GS2011M Full HD Video Battery Powered Application Development Kit
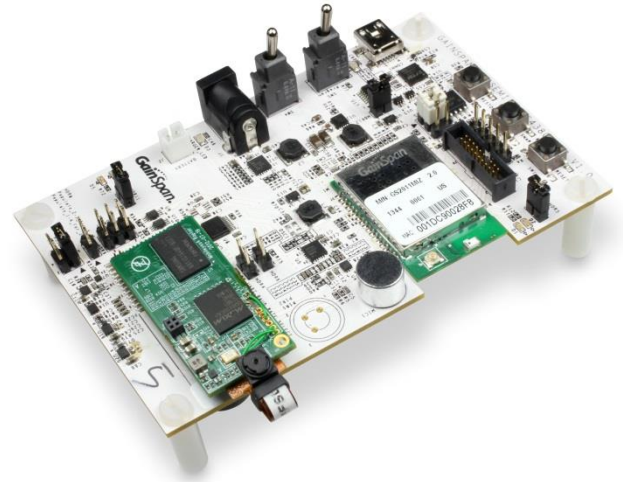
PRODUCT OVERVIEW

GainSpan Full HD Video ADK is a development platform enabling customers to build Wi-Fi IP video streaming applications with excellent video quality. By integrating the major hardware and software components for Wi-Fi IP camera solution, this platform facilitates fast time to market for customer projects.

Targeted applications for this platform include Wi-Fi IP cloud cameras, baby monitors, toy cameras, automotive backup / drive recorder cameras and variety of other systems where customer would like to add IP video streaming functionality. This platform also integrates key functionality for battery powered operation for the camera.

GEOSEMI FULL HD IP CAMERA ADK FEATURES

The following Full HD ADK ADK features include the following:

- GS2011MIZ module with extremely low power IEEE 802.11b/g/n compliant module meeting worldwide regulatory and Wi-Fi Alliance certification requirements.

- Full HD (1920 x 1080 pixels) resolution with Geo Semiconductor H.264 encoder

- In-home streaming via access point

- Mobile applications from Geo Semiconductor

- Battery powered reference design with charging circuit

- Planned support for:

  ✓ Streaming to the cloud through an access point or a custom gateway

  ✓ Uploading to cloud and storage in the cloud

  ✓ Power saving mode implementation for long battery life designs

  ✓ 2-way audio for communication with a smartphone

APPLICATIONS:

- **Battery powered IP cloud cameras**

- **Line powered IP cloud cameras**

- **Baby monitors**

- **Toy cameras**

- **Automotive backup/drive recorder cameras**

WIFI CONNECTIVITY:

- **GS2011MIZ module IEEE 802.11b/g/n connectivity with PHY rates up to 72Mbps**

- **Limited AP, Wi-Fi Direct with concurrent mode, WPS2.0**

- **SPI interface to H.264 encoder**

- **Security: 802.11i, WPA/2-Personal and Enterprise, legacy WEP, TLS**

- **Fast boot up, low power operation and low standby current**

STREAMING PROTOCOLS:

- **RTP/RTSP streaming for Audio/Video**

- **UDP/TCP streaming**

ADDITIONAL GEO SEMI ENCODERS:

- **Raptor 2 (with geometric correction)**

APPLE AUTHENTICATION COPROCESSOR:

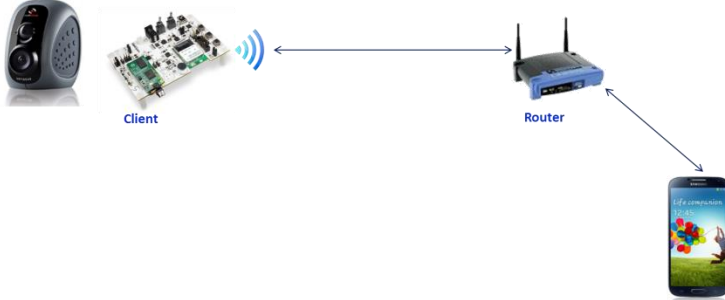- **Apple authentication co-processor for Wi-Fi config**

HOSTED SYSTEMS:

- **For addition of video functionality to existing embedded systems, GainSpan ADK implements simple AT commands and Serial-to-Wi-Fi connectivity over UART**
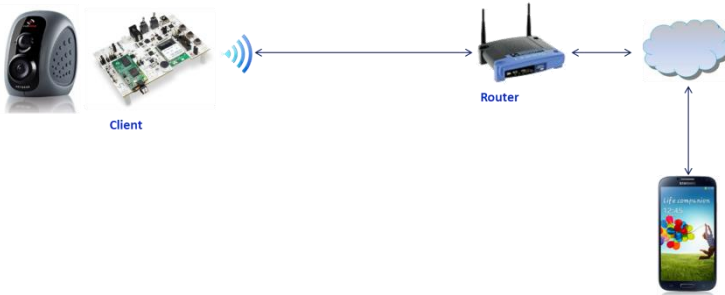
USE CASES

GainSpan Full HD ADK enables multiple use cases over Wi-Fi technology.

