Product Manual

Q26 Elite Wireless CPU®

Reference: **WI_DEV_Q26EL_UGD_002**

Revision: **002**

Date: **April 17, 2009**

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User Manual

Reference: WI_DEV_Q26EL_UGD_002
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Document History

Revision	Date	List of revisions	
001	April 7, 2009	Creation	
002	April 17, 2009	Updates	

Overview

This document is intended to provide the product technical specifications of the Q26 Elite Wireless CPU® and all derivatives.

Cautions

This platform contains a modular transmitter. This device is used for wireless applications. Note that all electronics parts and elements are ESD sensitive.

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1 References

1.1 Abbreviations

Abbreviation	Definition
CDMA	Code Division Multiple Access
dB	Decibel
DC	Direct Current
EN	Enable
GPIO	General Purpose Input Output
GPS	Global Positioning System
GSM	Global System for Mobile communications
I/O	Input / Output
MAX	MAXimum
MIC	MICrophone
MIN	MINimum
NMEA	National Marine Electronics Association
NOM	NOMinal
PCB	Printed Circuit Board
RF	Radio Frequency
RST	ReSeT
RTC	Real Time Clock
RX	Receive
TX	Transmit
TYP	TYPical
UART	Universal Asynchronous Receiver-Transmitter
USB	Universal Serial Bus
VSWR	Voltage Standing Wave Ratio

2 Product Description

Designed for fast and easy integration, the Q26 Elite Wireless CPU® is a Dual Band (800/1900 MHz) product. The Wireless CPU® provides end application devices with wireless connectivity, high-speed data transfer, and advanced features such as gpsOne, TCP/IP, and voice. The Q26 family is designed to target the vertical applications market space such as automotive applications, Telematics, Machine-to-Machine Interfaces and Mobile Professional Applications. This Wireless CPU® is also designed for integration in Dual Processor applications

2.1 Main Features

2.1.1 Recommended Operating Conditions

The table below defines the Recommended Operating Conditions for the Q26 Elite Wireless CPU®.

Table 1: Recommended Operating Conditions

Symbol	Parameter	Min	Typ	Max	Units
To	Operating Temperature	-40		+85	°C
Ts	Storage Temperature	-40		+85	°C

2.1.2 Power Supply

The VBATT power supply input provides power to the entire Q26 Elite Wireless CPU®. The system connector pins are identified in the table below.

Table 2: Power Supply Specification

Supply	V_{MIN}	V_{NOM}	V_{MAX}	Units
VBATT	3.8	4.0	4.2	V

2.1.3 Ground

There are no Ground (GND) pins defined in the system connector. The application must ensure that the four mounting tabs of the Q26 Elite are soldered to GND and this is common to the GND of the Power Supply.

2.1.4 Current Consumption

- 2mA (in Sleep Mode)
- Up to 600mA - TX full power

2.1.5 RF Interfaces

The Q26 Elite operates in Band Class 0 and 1 modes for CDMA 1xRTT operation. The table below defines the performance characteristics of the radio.

Table 3: RF Parametrics

	BC0 (Power Class III)	BC1 (Power Class II)	Units
Max TX RF Output Power	+24 (+2/-1)	+24 (+2/-1)	dBm
RX Sensitivity	-104	-104	dBm

Note: The values in the table above are valid at the RF connectors of the Q26 Elite into a 50 Ohm load.

The Q26 Elite Wireless CPU® has two antenna connections; CDMA and GPS. These paths are separate internally and must be provide via the respective antenna ports.

2.1.6 Environmental

- RoHs Compliance
- Lead Free Compliance

2.1.7 CDMA Antenna Specifications

A dual-band, tri-band or quad-band antenna may be used, depending on customer applications. The antenna must have the following characteristics:

Table 4: CDMA Antenna Characteristics

Characteristics		US Cellular (BC0)	US PCS (BC1)
Frequency (MHz)	TX	824-849	1850-1910
	RX	869-894	1930-1990
Impedance	RF	50 Ohm	
	DC[1]	10 kOhm	

[1] For antenna diagnostic feature

Characteristics		US Cellular (BC0)	US PCS (BC1)
VSWR max	Rx	1.5: 1	
	Tx	1.5: 1	
Polarization		Linear, vertical	
Typical radiated gain		0 dBi in one direction at least	

Note: Wavecom recommends a VSWR max of 1.5:1 for the Rx and Tx bands. Nevertheless, all aspects of this specification will be fulfilled even with a max. VSWR of 2:1.

