# Tune-Up Procedure of

## Content

# 1. Purpose

This panel gives the possibility to manage the mobile in the transmit and receive mode.

# 2. General description

## 2.1 PA ramp DAC

The PNX4851 PA ramp DAC controls the output power level of th RF PA.The ramps aare stored in the designerd ramp RAM.the RTEC then asserts a strobe to transfer the first ramp to the DAC; see figure 1. Following each strobe,the next ramp profile is loaded, and a subsequent pulse causes the next ramp to transmit, and so on. At the end of a transmit sequence, the first ramp profile is re-selected.

PA ramp DAC features include the following:
- Controls PA ramp output power
- Ramp values are preserved until overwritten
- Each ramp has 16 values, interpolated to produce a 64-step ramp over 8.25 bits

10-bit resolution on DAC values

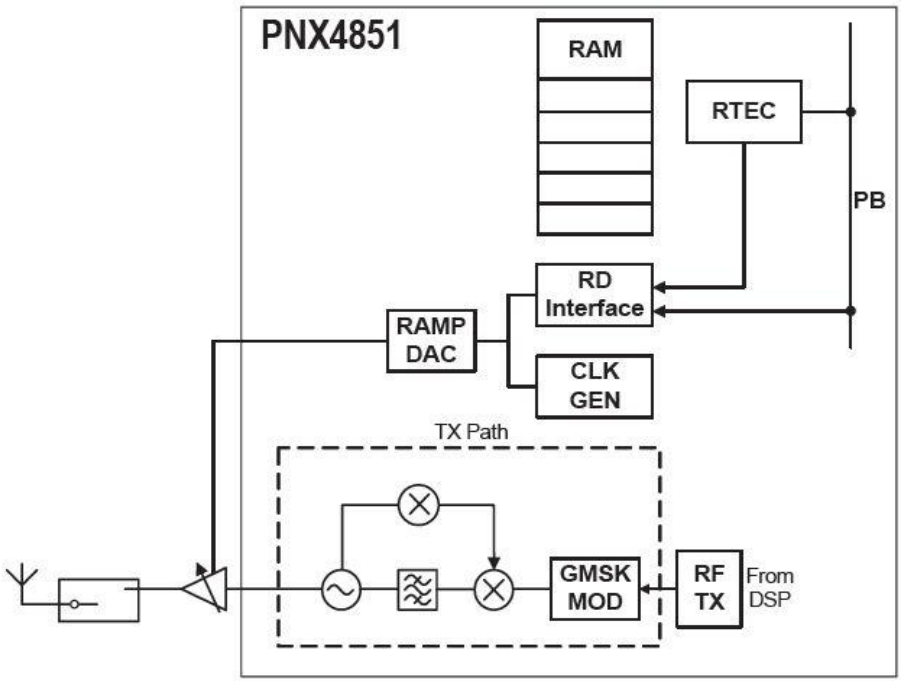


Figure 1 PA ramp DAC

### 2.2. RF circuit

SIM900 designed by SIMCOM is a quad band module which support GSM/GPRS. RF circuit is based on RFMD. It works at quad bands, GSM850, EGSM900, DCS1800, and PCS1900 band.

The PAM RF7161 include RF power amplifier and antenna switch for quad-band (GSM850/EGSM900/DCS1800/PCS1900) GSM/GPRS applications. The device is designed for use as the final portion as the transmitter section in a GSM850/EGSM900/DCS1800/PCS1900 handset and eliminates the need for a PA-to-antenna swithch module matching network. The device provides 50ohm matched input and output ports requiring no external matching components.

The functional block diagram is as following.

