# CP2110/4 INTERFACE SPECIFICATION

## 1. Introduction

The Silicon Laboratories CP2110/4 is a USB device that adheres to the USB-defined Human Interface Device class specification. HIDs communicate with a USB host through the use of reports. This document is a specification for the reports supported by the CP2110/4 and it also describes the configurable parameters.

Silicon Laboratories provides dynamic libraries that adhere to this specification for the following operating systems:

- Windows XP/Vista/7/8
- Mac OS X
- Linux

This document is intended for the following:

- Users who are using an operating system that is not supported by the dynamic libraries and need to implement their own interface.
- Users who want to integrate the device interface into their application.

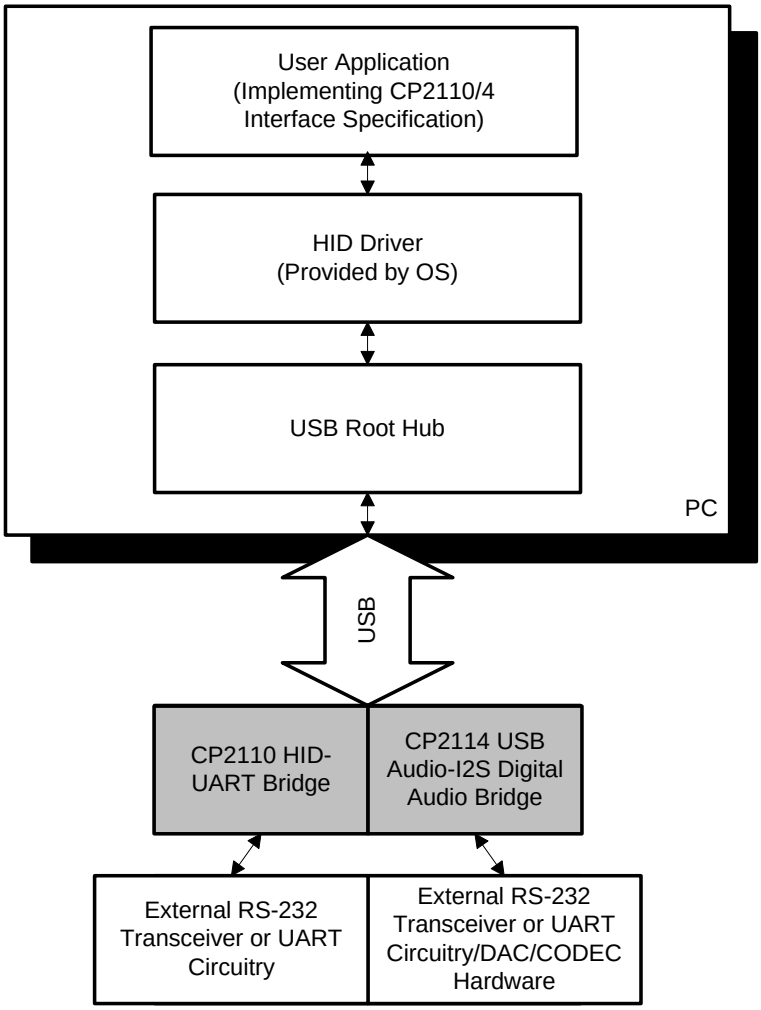


**Figure 1. System Architecture Diagram**

## 1.1. Additional Documentation

1. CP2110 data sheet:

http://www.silabs.com/products/interface/usbtouart

2. CP2114 data sheet:

http://www.silabs.com/CP2114

3. Dynamic libraries that adhere to this CP2110/4 Interface specification are available for the following operating systems:

- Windows 7/Vista/XP
- Mac OS X

AN433: CP2110 HID-to-UART API Specification documents the Windows DLL. The document and libraries are available at:

www.silabs.com/appnotes

4. HID Device Class Definition:

http://www.usb.org/developers/hidpage/

## 1.2. Default Values for Parameters Stored in PROM

Table 1 and Table 2 list the default values for the one-time configurable parameters stored in the PROM of the CP2110. Table 3 and Table 4 list the default values for the one-time configurable parameters stored in the PROM of the CP2114.

**Table 1. CP2110 Default PROM Values**

| Parameter | Default Value |
|---|---|
| VID | 0x10C4 |
| PID | 0xEA80 |
| Power | 50 (100 mA) |
| Power Mode | Bus Powered |
| Flush Buffers | Flush TX/RX on Open |
| Manufacturing String | Silicon Laboratories Inc. |
| Product String | CP2110 HID USB-to-UART Bridge |
| Serial String | 0001 |
| Lock Bytes | 0xFF0F* |
| ***Note:** The lock bytes indicate which parameters have already been programmed. | |

**Table 2. CP2110 Default Pin Settings**

| Parameter | Default Value |
|---|---|
| GPIO0_CLK | 0x00 (GPIO–Input) |
| GPIO1_RTS | 0x03 (RTS) |
| GPIO2_CTS | 0x03 (CTS) |
| GPIO3_RS485 | 0x03 (RS-485 Transceiver Control) |
| GPIO4_TXT | 0x03 (TX Toggle) |
| GPIO5_RXT | 0x03 (RX Toggle) |
| GPIO6 | 0x00 (GPIO–Input) |
| GPIO7 | 0x00 (GPIO–Input) |
| GPIO8 | 0x02 (GPIO–Push-pull Output) |
| GPIO9 | 0x02 (GPIO–Push-pull Output) |
| TX | 0x02 (Push-Pull) |
| Suspend | 0x02 (Push-Pull) |
| $\overline{\text{Suspend}}$ | 0x02 (Push-Pull) |
| Suspend Latch Mode | 0x0000 |
| Suspend Latch Value | 0x0000 |
| RS485 Level | 0x01 (Active High) |
| Clock Out Divider | 0x00 (Divide by 1) |

**Table 3. Default PROM Values**

| Parameter | Default Value |
|---|---|
| VID | 0x10C4 |
| PID | 0xEAB0 |
| Power | 50 (100 mA) |
| Power Mode | Bus Powered |
| Release Version (Major) | 1 |
| Release Version (Minor) | 0 |
| Flush Buffers | Flush TX/RX on Open |
| Manufacturing String | Silicon Laboratories |
| Product String | CP2114 USB-to-Audio Bridge |
| Serial String | (Unique randomized serial number) |
| Lock Bytes | 0xFF0F* |
| ***Note:** The lock bytes indicate which parameters have already been programmed. | |

**Table 4. Default Pin Settings**

| Pin Name or Parameter | Default Value and Function |
|---|---|
| GPIO.0_RMUTE | 0x03 (Record Mute control) |
| GPIO.1_PMUTE | 0x03 (Playback Mute control) |
| GPIO.2_VOL- | 0x03 (Volume Decrease control) |
| GPIO.3_VOL+ | 0x03 (Volume Increase control) |
| GPIO.4_RMUTELED | 0x03 (Record Mute indicator) |
| GPIO.5_TXT_DACSEL0 | 0x04 (DAC Select control) |
| GPIO.6_RXT_DACSEL1 | 0x04 (DAC Select control) |
| GPIO.7_RTS_DACSEL2 | 0x04 (DAC Select control) |
| GPIO.8_CTS_DACSEL3 | 0x04 (DAC Select control) |
| GPIO.9_CLKOUT | 0x03 (Clock Output) |
| GPIO.10_TX | 0x04 (TX output, push-pull) |
| GPIO.11_RX | 0x03 (RX input) |
| SUSPEND | 0x02 (push-pull output) |
| SUSPEND BAR (?:show bar) | 0x02 (push-pull output) |
| SUSPEND Latch Value | 0x0000 |
| SUSPEND Latch Mode | 0x0000 |
| Clock Output Divider | 0x00 (Divide by 1) |

## 1.3. Default UART Configuration

Table 5 and Table 6 show the default settings for the UART. Upon a device power-up or reset, these settings are used.

