



THIS SPEC IS OBSOLETE

Spec No: 002-14919

Spec Title: AN214919 - CYW43242 POWER SUPPLY
CONSIDERATIONS

Replaced by: NONE

CYW43242 Power Supply Considerations

Associated Part Family: CYW43242

This document provides CYW43242 power consumption information for Bluetooth and WLAN during transmission and calibration.

1 About This Document

1.1 Cypress Part Numbering Scheme

Cypress is converting the acquired IoT part numbers from Broadcom to the Cypress part numbering scheme. Due to this conversion, there is no change in form, fit, or function as a result of offering the device with Cypress part number marking. The table provides Cypress ordering part number that matches an existing IoT part number.

Table 1. Mapping Table for Part Number between Broadcom and Cypress

Broadcom Part Number	Cypress Part Number
BCM43242	CYW43242

1.2 Acronyms and Abbreviations

In most cases, acronyms and abbreviations are defined on first use. For a more complete list of acronyms and other terms used in Cypress documents, go to: <http://www.cypress.com/glossary>.

2 USB Power Specifications

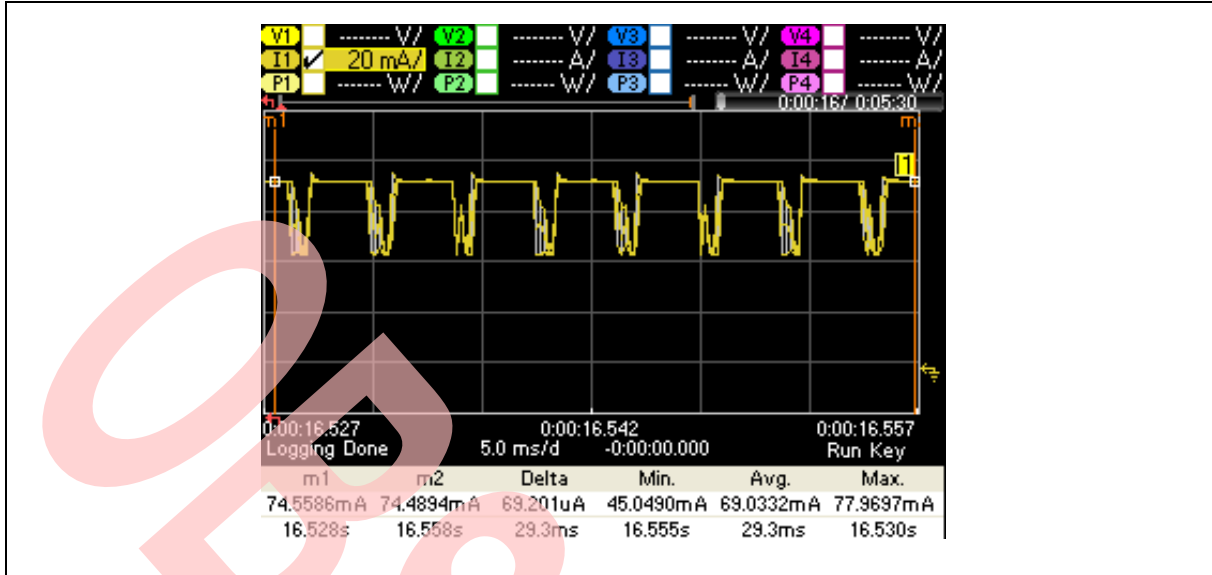
Parameter	Value	Comment
USB power specifications (typical)	500 mA at 5V	This translates to 720 – 760 mA at 3.3V, given 95 – 100% regulator efficiency.

3 Bluetooth Power Consumption Considerations

Parameter	Value	Comment
Bluetooth power consumption (maximum)		Bluetooth consumes the highest amount of current when continuously transmitting DH5 packets (see Figure 1).
Peak:	75 mA at 3.3V	
Average:	70 mA at 3.3V	

The plot shown in Figure 1 shows current consumption when DH5 packets are continuously transmitted.

