
# WT11 to WT11i Migration

## Bluegiga Technologies

30.11.2011

# Topics

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# Introduction

# Introduction

- Due to unexpected Skyworks PA2324L RF power amplifier End-of-Life announcement Bluegiga Technologies has to the End-of-Life for WT11 product series.
- The End-of-Life takes place immediately on 30.11.2011
- Bluegiga Technologies offers a pin-to-pin replacement for WT11 called WT11i
- This document instructs how to migrate from a WT11 based design to WT11i based design

# Schedule

# Introduction

- **WT11 end-of-life schedule**

| Action | Schedule |
|---|---|
| WT11 end-of-life | **Immediately** |
| Last-time-buy | **31st of January 2012** |
| Final delivery date | **31st of July 2012** |

# Introduction

- WT11i schedule

| Action | Schedule |
|---|---|
| WT11i-A status | **Production** |
| WT11i-A availability | **Immediately** |
| WT11i-E status | **Sampling**<br>(Available in Jan, 2012) |
| WT11i-E availability | **March 2012** |

# WT11i overview

# WT11i key features

- ***Bluetooth*® *2.1* + *EDR* compliant, class 1**
- **Extremely good radio performance**
  - Transmit power: +17 dBm
  - Receiver sensitivity: - 85 dBm
- **Integrated chip antenna or U.FL**
- **Industrial Temperature Range from -40C to +85C**
- **Integrated iWRAP *Bluetooth* stack or HCI over UART/USB**
- **802.11 co-existence**
- ***Bluetooth*, CE, FCC and IC qualified**

# WT11i key features

- Can be used to improve the performance of WT11 based designs as a drop in replacement
- Ideal for Bluetooth® applications where class 1 performance is needed

# WT11 and WT11i differences

| | WT11 | WT11i |
|---|---|---|
| |  |  |
| ***Bluetooth*** | | |
| Version | *Bluetooth* 2.1 + EDR | *Bluetooth* 2.1 + EDR |
| Low energy support | - | - |
| BR/EDR support | Yes | Yes |
| **Radio** | | |
| Typical TX power | +12dBm | +17 dBm |
| Typical RX sensitivity | -83 dBm | -85 dBm |
| Class | 1 | 1 |
| Typical range | 100-300m | 200-400m |
| **Antenna options** | | |
| Integrated chip | Yes | Yes |
| Integrated meander line | - | - |
| U.FL | Yes | Yes |
| 50ohm pin | Yes | Yes |
| **Interfaces** | | |
| UART | 1 | 1 |
| USB | 2.0 device | 2.0 device |
| SPI (debugging) | 1 | 1 |
| GPIO | 6 configurable | 6 configurable |
| AIO | 1 x 8-bit | 1 x 8-bit |
| **Audio Interfaces** | | |
| PCM | 1 | 1 |
| I2S | - | - |
| SPDIF | - | - |
| Analogue | - | - |
| **Microcontroller** | | |
| Architecture | 16-bit RISC (XAP2) | 16-bit RISC (XAP2) |
| RAM | 48 kB | 48 kB |
| Flash | 8 Mbit | 8 Mbit |
| **Current consumption** | | |
| TX | TBD | TBD |
| RX | TBD | TBD |
| Deep Sleep | TBD | TBD |
| **Operating voltage** | | |
| Operating voltage | 2.6 - 3.6V | 2.6 - 3.6V |
| **Copper plated edges** | | |
| | No | Yes |

