

TUSCANY MODULE
64 X 29.5 MM

OVERVIEW

The Tuscany FS2230 module is the latest highly flexible integrated wireless speaker module from Frontier Silicon. Incorporating Bluetooth®, DAB/FM radio, USB, iOS and Android smart device connectivity, Tuscany provides superior signal reception at low-power and at a price point suitable for entry level products.

Tuscany's flexible design enables production of audio devices with any combination of high-performance **Bluetooth**, dual-band DAB/DAB+, FM with RDS and Apple® Lightning™/USB docking at low-cost. In master mode, Tuscany removes the need for an additional host processor and includes a USB device interface for firmware updates. Alternatively, Tuscany can operate in simple slave mode.

The module provides all interfaces necessary for a fully functional **Bluetooth** wireless speaker system with iOS docking capability and digital/analogue radio - needing only power supply, display, keypad, audio amplifier and speakers to complete a product.

BENEFITS

- **Bluetooth** A2DP streaming with AAC support
- On-board **Bluetooth** antenna
- USB interface for iOS device docking (and field software updates)
- Support for NFC Bluetooth pairing
- The most cost-effective BT/DAB/DAB+/FM combo solution available
- Best in class DAB sensitivity ensuring good radio reception even in poor signal areas
- No external microcontroller required

BUILD OPTION

PRODUCT CODE	DESCRIPTION
FS2230-TB	Bluetooth , DAB/DAB+ Band III/Software FM with RDS
FS2230-TF	Bluetooth , Software FM with RDS
FS2230-T	Bluetooth wireless speakers
FS2230-B	DAB/DAB+ Band III/Software FM RDS

APPLICATIONS

- **Bluetooth** DAB/FM digital radios
- **Bluetooth** Docker radios
- **Bluetooth** Wireless Speakers
- **Bluetooth** Micro-systems
- **Bluetooth** Clock Radios
- **Bluetooth** Soundbars

KEY FEATURES

- **Bluetooth** 3.0 (EDR)
- Support for A2DP, AVRCP, and SPP **Bluetooth** profiles.
- **Bluetooth** Integrated PIFA antenna (external antenna optional)
- NFC support
- DAB/DAB+ sensitivity to -100 dBm (typical)
- FM sensitivity to -108 dBm (typical)
- Decodes multiple audio services up to 384 kbps
- Combined antenna input for FM and Band III
- Full digital audio output (I²S)
- On-board stereo DAC
- Memory:
 - Integrated RAM for **Bluetooth**, DAB/DAB+
 - Built-in Flash - size dependent on application
- Full-speed USB 2.0 (12 Mbit/s) for iOS device docking and software updates
- iAP2 support
- Display backlight control
- RoHS compliant
- Temperature range:
 - operation: -10 to +70°C
 - storage: -40 to +85°C

TUSCANY FS2230

Integrated Bluetooth®/DAB/FM module for wireless audio devices

DESCRIPTION

Tuscany provides a complete flexible, low-power wireless speaker system, in a compact module, incorporating digital/analogue radio and smart device docking capability as required.

The main components of the Tuscany module are shown in the diagram opposite. These are Frontier Silicon's Apollo 2 RF front-end, Kino 3 baseband processor, **Bluetooth** IC, flash and audio DAC.

SOFTWARE

Software is configured to customer requirements and pre-installed in the module's flash memory.

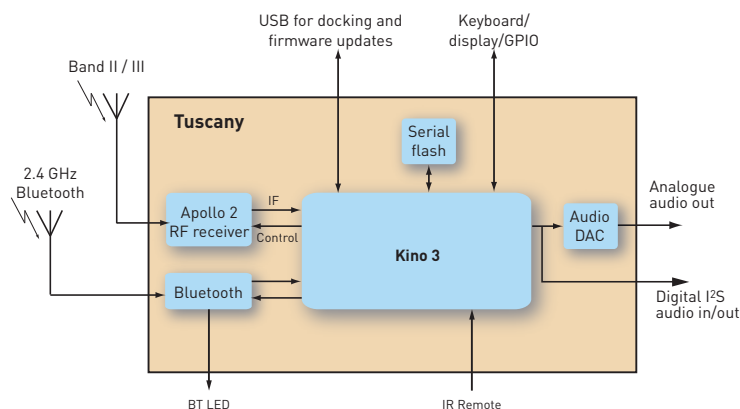
Frontier offers a full suite of customisable application software which includes:

