FCC ID: TWAWL0401C

THEORY OF OPERATION

This Wlan 802.11b Usb adapter basically is based on Atmel solution, including RF5117 ,RF2958 and AT76C505A.

AT 76C505A is an BB/MAC IC,RF2958 is an RF transceiver IC , Beside , there is an Power Ampplifier is RF5117 between ANT and RF2958. It can enchance output power of TX signal.

AT76C505A

(802.11b Media Access Controller (MAC) and Baseband with USB Interface)

Features

• Integrates the IEEE 802.11b Physical Layer (Baseband) and the Media Access Controller (MAC) for Supporting Standard Rates up to 11 Mbps

• Supports Antenna Diversity Algorithm, Automatic Receive Gain Control, Transmit Gain Control, Transmit Filter for Japanese Regulatory and Differential or ingle-Ended I and Q Baseband Signals

• Integrates 160 KBytes of SRAM which are Organized in Five Banks of 32 KBytes Each,Offering the Flexibility for individually Configuring Each of Them as Program or Data Memory

• Zero Wait States for Program Execution

• Fast Data Transfers through DMA Channels

• Low Power ARM7TDMI® RISC Processor

• Integrates a Bootstrap ROM Supporting Device Firmware Upgrade (DFU) Protocol and USB Chapter 9 Compatibility

• The Bootstrap Code Supports External SPI EEPROM for the Custom Configuration Parameters Used during the Device Enumeration Phase as well as Default Parameters for First Time EEPROM Programming

• Glueless Parallel Flash Memory Interface, Supporting up to 128 KBytes of onvolatile Memory

• Glueless External SRAM Interface for all MAC Operations, Supporting up to 128 KBytes of External Memory

• Wired Equivalency Privacy (WEP) in Hardware Supporting 64-bit and 128-bit Keys

• Hardware Implementation of TKIP

• Hardware Implementation of AES Encryption Supporting Various Modes (CCM/CTR/CBC)

• The WLAN Functions Can Be Easily Changed or Updated to New Requirements Since They are Implemented in Microcode

• Supports 11 Mbps Rates With Automatic Fallback to 5.5, 2 and 1 Mbps

• SPI Interface and 9 GPIO Pins

• 144-ball LFBGA Package

• Low-voltage 1.8V Core Operation

RF5117

(3V, 1.8GHz TO 2.8GHz LINEAR POWER AMPLIFIER)

Typical Applications

• IEEE802.11B WLAN Applications

• 2.5GHz ISM Band Applications

• Wireless LAN Systems

• Commercial and Consumer Systems

• Portable Battery-Powered Equipment

• Spread-Spectrum and MMDS Systems

Product Description

The RF5117 is a linear, medium-power, high-efficiency amplifier IC designed specifically for battery-powered WLAN applications such as PC cards, mini PCI, and compact flash applications. The device is manufactured on an advanced Gallium Arsenide Heterojunction Bipolar Transistor (HBT) process, and has been designed for use as the final RF amplifier in 2.5GHz WLAN and other spread-spectrum transmitters. The device is provided in a 3mmx3mm, 16-pin, leadless chip carrier with a backside ground. The RF5117 is designed to maintain linearity over a wide range of supply voltage and power output.

RF2958

(2.4GHz SPREAD-SPECTRUM TRANSCEIVER)

Typical Applications

- IEEE 802.11b WLANs
- Wireless Residential Gateways
- Secure Communication Links
- High Speed Digital Links
- Wireless Security
- Digital Cordless Telephones

Product Description

The RF2958 is a single-chip transceiver specifically designed for IEEE 802.11b applications. The part includes all required transceiver functions. The receiver includes: an LNA and downconverter; complete synthesizers and VCO's; direct conversion from IF receiver with variable gain control; quadrature demodulator; I/Q baseband amplifiers; and, on-chip baseband filters. For the transmit side, a QPSK modulator and upconverter are provided along with the synthesizer, VCO, and PA driver.A minimum number of external components are required,resulting in an ultra-compact low-cost radio design. Twocell or regulated three-cell (3.6V maximum) battery applications are supported by the part. The RF2958 is also part of a 2.4GHz chipset along with our high-efficiency GaAs HBT PA and the RF3002 Baseband Processor.

BLOCK DIAGRAM

Figure