| | WT11 | WT11i |
|---|---|---|
| |  |  |
| ***Bluetooth stack features*** | | |
| Version | 2.1 + EDR | 2.1 + EDR |
| Integrated *Bluetooth* stack | Yes | Yes |
| Security Simple Pairing | Yes | Yes |
| Connections | 1-7 | 1-7 |
| Host API | ASCII commands / HCI | ASCII commands / HCI |
| HCI | Over UART/USB | Over UART/USB |
| **Supported profiles** | | |
| SPP | Yes | Yes |
| OBEX OPP | Yes | Yes |
| OBEX FTP | Yes | Yes |
| DUN | Yes | Yes |
| HID | Yes | Yes |
| A2DP | - | - |
| AVRCP | Yes | Yes |
| HFP v.1.5 | Yes | Yes |
| HSP | Yes | Yes |
| PBAP | Yes | Yes |
| HDP | Yes | Yes |
| DI | Yes | Yes |
| Apple iAP support | Yes | Yes |
| Over-the-Air configuration* | Yes | Yes |
| BGIO* | Yes | Yes |
| **Software development** | | |
| On-board applications | Yes | Yes |
| Software development service | Yes | Yes |
| SDK/IDE | CSR BlueLab | CSR BlueLab |
| **Evaluation kits** | | |
| Availability | Now (EoL) | Now |
| **Production status** | | |
| Samples | Now (EoL) | WT11i-A: now<br>WT11i-E: Jan/2012 |
| Mass production | Now (EoL) | WT11i-A: now<br>WT11i-E: Mar/2012 |
| **Certifications** | | |
| Bluetooth | Yes | Yes |
| CE | Yes | Yes |
| FCC | Yes | Yes |
| IC | Yes | Yes |
| **Dimensions** | | |
| Dimensions (W x L) | 35.3x14.0x2.5mm | 35.8x14.5x2.6 mm |

# Summary of differences

- **Dimensions**

  WT11: 35.3 mm x 14.0 mm x 2.5 mm (LxWxH)

  WT11i: 35.8 mm x 14.5 mm x 2.6 mm (LxWxH)

- **TX power and RX sensitivity**

  WT11: +12dBm (TX) and -83dBm (RX), 95dBm link budget

  WT11i: +17dBm (TX) and -85dBm (RX), 102dBm link budget

- **WT11i has copper plated edges**

- **Different product codes**

# Certification considerations

# FCC and IC Certification

- **Designs with WT11i as the only radio and the end product being used further than 20 cm from a human body:**
  - Update the FCC ID and the IC Certification number in the labeling of the end product.
  - Example: Label ”*Contains FCC ID: QOQWT11*” shall be updated to a label ”*Contains FCC ID: QOQWT11IA*”

- **Designs with WT11 as the only radio and the end product being used closer than 20 cm from a human body:**
  - Update the labeling as in previous AND
    - **Option 1**: Limit the TX power to nominal 12 dBm
    - **Option 2**: Test SAR (Specific Absorption Rate) in an accredited test house, save an official test report and ask for Bluegiga to obtain a Class 2 Permissive Change for the module (Cost ~$1600)

# FCC and IC Certification

- **Designs with other radios co-located with WT11**
  - Option 1: Ask for Bluegiga to make Class 2 Permissive Change (C2PC) to WT11i for the end product. This will require some EMC conformance testing (Cost: ~$1000).
  - Option 2: Obtain a separate FCC and IC authorization for the end product with a new FCC ID and IC Certification Number.

# FCC and IC Certification

- **WT11i-E designs with other type of an antenna than 2.14 dBi dipole**
  - Please contact Bluegiga and we will update the listing of the module for your antenna as a Class 2 Permissive Change.