IN-HOME STREAMING

STREAMING TO THE CLOUD (PLANNED SUPPORT)

DEVELOPMENT KIT SYSTEM COMPONENTS

GainSpan Full HD Video ADK comprises of the following components:

- **GS2011MIZ:** GainSpan GS2011MIZ features low power battery applications

- **MAX64380**: Geo Semi H.264 encoder (Raptor) and AAC-LC encoder supporting Full HD 1080 pixels 30 resolution video

- **MAX9860:** Low-power, voice band, mono audio codec; ADC and DAC supporting sample rates of 8kHz to 48kHz

- **MAX9300:** Mono 2.6W Class D amplifier

- Apple authentication co-processor

EMBEDDED SOFTWARE:

- **WLAN**
  - MCS 0 – 7 data rates; STBC
  - 802.11 Security: WPA / WPA2 enterprise and personal security modes

- **Full implementation of TCP / IP networking stack**
  - IPv4 / IPv6 support
  - HTTP1.1 Web Server or Client
  - HTTP POST / GET / Response codes
  - Application security (TLS 1.0, TLS 1.2)
  - mDNS Discovery
  - RTP / RTSP streaming
  - UDP streaming

- **Multiple Wi-Fi modes**
  - Limited AP
  - Station
  - Limited AP concurrent
  - Wi-Fi Direct

- **Multiple Provisioning Methods**
  - WPS Provisioning
  - Wireless AP Provisioning
  - QR Code Provisioning
  - Group Provisioning on Android devices

- **Over-the-Air Firmware Update**
  - Wireless update of the host code

- **Video Encoding**
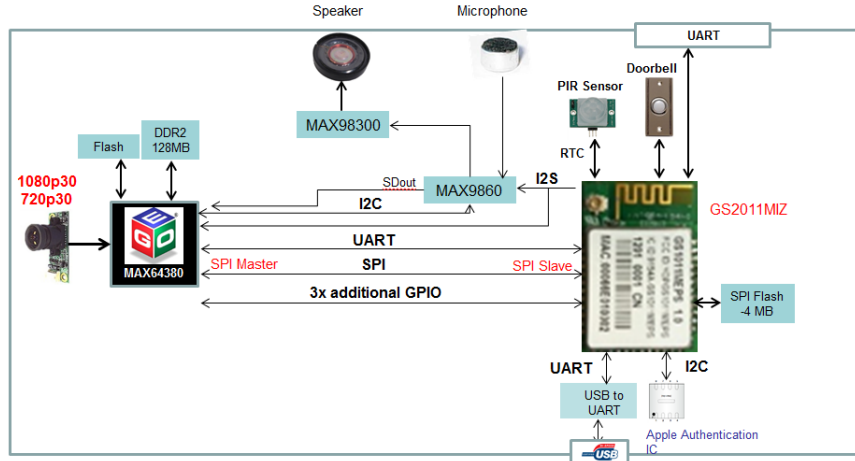 - H.264 encoding up to 1080p30 resolution

MOBILE APPLICATION:

- iOS and Android application from Geo Semiconductor
- Notification from cloud on doorbell press
- mDNS Discovery for local cameras

CLOUD CONNECTIVITY (PLANNED SUPPORT)

- **Cloud streaming services**
- **Cloud storage**

GAINSPAN FULL HD ADK BLOCK DIAGRAM

GAINSPAN GS2011MIZ/MIE MODULE SPECIFICATIONS

Components	Description
Radio Protocol	IEEE 802.11b/g/n
Pin Count	49 pins
RF Output Power (Typical)	+15dBm (802.11b), +11dBm (802.11n)
Rx Sensitivity	-95dBM
Wake from Standby Time	1ms (1 millisecond)
RF Operating Frequency	2.4 – 2.495GHz
Supported Data Rates	72, 65,58,43,29,22,14,7 Mbps (802.11n), 54, 48, 36, 24, 18, 12, 9, 6 Mbps (802.11g) 11, 5.5, 2, 1 Mbps (802.11b)
Antenna Options	External antenna (u.FL connector) or Internal PCB trace antenna
Operating Temperature	-40° to +85°C
Security Protocols	WPA/WPA2-Personal, WPA/WPA2-Enterprise (PEAP, EAP-FAST, EAP-TLS, EAP-TTLS), WEP, TLS/SSL Client and Server, HTTPs
Networking Protocols	TCP, UDP, IPv4, IPv6, TLS Client/Server, SNTP client, DHCP Client/Server v4, DHCP Client/Server v6, DNS Client and Server, mDNS, DNS-SD, HTTP Client/Server, and XML Parser
Certifications and Compliance	FCC, IC, TELEC, ETSI, RoHS, Wi-Fi Certified, Wi-Fi Direct, WPS 2.0, SEP 2.0
I/O Interfaces	SPI, UART, SDIO, I^{2}C, I^{2}S, GPIO, ADC (12.bit), JTAG
Host Connections	SPI, UART, SDIO (typically to an external microcontroller)
Internal Flash	4MB
Outline Dimensions	22.8mm x 32.5mm x 3.63mm (shield)
I/O Voltage	2.7-3.6V
Operating Voltage	2.7-3.6V
V$_{BAT}$	1.6-3.6V

GAINSPAN / GEO FULL HD VIDEO ADK ORDERING INFORMATION

ITEM	PART NUMBER	Description
GainSpan Full HD Video ADK **GainSpan Full HD Video AEK**	GS-ADK-VideoGeo1080p GS-AEK-VideoGeo1080p	GainSpan / Geo Full HD Video Application Development Kit GainSpan / Geo Full HD Video Application Evaluation Kit

GAINSPAN / GEO HD VIDEO ADK ORDERING INFORMATION

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GainSpan HD Video ADK **GainSpan HD Video AEK**	GS-ADK-VideoGeo720p GS-AEK-VideoGeo720p	GainSpan / Geo HD Video Application Development Kit GainSpan / Geo HD Video Application Evaluation Kit