2.1.8 GPS Antenna Specification

The Q26 Elite Wireless CPU® is designed to provide a 5V bias to power an active GPS antenna. For applications in which an active antenna is used, a diagnostic function to detect OPEN, SHORT or OK status is available.

Table 5: GPS Antenna Characteristics

Characteristics		GPS L1
Frequency (MHz)	RX	1575.42
Impedance	RF	50 Ohm
VSWR max	Rx	1.5: 1
LNA Bias Voltage		5V
LNA Current Consumption		40 mA Max
Polarization		Linear, vertical
Typical radiated gain		0 dBi in one direction at least

3 Mechanical

The Q26 Elite Wireless CPU® is a member of the Q26 Family. It therefore has common length and width dimensions as the other Q26 Wireless CPU®s. The system connector physical attributes are identical as well as its placement. The primary RF connector and placement are also consistent with the rest of the family.

3.1 Mechanical Drawing

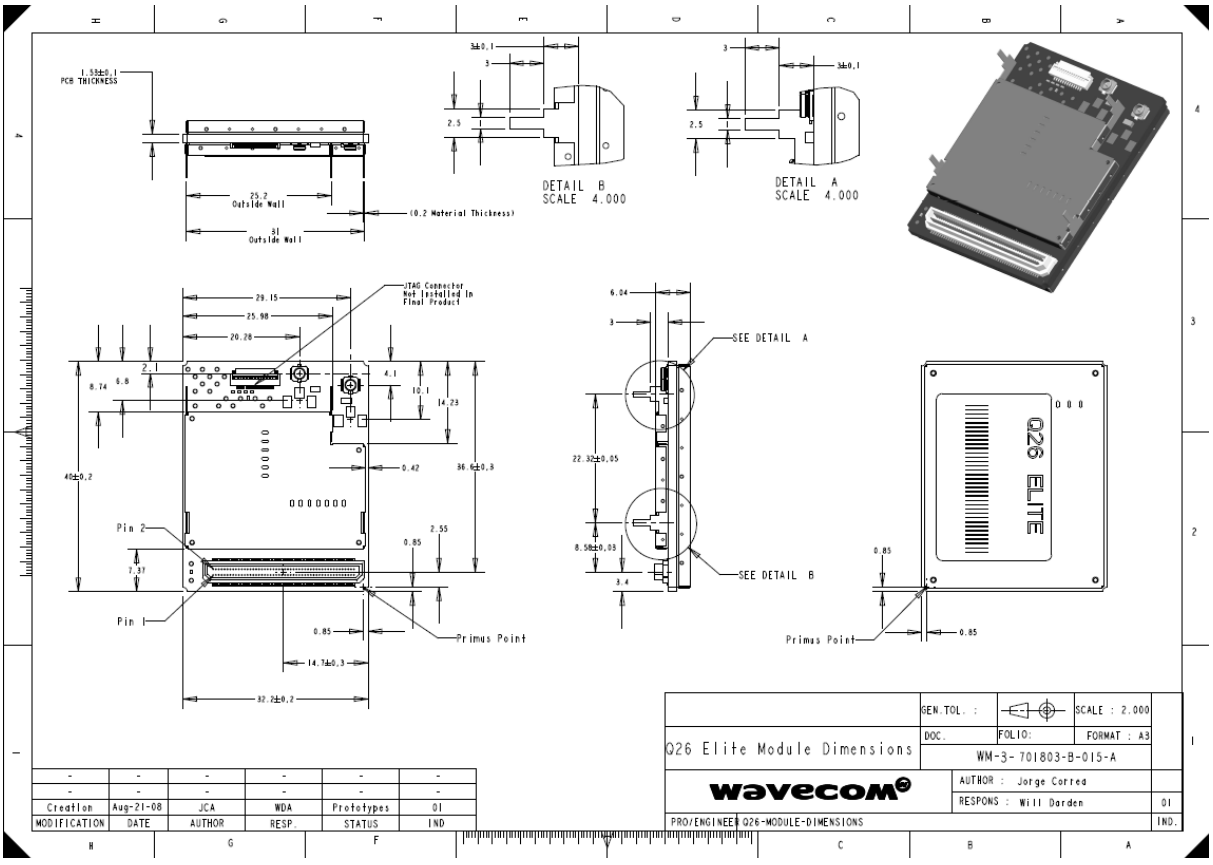

Figure 1: Mechanical Drawing

3.2 Component Location Drawing

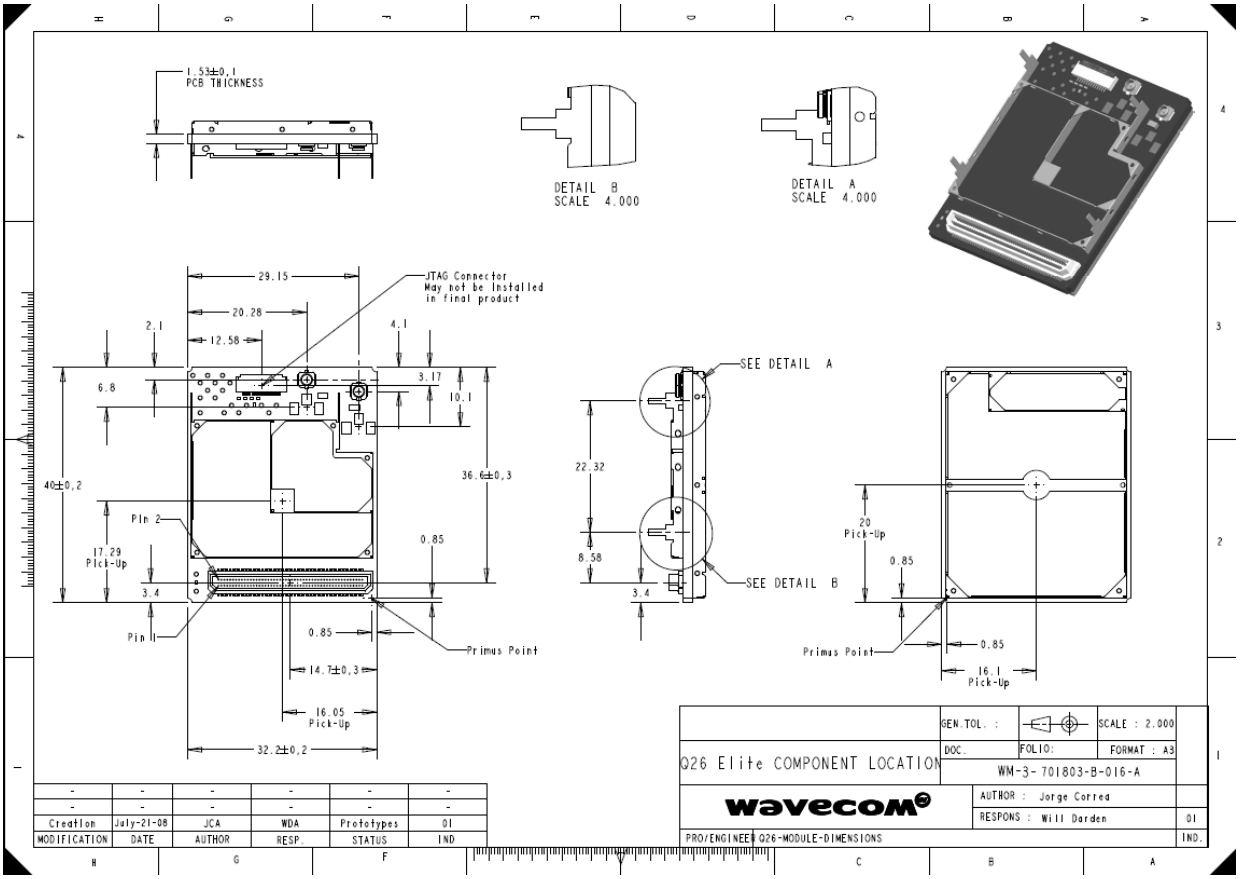

Figure 2: Component Location Drawing