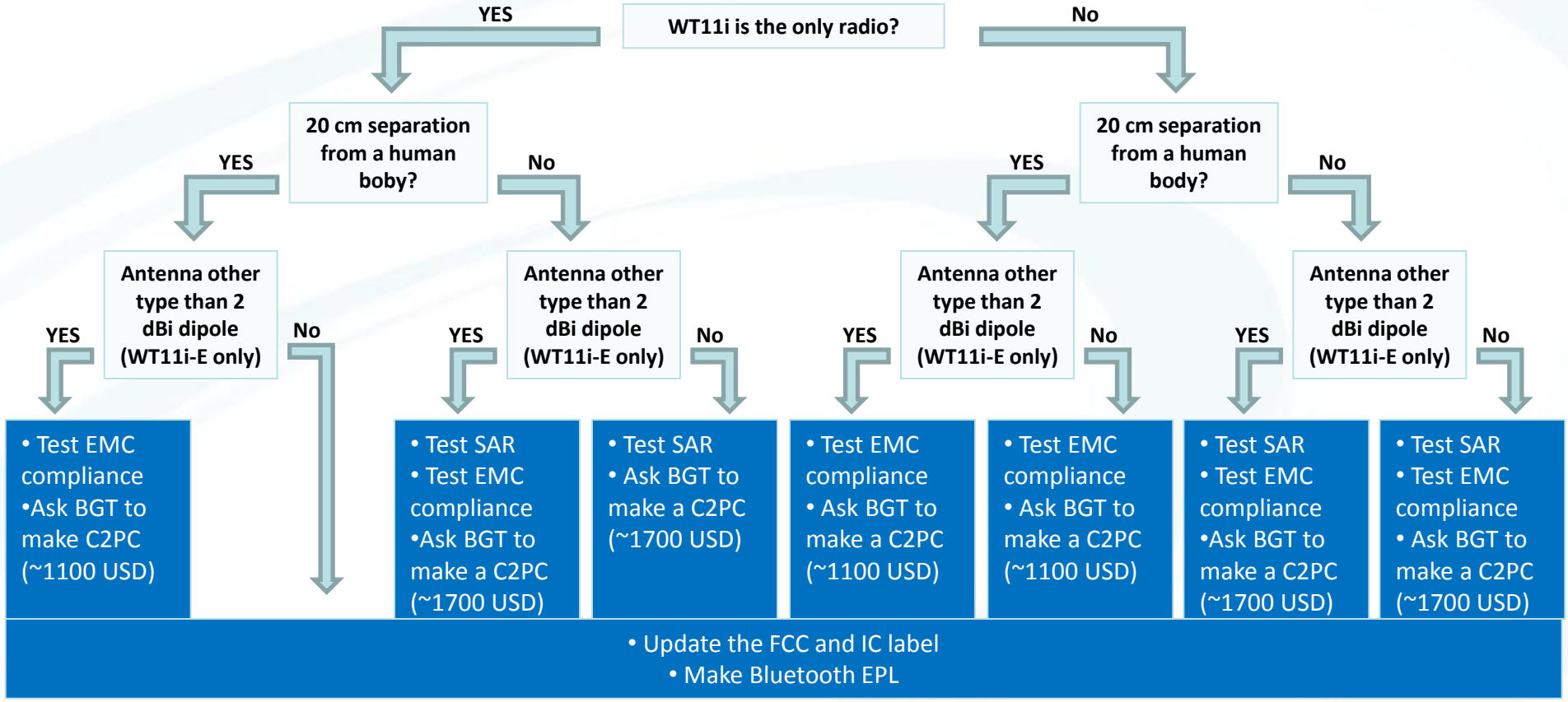
- **WT11i-E design with an antenna gain higher than 2.14 dBi**
  - Change the antenna to meet the antenna absolute maximum gain requirement 2.14 dBi

# CE Compliance

- **Basically the same requirements as with FCC and IC but OEM will be responsible that the end product is compliant.**

- **Recommendations:**
  - If the end product is being used closer than 20 cm from a human body, test SAR (EN / IEC 62311:2007) with an accredited test house.
  - If the are other radios co-located, test EMC compliance
  - If using other type of an antenna than 2.14 dBi dipole, test EMC compliance
  - Antenna gain higher than 2.14 dBi is not allowed

# Summary of Certification Flow



# *Bluetooth* End Product Listing

- **Bluegiga recommends updating the *Bluetooth* End Product Listing (EPL)**

- **Done at www.bluetooth.org**
  - WT11i QDID: B017633
  - iWRAP4 QDID: B016450
  - iWRAP3 QDID: B014328

- **Free of charge!**

# WT11i migration checklist

# WT11i migration checklist

- Check that WT11 physically fits into your design
- Make a trial run with WT11i at your production site
- Verify the FCC, IC and CE compliance of the end product
- Update the *Bluetooth* listing for the end product
- Update your product ordering codes

# Contact information

# Contact information

- **Sales**

  sales@bluegiga.com

- **Technical support**

  support@bluegiga.com

  http://techforum.bluegiga.com

- **Orders**

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Thank you
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