Circuit Description Theory of Operations

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Receiver:

1. RF Module

Low Noise Amplifier (LNA) consist of the Q1 and Q2, FIL1 for suppression the image frequency. Crystal X1 (using three difference frequency crystal 52.935MHz/53.1817MHz/53.735MHz for three difference channels) and Q5 act as an oscillator and the Lo signal (triple up to the desired LO frequency 158.805MHz/159.545MHz/161.205MHz for three difference channels) will be selected by L9 C40 L8 C36. RF signal from LNA and Lo signal is mixed by Q3, FIL2 Q4 FIL3 act the IF amplifier and filter the unwanted signal .U1(TA31161) is RF demodulation IC, AF and RSSI signal will be output .

2. Power control regulator

S1 is Power ON/OFF control switch, Q9 Q7 Q8 and C44 reduce the “POP” noise, Q13 C69 and U3 provide a +5v DC for all circuit, the POWER LED will light when the S1 sets to ON.

3. Mute and Squelch

The Mute circuit are controlled by U2-B VR2 and Q15, if the RF signal is weak then the Q5 will short the AF signal to ground. The noise section from the RF MODULE will be selected by U2-A U2-B and amplified by Q12 and rectifying the DC voltage which is filtered by C56 and R47 compare with the voltage of the IC’s Pin 9 from SQUELCH control VR1, if the RF signal is weak then the AF signal will be shorted by Q6 to ground and the indicator SQ-LED will OFF.

4. AF Amplifier and Expander

Q14 and Q10 for the AF amplifier, U4 acts the expander to improve the SIGNAL-NOISE-RATIO