4 System Connector Pin-out

Table 6: System Connector Pin-out

Pin #	Signal Name	Voltage	I/O*	Pin Type	Description
1	VBATT	VBATT	I	AI	Power Supply
2	VBATT	VBATT	I	AI	Power Supply
3	VBATT	VBATT	I	AI	Power Supply
4	VBATT	VBATT	I	AI	Power Supply
5	VCC_1V8	VCC_1V8	O	AO	1.8V Supply Output
6	CHG-IN	CHG-IN	I	AI	Charger input
7	VCOIN	VCOIN	I/O	AI, AO	RTC Battery connection
8	CHG-IN	CHG-IN	I	AI	Charger input
9	UIM_PWR	1V8 or 3V	O	AO	UIM Power Supply
10	VCC_2V8	VCC_2V8	O	AO	2.8V Supply Output
11	UIM_DATA	1V8 or 3V	I/O	B6	UIM Data
12	GPIO2	VCC_1V8*	I/O	BS-PD2	
13	UIM_RESET	1V8 or 3V	O	DO2	UIM reset Output
14	UIM_CLK	1V8 or 3V	O	DO2	UIM Clock
15	VIB_DRV_N	Open Drain	O		Buzzer Output
16	BOOT	VCC_1V8*	I		Not Used
17	LED	Open Drain	O		Flash Led Output
18	RESET_N	VCC_1V8	I/O		RESET Input
19	ON/~OFF	VBATT	I		ON / ~OFF Control
20	ADC_0	Analog	I	AI	Analog to Digital Input
21	ADC_1	Analog	I	AI	Analog to Digital Input
22	GPIO32	VCC_2V8	I/O	BS-PD2	
23	GPIO33	VCC_2V8	I/O	BS-PD2	
24	GPIO34	VCC_2V8	I/O	BS-PD2	
25	GPIO35	VCC_2V8	I/O	BS-PD2	
26	GPIO36	VCC_2V8	I/O	BS-PD2	

