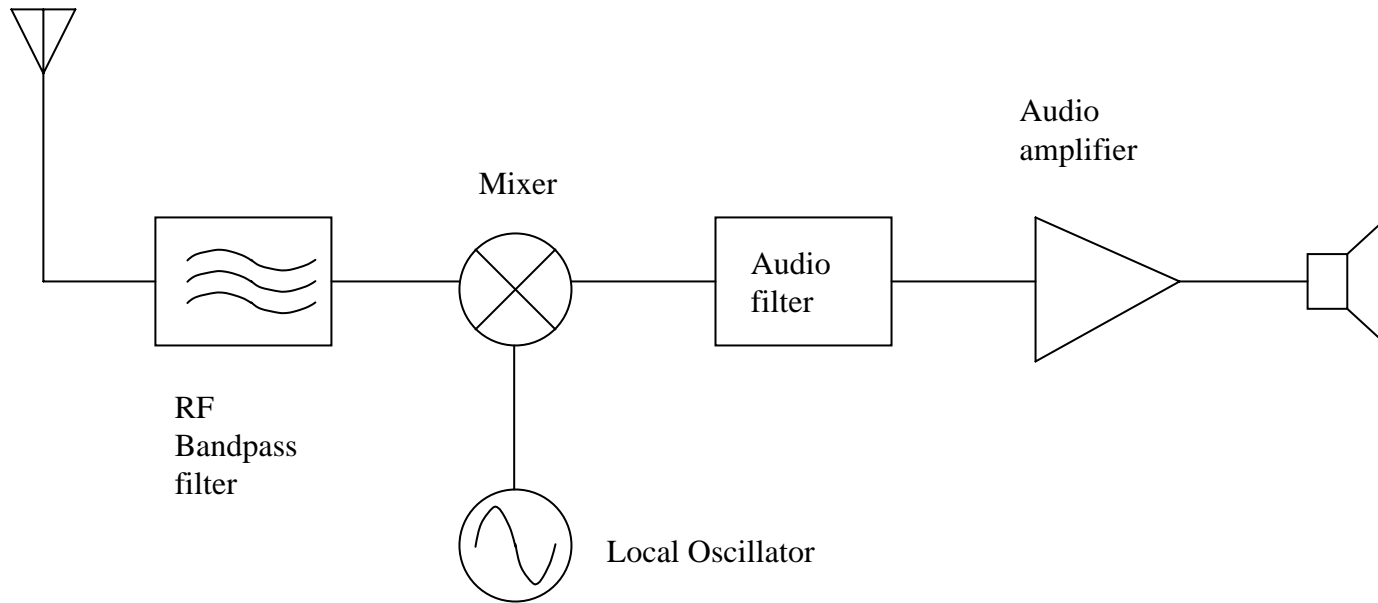
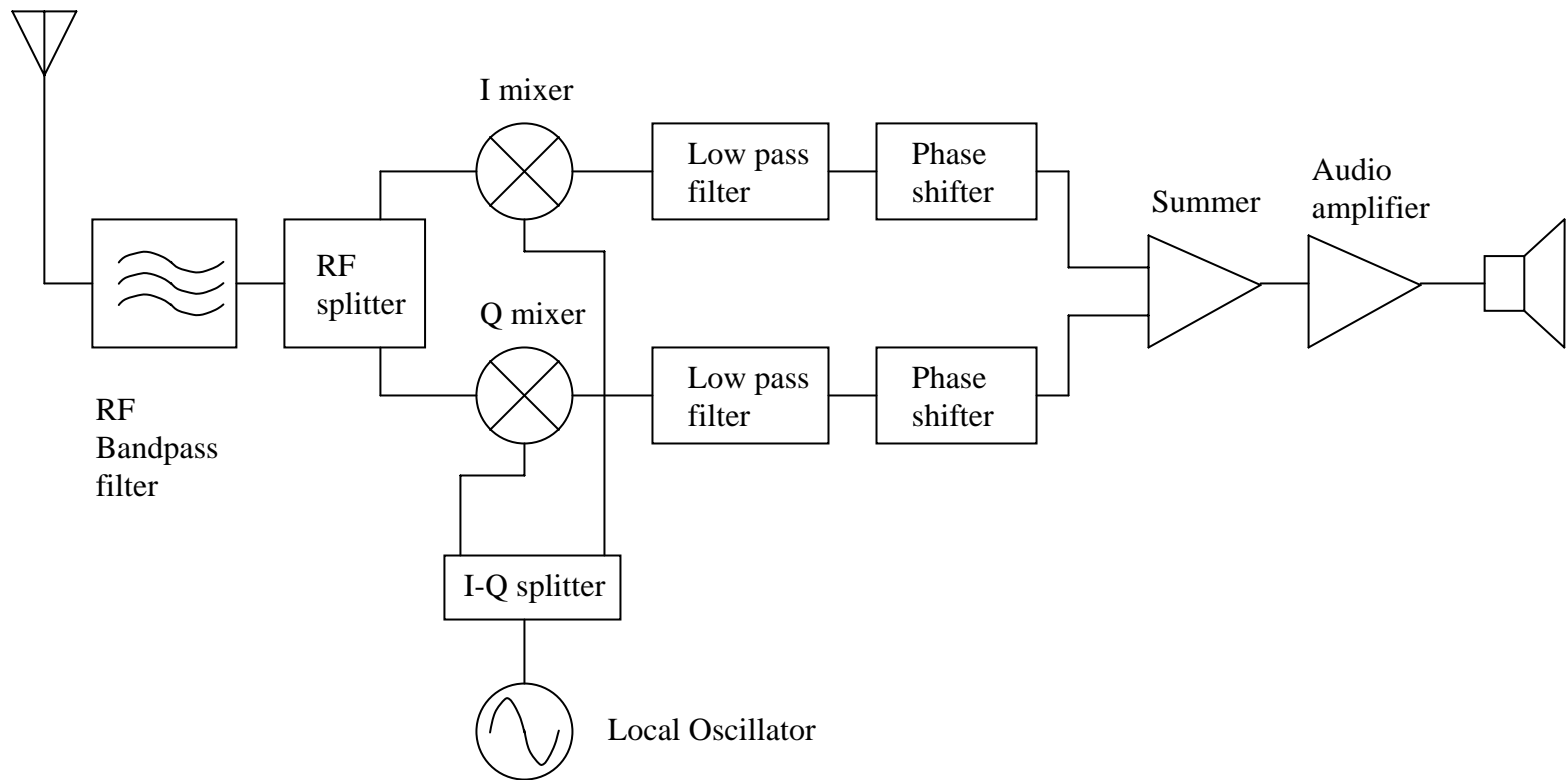


