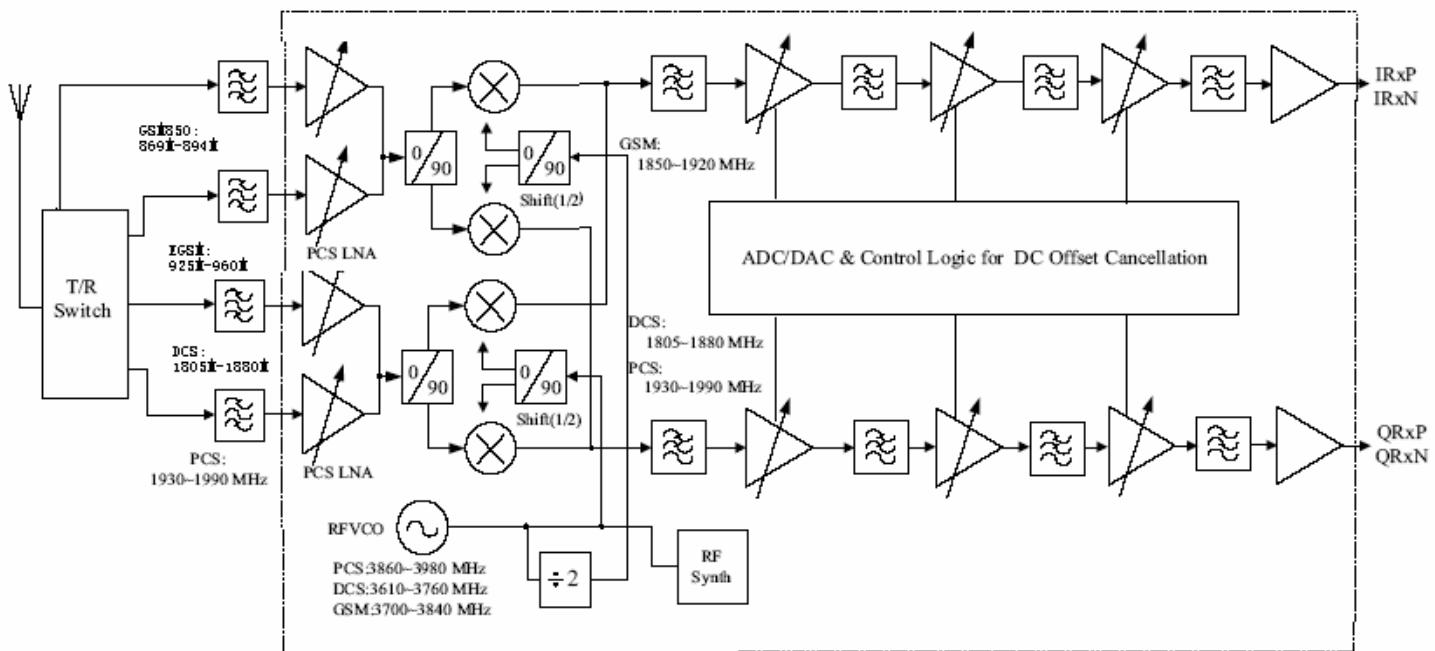


# 一、 Receiver operation

The frequency ranges of the synthesizer for RX mode are  
 RX mode    GSM850    869M -894M  
 PCS                    1930M-1990M



