



DESCRIPTION OF EQUIPMENT

STNE4C7A82GDL and STME4C1A82T2M

ID: Revision: 02

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Revision list

Rev.	Date	Reasons to change
1	30/06/2011	First version
2	08/07/2011	Radio module: Revised bandwidth WiFi mode n
3		
4		
5		

In the following there are the descriptions of two equipments being submitted for FCC certification. The units are identified by two part numbers STNE4C7A82GDL and the variant STME4C1A82T2M.

The part number STNE4C7A82GDL is the most complete model.

STME4C1A82T2M is a variant it has a different appearance of the front panel, doesn't have the inside USB memory stick and doesn't have a front panel board with push buttons and LEDs.

These equipments are a Set Top Box (STB) based on the most recent embedded chipset technologies that can be tailored to the needs of all IP Video Service Providers.

With these STB is possible to watch on the TV, videos and audio coming from:

- New Generation Internet Platforms (web TV, web shops, blog based TV, podcast systems, social networks).
- Service Providers
- USB mass storage devices
- Hard disk of PC or local server in the LAN
- An IP video streaming generated by a PC or other device in the LAN

Both of them have the Wi-Fi interface IEEE 802.11 b/g/n with internal antenna.

The system is based on a 405 MHz dual core MIPS processor with RAM and Flash and Real Time Clock.

Interfaces are:

- Ethernet
- USB
- Video Component
- Video Composite
- Dual RCA for stereo Audio
- HDMI
- S/PDIF digital audio
- IrDA extender
- Wi-Fi IEEE 802.11 b/g/n
- 12V DC input for power supply

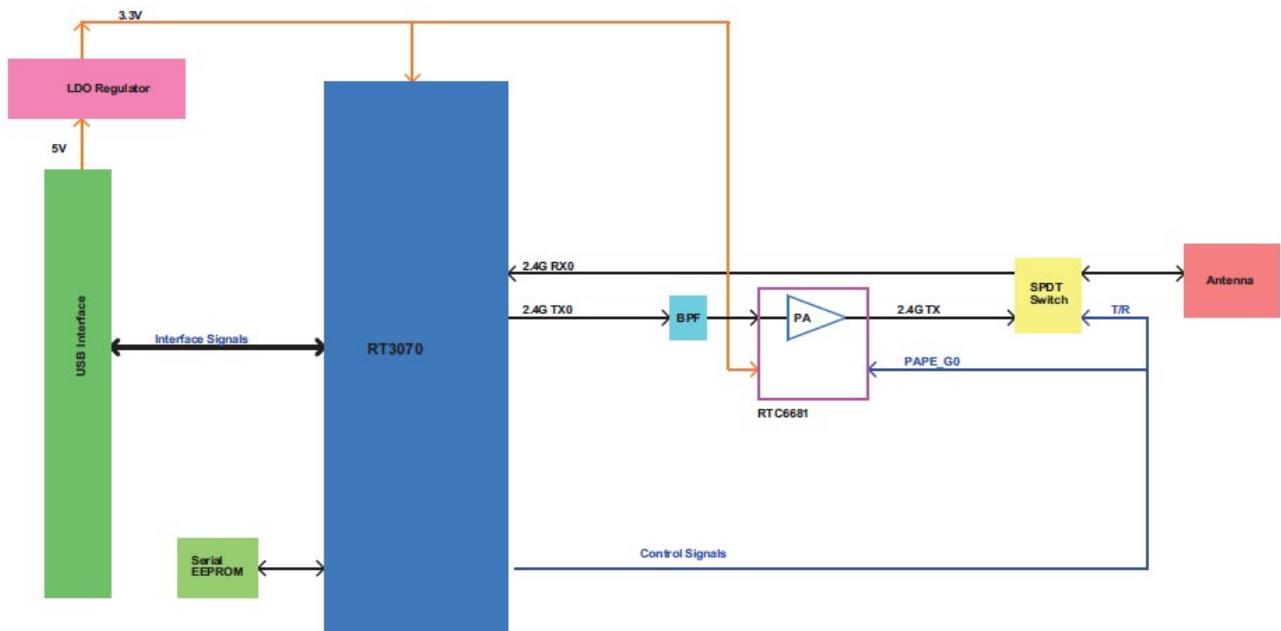
Accessories:

- External power supply

- Remote controller
- Cables

Radio module and antenna are the same on both models.

RADIO MODULE DESCRIPTION



Radio block diagram

This radio module is based on Ralink chip set RT3070. It works on 2.4 GHz Wi-Fi band on channels from 1 (frequency 2412 MHz) to 11 (frequency 2462 MHz). It can operate on modes b, g and n.

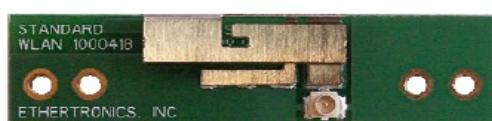
Mode b uses modulation DSSS DBPSK, the bandwidth is 20 MHz

Modes g uses modulation OFDM BPSK, the bandwidth is 20 MHz

Modes n uses modulation OFDM BPSK, the bandwidth is 20 MHz, (40 MHz not supported)

This module uses a base band processor RT3070, all the frequencies that it generates are coming from internal PLLs that have as frequency clock a crystal of 40 MHz +/-25ppm.