**Table 5. UART Transfer Settings**

| Parameter | Default Value |
|---|---|
| UART Enable | 0x00 (Disabled) |
| Baud Rate | 115200 |
| Parity | 0x00 (None) |
| Flow Control | 0x00 (None) |
| Data Bits | 0x08 (8 bits) |
| Stop Bits | 0x01 (1 bit) |

**Table 6. Other UART Settings**

| Parameter | Default Value |
|---|---|
| TX FIFO | 0x00 (TX FIFO empty) |
| RX FIFO | 0x00 (RX FIFO empty) |
| Error Status | 0x00 (No Parity or Overrun errors) |
| Break Status | 0x00 (Line Break is inactive) |

# 2. Report Overview

Communication with the CP2110 is performed using HID Reports as defined in the HID Device Class Definition. The class definition is available for download at http://www.usb.org/developers/hidpage/.

## 2.1. Reports Response

The CP2110 responds to reports in different ways depending on if the report configures a parameter on the device using a Set Report or if it requests data from the device using a Get Report. The list of all supported reports is available in "3.Report ID List" on page 7.

### 2.1.1. Set Reports

In response to a Set Report, the CP2110 will not return any report or acknowledgement of a report. To verify that a report has completed successfully, use the corresponding Get Report to obtain the data. The delay imposed by the HID protocol between reports guarantees that there will be no race condition between the execution of a Set Report and Get Report verification. A Set Report will always complete before the device receives the Get Report.

### 2.1.2. Get Reports

If a report requests data from the device and the report is valid, the device will return a report with the requested data. If the report is invalid, the device will stall.

## 2.2. Data Format

In all of the reports, the first byte of the data portion of the payload is the Report ID. In the report definitions in this document, the Report ID is stored in index 0 of the payload and is not explicitly listed in the table. All data content in the report starts at index 1. The reports have a maximum length of 64 bytes, indexed from 0–63. For any multi-byte values sent in the reports, the values are sent least significant byte first.

## 3. Report ID List

Report IDs 0x01–0x3F are used to transmit UART data across the Interrupt pipes.

Report IDs 0x40–0x66 are reserved for device configuration and customization.

**Table 7. Report IDs**

| Report ID | Report Name | Page |
|---|---|---|
| **UART Data Transfer (Interrupt Transfer)** | | |
| 0x0–0x3F | Set Send Data and Get Receive Data | 12 |
| **Device Configuration (Control Transfer)** | | |
| 0x40 | Set Reset Device | 9 |
| 0x41 | Get Set UART Enable | 9 |
| 0x42 | Get UART Status | 9 |
| 0x43 | Set Purge FIFOs | 10 |
| 0x44 | Get GPIO Values | 10 |
| 0x45 | Set GPIO Values | 10 |
| 0x46 | Get Version Information | 11 |
| 0x47 | Get Set Lock Byte | 11 |
| **UART Configuration (Control Transfer)** | | |
| 0x50 | Get Set UART Config | 13 |
| 0x51 | Set Transmit Line Break | 14 |
| 0x52 | Set Stop Line Break | 14 |
| **USB Customization (Control Transfer)** | | |
| 0x60 | Get Set USB Configuration | 16 |
| 0x61 | Get Set Manufacturing String 1 | 16 |
| 0x62 | Get Set Manufacturing String 2 | 17 |
| 0x63 | Get Set Product String 1 | 17 |
| 0x64 | Get Set Product String 2 | 17 |
| 0x65 | Get Set Serial String | 18 |
| 0x66 | Get Set Pin Configuration | 18 |
| **CP2114 Customization and Configuration (Control Transfer)** | | |
| 0x70 | Get Device Status | 22 |
| 0x71 | Get Device Capabilities | 23 |

**Table 7. Report IDs (Continued)**

| Report ID | Report Name | Page |
|---|---|---|
| 0x72 | Get RAM Configuration | 23 |
| 0x73 | Set RAM Configuration | 23 |
| 0x74 | Set DAC Registers | 24 |
| 0x75 | Get DAC Registers | 24 |
| 0x76 | Get OTP Configuration | 25 |
| 0x77 | Get Device Version | 25 |
| 0x78 | Create OTP Configuration | 26 |
| 0x79 | Set Boot Configuration | 26 |
| 0x7A | Set Parameters For Next Get | 27 |
| 0x7B | Get OTP All Configurations | 27 |
| 0x7C | Set OTP All Configurations | 28 |

# 4. Device Configuration Reports

## 4.1. Set Reset Device

Report ID: 0x40

Direction: Control Out

| Name | Offset | Size | Value | Description |
|---|---|---|---|---|
| Reset Type | 1 | 1 | 0x00 | Reset with re-enumeration |

*Set Reset Device* is used to restart the device from the USB host. The device will re-enumerate on the USB bus and all UART configuration settings are reset to their default values.

For certain operating systems such as Windows, initiating a device reset and re-enumerating will make the device's handle stale. The user application is responsible for handling this "surprise disconnect" event. See AN433: CP2110 HID-to-UART API Specification for more information regarding surprise disconnects.

## 4.2. Get/Set UART Enable

Report ID: 0x41

Direction: Control In/Out

| Name | Offset | Size | Value | Description |
|---|---|---|---|---|
| UART Enable | 1 | 1 | 0x00<br>0x01 | UART disabled<br>UART enabled |

*Get UART Enable* returns the Enable status of the UART. The UART is disabled by default.

*Set UART Enable* checks the FlushBuffers programmed parameter and purges the FIFOs depending on the parameter Enable or Disable, which are treated as Open and Close respectively.

## 4.3. Get UART Status

Report ID: 0x42

Direction: Control In

| Name | Offset | Size | Value | Description |
|---|---|---|---|---|
| TX FIFO | 1 | 2 | See below | Number of bytes in Transmit FIFO |
| RX FIFO | 3 | 2 | See below | Number of bytes in the Receive FIFO |
| Error Status | 5 | 1 | See below | Parity and Overrun errors |
| Break Status | 6 | 1 | 0x00<br>0x01 | Line break is not active<br>Line break is active |

*TX FIFO* is the number of bytes left for the device transfer to the UART-based device. The transmit FIFO buffer can hold up to 480 bytes. The value returned is a two-byte, unsigned integer.

