



HiSilicon Push-to-Talk Development Kit for Amazon AVS



Based on HiSilicon 4K Set Top Box Platform

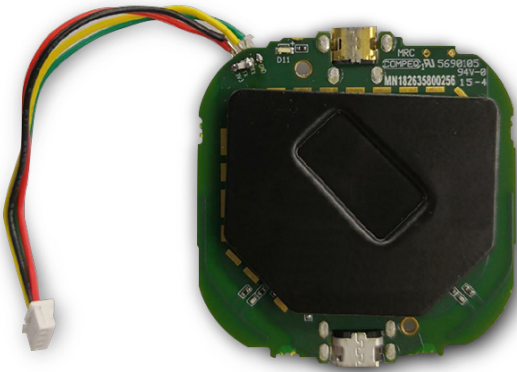
HiSilicon Push-to-Talk (PTT) Development Kit for Amazon AVS is a set-top box (STB) SoC based development kit. It is a reference platform for those developers who are interested in having Alexa Voice Service (AVS) on STB device and also for Pay TV operators, the 3rd parties who want to evaluate the deployment possibility of AVS over Pay TV network. The kit is based on HiSilicon mainstream 4K SoC Hi3798MV200. It is a member of HiSilicon's UHD HDR10 product family. HiSilicon provides a full portfolio of STB chipset solutions from entry-level HD to high-end UHD. Because they share APIs with a common software architecture, this solution for the Hi3798MV200 can be leveraged across the entire SoC portfolio with ease.

The development kit for this solution includes a HiSilicon's Hi3798MV200 evaluation board running Linux and the AVS Device SDK with display cards, and a PTT remote with USB receiver dongle. It offers a full reference of Alexa display cards implementation on a typical STB environment with Alexa C++ SDK. Most of the popular skills like Prime Music, Kindle book, Audible book and Radio etc. can be evaluated on this reference. HiSilicon plans to provide future feature updates such as video skills and multi-room music. The voice remote provides flexibility for an operator to retrofit existing STBs to add Alexa by simply swapping the remote, adding a USB receiver dongle, and updating the STB software. This kit offers an Alexa Push-to-Talk implementation on STB solution and the implementation is based on the common delivery for STB scenario. The developers will integrate Alexa SDK on the standard HiSilicon SDK modules including voice I/O, media player, graphic engine, network etc.

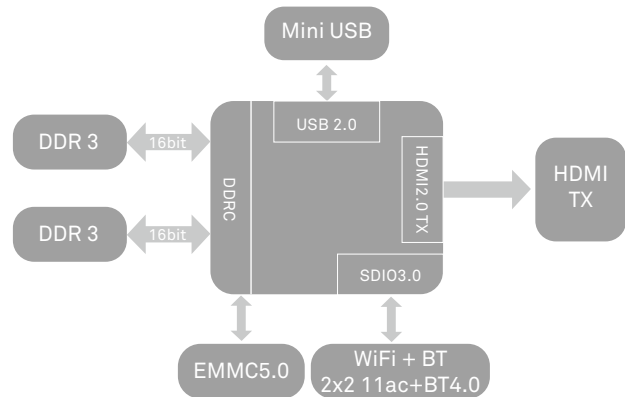
Key Features

- Smart audio input by remote controller, easy to deploy AVS on Pay TV operator system
- Integrated Alexa client with Linux C++ SDK
- Integrated quad-core ARM® Cortex® A53 CPU and a multi-core Mali 450 GPU
- Support STB key features like Imprex™2.0 with immersive video experience, HDR and pay TV industry security etc.
- Scalable and consistent software architecture designed to reduce the development time on current pay TV application
- Compact 5cm*5cm form factor with low power consumption

