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# Reference Integration Note

# For

## *43241*

Broadcom Corporation
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Irvine, CA 92617

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**Abstract:** This document provides a conceptual description of the BCM43241 controller subsystem, and summarizes the integration requirements as a guide for others integrating this design.

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| Document Revision History | | |
|---|---|---|
| **Revision** | **Date** | **Description** |
| 1 | 07/20/2012 | Original version of document |
| | | |

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# 1 PREFACE

This document forms the Reference Integration Note for the BCM43241 Subsystem.

| **Design RIN Information** | |
|---|---|
| **Product Name:** | **BCM43241** |
| **Bluetooth Qualified Design ID (QD ID):** | |
| **Bluetooth Product Type:** | **Controller Subsystem** |
| **Product Name:** | **BCM43241** |
| **Hardware Version:** | **B0** |
| **Software Version:** | **002.001.013.8044.0000** |

# 2 PRODUCT OVERVIEW

The Broadcom BCM43241 is a single chip device provides the highest level of integration for a mobile or handheld wireless system, with integrated IEEE 802.11 a/b/g/n (MAC/baseband/radio), Bluetooth 4.0 + EDR (enhanced data rate), and FM receiver.

## 2.1 FEATURES

- Bluetooth 4.0 + EDR compliant
- Class 1 capable with built-in PA
- Programmable output power control meets Class 1, Class 2, or Class 3 requirements.
- Use supply voltages up to 4.8V
- Supports Broadcom SmartAudio™, wide-band speech, SBC codec, and packet loss concealment.
- Fractional-N synthesizer supports frequency references from 12 MHz to 52 MHz
- Automatic frequency detection for standard crystal and TCXO values when an external 32.768 kHz reference clock is provided.
- Ultra-low power consumption
- Available in a 293-bump WLCSP package
- ARM® Cortex-M3™ processor with integrated ROM and RAM
- Supports mobile applications without external memory

### 2.1.1 Product Type Declaration

This design is listed as a *Bluetooth* **Controller Subsystem** on the Bluetooth SIG Qualified Design List (QDL) -QDID**XXXXX.** Further use of this design to create subsequent Bluetooth implementations can be achieved without further qualification provided that the resulting implementation has no negative material impact on the Bluetooth performance or functionality of the design, and the subsequent implementation is listed on the Bluetooth End Product List (EPL) by the integrator of this design. There is no charge for listing your product on the EPL and if you do not desire to have this listing publicly displayed, you can choose to not have it listed on the public database while filling out the EPL form. You can find the EPL at https://bluetooth.org/EPL. Please note that if the design has been changed, the design is required to be re-assessed by the Member integrating the design to assert that the change does not result in a different Bluetooth design and that there has been no changes within the PICS selections from the this design (as listed on the Bluetooth QDL). If you have changed or modified this product such that the Bluetooth functionality or performance is affected, further qualification and listing may be required in accordance with the Bluetooth Qualification Process (ref. PRD 2.0). To start the process for a new qualification, please visit https://bluetooth.org/TPG.

### 2.1.2 Hardware Overview

The Broadcom® BCM43241 compiler with Bluetooth® Core Specification, version 4.0 and is designed for use in standard Host Controller Interface (HCI) UART and HCI USB applications. The combination of the Bluetooth Baseband Core (BBC), a Peripheral Transport Unit (PTU), and an ARM®-based microprocessor with on-chip ROM provides a complete lower layer Bluetooth protocol stack, including the Link Controller (LC), Link Manager (LM), and HCI.

