

CIRCUIT DESCRIPTION of NTM-910

NTM-910 is made up from a pair of components, which are a transmitter(TX) and receiver(RX). So, though FCC application of Certification is only applied for TX of NTM-910, explanation of TX and RX are described on "Circuit Description".

Transmitter(TX) part

Configuration : crystal-controlled PLL circuit

Transmitting frequency of the TX has 27 channels (please refer to the below).
The channel is manually selected by SW302 , SW303 and SW304.

1ch 902.200MHz	10ch 903.100MHz	19ch 904.100MHz
2ch 902.300MHz	11ch 903.200MHz	20ch 904.200MHz
3ch 902.400MHz	12ch 903.300MHz	21ch 904.300MHz
4ch 902.500MHz	13ch 903.400MHz	22ch 904.400MHz
5ch 902.600MHz	14ch 903.500MHz	23ch 904.500MHz
6ch 902.700MHz	15ch 903.700MHz	24ch 904.600MHz
7ch 902.800MHz	16ch 903.800MHz	25ch 904.700MHz
8ch 902.900MHz	17ch 903.900MHz	26ch 904.800MHz
9ch 903.000MHz	18ch 904.000MHz	27ch 904.900MHz

Signal-flow path

After IC301 get selected channel signal (which is occurred by SW302, SW303 and SW304) through IC302, fundamental frequency is oscillated by Phase Locked Loop circuit (IC301, Q302, D301 and Low Pass Filter). Range of the frequency is 451.1MHz to 452.450MHz. And, second harmonic frequency only of it is amplified by Q301. The frequency(902.2MHz - 904.9MHz) will take a route to FL301(Band Pass Filter), and finally to the Antenna for the transmission.

MIC amplifier

Voice sound picked up through the MIC will be amplified by Amplifier of IC301, then the sound will be injected to the D301(Variable Capacitor diode) and FM modulation is conducted.

Voltage stabilizer circuit

Floating voltage will be stabilized on Q305 and D302.

Receiver(RX) part

Configuration : crystal-controlled PLL circuit

Receiving frequency of the RX has 27 channels (please refer to the below). The channel is manually selected by SW2, SW3 and SW4. That receiving type is Lower Heterodyne with Intermediate Frequency (IF) of 10.7MHz.

1ch 902.200MHz	10ch 903.100MHz	19ch 904.100MHz
2ch 902.300MHz	11ch 903.200MHz	20ch 904.200MHz
3ch 902.400MHz	12ch 903.300MHz	21ch 904.300MHz
4ch 902.500MHz	13ch 903.400MHz	22ch 904.400MHz
5ch 902.600MHz	14ch 903.500MHz	23ch 904.500MHz
6ch 902.700MHz	15ch 903.700MHz	24ch 904.600MHz

7ch 902.800MHz	16ch 903.800MHz	25ch 904.700MHz
8ch 902.900MHz	17ch 903.900MHz	26ch 904.800MHz
9ch 903.000MHz	18ch 904.000MHz	27ch 904.900MHz

Signal-flow path

A RF-signal received through the antenna will take a route from Q1(RF Amp) to Q2(MIX), FL2 and FL3(Band pass filter), IC1(IF-Amp, Quad detector, Pre-Amp, Expander) and IC6(AF power amp), and finally to speaker. Fundamental frequency(445.750MHz - 447.100MHz) is made by Phase Locked Loop circuit (IC1, Q3, D1 and Low Pass Filter). And, second harmonic frequency(891.5MHz-894.2MHz) of it will take a route to Q2(MIX).

Sound monitor

A part of AF signal is branched to Q4(Amp) and the signal is converted to DC voltage. CPU(IC2) reads the DC voltage level and illuminate LEDs(D6 - D10).

Voice activated system

In case AF signal can not be detected for 5 seconds, sound is muted by Q5, Q6, Q7 and Q8 until next AF signal can be detected.

FCC ID : AK8NTM910

Model : NTM-910

Receiver(RX) part

Range alarm

When AF signal can not be detected (e.g. : receiver is out of area etc.), the device turns the light(D5) on and off, and beep sound is sounded from the speaker.

Battery monitor

When battery voltage level is down, the device turns the light(D4) on and off, and beep sound is sounded from the speaker. Then the power supply is automatically stopped.