C326e0

IEEE 802.11ac Dual-band 2Tx2R PCIe Mini-Card

Version: 0.1

Date: July. 6, 2018

Release History

Date	Rev.	Description of Change
2018/07/06	0.1	Initial draft

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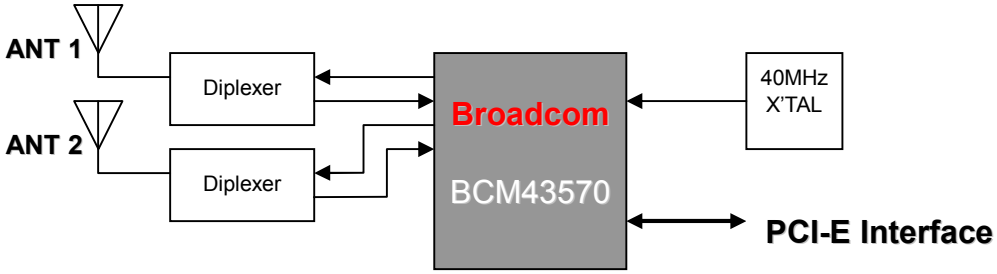
1 Introduction

C326e0 is an IEEE 802.11ac-Draft-compliant MIMO wireless LAN module specifically designed in half-size PCI Express Mini-card form factor for integrated application. It adopts Broadcom's BCM43570 single-chip solution for 2.4/5GHz 802.11ac wireless local area network, enhanced with external RF Power Amplifier on transmitting and Low-Noise Amplifier on receiving to achieve excellent performance over 2Tx2R configuration for wireless access point or station application demanding robust link quality and maximum throughput and range. **C326e0** supports two-stream spatial multiplexing up to 866Mbps data rate, and is backward compatible with legacy IEEE 802.11a/b/g/n/ac data rates. **C326e0** provides a flexible, high performance and low cost solution for Notebook PC, portable equipment and embedded system applications.

2 Features

- half-size Mini PCI Express card, which is interoperable with IEEE 802.11a/b/g/n/ac WLAN
- 2x2 MIMO, advanced modulation and wide bandwidth technology improves effective throughput and range over existing 802.11a/n products
- BPSK, QPSK, 16 QAM, 64 QAM, 256-QAM and CCK modulation schemes
- 20, 40 and 80 MHz channelization and optional short guard interval
- Aggregated MPDU (MAC Protocol Data Unit) support for High-Throughput (HT)
- WPA, WPA2 (802.11i) and hardware accelerated AES encryption/decryption, coupled with TKIP and 802.1X support
- PCI Express Rev. 2.0 compliant

3 Block Diagram



4 General Specifications

■ **Module Name**					
• XW348E					
■ **Product Description**					
• WLAN Standards	IEEE 802.11ac				
• Host Interface	Mini PCI Express compliant with PCI Express ver. 2.0				
• Major Chipset	Broadcom BCM43570				
• SSID	TBD				
• SVID	TBD				
• Firmware (calibration tool version)	TBD				
• Dimensions					
		Minimum	Typical	Maximum	Unit
	Length	50.65	50.8	50.95	mm
	Width	29.70	29.85	30.00	mm
	Height	4.0	4.3	4.6	mm
	Weight		7.25		Gram
• Antenna Connector	two U.FL connectors				
• Customization	Follows XAVi's instruction to modify the matching circuit				
■ **Operating Condition**					
		Minimum	Typical	Maximum	Unit
• Voltage	DC	3.15	3.3	3.45	V
• Temperature		0		70	°C
• Storage temperature		-20		70	°C
• Humidity Non-Operating		5		80	%
■ **Electrical Specification**					
• Frequency Range, Offset, Channel	2412~2462MHz, 4900 ~ 5845MHz, +/- 20ppm				

