

## Bluetooth V2.1<sup>(a)</sup> EDR and RDS FM radio combo solution

Data Brief

### Description

The STLC2592 combines Bluetooth, and FM tuner functionality into one product and is fully optimized for mobile applications such as mobile phones, smart phones, PDAs and portable media players. The required board space has been minimized, only 1 external component is needed, power consumption levels are targeted for battery powered devices and the integration allows a cost effective solution. Also due to the reduction of external components, manufacturers can easily and fast integrate the STLC2592 on their product to enable a rapid time to market. Compared to its successful predecessor, the STLC2590, it supports the latest Bluetooth specification V2.1<sup>(a)</sup> + EDR ("Lisbon") and further optimizes the RF performances.

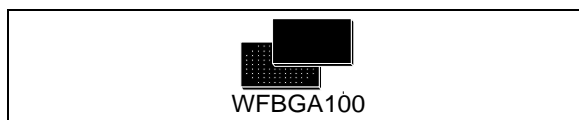
### General features

- 100-pin WFBGA 5.0 mm x 7.5 mm x 0.8 mm, pitch 0.5 mm
- lead-free, RoHs compliant
- PCB footprint < 45 mm<sup>2</sup>

### Bluetooth features

- The lowest power consumption by design and technology (see [Table 1](#)). Ultra low power architecture with 3 different low power modes: sleep, deep sleep and complete power down
- BT-WLAN coexistence support for several BT-WLAN coexistence algorithms (i.e. 2/3/4-wire PTA, in a very flexible and parametric way to optimize voice and data quality over Bluetooth and WLAN

a. Bluetooth specification V2.1 + EDR ("LISBON") was still in a preliminary state. "LISBON" features currently implemented comply to the preliminary "LISBON" specification from October 2006.



- ARM7TDMI and on-chip RAM (included patch RAM) and ROM
- Communication interfaces
  - Fast UART up to 4 Mbps for HCI
  - Flexible SPI interface up to 13 MHz for HCI
  - PCM interface for voice
  - Wireless LAN coexistence with 2, 3, 4 wires
  - Flexibly programmable GPIOs
  - Fast I2C interface as master
- Software support up to HCI stack
  - H4 HCI transport layer
  - HCI proprietary commands and single HCI command for patch/upgrade download
- Supports 2.75 V supply voltage and 1.65 V to 2.85 V I/O voltage
- Clock support for all cellular standards: system clock and low power clock
- Bluetooth V2.1 + EDR ("Lisbon") compliant<sup>(a)</sup>
  - Encryption Pause/Resume (EPR)
  - Extended Inquiry Response (EIR)
  - Link Supervision Time Out (LSTO)
  - Secure simple pairing
  - Sniff subrating
  - Quality of Service (QoS)
    - Packet Boundary Flag
    - Erroneous Data Delivery
- Backward compatibility with legacy devices including extended V1.2 feature support
  - Adaptive Frequency Hopping (AFH)
  - Faster connections through interlaced scan
  - Extended SCO (eSCO) links
  - Full EDR support and all BT1.2 errata
  - All EDR data rates and packet types
  - Channel Quality Driven Data Rate change

- Point-to-point and point-to-multi-point (up to 7 slaves) and scatternet capability
- Asynchronous Connection-Less (ACL) logical transport link
- Synchronous Connection Oriented (SCO) link for 2 simultaneous SCO channels at 64 kbps
- Superior voice quality
  - Pitch-Period Error Concealment (PPEC) for improved speech quality (in the vicinity of interference)
- Extended range due to higher (than class 2) Tx output power
- Pre-calibrated RF
  - Auto calibration (VCO, filters), no RF calibration required in production

### **FM radio features**

- Worldwide FM band support (76-108 MHz)
- Frequency synthesizer with integrated VCO
- Seek tuning
- Signal strength measurement
- Programmable de-emphasis (50/75  $\mu$ s)
- Adaptive noise suppression
- Volume control
- Line-level analog output
- 32.768 kHz reference clock
- RDS/RBDS processor
- 2-wire and 3-wire control interface
- 2.7 V to 5.5 V supply voltage
- Integrated LDO regulator allows direct connection to battery