*RX FIFO* is the number of bytes left for the device to transfer to the USB host. The receive FIFO buffer can hold up to 480 bytes. The value returned is a two-byte, unsigned integer.

*Error Status* indicates if a Parity error (mask 0x01) or Overrun error (0x02) has occurred since the last time Error Status was read by the user. Reading Error Status clears the errors.

*Break Status* indicates if a line break is currently in progress.

## 4.4. Set Purge FIFOs

Report ID: 0x43

Direction: Control Out

| Name | Offset | Size | Value | Description |
|---|---|---|---|---|
| Purge Type | 1 | 1 | 0x01<br>0x02<br>0x03 | Purge all data in the transmit FIFO<br>Purge all data in the receive FIFO<br>Purge all data in both buffers |

This report is used to empty the transmit and receive FIFO buffers on the CP2110 device. The host application is responsible for purging any host-side buffer.

If *Purge Type* is set to 0x01, the device will clear all data from the transmit buffer.

If *Purge Type* is set to 0x02, the device will clear all data from the receive buffer.

If *Purge Type* is set to 0x03, the device will clear the data from both the transmit and receive buffers.

## 4.5. Get GPIO Values

Report ID: 0x44

Direction: Control In

| Name | Offset | Size | Value | Description |
|---|---|---|---|---|
| Latch Value | 1 | 2 | * | Current latch values |

*See "Appendix A—Pin Configuration Options" on page 29 for details of this 2-byte value.

If a pin is configured as a GPIO input pin or a flow control pin that is an input, the corresponding Latch Value bit represents the input value.

If a pin is configured as a GPIO output pin or a flow control pin that is an output, the corresponding Latch Value bit represents the logic level driven on the pin.

## 4.6. Set GPIO Values

Report ID: 0x45

Direction: Control Out

| Name | Offset | Size | Value | Description |
|---|---|---|---|---|
| Latch Value | 1 | 2 | * | Latch value |
| Latch Mask | 3 | 2 | * | Pin to set to new latch value |

*See "Appendix A—Pin Configuration Options" on page 29 for details of these 2-byte values.

*Set GPIO Values* sets the values for GPIO pins or Flow Control pins that are configured as outputs.

The desired value for the pin is configured in *Latch Value*. To drive a 1 on an output pin, the corresponding bit should be set to 1. To drive a 0 on an output pin, the corresponding bit should be set to 0.

The Report will set new values only for output pins that have a 1 in the corresponding bit position in *Latch Mask*. If

the corresponding bit in *Latch_Mask* is set to 0, a new pin value will not be set, even if the pin is configured as an output pin.

The Report does not affect any pins that are not configured as outputs. This Report is only valid for the GPIO/Flow control pins. Pins TX, RX, Suspend, and /Suspend cannot be configured using this Report. The unused Latch Value and Latch Mask bits can be set to 1 or 0.

## 4.7. Get Version Information

Report ID: 0x46

Direction: Control In

| Name | Offset | Size | Value | Description |
|---|---|---|---|---|
| Part Number | 1 | 1 | 0x0A | Device part number |
| Device Version | 2 | 1 | Varies | Device version |

*Part Number* indicates the device part number. The CP2110 returns 0x0A.

*Device Version* is the version of the device. This value is not programmable over the HID interface.

## 4.8. Get/Set Lock Byte

Report ID: 0x47

Direction: Control In/Out

| Name | Offset | Size | Value | Description |
|---|---|---|---|---|
| Lock Status | 1 | 2 | See Below | Shows which fields have already been programmed. |

The device has a 2-byte field which indicates which of the customizable fields have been programmed. The following table shows the values of the bits:

| Bit Position | MSB – address[1] | LSB – address[2] |
|---|---|---|
| Bit 0 | VID | String 2–Part 1 |
| Bit 1 | PID | String 2–Part 2 |
| Bit 2 | Max Power | String 3 |
| Bit 3 | Power Mode | Pin Config |
| Bit 4 | Release Version | (unused) |
| Bit 5 | Flush Buffers | (unused) |
| Bit 6 | String 1–Part 1 | (unused) |
| Bit 7 | String 1–Part 2 | (unused) |

If the bit value is set to 1, the corresponding field has not been customized. If the bit value is set to 0, the field has been customized and can no longer be changed for this device.

Using the Set Lock Byte Report, any bit value set to 0 will lock the corresponding field. Send 0x00F0 to lock all parameters and prevent future customization.

# 5. UART Reports

The device enumerates Report IDs 0x01–0x3F for the Send and Get Data functions. The report ID indicates the number of data bytes being transferred, not including the Report ID itself.

## 5.1. Set Send Data

Report ID: 0x01 to 0x3F

Direction: Interrupt Out

| Name | Offset | Size | Value | Description |
|---|---|---|---|---|
| Buffer | 1 | 1–63 | — | Data to be sent to the UART |

*Set Send Data* is used to send data from the USB host to the UART device.

*Buffer* is the data to be transferred. The USB host application can transfer up to 1–63 data bytes using this Report.

## 5.2. Get Receive Data

Report ID: 0x01 to 0x3F

Direction: Interrupt In

A USB host requests data automatically from an HID device and thus this report is not typically required.This Report can be used to receive any data in between the automatic updates by the device.

| Name | Offset | Size | Value | Description |
|---|---|---|---|---|
| Buffer | 1 | 1–63 | — | Data to be sent to the USB Host |

*Get Receive Data* is used to receive data from the UART device.

*Buffer* is the data to be transferred. The USB host application can transfer up to 1–63 data bytes using this Report.

## 5.3. Get/Set UART Config

Report ID: 0x50

Direction: Control In/Out

| Name | Offset | Size | Value | Description |
|---|---|---|---|---|
| Baud Rate | 1 | 4 | See below | Baud rate in bits per second |
| Parity | 5 | 1 | 0x00<br>0x01<br>0x02<br>0x03<br>0x04 | No Parity<br>Even Parity<br>Odd Parity<br>Mark Parity<br>Space Parity |
| Flow Control | 6 | 1 | 0x00<br>0x01 | No Flow Control<br>Hardware Flow Control |
| Data Bits | 7 | 1 | 0x05<br>0x06<br>0x07<br>0x08 | 5 data bits<br>6 data bits<br>7 data bits<br>8 data bits |
| Stop Bits | 8 | 1 | 0x00<br>0x01 | Short Stop Bit<br>Long Stop Bit |

**Values from the Set Report are not stored in PROM. These parameters must be initialized after every power-on or device reset.**

*Baud Rate* is the speed in bits per second (bps) at which data is transferred over the UART. It is stored as a 4-byte unsigned number. The valid range for *Baud Rate* is 300 bps to 500,000 bps.

*Parity* is the type of parity bit that is appended to each data byte. The five types of parity available are none, even, odd, mark, and space parity. If “No Parity” is configured, no extra bit is appended to each data byte.

*Flow Control* is the type of handshaking used for the UART communication. The available types of flow control are No Flow Control and Hardware Flow Control. Hardware Flow Control uses the RTS and CTS pins.

