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Marketing Requirements Specification

Draft 802.11b/g/n, Wireless LAN PCI Express Half Mini Card

(Project Name)	RTL8191SE 1T2R Half-Mini Card
(Foxconn Part No.)	T77H143.00
(Customer Part No.)	TBD

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0. Revision History

Date	Document revision	Product revision	Change Description
2009/01/13	00	00S0	Initial release

1. Introduction

Project Name: RTL8191SE 1T2R Half-Mini Card

Project Number: T77H143.00

This document describes the marketing requirements specification of the 802.11 b/g PCI-Express Half mini card Module. It is a confidential document of Foxconn.

1.1 Scope

802.11b/g/n Combo Module is available in the 2.4GHz band, compatible with the IEEE 802.11b/g standard and the 802.11n/EWC draft standard. It allow user to switch to different vendors' Access Points through the wireless networks and to prevent from eavesdropping. The 802.11g data rate provides for 54, 48, 36, 24, 18, 12, 9, 6Mbps, 802.11b data rate provides for 11, 5.5, 2, 1 Mbps and EWC high data rate.

1.2 Function

- Compatible with IEEE 802.11b/g standard and EWC draft standard.
- The IEEE802.11g data rate provides for 54 auto fallback 48, 36, 24, 18, 12, 9, 6 and IEEE802.11b data rate provides for 11 auto fallback to 5.5, 2 and 1Mbps.
- Enterprise level security which can apply WPA2 certification.
- Allows auto fallback data rate for optimized reliability, throughput and transmission range.
- Supports Ad-hoc mode (peer-peer) and Infrastructure mode (client-server) communications.
- 1 transmitter and 2 receivers allow data rates supporting up to 300 Mbps downstream and 150 Mbps upstream PHY rates.
- Drivers supports Vista and XP
- Auto scan to find AP nearby and show signal strength for each channel.
- Full-featured software utility for easy configuration and management.
- Power savings features and low power consumptions for mobile powered applications.
- ROHS compliance.

2. Product Specification

2.1 Functional Specification

Standard	IEEE802.11b; IEEE 802.11g; Draft IEEE 802.11n		
Bus Interface	PCI Express		
Data Rate	802.11b: 11, 5.5, 2, 1 Mbps; 802.11g: 54, 48, 36, 24, 18, 12, 9, 6 Mbps 802.11n: 20 MHz BW: 130, 1117, 104, 78, 65, 58.5, 52, 39, 26, 19.5, 13, 6.5 40 MHz BW: 270, 243, 216, 162, 150, 135, 121.5, 108, 81, 54, 40.5, 27, 13.5		
Media Access Control	CSMA/CA with ACK		
Modulation Techniques	802.11b: CCK, DQPSK, DBPSK 802.11g: 64 QAM, 16 QAM, QPSK, BPSK 802.11n: BPSK, QPSK, 16-QAM, 64-QAM		
Network architecture	Ad-hoc mode (Peer-to-Peer) Infrastructure mode		
Operating Channel	2.4GHz 11: (Ch. 1-11) – United States 13: (Ch. 1-13) – Europe 14: (Ch. 1-14) – Japan		
Frequency Range	802.11 b & g 2.412 ~ 2.4835 GHz		
Transmit Output Power – 1x2 (Tolerance: +1.5dBm, -1.5dBm)	802.11 b 11Mbps 17.5 dBm	802.11 g 54Mbps 15dBm	802.11 n MCS7 13.5 dBm
Receiver Sensitivity	802.11b(1R) -85dBm@11MHz	802.11g(1R) -75dBm @54MHz	802.11 n(2R) -73dBm (MCS 7 HT20) -70dBm(MCS 15 HT20) -70dBm (MCS 7 HT40) -67dBm(MCS15 HT40)
Security	WPA, WPA-PSK, WPA2, WPA2-PSK, WEP 64bit & 128bit, IEEE 802.11x, IEEE 802.11i		
Operating Voltage	3.3 V ±5% I/O supply voltage		
OS supported	Windows XP/Vista		
Current Consumption	Associated idle Mode: 10mA Radio off Mode: 10mA		
Antenna Type	Dual antenna connector		

Environmental factors dependent

.3.4.2 Operating System Support

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

- Microsoft Windows XP and Vista drivers

3.4.3 Software Functions

The software must support the following functions:

- Auto scan to find AP nearby and show signal strength for each channel.
- Support WPA, WPA-PSK, WPA2, WPA2-PSK, WEP 64bit & 128bit, IEEE 802.11x, IEEE 802.11i

4. Compatibility Requirements

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

5. Quality

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

6. Environmental Requirements

6.1 Temperature

6.1.1 Operating Temperature Conditions

The product shall be capable of continuous reliable operation when operating in ambient temperature of 0°C to +70°C.

6.1.2 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 -55°C to +125°C.

6.2 Humidity

6.2.1 Operating Humidity Conditions

The product shall be capable of continuous reliable operation when subjected to relative humidity in the range of 5% and 90% non-condensing.

6.2.2 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.

FCC Regulatory Compliance Requirements

To comply with RF exposure compliance, the following restrictions and requirements must be followed when this device is integrated in the final host end product.

- Maintain at least a 20 cm separation between the antenna and the user's body when this module is used as mobile device per the definition of section 2.1091 of FCC rules.
- If the module is installed in the Netbook/notebook/laptop portable host per the definition of section 2.1093 of FCC rules, antenna-to-user separation distance has to be at least 19.3 cm.
- Only antenna with same type and lower gain as documented in the FCC database can be used.
- The antenna(s) used for this transmitter must not be collocated or operating in conjunction with any other antenna or transmitter within a host device, except in accordance with FCC multi-transmitter product procedures.
- A label with the following statements must be attached to the host end product: This device contains Tx FCC ID: TX2-RTL8191SE-L.
- The user manual of final host must be clearly defines operating requirements and conditions that must be observed to ensure compliance with current FCC RF exposure guidelines.
- The host end product must comply applicable FCC Part 15 unintentional emission testing requirement and be properly authorized per FCC Part 15.
- The final system integrator must ensure there is no instruction provided in the user manual or customer documentation indicating how to install or remove the transmitter module except such device has implemented two-ways authentication between module and the host system.
- The regulatory compliance information shall be contained in the user manual of final host:
 - This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy. If not installed and used in accordance with the instructions, it may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by tuning the equipment off and on, the user is encouraged to try and correct the interference by one or more of the following measures:
 - Reorient or relocate the receiving antenna

- Increase the distance between the equipment and the receiver.
- Connect the equipment to outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.
- This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.
- **FCC Caution:** Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.