EXHIBIT B

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

"Description of Circuit Functions"

Exhibit B(1)-1 to B(1)-3 - Circuit Description
Exhibit B(2) - Statement of Digital Security Code

CIRCUIT DESCRIPTION

Model : 27958A

The following circuit description for model 27958A base on the circuit diagram and block diagram of 27958A.

1. RECEIVING SECTION (BASE)

a. LNA, mixer, LO and IF amp

The received frequency will pass through a band pass filter (F16) . A low noise amplifier (Q18) will amplify this signal and will be mixed with 2nd LO(local oscillator) frequency derived from the second harmonics of the 1st LO. The mixer (Q23) will amplify the output signal which is the difference between the received frequency and the 2nd LO and will pass through a band pass filter (F18) . It will be mixed with the 1st LO signal to attain the IF(10.7Mhz) signal. This IF will be filtered further by CF1. The Filtered IF will be amplified inside the built-in LNA of the COMBO chip IC (U1) and filtered by F2 before demodulation. The LO frequency is generated by the PLL circuit of the combo IC and the VCO circuit (Q20).

b. Demodulator, Expander, Audio Amp

The demodulated signal will be filtered by a low-pass filter to remove residual IF frequency. The filtered audio will pass through a built-in expander then amplified by a built in amplifier.

c. Final AUDIO amp

The audio output from the module will be amplified by U9 (TEA1062). This will also amplify the DTMF signal of the system before sending it to the PSTN. Q11 provides the line switch. This also provides the line break and Pulse dialing.

2. TRANSMITTING SECTION (BASE)

a. 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 TXVCO(Transmit Voltage controlled Oscillator) frequency of the modulator (Q13) which is controlled by the PLL of the combo IC.

b. Pre-amp, Final amp

The 3rd harmonics of the TXVCO frequency is extracted by pre-amp (Q11) and amplified by Q7. the Final Tx signal is then passed through a filter F15 to reduced unwanted harmonics. It is then transmitted through the antenna.

3. RECEIVING SECTION (HANDSET)

a. LNA, mixer, LO and IF amp

The received frequency from the antenna will pass through a band pass filter F16 . A low noise amplifier (Q18) will amplify this signal and will be mixed with 2nd LO(local oscillator) frequency derived from the second harmonics of the 1st LO. The mixer (Q23) will amplify the output signal which is the difference between the received frequency and the 2nd LO and will pass through a band pass Filter(F18) . It will be mixed with the 1st LO signal to attain the IF(10.7Mhz) signal. This IF will be filtered further t by CF1. The Filtered IF will be amplified inside the built-in LNA of the COMBO chip IC(U1) and filtered by F2 before demodulation. The LO frequency is generated by the PLL circuit of the combo IC and the VCO circuit (Q20).

b. Demodulator, Expander, Audio Amp, Receiver

The demodulated signal will be filtered by a low-pass filter to remove residual IF frequency. The filtered audio will pass through a built-in expander then amplified by a built in amplifier and finally to the Receiver

4. TRANSMITTING SECTION (HANDSET)

a. 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 TXVCO (Transmit Voltage controlled Oscillator) frequency of the modulator (Q13) which is controlled by the PLL of the combo IC.

b. Pre-amp, Final amp

The 3rd harmonic of the TXVCO frequency is extracted by pre-amp (Q11) and amplified by Q7. The Final Tx signal is then passed through a filter F15 to reduced unwanted harmonics.

5. TELEPHONE LINE INTERFACE and TAD/speakerphone (Base)

The Telephone line interface circuit is established by below sections:

a. Line-interface IC

TEA1062 of a speech IC contains amplifier and AGC inside as the line interface.

b. Telephone line control

Q12 & Q13 are the transistors for line seizure, which is controlled by Q11.

c. 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 MCU U1 for ring detection. U11 UTC2411 is the ringer I.C.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 MCU and amplified by the audio amplifier LM386 (U10) to the speaker. The opto-coupler U13, is used to disable the ringer IC to drive the buzzer when the AC exists.

d. Caller ID circuit

The CAS tone and the FSK signal are detected by IC5 TC112, it has the interface with the base MCU U1 through the I2C buses.

e. Extension in use

U12-B and U12-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 10Mohm resistors are used as isolation from the line.

f. Answerer & Speakerphone

The line signal will pass through U9 TEA1062 and enter the D16559 DSP (U1 of TAD PCB) for recording the incoming message into the flash IC (U2 of TAD PCB). During recording incoming message, the call-screening will be performed by the DSP and amplified by the audio amplifier LM386 (U10 of base main PCB).

On the other hand, the out-going or MEMO message can be recorded through the mic, MIC1 and enter to the DSP for digitizing the signal and stored into the flash memory.

D16559 also perform speakerphone function since it contains dual Codec, one codec manage the signal for line-in and line-out, another codec manages the signal for speaker output and mic input.

g. Corded phone

The corded phone receiver has the signal come from pin 4 of TEA1062 and it contains 4 volumes levels controlled by Q31 and Q33. The mic of the corded phone MIC2 will pass through Q8 and enter U9 TEA1062 to output the mic signal to line.

h. Separate charger

The separate charger contains the timer IC AN6780 for controlling the timing for higher charging current and lower charging current.