Kit Overview



F.1 Reference board



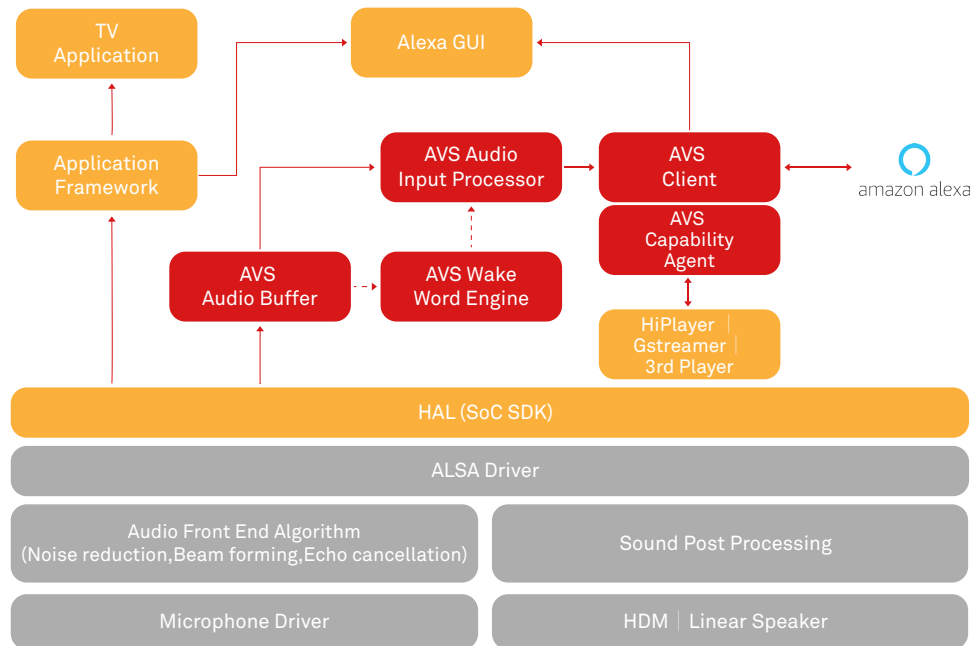
F.2 Functional Block Diagram

F.1 is the overview of the Reference board. There is a UART debug port available for engineer to connect to the Reference board for bug shooting. From F.2 we can see that there is a Mini USB for power input and HDMI TX for TV connection. There is a WiFi 2*2 11ac and BlueTooth 4.0 integrated on the board but WiFi is not activated when using AVS.



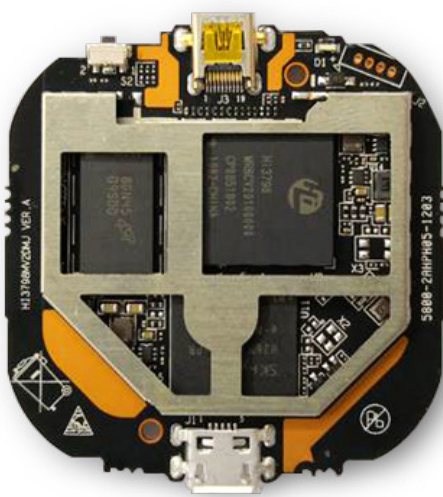
Only Linux OS is available on this reference platform and there is no WiFi Setting UI. So a USB Ethernet converter will be used to connect to Internet.

The following picture F.3 shows the overall software architecture of the AVS integration implementation at the device side. There is no far-field feature for this PTT solution, The AVS Wake Word Engine will be available on the next far-field solution in the near future.

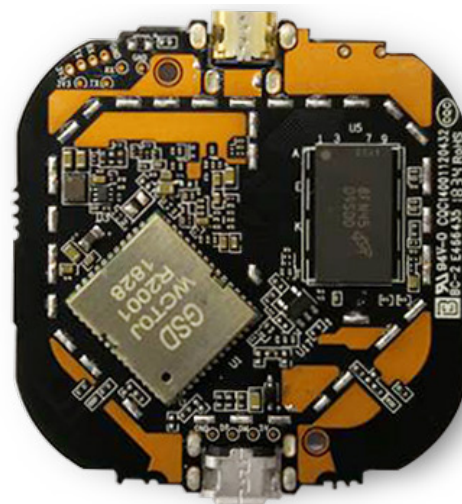


Specification

The AVS development kit is based on mainstream 4K chipset Hi3798MV200. HiSilicon engineering team offers customers a compact form factor which leaves good flexibility for the final products. F.4 and F.5 are the Top and Bottom view of this design. The customers can reuse this design or develop a new hardware design based on this solution.



F.4 Top View



F.5 Bottom View

Please also get detailed components list from the following table.

Component	Parameter	Note
PCB	Hi3798MV2DMJ	<ul style="list-style-type: none"> · 6 layers PCB design(HDI-1) · 46mm*47.6mm,DDR3
Power Input	5V/1A	
Power Connector	Micro USB	
Remote Control	2.4G RC	BlueTooth4.1 is also available
CPU	Hi3798MV200	Package :BGA 14mm*14mm
Memory	· DDR3*2 (DMJ)	DDR3*2 with capacity 1GB (DMJ)
EMMC	eMMC5.0 8GB	<ul style="list-style-type: none"> · eMMC5.0 with capacity 8GB · Boot from EMMC
Ethernet	N/A	<ul style="list-style-type: none"> · USB2Ethernet converter available for Kit · Ethernet available at chipset level
WIFI w/ BT	11AC 2T2R+BT4.1	<ul style="list-style-type: none"> · 11AC 2T2R+BT4.1 I/F:SDIO3.0 · AP6356S
HDMI	HDMI2.0a TX With HDCP2.2	
Support OS	Linux	