CST-2001/V
FCC ID# IP92K51/V
S/N 136
Two Channel Synthesized Transmitter
Frequency Range
154 - 174 Mhz
Power Output 250 mw

I.C. and Transistor Discription:

U1	3.5 Volt regulator	Toko TK11435CT-ND
U2	10Mhz 2.5ppm Reference	Temex TTF95AA010MHZ
U3	PLL	Nat.Semi. 1501A
U4	Micrcontroller	Micrchip 16F84/04
U5	4 Mhz Xtal	
Q1	FET	Silconix 2N7000
Q2	PNP	Mot. 2N2907
Q3,Q4,Q5	RF NPN	Mot. BFR92A
Q6	RF NPN	Nec. 46134
Q7,Q8,Q9,Q10	AUDIO NPN	Mot. 2N5088

RF Circuit Discription:

The Microcontroller (U4) has 2 factory programmed frequencies 154 - 174 Mhz. The clock frequency of the microcontroller is 4 Mhz. The microcontroller sends data to the Phase Lock (U3), which converts the data into a dc voltage. This voltage is applied to the varactor which moves the oscillator (Q4) frequency to programmed frequency. The oscillator output is injected into the buffer (Q3), the buffered output is fedback to the PLL (U2) and the RF pre-amp (Q5). When the oscillator is at the desired frequency the PLL lock detect output turns ON the N-Channel FET (Q1) which turns on the PNP transistor (Q2) and applies voltage to the pre-amp and the final amp (Q6). The harmonic output of (Q6) is attenuated by the low pass filter.

Audio Circuit Description:

The microphone signal is amplified by (Q9 and Q10). The pre-emphasis is handled by the RC combinations of both audio amplifiers. The low pass filter (Q7) attenuates the audio frequencies after 2700 Hz. THhe audio from the low pass filter is converted to a dc voltage, this voltage turns ON the AGC transistor (Q8) which shorts the audio from the microphone to ground to prevent over deviation. The varable resistor controls the amount of deviation to the varactor.

Antenna/Microphone Description:

The antenna and the microphone are combined together through a matching circuit. The 1.8 uh inductors isolates the RF from the audio section. The 100 ohm resistor and 18 pf capacitor matches the transmitter low pass filter to the antenna.

Computer interface Description:

The microcontroller has a 2 wire interface with the computer. When the program cable is connected to the transismitter and the computer this disables the transmitter and puts the microcontroller in program mode. The data from the computer is converted in a hex number and stored in EE of the microcontroller.