?defs=GPIO_2MA&project=SDM660O-PR)),

  &[GpioStatus](http://157.235.208.175:8080/source/s?defs=GpioStatus&project=SDM660O-PR));

Write gpio status on TLMM

[Status](http://157.235.208.175:8080/source/s?defs=Status&project=SDM660O-PR) = [**TLMMProtocol**](http://157.235.208.175:8080/source/xref/SDM660O-PR/BOOT.XF.1.4/boot_images/QcomPkg/Sdm660Pkg/Library/ButtonsLib/ButtonsLib.c#TLMMProtocol)->[GpioOut](http://157.235.208.175:8080/source/s?defs=GpioOut&project=SDM660O-PR)(

  ([UINT32](http://157.235.208.175:8080/source/s?defs=UINT32&project=SDM660O-PR))[EFI\_GPIO\_CFG](http://157.235.208.175:8080/source/s?defs=EFI_GPIO_CFG&project=SDM660O-PR)([GpioNumber](http://157.235.208.175:8080/source/s?defs=GpioNumber&project=SDM660O-PR), 0, [GPIO\_OUTPUT](http://157.235.208.175:8080/source/s?defs=GPIO_OUTPUT&project=SDM660O-PR), [GPIO\_NO\_PULL](http://157.235.208.175:8080/source/s?defs=GPIO_NO_PULL&project=SDM660O-PR), [GPIO\_2MA](http://157.235.208.175:8080/source/s?defs=GPIO_2MA&project=SDM660O-PR)),

[GpioStatus](http://157.235.208.175:8080/source/s?defs=GpioStatus&project=SDM660O-PR));

<https://gerrit.zebra.com/#/c/99937/>