

EXHIBIT C

[FCC Ref. 2.1033(b)(4)]

"Description of Circuit Functions"

Circuit Description

Model: 27957xxx-A

The following circuit description is for Model 27957xxx-A and base on the Circuit diagram and Block diagram.

Handset Unit

1. Receiving path

The receiving path is established by below sections:

RX Antenna

The Solid-wire RX antenna detects electro-magnetic signals at radio frequencies. These signals are further filtered into usable frequency for the receiving path through the 925MHz dielectric filter F1.

Low Noise Amplifier (LNA)

FM signal filtered by the 925MHz dielectric filter F1, is input to tuning amplifier Q3 before output to mixer.

Mixer, IF filter

Mixer has built in U1, which is controlled by the PLL. The signal is then filtered by CF1 (10.7MHz) ceramic filter and feed into pin 30 of U1 for demodulation.

IF amplifier

IF amplifier has built in U1, Amplified IF is filtering again by a ceramic filter CF2 (10.7MHz), the filtered IF will input to FM demodulator U1 pin 26.

FM demodulator and expander

The second IF signal and the recovered audio signal is demodulated and expand respectively by U1 for de-emphasis before output to the handset speaker through the audio amplifier (built in U1).

2. Transmitting path

The transmitting path is established by below stages:

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 built in U1, which is controlled by PLL. Both audio and data signal input to the transmission VCO will cause a frequency modulation progress.

RF Power Amplifier and TX Antenna

FM signal amplified by Q2 & Q4 and the amplified Radio Frequency signal from the LC filter is fed into the Solid-wire, TX Antenna then propagates the composite RF signal.

Base Unit

1. Receiving Path

The receiving path is established by below stages:

RX Antenna

The Solid-wire, spring type RX antenna detects electro-magnetic signals at radio frequencies. These signals are further filtered into usable frequency for the receiving path through the 2405MHz dielectric filter F21.

Low Noise Amplifier (LNA)

The filtered FM signal is inputted to tuning amplifier Q18 before output to mixer.

Mixer, Rx VCO, Tripler, IF filter

Mixer stage constructed by Q24, which is controlled by the Rx VCO build by Q20 and the Tripler Q2. The mixed IF signal is filtered by the 10.7MHz ceramic filter CF1 before passing into U1 pin 40 for demodulation.

IF Amplifier

IF amplifier constructed by Q1, amplified IF is filtering again by a ceramic filter CF2 (10.7MHz), the filtered IF will input to FM demodulator U1 pin 33.

FM Demodulator and Expander

The second IF signal is demodulated by quadrature coil T1, then the recovered audio signal is input to the expander stage in U1 for de-emphasis before output to MCU IC2 (TMP87C405) through the audio amplifier in U1.

2. Transmitting Path

The transmitting path is established by below sections.

Compressor, Splatter, Modulator

The received line audio and side tone signal from the hybrid will go to the audio input of the combo chip. It will pass through a compressor. From the output of the compressor, it will go to the splatter circuit. The audio will then modulate the Tx VCO (Transmit Voltage Controlled Oscillator) frequency of the modulator (Q13), which is controlled by the PLL of the combo IC.

Pre-amp, TX Antenna

The Tx VCO frequency is extracted and amplified by RF pre-amp Q12. The final Tx signal is provided to the Solid-wire, spring-type TX Antenna for transmission.

3. Telephone Line Interface

The telephone line interface circuit is established by below stages:

Telephone Line Control

Q12 transistor is used for line seizure, which is controlled by Q11.

Line-interface IC

TEA1062 is the speech IC that contains amplifier and AGC inside as the line interface.

Ring-detect circuit

U6 LM324 is used as a differential amplifier for accurately detecting the ring signal, which is connected to the ring-detect pin of D36529 DSP for ring detection.

U11, UTC31002 is the ringer IC with line DC powered, it will output ring signal to the buzzer when out of AC power. If the AC power exists, the ringing signal will be generated by the D36529 DSP and amplified by the audio amplifier LM386 (U2) to the speaker. The opto-coupler U13 is used to disable the ringer IC to drive the buzzer when the AC exists.

Caller ID circuit

D36529 DSP detects the CAS tone and the FSK signal, and it connects to base MCU U1 through the I2C buses.

Line in use function

U8-C and U6-C form the comparator circuit for detection of the telephone line voltage. If the line voltage is less than or equal to 19V, it will be identified as extension in use. R222, R223 of both 10M-ohm resistors are used as isolation from the line.

Answer Machine and Speakerphone

The line signal will pass through U9 TEA1062 and enter the D36529 DSP for recording the incoming message into the flash IC (U2 of TAD PCB). During recording incoming message, the call0screening will be performed by the DSP and amplified by the audio amplifier LM386 (U10 of base main PCB).

The out-going or MEMO messages are recorded through the mic and enter to DSP for digitizing the signal and stored into the flash memory.

D36529 DSP also perform speakerphone function since it contain dual CODEC, one for manage the signal for line-in and line-out, another form manage the signal of speaker output and mic input.

Corded phone

Corded phone receiver's signal come from pin 4 of TEA1062 and it can adjust 4 volume levels controlled by Q31 and Q33. The mic signal of the corded phone will pass through Q8 and then U9 TEA1062 and lastly go to the line.