*Data Bits* is the number of data bits per UART transfer. The UART can operate at 5, 6, 7, or 8 data bits.

*Stop Bits* is the number of stop bits used after each data byte. If *Data Bits* is set to 5, a Short Stop Bit is equivalent to 1 bit time, and Long Stop Bit is equivalent to 1.5 bit times. If *Data Bits* is set to 6, 7, or 8, a Short Stop Bit is equivalent to 1 bit time, and Long Stop Bit is equivalent to 2 bit times.

## 5.4. Set Transmit Line Break

Report ID: 0x51

Direction: Control Out

| Name | Offset | Size | Value | Description |
|---|---|---|---|---|
| Line Break Time | 1 | 1 | See Below | Length of line break in ms |

*Set Transmit Line Break* is used to transmit a line break on the TX pin. The line break will last for the amount of time specified in *Line Break Time*. The valid range for *Line Break Time* is 0 to 125 ms. The TX FIFO buffer is also purged when a line break is started.

If a value of 0 is set for *Line Break Time*, the device will transmit a line break until it receives a *Set Stop Line Break* Report.

## 5.5. Set Stop Line Break

Report ID: 0x52

Direction: Control Out

| Name | Offset | Size | Value | Description |
|---|---|---|---|---|
| Report ID | 0 | 1 | | (no data bytes) |

*Set Stop Line Break* is used to stop a line break if it is in progress. If no line break is currently in progress, this report is ignored.

Set *Report ID* to the report ID of *Set Stop Line Break.* There are no data bytes in the payload other than the Report ID.

## 6. Programmable USB Parameters

The following parameters are programmable on the device. Seven different reports are provided to program these parameters. Each of those seven reports can only be called once for each device.

| Name | Description |
|---|---|
| VID | USB Vendor ID |
| PID | USB Product ID |
| Power | Power request in mA/2 |
| Power Mode | Bus Powered<br>Self Powered–Regulator Off<br>Self Powered–Regulator On |
| Release Version | Major and Minor release version |
| Flush Buffers | Purge FIFOs on enable/disable |
| Manufacturer String | Product Manufacturer |
| Product String | Product Description |
| Serial String | Serialization String |
| Pin Configuration | All pins configuration |
| Lock Bytes | Indicates programmed values |

*VID* is the USB Vendor ID.

*PID* is the USB Product ID.

*Power* is the current requested by the device from the USB host in bus-powered mode. The units for this value is milliamps / 2. For example, if the device is configured to request 200 mA, the value for *Power* is 100. The maximum setting for *Power* is 500 mA, or a value of 250. Unpowered USB hubs are limited to providing 100 mA per port.

*Power Mode* indicates whether the device is operating in Bus-powered (0x00), Self-powered (0x01, voltage regulator disabled) or Self-powered (0x02, voltage regulator enabled) mode. If the device is configured for Self-powered mode, the value programmed for Power is not used during USB enumeration.

*Release Version* is a user-programmable value. The most significant byte is the Major revision number. The least significant byte in the report is the Minor revision number. Both bytes can be programmed to any value from 0 to 255.

*Flush Buffers* determines whether the RX and/or TX FIFOs are purged upon a device open and/or close.

- 0x01—Flush Transmit FIFO upon Device Open
- 0x02—Flush Transmit FIFO upon Device Close
- 0x04—Flush Receive FIFO upon Device Open
- 0x08—Flush Receive FIFO upon Device Close

All bitwise-OR combinations of these four values are valid settings for *Flush Buffers*.

*Manufacturing String* is a 126-byte string, where the first two bytes must be set according to the USB specification (length, 0x03).

*Product String* is a 126-byte string, where the first two bytes must be set according to the USB specification (length, 0x03).

*Serial String* is a 63-byte character array used to provide a unique serial number/string for the device. The first two characters must be set according to the USB specification (length, 0x03).

# 7. PROM Programming Reports

## 7.1. Get/Set USB Configuration

Report ID: 0x60

Direction: Control In/Out

| Name | Offset | Size | Value | Description |
|---|---|---|---|---|
| VID Low Byte | 1 | 1 | — | VID Low Byte |
| VID High Byte | 2 | 1 | — | VID High Byte |
| PID Low Byte | 3 | 1 | — | PID Low Byte |
| PID High Byte | 4 | 1 | — | PID High Byte |
| Power | 5 | 1 | — | Power requested in mA/2 |
| Power Mode | 6 | 1 | — | Regulator Configuration |
| Release Major | 7 | 1 | — | Release Version Major Value |
| Release Minor | 8 | 1 | — | Release Version Minor Value |
| Flush Buffers | 9 | 1 | — | Which buffers to flush on open/close |
| Mask | 10 | 1 | — | Mask for what fields to program |

*Get USB Configuration* returns the values for the various fields and also the *Mask* value. The *Mask* value is equal to the most significant byte value that is returned in Report *Get Lock Byte*. If the corresponding *Mask* bit is set to '0', the corresponding field has been programmed and any *Set USB Configuration* function operating on that field is ignored.

*Set USB Configuration* is used to customize these fields. The corresponding *Mask* bit should be set to '1' to program the field. If the field has already been programmed once, an attempt to reprogram it is ignored. If a field is being programmed with the current value, the programmed bit will still be set.

See "4.8.Get/Set Lock Byte" on page 11 for the definition of *Mask*.

## 7.2. Get/Set Manufacturing String 1

Report ID: 0x61

Direction: Control In/Out

| Name | Offset | Size | Value | Description |
|---|---|---|---|---|
| String Length | 1 | 1 | — | Length of string + 2 |
| USB Required | 2 | 1 | 0x03 | String indicator |
| Manufacturing String 1 | 3 | 61 | — | First 61 bytes of string |

The *Set Manufacturing String 1* Report can only be used once to set the Manufacturing String. Any subsequent calls to *Set Manufacturing String 1* are ignored.

The maximum value for *String Length* is 126. The first two bytes are allocated for *String Length* and the value 0x03, meaning the actual length of the pstring is 124 bytes. The device will ignore the report if *String Length* is too long. the string must be in Unicode format.

## 7.3. Get/Set Manufacturing String 2

Report ID: 0x62

Direction: Control In/Out

| Name | Offset | Size | Value | Description |
|---|---|---|---|---|
| Manufacturing String 2 | 1 | 63 | — | Second 63 bytes of string |

The *Set Manufacturing String 2* Report can only be used once to set the Manufacturing String. Any subsequent calls to *Set Manufacturing String 2* are ignored.

*Manufacturing String 2* is the second half of the manufacturer string. If the Manufacturing String does not require the additional bytes, it does not need to be initialized. The string must be in Unicode format.

## 7.4. Get/Set Product String 1

Report ID: 0x63

Direction: Control In/Out

| Name | Offset | Size | Value | Description |
|---|---|---|---|---|
| String Length | 1 | 1 | — | Length of string + 2 |
| USB Required | 2 | 1 | 0x03 | String indicator |
| Product String 1 | 3 | 61 | — | First 61 bytes of string |

The *Set Product String 1* Report can only be used once to set the Product String. Any subsequent calls to *Set Product String 1* are ignored.

