



## PCI-SIG ENGINEERING CHANGE NOTICE

<b>TITLE:</b>	SIM/UIM Interface Definition (v1.4)
<b>DATE:</b>	March 3, 2004
<b>AFFECTED DOCUMENT:</b>	PCI Express™ Mini Card Electromechanical Specification, Revision 1.0 (June 2, 2003)
<b>SPONSOR:</b>	Jim Panian; QUALCOMM Incorporated

### **Part I**

#### **1. Summary of the Functional Changes**

The proposed change provides a definition of additional signals on the system connector to provide an interface between a removable User Identity Module (UIM), an extension of a Subscriber Identity Module (SIM), and a wireless wide area network (WWAN) radio device residing on the PCI Express Mini Card add-in card.

The term "UIM" refers to any user identity module independent of cellular technology. It is used in favor of other commonly used terms that are technology-specific. For example, "SIM" refers to a GSM UIM; "USIM" refers to a WCDMA UIM; and "R-UIM" refers to a CDMA UIM.

#### **2. Benefits as a Result of the Changes**

Defining the UIM interface pin out requirements will ensure that future PCI Express Mini Card implementations that require a hardware interface to a UIM card will design to a known set of UIM interface signals and power source.

#### **3. Assessment of the Impact**

The five reserved pins previously set-aside for potential UIM interface definition will no longer be available for re-assignment to any other future use. Two additional generic reserved pins are also used.

#### **4. Analysis of the Hardware Implications**

A PCI Express Mini Card will now need to support the UIM hardware interface pin out.

#### **5. Analysis of the Software Implications**

A PCI Express Mini Card will now need to support the UIM signaling interface.

## **Part II**

### **Detailed Description of the change**

#### **Change 1.2, Specification References, page 9 as follows:**

## **1.2 Specification References**

This specification requires references to other specifications or documents that will form the basis for some of the requirements stated herein.

- *PCI Express Base Specification, Revision 1.0a*
- *PCI Express Card Electromechanical Specification, Revision 1.0a* <sup>5</sup>
- *PCI Local Bus Specification, Revision 2.3*
- *Mini PCI Specification, Revision 1.0*
- *PCI Bus Power Management Interface Specification, Revision 1.1*
- *Advanced Configuration and Power Interface Specification, Revision 2.0b*
- *Universal Serial Bus Specification, Revision 2.0* <sup>10</sup>
- *SMBus Specification, Revision 2.0*
- *EIA-364-1000.01: Environmental Test Methodology for Assessing the Performance of Electrical Connectors and Sockets Used in Business Office Applications*
- *EIA-364: Electrical Connector/Socket Test Procedures Including Environmental Classifications*
- [ISO/IEC 7816-2, 1999-3-1, Information technology - Identification cards -Integrated circuit\(s\) cards with contacts - Part 2: Dimensions and location of the contacts](#)
- [ISO/IEC 7816-3, 1997-12-15, Second Addition, Information technology - Identification cards - Integrated circuit\(s\) cards with contacts - Part 3: Electronic signals and transmission protocols](#)
- [ISO/IEC 7816-3, Amendment 1 2002-06-01, AMENDMENT 1: Electrical characteristics and class indication for integrated circuit\(s\) cards operating at 5 V, 3 V and 1,8 V](#)

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Change Table 3-1, page 26 as follows:

## Table 3-1: PCI Express Mini Card System Interface Signals

Signal Group	Signal	Direction	Description
Power	+3.3V (2 pins)		Primary 3.3 V source
	+3.3Vaux (1 pin)		Auxiliary 3.3 V source
	+1.5V (3 pins)		Primary 1.5 V source
	GND (12 pins)		Return current path
PCI Express	PETp0, PETn0 PERp0, PERn0	Input/Output	PCI Express x1 data interface: one differential transmit pair and one differential receive pair
	REFCLK+, REFCLK-	Input	PCI Express differential reference clock (100 MHz)
Universal Serial Bus (USB)	USB_D+, USB_D-	Input/Output	USB serial data interface compliant to the USB 2.0 specification
Auxiliary Signals (3.3V Compliant)	PERST#	Input	Functional reset to the card
	CLKREQ#	Output	Reference clock request signal
	WAKE#	Output	Open Drain active Low signal. This signal is used to request that the system return from a sleep/suspended state to service a function initiated wake event.
	SMB_DATA	Input/Output	SMBus data signal compliant to the SMBUS 2.0 specification
	SMB_CLK	Input	SMBus clock signal compliant to the SMBUS 2.0 specification
Communications Specific Signals	LED_WPAN#, LED_WLAN#, LED_WWAN#	Output	Active low signals. These signals are used to allow the PCI Express Mini Card add-in card to provide status indicators via LED devices that will be provided by the system.
<a href="#">User Identity Module (UIM) Signals</a>	<a href="#">UIM_PWR (1 pin)</a>	<a href="#">Output</a>	<a href="#">Power source for the UIM.</a>  <a href="#">Compliant to the ISO/IEC 7816-3 specification (VCC).</a>
	<a href="#">UIM_RESET</a>	<a href="#">Output</a>	<a href="#">UIM reset signal.</a> <a href="#">Compliant to the ISO/IEC 7816-3 specification (RST).</a>
	<a href="#">UIM_CLK</a>	<a href="#">Output</a>	<a href="#">UIM clock signal.</a> <a href="#">Compliant to the ISO/IEC 7816-3 specification (CLK).</a>

