

General Technical Description

Model: OT-E105a

Date: 2006-05-03

Band: 850MHz/1900MHz

1. Scope

This document is shown and provided the more detail information about the platform we used. The basic description for the Baseband and RF section are also included.

OT-E105a product is new model phone designed by T&A, it works at Dual-band, GSM850 and PCS1900 band its weight is only 76g, the size is **96x42.5x19mm**. OT-E105a has a black&white display which pixels is 102*80, and has 16 polyphonies.

OT-E105a CPU runs at 52 MHz, with 32M Flash Memory and 4M pSRAM. The main IC include ABB (TWL3025) 、 DBB(CALYPSO) 、 FLASH (S71PL032J40BFW) 、 Transceiver(TRF6151)、 PA(AWT6166), OT-E105a can dial 4 hours continuously and can be in idle mode up to 230hours ,using 650mAh LI battery.

2. Detail Block Diagram

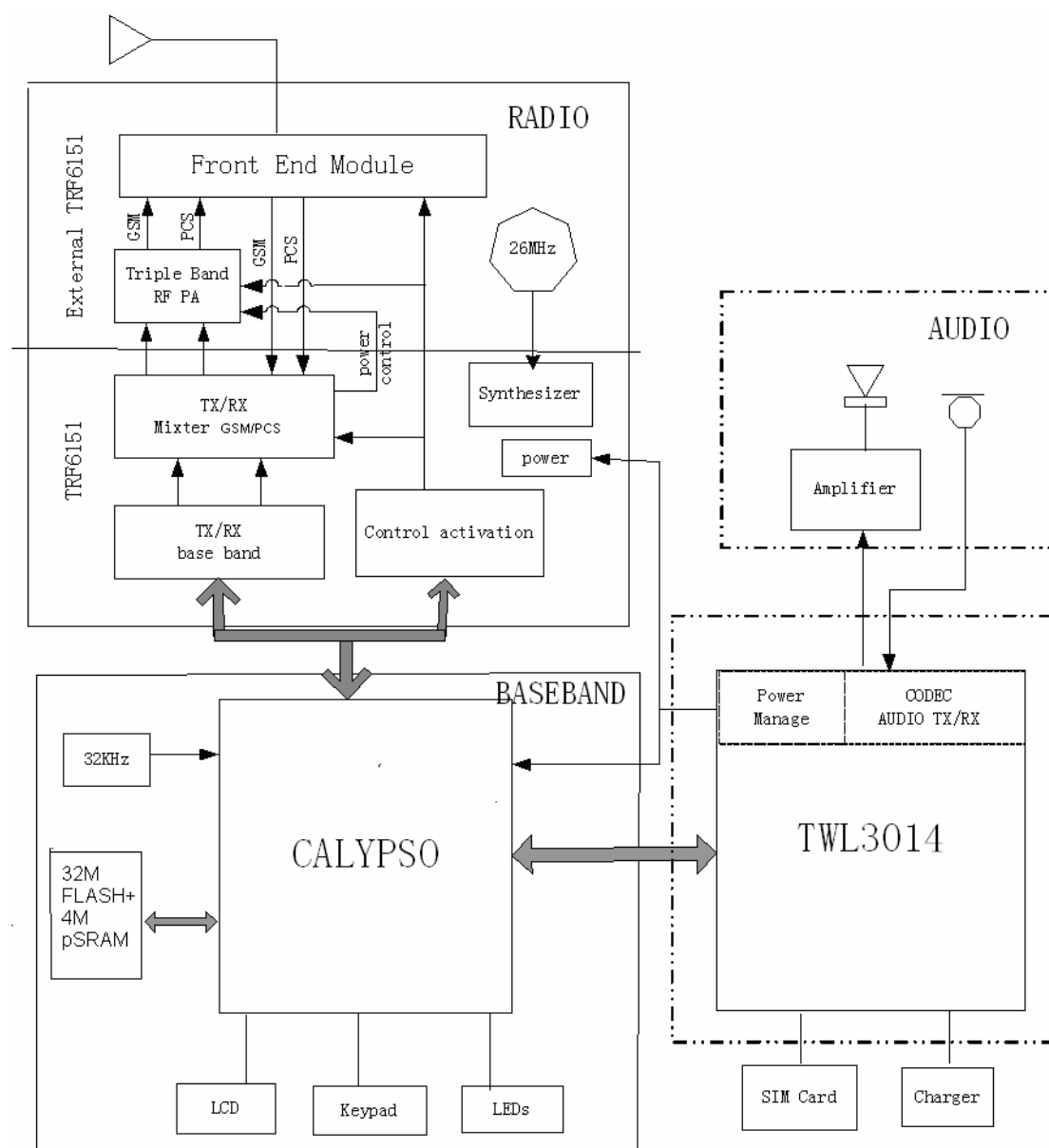
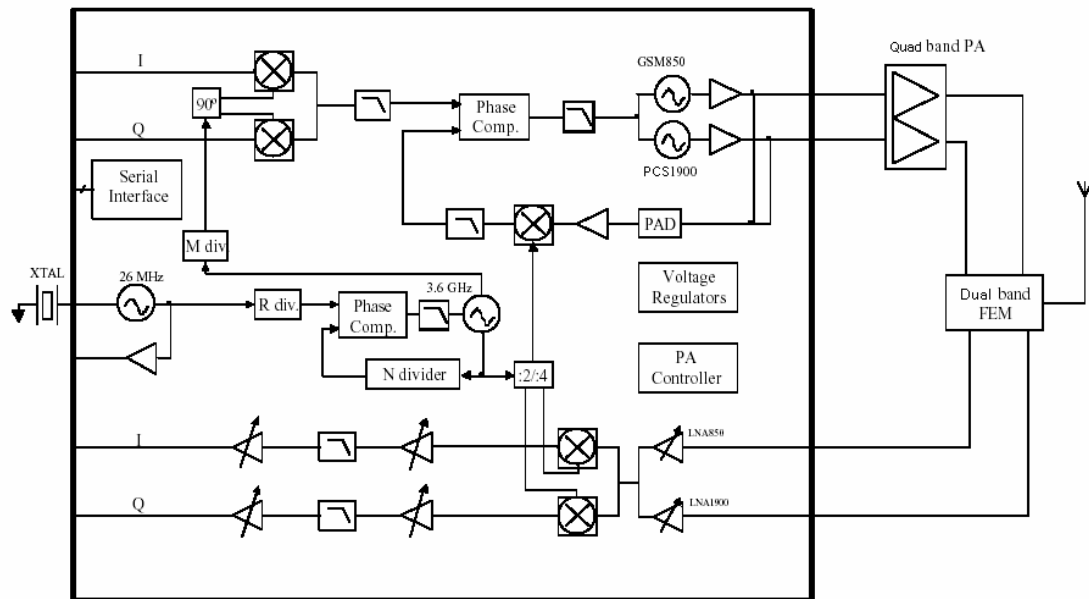