# Software Defined Radio

The 'Softrock lite' as a Club building project to get started in SDR

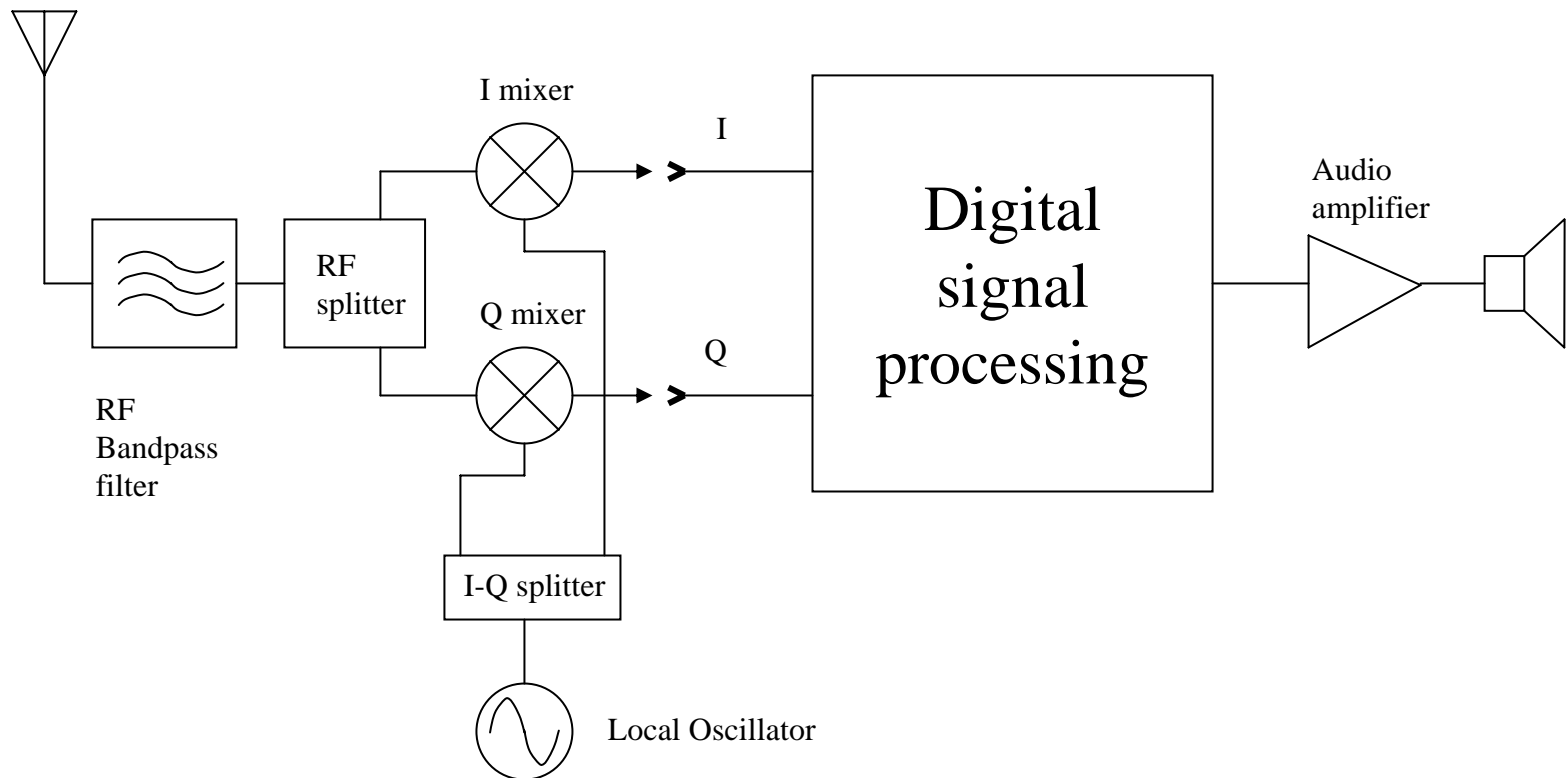


## Direct conversion receiver



