SPB80P R1A to R2A Migration Application Note

1 Preface

This document provides design guidelines on how to migrate from SPB80P R1A to SPB80P R2A.

2 Overview

SPB820P integrates RF, baseband/MAC, Flash, RF filters and oscillator and IP stack into a highly integrated and optimized solution with high quality and reliability, specifically designed to address host processors with limited memory.

SPB20P enables a cost efficient ultra-low power, high performance and feature rich client solution with an easy to use API. HDG820P offloads the IP-stack and much of the WiFi-handling code from the host to drastically reduce memory footprint and MCU requirements for adding WiFi to a host system.

The oWL-Pico API is simple and easy to use but still gives full detailed controlled of the WLAN.

The R1A revision of SPB80P did only support UART as host interface. The R2A support both UART and SPI as host interfaces.

3 Pinout comparison

Table 1, list the pin function for the R1A and R2A revision of SPB80P. It also tells how to handle each pin when upgrading a PCB made for R1A to R2A. Note that since R1A only supports UART this is kept as the host interface in Table 1 to keep the same functionality.

Table 1: SPB80P R1A and R2A pin comparison

Pin	Function R1A	Function R2A	Action
1	VDD	VDD	None
2	JTAG_RST	JTAG_TMS	None
3	NC	JTAG_TCK	None
4	NC	SPI_MOSI	None
5	JTAG_TDO	SPI_CLK	None
6	NC	UARTb_SPI WAKE_UP	See 3.1.1

7	NC	JTAG_TDI	None
8	NC	JTAG_TDO	None
9	UART_RX	UART_RX/SPI_MISO	None
10	UART_TX	UART_TX/SPI_CS	None
11	UART_CTS	UART_CTS/SPI_INT	None
12	UART_RTS	UART_RTS	None
13	GND	GND	Ground
14	RF_PAD	RF_PAD	RF Signal (on –R version only)
15	GND	GND	Ground
16	LED1	LED1	None
17	LED2	GPIO2	None. Note: the R2A revision FW does not support LED2.
18	HOST_ATT	HOST_ATT	None
19	NC	GPIO3	None
20	DEBUG_UART_RX	GPIO4	None
21	DEBUG_UART_TX	GPIO1	None
22	RESETb	SHUTDOWN	None
23	WAKE_UP	GPIO6	See 3.1.1
24	NC	PWR_OFF	None

3.1.1 SPB80P WAKE_UP

If the design for SPB80P R1A has utilized the WAKE_UP signal the WAKE_UP signal from the host has to be re-routed to pin 6 of the SPB80P. The WAKE_UP signal has to be kept low at power on of the SPB80P to select UART and kept low during the start-up time t_{ready}.

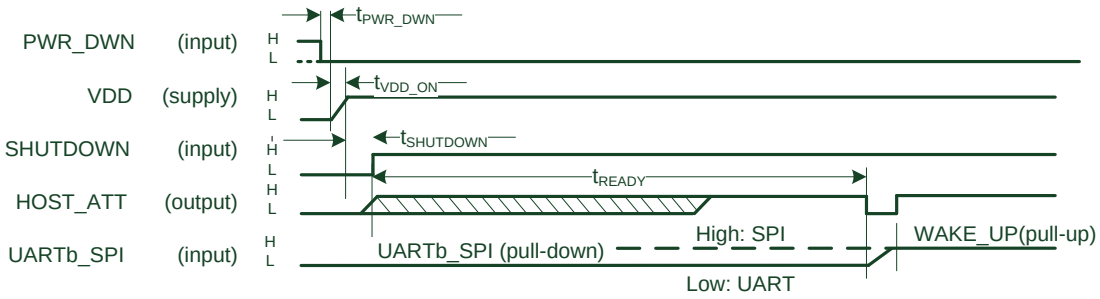

Figure 1; Initialization timing

Parameter	Symbol	Min	Typ	Max	Unit	Comment

VDD rise time	t_{VDD_ON}	2			µs	
PWR_DWN release to VDD high	t_{PWR_DWN}		150		µs	
SHUTDOWN release delay	$t_{SHUTDOWN}$	1	100*		ms	Internal RC link delay
IO supply ramp time	$t_{VDD\_LDO\_IO}$		360		µs	
Digital 1.5V supply ramp time	t_{VDD_DCDC}		150		µs	
SHUTDOWN release to host alert	t_{READY}		4		s	

Table 2: Initialization timing

If the WAKE_UP signal is not used pin 6 can be tied to GND.

4 Land pattern

The HDG820 R2A has been equipped with a more efficient antenna to provide better coverage and improved data rates. The antenna has also been moved to the lower left corner of the module, see Figure 2.