- Support for a variety of User Interfaces, including 1-line or 2-line displays and headless interfaces
- Clock with multiple alarms/timers
- Presets
- Battery charge control
- Support for 2 rotary encoders and 10 keys
- Optional USB field upgrade available
- Simple **Bluetooth** pairing using NFC

STANDARDS AND

CERTIFICATION

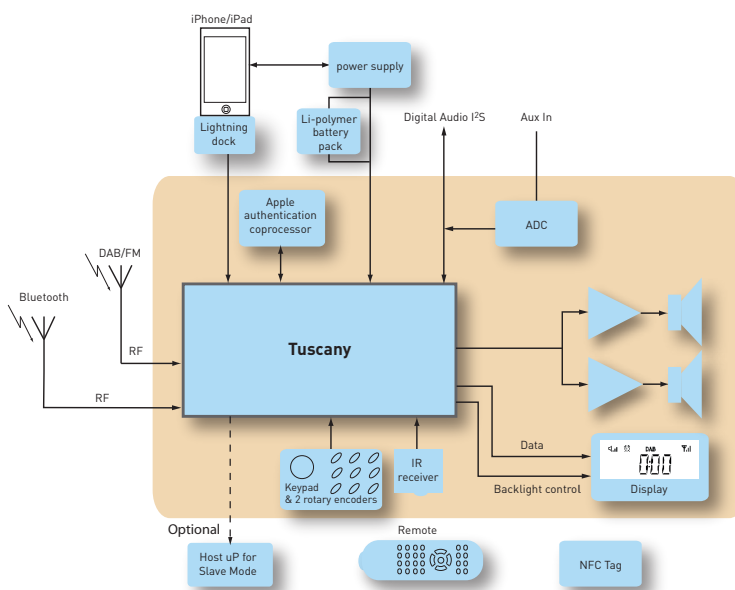
Tuscany is designed to be interoperable throughout Europe and beyond. As well as working with the standards below, suitable end-products based on this platform should be able to obtain certification for various other industry standards. For more information, contact Frontier Silicon.



TUSCANY BLOCK DIAGRAM

SPECIFICATION

Supply voltages		3.3V (baseband I/O and RF) 1.2V (baseband core)
Power consumption		130 mW (Standby) 270 mW (DAB - 128Kbit/s, MP2) 410 mW (FM-RDS) 250 mW (Bluetooth paired) 300 mW (Bluetooth streaming) 200mW (Aux In)
Bluetooth	Sensitivity Rx	-89 dBm (typ)
	Tx power	7 dBm (typ)
DAB/DAB ⁺	Sensitivity	-100 dBm (typ)
FM	Sensitivity (@ 40 dB SNR)	-108 dBm (typ)



TUSCANY IN A TYPICAL EXAMPLE APPLICATION

Frontier Silicon is a trademark or registered trademark of Frontier Silicon Ltd. iPhone, iPad, iPod and lightning are trademarks of Apple Inc., registered in the U.S. and other countries. The Bluetooth® word mark and logos are registered trademarks owned by Bluetooth SIG, Inc. MPEG-4 HE-AAC audio coding technology licensed by Fraunhofer IIS, www.iis.fraunhofer.de. Windows 7 is a registered trademark of Microsoft Corporation. Android is a trademark of Google Inc. Specifications are subject to change without notice.

Tuscany FS2230 contains IP licensed from Imagination Technologies Ltd.
Tuscany FS2230 Product Brief FSM-0011-7822 Rev 2



© 2013 Frontier Silicon Ltd. August 2013