Description of G8660

The G8660 intended for use as baby monitor that is composed of the 2.4GHz band FM transmitter and receiver. The send-receive frequency can select from the following by the switch.

Channel A: 2416.0MHz

Channel B: 2418.0MHz

1. Transmitter

1.1. Frequency synthesizer

IC1 is PLL (Phase Locked Loop) frequency synthesizer. The device is integrated reference oscillator, 64/65 divider, phase comparator, and VCO. D1 (variable capacitance diode) is a part of VCO.

The frequency of reference oscillator is determined by a X1 or X2 (crystal resonator). The frequency of VCO equals 1/3 of the transmission frequency. The frequency of divider output is 1/64 of the frequency of VCO. The frequency of phase comparator input is the same as the frequency of reference oscillator.

1.2. Modulator

IC2 is integrated amplifier and ALC (Automatic Level Control). D3 is a part of ALC. The ALC prevent the over modulation. D2 (variable capacitance diode) is a part of the reference oscillator. The modulate signal is imparted to D2, and then the reference oscillator is modulated FM method.

1.3. Tripler & amplifier

Q3 is frequency Tripler. The frequency is multiplied by 3 equals 2.4GHz.

Q2 is 2.4GHz amplifier.

F1 is 2.4GHz band-pass filter that use for spurious rejection.

Q1 is 2.4GHz amplifier.

A low-pass filter is added between the antenna and Q1. The filter reduces emission of harmonics.

1.4. Antenna

An antenna integrated into print circuit board that monopole type.

1.5. Power Supply

The source voltages transforms to DC6V from AC120V by AC adapter.

S2 is power switch.

IC3 is voltage regulator. The output voltages are 5V.

D4 is an LED that indicates working.

2. Receiver

2.1. Frequency synthesizer

IC1 is PLL (Phase Locked Loop) frequency synthesizer. The device is integrated reference oscillator, 64/65 divider, phase comparator, and VCO.

The frequency of reference oscillator is determined by a X1 or X2 (crystal resonator). The frequency of VCO is shown by the following formula.

$f_{VCO}=(f_{RX}-82MHz)/3$ f_{VCO}: frequency of VCO, f_{RX}: frequency of receive

The frequency of divider output is 1/64 of the frequency of VCO. The frequency of phase comparator input is the same as the frequency of the reference oscillator.

2.2. Tripler & amplifier

Q3 is frequency Tripler. The frequency is multiplied by 3 equals 2.3GHz.

Q2 is 2.3GHz amplifier. The output is imparted to mixer.

2.3. Antenna

An antenna integrated into print circuit board that monopole type.

2.4. RF amplifier & band pass filter

Band-pass filter is added between an antenna and Q1 that consist of discreet parts.

Q1 and Q2 is RF amplifier. F1 is 2.4GHz band-pass filter.

2.5. Mixer

Q5 is a frequency mixer that mixing down to 82MHz.

2.6. IF amplifier & demodulator

The frequency of the intermediate frequency is 82MHz. T1 and T2 is 82MHz band-pass filters. IC2 is integrated limiter amplifier and a PLL FM demodulator.

2.7. AF power amplifier

IC3 drives a speaker.

2.8. Sound light indicator

That indicates the sound levels.

2.9. Battery indicator

That indicates the low battery.

2.10. Power supply

The equipment can use external AC adapter or alkaline dry cell x 3.

The voltages of AC adapter are DC6V. The voltages of alkaline dry cell are 4.5V.

IC4 is voltage regulator. The output voltages are 3V