The maximum value for *String Length* is 126. The first two bytes are allocated for *String Length* and the value 0x03, meaning the actual length of the payload part of the string is 124 bytes. The device will ignore the Report if *String Length* is too long. The string must be in Unicode format.

## 7.5. Get/Set Product String 2

Report ID: 0x64

Direction: Control In/Out

| Name | Offset | Size | Value | Description |
|---|---|---|---|---|
| Product String 2 | 1 | 63 | | Second 63 bytes of string |

The *Set Product String 2* Report can only be used once to set the Product String. Any subsequent calls to *Set Product String 2* are ignored.

*Product String 2* is the second half of the manufacturer string. If the Product String does not require the additional bytes, it does not need to be initialized. The string must be in Unicode format.

## 7.6. Get/Set Serial String

Report ID: 0x65

Direction: Control In/Out

| Name | Offset | Size | Value | Description |
|---|---|---|---|---|
| String Length | 1 | 1 | — | Length of string + 2 |
| USB Required | 2 | 1 | 0x03 | String indicator |
| Ser String 1 | 3 | 61 | — | 61 bytes of string |

The *Set Serial String* Report can only be used once to set the Product String. Any subsequent calls to *Set SerialString* are ignored.

The maximum value for *String Length* is 63. The first two bytes are allocated for *String Length* and the value 0x03, meaning the actual length of the payload part of the string is 61 bytes. The device will reject the Report if *String Length* is too long. The string must be in Unicode format.

## 7.7. Get/Set Pin Configuration

### 7.7.1. CP2110 Get/Set Pin Configuration

Report ID: 0x66

Direction: Control In/Out

The values in **bold** are the default values.

| Name | Offset | Size | Value | Description |
|---|---|---|---|---|
| GPIO0_CLK | 1 | 1 | **0x00**<br>0x01<br>0x02<br>0x03 | **GPIO Input Pin**<br>GPIO Output–Open Drain<br>GPIO Output–Push-Pull<br>Clock Output–Push-Pull |
| GPIO1_RTS | 2 | 1 | 0x00<br>0x01<br>0x02<br>**0x03** | GPIO Input Pin<br>GPIO Output–Open Drain<br>GPIO Output–Push-Pull<br>**RTS–Open-Drain** |
| GPIO2_CTS | 3 | 1 | 0x00<br>0x01<br>0x02<br>**0x03** | GPIO Input Pin<br>GPIO Output–Open Drain<br>GPIO Output–Push-Pull<br>**CTS–Open-Drain** |
| GPIO3_RS485 | 4 | 1 | 0x00<br>0x01<br>0x02<br>**0x03** | GPIO Input Pin<br>GPIO Output–Open Drain<br>GPIO Output–Push-Pull<br>**RS-485 Transceiver Control** |
| GPIO4_TXT | 5 | 1 | 0x00<br>0x01<br>0x02<br>**0x03** | GPIO Input Pin<br>GPIO Output–Open Drain<br>GPIO Output–Push-Pull<br>**TX LED Toggle–Push-Pull** |

| Name | Offset | Size | Value | Description |
|---|---|---|---|---|
| GPIO5_RXT | 6 | 1 | 0x00<br>0x01<br>0x02<br>**0x03** | GPIO Input Pin<br>GPIO Output–Open Drain<br>GPIO Output–Push-Pull<br>**RX LED Toggle–Push-Pull** |
| GPIO6 | 7 | 1 | **0x00**<br>0x01<br>0x02 | **GPIO Input Pin**<br>GPIO Output–Open Drain<br>GPIO Output–Push-Pull |
| GPIO7 | 8 | 1 | **0x00**<br>0x01<br>0x02 | **GPIO Input Pin**<br>GPIO Output–Open Drain<br>GPIO Output–Push-Pull |
| GPIO8 | 9 | 1 | 0x00<br>0x01<br>**0x02** | GPIO Input Pin<br>GPIO Output–Open Drain<br>**GPIO Output–Push-Pull** |
| GPIO9 | 10 | 1 | 0x00<br>0x01<br>**0x02** | GPIO Input Pin<br>GPIO Output–Open Drain<br>**GPIO Output–Push-Pull** |
| TX | 11 | 1 | 0x01<br>**0x02** | TX–Open-Drain<br>**TX–Push-Pull** |
| Suspend | 12 | 1 | 0x01<br>**0x02** | Suspend–Open-Drain<br>**Suspend–Push-Pull** |
| $\overline{\text{Suspend}}$ | 13 | 1 | 0x01<br>**0x02** | $\overline{\text{Suspend}}$–Open-Drain<br>**$\overline{\text{Suspend}}$–Push-Pull** |
| Suspend Pin Latch | 14 | 2 | 0x0000 | Latch values in suspend state |
| Suspend Pin Mode | 16 | 2 | 0x0000 | Push-pull or open-drain |
| RS485 Level | 18 | 1 | 0x00<br>**0x01** | Active Low<br>**Active High** |
| Clock Out Divider | 19 | 1 | 0x00–0xFF | Divider applied to GPIO0_CLK |

The *Set Pin Configuration* Report should only be called once. Any further calls to this Report are ignored by the device. If any parameters are outside of their valid range, the report is ignored and no parameters are programmed. In this instance, the report can be called again with the correct values.

*GPIO0_CLK, GPIO1_RTS, GPIO2_CTS, GPIO3_RS485, GPIO4_TXT, GPIO5_RXT, GPIO6, GPIO7, GPIO8, GPIO9, TX, Suspend*, and */Suspend* are used to configure the pins to various modes. See "Appendix B—CP2110 Pin Variable Definition" on page 30 for more information about each configuration option for each pin.

*Suspend Latch_Value* is the value that will be driven on the pins when the device is in a Suspend state. *Suspend Pin Mode* is the mode (open-drain or push-pull) the pins will be in when the device is in a Suspend state. See "Appendix A—Pin Configuration Options" on page 29 for details on interpreting the 2-byte values returned here.

*RS485 Level* configures the active logic level if GPIO2 is used as the RS485 transceiver control pin.

*Clock Out Divider* determines the divider for the clock output when GPIO0_CLK is configured for clock output function. When the divider is set to 0x00, the output frequency is 24 MHz. When the divider is set to any value between 0x01 and 0xFF, the output frequency is determined by the following formula:

Output Frequency = 24 MHz / (2 x *Clock Out Divider*)

### 7.7.2. CP2114 Get/Set Pin Configuration

Report ID: 0x66

Direction: Control In/Out

The values in **bold** are the default values.

