Visteon®

MIB Regio IN Upgrade

Škoda 2.5

Scope:

HW SW Interface

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CPU / RAM

MEDIATEK

MT2713
Application Processor
Technical Brief

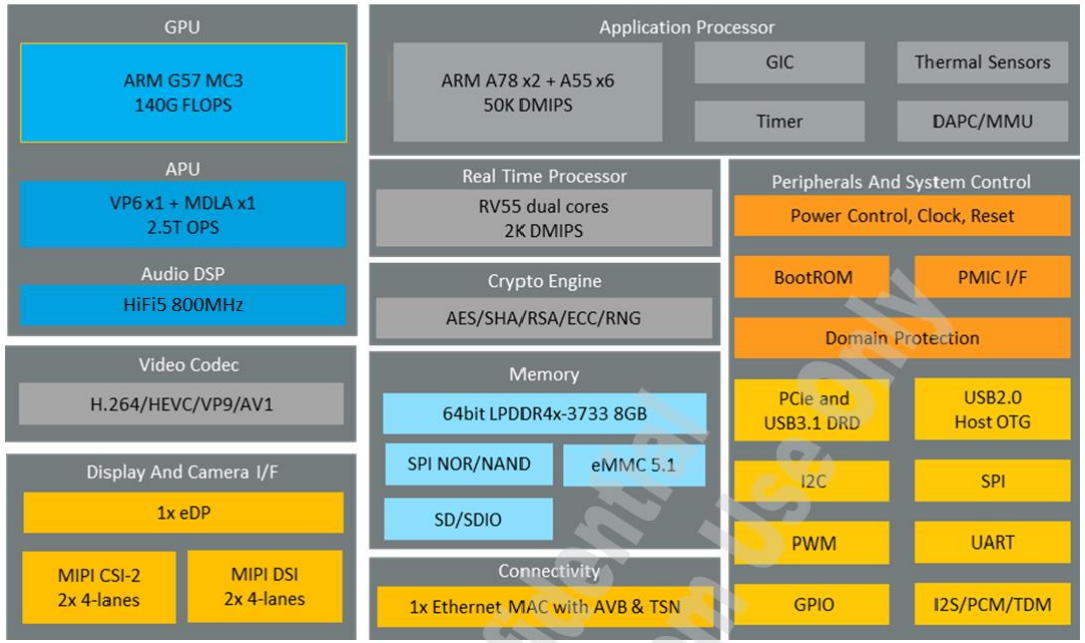
MIB Regio IN Upgrade / Skoda2.5

Processor : MT2713M (35K DMIPS)
Platform : Android 13
CPU Cores:

- ARM A78 x2
- ARM A55 x4
- RV55 x2

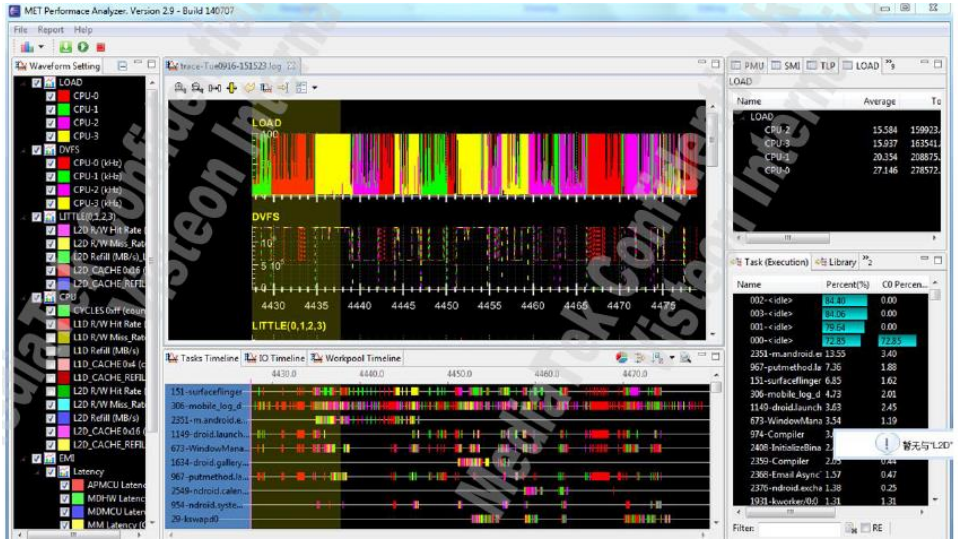
GPU

- ARM G57 MC3 (140GFlops)



Key Topics

- CPU Profiling - MET tool – Provided by MediaTek
- Stress Test Application – Provided by MediaTek
- Thermal Management / Derating Strategy
- RAM Partition



