

Product External Specifications

For

Wireless N 300 PCI Express Desktop Adapter

Model Number: DWA-548 A1

Revision: 1.01



Revision History

Rev.	Date	Author	Reason for Changes
1.00	02.Feb.2012	Fen Shih	<ul style="list-style-type: none">Initial Draft
1.01	22.Feb.2012	Fen Shih	<ul style="list-style-type: none">Updated Power value

Contents

1.0 SCOPE	4
1.1 DOCUMENT	4
1.2 PRODUCT FEATURES.....	4
2.1.1 IEEE 802.11b Section	5
2.1.2 IEEE 802.11g Section	5
2.1.3 IEEE 802.11 n Section	6
2.1.4 General Section	7
2.2 SOFTWARE REQUIREMENTS	7
2.2.1 Information	8
2.2.2 Configuration	8
2.2.3 Encryption	8
2.3 MECHANICAL REQUIREMENTS.....	8
2.4 PRODUCT ID	9
2.5 COMPATIBILITY REQUIREMENTS.....	9
2.6 REGULATORY REQUIREMENTS.....	9
2.7 REQUIREMENTS OF RELIABILITY, MAINTAINABILITY AND QUALITY	10
2.8 ENVIRONMENTAL REQUIREMENTS	10

1.0 Scope

1.1 Document

This document is to specify the product requirements for **Wireless N 300 PCI Express Desktop Adapter**. The DWA-548 complied with 802.11n standard from 2.4~2.5GHz, and it can be used to provide up to 11Mbps for IEEE 802.11b, 54Mbps for IEEE 802.11g and 300Mbps for 802.11n to connect your wireless LAN.

With seamless roaming, fully interoperability and advanced security with WEP standard, **802.11n PCIe Adapter** offers absolute interoperability with different vendors' 802.11b, 802.11g, and 802.11n Access Points through the wireless LAN.

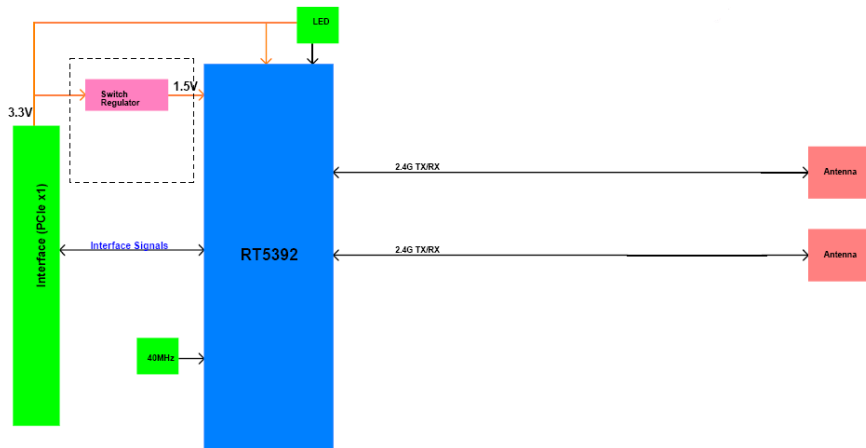
1.2 Product Features

- Compatible with IEEE 802.11n standard to provide wireless 300Mbps data rate.
- Compatible with IEEE 802.11g standard to provide wireless 54Mbps data rate
- Compatible with IEEE 802.11b standard to provide wireless 11Mbps data rate
- Operation at 2.4 ~ 2.5GHz frequency band to meet worldwide regulations.
- Dynamic data rate scaling at 6, 9, 12, 18, 24, 36, 48, 54 Mbps for IEEE 802.11g.
- Dynamic data rate scaling at 1, 2, 5.5, and 11Mbps for IEEE 802.11b
- Maximum reliability, throughput and connectivity with automatic data rate switching
- Supports wireless data encryption with 64/128-bit WEP for security
- Supports infrastructure networks via Access Point and ad-hoc network via peer-to-peer communication
- Support WPA, WPA2 and AES enhanced security
- Friendly user configuration and utilities
- Drivers support Windows XP, Vista, 7.
- Support WPS setup to connect Access Point easily
- RoHS compliant
-

2.0 Requirements

The following sections identify the detailed requirements of the **Wireless N 300 PCI Express Desktop Adapter**.

