



STA-UI-A003D (USB version)

WiFi 802.11 b/g and Bluetooth v2.0 + EDR
Combo USB Dongle Module

Ver: 1.0



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1. Introduction

The **STA-UI-A003D** product provides the highest level of integration and most aggressive BOM cost by integrating IEEE 802.11b/g and Bluetooth v2.0 + EDR into a single MAC/Baseband chip utilizing a single 2.4GHz transceiver. Integrated on-chip power amplifier and LNA reduce external component count, while still able to deliver ample transmit power for most applications.

Different from any other wireless LAN and Bluetooth chip set vendor, **STA-UI-A003D** uses its patented Software Radio technology to implement both wireless LAN and Bluetooth in software. The highly optimized software radio DSP technology enables **STA-UI-A003D** to integrate class 1 Bluetooth v2.0 + EDR function without any added cost to the total solution. No extra antenna, PA, RF transceiver, resistor, capacitor, crystal or any components are needed. The software solution even guarantees the Bluetooth RF performance if the wireless LAN performance is tested to be good. It eliminates the need for system manufacturers to separately test the module's Bluetooth RF performance, therefore reduce the testing time and cost.

The **STA-UI-A003D** utilizes 3DSP's patent pending technologies to fundamentally solve the interference and performance issues existed during 802.11b/g and Bluetooth coexistence, thus improving both 802.11b/g and Bluetooth performance and link stability in real environment. As a result, it enhances user experience in a totally wireless environment, where all devices are connected wirelessly through either Bluetooth link or 802.11b/g link.

The single installation package allows for easy setup and configuration of both 802.11b/g and Bluetooth devices. Combined user interface is intuitive to use. Once configured, both wireless links operate transparently in the background.

1.1 Features & Benefits

[WiFi]

- Data Rate up to 54Mbps.
- Single-band 2.4-GHz 802.11b/g with Bluetooth v2.0 + EDR
- Integrated on-chip PA capable of delivering 20dBm output power
- Low active transmit and receive power dissipation and ultra-low power in stand-by and idle modes
- Supports IEEE802.11 b/g

Security:

- WPA and WPA2 for advanced authentication and encryption
- AES and TKIP in hardware for reduced power dissipation and encryption speed
- Worldwide regulatory support
- Patent pending technology maximizes multimedia streaming performance over Bluetooth over WLAN in coexistence mode



Patent pending Software Radio technology allows single radio, single baseband integration of multiple standards
Advanced network security features include WPA, WPA2, 802.11i and 802.11x
Long and short preamble supported

[Bluetooth]

- Support AFH (Adaptive Frequency Hopping)
- Support Bluetooth v2.0 + EDR
- Forward and backward compatible with Bluetooth v1.1 and v1.2
- Support for up to seven active Bluetooth devices
- Class 1 with 18dbm PA, 100m range

1.2 Applications

- Home networking for device sharing
- Wireless office for extension Ethernet range

2. Product Specifications

2.1 WiFi Product Spec

WiFi product spec	
Network Standard	IEEE 802.11b IEEE 802.11g
Frequency Band	2.400-2.4835 GHz
Data Rate	IEEE 802.11g (auto-fallback): - OFDM: 54, 48, 36, 24, 18, 12, 9 and 6 Mbps IEEE 802.11b (auto-fallback): - CCK: 11, 5.5 Mbps - DQPSK: 2 Mbps - DBPSK: 1 Mbps