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Display Interface

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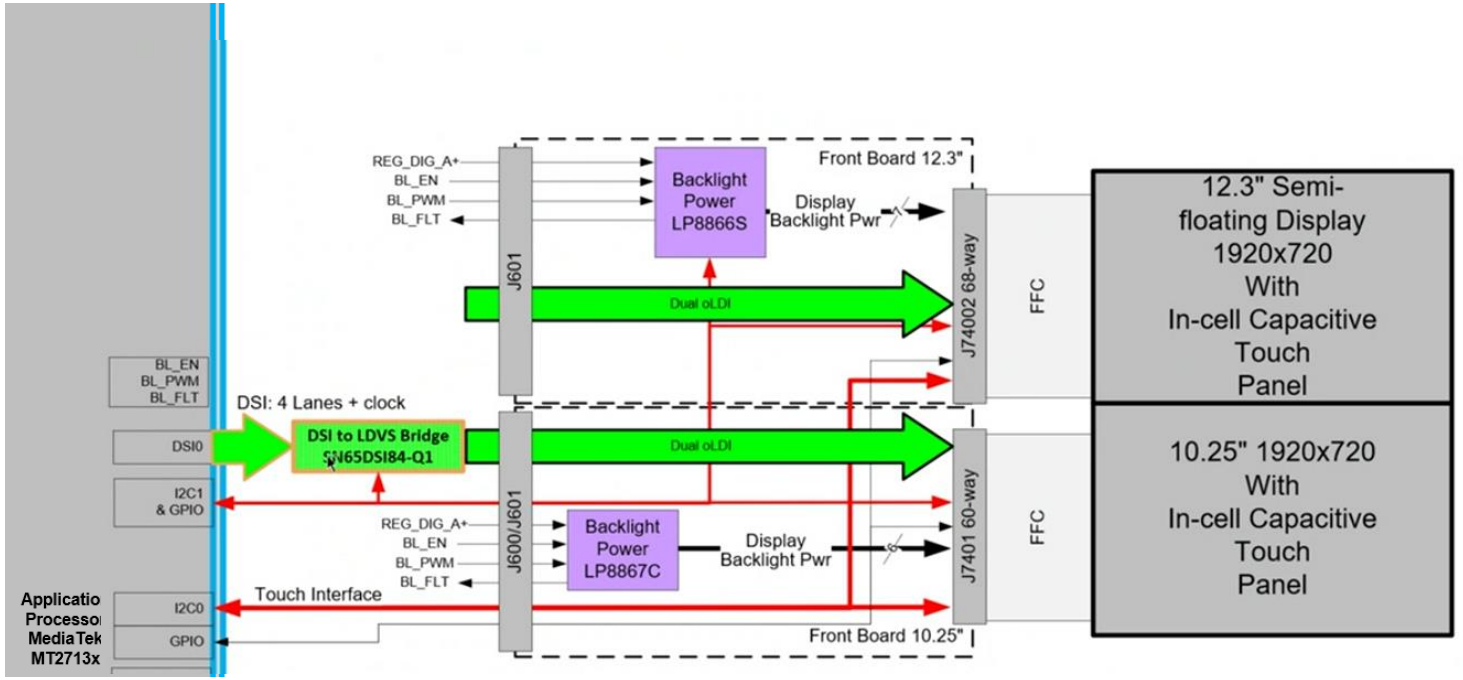
-Display : **CSOT MAA250XB1-C (10.1” 1920x720)**
Input : oLDI (LVDS)
Processor : MT2713 Supports DSI, eDP

I2C0
Touch

Bridge

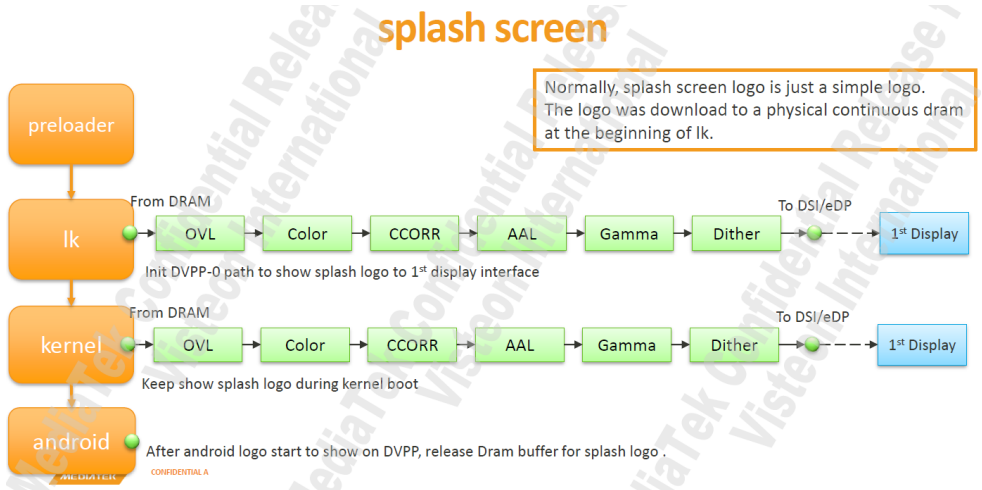
- DSI to dual-link oLDI (LVDS)
- TI SN65DSI84-Q1

DSI → LVDS Bridge → oLDI Display



Key Topics

- Display Bridge configuration *(TI SN65DSI84-Q1)*
- Display Driver & Firmware and Partition
- Display Power up/down sequence
- Splash Screen Partition - MediaTek *TBC*
- Display boot up KPI - MediaTek *TBC*
- Backlight Driver – **TI LP8869C-Q1**
- Touch Driver, Firmware & Configuration - Partition
- Firmware update Strategy
- Touch Latency KPI
- Display Derating Strategy