**Table 8. CP2114 Get/Set Pin Configuration**

| Name | Offset | Size | Value | Description |
|---|---|---|---|---|
| GPIO.0_RMUTE | 1 | 1 | 0x00<br>0x01<br>0x02<br>**0x03** | GPIO Input Pin<br>GPIO Output–Open Drain<br>GPIO Output–Push-Pull<br>**Record Mute Input** |
| GPIO.1_PMUTE | 2 | 1 | 0x00<br>0x01<br>0x02<br>**0x03** | GPIO Input Pin<br>GPIO Output–Open Drain<br>GPIO Output–Push-Pull<br>**Playback Mute Input** |
| GPIO.2_VOL– | 3 | 1 | 0x00<br>0x01<br>0x02<br>**0x03** | GPIO Input Pin<br>GPIO Output–Open Drain<br>GPIO Output–Push-Pull<br>**Volume Decrease Input** |
| GPIO.3_VOL+ | 4 | 1 | 0x00<br>0x01<br>0x02<br>**0x03** | GPIO Input Pin<br>GPIO Output–Open Drain<br>GPIO Output–Push-Pull<br>**Volume Increase Input** |
| GPIO.4_RMUTELED | 5 | 1 | 0x00<br>0x01<br>0x02<br>**0x03** | GPIO Input Pin<br>GPIO Output–Open Drain<br>GPIO Output–Push-Pull<br>**Record Mute Output** |
| GPIO.5_TXT_DACSEL0 | 6 | 1 | 0x00<br>0x01<br>0x02<br>0x03<br>**0x04** | GPIO Input Pin<br>GPIO Output–Open Drain<br>GPIO Output–Push-Pull<br>TX Toggle Output<br>**DAC Select Input** |
| GPIO.6_RXT_DACSEL1 | 7 | 1 | 0x00<br>0x01<br>0x02<br>0x03<br>**0x04** | GPIO Input Pin<br>GPIO Output–Open Drain<br>GPIO Output–Push-Pull<br>RX Toggle Output<br>**DAC Select Input** |
| GPIO.7_RTS_DACSEL2 | 8 | 1 | 0x00<br>0x01<br>0x02<br>0x03<br>**0x04** | GPIO Input Pin<br>GPIO Output–Open Drain<br>GPIO Output–Push-Pull<br>Record Mute control<br>**DAC Select Input** |

**Table 8. CP2114 Get/Set Pin Configuration (Continued)**

| | | | | |
|---|---|---|---|---|
| GPIO.8_CTS_DACSEL3 | 9 | 1 | 0x00<br>0x01<br>0x02<br>0x03<br>**0x04** | GPIO Input Pin<br>GPIO Output–Open Drain<br>GPIO Output–Push-Pull<br>Record Mute control<br>**DAC Select Input** |
| GPIO.9_CLKOUT | 10 | 1 | 0x00<br>0x01<br>0x02<br>**0x03** | GPIO Input Pin<br>GPIO Output–Open Drain<br>GPIO Output–Push-Pull<br>**Clock Output – Push-Pull** |
| GPIO.10_TX | 11 | 1 | 0x00<br>0x01<br>0x02<br>0x03<br>**0x04** | GPIO Input Pin<br>GPIO Output–Open Drain<br>GPIO Output–Push-Pull<br>TX Output – Open Drain<br>**TX Output – Push-Pull** |
| GPIO.11_RX | 12 | 1 | 0x00<br>0x01<br>0x02<br>**0x03** | GPIO Input Pin<br>GPIO Output–Open Drain<br>GPIO Output–Push-Pull<br>**RX Input** |
| SUSPEND | 13 | 1 | 0x01<br>**0x02** | Suspend Output – Open-Drain<br>**Suspend Output– Push-Pull** |
| /SUSPEND | 14 | 1 | 0x01<br>**0x02** | /Suspend Output – Open-Drain<br>**/Suspend Output – Push-Pull** |
| SUSPEND Pin Latch | 15 | 2 | 0x0000 | Latch values in suspend state |
| SUSPEND Pin Mode | 17 | 2 | 0x0000 | Push-pull or open-drain |
| Clock Output Divider | 19 | 1 | **0x00**-<br>0xFF | Divider applied to GPIO.9_CLKOUT. |

The Set Pin Configuration Report should only be called once. Any further calls to this Report are ignored by the device. If any parameters are outside of their valid range, the report is ignored and no parameters are programmed. In this instance, the report can be called again with the correct values.

GPIO.0_RMUTE, GPIO.1_PMUTE, GPIO.2_VOL–, GPIO.3_VOL+, GPIO.4_RMUTELED, GPIO.5_TXT_DACSEL0, GPIO.6_RXT_DACSEL1, GPIO.7_RTS_DACSEL2, GPIO.8_CTS_DACSEL3, GPIO.9_CLKOUT, GPIO.10_TX, GPIO.11_RX, SUSPEND, and /SUSPEND are used to configure the pins to various modes. See "Appendix A—Pin Configuration Options" on page 29 for more information about each configuration option for each pin. Suspend Latch_Value is the value that will be driven on the pins when the device is in a Suspend state. Suspend Pin Mode is the mode (open-drain or push-pull) the pins will be in when the device is in a Suspend state. See "Appendix C—CP2114 Pin Variable Definition" on page 31 for details on interpreting the 2-byte values returned here.

Clock Out Divider determines the divider for the clock output when GPIO.9_CLKOUT is configured for clock output function. When the divider is set to 0x00, the output frequency is SYSCLK (either 48 MHz or 48.152 MHz). When the divider is set to any value between 0x01 and 0xFF, the output frequency is determined by the following formula:

Output Frequency = SYSCLK / (2 x Clock Out Divider)

# 8. CP2114 Reports

Report IDs 0x70–0x7C are used for CP2114-specific reports, which are described in the following sections.

## 8.1. Get Device Status

Report ID: 0x70

Direction: Control In

| Name | Offset | Size | Value | Description |
|---|---|---|---|---|
| Status | 1 | 1 | Varies | See below |

The possible status values returned by the CP2114 are:

| Status | Description |
|---|---|
| 0x00 | Last command produced no error. |
| 0x20 | Requested configuration number is too large. |
| 0x21 | All Device Boot Indexes have been used. |
| 0x22 | Pointer to requested Device Configuration is 0xFFFF. |
| 0x23 | Configuration invalid or not supported. |
| 0x24 | All Configuration Pointer slots have been used. |
| 0x25 | Insufficient OTP space to store new configuration. |
| 0x26 | The user-specified boot index is already the current boot index. |
| 0x27 | The current configuration is already as requested. |
| 0x40 | The specified number of cached parameters is too large. |
| 0x41 | Invalid cached parameter value(s). |

The CP2114 clears the status upon read.

## 8.2. Get Device Capabilities

Report ID: 0x71

Direction: Control In

The CP2114 returns the following information:

| Name | Offset | Size | Value | Description |
|---|---|---|---|---|
| Available Boot Indices | 1 | 1 | Varies | The number of unprogrammed Boot Indices. |
| Available Configurations | 2 | 1 | Varies | The number of unprogrammed Configuration Indices. |
| Current Boot Configuration | 3 | 1 | Varies | The current Boot Configuration index. |
| Available OTP Configuration Space | 4 | 2 | Varies | The number of unprogrammed Configuration bytes. |

## 8.3. Get RAM Configuration

Report ID: 0x72

Direction: Control In

The CP2114 returns this information:

| Name | Offset | Size | Value | Description |
|---|---|---|---|---|
| Current Audio Configuration String in RAM | 1 | 30 | Varies | See text. |

See the CP2114 data sheet for information on the audio configuration string format.