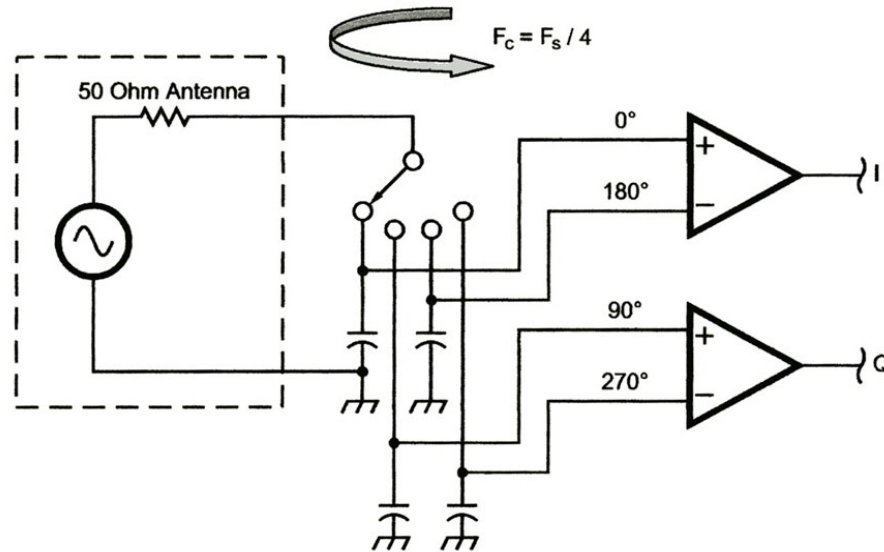
## Phasing direct conversion receiver





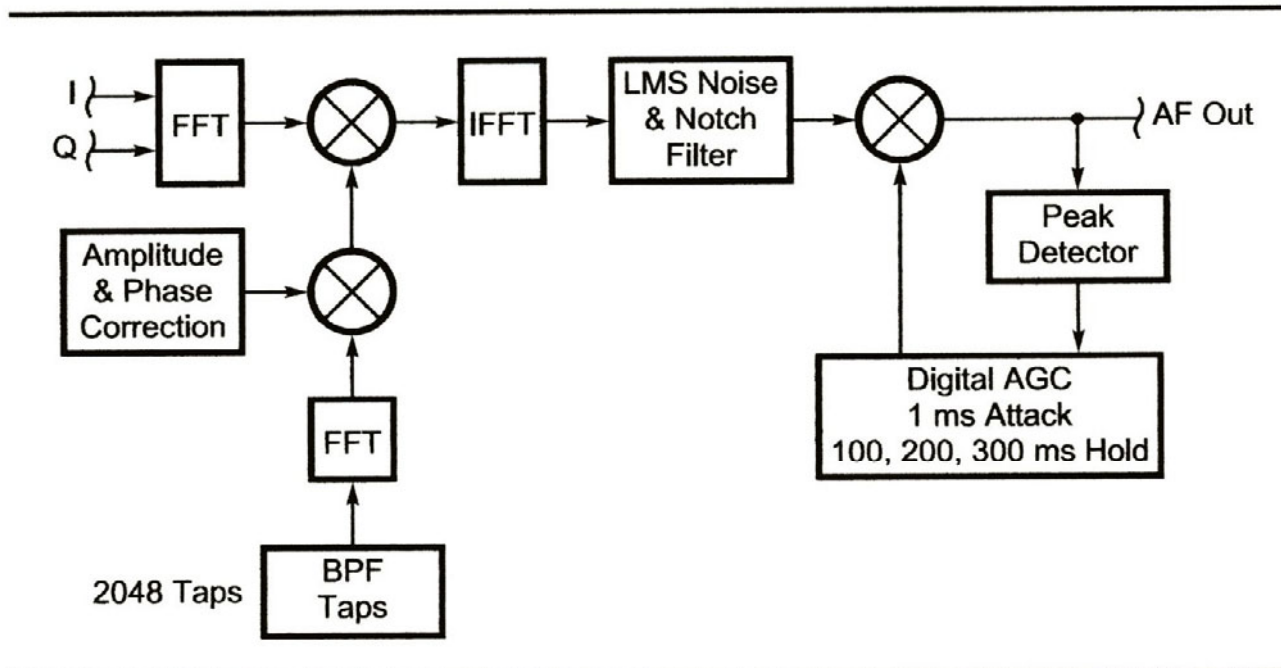
## Phasing direct conversion receiver with DSP