BT/WiFi

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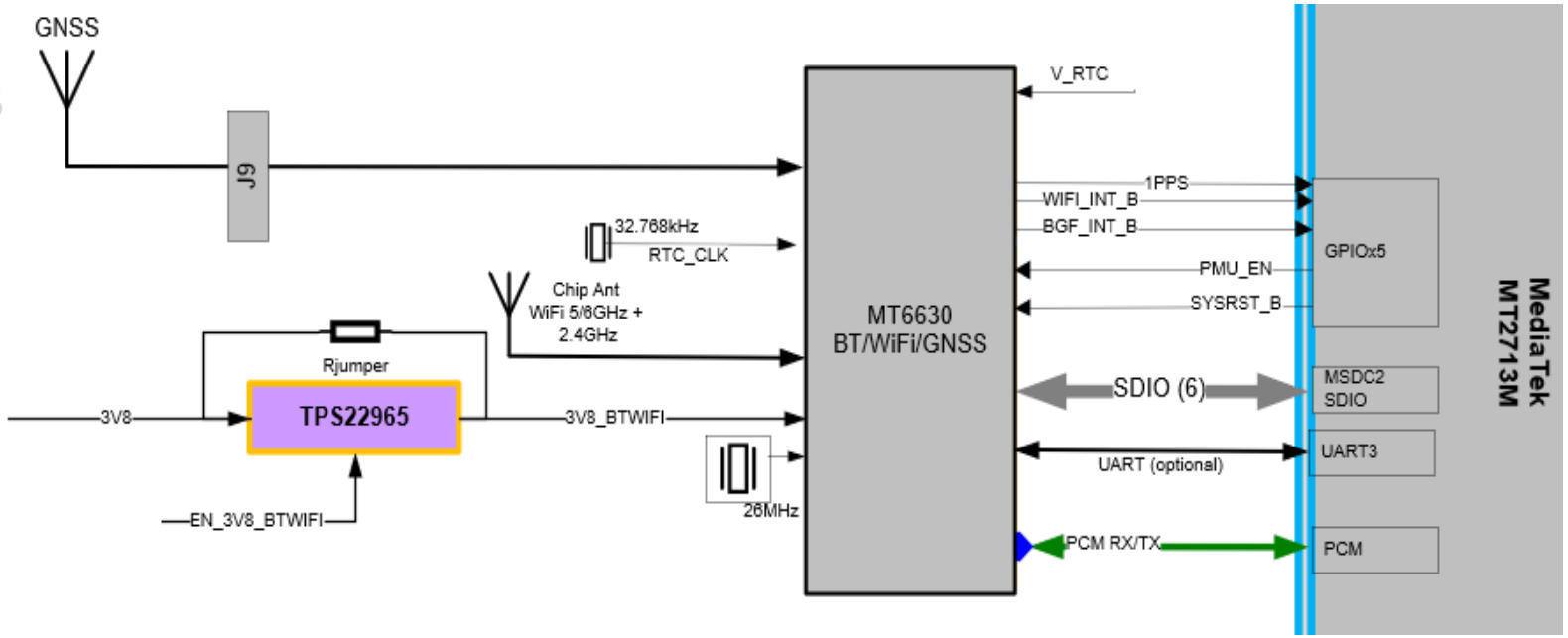
Combo Chipset : MT6630
Platform : Android 13

BT/WiFi – SDIO **SDC2**
BT – PCM
BT – UART3 *(Depop)*

Load shed of MT6630 from VIP is available



Key Topics

MediaTek Known Issues

- Switching performance between 2.4 to 5 GHz
- Co-existence of BT/WiFi - *MTK Ticket AUTO00270544*
- Channel Switch Announcement(CSA) feature support
- BT/Wi-Fi time sharing configurations to improve throughput in Wi-Fi STA cases, as always BT is given priority
- Throughput issue with WPA3 security –*MTK Ticket AUTO00234664*
- Firmware to accommodate ACL sniff fix for the HCI timeout issue. (For Dual HFP use case : 1 ACL + 1 SCO + 1ACL (sniff))
- RTS to be supported for TCP/UDP Tx cases
- BT 5.0 Support (6630 Dev documents states 4.1only, MTK to Update)

GNSS / ADR

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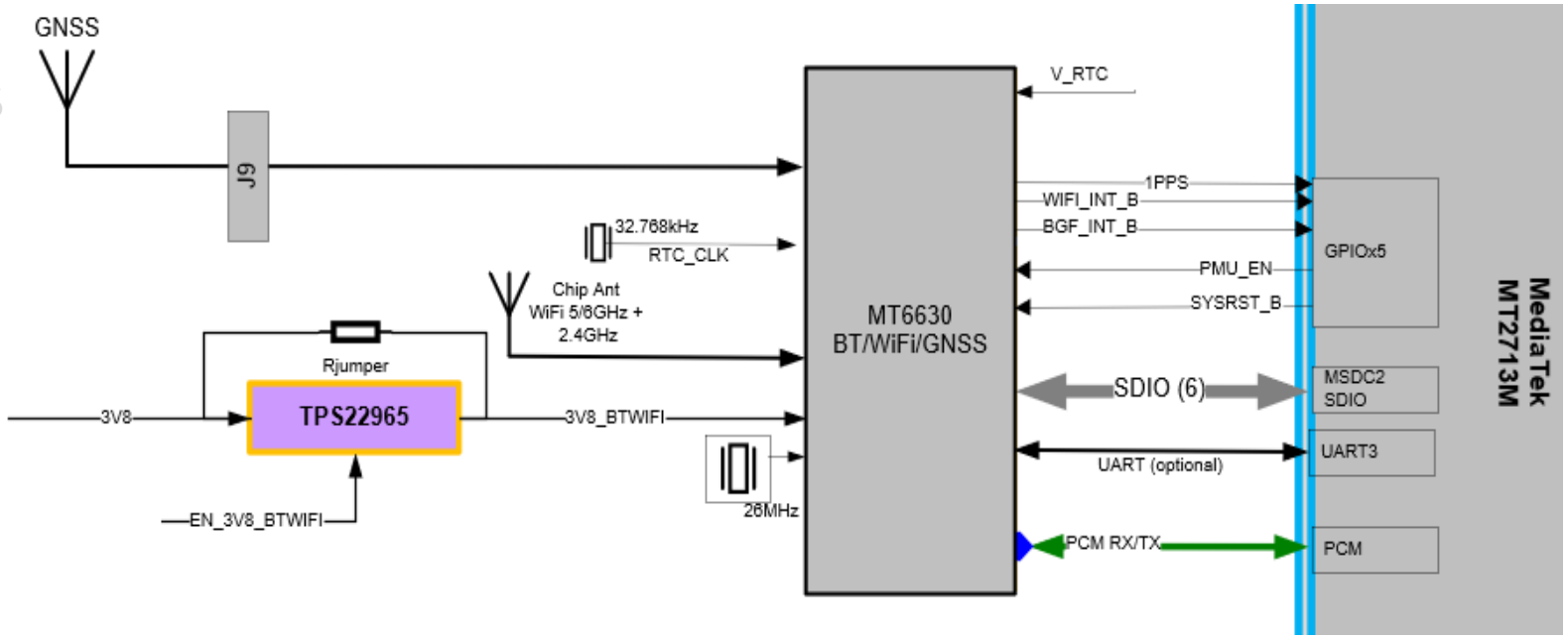
Combo Chipset : MT6630
ADR Solution - MediaTek



