

Frequency Synthesizer Circuit

The Frequency synthesizer PLL(Phased Locked Loop). It consists of a VCTCXO(U304), PLL IC(U303), VCO(U303), and loop filter.

VCTCXO

The VCTCXO is a reference source of the Frequency synthesizer. It provides 19.68MHz reference frequency to PLL. The VCTCXO is a Voltage Controlled Temperature Compensated Crystal Oscillator having 19.68MHz(deviation 2.5ppm) frequency stability over all useful temperature range. A correct frequency tuning is made by the control voltage.

VCO

The VCO(U303) generates the signal 1720 to 1780MHz center frequency with the voltage control.

PLL IC

The PLL IC(U303) includes prescalers and charge pump. The reference divider in PLL IC divides the frequency of VCTCXO by 1968 and makes reference frequency 10KHz and 40KHz. This reference frequency is supplied to one of the input of phase detector. The signal generated at VCO goes into another input stage of the phase detector through a prescaler and the main divider. At this point, the error proportional to the phase difference of two inputs is occurred. The error signal is supplied to the frequency control input stage of VCO through the loop filter consisted RC.

Spurious Radiation Suppression Circuit

The spurious signal from antenna is suppressed at the duplexer. The duplexer has a flat characteristics to the receive signal and a high attenuation characteristics to the harmonic signal of transmission. So it suppresses the spurious radiation.

Table : The characteristic of duplexer filter(F306)

Parameter	Spceification(@25 degrees centigrade)	Typical Variation
TX		
Center Frequency	1880MHz	
Passband	18501910MHz	
Insertion Loss	3.5dB(Max.)	0.2dB
Return Loss	9.0dB(Min.)	1.0dB
Attenuation		
1930MHz	34.0dB(Min.)	2.0dB
RX		
Center Frequency	1960MHz	
Passband	1930 to 1990MHz	
Insertion Loss	4.5dB(Max.)	0.2dB
Return Loss	7.0dB(Min.)	1.0dB
Attenuation		
1910MHz	43.0dB(Min.)	2.0dB
Power Rating	5W	
Input/Output Impedance	50 ohms(Typ.)	
Operating Temperature Range	-40 to +85 degrees centigrade	