

Talaria™ ONE

Ultra-Low Power (ULP) WiFi Radio

PRODUCT BRIEF



The Talaria ONE ULP WiFi Radio is the industry's lowest power 802.11 implementation.

The solution is an advanced, ultra-low power, WLAN 802.11b semiconductor radio processor. It features an on-chip RF front-end circuit, baseband, MAC, clock management, and power management. The internal amplifier can be used for near-range and enables a direct cloud connection at Bluetooth Classic power consumption levels, while an optional external PA can be used for long-range.

The Talaria ONE ULP WiFi Radio demonstrates leading edge, ultra-low power consumption in both active and sleep modes. The ultra-low power level combined with the extensive feature set of the Talaria ONE makes it a perfect match for battery-powered remote nodes. Additionally, it only requires a single supply voltage and has processing power available for small applications – features needed in demanding consumer and industrial IOT applications.

Key System Features

Functionality:

IEEE 802.11b WLAN
Up to 6Mbps Throughput
WPA and WPA2 security
STA/SoftAP modes
TX output power: +21dBm (w/ FEM)
RX sensitivity: -99dBm @ 1Mbps
Optimized performance within 802.11g/n networks

Software Features:

Developed for FreeRTOS Operating Environment
Complete SDK Toolchain
Power-Optimized TCP/IP Stack
ARM-based Driver
Extensive Sample Code

Hardware Interfaces:

GPIO, 14-Bit ADC, I2C/SPI(x6), UART, I2S, PDM

System Power Consumption:

Near-Range Operation:

25mA Rx, 802.11b, CCK 11Mbps, -87dBm
25mA Tx, 802.11b, CCK 11Mbps, 0dBm

With Front-End Module (FEM):

36mA Rx, 802.11b, CCK 11Mbps, -91dBm
155mA Tx, 802.11b, CCK 11Mbps, 18dBm
(97mA with optional PA-only device)

Sleep Mode:

18µA VDDIO at 1.8V from internal LDO

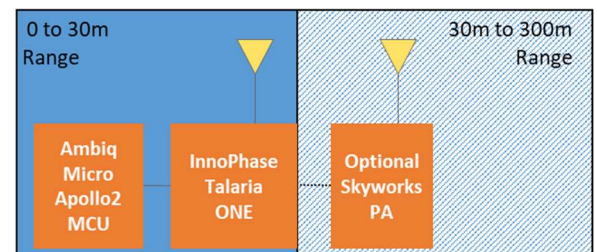
Power Save Mode:

0.45mA DTIM=3, 802.11b/g/n network
0.24mA DTIM=3, 802.11b network

Hardware Implementation

InnoPhase's solution consists of the following components:

- **Talaria ONE:** InnoPhase's 802.11b radio device implementing the PolarFusion™ technology
- **Microcontroller:** Ambiq Micro Apollo2
- **Optional Front-End Module:** Skyworks SKY85314 added for extended 30m to 300m range



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