Key Topics

- ACC / Gyro latency - MediaTek
- Max Gyro / Acc latency - that can be with out error – MediaTek
- Calibration update
- ADR Verification Strategy

ADR Acceptance Criteria

Yield	Horizontal error	Direction error	Speed error
98% of accessory location yield	67% of error < 40 m	67% of error < 12°	67% of error < 2.4 m/s
	95% of error < 75 m	95% of error < 40°	95% of error < 5.4 m/s
	Max error < 200 m		

Audio/Tuner

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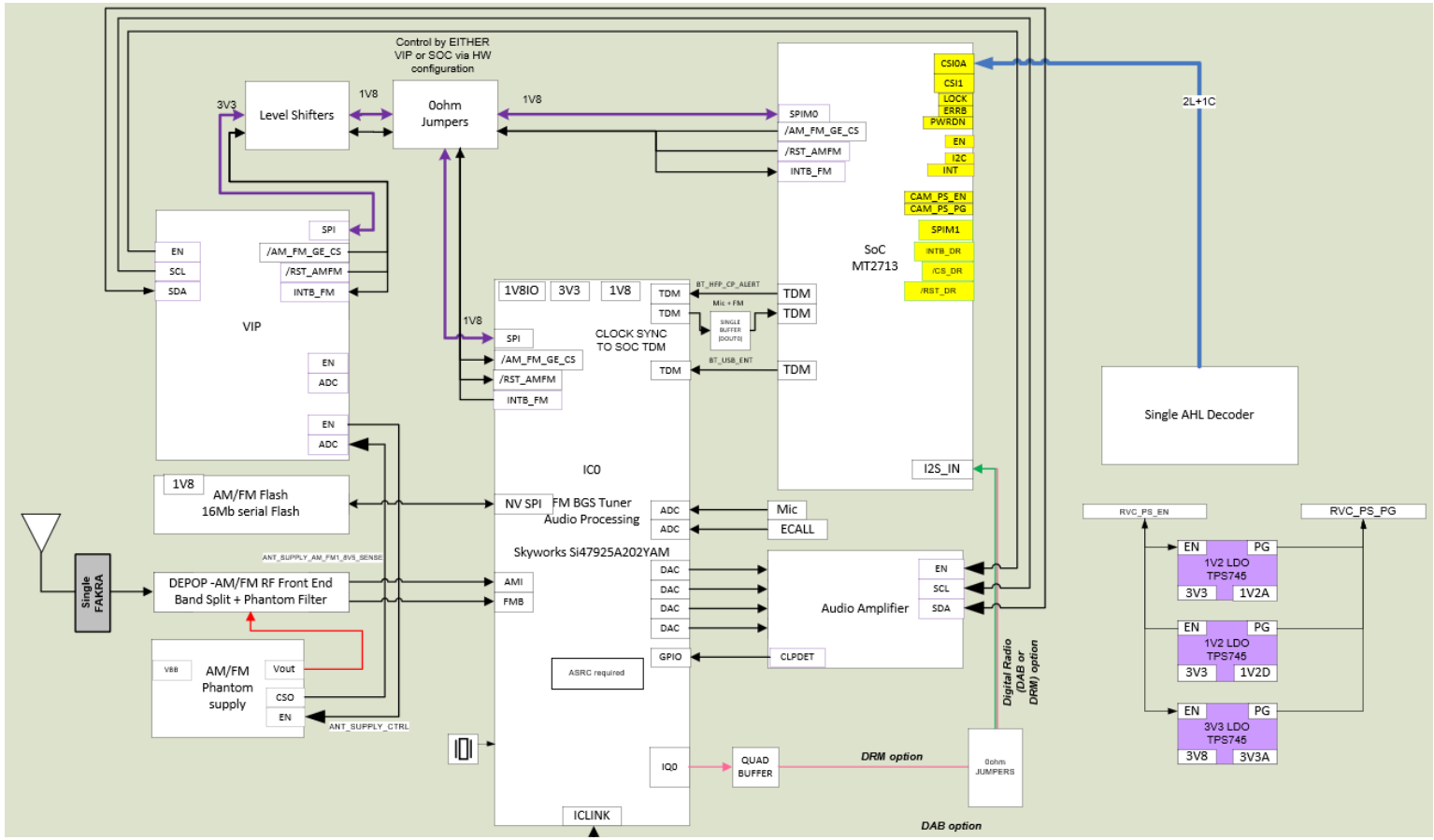
Tuner/DSP – SI47925
DSP <---------- SPI ----------> VIP

