

## Circuit Description

### a. Transmitter section

Data from the host is sent to the U5(BBP/MAC ISL3871) through the PCMCIA interface. After being converted from digital to analog signals by the I and Q transmit digital-to-analog converters (DAC) in the U5(BBP/MAC ISL3871) the output signals are routed to the Transceiver ISL3684 (U11 pin46/47/49/50) . These balanced I and Q signals are fed through separate lowpass filters(R41/45/49/52 C100/105/107/108).

The output of the LPFs are routed to the up converter in the U11 (Transceiver ISL3684), which translates the baseband signal to the 2.45GHz ISM band by mixing it, in a pair of balanced modulators, with the I and Q local oscillator signals derived from the external RF VCO(U15 pin10/11:ISL3084 see RF VCO section).

After the LNA the signal proceeds to the quadrature up/down converter in the U11 (transceiver ISL3684), which performs direct down conversion to baseband. The local oscillator (LO) for the down conversion mixers is derived from the ISL3084 RF VCO (U15 pin10/11:ISL3084 see RF VCO section).

The transmit output signal from the U11 pin23 is fed to the ISL3985 power amplifier (U12 pin12). After the RF PA the signal (U12 pin6) travels through a bandpass filter (FL4:BPF) and the Transmit/Receive (T/R) Switch(U8 pin1). The filter within the range of 2.4GHz ~2.5GHz attenuates unwanted signals such as harmonics. The transmit output signal from the U8 pin5(Transmit/Receive Switch) is sent to the antenna1.

### b. Receiver section

The input signal to the radio is received through either antenna1 or antenna2. The received signal from the selected antenna is fed to a bandpass filter (FL1:BPF) which prevents out-of-band interfering signals from altering the performance of the receiver. Then, the signal is routed to a low-noise amplifier (LNA) in the Transceiver ISL3684 (U11 pin17/18).The LNA is a fixed gain amplifier and is preceded by a 30dB attenuator.

After the LNA the signal proceeds to the quadrature up/down converter in the U11 (transceiver ISL3684), which performs direct downconversion to baseband. The local oscillator (LO) for the down conversion mixers is derived from the ISL3084 RF VCO (U15 pin10/11:ISL3084 see RF VCO section).

The baseband output signals are designated RxI+, RxI-, RxQ+ and RxQ-(U11 pin51/51/55/58). These analog differential outputs are fed through separate I and Q lowpass filters(R42/44/47/54 and C92/93/99/104) to the U5 pin76/77/79/80 (BBP/MAC ISL3871).

After being converted from analog to digital signals by the I and Q transmit

**analog-to-digital converters (ADC) in the U5(BBP/MAC ISL3871) the output data is sent to the host through the PCMCIA interface.**

**c. RF VCO section**

**The RF VCO(ISL3084 U15) operates at twice the channel frequency. It is divided by two in a flip-flop circuit to form accurate in-phase (I) and quadrature (Q) LO signals at the channel frequency. The VCO is phase locked to the 44MHz crystal-controlled clock by the synthesizer in the U11 (transceiver ISL3684) and therefore constitutes an accurate channel frequency reference for the radio. The phase-locked loop (PLL) loop filter, consisting of C118,C123, R69, R65 and C125.**