T60H418.00
MINIPCI IIIB Wireless LAN/Modem Combo Card

Marketing Requirements Specification

January 28, 2002

0. Revision History

Date: June 11, 2001		REV.0.1
Date: June 22, 2001		REV.0.2
Date: January 28, 2002		REV. 1.0
	Change 1.2 Driver Support	
	Change 2,1 Transmitter Output Power Receiver Sensitivity	
	Change 2.3 Mechanical Requirement	
	Change 2.5 Antenna Connection	
	Change 4.1.1 Operating Temperature	

1. Introduction

Project Name : MINIPCI 3B Wireless LAN/ Lucent Scorpio Modem Combo
Project Code : T60H418.00

This documentation describes the marketing requirements specification of the Ambit MINIPCI 3B Wireless LAN/Modem Combo card using a RF Module based on Intersil's Prism 2.5 chipsets. It is a confidential document of AMBIT.

1.1 Scope

AMBIT MINIPCI 3B WLAN/Modem complied with IEEE 802.11b 11Mbps Standard. The WLAN/Modem application is implemented via a RF module. This RF module is developed for Wireless LAN application complied with IEEE 802.11b 11Mbps standard in ISM band. It can be used to provide a variety of low-cost wireless network interfaces to build your wireless connection via simply SMT procedure to speed the time to market. Three Intersil's chips are implemented including ISL3984, ISL3685, HFA3783. With V.90 technology, the modem part can achieve internet connection rates up to 56 kbits/s with backward compatibility. The Audio CODEC will be placed on the notebook and contact with Modem Codec by AC-Link Interface. The combo card complies with MINIPCI 3B form factor.

1.2 Wireless LAN Function

- Compatible with IEEE 802.11b high rate standard to provide wireless Ethernet speeds of 11Mbps data rate
- Dynamic data rate switching with 11, 5.5, 2 and 1Mbps
- Allows auto fallback data rate for optimized reliability, throughput and transmission range
- Supports wireless data encryption with 64/128-bit WEP standard for security
- Dual diversity antenna connectors supported for the multi-path environment
- Drivers supports Windows 98SE, ME, 2000, XP

1.3 Modem Function

- ITU-T V.90 data rates with auto-fallback to V.34, V.32terbo, V.32bis and fallbacks
- TIA/EIA 602 standard for AT Command set
- Supports V.42 error correction and V.42bis/MNP5 data compression
- FAX capabilities: ITU-T V.17, V.29, V.27ter, V.21 Ch2 and TIA/EIA 578 Class1 FAX
- AC'97/MC'97 2.1 compliant

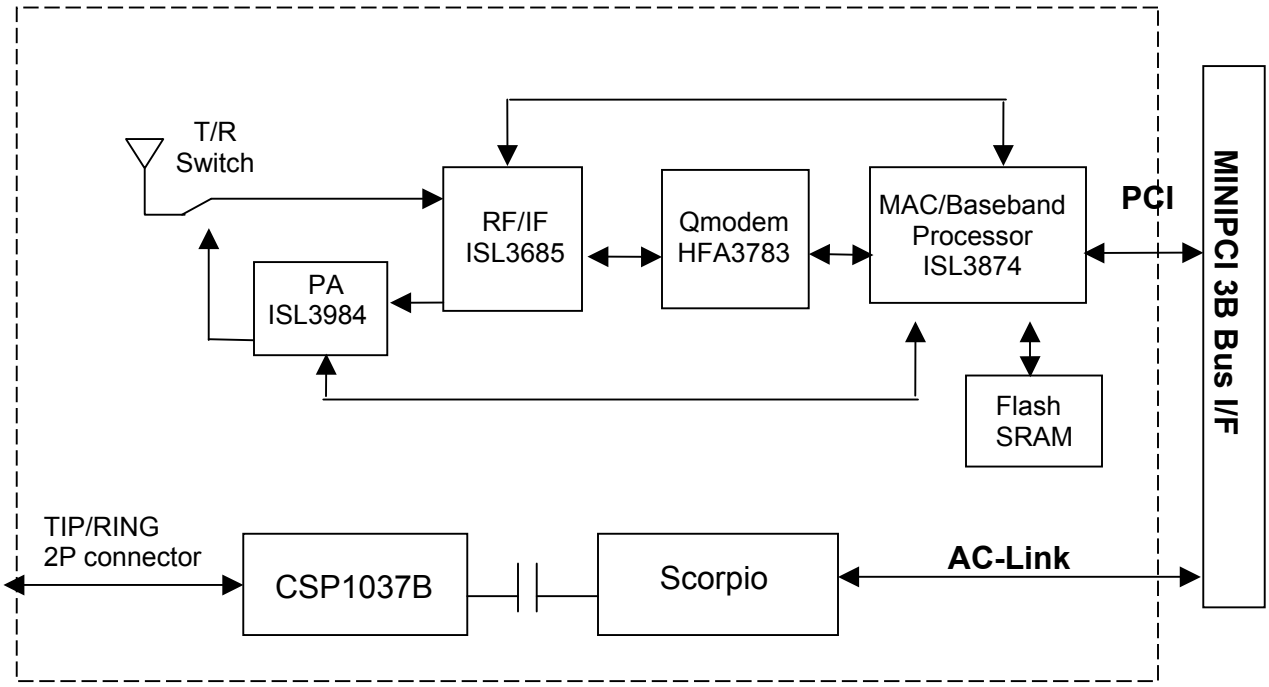
- ACPI Power management compliant with Low power standby mode.