Amplifier – TPA6304-Q1
Amplifier <---------- I2C --------> VIP

Type	Product	AM/FM	DRM	Audio DAC	WB	Audio Post-Processing (DSP)	HD Radio	DAB/DAB+
Tuner/DSP	Si47925	true	true	true	true	true	true	false



Key Topics

- DSP is HW Configurable to VIP or SoC *(via jumper)*
- Reset Lines are Configurable to VIP/SoC
- HiFi Core to be disabled and DRAM allocated for it be unblocked for other usage – MediaTek
- Firmware Partition – *emmc*
- Android 13 Migration

Camera - Single AHL (RAA279972)

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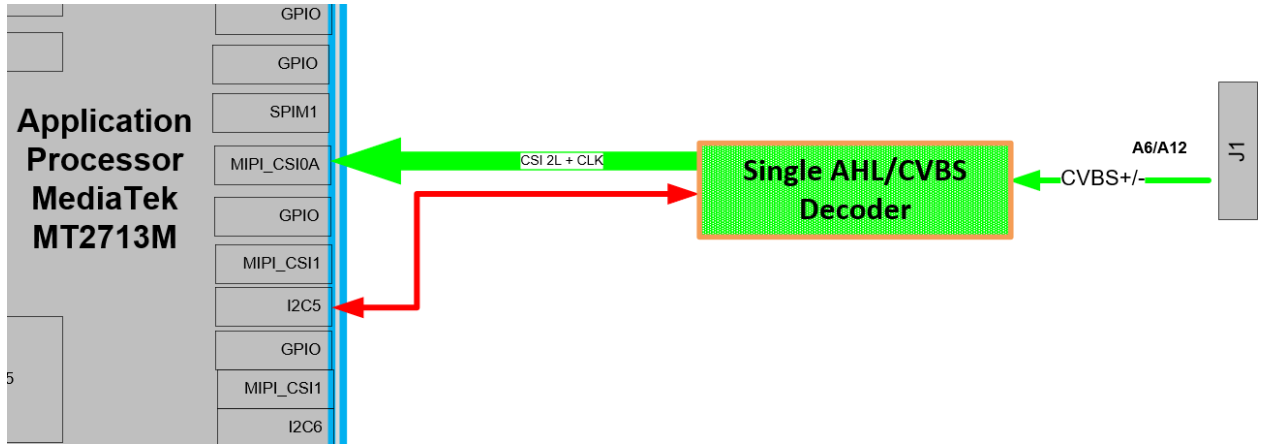
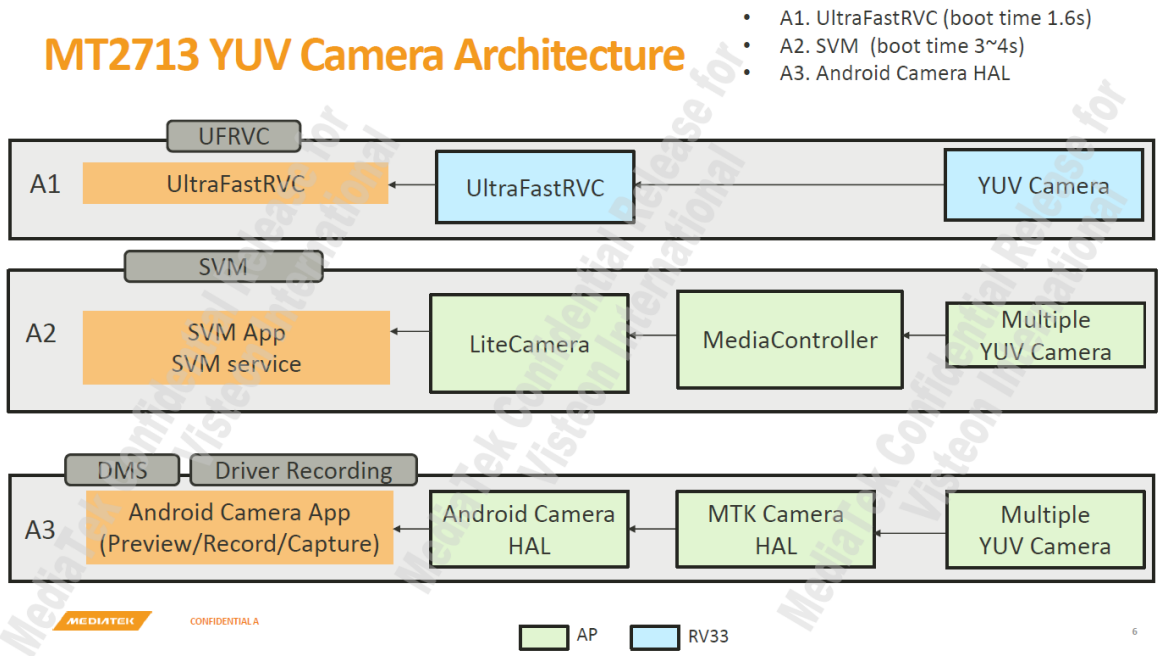
Decoder : Renesas RAA279972C3HNP#HA0