• Modulation	BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM and CCK				
• Output power (per chain, tolerance: -1.5/+1.5dBm)					
2412 ~ 2462 MHz (ch1~ch11)		Minimum	Typical	Maximum	Unit
802.11b Mode	11 Mbps cck	17.5	19.0	20.5	dBm
802.11a Mode	54 Mbps OFDM	15.0	16.5	18.0	dBm
802.11n Mode	MCS7_HT20	14.0	15.5	17.0	dBm
802.11n Mode	MCS7_HT40	13.5	15.0	16.5	dBm
4900 ~ 5845 MHz (ch36~ch165)		Minimum	Typical	Maximum	Unit
802.11a Mode	54Mbps	14.5	16.0	17.5	dBm
802.11n Mode	MCS7_HT20	13.5	15.0	16.5	dBm
802.11n Mode	MCS7_HT40	13.0	14.5	16.0	dBm
802.11ac Mode	MCS8_HT20	12.5	14.0	15.5	dBm
802.11ac Mode	MCS9_HT40	11.5	13.0	14.5	dBm
802.11ac Mode	MCS9_HT80	10.5	12.0	13.5	dBm
• Receiver Sensitivity					
		Minimum	Typical	Maximum	Unit
802.11a RX sensitivity (10% PER for 1,000 octet PSDU)	6 Mbps OFDM		-94.5		dBm
	9 Mbps OFDM		-93		dBm
	12 Mbps OFDM		-92		dBm
	18 Mbps OFDM		-89		dBm
	24 Mbps OFDM		-86		dBm
	36 Mbps OFDM		-83		dBm
	48 Mbps OFDM		-78		dBm
	54 Mbps OFDM		-76		dBm
802.11n RX sensitivity (10% PER for 4,096 octet PSDU) Defined for default parameters: GF, 800 ns GI, and non-STBC.	MCS0_HT20		-93		dBm
	MCS1_HT20		-91		dBm
	MCS2_HT20		-89		dBm
	MCS3_HT20		-86		dBm
	MCS4_HT20		-82		dBm
	MCS5_HT20		-77		dBm
	MCS6_HT20		-76		dBm
	MCS7_HT20		-74		dBm
	MCS0_HT40		-90		dBm
	MCS1_HT40		-88		dBm
	MCS2_HT40		-86		dBm

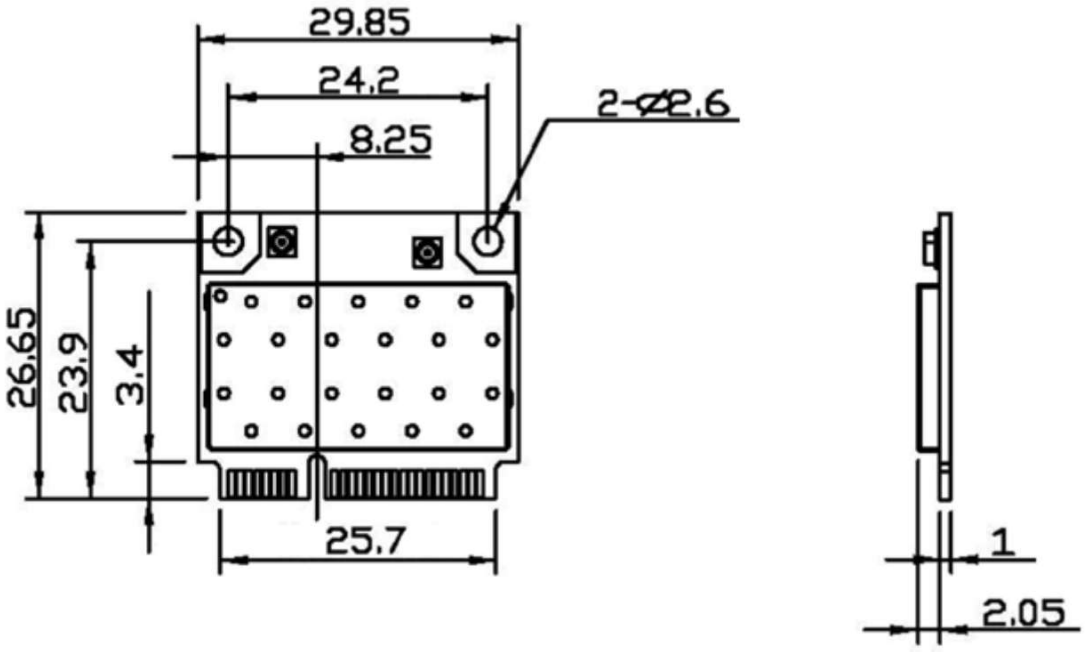
	MCS3_HT40		-82		dBm
	MCS4_HT40		-79		dBm
	MCS5_HT40		-75		dBm
	MCS6_HT40		-73		dBm
	MCS7_HT40		-71		dBm
802.11ac RX sensitivity (10% PER for 4,096 octet PSDU) Defined for default parameters: GF, 800 ns GI, and non-STBC.	MCS0_HT20		-93		dBm
	MCS1_HT20		-90		dBm
	MCS2_HT20		-89		dBm
	MCS3_HT20		-86		dBm
	MCS4_HT20		-82		dBm
	MCS5_HT20		-77		dBm
	MCS6_HT20		-76		dBm
	MCS7_HT20		-74		dBm
	MCS8_HT20		-89		dBm
	MCS0_HT40		-90		dBm
	MCS1_HT40		-87		dBm
	MCS2_HT40		-85		dBm
	MCS3_HT40		-82		dBm
	MCS4_HT40		-79		dBm
	MCS5_HT40		-73		dBm
	MCS6_HT40		-72		dBm
	MCS7_HT40		-73		dBm
	MCS8_HT40		-67		dBm
	MCS9_HT40		-66		dBm
	MCS0_HT80		-87		dBm
	MCS1_HT80		-83		dBm
	MCS2_HT80		-81		dBm
	MCS3_HT80		-78		dBm
	MCS4_HT80		-75		dBm
	MCS5_HT80		-73		dBm
	MCS6_HT80		-68		dBm
	MCS7_HT80		-68		dBm
	MCS8_HT80		-62		dBm
	MCS9_HT80		-60		dBm