Pin #	Signal Name	Voltage	I/O*	Pin Type	Description
27	GPIO37	VCC_2V8	I/O	BS-PD2	
28	GPIO38	VCC_2V8	I/O	BS-PD2	
29	GPIO39	VCC_2V8	I/O	BS-PD2	
30	RXD2	VCC_1V8	O	DO6	Auxiliary RS232 Receive
31	TXD2	VCC_1V8	I	DI	Auxiliary RS232 Transmit
32	CTS2	VCC_1V8	O	DO2	Auxiliary RS232 Clear To Send
33	RTS2	VCC_1V8	I	DI	Auxiliary RS232 Request To Send
34	MIC2N	Analog	I	AI	Micro 2 Input Negative
35	HPH_OUT_L_P	Analog	O	AO	Speaker 1 Output Positive, 32 Ohm Output
36	MIC2P	Analog	I	AI	Micro 2 Input Positive
37	HPH_OUT_R_N	Analog	O	AO	Speaker 1 Output Negative, 32 Ohm Output
38	LINE_IN_R_N	Analog	I	AI	Micro 1 Input Negative
39	SPKR_OUT_P	Analog	O	AO	Speaker 2 Output Positive, 8 Ohm Output
40	LINE_IN_L_P	Analog	I	AI	Micro 1 Input Positive
41	SPKR_OUT_N	Analog	O	AO	Speaker 2 Output Negative, 8 Ohm Output
42	EBI2_LB_N	VCC_1V8	O	DO10	Lower Byte select
43	GPIO40	VCC_2V8	I/O	BS-PD2	
44	SCL	VCC_2V8	O	B2	I²C Clock
45	GPIO41	VCC_2V8	I/O	BS-PD2	
46	SDA	VCC_2V8	I/O	B2	I²C Data
47	GPIO42	VCC_2V8	I/O	BS-PD2	
48	GPIO43	VCC_2V8	I/O	BS-PD2	
49	GPIO44	VCC_2V8	I/O	BS-PD2	
50	GPIO7	VCC_1V8*	I/O		
51	GPIO51	VCC_1V8	I/O	BS-NP6	
52	VPAD-USB	VPAD-USB	I	AI	USB Power supply input

Pin #	Signal Name	Voltage	I/O*	Pin Type	Description
53	GPIO50	VCC_1V8*	I/O	BS-PD2	
54	USB-DP	VPAD-USB	I/O	AI, AO	USB Data
55	GPIO45	VCC_2V8	I/O	BS-PD2	
56	USB-DM	VPAD-USB	I/O	AI, AO	USB Data
57	GPIO46	VCC_2V8	I/O	BS-PD2	
58	GPIO49	VCC_2V8	I/O	BS-PU2	
59	COL0	VCC_1V8*	I/O	BS2	Keypad column 0
60	COL1	VCC_1V8*	I/O	BS2	Keypad column 1
61	COL2	VCC_1V8*	I/O	BS2	Keypad column 2
62	COL3	VCC_1V8*	I/O	BS2	Keypad column 3
63	COL4	VCC_1V8*	I/O	BS2	Keypad column 4
64	ROW4	VCC_1V8*	I/O	DO2	Keypad Row 4
65	ROW3	VCC_1V8*	I/O	DO2	Keypad Row 3
66	ROW2	VCC_1V8*	I/O	DO2	Keypad Row 2
67	ROW1	VCC_1V8*	I/O	DO2	Keypad Row 1
68	ROW0	VCC_1V8*	I/O	DO2	Keypad Row 0
69	RI1	VCC_2V8	O	BS-PD2	Main RS232 Ring Indicator
70	DCD1	VCC_2V8	O	BS-PD2	Main RS232 Data Carrier Detect
71	TXD1	VCC_2V8	I	DI	Main RS232 Transmit
72	RTS1	VCC_2V8	I	DI	Main RS232 Request To Send
73	RXD1	VCC_2V8	O	DO4	Main RS232 Receive
74	DSR1	VCC_2V8	O	BS-PD2	Main RS232 Data Set Ready
75	CTS1	VCC_2V8	O	DO4	Main RS232 Clear To Send
76	DTR1	VCC_2V8	I	BS-PD2	Main RS232 Data Terminal Ready
77	PCM_SYNC	VCC_1V8*	O	B2	PCM Frame Synchro
78	PCM_DIN	VCC_1V8*	I	B2	PCM Data Input
79	PCM_CLK	VCC_1V8*	O	B2	PCM Clock
80	PCM_DOUT	VCC_1V8*	O	B2	PCM Data Output
81	EBI2_OE_N	VCC_1V8	O	DO10	Output Enable/ Read not write

