VT9109 Circuit Description :

The following circuit description for model VT9109 is base on the circuit diagram and block diagram of VT9109.

VT9109 Handset :

1. Receiving Path

The receiving path is established by below sections.

Low Noise Amplifier (LNA)

FM signal filtering by the duplexer , and input to tuning amplifier Q555. Then input to 2nd tuning amplifier Q512 before output to mixer .

Mixer

Mixer is included Q520 , and local oscillator Q506 & Q504 , which is controlled by the PLL U1 PLL pin . The IF (10.7MHz) is filtering by a ceramic filter CF501 , the filtered IF will input to IF amplifier U1 pin 40.

IF amplifier

IF amplifier is built in U1. Amplified IF is filtering again by a ceramic filter F1 , the filtered IF will input to FM demodulator U1 pin 33.

FM demodulator and expandor

The IF is demodulate by quadrate coil T1 , then the recovered audio is input to the expandor for de-emphasis , before output to the handset speaker though audio amplifier .

2. Transmitting Path

The transmitting path is established by below sections.

Mic amplifier and compressor

Audio pick up by handset microphone is amplified by internal mic amplifier of U1 , then input to compressor for pre-emphasis , before input to the modulator (Tx VCO).

Modulator and Tx VCO

The transmit VCO is constructed by Q509 & Q503 , which is controlled by PLL of U1 . Both audio and data signal input to the transmit VCO will cause a frequency modulation progress.

RF power amplifier

FM signal is amplified by Q510 and fit to the antenna though duplexer .

VT9109 Base Unit :

1. Receiving Path

The receiving path is established by below section .

Low Noise Amplifier (LNA)

FM signal filtering by the duplexer , and input to tuning amplifier Q555. Then input to 2nd tuning amplifier Q512 before output to mixer .

Mixer

Mixer is included Q520 , and local oscillator Q506 & Q504 , which is controlled by the PLL U1 PLL pin . The IF (10.7MHz) is filtering by a ceramic filter CF501 , the filtered IF will input to IF amplifier U1 pin 40.

IF amplifier

IF amplifier is built in U1. Amplified IF is filtering again by a ceramic filter F1 , the filtered IF will input to FM demodulator U1 pin 33.

FM demodulator and expandor

The IF is demodulate by quadrate coil T1 , then the recovered audio is input to the expandor for de-emphasis , before output to the handset speaker though audio amplifier .

2. Transmitting Path

The transmitting path is established by below sections.

Mic amplifier and compressor

Audio pick up by handset microphone is amplified by internal mic amplifier of U1 , then input to compressor for pre-emphasis , before input to the modulator (Tx VCO).

Modulator and Tx VCO

The transmit VCO is constructed by Q509 & Q503 , which is controlled by PLL of U1 . Both audio and data signal input to the transmit VCO will cause a frequency modulation progress.

RF power amplifier

FM signal is amplified by Q510 and fit to the antenna though duplexer .

3. Telephone line interface

The telephone line interface circuit is established by below sections.

Audio power amplifier

IC2 a & IC2b are built as a power amplifier , according to high current output requirement for line interface.

Line relay & isolation transformer

T4 is the line isolation transformer , both audio input and output is though this transformer . RL1 is the reed relay for line seize , which is controlled Q3.

Ring detect circuit

IC2c and IC2d is used as a differential amplifier for pick up the ring signal , which is input though two 20M ohm resistor (R44 and R45) as an isolation from the line.

<u>VT9109 digital security coding system</u> :

The handset and base unit of VT9109 will exchange a random generated 16 bits digital security code , when every time the handset put on the charging cradle of base unit . This is to FCC Part 15.214(d) requirement.