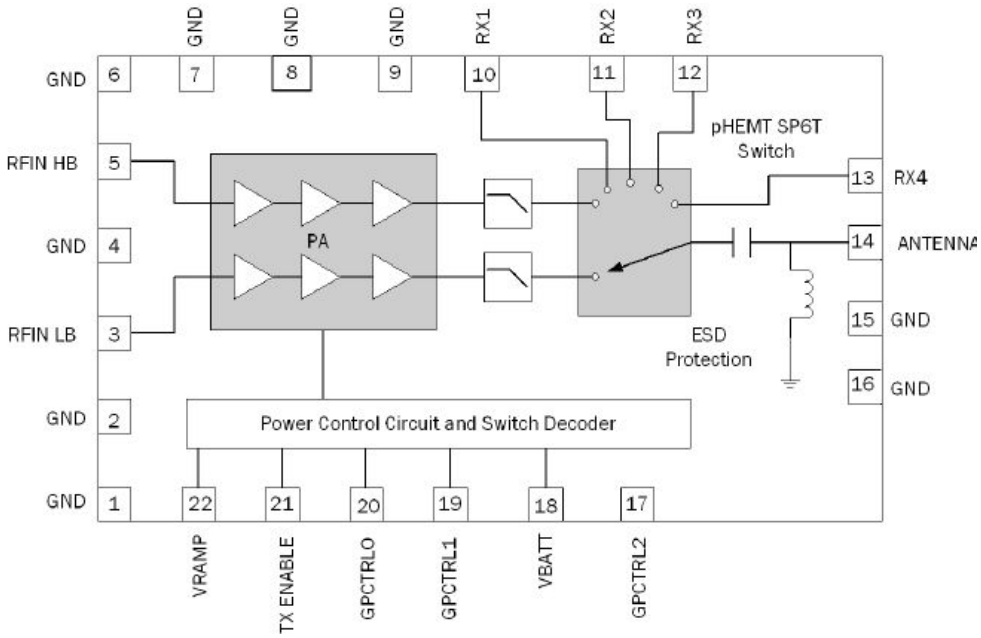


Figure 2 Functional Block Diagram

## 3. Operating mode

### 3.1 Transmit a Tch burst in quad band at power control level max

Configuration of the common parameters:
- band: GSM850,
- channel: 189,
- RF level: 5,

- Burst select: Mode Tch Random
Configuration of the common parameters:
- band: GSM900,
- channel: 37,
- RF level: 5,
- Burst select: Mode Tch Random

Configuration of the common parameters:
- band: DCS1800,
- channel: 698,
- RF level: 0,
- Burst select: Mode Tch Random

Configuration of the common parameters:
- band: PCS1900,
- channel: 189,
- RF level: 0,
- Burst select: Mode Tch Random

Power on the mobile, dial SOS, you can find the burst must fit for the curve below.

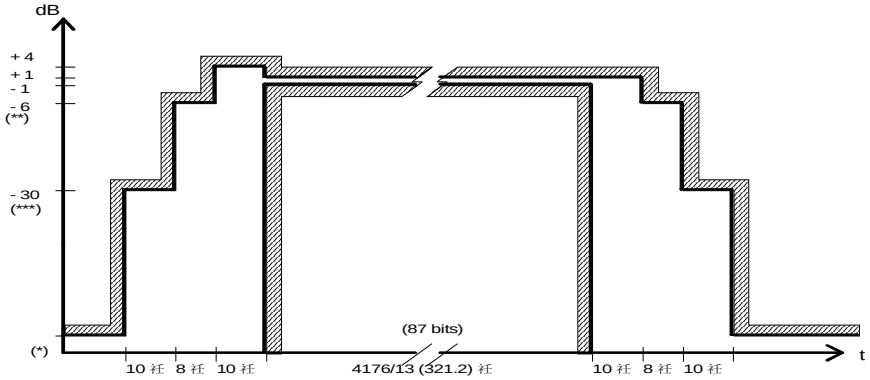


Figure 3 The request of the Power vs Time.

**3.2. Output Power**

- BAND GSM850/900

| Power level | Power Peak value | limit |
|---|---|---|
| | dBm | normal |
| 5 | 33 | +/-2 dB*) |
| 6 | 31 | +/-3 dB |
| 7 | 29 | +/-3 dB) |
| 8 | 27 | +/-3 dB |
| 9 | 25 | +/-3 dB |
| 10 | 23 | +/-3 dB |
| 11 | 21 | +/-3 dB |
| 12 | 19 | +/-3 dB |
| 13 | 17 | +/-3 dB |
| 14 | 15 | +/-3 dB |
| 15 | 13 | +/-3 dB |
| 16 | 11 | +/-5 dB |
| 17 | 9 | +/-5 dB |
| 18 | 7 | +/-5 dB |
| 19 | 5 | +/-5 dB |