MIPI CSI <---------- AHL ----------> Camera
(CSI0A) RAA279972



Key Topics

- Camera Architecture – Fast RVC
  - *RV55 Implementation – NO*
- System Requirements KPI for RVC
- Ultra Fast RVC KPI
- Driver / Firmware for AHL – emmc Partition



Ethernet 88Q5040 BGA

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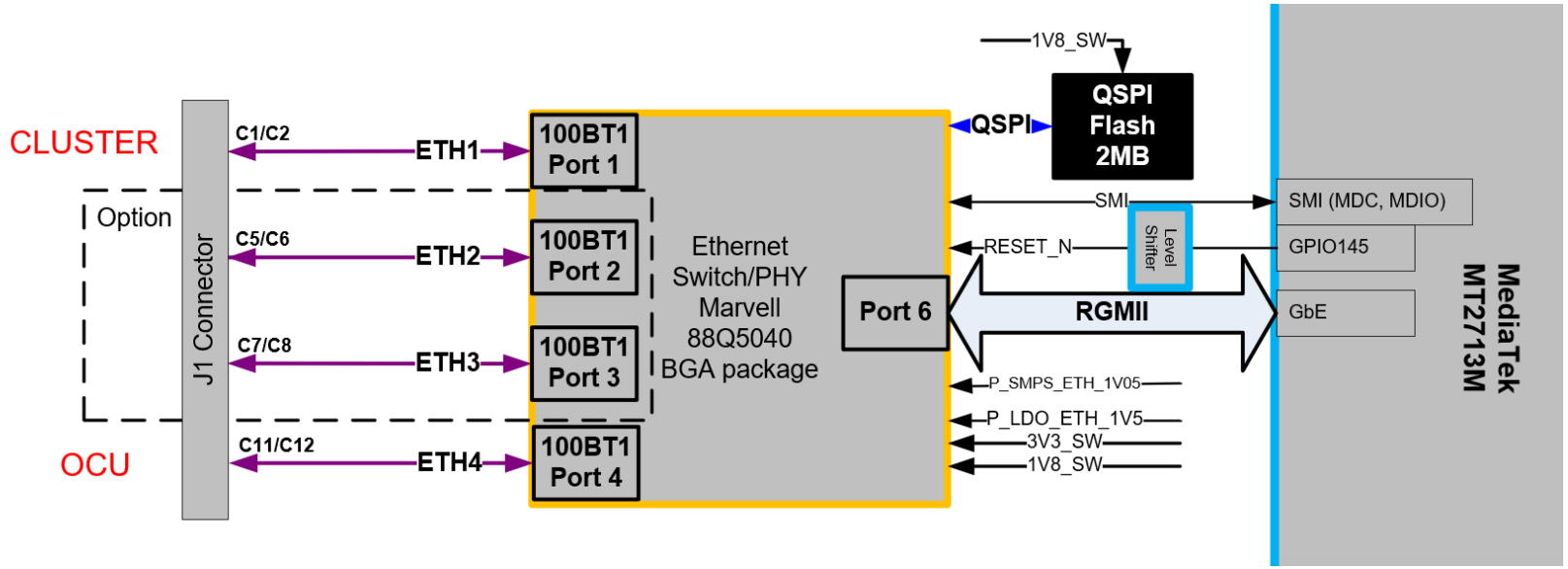
Marvell 88Q5040 BGA

2 x 100BASE-T1
2 Optional 100BASE-T1
RMU available for ETH1 & ETH4



Key Topics

- *Network Configuration*
- *Interface Link Speed – KPI*
- *Firmware for Ethernet – QSPI*