Media Access Control	CSMA/CA with ACK			
Channel	<i>IEEE 802.11g</i>		<i>IEEE 802.11b</i>	
	Ch. 1-11 – N. America		Ch. 1-11 – N. America	
	Ch. 1-13 – Japan		Ch. 1-14 – Japan	
	Ch. 1-13– Europe ETSI		Ch. 1-13– Europe ETSI	
	Ch. 10-11 – Spain		Ch. 10-11 – Spain	
	Ch. 10-13 – France		Ch. 10-13 – France	
Transmission	DSSS、OFDM			
Modulation	<i>IEEE 802.11b</i> (DSSS):		<i>IEEE 802.11g</i> (OFDM):	
	CCK @ 11, 5.5 Mbps DQPSK @ 2 Mbps DBPSK @ 1 Mbps		BPSK @ 6, 9 Mbps QPSK @ 12, 18 Mbps 16-QAM @ 24, 36 Mbps 64-QAM @ 48, 54 Mbps	
Network Architecture	Ad-Hoc Mode (Peer-to-Peer), Infrastructure Mode			
Antenna Type	One Chip antenna			
Temperature Operating	Temperature 32°F to 131°F (0°C to 55°C)			
	Storage Temperature 4°F to 185°F (-20°C to 85°C)			
Humidity	10%-85% (non-condensing)			
Power Consumption	320mA in Standard mode 500mA in Peak			
Dimensions	5.1 x 2.1 cm (2.0 x 0.83 in) Module 6.6 x 2.1 cm (2.60 x 0.83 in) w/USB			
Operating Voltage	3.3V +/- 10%			
Output Power	802.11g		802.11b	
	54Mbps	14.5+/-1 dBm	11Mbps	17.5+/-2 dBm
Receiver Sensitivity (Typical Value)	-74dBm@54Mbps, -85dBm@11Mbps			
Range	100m operating range			
Security	64/128-bit WEP, WPA, WPA2, TKIP, AES			
Operating System	Windows 2000/XP sp2/XP sp3/2003/Vista/Vista 64-bit			

2.2 Bluetooth Product Spec

Bluetooth product spec	
Network Standard	Bluetooth Class I v2.0 with EDR function, Bluetooth v1.2
Frequency Band	2.400-2.4835 GHz
Data Rate	Up to 3Mbps



Channel	79 sub-channels
Transmission	FHSS (Frequency Hopping Spread Spectrum)
Modulation	GFSK, DQPSK, D8PSK
Antenna Type	Same One Chip antenna as WiFi connector support
Temperature Operating Temperature	32°F to 131°F (0°C to 55°C)
Storage Temperature	4°F to 185°F (-20°C to 85°C)
Humidity	10%-85% (non-condensing)
Power Consumption	320mA in Standard mode 500mA in Peak
Bluetooth Transmit Power	≤ 20dBm
Receiver Sensitivity	3DH5@BER=1%%, -76dBm; 2DH5@BER=1%%, -90dBm; GFSK@BER=0.1%, -88dBm
Range	100m operating range
Baseband	
Physical Links	Support ACL and SCO link
Network Capabilities	Support Pico-net point-to-point and point-to-multipoint connections
Link Manager	
3-slot Packets	Yes
5-slot Packets	Yes
Slot Offset	Yes
Timing Accuracy	Yes
Switch	Yes
Hold Mode	Yes
Sniff Mode	Yes
Test Mode	Yes
Park Mode	Yes
RSSI	Yes
Power Control	Yes
Authentication	Yes
Encryption	Yes
System Support	Windows 2000/2003/XP sp2/XP sp3/Vista/Vista 64-bit



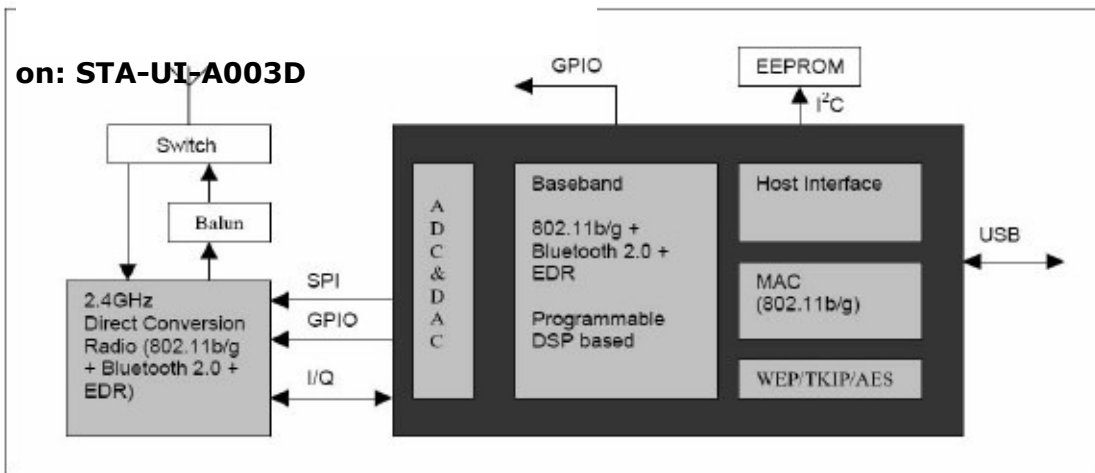
Profile Support

Serial Port Profile , Dial Up Networking Profile, File Transfer Profile, Human Interface Device Profile, Headset Profile, Advanced Audio Distribution Profile, Object Push Profile, Synchronization Profile, LAN Access profile, Personal Area network Profile, Fax Profile, Basic Imaging Profile