Pin #	Signal Name	Voltage	I/O*	Pin Type	Description
82	Reserved	VPAD-USB			Reserved
83	EBI2_CS0_N	VCC_1V8	O	DO10	Chip Select
84	EBI2_WE_N	VCC_1V8	O	DO10	Write Enable
85	EBI2_AD0	VCC_1V8	I/O	B-K10	Data for Peripheral
86	EBI2_AD15	VCC_1V8	I/O	B-K10	Data for Peripheral
87	EBI2_AD1	VCC_1V8	I/O	B-K10	Data for Peripheral
88	EBI2_AD14	VCC_1V8	I/O	B-K10	Data for Peripheral
89	EBI2_AD2	VCC_1V8	I/O	B-K10	Data for Peripheral
90	EBI2_AD13	VCC_1V8	I/O	B-K10	Data for Peripheral
91	EBI2_AD3	VCC_1V8	I/O	B-K10	Data for Peripheral
92	EBI2_AD12	VCC_1V8	I/O	B-K10	Data for Peripheral
93	EBI2_AD4	VCC_1V8	I/O	B-K10	Data for Peripheral
94	EBI2_AD11	VCC_1V8	I/O	B-K10	Data for Peripheral
95	EBI2_AD5	VCC_1V8	I/O	B-K10	Data for Peripheral
96	EBI2_AD10	VCC_1V8	I/O	B-K10	Data for Peripheral
97	EBI2_AD6	VCC_1V8	I/O	B-K10	Data for Peripheral
98	EBI2_AD9	VCC_1V8	I/O	B-K10	Data for Peripheral
99	EBI2_AD7	VCC_1V8	I/O	B-K10	Data for Peripheral
100	EBI2_AD8	VCC_1V8	I/O	B-K10	Data for Peripheral

*NOTE: I = Inputs to the Q26 Elite and O = Outputs from the Q26 Elite.

Table 7: Pin Type Definition

Symbol	Description
Pad type	
AI	Analog input
AO	Analog output
B, BS	Bidirectional, bidirectional with Schmitt trigger
DI, DIS	Digital CMOS input, digital input with Schmitt trigger
DO	Digital output
Pad type - pull/keep details for digital I/Os	
PU	Contains an internal pullup device
PD	Contains an internal pulludown device
K	Contains an internal weak keeper device (keepers cannot drive external buses)
#	Drive Strength for digital I/Os

5 FCC Certification

The Q26 Elite is FCC certified as a 'mobile device', which requires a minimum distance of 20 cm between the application's antenna and the human body.

Per FCC Section 15.21, any changes or modifications to the Q26 Elite not expressly approved by Wavecom could void the user's authority to operate the equipment.

Users and installers must be provided with antenna installation instructions and transmitter operating conditions for satisfying RF exposure compliance.

Wavecom's FCC ID may be used by the integrator if the conditions below are followed:

1. The application must be implemented as a "mobile device" and not a "portable device."
2. The application's user and installation manuals must include a statement that a minimum distance of 20 cm between the antenna and the human body is required.
3. The antenna system gain must be within the following constraints:
   a) 850 MHz Band: the antenna system gain must not exceed 5.76 dBd gain.
   b) 1900 MHz PCS Band: the antenna system gain must not exceed 7.01 dBi gain.
4. The license module will have a FCC ID label on the module itself. The FCC ID label must be visible as defined by the FCC (visible through an open access door is permissible), or a separate label must be similarly visible that conveys the message: "Contains Transceiver Module FCC ID: O9EQ26ELITE."

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