LGA+ Module

Intel SoC Apollo Lake Low

iFlytek VR / TTS
BT4.2 BLE
802.11a/b/g/n/ac
On board Navi
2D or 3D NDS Map
AVM or RVC/SVC
DLNA + Airplay
OTA
APU
TMC
Online music

eMMC 5.0
- V2H&M(TOP): 32GB
- V2H&M(High): 32GB
- V2H&M(Mid): 32GB
- V2H&M(Low): 8GB

eMMC5.0 HS400
SDCard SD3.0 SDR104/DDR50
8 MB NOR-Flash N25Q064A — Fast SPI QSPI 50MHz
Rohm BlueCove PMIC — SVID
3GB LPDDR4 / 2GB LPDDR4 — LPDDR4-3200 x128

USB Connector — +5V/2.1A Charging — USB 2.0HS+OTG
USB/iPod/CarPlay/AndroidAuto/Welink
USB Connector — +5V/2.1A Charging — USB 2.0HS
USB/iPod

V2X module uBlox THEO-P173 — Reserve for US market

Ethernet Connector
Ethernet Switch Broadcom BCM89230
Ethernet Controller Springville I210

Ethernet connect to:
1. Cluster for OTA and Navi-MAP graphic delivery (800*480@20fps or 1920*720@30fps)
2. T-box for OTA and internet (hybrid navigation, online music etc.)
3. Driver ID for OTA and face recognition

Wireless CarPlay WiFi direct
BT+WiFi CWM-09 Marvell 88W8887

GNSS UBX-M8030
For V2H&M(Mid), V2H&M(High), V2H&M(Low) don't need GNSS and NAVI

iPod Auth. 2.0C

LVDS Serializer DS90UB929-Q1 — LVDS Connector — Remote Display 1280*720
LVDS DeSerializer DS90UB954-Q1
LVDS DeSerializer DS90UB954-Q1
For V2H&M(Mid), V2H&M(High), V2H&M(Top)surround view

CVBS Decoder ADV7281-M

Audio Mixer
Audio Buffer For Ext-AMP (For Top variant)
Class-D AMP TDF8532 (4x20W@4Ω) For Low/Mid/High
Class-D AMP TDF8531 For Mid/High

Amplifier Channels
- V2H&M(Low): 4ch Int-AMP
- V2H&M(Mid): 7ch Int-AMP
- V2H&M(High): 7ch Int-AMP
- V2H&M(High): 4ch to Ext-AMP

Tuner + DSP NXP Dirana3 SAF7754 HiFi2 core DTS CS AUTO
V2H(Top): SAF7751 Without DTS CS AUTO

SPDIF buffer (For Ext-CD) (3.3V logic)
TMC tuner TEF7016

2MB Flash S25FL116K

DAB/DRM/HD NXP Saturn
SAF3600 for HD
SAF3601 for DAB
SAF3607 for DRM
2MB Flash S25FL116K
Reserve for Overseas Market

SiriusXM X40HAF

A2B Receiver AD2425 — Rear CONN
For V2H&M(Low), V2H&M(Mid), V2H&M(High)

Rear Connector

Battery Protection — BATT / GND — UBATT

IO Controller RH850 F1K Premium R7F7016223AFP
144 POL Package 768K Flash + 96K RAM

TEMP Sensors
Voltage Monitors
FAN
EEPROM 8 KB
3D Gyro+Acc. SMI130
3D Gyro SMG130
RTC RA8900
For V2H&M(Mid), V2H&M(High), V2H&M(Top)

HS-CAN TJA1044 — Public CAN — CAN_TX/RX / CAN_STB

AUX_DET
Reverse
SPEED
Power_KEY
SWC1/2REF
TBOX_MUTE_IN

AMP_STBY — AMP

Legend

- Not in HU
- V2H&M(Top)
- V2H&M(High)
- V2H&M(Mid)
- V2H&M(Low)
- Reserve
- Audio
- Video
- SPI
- UART
- I2C
- USB&SDIO
- Reserved

Revision History

2016-12-08 V0.1 **Shi Guangze**
First version

2016-12-09 V0.2 **Shi Guangze**
Remove Ethernet for AVM/AMP/Antenna module.
Add DS90UB960-Q1 for AVM and LVDS over Coax.
Change Tuner&DSP to Dirana3 because DIONE timing and datasheet is not clear now.

2016-12-12 V0.3 **Shi Guangze**
Reserve internal Drive ID (Face&Voice recognition) solution. Assume Driver ID via 3rd USB and reserve Ethernet port for it.
Assume CarLife still required.
Add DS90UB954-Q1 for V2M(Mid) variant.
Mark different variants on the block diagram

2016-12-12 V0.31 **Shi Guangze**
Customer require DS90UB954-Q1 for LVDS Des. And CVBS decoder change to be reserved.
Broadcom Ethernet switch change to TJA1100. GWM now need single Ethernet port.
Remove CarLife
Remove Internal Driver ID because customer confirmed it will be external module. Remove the 3rd USB for Driver ID.

2016-12-15 V0.32 **Shi Guangze**
eMMC change to V2H&M_Mid 16GB (was 8GB),V2H&M_Low 8GB (was 4GB).
BT&WiFi module change to CWM-07 (was CWM-09)

2016-12-16 V0.33 **Shi Guangze**
BT&WiFi module change back to CWM-09
Ethernet chip change to Marvell 88E1512 (was TJA1100) for all variants
Add RTC chip RA8900 for V2H&M_Low variant
Amplifier TDF8546A change to TDF8532 to follow GWM's requirement. Add audio buffer for V2H&M_Top external AMP.
V2H&M_Mid variant change to 360 surround view and need two DS90UB954-Q1 in eBOM (was one DS90UB954-Q1)
CAN chip change from TJA1043 to TJA1044GT

2016-12-19 V0.34 **Shi Guangze**
V2H&M_Mid eMMC change from 16GB to 32GB (customer requirement)
V2H&M_Mid/High/Top DDR4 change from 2GB to 3GB (customer requirement)
CAN PHY change from TJA1044GT to TJA1043. (CAN-FD canceled)

2017-01-03 V0.35 **Shi Guangze**
Change Marvell 88E1512 to Broadcom BCM89200. (Customer confirmed EAVB and BroadR-Reach requirement.)
Remove S25FL116K 2MB Flash for GPS
Remove power supply to CVBS RVC&SVC
Add Power supply to remote display.
Add SPDIF buffer for external CD. (optional BOM)
V2X change to uBlox V2X module which has the same NXP solution inside.(optional BOM)
Add S25FL116K for quick warning sound and ANC.

2017-01-10 V0.36 **Shi Guangze**
ANC&ESE required: Halosonic in Dirana3. Add A2B chip for microphone signal receiving.
AMP&Dirana3&A2B controlled by IOC for quick warning sound.
Ethernet chip change from BCM89200 to BCM89530

2017-01-16 V0.37 **Shi Guangze**
Ethernet chip change from BCM89530/4ports to BCM89230/3ports
Add TEF7016 for oversea market to support TMC over RDS.
CAN-FD required: MCU change from R7F7010283AFP to R7F7016223AFP. CAN chip change from TJA1043 to TJA1044.