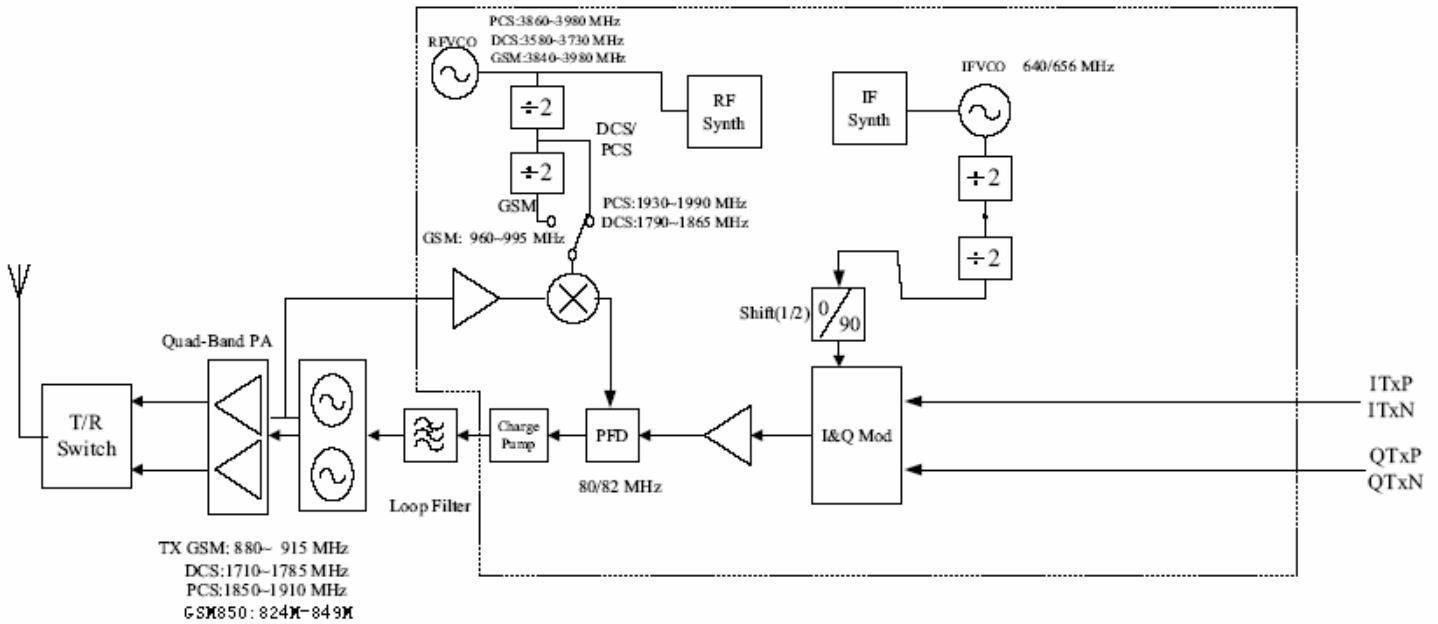
The Receiver structure in SKY77547 is a very-low IF solution. More than 100DB gain, more than 110DB control range. And by the way, all of the DC-offset canceling processes are done within chip. we do not have to care about that.

The LNA amplifies the RF signal after passing the T/R switch and RF SAW filter and before it enters the down-converter section. The RF signal is mixed with a local oscillator(LO) signal to generate the baseband signal.

Four LPFs are used in the baseband signal processing for reduce block signals. The first LPF employs two external capacitors, and we can check whether the front-end (LNA+MIXer) is functionally well or not by probing these two capacitors to see if there is any baseband signal(<200kHz).

After three stages of DC-offset canceling, the signal(I+/I-/Q+/Q-) then output to the baseband IC for further processing.

## 二、 Transmitter Operation



The frequency ranges of the synthesizer for TX mode are

TX mode	GSM850	1813M -1868M
	PCS	2035M-2149M

The transmitter chain converts differential IQ baseband signals to a suitable format for transmission by a power amplifier.

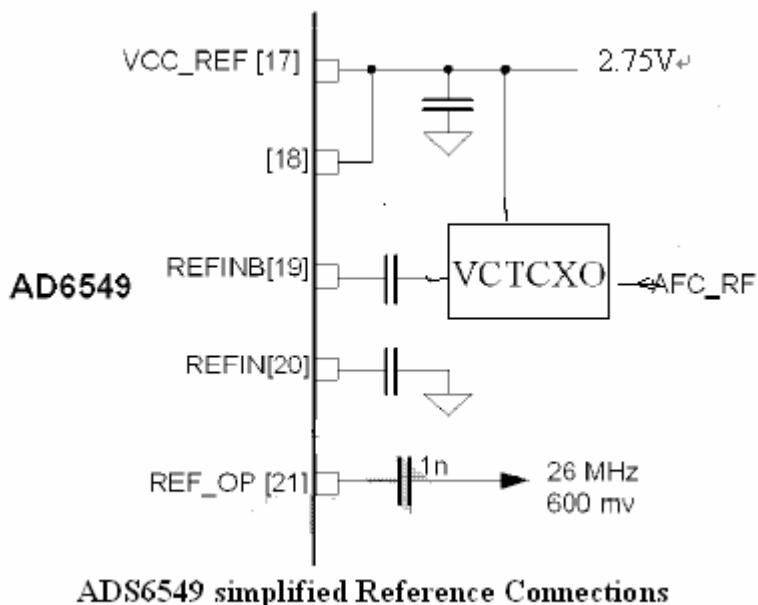
The common mode voltage range of the modulator inputs is 1.0V-1.4V and they have 0.5 Vp-p swing. The modulator circuit uses double-balance mixers for the I/Q paths. The Local signals are generated by dividing the IFLO signals by 8 in GSM band and by 4 in DCS band, and then passed to the modulator through a phase splitter/shifter. The IF signals generated are then summed to produce a signal modulated IF signal which is amplified and fed into the offset PLL block.

Within the offset PLL block there are a down converter, a phase comparator and a VCO driver. The down converter mixes the first local signal and the TXVCO signal to create a reference local signal for use in the offset PLL circuit. The phase comparator and the VCO driver generate an error current, which is proportion to the phase differential between the difference IF and the modulated IF signals, this current is used in a third order loop filter to generate a voltage, which in turn modulates the TXVCO.

