

Product External Specifications

For

Wireless N 150 High-Gain USB Adapter

Model Number: DWA-127 A1

Revision: 1.00

Revision History

Rev.	Date	Author	Reason for Changes
1.00	Aug.30.2010	Fen Shih	• 1 st Release

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1.0 Scope

1.1 Document

This document is to specify the product requirements for **DWA-127 Wireless N 150 USB Adapter**. It is 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 150Mbps for 802.11n to connect your wireless LAN. DWA-127 is designed with a 3dBi fixed and rotatable antenna that can boost wireless performance. With seamless roaming, fully interoperability and advanced security with WEP standard, 802.11n USB Dongle offers absolute interoperability with different vendors' 802.11b, 802.11g, and 802.11n Access Points through the wireless LAN.

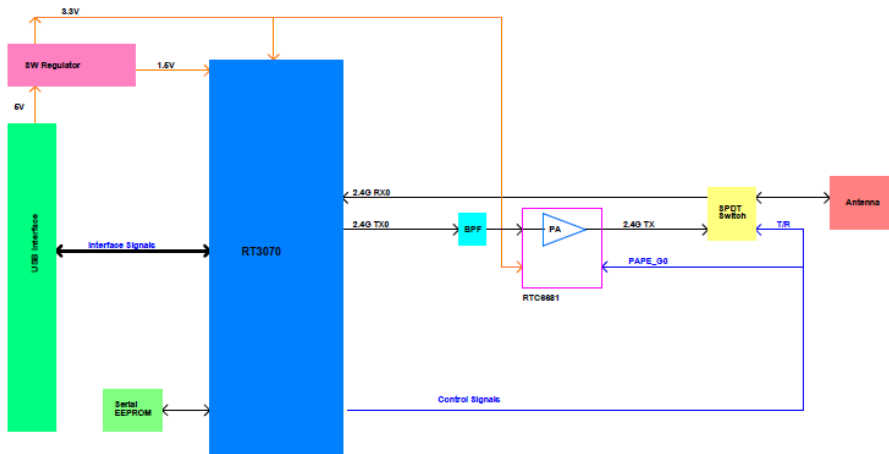
1.2 Product Features

- Compatible with **IEEE 802.11n** standard to provide up to **150Mbps** data rate.
- Compatible with IEEE 802.11g standard to provide up to wireless 54Mbps data rate
- Compatible with IEEE 802.11b standard to provide up to 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 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
- Support wireless data encryption with 64/128-bit WEP for security
- Support infrastructure networks via Access Point and ad-hoc network via peer-to-peer communication
- Support WEP, WPA, WPA2 and EAP-AKA/FAST enhanced security
- Drivers support Windows XP 32/64-bit, Vista 32/ 64-bit, and Windows 7 32/ 64-bit.
- Support external WPS button to connect Access Point easily.
- 3dBi dipole antenna, rotatable for 90 degree of vertical and 180 degree horizontal angle.
- High speed USB 2.0 interface
- RoHS compliant

2.0 Requirements

The following sections identify the detailed requirements of the **DWA-127 Wireless N 150 High-Gain USB 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 and other regions
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 17 dBm (± 2dB) at 1,2,5.5,11Mbps
2.2.1.8	Receiver Sensitivity	<ul style="list-style-type: none"> Typical Sensitivity at Which Frame (1000-byte PDUs) Error Rate = 8% 17 dBm at 1Mbps 17 dBm at 2Mbps 17 dBm at 5.5Mbps 17 dBm 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	<ul style="list-style-type: none"> BPSK, QPSK, 16QAM, 64QAM, and OFDM

#	Feature	Detailed Description
	Schemes	
2.2.2.3	Operating Frequency	<ul style="list-style-type: none"> 2400 ~ 2497MHz ISM band
2.2.2.4	Channel Numbers	<ul style="list-style-type: none"> 11 channels for United States 13 channels for Europe Countries and other regions
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 (tolerance +-2dB) at each RF chain, Data Rate and at room Temp. 25degree C 16 dBm at 12 ~ 6 Mbps 15 dBm at 24,36 Mbps 14 dBm at 54,48 Mbps <p>Note: The maximum power setting will vary according to individual country regulations.</p>
2.2.2.8	Receiver Sensitivity	<ul style="list-style-type: none"> Typical Sensitivity at Which Frame (1000-byte PDUs) Error Rate = 10% -86 dBm at 6Mbps -85 dBm at 9Mbps -84 dBm at 12Mbps -84 dBm at 18Mbps -80 dBm at 24Mbps -77 dBm at 36Mbps -74 dBm at 48Mbps -68 dBm at 54Mbps

