

C. Transmitter

1) Microphone amplifier

The hybrid IC IC11 provides amplification, pre-emphasis, limiting and filtering of the microphone audio signal. It can prevent over modulation caused by high input level from the microphone and attenuate frequency above 3kHz generated by amplitude limiting, thus avoid adjacent channel interference. The audio signal passes through the low pass band filter Q61 and Q62 and output from pin 6 of IC11, which is then fed into pin 6 of IC10, the modulation circuit in the TxVCO. The audio deviation level can be adjusted by RPI.

2) Pre-amplifier

The local signal from pin 1 of IC10 is applied to the two pre-amplifiers consisting of Q2 and Q3.

3) Power Module

The output from the pre-amplifier is then amplified by the RF power module IC2 to reach an RF power of 2W (7.2V supply) or 3W (9.6V supply). The amplified transmit signal is then applied to the low pass filter consisting of C7, C8, C10 and L4, the antenna switching circuit D1 and the second low pass filter consisting of L1, L2, C1, C2 and C3 to reject unwanted harmonics of the carrier signal before emitting from the antenna.

4) Auto Power Control

The Auto Power Control (APC) circuit consists of Q11, Q12 and associated components. The APC provides a feedback loop to maintain a constant output power from IC2. When the unit is set to operate in low power mode, adjust RP4 such that the output power is 0.5W. D3 detects the carrier power from IC2 and converts it to become a DC voltage which is then applied to Q11, stabilizing the collector voltage of Q12 at 1.1V and in turn the output from IC2. When the unit set to operate at high power mode, the collector voltage of Q12 becomes 4V and the output from IC2 is stabilizes at 2W.

5) High/Low power control

The high/low power output is controlled by the high or low level from pin 43 of IC9 which is applied to Q10. When the unit is set to operate in low power mode, pin 43 is high level, Q10 becomes conductive and the output from collector of Q12 is 1.1V. Output power of unit is low (0.5W). When pin 43 is low level, Q10 is blocked, output from collector of Q12 becomes 4V, output power of unit is high (2W).