# Quadrature Sampling Detector that is at the heart of the Softrock lite



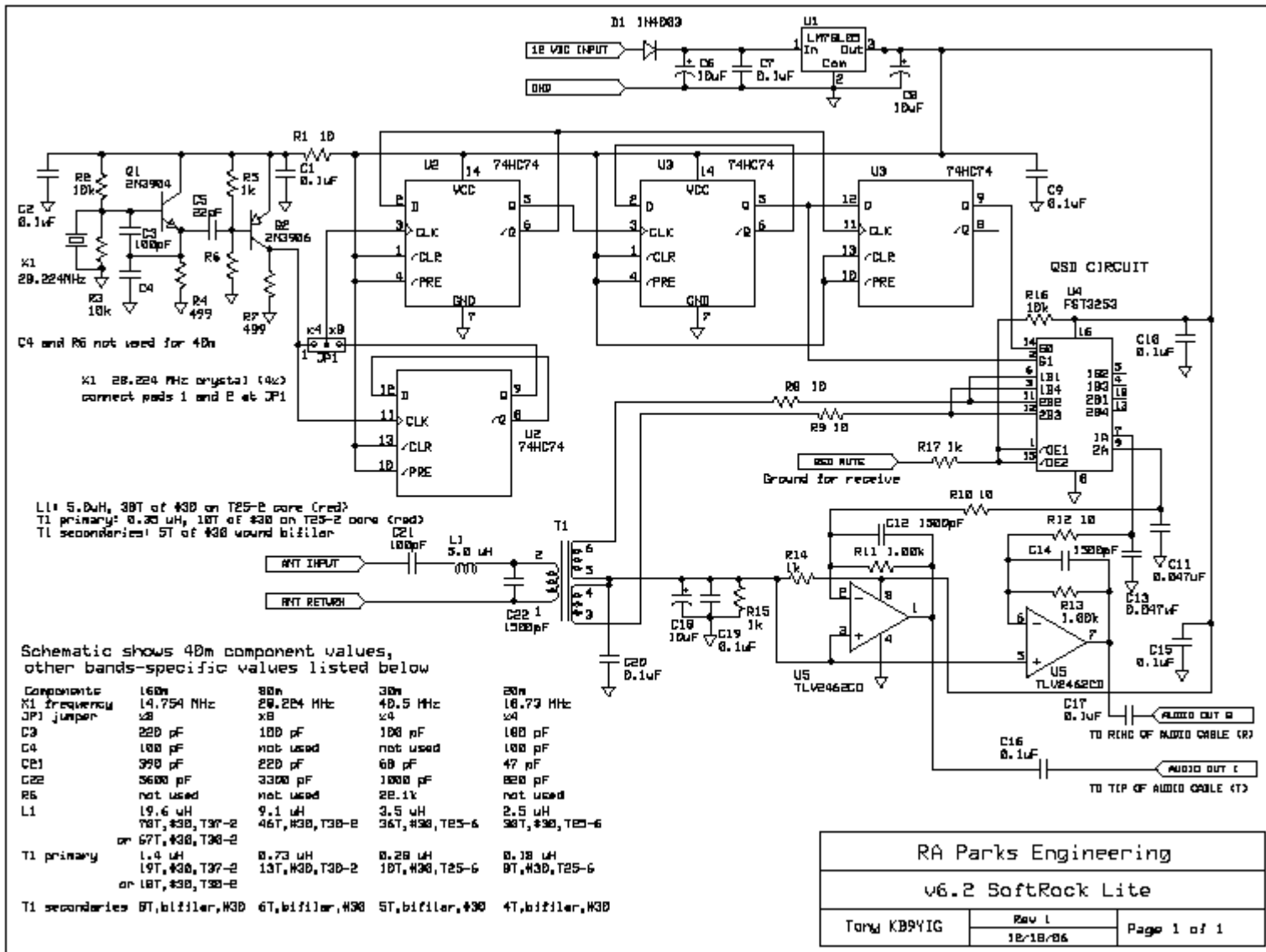
**Fig 10—Taylor detector: The switch rotates at the carrier frequency so that each capacitor samples the signal once each revolution. The 0° and 180° capacitors differentially sum to provide the in-phase (I) signal and the 90° and 270° capacitors sum to provide the quadrature (Q) signal.**