2.1 Functional Block Diagram



2.2 General Requirements

2.2.1 IEEE 802.11b Section

#	Feature	Detailed Description
2.2.1.1	Standard	<ul style="list-style-type: none"> IEEE 802.11b
2.2.1.2	Radio and Modulation Schemes	<ul style="list-style-type: none"> DQPSK, DBPSK, DSSS, and CCK
2.2.1.3	Operating Frequency	<ul style="list-style-type: none"> 2400 ~ 2497MHz ISM band
2.2.1.4	Channel Numbers	<ul style="list-style-type: none"> 11 channels for United States 13 channels for Europe Countries
2.2.1.5	Data Rate	<ul style="list-style-type: none"> 11, 5.5, 2, and 1Mbps
2.2.1.6	Media Access Protocol	<ul style="list-style-type: none"> CSMA/CA with ACK
2.2.1.7	Transmitter Output Power	<ul style="list-style-type: none"> Typical RF Output Power at each RF chain, Data Rate and at room Temp. 25degree C 16±2 dBm at 1,2,5.5,11Mbps
2.2.1.8	Receiver Sensitivity	<ul style="list-style-type: none"> Typical Sensitivity at each RF chain. Frame (1000-byte PDUs) Error Rate = 8% -76dBm at 1Mbps -76dBm at 2Mbps -76dBm at 5.5Mbps -76dBm for 11Mbps

2.2.2 IEEE 802.11g Section

#	Feature	Detailed Description
2.2.2.1	Standard	<ul style="list-style-type: none"> IEEE 802.11g
2.2.2.2	Radio and Modulation Type	<ul style="list-style-type: none"> BPSK, QPSK, 16QAM, 64QAM, and OFDM
2.2.2.3	Operating Frequency	<ul style="list-style-type: none"> 2400 ~ 2483.5MHz ISM band

#	Feature	Detailed Description
2.2.2.4	Channel Numbers	<ul style="list-style-type: none"> 11 channels for United States 13 channels for Europe Countries 13 channels for Japan
2.2.2.5	Data Rate	<ul style="list-style-type: none"> 6,9,12,18,24,36,48,54Mbps
2.2.2.6	Media Access Protocol	<ul style="list-style-type: none"> CSMA/CA with ACK
2.2.2.7	Transmitter Output Power	<ul style="list-style-type: none"> Typical RF Output Power at each RF chain, Data Rate and at room Temp. 25degree C 17±2dBm at 12,9,6 Mbps 17±2dBm at 24,18 Mbps 15±2dBm at 48,36 Mbps 14±2dBm at 54 Mbps
2.2.2.8	Receiver Sensitivity	<ul style="list-style-type: none"> Typical Sensitivity at each RF chain. Frame (1000-byte PDUs) Error Rate <10% -82dBm at 6Mbps -81dBm at 9Mbps -79dBm at 12Mbps -77dBm at 18Mbps -74dBm at 24Mbps -70dBm at 36Mbps -66dBm at 48Mbps -65dBm at 54Mbps

2.2.3 IEEE 802.11 n Section

#	Feature	Detailed Description				
2.2.3.1	Standard	<ul style="list-style-type: none"> IEEE 802.11n 				
2.2.3.2	Radio and Modulation Type	<ul style="list-style-type: none"> BPSK, QPSK, 16QAM, 64QAM with OFDM 				
2.2.3.3	Operating Frequency	<ul style="list-style-type: none"> 2400 ~ 2483.5MHz ISM band 				
2.2.3.4	Data Rate	MCS	GI=800ns		GI=400ns	
			20MHz	40MHz	20MHz	40MHz
		0	6.5	13.5	7.2	15
		1	13	27	14.4	30
		2	19.5	40.5	21.7	45
		3	26	54	28.9	60
		4	39	81	43.3	90
		5	52	108	57.8	120
		6	58.5	121.5	65.0	135
		7	65	135	72.2	150
		8	13	27	14.444	30
		9	26	54	28.889	60
		10	39	81	43.333	90
		11	52	108	57.778	120
		12	78	162	86.667	180
		13	104	216	115.556	240
		14	117	243	130.000	170
		15	130	270	144.444	300
2.2.3.6	Media Access Protocol	<ul style="list-style-type: none"> CSMA/CA with ACK 				
2.2.3.7	Transmitter Output Power	<ul style="list-style-type: none"> Typical RF Output Power at each RF chain, Data Rate and at room Temp. 25degree C HT-20				