IPCL

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UCL 3.0

SoC

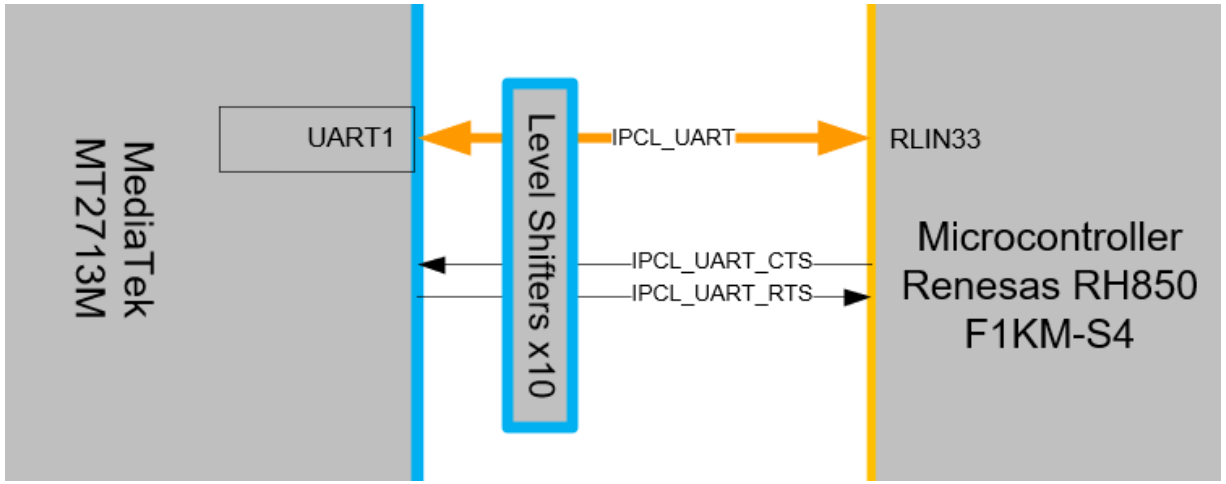
UART1 - IPCL_UART

UART2 - IPCL_CTS_RTS

VIP

UART5 – IPCL_UART

UART5 - IPCL_CTS_RTS *(Software)*

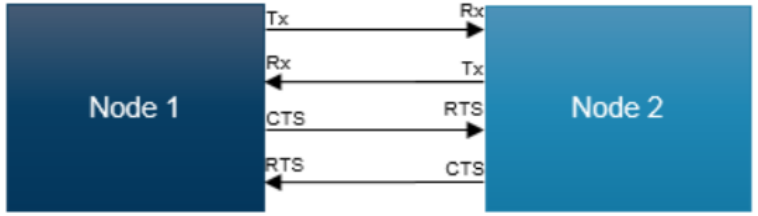


Key Topics / Questions

- *UART Flow Control need & necessity ?*
- *Impact of bap messages (400+) in UCL3.0 model.*
- *UCL performance from project with BAP (ex: Audi, VW, Porsche)*
- *Compatibility & feasibility of Porting existing Message Catalog to UCL3.0*
- *Receive Notification impact on CPU resources.*

3.1.1 Block Diagram

The hardware flow control mechanism shall be used if available. In microcontrollers that do not have hardware assisted flow control mechanism, interrupt capable GPIOs can be used to emulate the flow control signals.



Memory Layout – emmc (32GB)

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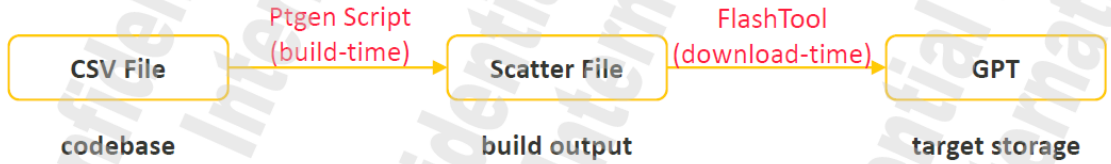
Vendor: Micron
Part Number : MTFC32GAZAQHD-AIT
Size : 32 GB

Table 3: HS200 Performance

Condition	32GB
Sequential write	100
Sequential read	175

- **Partition Table Generation**



codebase: alps/vendor/mediatek/proprietary/tools/ptgen

```
1 Partition_Name,Type,Size_KB,,Region,,Group,Reserved,Download,Download_File,OTA_Update,EmptyBoot_Needed,FastBoot
2 ,,eng,user,emmc,ufs,,,,,,,eng,user,eng,user,,,
3 preloader,Raw data,512,,EMMC_BOOT1,UFS_LU0,,N,Y,AUTO,Y,N,N,,N,,BOOTLOADERS,,
4 preloader_backup,Raw data,512,,EMMC_BOOT2,UFS_LU1,,N,Y,AUTO,N,N,N,,N,,BOOTLOADERS,,
5 pgpt,Raw data,32,,EMMC_USER,UFS_LU2,,N,N,NONE,N,N,Y,N,Y,N,AUTO,,
6 misc,Raw data,512,,EMMC_USER,UFS_LU2,,N,N,NONE,N,N,N,,N,,AUTO,,
7 para,Raw data,512,,EMMC_USER,UFS_LU2,,N,N,NONE,N,N,N,,N,,AUTO,,
8 expdb,Raw data,40960,,EMMC_USER,UFS_LU2,,N,N,NONE,N,N,N,,N,,AUTO,,
9 frp,Raw data,1024,,EMMC_USER,UFS_LU2,,N,N,NONE,N,N,N,,N,,AUTO,,"ne(MTK_FACTORY_RESET_PROTECTION_SUPPORT,yes)"
10 nvcfg,EXT4,32768,,EMMC_USER,UFS_LU2,,N,N,NONE,N,N,N,,N,,PROTECTED,,
11 nvdata,EXT4,65536,,EMMC_USER,UFS_LU2,,N,N,NONE,N,N,N,,N,,AUTO,,
12 eng_system,EXT4,32768,,EMMC_USER,UFS_LU2,,N,N,NONE,N,N,N,,N,,AUTO,,"ne(MTK_RESERVE_ENG_PARTITIONS,yes)"
13 eng_vendor,EXT4,32768,,EMMC_USER,UFS_LU2,,N,N,NONE,N,N,N,,N,,AUTO,,"ne(MTK_RESERVE_ENG_PARTITIONS,yes)"
14 vbmeta_a,Raw data,8192,,EMMC_USER,UFS_LU2,,N,Y,vbmeta.img,Y,N,Y,,Y,,AUTO,,"ne(MTK_BOARD_AVB_ENABLE,true)"
15 vbmeta_system_a,Raw data,8192,,EMMC_USER,UFS_LU2,,N,Y,vbmeta_system.img,Y,N,Y,,Y,,AUTO,,"ne(MTK_BOARD_AVB_ENABL
16 vbmeta_vendor_a,Raw data,8192,,EMMC_USER,UFS_LU2,,N,Y,vbmeta_vendor.img,Y,N,Y,,Y,,AUTO,,"ne(MTK_BOARD_AVB_ENABL
17 vbmeta_b,Raw data,8192,,EMMC_USER,UFS_LU2,,N,N,NONE,Y,N,Y,,Y,,AUTO,,"ne(MTK_BOARD_AVB_ENABLE,true)"
18 vbmeta_system_b,Raw data,8192,,EMMC_USER,UFS_LU2,,N,N,NONE,Y,N,Y,,Y,,AUTO,,"ne(MTK_BOARD_AVB_ENABLE,true) or ne
19 vbmeta_vendor_b,Raw data,8192,,EMMC_USER,UFS_LU2,,N,N,NONE,Y,N,Y,,Y,,AUTO,,"ne(MTK_BOARD_AVB_ENABLE,true) or ne
20 md_udc,Raw data,65536,,EMMC_USER,UFS_LU2,,N,N,NONE,N,N,Y,,N,,AUTO,,"ne(MTK_BOARD_USES_METADATA_PARTITION,true)"
21 metadata,Raw data,32768,,EMMC_USER,UFS_LU2,,N,N,NONE,N,N,Y,,N,,AUTO,,
22 persist,EXT4,49152,,EMMC_USER,UFS_LU2,,N,N,NONE,N,N,N,,N,,PROTECTED,,"ne(MTK_PERSIST_PARTITION_SUPPORT,yes)"
23 protect1,EXT4,8192,,EMMC_USER,UFS_LU2,,N,N,NONE,N,N,N,,N,,PROTECTED,,
24 protect2,EXT4,8192,,EMMC_USER,UFS_LU2,,N,N,NONE,N,N,N,,N,,PROTECTED,,
25 seccfg,Raw data,512,,EMMC_USER,UFS_LU2,,N,N,NONE,N,N,N,,N,,AUTO,,
26 otp,Raw data,44032,,EMMC_USER,UFS_LU2,,N,N,NONE,N,N,N,,N,,AUTO,,
```

