HX150 Circuit Description

1. Receive Signal Path

Incoming RF from the antenna is delivered to the RF Unit and passes through a low-pass filter consisting of coils L1001, L1002, L1003 and L1004,capacitors C1012, C1016, C1019,C1024 and C1036.

Signals within the frequency range of the transceiver enter a band-pass filter consisting of coils L1007, L1009, L1010 and L1012, capacitors C1043, C1047, C1049, L1051 and C1053, then amplified by Q1010.

The amplified RF is delivered to single chip transciver IC Q1015.

2. Audio Amplifier

The demodulated audio signal from the Q1015 passes through the audio power amplifier Q1019, providing up to 500 mW of audio power to the 16ohm loudspeaker.

3. Squelch Control

Squelch control is automatically performed by Q1015.

The internal Electric audio volume is controlled by a RSSI level.

Q1013 controls audio power amplifier Q1019 in response to the control signal from Q1015.

4. Transmit Signal Path

The speech input from the microphone MC1001 passes through the pre-emphasis circuit to Q1011, which contains the IDC.

The audio signal is applied to Q1015, which has passed through the low-pass filter.

The filtered audio signal is frequency modulation inside the Q1015.

The modulated signal from the Q1015 is then passes through the buffer amplifier Q1012, driver amplifier Q1009, then amplified transmit signal is applied to the final amplifier Q1008 up to 5.0 watts output power.

The transmit signal then passes through the antenna switch D1004 and is low-pass filtered to suppress harmonic spurious radiation before delivery to the antenna.

4-1 Automatic Transmit Power Control

Current from the final amplifier is sampled by C1018 and C1021, and R1003 and R1009, and is rectified by D1003. The resulting DC is feed back through Q1011 to the amplifier Q1008 and Q1009 for control of the power output. When the microprocessor selects ”High” or “Low” power levels, pin 4 of Q1013 voltage is generated according to the power levels.

5. Q1015 Single chip tansceiver IC RDA1846

The RDA1846 is a highly integrated single-chip transceiver for Walkie Talkie applications. It totally realizes the translation from RF carrier to voice in the RX path and from voice to RF carrier in the TX path, requiring only one micro controller.

6. Miscellaneous Circuits

Push-To-Talk Transmit Activation

When the PTT switch on the main PCB is closed, pin 60 of Q1013 goes low. This signal disables the receiver by disabling the 3.3 V supply bus at Q1005 to the RF amplifier Q1010.

At the same time, Q1006 activate the transmit 3.3 V supply line to enable the transmitter.