2. Product Requirements

2.1 General Electrical Specifications

Radio Technology	IEEE 802.11b Direct Sequence Spread Spectrum
Operating Frequency	2400 ~ 2497MHz ISM band
Modulation Schemes	DQPSK, DBPSK and CCK
Channel Numbers	IEEE 802.11b compliant 11 channels for United States 13 channels for Europe Countries 14 channels for Japan
Data Rate	11Mbps with fall back rates of 5.5, 2, and 1Mbps
Spreading	11-chip Barker Sequence
Media Access Protocol	CSMA/CA with ACK
Transmitter Output Power	14dBm typically
Receiver Sensitivity	–83dBm typical for 11Mbps @ 8% PER –86dBm typical for 1Mbps @ 8% PER
Antenna Type	Integrated diversity switch with HRS/JST connectors for connecting dual diversity antennas
Operating Voltage	3.3VDC
Current Consumption	380mA at transmit mode (typically) 215mA at receive mode (typically) 90mA at sleep mode (typically)
Bus Interface	Mini-PCI Type IIIB
Line Interface	Modem part connected to RJ-11 on motherboard through connector (MOLEX connector, part no.: 53780-0290 SMD-2) Surge protector and Ferrite Bead can be placed on modem part circuit.

2.2 Hardware Architecture



CSP1037B: Telephone Line Interface
Scorpio (CSP 1037): AC-97 Interface
ISL3984:2.4GHz Power Amplifier and Detector
ISL3685:2.4GHz RF/IF Converter and Synthesizer
HFA3783:I/Q Modulator/Demodulator Synthesizer
ISL3874:Integrated MAC and Baseband Processor
Modem part is designed as a secondary device, the BIT_CLK becomes an input and is used as the master clock. Host system should supply BIT_CLK to the MDC modem parts.

2.3 Mechanical Requirements

The Ambit Mini-PCI WLAN/Modem Combo Module shall be 6-layer FR4 PCB design, which meets the requirements of Mini-PCI Type IIIB.

Maximum PCB Dimension (W x L x H) : 59.75mm x 44.6mm x (1.00mm+/-0.1mm)

Module Height (front/PCB/back) w shielding case : 5.2 mm (2.8mm/1.0mm/1.4mm)

The wireless LAN RF module shall be 6-layer FR4 PCB (Tg=180°, εγ= 3.75) design with 0.6 mm thickness, in order to meets the requirements of versatile interfaces, the physical dimension (W x L x H) : 35mm x 35mm x 2.7mm..

2.4 Antenna Connection

Dual antenna connectors (HRS-UFL-R-SMT)/(JST AYUI) supported on the RF module to improve the performance due to multi-path environment.

2.5 Reference Oscillator

This module does not included reference oscillator which shall be supplied externally. The all specification of frequency related items have been guaranteed based on 25 ppm accuracy over extreme temperature.

3. Reliability, Maintainability and quality

3.1 Reliability

Mean Time Between Failure (MTBF) 30,000 hours

3.2 Maintainability

There should be no scheduled preventive maintenance required.

3.3 Quality

The product quality must be followed-up by Ambit factory quality control system.

4. Environmental Requirements

4.1 Temperature

4.1.1 Operating Temperature Conditions

The product shall be capable of continuous reliable operation when operating in ambient temperature of 0 degree C to +60 degree C.

4.1.2 Non-Operating Temperature Conditions

Neither subassemblies shall be damaged nor shall the operational performance be degraded when restored to the operating temperature when exposed to storage temperature in the range of -10 degree C to +70 degree C.

4.2 Humidity

4.2.1 Operating Humidity Conditions

The product shall be capable of continuous reliable operation when subjected to relative humidity in the range of 10% and 90% non-condensing.

4.2.2 Non-Operating Humidity conditions

The product shall not be damaged nor shall the performance be degraded after exposure to relative humidity ranging from 5% to 95% non-condensing.