Figure 1. STLC2592 architecture

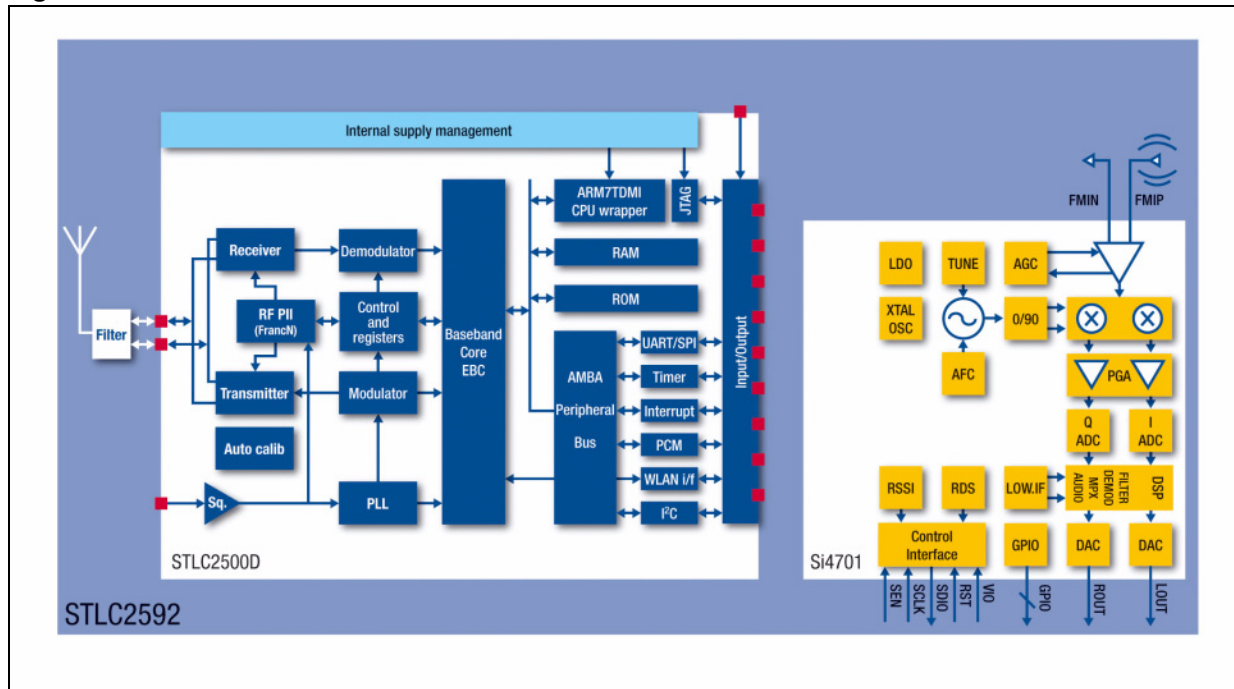


Table 1. Technical specifications

Parameter	Typ.	Unit
<b>Bluetooth parameters</b>		
Complete power-down	1	µA
Deep sleep	20	µA
Audio communication (HV3, slave, sniff 1.28s/2 attempts/0 time-outs)	10.6	mA
Audio communication (eSCO, 3-EV3, 64 kbps symmetrical TSCO=18, master)	6.5	mA
Data communication (3-DH5, master or slave, 1306.9 kbps)	35.4	mA
Data rate throughput at host interface in EDR mode	2.178	Mbps
<b>FM radio parameters</b>		
Sensitivity	2.5	µV EMF
RDS sensitivity	15	µV EMF
Adjacent channel sensitivity (+/-200 kHz)	50	dB
Audio S/N	63	dB
Supply current	17.6	mA
Power-down current	4	µA

## Ordering information

**Table 2. Order codes**

Part Number	Package	Packing
E-STLC2592	WFBGA100	Tray
E-STLC2592TR	WFBGA100	Tape-on-reel

## Revision history

**Table 3. Document revision history**

Date	Revision	Changes
15-Jan-2007	1	Initial release.

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