Key Topics

- Emmc Performance [R/W Speed]
- Custom Partition addition/deletion – Provided by MediaTek
- Layout for Skoda2.5

Apple Authentication

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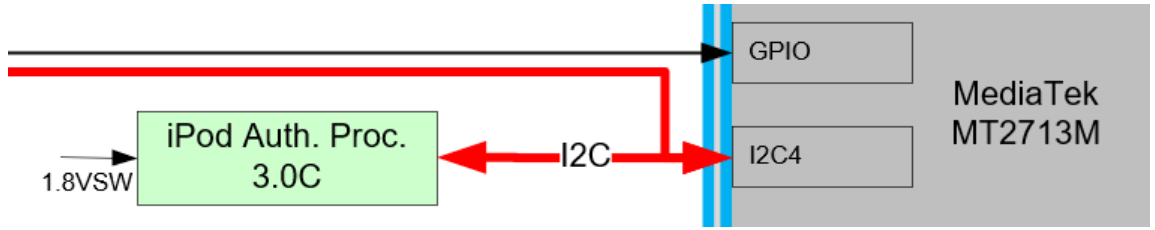
MFI authentication Coprocessor 3.0
Interface: **I2C4**



Key Topics

- *Not available in EVK 2715*

Issue Type	Key	Summary	JIRA Sprint	Feature Group
Epic	SMQB31568-305	[Skoda2.5] : Bring-up : Apple Authentication - MFI 3.0	PI_4	HW_SW_interface

USB

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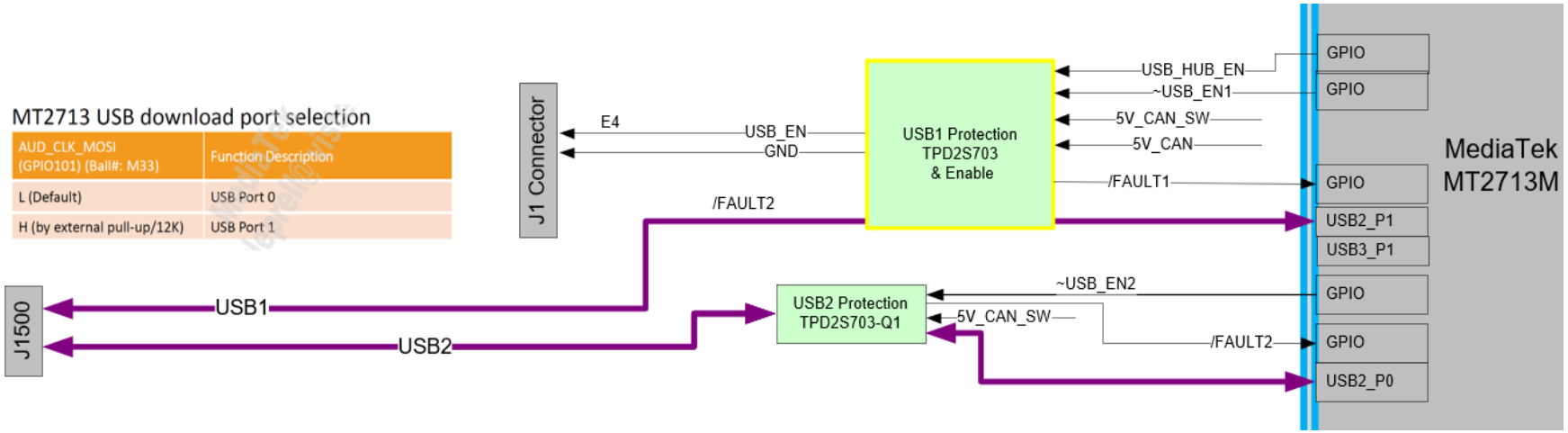
USB 2.0
2 USB Exposed
3 Enable GPIO Pin
- 2 for Data Line
- 1 for Hub Enable (USB1)

MT2713 USB download port selection

AUD_CLK_MOSI (GPIO101) (Ball#: M33)	Function Description
L (Default)	USB Port 0
H (by external pull-up/12K)	USB Port 1



Key Topics

- *USB Enable*
- *USB Download Port Selection*
- *ADB Connector*

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