

Circuit Description

NTM-30 is made up from a pair of components, which are a TX(transmitter) and a RX(receiver). So, though FCC application of Certification is only applied for TX of NTM-30, explanation of TX and RX are described on "Circuit Description".

Transmitter(TX)

Configuration : Narrow Band with Variable Capacitor Diode

A transmitting frequency of the TX has 3 channels : A channel at 49,830MHz, B channel at 49,860MHz and C channel at 49,890MHz. The 3 overtone frequencies of Crystal Oscillator are used on TX.

Signal-flow path :

A frequency which is oscillated with 3 overtone by Q103(X101 : 16,610MHz, X102 : 16,620MHz, X103 : 16,630MHz) will take a route to Q102(Buffer), Q101(P.A.), Low Pass Filter and finally to the Antenna for the transmission.

MIC Amp :

A sound picked up through the MIC will be amplified by the ALC(Auto Level Control) built-in AF-Amp(IC101) and will be buffered by Q104. Then the Sound Frequency will be injected to the Variable Capacitor Diode (D101).

Voltage Stabilizer circuit :

Floating voltage will be stabilized by Q105 and D103.

Circuit Description

Receiver(RX)

Configuration : Single Super Heterodyne

A receiving frequency of the RX also has 3 channels : A channel at 49,830MHz, B channel at 49,860MHz and C channel at 49,890MHz. Its receiving type is Lower Heterodyne with Intermediate Frequency (IF) of 455kHz. A frequency of Crystal Oscillator (X201 : 49,375MHz, X202 : 49,405MHz, X203 : 49,435MHz) is used on each channel.

Signal-flow path :

A RF-signal received through the Antenna will take a route from Q201(RF Amp) to IC201(Mixing, IF Amp, Quadrature detector and Squelch trigger), IC202(Power Amp) and finally to the Speaker.

Voice Activated System :

A part of the voice signal will be branched to Voice Activated System which consist of IC203, D202, D203, IC204(1/2) and D204. When some level of the signal is detected at D202 and D203, IC204(1/2) will be controlled by a generated DC voltage. This is an activation of the system and also cause a LEC blinking(D204).

Range ALM :

When the receiver is out of area, the Squelch signal will be selected by IC204(2/2). Then an alarm sound will be generated by IC203(2/2) and be routed to the Speaker while the LED(D205) lights up.

Voltage Stabilizer circuit :

Floating voltage will be stabilized by Q207 and D206.