

Technical Description for the Outdoor Wireless Speaker

Following is the function description of 900MHz Receiver of Outdoor wireless speaker:

For RECEIVER:

The receiving signal from the antenna is first passed through the L-C (for filtering) and RF amplifier circuit (C1, C2, C4, L1, L2 and L3 for filtering and Q2 for amplifier) to select the wanted signal.

Frequency Adjust: Frequency is selected by channel switch SW401 for CH .1 = 926.6 MHz , CH .2 = 925.8 MHz and CH .3 = 927.4 MHz .(The channel selection is input to MCU U1 Pin 4 and Pin 7)

De-modulation Circuit:

In the de-modulation circuit, the RF carrier frequency (for CH .1 = 926.6 MHz, CH .2 = 925.8 MHz and CH .3 = 927.4 MHz) is subtracted by the oscillated frequency and then converted into IF frequency (10.7MHz). (When the RF carrier signal is subtracted in the amplifier that is formed by D1, L5, R5, C12, C13, Q1, C9, C8, R5, C7, C73).

(For the oscillating frequency please refer to oscillating signal in VCO circuit)

VCO Circuit:

The oscillating frequency (The frequency is depend on the channel that the user selected. For CH .1 = 926.6 MHz, CH .2 = 925.8 MHz and CH .3 = 927.4 MHz) in the VCO circuit is control by change the voltage output (from U4 pin14) to D1 to change the output frequency from Q3 and Q4.

The VCO circuit is constructed by Q3, Q4 and other passive components D1, C20, C19, R9, R8, R7, C18, C17, C24, R10, C22, R12, C25, C27, C31, C27, C31, R13, C30, L8, C32 and L9.

The MCU and PLL:

The oscillating signal in the VCO circuit is controlled by the MCU U1 and PLL IC U4. (The MCU U1 pin 3, 5, 6 is used to communicate with the PLL IC (U4 pin 6, 7, 8) to give the Channel signal frequency is choice.

The PLL is a phase detector circuit that is used to monitor (by U4 pin 16) and control (by U4 pin 14) the oscillating signal in the VCO circuit that oscillated in the defined frequency

IF amplifier and IF Filtering:

The IF signal pass into the IF filter CF2 and amplify to a define level by the IF amplifier circuit. (That is formed by Q5, R25, R23, R26, R27, C46, C45, R28 and R29)

FM DE-Modulation.

U3 Pin 2 receive the IF signal (10.7MHz) and then demodulated into audio signal from U3 pin8

Audio Amplifier:

The audio signal is amplified by U2.

Power Amplifier:

The audio signal is feeding to the audio amplifier section from above RX module then passed through the EQ circuit / volume control circuit and amplifies by the Class D Amplifier to Speaker.

The functions of MCU on this power amplifier board that will be as below listed:

- 1) Power ON/OFF for this unit.
- 2) Volume Up/Down control.
- 3) Super Bass ON/OFF control.