2.2.3 IEEE 802.11n 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				
		0	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
2.2.3.5	Media Access Protocol	<ul style="list-style-type: none"> CSMA/CA with ACK 				
2.2.3.6	Transmitter Output Power at Antenna	<ul style="list-style-type: none"> Typical RF Output Power (tolerance +-2dB) at each RF chain, Data Rate and at room Temp. 25degree C <p>HT20</p> <ul style="list-style-type: none"> 17 dBm at MCS0/1 				

#	Feature	Detailed Description
	Connector	<ul style="list-style-type: none"> • 16 dBm at MCS2/3 • 15 dBm at MCS4/5 • 14 dBm at MCS6/7 HT40 <ul style="list-style-type: none"> • 17dBm at MCS0/1 • 16 dBm at MCS2/3 • 15 dBm at MCS4/5 • 14 dBm at MCS6/7
2.2.3.7	Receiver Sensitivity at Antenna Connector	<ul style="list-style-type: none"> • Typical Sensitivity at Which Frame (1000-byte PDUs) Error Rate = 10% HT20 <ul style="list-style-type: none"> • -86 dBm at MCS0 • -84 dBm at MCS1 • -82 dBm at MCS2 • -79 dBm at MCS3 • -76 dBm at MCS4 • -74 dBm at MCS5 • -72 dBm at MCS6 • -68 dBm at MCS7 HT40 <ul style="list-style-type: none"> • -83 dBm at MCS0 • -81 dBm at MCS1 • -79 dBm at MCS2 • -77 dBm at MCS3 • -74 dBm at MCS4 • -70 dBm at MCS5 • -68 dBm at MCS6 • -62 dBm at MCS7

2.2.4 General Section

#	Feature	Detailed Description
2.2.4.1	Antenna Type	<ul style="list-style-type: none"> • 3dBi dipole antenna
2.2.4.2	Operating Voltage	<ul style="list-style-type: none"> • 5VDC +/- 5%
2.2.4.3	Current Consumption	<ul style="list-style-type: none"> • 230mA at continuous transmit mode • 140mA at receive mode w/o receiving packet
2.2.4.4	USB	<ul style="list-style-type: none"> • High Speed USB2.0 Interface
2.2.4.5	LED	<ul style="list-style-type: none"> • Link/ACT: Follow D-Link USB & WPS LED behavior spec

2.3 Software Requirements

The WPS software supports Microsoft Windows XP (SP3), Vista, and Windows 7. This software includes the following functions:

- **WPS Push Button**
Connect to a wireless network using Wi-Fi protected Setup (External Push Button).
- **Encryption**
WPS-PBC utility supports WEP, WPA/WPA2-PSK security.
- **Profile**
Profile named Security.htm and saves in user desktop after WPS connection successfully established
- **Diagnosis**
Diagnosis the OS requirement (support XP SP3 and above) and WPS-PBC connection status.

2.4 Mechanical Requirements

#	Feature	Detailed Description
2.4.1	Length	31.0mm(PCBA)
2.4.2	Width	11.3mm(PCBA)
2.4.3	Height	0.6mm(PCBA)
2.4.4	Weight	2.3 g (PCBA)
2.4.5	Length	210.0 mm(Device, include antenna)
2.4.6	Width	15.0mm(Device)
2.4.7	Height	14.0mm(Device)
2.4.8	Weight	12.8 g (Device)

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 802.11 b/g/n product including security, multimedia and WPS 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 Product Development Guideline

2.7.1 Emissions & Safety

2.7.1.1 EMI/EMC Certificates and Test Reports

For radiated emission testing need to be under 3dB comply with required standard in table 2.1.1.

Require d	EMI/EMC Test Report	Clas s A	Clas s B	Region
V	CE Report (89/336/EEC(EN55022/24) 2004/108/EC), EN55022:2006 CISPER 22 : 2005 EN55024:1998+A2:2003 (CISPER24:1997+A2: 2002) EN61000-3-2:2006 EN 61000-3-3 :1995+A1: 2001(IEC 61000-3-3:1994+A1: 200 1) EN301489-01 v1.6.1 (RF) EN301489-17 v1.1.1 (RF)			Europe

	EN50412-2-1 (PLC)			
V	FCC report(FCC CFR 47 Part 15 B) IC report(ICES-003)			US Canada
V	IC report(ICES-006)			Canada
V	C-Tick Report(AS/NZS CISPR 22)			New Zealand & Australia
	VCCI Report(CISPR 22)			JAPAN
	MIC report			KOREA
	Anatel			Brazil
	BSMI			Taiwan
	CCC			China
	Others			

Table 2.1.1 EMI/ EMC certified items

Note: All regulation follow the latest edition of each authentication organization.