3. Hardware

**HW
versi**

3.1 Hardware Architecture



3.2 Chip Information

IEEE 802.11	b/g 2.4GHz Radio Transceiver (integrated PA)	STK9230-AQFG
STK9100-CLQG / DS	base 802.11 b/g and Bluetooth v2.0 + EDR for Baseband and	
MAC		
STK9110-ALOG		



4. Software

4.1 Software Version

Driver versionsetup.exe, IVT BlueSoleil 2.7.0.13
Users can download update driver from www.stk.com.tw

4.2 Operating System Support

Windows 2000, 2003, Windows XP sp2, Windows XP sp3, Windows Vista and Windows Vista 64-bit

4.3 Security

Security support

WEP
WPA (AES/TKIP)
WPA2 (AES)

5. Test Result

5.1 WiFi RF Test

Test item	Pass or fail
Transmitter power	Pass
Transmit spectrum mask	Pass
Transmit spectrum flatness	Pass



RF carrier suppression	Pass
Transmit power-on and power-down ramp	Pass
Transmit center frequency & symbol clock tolerance	Pass
Transmit modulation accuracy	Pass
Receiver minimum input level sensitivity	Pass
Receiver maximum input level	Pass
Receiver adjacent channel rejection	Pass
Transmit and receive in-band and out-band spurious	Pass
Transmit and receive current measurement	Pass
PER Test for Transmitter	Pass
Bandwidth measurement	Pass

5.2 Bluetooth RF Test

Test item	Pass or fail
Output Power	Pass
Power Density	Pass
Frequency Range	Pass
-20dB Bandwidth	Pass
Adjacent Channel Power	Pass
Modulation Characteristics	Pass
Initial carrier frequency tolerance	Pass
Carrier frequency drift	Pass
Sensitivity - Single Packets	Pass
Sensitivity - Multi Packets	Pass
C/I Performance	Pass
Maximum input Level	Pass

5.3 WiFi and Bluetooth Interoperability Test

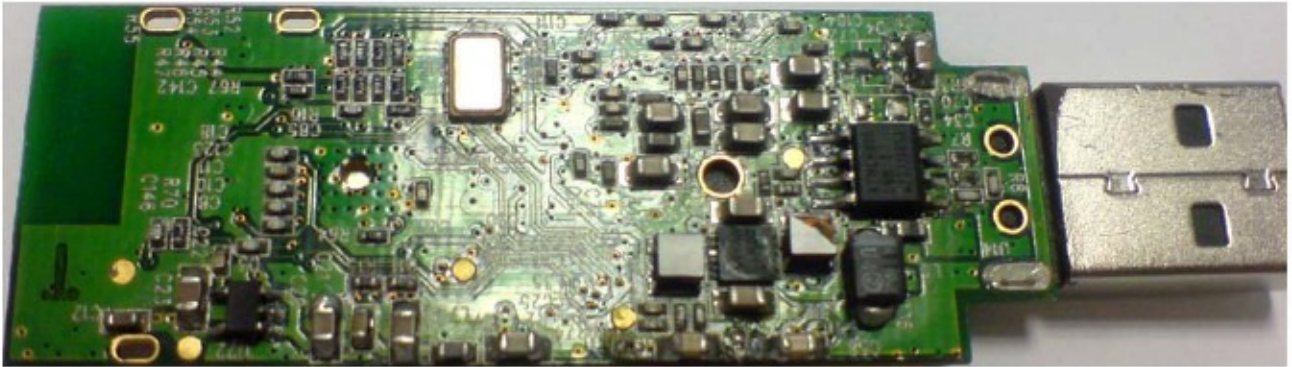
Please review to the STA-UI-A003D USB Card test Report for detail.



Front View



Back View





7. Certification

WiFi Enterprise Logo Certified
 Bluetooth v2.0 + EDR Certified
 Microsoft Windows WHTL Certified (2000, XP sp2, XP sp3, Vista, Vista-64)
 Patent

7.1 WiFi Certification

Wi-Fi® Interoperability Certificate

Certification ID: WFA5597



This certificate indicates the capabilities and features that successfully completed interoperability testing by the Wi-Fi Alliance. You may find detailed descriptions of these features at www.wi-fi.org/certification_programs.php.