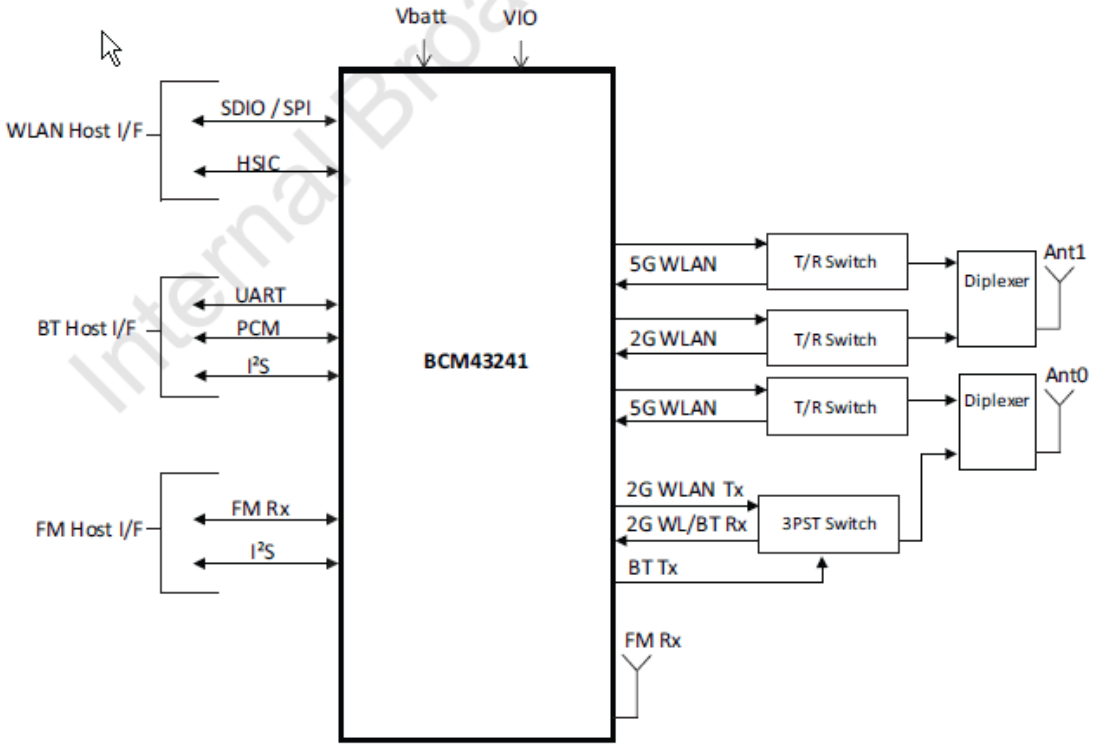
### 2.1.3 Standard Operating Conditions

| ***Parameter*** | ***Conditions*** | ***Minimum*** | ***Typical*** | ***Maximum*** | ***Unit*** |
|---|---|---|---|---|---|
| **Temperature** | Commercial | -30.0 | - | 85 | °C |
| **CBUCK** | Core switcher | 3.0 | 3.6 | 4.8 | V |
| **LDO2.5V (BT PA supply)** | BT PA | 2.3 | 2.5 | 2.8 | V |

### 2.1.4 Application

- Mobile or hand held wireless system
- Tablets

### 2.1.5 Block Diagram




### 2.1.6 Radio Modules

The BCM43241 has an integrated radio transceiver that has been optimized for use in 2.4 GHz Bluetooth wireless systems. It has been designed to provide low-power, low-cost, robust communications for applications operating in the globally available 2.4 GHz unlicensed ISM band. The BCM43241 is fully compliant with the Bluetooth Radio Specification and enhanced data rate specification and meets or exceeds the requirements to provide the highest communication link quality of service.

### 2.1.7 Interfaces

The BCM43241 supports PCM, UART, SPI, SDIO, HSIC and I2S peripheral interfaces.

### 2.1.8 Application Requirements

Contact your Broadcom representative if customization of this Application is needed for design.

### 2.1.9 PIN Description

See the Broadcom datasheet for a complete pin description.

### 2.1.10 Bill of Material

See Broadcom's schematic and layout guidelines for the bill of material describing the components supporting the device.

## 2.2 SOFTWARE FEATURES

- Bluetooth 4.0 + EDR specification compliant

### 2.2.1 Product Type Declaration

For further information regarding subsystem combination and End Product approach see 2.1.1 or PRD v2.1.

### 2.2.2 Software Overview

The BCM43241 Bluetooth component is designed to work in conjunction with the Broadcom Bluetooth stack.

### 2.2.3 Application

See the hardware application section.

### 2.2.4 Interfaces

The API between the Broadcom Bluetooth stack and the host software is contained in Broadcom's stack documentation, and example files. Please Contact Broadcom sales for the documentation and engineering support.

### 2.2.5 Application Requirements

The Broadcom Bluetooth stack has been ported to a wide variety of different operating systems. This stack operating on a host processor is the primary requirement for the system.

### 2.2.6 Sample Porting

For a detailed porting guide please contact Broadcom Sales.

### 2.2.7 Hardware / Software Reference Platforms

# 3 Contact Information

**Broadcom Corporation**

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