Figure 1. Continuous DH5 TX



4 WLAN Power Consumption Considerations

4.1 Remaining Budget

Parameter	Value(s)
WLAN Remaining Budget:	645 – 685 mA at 3.3V

4.2 WLAN Maximum Current During Transmission

Table 2 lists WLAN maximum current during transmission.

Note: WLAN sinks the maximum current during transmission.

Table 2. WLAN Maximum Current During Transmission

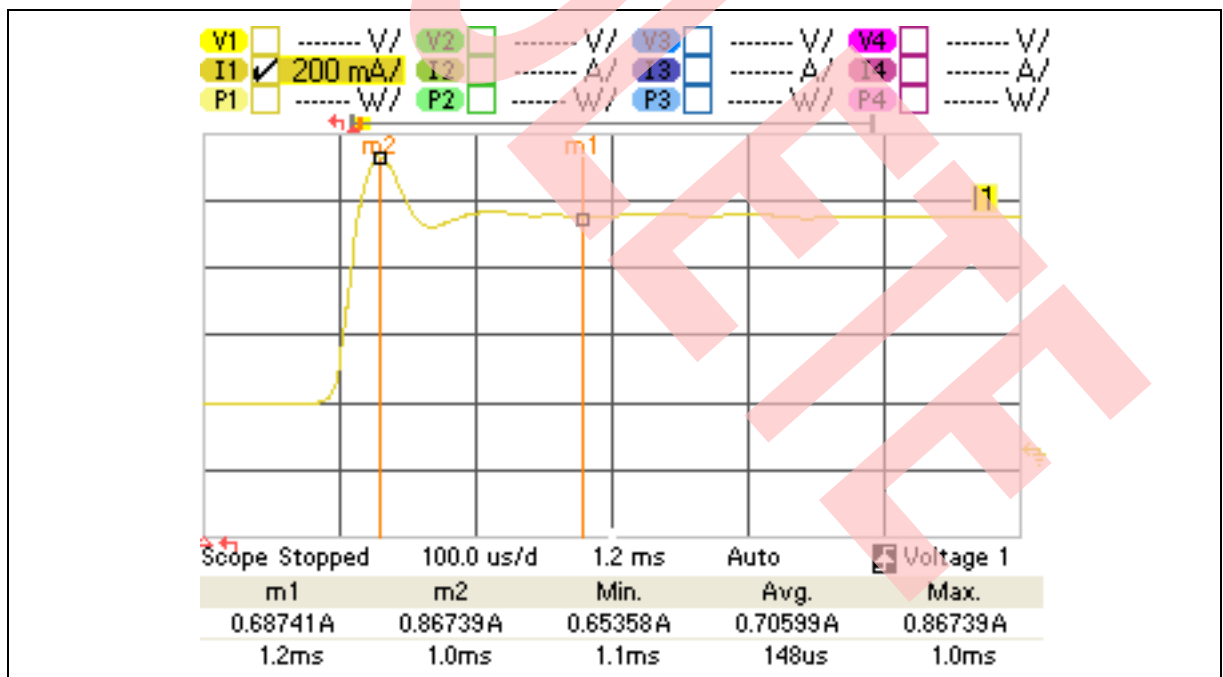
Parameter	Tx Power on A0 (dBm)	Ptotal (dBm)	Icc_max at Packet Start (mA)	Icc_steady (mA)
Channel 7 with 20 MHz Bandwidth				
	6.1	9.1	675	543
	7.6	10.6	680	547
	9.0	12.0	690	555
	10.2	13.2	700	560
	11.1	14.1	710	570
	11.7	14.7	720	585
	12.5	15.5	740	600
	13.3	16.3	760	610
	14.3	17.3	790	630
	15.4	18.4	850	680
	16.2	19.2	860	690
	17.6	20.6	910	730
Channel 7 with 40 MHz Bandwidth				
	7.6	10.6	730	600
	9.4	12.4	740	607

Table 2. WLAN Maximum Current During Transmission (Cont.)

