

General

Frequency Range	
Transmitter	: 1850 1910 MHz
Receiver	: 1930 1990 MHz
Channel Bandwidth	: 1.23 MHz
Channel Spacing	: 50 KHz
Number of Channels	: 1200
Duplex Separation	: 80 MHz
Type of Emission	: G7W
Input/Output Impedance	: 50 ohms
Intermediate Frequency	
Transmitter	: 130.38 MHz
Receiver	: 210.38 MHz
Local Frequency	
Transmitter	: 1st(F_{TX} -130.38), 2nd(260.76MHz)
Receiver	: 1st(F_{RX} -210.38), 2nd(420.76MHz)
TCXO Frequency	: 19.68 MHz
Frequency Stability	: (f_{RX} - 80MHz) 150Hz
Operating Temperature	: -30 +60
Supply Voltage	: +3.6V
Current Consumption	
Standby	: 150mA (Non-slot mode)
Talk	: 390mA (at +10dBm)
Size and Weight	
including Standard Battery	: 85.5(H) 46.5(W) 11(D), 51g
including Extended Battery	: 85.5(H) 46.5(W) 14(D), 77g

Transmitter

Waveform Quality	: 0.944 or more
Open Loop Power Control Range	
-25 dBm	: -60.5dBm -41.5dBm
-65 dBm	: -20.5dBm +1.5dBm
-104dBm	: +15.0dBm +30.0dBm
Minimum TX Power Control	: -50dBm below
Closed Loop Power Control Range	: 24dB
Maximum RF Output Power	: 200mW(+23dBm)
Occupied Bandwidth	: 1.23MHz
Conducted Spurious Emissions @1.25MHz	: -42 dBc/30KHz

Receiver

RX Sensitivity and Dynamic Range	: -104dBm, FER=0.5% or less
	: -25 dBm, FER=0.5% or less
Conducted Spurious Emission	
1930 1990 MHz	: <-81dBm
1850 1910 MHz	: <-61dBm
All Other Frequencies	: <-47dBm
Single Tone Desensitization	: lower than 1%
RX power=-101dBm	
Tone power=-30dBm	
Tone offset from carrier= 1.25MHz	
Intermodulation Spurious Response Attenuation	: lower than 1%
RX power=-101dBm	
Tone power 1=-43dBm	
Tone power 2=-43dBm	
Tone 1 offset from carrier= 1.25MHz	
Tone 2 offset from carrier= 2.05MHz	

3.1. Frequency Synthesizer Circuit

The Frequency synthesizer PLL(Phased Locked Loop). It consists of a VCTCXO(U304), PLL Module(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 ± 2.5 ppm frequency stability over all useful temperature range. A correct frequency tuning is made by the control voltage.

PLL module

The PLL module(U303) includes prescaler s and charge pump. The reference divider in PLL module 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.

The VCO(U303) generates the signal 1750 $\pm$ 30MHz center frequency with the voltage control.

3.2. 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(@25jÉ)	Typical Variation
TX		
Center Frequency	1880 MHz	
Passband	1850~1910 MHz	
Insertion Loss	3.6 dB(Max.)	0.2 dB
Return Loss	9.0 dB(Min.)	1.0 dB
Attenuation		
1930 MHz	38.0 dB(Min.)	2.0 dB
RX		
Center Frequency	1960 MHz	
Passband	1930~1990 MHz	
Insertion Loss	4.4 dB(Max.)	0.2 dB
Return Loss	9.0 dB(Min.)	1.0 dB
Attenuation		
1910 MHz	50.0 dB(Min.)	2.0 dB
Power Rating	5W	
Input/Output Impedance	50 (Typ.)	
Operating Temperature Range	-40 to +85	