The RF signal is then amplified by PA and power control loop to the assigned power level within the burst ramping mask. After passing the LPF of the T/R switch, the signal is then radiated through the antenna.

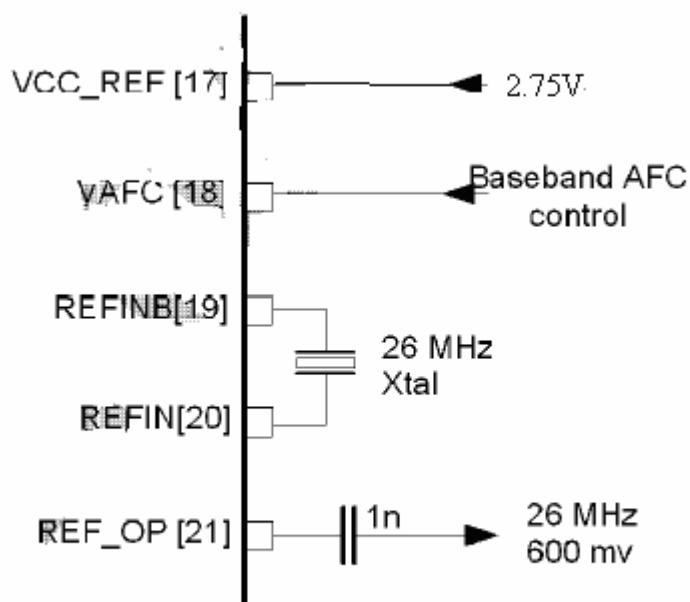
## VCXO Operation

The 26MHz reference frequency is provided by an external VCTCXO module ,supplied to the REFINB pin .The REFIN pin must be AC grounded via a inf capacitor .In this case temperature and frequency stability are provided by the VTCXO module .



ADS6549 simplified Reference Connections

The AD6548 requires only an external low cost crystal as the frequency reference. The circuitry to oscillate the crystal and tune its frequency is fully integrated. For good noise immunity the oscillator is a balanced implementation requiring the crystal to be connected across 2 pins. There is a programmable capacitor array included for coarse tuning of fixed offsets, and an integrated varactor for dynamic control. The oscillator is designed for use with a 26MHz crystal.



AD6548 Crystal Oscillator External Connections.

### 三、RF Specification Requirement

#### 1、TX Average carrier power

POWER LEVEL(GSM850)	max	Range	
5	dBm 33	normal +/-2 dB*)	ultimate +/-2.5 dB*)
6	31	+/-3 dB	+/-3 dB
7	29	+/-3 dB)	+/-4 dB*)
8	27	+/-3 dB	+/-4 dB
9	25	+/-3 dB	+/-4 dB
10	23	+/-3 dB	+/-4 dB
11	21	+/-3 dB	+/-4 dB
12	19	+/-3 dB	+/-4 dB
13	17	+/-3 dB	+/-4 dB
14	15	+/-3 dB	+/-4 dB
15	13	+/-3 dB	+/-4 dB
16	11	+/-5 dB	+/-6 dB
17	9	+/-5 dB	+/-6 dB
18	7	+/-5 dB	+/-6 dB
19	5	+/-5 dB	+/-6 dB

POWER LEVEL(DCS 1800)	max	Range	
0	dBm 30	normal +/-2 dB*)	ultimate +/-2.5dB*)
1	28	+/-3 dB	+/-4 dB
2	26	+/-3 dB	+/-4 dB
3	24	+/-3 dB*)	+/-4 dB*)
4	22	+/-3 dB	+/-4 dB
5	20	+/-3 dB	+/-4 dB
6	18	+/-3 dB	+/-4 dB
7	16	+/-3 dB	+/-4 dB
8	14	+/-3 dB	+/-4 dB
9	12	+/-4 dB	+/-5 dB
10	10	+/-4 dB	+/-5 dB
11	8	+/-4 dB	+/-5 dB
12	6	+/-4 dB	+/-5 dB
13	4	+/-4 dB	+/-5 dB
14	2	+/-5 dB	+/-6 dB
15	0	+/-5 dB	+/-6 dB

2、Frequency Error: 0.1ppm

3、Phase Error

(a): Peak Phase Error :20 degree

(b): RMS Phase Error :5 degree

4、ORFS(Ouptut Radio Frequency Spectrum) :

400KHz:-60dB

600KHz~1.8MHz:-60dB

5、Switching Spectrum

400KHz:-19dBm@GSM PCL5

400KHZ:-22dBm@DCS PCL0

6、 Rx Sensitivity

-102dBm@RBERII=2.4%