



VGA Video Application Development Kit



PRODUCT OVERVIEW

The GainSpan VGA Video Application Development Kit (ADK) is a complete reference design that demonstrates a VGA resolution (640*480) video streaming application based on the GainSpan GS2011MIZ Wi-Fi module and associated embedded and mobile software suite. The Video ADK finds applications in Wi-Fi doorbells, car backup cameras, baby monitors and IP cameras.

The Video ADK includes the video application board, hardware design package, and complete software suite including GainSpan embedded software and mobile reference applications for iOS/Android based smartphones. An evaluation version of the ADK, the Video Application Evaluation Kit (AEK) is also available that includes the application hardware and binary-only software.

The ADK hardware and software provide customers a starting point to build video streaming applications.

OPERATIONAL MODES AND USE CASES

The GainSpan module running the video application operates as a limited access point (Limited AP Mode) or as a client within an existing network infrastructure (Client/Station Mode).

Once the smartphone has established connection with the video ADK board operating in Limited AP mode, the mobile application discovers the video application profile being advertised by the embedded application and selects it to enable streaming of video from the camera to the smartphone. The mobile application features a custom player that plays the video stream from the camera.

In the Client mode, the Video application board connects to an AP as a client. The smartphone, also connected to the same AP, now discovers the Video embedded application profile, and upon selection, starts receiving the video feed from the camera.

Both the Limited AP mode and client/station modes provide mDNS/DNS-SD based discovery methods. The embedded application advertises availability, and clients automatically discover the video profile and connect to it.

Discovery allows clients to locate and connect to Video applications without the need to know the URL.

Provisioning of the GainSpan node in Limited AP or Client/Station modes and Over-the-air firmware updates (OTAFU) of the GS2011M module firmware can be done using Provisioning and OTAFU web or mobile applications.

BENEFITS:

- Complete VGA resolution video reference design that allows users to stream video from a camera to their iOS or Android based smartphones
- Target applications are video streaming applications such as Wi-Fi doorbells, IP cameras, car rear-view cameras and baby monitors
- Accelerated time-to-market using GainSpan's solution that includes complete hardware design package and software suite (embedded software source and mobile reference apps)
- Ultra low-power video streaming for battery powered devices

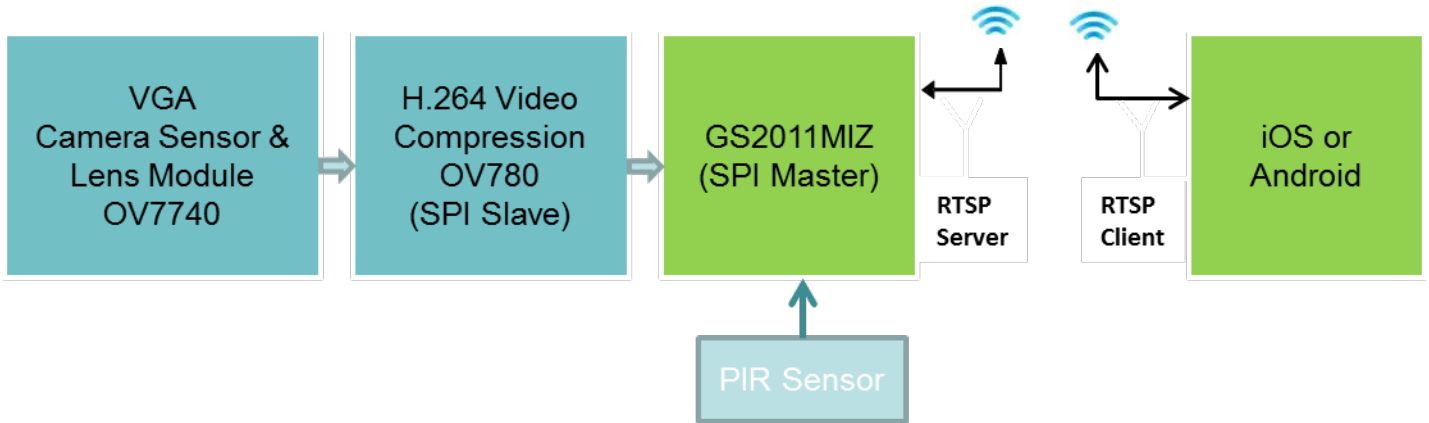
FEATURES:

