Table 1-2. Summary Similarities/Differences Between L1 and L2 (cont.)

	L1 (Sleep)	L2 (Suspend)
Device Power Consumption	Device power consumption level is application/implementation specific	Device consumption is limited to: ≤500 µA or ≤2.5mA
Hot Removal	Natively detected per USB2 mechanisms	Natively detected per USB 2.0 mechanisms

Note, the time from the link returning to L0 (from L1) and the first transaction addressed to the device is host controller implementation specific. It is recommended that hosts service endpoints on the device as quickly as possible (given current host controller state transfer type of endpoints on the device and service interval). For example, quickly servicing reduces or avoids unnecessary latency in the data stream and may also provide an early opportunity to transition the link back to L1.

2. Protocol

A transaction is used to request a device connected to a port to transition to L1. USB 2.0 had only one 'reserved' PID value, so an extension transaction is defined to allow future protocol extensibility. This section is organized into two parts: Section 2.1 defines the extension (EXT) transaction framework and Section 2.2 defines the LPM extended transaction.

2.1 USB 2.0 Extension Transaction

The extension transaction uses the remaining USB 2.0 reserved PID value (0000B), which is in the Special PID type group. This addendum names this PID value the EXT PID, as illustrated in Table 2-1. Note, this table overrides Table 8-1 PID Types in the USB specification, Revision 2.0.

Table 2-1 PID Types

PID Type	PID Name	PID<3:0>*	Description
Token	OUT	0001B	Address + endpoint number in host-to-function transaction
	IN	1001B	Address + endpoint number in function-to-host transaction
	SOF	0101B	Start-of-Frame marker and frame number
	SETUP	1101B	Address + endpoint number in host-to-function transaction for SETUP to a control pipe
Data	DATA0	0011B	Data packet PID even
	DATA1	1011B	Data packet PID odd
	DATA2	0111B	Data packet PID high-speed, high bandwidth isochronous transaction in a microframe (see Section 5.9.2 for more information)
	MDATA	1111B	Data packet PID high-speed for split and high bandwidth isochronous transactions (see Sections 5.9.2, 11.20, and 11.21 for more information)

Table 2-1 PID Types (cont.)

PID Type	PID Name	PID<3:0>*	Description
Handshake	ACK	0010B	Receiver accepts error-free data packet
	NAK	1010B	Receiving device cannot accept data or transmitting device cannot send data
	STALL	1110B	Endpoint is halted or a control pipe request is not supported
	NYET	0110B	No response yet from receiver (see Sections 8.5.1 and 11.17-11.21)
Special	PRE	1100B	(Token) Host-issued preamble. Enables downstream bus traffic to low-speed devices.
	ERR	1100B	(Handshake) Split Transaction Error Handshake (reuses PRE value)
	SPLIT	1000B	(Token) High-speed Split Transaction Token (see Section 8.4.2)
	PING	0100B	(Token) High-speed flow control probe for a bulk/control endpoint (see Section 8.5.1)
	EXT	0000B	(Token) Protocol extension token (see Section 2.1.1)

*Note: PID bits are shown in MSb order. When sent on the USB, the rightmost bit (bit 0) will be sent first.

2.1.1 Protocol Extension Token

This addendum defines an extended token phase used to extend the USB transaction protocol. The token phase for an EXTended transaction is comprised of two token packets (each a standard 3 byte token packet), see Figure 2-1.

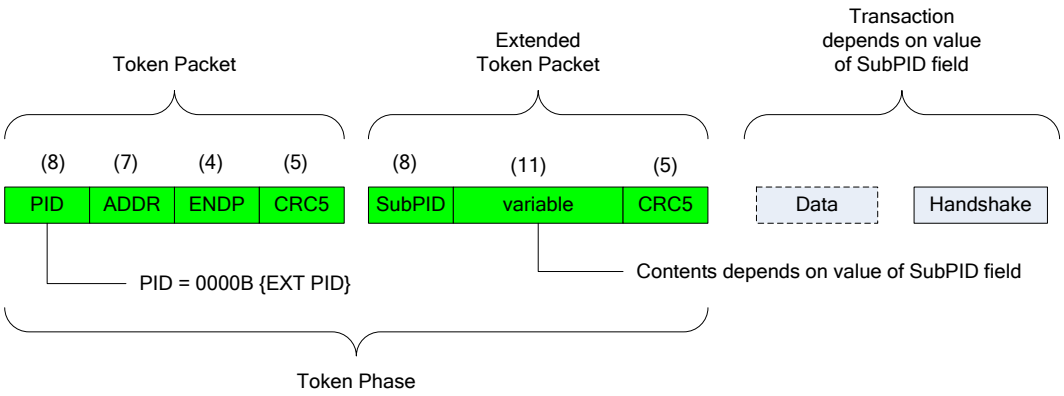

Figure 2-1. Packets in an Extension Token Transaction

The first packet of an extension transaction is a standard token packet with EXT in the PID field, including: ADDR, ENDP and CRC5 fields. The EXT PID indicates that the next packet (with standard, back-to-back inter-packet timing) is an extended token packet.

The second packet of an extension transaction is the Extended Token packet. The basic structure of this packet is identical to a standard token packet in that the first field is a PID (subPID) field and the end of the packet contains a CRC5, which is used to check the 11 bits between the SubPID field and the CRC5. The format of the