

MiniPCI 802.11g Module

Marketing Requirements Specification

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Total Pages	Product Rev.	Date	Sales
9	0		

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0. Revision History

Date	Change Note	REV Note
10/25/2002	1 st Rev.	0.1

1. Introduction

Project Name : MiniPCI 802.11g/b Module
Project Number: T60H713

This documentation describes the marketing requirements specification of the 802.11g/b MiniPCI Module. The solution used for this product is Intersil 802.11g chipset. It is a confidential document of AMBIT.

1.1 Scope

The MiniPCI 802.11g/b Module is designed to users a secure cost-effective high-speed wireless LAN access anywhere at anytime. With seamless roaming, fully interoperability and advanced security with WEP standard, it allows user to switch to different vendors' Access Points through the wireless networks and to prevent from eavesdropping.

The wireless LAN is compliant to both IEEE 802.11 g 54Mbps draft standard and 802.11b. For IEEE 802.11g, its data rates are up to 54Mbps and auto-fallback rates of 48,36, 24, 18, 12, 9, 6Mbps. While using 802.11 b, the data rates can be 11, 5.5, 2, 1 Mbps. It provides friendly UI, which includes fully interoperability and advanced security with entering WEP key. It can allow user to switch to different vendors' Access Points through the wireless networks.

1.2 Function

1.2.1 Wireless LAN Function

Based on the 802.11g/b draft standard, the module is fully interoperable with WLAN 802.11 g/b access points, which provides access point from other standard-compliant WLAN vendors.

- o 802.11 g/b circuit of MiniPCI Module compatible with IEEE 802.11 g/b draft standard to provide wireless Ethernet speeds of 54Mbps data rate
- o Dynamic data rates switching with 802.11 g/b
- o Support wireless data encryption with 64/128-bit WEP standard for security
- o Allows auto fallback data rate for optimized reliability, throughput and transmission range.
- o Supports Ad-hoc mode (peer-peer) and Infrastructure mode (client-server) communications.
- o Dual diversity antenna connectors supported for the multi-path environment. Drivers supports Windows 98SE, ME, 2000 and XP

2. Specification

2.1 Hardware Specification

Radio Technology	IEEE 802.11g OFDM and 802.11b CCK
Operating Frequency	2412 ~ 2484MHz ISM band
Modulation Schemes	64QAM, 16QAM, QPSK, BPSK-OFDM and CCK
Channel Numbers	Channel settings as follow: 11 channels for United States 13 channels for Europe Countries 14 channels for Japan
Data Rate	54Mbps with auto-fallback rates of 48, 36, 24, 18, 12, 9, 6Mbps for 802.11g 11, 5.5, 2, 1Mbps for 802.11b
Spreading	11-chip Barker Sequence for 802.11b
Media Access Protocol	CSMA/CA with ACK
Transmitter Output Power	Typical 12 dBm for 54Mbps Typical 14 dBm for 36Mbps Typical 17 dBm for 24, 18, 12, 9, 6Mbps Typical 17dBm for 802.11b
Receiver Sensitivity	Typical -70 dBm for 54Mbps @ 10% PER Typical -72 dBm for 48Mbps @ 10% PER Typical -78 dBm for 36Mbps @ 10% PER Typical -81 dBm for 24Mbps @ 10% PER Typical -83 dBm for 18Mbps @ 10% PER Typical -85 dBm for 12Mbps @ 10% PER Typical -86 dBm for 9Mbps @ 10% PER Typical -86 dBm for 6Mbps @ 10% PER Typical -83dBm for 11Mbps @ 8% PER Typical -85dBm for 5.5Mbps @ 8% PER Typical -86dBm for 2Mbps @ 8% PER Typical -90dBm for 1Mbps @ 8% PER
Current Consumption	460mA at transmit mode (max) 330mA at receive mode (typically)

3. Product Requirements

3.1 Hardware Requirements

Form Factor	MiniPCI Type IIIB
Host Interface	MiniPCI Type III Bus interface
PCB	6-layer design
WLAN	Intersil 802.11g solution
Antenna	Dual diversity antenna connectors

3.2 Hardware Architecture

The WLAN design is based on Intersil 802.11g chipset ISL3880, ISL3686A, ISL3980 and ISL3084.

The Intersil 802.11g chips include ISL3686 ZIF Radio chip, ISL3980 PA, ISL3880 MAC/BBP and ISL3084 5GHz VCO. It operates in the 2.412 to 2.472GHz U.S. frequency bands and the 2.484 Japanese band. The functional block diagram is shown in Figure 1.

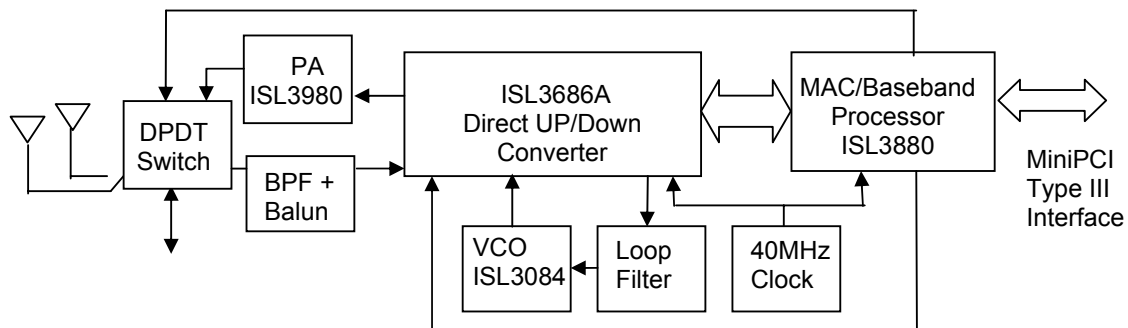


Figure 1 Functional Block Diagram

3.3 Software Requirements

All software components and documentation, including user interface and help files are English version. For other language support need to be decided by mutual discussion.