Figure 1.3 – BLOCK DIAGRAM

3. RF Front End



3.1 Transceiver with Direct Conversion

The chip supports GSM850/GSM900/DCS1800/PCS 1900 application. The chip integrates the receiver based on direct conversion architecture, the transmitter based on the modulation loop architecture, the frequency synthesis including a 26MHz VCXO, a MAIN N- integer synthesizer, 2 MAIN VCOs, a programmable MAIN loop filter, 2 TX VCOs, a TX loop filter, the voltage regulators to supply on chip and off chip RF functions and a power amplifier controller. It is housed in a 49 pins 7x7mm - 0.5mm pitch QFN package.

3.2 Power Amplifier

This quad band power amplifier module is designed to support dual, triple and quad band applications. The module includes an integrated power control scheme that facilitates fast and easy production calibration and reduces the number of external components required to complete a power control function.

4. Baseband

Baseband architecture comprise mainly two chips:

4.1 DBB(CALYPSO)

CALYPSO is a chip implementing the digital base-band processes of a GSM/GPRS mobile phone. This chip combines a DSP sub-chip (LEAD2 CPU) with its program and data memories, a Micro-Controller core with emulation facilities (ARM7TDMI-E), internal 8Kb of Boot ROM memory, 2M bit SRAM memory, a clock squarer cell, several compiled single-port or 2-ports RAM and CMOS gates.

The application of this circuit is the management of the GSM/GPRS base-band processes

through the GSM layer 1, 2 and 3 protocols as described in the ETSI standard with a specific attention to the power consumption in both GSM dedicated and idle modes, and GPRS (class 12) capability.

The chip will fully support the GSM full-level test approval (FTA) for both Full-Rate, Enhanced Full-Rate and Half-Rate speech coding.

CALYPSO implements all features for the structural test of the logic (full-SCAN, BIST, PMT, JTAG boundary-SCAN).

4.2 ABB(TWL3025)

The TWL3025 device is an analog baseband (ABB) device which includes a complete set of baseband functions that perform the interface and processing of the following voice signals, the baseband in-phase (I) and quadrature (Q) signals, which support both the single-slot and multislot modes. The TWL3025 device also includes associated auxiliary RF control features, supply voltage regulation, battery charging controls, and switch on/off system analysis.

The TWL3025 device interfaces with the DBB device through a digital baseband serial port (BSP) and a voiceband serial port (VSP). The signal ports communicate with a DSP core (LEAD). A microcontroller serial port (USP) communicates with the microcontroller core and a time serial port (TSP) communicates with the time processing unit (TPU) for real-time control.

A specific module is dedicated to support the 1.8-V/3-V SIM card interface. The module includes the generation of the SIM card supply voltage, as well as level shifters to adapt the SIM card signal levels to the microcontroller I/O signal levels. The TWL3025 device meets JTAG testability standard (IEEE Std 1131.1 – 1990) through a standard test access port (TAP) and boundary scan.

The TW3025 device also includes an on-chip voltage reference, under-voltage detection, and power-on reset circuits. The TWL3025 device is packaged in Texas Instruments 100-terminal, 0,8-mm pitch, MicroStar. ball grid array (GGM) and 143-terminal, 0,5-mm pitch, MicroStar. ball grid array (GQW).