#	Feature	Detailed Description
		<ul style="list-style-type: none"> • 14±2dBm at MCS0 • 14±2dBm at MCS1/2 • 14±2dBm at MCS3/4 • 14±2dBm at MCS5/6 • 14±2dBm at MCS7 HT-40 <ul style="list-style-type: none"> • 12±2dBm at MCS0 • 12±2dBm at MCS1/2 • 12±2dBm at MCS3/4 • 12±2dBm at MCS5/6 • 12±2dBm at MCS7
2.2.3.8	Receiver Sensitivity at Antenna Connector	<ul style="list-style-type: none"> • Typical Sensitivity at each RF chain. Frame (4096 octets PSDUs). Error Rate <10% and at room Temp. 25degree C HT-20 <ul style="list-style-type: none"> • -80dBm at MCS0 • -77dBm at MCS1 • -75dBm at MCS2 • -72dBm at MCS3 • -68dBm at MCS4 • -64dBm at MCS5 • -63dBm at MCS6 • -62dBm at MCS7 HT-40 <ul style="list-style-type: none"> • -77dBm at MCS0 • -74dBm at MCS1 • -72dBm at MCS2 • -69dBm at MCS3 • -65dBm at MCS4 • -61dBm at MCS5 • -60dBm at MCS6 • -59dBm at MCS7

2.2.4 General Section

#	Feature	Detailed Description
2.2.4.1	Antenna Type	• External Dipole Antenna x2
2.2.4.2	Operating Voltage	• 3.3VDC +/- 10%
2.2.4.3	Current Consumption	<ul style="list-style-type: none"> • 520mA at continuous transmit mode • 189mA at receive mode w/o receiving packet
2.2.4.4	PCI interface	• PCIe Interface
2.2.4.5	LED	<ul style="list-style-type: none"> • One Green LED behaviors: • Blink: Driver installed and working. • Light off: Insert the card but without driver installed and without connection.

2.3 Software Requirements

The Configuration Software supports Microsoft Windows XP, Vista and 7. This configuration software includes the following functions:

- **Information**
Information allows you to monitor network status.
- **Configuration**
Configuration allows you to configure parameters for wireless networking.

- **Encryption**
Encryption provides WEP, WPA, WPA2 and WPS security control
- **Diagnosis**
Diagnosis allows you to display all channel status and search neighboring access points

2.3.1 Information

#	Feature	Detailed Description
2.3.1.1	General Information	<ul style="list-style-type: none"> General Information shows the name of Wireless Adapter, Adapter MAC Address, Regulatory Domain, Firmware Version, and Utility Version.
2.3.1.2	Current Link Information	<ul style="list-style-type: none"> Current Link Information shows the Current Setting ESSID, Channel Number, Associated BSSID, Network Type (infrastructure or Ad-hoc network), WEP Status (enable or disable), Link Status (Connect or Dis-connect), 802.11n Transmit Speed (300, 270.....6.5Mbps), 802.11g Transmit Speed (6, 9, 12, 18, 24, 36, 48, 54Mbps), 802.11b Transmit Speed (1, 2, 5.5, 11Mbps), Signal Strength, and Link Quality (isn't it the same as signal strength).
2.3.1.3	Site survey	<ul style="list-style-type: none"> To search the neighboring access points and display the information of all access points.

2.3.2 Configuration

#	Feature	Detailed Description
2.3.2.1	ESS ID	<ul style="list-style-type: none"> Supports for ASCII printable characters.
2.3.2.2	Network Type	<ul style="list-style-type: none"> Ad-hoc Mode and 802.11 Ad-hoc Mode for network configurations that do not have any access points Infrastructure Mode for network configurations with access points

2.3.3 Encryption

#	Feature	Detailed Description
2.3.3.1	Encryption	<ul style="list-style-type: none"> RC4 encryption algorithm Support 64/128 bit WEP encryption Support open system and shared key authentication
2.3.3.2	WEP Management	<ul style="list-style-type: none"> Four WEP keys can be selected STA with WEP off will never associate any AP with WEP enabled WEP Key Format: Option for Hex format
2.3.3.3	802.1i	<ul style="list-style-type: none"> Support EAP-TLS, EAP-TTLS, and EAP-PEAP
2.3.3.4	WPA/WPA2	<ul style="list-style-type: none"> Support WPA/WPA2-PSK and WPA/WPA2-EAP Support Cipher Mode AES and TKIP

2.4 Mechanical Requirements

#	Feature	Detailed Description
2.4.1	Length	<ul style="list-style-type: none"> 65.3mm(PCB)
2.4.2	Width	<ul style="list-style-type: none"> 55mm(PCB)
2.4.3	Height	<ul style="list-style-type: none"> 1.57mm(PCB)

2.5 Product ID



2.6 Compatibility Requirements

This device passes the following compatibility requirements.