During transmission the signal is sent to a chip with power amplifier and then to antenna switch that is connected to a small internal antenna with a maximum gain of 2.5 dBi.



WiFi antenna

The received signal coming from antenna goes to antenna TX/RX switch and then to receiver section of RT3070.

A voltage regulator, coupling and decoupling capacitor and some resistor complete the schematic.

MAIN BOARD DESCRIPTION

This board is mainly based on a Broadcom chip BCM7213 that is able to cover all the functionalities.

The main blocks of the circuit are:

Power supply section:

There are some switching and linear voltage regulators in order to generate all the power supply voltages needed by the different sections of the circuit. These voltages are 5 V, 3.3 V, 2.5 V, 1.8 V and 1.2 V.

Microprocessor:

BCM7213 is a system on chip and it needs only some external components to provide all the functionalities required. External components are:

54 MHz quartz for internal oscillator that generates all the frequencies using internal PLL

DDR2 RAM memory

2 MB NOR Flash memory

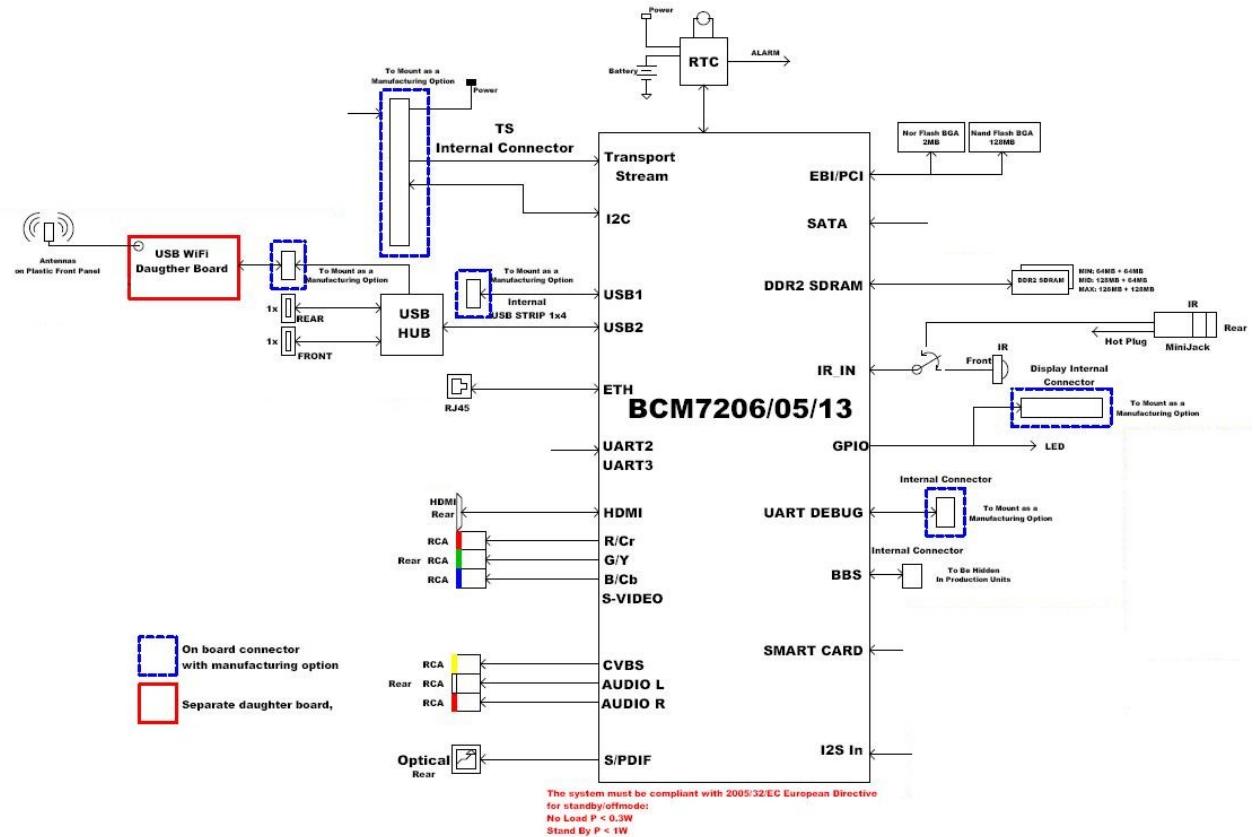
1Gb NAND Flash memory

USB hub for esternal and internal ports

Real time clock with battery backup

The driver for the video outputs.

The model STNE4C7A82GD has a front panel board with WiFi antenna some push buttons and leds.



Block diagram of the main board



Model STNE4C7A82GDL