Certificate Date: September 21, 2007
 Category: Reference Design
 Company: 3DSP
 Product: BlueW
 Model/SKU#: 2310

This product has passed Wi-Fi certification testing for the following standards:

IEEE Standard	Security
802.11b	WPA™ - Personal
802.11g	WPA™ - Enterprise
	WPA2™ - Personal
	WPA2™ - Enterprise
	EAP Type(s)
	EAP-TLS
	EAP-TTLS/MSCHAPv2
	PEAPv0/EAP-MSCHAPv2
	PEAPv1/EAP-GTC
	EAP-SIM

For more information: www.wi-fi.org/certification_programs.php

WiFi® Certificate Products Name: BlueW_2310
Wi-Fi® Interoperability Certificate ID: WFA5597



7.2 Bluetooth Qualification Body Certification

Bluetooth.org - The Official Bluetooth Membership Site

第 1 頁, 共 2 頁

Bluetooth SIG Shop | Bluetooth.com



Qualified Design Listing Details

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TPG Project: [bluew \(Component \(Tested\)\)](#)

Qualified Design ID (QD ID): B013118

PRO 1.0 ID (QP ID):

Design Name: [BlueW-BB.LM.HCI-2310](#)

Member Company: [3DSP](#)

Core Version: 2.0/2.0+EDR

Design Model Number: 2310

Hardware Version Number: 2310

Software Version Number: 2.0

Qualification Assessment Date: September20/2007

Listing Date: September20/2007

Design Description: The 3DSP BlueW-2310 product provides the highest level of integration by integrating IEEE 802.11b/g and Bluetooth 2.0 + EDR into a single MAC/Baseband chip utilizing a single 2.4GHz transceiver

Product Type: Component (Tested)

[Technical Data Sheet \(RIN\)](#) [** Open Reference Integration Notes \(RIN\) **](#)

Listed By: [Felix Tang](#)

Approved by BQE: [Jan-Williem Venis](#)

Profile: [Role / Version \(If Any\)](#)

Baseband

Link Manager

Host Controller Interface

https://www.bluetooth.org/tpg/QLI_viewQDL.cfm?tid=13118

2007/11/26

Bluetooth Certificate Products Name: BlueW_2310
BQB IC Certification ID: B013118
BQB Module Certification ID: B013452

7.3 Patent

Application Patent Advantage:
 Application One Aerial WLAN 54M channel Share (WLAN & Bluetooth in coexistence mode)
 to assist the customer to Lower Costs.

US Patent Licence: **20070197256**



8. Specifications

WLAN Spec	IEEE 802.11b/g
Transmit Power	13 dBm to 17 dBm
Sensitivity	-74dBm@54Mbps, -85dBm@11Mbps
Frequency Channel	14
Modulation	802.11g: OFDM / 802.11b: DSSS
Security Features	WEP, WPA, AES, TKIP, WPA2
WEP Key Bits	64 / 128 bit
Protocol	TCP/IP
Bluetooth Spec	Bluetooth 1.2 and 2.0 + EDR
Transmit Power	≤ 20dBm
Sensitivity	3DHS@BER=1%%, -76dBm ; 2DHS@BER=1%%, -90dBm ; GFSK@BER=0.1%, -88dBm
Frequency Channel	79
Modulation	DQPSK, D8PSK, GFSK
Profile	SPP, DUN,HID, HSP, A2DP, OPP, SYN, LAN, PAN, FAX, FTP, BIP
Operating Temperature	32°F to 131°F (0° C to 55° C)
Storage Temperature	04°F to 185°F (-20° C to 85° C)
Operating Humidity	10% to 85%, Non-Condensing
Storage Humidity	5% to 90%, Non-Condensing
Interface Standard	USB 2.0
LED Indicators	Power, Bluetooth
Power	DC: 5V, Normal 320mA / Peak 500mA
Certifications	CE, FCC Class B, Wi-Fi Certification(802.11b/g), BQB , WHQL: Vista 32-bit, Vista-64bit, XP, 2000
Dimensions	5.6 x 2.1 cm (2.2 x 0.83 in) Module 7.1 x 2.1 cm (2.79 x 0.83 in) w/USB
Unit Weight	9 g. (0.31 oz)