



CIRCUIT DESCRIPTIONS OF STMB201A

This product generates RF carrier signal for video and audio, and transmitts the RF signal to the receiver through the antenna.

Followings are descriptions of each block.

A. POWER SUPPLY AND REGULATOR

This product has a bridge circuit in it. So, external power can be supplied to two inputs alternately. When the input of control signal is applied to the base of Q6, Q5 is turned on. So, DC power is applied to the regulator (U7). U7 is a 8V regulator and the output of regulator is applied to all the circuit in this product.

B. SUB-CARRIER GENERATORS

U2(LA7058R) is a generator of sub-carrier 1. The frequency of which is 6.5MHz. The frequency of sub-carrier is adjusted by tuning coil named TC1. TC1 is a custom-made component which can be tuned to 6.5MHz. C19 is a DC block of audio and R25,R26,R27,R28 is an attenuator of audio level. Usually input level of audio is 1V P-P, but U2 needs small of them for 25kHz deviation.

The output signal from U2 is supplied to CF1 through R30. CF1 is a filter which only passes 6.5 MHz signal.

The sub carrier is supplied to U1 (video amp) through R8.

When the mic is used directly, the input level of audio is ranged from 6mV to 8mV. When this option is used, the aduio is routed to the Q4 through C47.

Q4 is pre-amplifier of audio. The audio is amplified and then, applied to the U5. U5 is a main amplifier of audio. And then, it is applied to U2 through C19.

C. PRE-EMPHASIS AND VIDEO AMP

The video signal (usually composite signal from external VIDEO source) is pre-emphasized and attenuated, and then, supplied the U1(VIDEO AMP). The parts located between CON2 and U1 is for pre-emhiasis.

NE592 is a video amp and has a variable resistor (VR1).

VR1 controls the level of video, which is supplied to the VCO.

The adjust of VR1 means the adjust of deviation of carrier.

D. CPU

This product has a CPU named U5(PIC16F84) to control the operation of the product.

U5 has a R-C oscillator which is composed of R51 and C39.

U5 needs 5V DC to operate and 5V DC is made by D2 and supplied to U5.

U5 has two outputs and one input. Input port is connected with PIN8 of CON1.

This pin is used to select channel. Whenever this pin is touched to ground, the channel is changed. Two outputs are used to send PLL data to the PLL IC.

E. PLL IC
U4(SP5055S) is a PLL IC which compares two signals and makes a error signal. U4 compares reference frequency from X1 and RF frequency from PIN 13 and then, makes a error signal which is supplied to VCO via R21, C17, C18 and Q1.

F. VCO
Q2(BFG540/X) and peripheral components is a voltage controlled oscillator. The frequency of this VCO is controlled by error signal from U4. When the error signal is increased, the capacitance of D1 is decreased because D1 is a varactor diode which increases the frequency of VCO, and vice versa.

The output from VCO is supplied to the antenna via attenuator and filter. These attenuator and filter are used to limit level of RF signal under the FCC regulation.