

**EXHIBIT C**

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

"Description of Circuit Functions"

# Circuit Description

Model: 25839B

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The following circuit description is for Model 25839B 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 F18.

#### Low Noise Amplifier (LNA)

FM signal filtered by the 925MHz dielectric filter F18, is input to tuning amplifier Q19.

#### Mixer

The signal is mixed with the 456MHz Rx VCO signal, which is formed by Q20. The mixer is constructed by Q24. The signal is then filtered by a 10.7MHz ceramic filter CF1, before feed into the next stage.

#### IF amplifier

IF amplifier has built inside U1, Amplified IF is filtering again by a ceramic filter F2 (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 the handset speaker through the audio amplifier in U1.

### **2. Transmitting path**

The transmitting path is established by below stages:

#### Mic amplifier and compressor

Audio signal 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 Q13, which is controlled by PLL of U1. Both audio and data signal input to the transmission VCO will cause a frequency modulation progress.

### **RF Power Amplifier and TX Antenna**

FM signal is filtered by a 5800MHz dielectric filter F19 before amplified by the power amplifiers constructed by Q12, Q25, Q27 and Q28. After that, the signal is further filter by a 5800MHz dielectric filter F3 and then it is fed into a 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, RX antenna detects electro-magnetic signals at radio frequencies. These signals are further filtered into usable frequency for the receiving path through the 5800MHz dielectric filter F21.

#### **Low Noise Amplifier (LNA)**

The filtered FM signal is inputted to tuning amplifier Q29, before input to the mixer.

#### **Mixer**

Mixer is construct by Q28. The signal is mixed with the signal from the 3.2GHz local oscillator Q27. After that, the combined signal is pass through a 2.4GHz LC band pass filter. Then, it is mixed again in Q24 with the signal from 2.4GHz local oscillator Q23. Both Q27 and Q23 is controlled by the 452MHz Rx VCO Q20. Finally, the signal is filter by a 10.7MHz ceramic filter CF1.

#### **IF Amplifier**

The IF amplified by Q1 is then fed into U1 pin 40 for further IF amplification. Amplified IF is filtered 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 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 463MHz Tx VCO (Transmit Voltage Controlled Oscillator) frequency of the modulator (Q13), which is controlled by the PLL of the combo IC.

### **Final amp, TX Antenna**

The Tx VCO frequency is doubled and amplified by Q12. The final Tx signal is then passed through a 925MHz dielectric filter F20 to reduce the unwanted harmonics. After this, the signal is provided to the Solid-wire, TX Antenna for transmission.

## **3. Telephone Line Interface**

The telephone line interface circuit is established by below stages:

### **Audio Power Amplifier**

Q5 & Q6 are built as an audio amplifier, according to high current output requirement for line interface.

### **Line Relay & Isolation**

Line isolation mainly performed by two transistors (Q1 and Q2). Q2 also has a function of controlling the line-seize. Both audio input and output will through transistor Q1.

### **Ring Detect circuitry**

Q8 and Q13 are used as AC amplifier for pick up the ring signal, which is input through resistor R50 (3.6M-ohm) and capacitor C28 (10nF, 500Volt) as DC isolation from the telephone line.

### **Caller ID Circuit**

The CAS tone and the FSK signal are input from the audio transformer and couple from the telephone line through C6, C23 (680pF, 2kVolt) and R53, R54 (330kohm)