# WF111 Wi-Fi Module

# Table of Contents

# Key Features


- **IEEE 802.11 b/g/n radio**
  - Single 2.4 GHz band
  - Symbol rate up to 72.2Mbps
- **Integrated antenna or U.FL connector**
- **Support for WEP, WPA and WPA2 encryption**
- **Software Access Point mode up to 8 clients**
- **Advanced *Bluetooth* coexistence support**
- **Temperature range: -40°C - +85°C**
- **SDIO host interface**
- **Fully CE, FCC and IC qualified**
- **Linux operating system drivers for ARM, x86 and PowerPC processors**
- **Small size: 12.0 x 19.0 x 2.1 mm**

# Benefits


- Small, fully integrated 802.11 b/g/n module with radio and antenna
- Low power solution designed for mobile and battery power applications
- Industrial specifications, long life time and future proof solution
- Regulatory qualifications reducing R&D risk and time-to-market

# WF111 Overview


- ***Single stream 802.11 b/g/n radio***
  - Frequency: 2402 – 2480 MHz
  - TX power: +17 dBm
  - RX sensitivity: -97 dBm
  - Symbol rate: up to 72.2 Mbps
- **Symbol rates**
  - 802.11n: 72.2 – 6.5 Mbps
  - 802.11g: 54 – 6 Mbps
  - 802.11b: 11 – 1 Mbps
- **Channels**
  - North America 11 channels
  - Rest of the world: 13 channels
- **Quality of serivce**
  - WMM
  - WMM power save
  - 802.11e
- **Line-of-sight range**
  - Upto 500 meters

# WF111 Overview


**Host interfaces**
- SDIO
- SPI

**Radio co-existence interfaces**
- 3-wire Unity 3
- 3-wire Unity 3e+ (recommended)
- 4-wire Unity 4

**Programming & Debug**
- 802.11 debug SPI

**Configurable GPIO ports**
- 6 configurable IO ports (wake-up, sleep etc.)

# WF111 Overview


**Power supply:**

- **Only two voltages needed**
  - 1.8V and 3.3V
- **VDD_REGIN : 802.11 core voltage**
  - 1.45 - 2.0V
- **VDD_PA : Front-end power supply**
  - 2.7 - 4.8V
- **VDD_IO / SDIO : Digital lines**
  - 1.7 - 3.6V
  - Supports both 1.8V or 3.3V voltage levels

# WF111 Overview

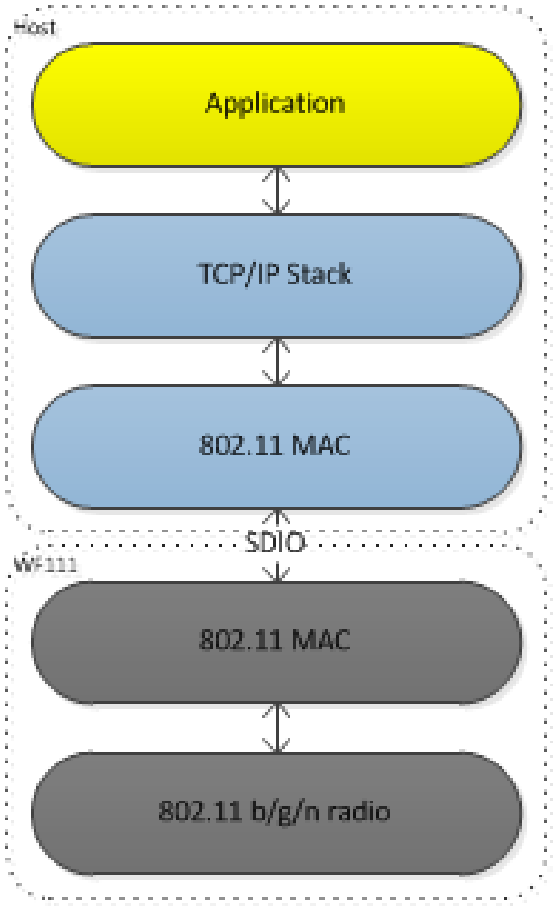

**Current consumption at 3.3V**

- **TX peak**
  - 248 mA
- **RX peak**
  - 240 mA
- **Typical TX consumption**
  - 802.11n @ 12Mbps 144 mA
  - 802.11g @ 1 Mbps 78 mA
  - 802.11b @ 1 Mbps 94 mA
- **Typical RX consumption**
  - 802.11n @ 16.5 Mbps 88 mA
  - 802.11n @ 1 Mbps 70 mA
- **Idle, associated to an Access Point**
  - 1.7 mA
- **Deep sleep**
  - 110 uA

# WF111 Operating System Drivers

# WF111 Operating System Drivers

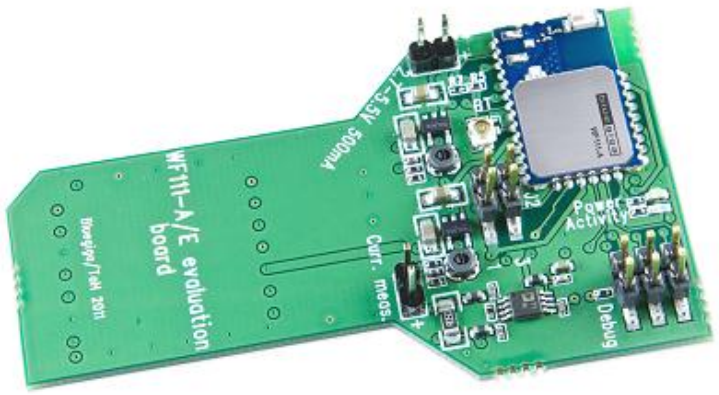
- ***WF111 only contains the 802.11 radio and 802.11 MAC***
  - Upper 802.11 MAC needs to be on a separate host
  - IP stack needs to be on a separate host
  - The application needs to be on a separate host
- **Bluegiga provides Linux drivers of WF111**
  - Support SDIO interface
  - Contains 802.11 MCA stack
  - Interfaces to standard Linux wireless tools like wpa_supplicant
  - Source code availability (contact sales@bluegiga.com)
- **Supported processor architectures**
  - ARM
  - x86
  - PowerPC
- **Supported Linux versions**
  - Kernels 2.6 to 3.2
  - Android



# Certifications


- ***Wi-Fi certification***
  - Tested to conmply Wi-Fi certification
  - Wi-Fi Alliance requires end products to be separately certified
- **CE**
  - EN300328
  - EMC330489
- **FCC**
  - FCC Modular approval
- **Industry Canada**
  - IC modular certification
- **South Korea**
  - KCC certification

# Development Tools




- **WF111 Development Kit**
  - WF111-A
  - SDIO connector board
  - SPI debug interface
  - Activity led
  - Current measurement point

  + Linux drivers

  + Documentation

# Use Cases

**Point of sale**

- Tablets
- PDAs
- Point-of-sale terminals


# Use Cases

## Consumer electronics

- Wireless audio
- Portable multimedia devices
- Digital cameras
- Wireless video

# Use Cases

**M2M and industial computing**

- Industrial PCs

- M2M computers

# Thank You