Tune Up Procedure

The tune up needs to be done for Duo phone is RF Calibration for its GSM system, to ensure the phone operates at the correct frequency and power level.

GSM RF Calibration

The main purpose of this GSM RF Calibration is to tune the main IC Digital Radio Processor (DRP) to have the appropriate parameters such that it will transmit or receive according to the correct specifications. Equipments needed to perform this calibration are Base Station Simulator (BSS), Power Supply, PC, and an application to run the calibration procedure automatically.

Followings are the parameters which are calibrated during this procedure:
- **Digitally Controlled Crystal Oscillator (DCXO) Calibration**
  This routine determines the default startup frequency to be as close as possible to the crystal frequency used by the system.
- **Low Noise Amplifier (LNA) Center Frequency Calibration**
  This routine adjusts the LNA center frequency to provide a maximum gain at the center of the band of operation.
- **I/Q Mismatch Compensation (IQMC) Coefficient Calibration**
  This routine corrects the IQ-mismatch by tuning to the proper coefficient.
- **Switched Capacitor Filter (SCF) Pole Calibration**
  This routine calibrates the poles of the SCF.
- **Analog Front End (AFE) Gain Calibration**
  This routine calibrates a part of the AFE gain steps.
- **Automatic Frequency Control (AFC) Calibration**
  This routine calibrates the frequency control algorithm to have an accurate startup interval when synchronizing with the network.
- **Received Signal Strength Indication (RSSI) Calibration**
  This routine corrects the received signal strength reported by the mobile phone such that it corresponds to the actual cell power of the base station.
- **Tx Power Calibration**
  This routine adjusts the transmit power according to the specified power levels.
- **Tx Power vs. Channel Calibration**
  This routine compensates the transmit power level differences across the channels in the band of operation.

All calibrations are done through software means, by tuning the DRP parameters inside the IC; hence no hardware tweaking is required.