- Video ADK hardware features
 - GainSpan GS2011MIZ Wi-Fi Module
 - Omnivision OV780 H.264 encoder
 - OV7740 VGA image sensor
 - PIR Motion Sensor
- Video ADK software features
 - Complete networking and Wi-Fi stack
 - RTP/RTSP transport protocol
 - Custom mobile application (iOS) for reduced latency
 - Allows automatic discovery by clients using mDNS/DNS-SD discovery methods
 - Complete suite of security protocols, including WPA/WPA2, legacy WEP, and upper layer security protocols such as TLS/SS and HTTPs

GAINSPAN VIDEO SOFTWARE

The GainSpan Video ADK embedded software supports video streaming to an iOS or Android smartphone over Wi-Fi. The OV780 H.264 video encoder chip compresses the raw video stream received from camera sensor to H.264 format and transmits this compressed data to GS2011MiZ Wi-Fi module over SPI bus. The application uses RTP/RTSP protocol for video streaming to a client (iPhone/Android smartphone). The mobile player supports session establishment and decodes the video stream.

On powering up the application board, the GainSpan Wi-Fi module establishes itself as a Limited AP. Users can browse to the list of available wireless networks on their client smartphones and connect to the Video application board. The video mobile application leverages discovery exposed by the Video embedded firmware application to enable automatic discovery of available video profiles and services.



MOBILE APPLICATIONS

The Video ADK iOS mobile app features a custom player that allows users to view live video data with reduced latency. When the iOS app is launched, it discovers the video profile being advertised by the video embedded software and upon selection, launches the player that plays the video stream. The application uses RTP/RTSP transport protocol for transfer of video data to the mobile device. The player allows a session to be established, streams video data, and supports PLAY and STOP functions.



GAINSPAN VIDEO HARDWARE DESCRIPTION

The GainSpan Video ADK uses a GS2011MIZ Wi-Fi module based Video Application Board that features the following components.

| Components | Description |
|--|---|
| GainSpan Wi-Fi Module | GS2011MIZ module streams video data over Wi-Fi |
| Omnivision OV780 | Omnivision H.264 VGA resolution video compression chip |
| Omnivision OV7740 VGA Image Sensor and Lens module | Omnivision OV7740 VGA image sensor and lens module; Supports 640*480 video resolution |
| PIR Motion Sensor | Triggers video stream on motion detected |
| Serial Flash | Used for storage of provisioning or custom application web pages and/or backup firmware |
| Switches and Buttons | Single snapshot button, WPS/Provisioning and Restore Backup Firmware |
| LEDs | Indicates Power On, Operation mode (Limited AP or Client) and Run/Program mode |
| USB port | Used to power the board and upgrade firmware on the Wi-Fi module |

VIDEO ADK AND AEK CONTENTS

| Components | ADK | AEK |
|--|-------------------------------|--------------------|
| Video Embedded Firmware Application | Binary and Source | Binary Only |
| Video Mobile Application for iOS/Android Smartphones | Mobile Application and Source | Mobile Application |
| GainSpan Video Application Board | Hardware | Hardware |
| USB Cable | Hardware | Hardware |

VIDEO ADK/AEK ORDERING INFORMATION

| ITEM | PART NUMBER | Description |
|------------------------|-------------------|---|
| GainSpan VGA Video ADK | GS-ADK-VideoOVVGA | GainSpan VGA Video ADK based on GS2011MIZ Wi-Fi modules |
| GainSpan VGA Video AEK | GS-AEK-VideoOVVGA | GainSpan VGA Video AEK based on GS2011MIZ Wi-Fi modules |