The Enalasys eScan system is intended for testing of HVAC systems. Remote Data Collection Units (DCU's) are polled by a transceiver unit about every 30 seconds. After the remote DCU's have made measurements of air temperature, relative humidity, air flow, refrigerant pressure, etc. the data is transmitted to the transceiver unit.

Data transmissions are limited to 3 bursts of 20 mSecs spaced 100mSecs apart (20% duty cycle). All data bytes contain equal numbers of 1's and 0's so that during each transmission burst the duty cycle is always 50% regardless of the data content. The overall duty cycle is always 10% during any 100 mSec period.

Transmitter Chain

The transmitter chain consists of a SAW delay line oscillator followed by a modulated buffer amplifier. The SAW filter suppresses transmitter harmonics to the antenna. Note that the same SAW devices used in the amplifier sequenced receiver are reused in the transmit modes.

The transmitter is operated with on-off keyed (OOK) modulation, i.e., the transmitter output turns completely off between "1" data pulses.

The transmitter RF output power is proportional to the input current to the TXMOD pin. A series resistor (R82)is used to adjust the peak transmitter output power. Maximum saturated output power requires about 350 µA of input current.

Receiver Chain

The receiver is an Amplifier-Ssequenced Hybrid (ASH)with direct conversion of the received RF signal. Unlike a superheterodyne receiver there is no local oscillator.

The output of the SAW filter drives amplifier RFA1. ON/OFF control to RFA1 (and RFA2) is generated by the Pulse Generator & RF Amp Bias function. The output of RFA1 drives the SAW delay line, which has a nominal delay of 0.5 µs. The second amplifier, RFA2, provides 51 dB of gain below satura-tion. The output of RFA2 drives a full-wave detector with 19 dB of threshold gain. The onset of saturation in each section of RFA2 is detected and summed to provide a logarithmic response. This is added to the output of the full-wave detector to produce an overall detector response that is square law for low signal levels, and tran-sitions into a log response for high signal levels.