- BAND DCS1800/PCS1900

| Power level | Power Peak value | limit |
|---|---|---|
| | dBm | normal |
| 0 | 30 | +/-2 dB*) |
| 1 | 28 | +/-3 dB |
| 2 | 26 | +/-3 dB |
| 3 | 24 | +/-3 dB*) |
| 4 | 22 | +/-3 dB |
| 5 | 20 | +/-3 dB |
| 6 | 18 | +/-3 dB |
| 7 | 16 | +/-3 dB |
| 8 | 14 | +/-3 dB |
| 9 | 12 | +/-4 dB |
| 10 | 10 | +/-4 dB |
| 11 | 8 | +/-4 dB |
| 12 | 6 | +/-4 dB |
| 13 | 4 | +/-4 dB |
| 14 | 2 | +/-5 dB |
| 15 | 0 | +/-5 dB |

### 3.3. Stop Tx measurements

On hook the mobile ,the test will be stop.

### 3.4. Transmit a burst after modifying parameters

Please note that each time a parameter is changed, then the user have to download to flash to validate the parameter modification. If the command is not performed, the old parameters are taken into account.

# 4. General description

## 4.1 Receive path

The Rx section integrates two differential input LNAs. The RFIL input path supports either GSM850 (869MHz to 894MHz ) or E-GSM900 (925 MHz to 960MHz). The RFIH input path supports either DCS1800 (1805MHz to 1880MHz) or PCS1900 (1930MHz to 1990MHz ).

The LNA inputs are matched to the 150ohm or 200ohm balanced output SAW filters through external LC matching networks. A quadrature image-reject mixer downconverts the RF signal to a low IF. The mixer output is amplified with an analog PGA. The quadrature IF signal is digitized with high-resolution A-D Converters (ADCs). A digital low-IF quadrature LO signal downconverts the ADC output to baseband.

The RF subsystem RX section is shown in Figure 4.

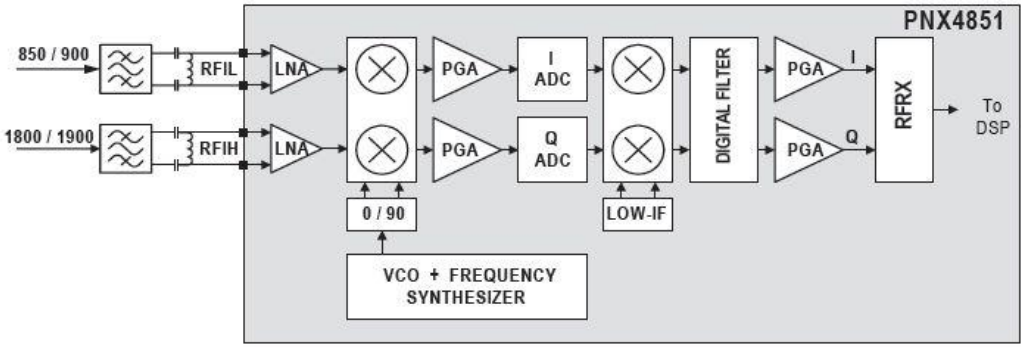


Figure 4 RF Rx path

## 4.2 LNA swapping

The PNX4851 LNA input may be swapped. The low-band LNA input RFIL may be used to receive either the GSM850 or E-GSM900 band. The high-band LNA input RFIH may be used to receive either the DCS1800 or PCS1900 band.

Under the default configuration, RFIL supports E-GSM900 while RFIH supports DCS1800.

Alternatively, LNA swapping can be enable via software.

# 5. Operating mode

## 5.1. Receive a Bch signal in quad band

For Rx mode, common parameters can be configured:
Configuration of the common parameters:
- the band: GSM850,
- the Rx channel: 189,
- antenna level: input antenna power (in dBm), so the receive path is forced to the corresponding AGC gain

Configuration of the common parameters:
- the band: GSM900,
- the Rx channel: 37,
- antenna level: input antenna power (in dBm), so the receive path is forced to the corresponding AGC gain

Configuration of the common parameters:
- the band: DCS1800,
- the Rx channel: 698,
- antenna level: input antenna power (in dBm), so the receive path is forced to the corresponding AGC gain

Configuration of the common parameters:
- the band: PCS190,
- the Rx channel: 661,
- antenna level: input antenna power (in dBm), so the receive path is forced to the corresponding AGC gain

## 5.2. Stop Rx mode:

On hook the mobile ,the test will be stop.