# SDR Software Architecture



**Fig 9—SDR receiver software architecture: The I and Q signals are fed from the sound-card input directly to a 4096-bin complex FFT. Band-pass filter coefficients are precomputed and converted to the frequency domain using another FFT. The frequency-domain filter is then multiplied by the frequency-domain signal to provide brick-wall filtering. The filtered signal is then converted to the time domain using the inverse FFT. Adaptive noise and notch filtering and digital AGC follow in the time domain.**

# Softrock lite schematic



# Softrock lite frequency coverage

## Sound card sampling rate

	48 KHz	96 KHz
40m kit option	7.032 to 7.08	7.008 to 7.102
80m kit option	3.504 to 3.552	3.480 to 3.576
160m kit option	1.819 to 1.867	1.795 to 1.891
30m kit option	10.100 to 10.148	10.076 to 10.165
20m kit option	14.023 to 14.071	13.999 to 14.095

# How to order a Softrock lite kit

- The cost is \$10.00 incl. shipping
- Orders will be accepted by PayPal to user name raparks@ctcisp.com or by mailing a check or money order to:
- Tony Parks  
1344 E 750 N  
Springport, IN 47386

# Softrock RxTx transceiver kits 1

- The 40m/30m RXTXv6.2 transceiver kit has the following four kit options:
- 40m/30m RXTXv6.2 kit with 28.06 MHz and 40.5 MHz crystals supplied for \$30
- 40m/30m RXTXv6.2 kit with 28.224 MHz and 40.5 MHz crystals supplied for \$30
- 40m/30m RXTXv6.2 kit with 28.06 MHz and 28.224 MHz crystals supplied for \$30
- 40m/30m RXTXv6.2 kit with 28.06 MHz, 28.224 MHz and 40.5 MHz crystals supplied for \$31
- The center frequencies provided by the three crystals are about 7.014 MHz for the 28.06 MHz crystal, about 7.055 MHz for the 28.224 MHz crystal and about 10.124 MHz for the 40.5 MHz crystal.
- Each kit price include the US/Canada mailing costs. For DX mailing each kit price needs to be increased by \$1 to cover the higher mailing cost.

# Softrock RxTx transceiver kits 2

- The 40m/80m RXTXv6.2 kit has 40m center frequencies of about 7.014 MHz and 7.055 MHz. The 80m center frequencies are about 3.507 MHz and 3.527 MHz. Kit price for the 40m/80m RXTXv6.2 kit is \$30 for US or Canada and \$31 for DX where postage costs are included in the kit prices.
- The 80m RXTXv6.2 kit at \$30 for US/Canada and \$31 for DX includes crystals to give center frequencies of 3.514 MHz, 3.549 MHz and 3.579 MHz for band coverage from 3.50 MHz to slightly above 3.60 MHz.
- The 160m RXTXv6.2 kit at a price of \$30 for US/Canada and \$31 for DX. Center frequencies provided in that kit will include 1.812 MHz, 1.843 MHz and 1.919 MHz.
- The 20m/30m RXTXv6.2 kit is \$38 for US/Canada and \$39 for DX. The kit includes a small daughter overtone oscillator kit to get center frequencies of about 14.047 MHz and 10.124 MHz.

# Softrock Resources and documentation

- <http://groups.yahoo.com/group/softrock40/>
- For Softrock lite: Files > Softrock v6.0 docs > SoftRock Lite docs
- For Softrock RxTx: Files > RXTX v6.2 files
- Tony Parks KB9YIG raparks@ctcisp.com

## ROCKY v3.2 SOFTWARE

- <http://www.dxatlas.com/Rocky/>