Parameter	Tx Power on A0 (dBm)	Ptotal (dBm)	Icc_max at Packet Start (mA)	Icc_steady (mA)
	10.5	13.5	750	615
	11.6	14.6	760	625
	12.2	15.2	770	640
	13.2	16.2	790	655
	14.2	17.2	820	675
	15.3	18.3	850	700
	16.2	19.2	890	740
	17	20	915	760
Channel 100 with 20 MHz Bandwidth				
	7.3	10.3	710	580
	8.3	11.3	725	590
	9.3	12.3	740	600
	10.2	13.2	755	610
	11.2	14.2	770	620
	12.1	15.1	790	640
	13	16	840	660
	14	17	900	690

The plot shown in Figure 2 shows peak current at packet start. As the plot shows, the current settles within 100 μ s.

Figure 2. Peak Current at Packet Start



4.3 WLAN Maximum Current During Calibrations

Table 3 lists WLAN maximum current during calibration.

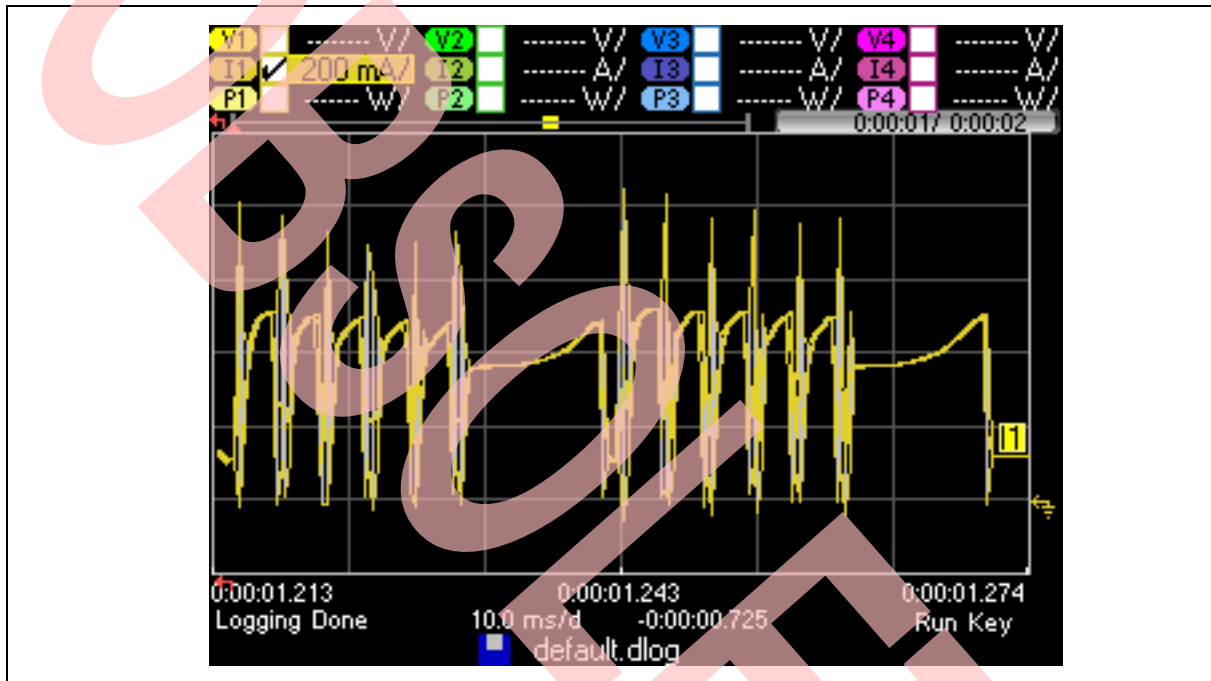
Note: WLAN sinks the maximum current during calibration.