2.7.1.2 RF Certificates and Test Reports

Required	RF Test Report	Wireless	Region
V	CE Report (R&TTE:1999/5/EC) EN300328 v1.7.1 EN50385: 2002 EN301839	802.11 a/b/g/n	Europe
V	FCC report(FCC CFR 47, Part 15 C,E) for 2.4G & 5GHz	802.11 a/b/g/n	US/ FCC ID (KA2XXXXXX..)
V	IC report (RSS-2106.2.2.o , 6.2.2.q) for 2.4G & 5GHz	802.11 a/b/g/n	Canada/ IC ID (4216AXXXX...)
V	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
	Others		

Table 2.1.2 RF certified items

Note: All regulation follow the latest edition of each authentication organization.

2.7.1.3 Telecom Certificates and Test Reports

Required	Telecom Test Report	Region
	CE Report (R&TTE:1999/5/EC) TBR-21	Europe
	FCC Report (FCC CFR 47, Part 68)	US/ FCC ID (3P7XXXXXX..)
	IC Report (CS-03)	Canada/ IC ID (4216AXXXX...)
	A-Tick Report	New Zealand & Australia
	NCC(PSTN01) 公眾交換電話網路終端設備技術規範	Taiwan
	Anatel	Brazil
	BSMI	Taiwan
	CCC	China
	Others	

Table 2.1.3 Telecom certified items

Note: All regulation follow the latest edition of each authentication organization.

2.7.1.4 Safety Certificates and Test Reports

A. This product must comply with UL/cUL certification, table 2.1.4-1.

Required	Certifications	Standards/Edition	Region
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	cUL Listed Mark	UL/CSA 60950-1	North/ South America
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Table 2.1.4-1 The must of certified item

If has the special factor to be possible to substitute or to add a course following, table 2.1.4-2

Required	Certifications	Standards/Edition	Region
	CSA International Mark	IEC 60950-1 UL 60950-1 CSA 60950-1 EN 60950-1	North/ South America Europe
	CB Report	IEC 60950-1: 2001 EN 60950-1 :2001	50s' list
	Others		

Table 2.1.4-2 Substituted certified items

B. A product's property for Telecom or RF either, therefore it must comply with, table 2.1.4-3.

A product designed to build an internal power unit; therefore it must comply with, table 2.1.4-3.

Required	Certifications	Standards/Edition	Region
	CE LVD report (LVD : 2006/95/EC)	EN 60950-1: 2006	Besides, North America

Table 2.1.4-3 CE LVD certified item

C. A product strategy for ship out to China, therefore it must comply with, table 2.1.4-4.

Required	Certifications	Standards/Edition	Region
	CCC	GB4943-2001, GB9254-1998, GB17625.1-2003	China

Table 2.1.4-4 China certified item

Note: All regulation follow the latest edition of each authentication organization.

2.7.2 Environmental & Reliability

The detail specification to present in "Environment & Reliability General Specification", Doc No.PSD-002-01000, all requirements are following table 2.2 index.

No.	Required	Test Items
1.	V	MTBF of Prediction Report
2.	V	Endurance test Report
3.	Option	MTBF of Demonstration test Report
4.	V	Free Fall(Drop)Test Report
5.	V	Random Vibration Test Report
6.	V	Storage Test Report
7.	V	Operation Cold(low temperature) Test
8.	V	Operation Dry Heat(High temperature) Test
9.	V	Operation Temperature Cycles Test
10.	V	Thermal Shock Test
11.	V	Damp Heat Steady State test
12.	V	Thermal Profile Test
13.	V	ESD Simulation Test report
14.	V	High / Low Temperature Start Test
15.	Option	Parts on/off & Insert/pulling Test
16.	V	Acoustic Noise test

Table 2.2 Environment & Reliability check index

2.7.3 Hazardous Substance Managements

The restrictions of hazardous substances policy need to follow with documentation "Product Hazardous Substance Management", Doc No.PSD-003-01000

2.7.4 Component Parts Standard

Components have to comply with the specification "Component Parts Select & Application Standard", Doc No.PSD-004-01000

2.7.5 Design Verification Test (DVT)

A product in developing must follow the testing requirement of main standard "Hardware Engineering Verification Test Plan", Doc No. HRS-001-00001

2.8 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