3.2.1 Software setup

1. Software setup must be able to run in two modes:
Normal mode. Setup should display the necessary dialogs to allow the user to select different options for installing the software.
2. Setup should have ability to detect the presence of the preloaded files.

3.2.2 Operating System Support

The driver must support the following Operating Systems at product introduction:

- Windows 98 Second Edition
- Windows ME
- Windows 2000
- Windows XP

3.2.3 Documentation

- Release notes document containing history of changes and list of known defects and limitations with every software version must be delivered to customer.

3.2.4 802.11 g/b Firmware/Software

The 802.11 g/b firmware/software must support the following functions:

- Auto scan to find APs nearby and show signal strength for each channel
- End user Operating System level diagnostics utility for Win 98 SE, Win ME, Win 2K, Win XP.
- Support for 64bit and 128bit WEP and provide utility for key conversion to access point.

4. Compatibility Requirements

The 802.11 g/b module shall pass the standard test plan, which includes hardware performance and reliability, and software compatibility test.

5. Regulatory Requirements (TBD)

5.1 Homologation Requirements

The product must be complied with the radio requirement of

- 1) FCC Part15 Subpart B and Subpart C 15.407, 15.205, 15.209, 15.247 and certified by FCC before marketing in USA
- 2) Industry Canada Parts RSS-210, RSS-104 before marketing Canada
- 3) Certified by TELEC before marketing Japan

6. Reliability, Maintainability and quality

6.1 Reliability

Mean Time Between Failure (MTBF) 30,000 hours

6.2 Maintainability

There should be no scheduled preventive maintenance required.

6.3 Quality

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

7. Environmental Requirements

7.1 Temperature

7.1.1 Operating Temperature Conditions

The product shall be capable of continuous reliable operation when operating in ambient temperature of 0□ to +65□.

7.1.2 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□ to +70□.

7.2 Humidity

7.2.1 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.

7.2.2 Non-Operating Humidity conditions

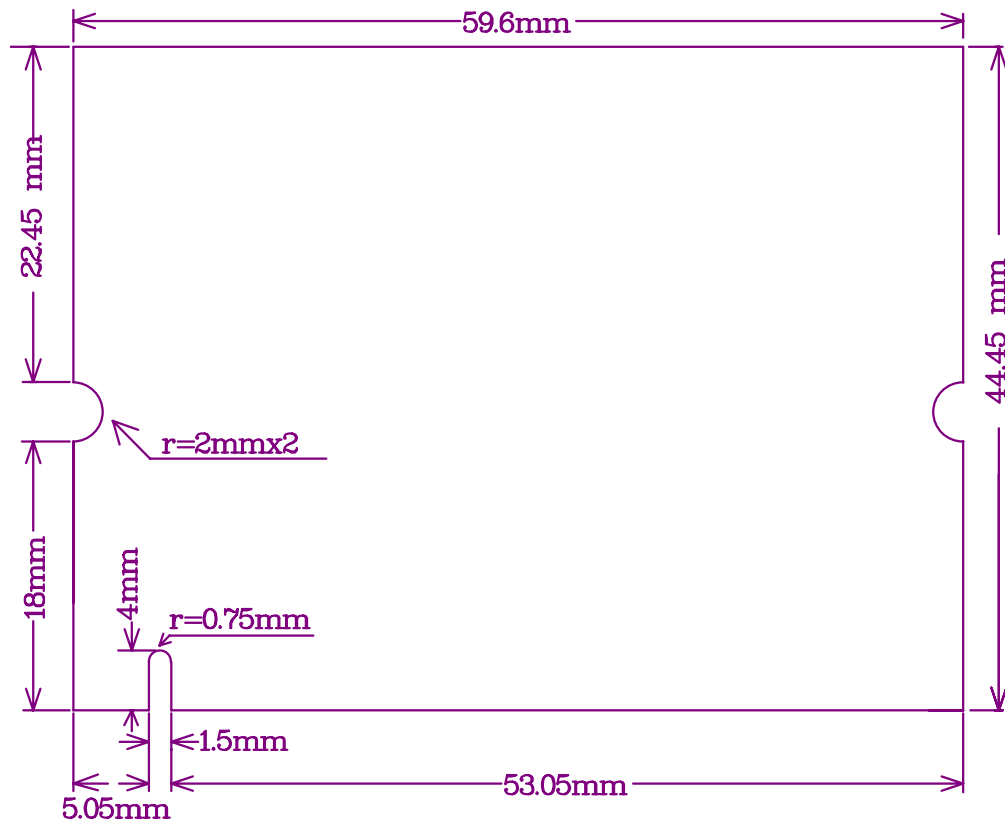
The product shall not be damaged nor shall the performance be degraded after exposure to relative humidity ranging from 5% to 95% non-condensing.

Appendix A Mechanical Drawing

The MiniPCI 802.11 g/b module shall be 6-layer FR4 PCB design, which meets the requirements of MiniPCI Specification Rev1.0 Type IIIB:

Dimension (WxLxH): 59.6 mm x 44.46 mm x 4.8 mm

Height Limit(Top\PCB\Bottom): 4.8mm (2.4mm \ 1.0mm\ 1.4mm)



1.Tolerance :

Routing TOL :+/- 0.15mm

V-Cut TOL :+0.5/- 0mm