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Signal Group	Signal	Direction	Description
	<a href="#">UIM_VPP</a>	<a href="#">Output</a>	<p><a href="#">Variable supply voltage (e.g. programming voltage) for class A devices. Refer to ISO/IEC 7816-3 for operating class definitions.</a></p> <p><a href="#">This signal is reserved for future use for devices of other classes.</a></p> <p><a href="#">Compliant to the ISO/IEC 7816-3 specification (VPP).</a></p>
	<a href="#">UIM_DATA</a>	<a href="#">Input/Output</a>	<p><a href="#">UIM data signal.</a></p> <p><a href="#">Compliant to the ISO/IEC 7816-3 specification (I/O)</a></p>

Add Section 3.2.6, page 30 as follows:

### **3.2.6. User Identity Module (UIM) interface**

The UIM signals are defined on the system connector to provide the interface between the removable User Identity Module (UIM), an extension of a Subscriber Identity Module (SIM), and a wireless wide area network (WWAN) radio device residing on the PCI Express Mini Card add-in card. The UIM contains parameters necessary for the WWAN device's operation in a wireless wide area network radio environment. The UIM signals are described in the following sections for PCI Express Mini Card add-in cards that support the off-card UIM interface.

#### **3.2.6.1 UIM\_PWR**

Refer to ISO/IEC 7816-3 for more details on the voltage and current tolerance requirements for the UIM\_PWR power source. Note, the UIM grounding requirements can be provided by using any GND pin. Only PCI Express Mini Card add-in cards that support a UIM card shall connect to this pin. If the add-in card has UIM support capabilities, it must support the UIM\_PWR power source at the appropriate voltage for each class of operating conditions (i.e. voltage) supported as defined in ISO/IEC 7816-3.

UIM\_PWR maps to contact number C1 as defined in ISO/IEC 7816-2.

#### **3.2.6.2 UIM\_RESET**

This signal provides the UIM card with the reset signal. Refer to ISO/IEC 7816-3 for more details on the functional and tolerance requirements for the UIM\_RESET signal. Only PCI Express Mini Card add-in cards that support a UIM card shall connect to this pin. If the add-in card has UIM support capabilities, it must support the UIM\_RESET signal.

UIM\_RESET maps to contact number C2 as defined in ISO/IEC 7816-2.

#### **3.2.6.3 UIM\_CLK**

This signal provides the UIM card with the clock signal. Refer to ISO/IEC 7816-3 for more details on the functional and tolerance requirements for the UIM\_CLK signal. Only PCI Express Mini Card add-in cards that support a UIM card shall connect to this pin. If the add-in card has UIM support capabilities, it must support the UIM\_CLK signal.

UIM\_CLK maps to contact number C3 as defined in ISO/IEC 7816-2.

#### **3.2.6.4 UIM\_VPP**

Refer to ISO/IEC 7816-3 for more details on the voltage and current tolerance requirements for the UIM\_VPP power source for class A devices.

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This signal is reserved for future use for devices of other classes.

UIM\_VPP maps to contact number C6.

### **3.2.6.5 UIM\_DATA**

This signal is used as output (UIM reception mode) or input (UIM transmission mode) for serial data. Refer to ISO/IEC 7816-3 for more details on the functional and tolerance requirements for the UIM\_DATA signal. Only PCI Express Mini Card add-in cards that support a UIM card shall connect to this pin. If the add-in card has UIM support capabilities, it must support the UIM\_DATA signal.

UIM\_DATA maps to contact number C7 as defined in ISO/IEC 7816-2..

Change Table 3-4, page 31 as follows:

Table 3-4: System Connector Pin-Out

Pin #	Name	Pin #	Name
51	Reserved*	52	+3.3V
49	Reserved*	50	GND
47	Reserved*	48	+1.5V
45	Reserved*	46	LED_WPAN#
43	Reserved*	44	LED_WLAN#
41	Reserved*	42	LED_WWAN#
39	Reserved*	40	GND
37	Reserved*	38	USB_D+
35	GND	36	USB_D-
33	PETp0	34	GND
31	PETn0	32	SMB_DATA
29	GND	30	SMB_CLK
27	GND	28	+1.5V
25	PERp0	26	GND
23	PERn0	24	+3.3Vaux
21	GND	22	PERST#
19	Reserved*** (UIM_C4)	20	Reserved****
17	Reserved*** (UIM_C8)	18	GND
Mechanical Key			
15	GND	16	UIM_VPP
13	REFCLK+	14	UIM_RESET
11	REFCLK-	12	UIM_CLK
9	GND	10	UIM_DATA
7	CLKREQ#	8	UIM_PWR
5	Reserved**	6	1.5V
3	Reserved**	4	GND
1	WAKE#	2	3.3V

\* [Reserved for future second PCI Express Lane \(if needed\).](#)

\*\* [Reserved for future wireless coexistence control interface \(if needed\).](#)

\*\*\* [Reserved for future UIM interface \(if needed\).](#)

\*\*\*\* [Reserved for future wireless disable signal \(if needed\).](#)

Change Section 3.3.2, page 32 as follows:

### **3.3.2 Reserved Pins**

Reserved pins are not to be terminated on either the add-in card or system board side of the connector. These pins are reserved for definition with future revisions of this specification and are not to be used for non-standard applications.

Three subsets of the reserved pins are tentatively reserved for specific applications as noted in Table 3 4. If new functionality requires use of these specially marked pins, they may be released for redefinition on an as needed basis.