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富達國際科技股份有限公司

台北縣中和市連城路 168 號 5F-1

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HANDSET

1. RF/Audio Section

The radio link Handset and Base is full duplex at 902/928 MHz with the 40 channels. FM modulation is used for the link. The 1st IF frequency is 10.7MHz and the 2nd IF frequency is 450KHz. The operating frequency for the cordless phone is selected from one of the following channels and controlled by the synthesizer U501 that is programmed by the MCU.

This section is common to both handset and base as the same ICs are used LMX1602(U501), KA3361(U500) is made up of dual serial input PLL frequency synthesizer with 1000MHz prescaler. KA3361 is a narrow-band IF detector IC.

1.1 Receiver

The receiver section is made of double conversion with 10.7MHz as the first and second IF. Rx signal from the duplexer circuit is amplified by a Low Noise RF transistor and passed to a Mixer (Q500), and it is converted to 10.7MHz IF and it is then double converted to 405KHz IF in the internet mixer of U500. Voice/data signal is demodulated and output from pin9 of U500. The demodulated signal is then divided into two paths, a path is fed into the data amplifier Q606, Q605. The other path will go through a de-emphasized amplifier and an expander in IC11B. Recovered signal can be muted by the pin 13 of IC11B, the volume level of the signal can be controlled by the knob switch SW1.

1.2 Transmitter

Audio signal (from Microphone for headset/Tip & Ring for base) is first fed into the amplifier and compressor inside IC11A. The signal will pass through a limiter. The AGC and the limiter have the property to limit the maximum signal that feed into the transmitter so that the RF deviation is limited. The transmitter section mainly divided into two parts. They are the voice/data modulator and the Tx power amplifier. The voltage-controlled oscillator VCO operated at the Tx frequency controlled by the synthesizer is modulated by the audio and data signals. Modulated signal is amplified by the RF amplified and sending the signal to the duplexer for radiation by the antenna.

1.3 Duplexer

Two band-pass filters are matched to use as duplexer. The function of the duplexer is to multiplex the transmitting and receiving signals to a common antenna while providing isolation and rejection of interference and other spurious signals.

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1.4 Alerter

The alerting signals include the following: Ringing, Paging, Key beep and Low battery warning tone. These tones are generated by the MCU to the alerter through the driving circuit formed Q608 and the associated components.

1.5 Headset microphone

The condenser microphone is in the headset and it biased by the resistor R621. The signal is applied to the amplifier inside IC 11A

2. MCU

2.1 Battery Detect

The voltage detector is composed of IC 12 that is used to detect battery low condition. The detecting accuracy of the voltage detector is $\pm 0.2V$. The detect pin BAT-LOW is connected to the pin 70 of MCU.

2.2 Carrier Detection

This 40 channels cordless has the features of auto-scanning. This is done by the detection of the RSSI at pin 71 of MCU of handset. During PHONE on or CHANNEL changing, the MCU will select the clearest channel for the RF communication.

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BASE

3. RF/Audio sections

The operation of the RF/Audio section is similar to that of the handset.

4. Telephone Network

4.1 Telephone interface

Fuse FUSEx is for over-voltage protection. Relay RL1 controls the on/off hook state and pulse dialing. The Tip& Ring are isolated from the base circuit by the transformer T1, relay RL1.

4.2 Ring Detect

When ring signal is present on the Tip Ring, and envelope waveform of the ring pattern will transfer to pin 69 of MCU by the Q1. The MCU will read this waveform and determine whether it will send ringer command.

4.3 Sidtone Cancellation Network

The sidetone cancellation is a hybrid circuit of the Tx and Rx paths of the telephone circuit formed by the Q12.

5. MCU

5.1 Charging Network

Base charging circuit provides a DC current for handset battery. Resistor R12P controls the current flow.

5.2 Carrier Detection

This is similar to the handset counterpart.