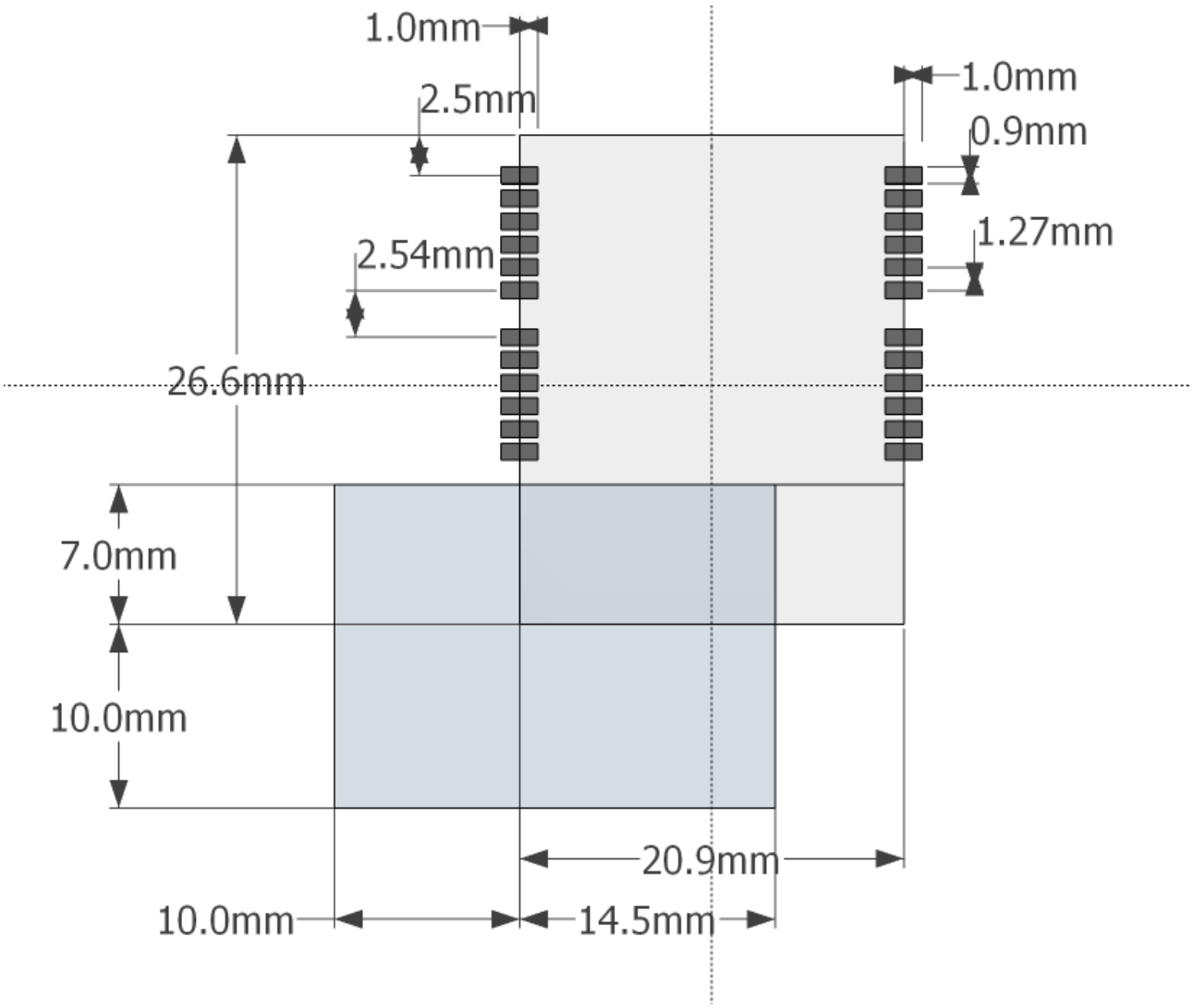

Figure 2: SPB80P-xxQ land pattern

The R2A module is also 0.6mm longer than the R1A revision. It will not affect the land pattern or placing of the SPB80P module if the reference point is in the upper left corner. If the center point of the module is used as reference the placement has to be updated!

Please note that the keep out area under the antenna now is top the left side of the SPB80P-B, see Figure 2. Check the layout for R1A for any metal traces within the new keep out area.

Place no via holes or exposed metal under the module.

5 oWL-pico Server and Client

The SPB80P module is programmed with the oWL-pico Server firmware. H&D Wireless may release new firmware for the SPB80P to add functionality and correct bugs. The firmware on the module can be updated by the customer, either via WiFi of the serial port. It is important to always upgrade the oWL-pico client software on the host to the corresponding release, to keep compatibility.

As the SPB80P R2A is programmed with oWL-pico Server release 2.1 or higher the client software on the host has to be updated when the transition to R2A is made. Please refer to http://pico.hd-wireless.se for the latest releases of oWL-pico Server and Client.

6 References

SPB820P R1A Data sheet: 1451-SPB820P_datasheet_rev_pa6.pdf
SPB820P R2A Data sheet: 1451-SPB820P_datasheet_rev_pb1.pdf or later.