## 8.4. Set RAM Configuration

Report ID: 0x73

Direction: Control Out

| Name | Offset | Size | Value | Description |
|---|---|---|---|---|
| Configuration to be loaded into RAM | 1 | 30 | Varies | See text. |

See the CP2114 data sheet for information on the audio configuration string format.

## 8.5. Set DAC Registers

Report ID: 0x74

Direction: Control Out

| Name | Offset | Size | Value | Description |
|---|---|---|---|---|
| Number of registers to write | 1 | 1 | Varies | Number of register writes to perform. |
| See text. | 2 | Varies | Varies | See text. |

The following types of data comprise the payload:

- DAC configuration string (address/value pairs that are to be written to the DAC)
- DAC configuration In-Band commands and their corresponding parameters

See the CP2114 data sheet for information on the audio configuration string and in-band commands.

## 8.6. Get DAC Registers

Report ID: 0x75

Direction: Control In

**Note:** Immediately preceding one or more “Get DAC Registers” reports, the host must issue the “Set Parameters For Next Get” report with the following information:

- Report ID: 0x75 (the Get DAC Registers report ID)
- Number of parameters: 2
- Parameter[0]: Starting DAC address
- Parameter[1]: Number of DAC registers to read

For each “Get DAC Registers” report, the CP2114 returns the following information:

| Name | Offset | Size | Value | Description |
|---|---|---|---|---|
| Packet Size | 1 | 1 | 1–62 | Number of bytes in this packet |
| Register value(s) | 2 | Varies | Varies | DAC register values. |

The maximum amount of data that can be returned is 62 bytes. The host should issue “Get DAC Registers” reports until the returned packet size is less than 62.

## 8.7. Get OTP Configuration

Report ID: 0x76

Direction: Control In

**Note:** Immediately preceding the "Get OTP Configuration" reports, the host must issue the "Set Parameters For Next Get" report with the following information:

- Report ID: 0x76 (the Get OTP Configuration report ID)
- Number of parameters: 1
- Parameter[0]: Index of the configuration to be read

For the "Get OTP Configuration" report, the CP2114 returns the following information:

| Name | Offset | Size | Value | Description |
|---|---|---|---|---|
| Packet Size | 1 | 1 | 1–62 | Number of bytes in this packet |
| Data | 2 | Varies | Varies | OTP configuration data |

The maximum amount of data that can be returned in one packet is 62 bytes. The host should issue "Get OTP Configuration" reports until the returned packet size is less than 62.

## 8.8. Get Device Version

Report ID: 0x77

Direction: Control In

The CP2114 returns the following information:

| Name | Offset | Size | Value | Description |
|---|---|---|---|---|
| Interface version | 1 | 1 | 0x05 | Version of the CP2114 interface |
| Firmware version | 2 | 1 | 0x07 | Version of the CP2114 firmware |

These numbers comprise the Version (5.7) for the CP2114. These version numbers are read-only values and cannot be changed by the customer. (The customer-configurable version numbers are accessed via the Get/Set USB Configuration reports.)

## 8.9. Create OTP Configuration

Report ID: 0x78

Direction: Control Out

If the OTP configuration to be programmed is larger than 62 bytes, the host must send multiple “Create OTP Configuration” reports. The first report should contain the following data:

| Name | Offset | Size | Value | Description |
|---|---|---|---|---|
| Packet length | 1 | 1 | Varies | Length of the current packet |
| Configuration size (LSB) | 2 | 1 | Varies | |
| Configuration size (MSB) | 3 | 1 | Varies | |
| Configuration data | 4 | Varies | Varies | Configuration data |

Subsequent reports (if necessary) should contain the following data:

| Name | Offset | Size | Value | Description |
|---|---|---|---|---|
| Packet length | 1 | 1 | Varies | Length of the current packet |
| Configuration data | 2 | Varies | Varies | Configuration data |

## 8.10. Set Boot Configuration

Report ID: 0x79

Direction: Control Out

The report information is:

| Name | Offset | Size | Value | Description |
|---|---|---|---|---|
| Configuration index | 1 | 1 | Varies | Index of the configuration to be assigned as the boot configuration. |

## 8.11. Set Parameters For Next Get

Report ID: 0x7A

Direction: Control Out

This report specifies parameters that are necessary for a subsequent Get report, and must be issued immediately prior to the following Get reports:

- Get DAC Registers
- Get OTP Configuration
- Get OTP All Configuration

The number of parameters depends on the Get report to follow. Refer to the appropriate Get report for the specific parameter format.

| Name | Offset | Size | Value | Description |
|---|---|---|---|---|
| Get Report ID | 1 | 1 | Varies | Report ID of the Get report to follow. |
| Number of parameters | 2 | 1 | Varies | The number of parameters in this report. |
| Parameter(s) | 3 | Varies | Varies | The parameter(s). |

## 8.12. Get OTP All Configurations

Report ID: 0x7B

Direction: Control In

**Note:** Immediately preceding the first “Get OTP All Configuration” report, the host must issue the “Set Parameters For Next Get” report with the following information:

- Report ID: 0x7B (the Get OTP All Configuration report ID)
- Number of parameters: 4
- Parameter[0]: Length (MSB)
- Parameter[1]: Length (LSB)
- Parameter[2]: Start address (MSB)
- Parameter[3]: Start address (LSB)

For the “Get OTP All Configuration” report, the CP2114 returns the following information:

| Name | Offset | Size | Value | Description |
|---|---|---|---|---|
| Packet Size | 1 | 1 | Varies | Number of bytes in this packet |
| Data | 2 | Varies | Varies | OTP configuration data |

The size of the entire CP2114 OTP is 6 KB (0x1800, 6144 bytes); therefore the host must send a total of 100 “Set OTP All Configuration” reports. The CP2114 will return 62 bytes in each of the first 99 reports; the last report will contain 6 bytes:

(99 x 62) + 6 = 6144

## 8.13. Set OTP All Configurations

Report ID: 0x7C

Direction: Control Out

The size of the entire CP2114 OTP is 6 KB (0x1800, 6144 bytes); therefore the host must send 100 “Set OTP All Configuration” reports.