Table 3. Maximum Current During Calibration

Channel	Operating Mode (bandwidth in MHz)	Icc_max (mA)	Icc_max duration (µs)	Icc_steady (at the end of calibration)
7	20	830 – 870	135	530
7	40	890	100	530
100	20	860	135	530

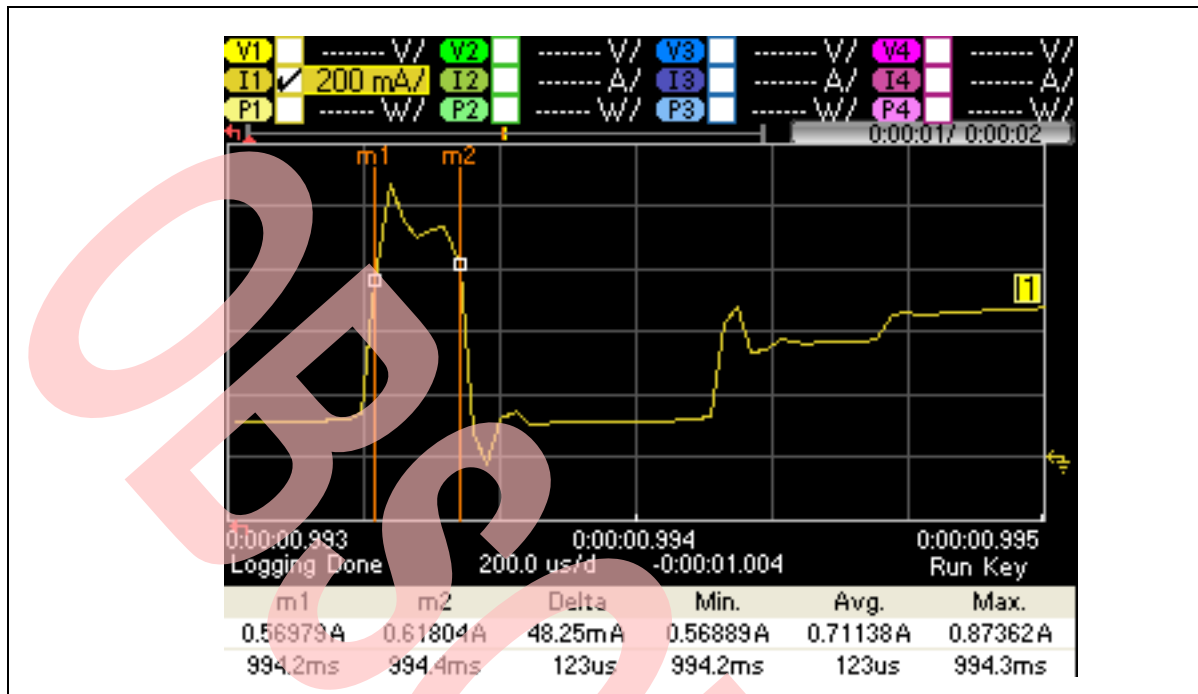
Figure 3 shows current consumption over time during power amplifier pre-distortion (PAPD) calibration.

Figure 3. Calibration Duration for Both Cores (2G BW20)



The plot shown in Figure 4 shows a magnified view of peak current and duration.

Figure 4. Peak Current Duration



5 Concerns

Consider the following regarding the budget current allowed by USB:

- At certain WLAN output power levels, I_{cc_max} and/or I_{cc_steady} will exceed the budget current allowed by USB.
- At the start of calibration, I_{cc_max} is over the current budget allowed by USB.

6 Considerations

Consider the following in regards to USB current specifications:

- Consider using a USB supply that can deliver up to 1000 mA
- If the peak value can be accepted (peak duration is less than 200 μ s), then the WLAN output power can be adjusted so that I_{cc_steady} can meet USB current specifications.

Document History Page

Document Title: AN214919 - CYW43242 Power Supply Considerations				
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Rev.	ECN No.	Orig. of Change	Submission Date	Description of Change
**	-	-	02/18/2013	43242-AN400-R Initial release.
*A	5473662	UTSV	10/13/2016	Updated to Cypress template.
*B	5881512	AESATMP9	09/12/2017	Updated logo and copyright.
*C	6439059	JPCH	01/11/2019	Obsolete document. Completing Sunset Review.

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