CIRCUIT DESCRIPTION

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Transmitter Unit:

Tx RF Module Part:

RF Frequency Oscillator (VCO)

Q2 function as oscillator for transmitter. The oscillator frequency is 2.414GHz(CH1) or 2.432GHz(CH2) or 2.450GHz(CH3).

RF Amplifier and Power Amplifier

Q1 is the power amplifier of transmitter.

PLL CIRCUIT

U1 (MB15E07SL) is a phase locked loop (PLL) IC. The output of the oscillator XOUT (8MHz) is input to the programmable reference divider. This 8MHz fequency is divided to 100KHz as the reference frequency, RF frequency from VCO is still divided to 100KHz by the pre-scaler built in the PLL IC. The phase difference between the reference frequency and the divided frequency by the pre-scaler will output to the tracking filter (R9, R10, C13, C14, R11, & C12) for locking the frequency. The DC voltage by filtering from the tracking filter is fed the varactor diode to control the VCO oscillator frequency until the VCO frequency is locked. The VCO will be locked at the desired carrier frequency.

Modulation

Firstly the audio signal is pre-modulated at 6.5MHz sub-carrier frequency by the built in IC U3, the varactor diode VD3 and the LC resonator L7,VC2. then the Video and the audio pre-modulated signals are modulated at RF carrier frequency by the varactor diode VD1.

MCU Controller

MCU control the location frequency by three data bus LE, DATA and CLK.

Power Supply

U4 is a regulator that the output DC voltage is 3.3V. This stable output is used to feed to pre-modulation IC U3 and PLL IC U1. Supply 5V stable power RF oscillator Power amplifier and RF amplifier.

Tx Camera and MIC Amplifier Part:

Video Signal

The IC U101 is color NTSC/PAL CMOS sensor, it can be set on NTSC mode by opening R102 and using 14.31818MHz crystal oscillator. The output of the sensor is the color NTSC analog video signal.

Audio Amplifier

The operational amplifier U103 and the Microphone MIC101 are used in Audio amplifier;Q105,Q106 and C127 are working AGC controller, the controlling range is about 30dB.

Night Light

The photo sensor D109 and Q104 built in night light detecting; Q101~103 are used for night light driver; The D101~108 is IR Led for night light indication.

Power supply

U102 is a 5V regulator, those stable output is used to feed to video sensor U101 and MIC amplifier U103;U104 is a 8V regulator, those stable output is used to feed to night light detector and night light IR Led.

Tx Main Part:

MCU Controller

U1,X2,D2 construct the MCU Controller. Powered by a stable 5V supply.

Channel Selector

SW102 is used to channel select.

Antenna

The antenna is a “F” type antenna, which is made by PCB.

Power Supply

The total unit is only powered by AC adaptor; U201 is a 5V LDO regulator, which can supply a stable power for RF module and MCU.