60 + (98 x 62) + 8 = 6144

The reports contain the following data:

Report 1:

| Name | Offset | Size | Value | Description |
|---|---|---|---|---|
| Packet length | 1 | 1 | 62 (0x3E) | Length of the current packet |
| Configuration size (LSB) | 2 | 1 | 0x00 | Total size of OTP block (LSB) |
| Configuration size (MSB) | 3 | 1 | 0x18 | Total size of OTP block (MSB) |
| Configuration data | 4 | 60 | Varies | Configuration data |

Reports 2–99 (98 total):

| Name | Offset | Size | Value | Description |
|---|---|---|---|---|
| Packet length | 1 | 1 | 62 (0x3E) | Length of the current packet |
| Configuration data | 2 | 62 | Varies | Configuration data |

Report 100:

| Name | Offset | Size | Value | Description |
|---|---|---|---|---|
| Packet length | 1 | 1 | 8 | Length of the current packet |
| Configuration data | 2 | 8 | Varies | Configuration data |

# APPENDIX A—PIN CONFIGURATION OPTIONS

## Introduction

Some of the pins of the CP2110 are configurable as inputs, open-drain outputs, or push-pull outputs. These options are configured when the device has enumerated and is operating in a normal mode. When the CP2110 is in USB suspend, all of the configurable pins are limited to be open-drain or push-pull outputs. The following describes the differences between open-drain and push-pull, and the difference in behavior in Suspend mode. See the CP2110 data sheet for the electrical specifications of the GPIO pins.

## GPIO Input

When a pin is configured as a GPIO input, the pin can read a logic high or logic low value. Internally, the GPIO pin is connected to the VIO pin through a resistor. If the pin is not connected externally, it will return a logic high or '1'. Any voltages connected to the pin should conform to data sheet specifications.

## Open-Drain Output

When a pin is configured as a GPIO open-drain output, the pin can output a logic high or logic low value. The default value is logic high and a logic high value is created by internally connecting the GPIO pin to the VIO pin through a resistor. In this mode, the pin is unable to source much current when driving a logic high. If the Set GPIO Values Report is used to change the output to a logic low, the pin is internally connected to GND.

## Push-pull Output

When a pin is configured as a GPIO push-pull output, the pin can output a logic high or logic low value. When driving a logic high value, the pin is directly connected to the VIO pin internally and can source current for devices such as LEDs. When driving a logic low value, the pin is internally connected to GND.

## Suspend Mode

When the device is in Suspend mode, all of the GPIO pins are forced to be open-drain or push-pull outputs. The mode of each GPIO pin (open-drain or push-pull) and output value (logic-high or logic-low) is a PROM configurable value which is set using the Set Pin Configuration Report. The modes and values of the pins during Suspend can be the same or different as when the device is in Normal mode. To maintain the same electrical characteristics of a GPIO Input Pin during Suspend, configure the pin for open-drain mode with the output latch value set to logic-high or 1.

# APPENDIX B—CP2110 PIN VARIABLE DEFINITION

The CP2110 has 14 pins that have configurable behavior. In some of the reports, the CP2110 returns the configuration of these pins in a two-byte value, or the report requires the pins to be configured using a two-byte value.

These tables show which bit of the two-byte value corresponds to which pin.

| **Bit** | **15** | **14** | **13** | **12** | **11** | **10** | **9** | **8** | **7** | **6** | **5** | **4** | **3** | **2** | **1** | **0** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **GPIO** | Use | SUS | 9 | 8 | 7 | 6 | X | $\overline{\text{SUS}}$ | 5 | 4 | RX | TX | 3 | 2 | 1 | 0 |

| Bit Position in 2-byte Word | Pin Name | CP2110 Pin Number |
|---|---|---|
| 0 | GPIO.0_CLK | 1 |
| 1 | GPIO.1_RTS | 24 |
| 2 | GPIO.2_CTS | 23 |
| 3 | GPIO.3_RS485 | 22 |
| 6 | GPIO.4_TXT | 19 |
| 7 | GPIO.5_RXT | 18 |
| 10 | GPIO.6 | 15 |
| 11 | GPIO.7 | 14 |
| 12 | GPIO.8 | 13 |
| 13 | GPIO.9 | 12 |
| 4 | TX | 21 |
| 5 | RX | 20 |
| 14 | Suspend | 11 |
| 8 | $\overline{\text{Suspend}}$ | 17 |
| 9 | Not Used | Not Used |
| 15 | Use_Suspend* | Not Used |

***Note:** Use_Suspend, Bit 15 of the Suspend_Pin_Mode, is configured using the Get/Set Pin Configuration Report and does not correspond to a CP2110 pin. When this bit is cleared to 0, the GPIO pins remain in their current state in Suspend and the values for Suspend_Pin_Mode and Suspend_Pin_Latch are unused. When Use_Suspend is set to 1, the values for Suspend_Pin_Mode and Suspend_Pin_Latch are used in Suspend Mode. The exceptions are GPIO.0_CLK and GPIO.3_RS485. If these pins are configured for their special functionality, the Clock Output is always disabled and the RS485 pin is set to the inactive level in suspend mode.
Bit 15 is unused in the two-byte fields other than Suspend_Pin_Mode and can be set to 1 or 0.

See the individual report definitions in the UART Reports section for the meaning of a bit being set to 1 or 0.

Not all configuration data applies to every pin. See the individual report definitions in the UART Reports section to determine if a certain configuration is applicable to a pin.

# APPENDIX C—CP2114 PIN VARIABLE DEFINITION

The CP2114 has 14 pins that have configurable behavior. In some of the reports, the CP2114 returns the configuration of these pins in a two-byte value, or the report requires the pins to be configured using a two-byte value.

These tables show which bit of the two-byte value corresponds to which pin.

| Bit | CP2114 Pin Name | CP2114 Pin Number |
|---|---|---|
| 0 | GPIO.0_RMUTE | 30 |
| 1 | GPIO.1_PMUTE | 29 |
| 2 | GPIO.2_VOL– | 14 |
| 3 | GPIO.3_VOL+ | 13 |
| 4 | GPIO.4_RMUTELED | 12 |
| 5 | GPIO.5_TXT_DACSEL0 | 28 |
| 6 | GPIO.6_RXT_DACSEL1 | 11 |
| 7 | GPIO.7_RTS_DACSEL2 | 19 |
| 8 | GPIO.8_CTS_DACSEL3 | 20 |
| 9 | GPIO.9_CLKOUT | 22 |
| 10 | GPIO.10_TX | 16 |
| 11 | GPIO.11_RX | 15 |
| 12 | SUSPEND | 18 |
| 13 | /SUSPEND | 17 |
| 14 | Not Used | Not Used |
| 15 | Use_Suspend* | Not Used |

***Note:** Use_Suspend, Bit 15 of the Suspend_Pin_Mode, is configured using the Get/Set Pin Configuration Report and does not correspond to a CP2114 pin. When this bit is cleared to 0, the GPIO pins remain in their current state in Suspend and the values for Suspend_Pin_Mode and Suspend_Pin_Latch are unused. When Use_Suspend is set to 1, the values for Suspend_Pin_Mode and Suspend_Pin_Latch are used in Suspend Mode. The exception is GPIO.0_CLK. If this pin is configured for as a Clock Output, the Clock Output is always disabled in suspend mode. Bit 15 is unused in the two-byte fields other than Suspend_Pin_Mode and can be set to 1 or 0.

See the individual report definitions in the UART Reports section for the meaning of a bit being set to 1 or 0.

Not all configuration data applies to every pin. See the individual report definitions to determine if a certain configuration is applicable to a pin.

# DOCUMENT CHANGE LIST

## Revision 0.3 to Revision 0.4

- Added support for CP2114.

## NOTES:

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