- Power Consumption (@3.3VDC supply, 25°C ambient temperature)

		Minimum	Typical	Maximum	Unit

Peak transient current				TBD	A
■ **Security**					
• WEP, WPA, WPA2 and hardware AES encryption / decryption, TKIP or 802.1X					

5 Mechanical Dimensions



Connector Pin-out Definitions

Pin	Definition	Type	Description
1	WAKE_L	I	Wake on Wireless LAN
2	3.3VAUX	P	3.3V power supply
3	COEX1	I/O	No connection
4	GND	P	Ground
5	COEX2	I/O	No connection
6	1.5V		1.5V (No connection)
7	CLKREQ_L	O	Reference clock request signal
8	UIM_PWR		No connection
9	GND	P	Ground
10	UIM_DATA		No connection
11	REFCLK-	I	Differential reference clock
12	UIM_CLK		No connection
13	REFCLK+	I	Differential reference clock
14	UIM_RESET		No connection
15	GND	P	Ground
16	UIM_VPP		No connection
17	RSVD_UIM_C8		No connection
18	GND	P	Ground
19	RSVD_UIM_C4		No connection
20	W_DISABLE_L	I	WLAN disable: Active low
21	GND	P	Ground
22	PERST_L	I	PCI express reset signal: Active low
23	PER0N	O	PCI express transmit differential signal
24	3.3VAUX	P	3.3V power supply
25	PER0P	O	PCI express transmit differential signal
26	GND	P	Ground
27	GND	P	Ground
28	1.5V		1.5V (No connection)
29	GND	P	Ground
30	SMB_CLK		No connection
31	PET0N	I	PCI express receive differential signal
32	SMB_DATA		No connection
33	PET0P	I	PCI express receive differential signal
34	GND	P	Ground

Pin	Definition	Type	Description
35	GND	P	Ground
36	USB_DN		No connection
37	GND	P	Ground
38	USB_DP		No connection
39	3.3VAUX	P	3.3V power supply
40	GND	P	Ground
41	3.3VAUX	P	3.3V power supply
42	LED_WWAN_L		No connection
43	GND	P	Ground
44	LED_WLAN_L	O	LED signal
45	Reserved		No connection
46	LED_WPAN_L		No connection
47	Reserved		No connection
48	1.5V		1.5V (No connection)
49	Reserved		No connection
50	GND	P	Ground
51	Reserved		No connection
52	3.3VAUX	P	3.3V power supply
P: Power/Ground; I: Input; O: Output.			

Host device Product Name: STB

Host device Model Number: Kamai 7XC

Host device Brand Name: Amino

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment

NOTE:THE MANUFACTURER IS NOT RESPONSIBLE FOR ANY RADIO OR TV INTERFERENCE CAUSED BY UNAUTHORIZED MODIFICATIONS TO THIS EQUIPMENT.SUCH MODIFICATIONS COULD VOID THE USER'S AUTHORITY TO OPERATE THE EQUIPMENT.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the 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 and, if not installed and used in accordance with the instructions, 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 turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

-- Reorient or relocate the receiving antenna.
-- Increase the separation between the equipment and receiver.
-- Connect the equipment into an 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.

This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled

environment. This device and its antenna must not be co-located or operating in conjunction with any other antenna or transmitter. To comply with FCC RF exposure compliance requirements, this grant is applicable to only Mobile Configurations. The antennas used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.

when this modular was installed to a host device, the host device should be labeled with “contains FCCID:XVG500102BC22”