#	Feature	Detailed Description
2.6.1	Wi-Fi	<ul style="list-style-type: none"> Meet Wi-Fi certification for IEEE 802.11b/g/n product include security, multimedia and WPS-PIN&PBC
2.6.2	WHQL	<ul style="list-style-type: none"> Meet applicable Microsoft WHQL certification requirements
2.6.3	Physical Layer and Functionality	<ul style="list-style-type: none"> Meet D-LINK Engineering Test Plan and Test Report

2.7 Regulatory Requirements

Request	EMI/EMC Test Report	Class A	Class B	Region & Country requirements
✓	CE Report (89/336/EEC(EN55022/24), 2004/108/EC)		✓	EU
✓	FCC report(FCC CFR 47 Part 15 B)		✓	US
✓	IC report(ICES-003)		✓	Canada
	IC report(ICES-006)			Canada
	C-Tick Report(AS/NZS CISPR 22)			New Zealand & Australia
	VCCI Report(CISPR 22)			JAPAN
	MIC report			KOREA
	Anatel			Brazil
	BSMI			Taiwan
	CCC			China
	Other's			
Request	RF Test Report	Wireless		Region requirements
✓	CE Report (R&TTE:1999/5/EC)	802.11 a/b/g/n		EU
✓	FCC report(FCC CFR 47, Part 15 C,E) for 2.4G & 5GHz	802.11 a/b/g/n		US /FCC ID (KA2XXXXX...)
✓	IC report (RSS-2106.2.2.o , 6.2.2.q) for 2.4G & 5GHz	802.11 a/b/g/n		Canada /IC ID (4216AXXX...)

	C-Tick Report(AS/NZS4771,4268) for 2.4G & 5GHz	802.11 a/b/g/n	New Zealand & Australia
	TELEC Report(STD-T66, 33 & STD-T71)		Japan
	NCC(LP0002 3.10.1 , LP0002 4.7) for 2.4G & 5GHz 低功率射頻電機技術規範	802.11 a/b/g/n	Taiwan
	CE Report (EN 302 326)	802.16e WiMAX 3.5G	Europe/Mexico/C hile

2.8 Requirements of Reliability, Maintainability and Quality

No.	Required	Test Items	Refer to Standards
1.	V	MTBF of Prediction Report	Bell-core TR-332, Issue 6 or Telcordia SR-332, Issue 1
2.	V	MTBF of Endurance test Report	D-Link SPEC
3.	Optional	MTBF of Demonstration test Report	D-Link SPEC
4.	V	Free Fall(Drop)Test Report	IEC 60068-2-32
5.	V	Random Vibration Test Report	IEC 60068-2-34: 1973
6.	V	Storage Test Report	IEC 60068-2-48
7.	V	Operation Cold(low temperature) Test	IEC 60068-2-1
8.	V	Operation Dry Heat(High temperature) Test	IEC 60068-2-2
9.	V	Operation Temperature Cycles Test	IEC 60068-2-14
10.	V	Thermal Shock Test	IEC 60068-2-14
11.	V	Damp Heat Steady State test	IEC 60068-2-78
12.	V	Thermal Profile Test	D-Link SPEC
13.	V	ESD Simulation Test report	IEC 61000-4-2 Air Discharge: ±8KV Contact Discharge: ±4KV
14.	V	High / Low Temperature Start Test	D-Link SPEC(0~50)
15.	V	Parts on/off & Insert/pulling Test	D-Link SPEC
16.	V	Acoustic Noise test	EN 27779 & ISO 7779
17	V	Operating Temperature Conditions: The product is capable of continuous reliable operation when operating in ambient temperature of-20 °C to +50°C.	

2.9 Environmental Requirements

#	Feature	Detailed Description
2.8.1	Operating Temperature Conditions	<ul style="list-style-type: none"> The product is capable of continuous reliable operation when operating in ambient temperature of 0 °C to +40°C.
2.8.2	Non-Operating Temperature Conditions	<ul style="list-style-type: none"> Neither subassembly is damaged nor is the operational performance degraded when restored to the operating temperature after exposing to storage temperature in the range of -20 °C to +75 °C.
2.8.3	Operating Humidity conditions	<ul style="list-style-type: none"> The product is capable of continuous reliable operation when subjected to relative humidity in the range of 10% and 90% non-condensing.
2.8.4	Non-Operating Humidity Conditions	<ul style="list-style-type: none"> The product is not damaged nor the performance is degraded after exposure to relative humidity ranging from 5% to 95% non-condensing