To: Angela - ITS
Fm: Blanche - OT 2/27 1/2

Circuit Description RS128 (43-3507)

This is a 900MHZ band cordless telephone combine with built in corded phone for domestic use. Radio transmitter with FM technology provides greater mobility to the user within approximately 200 meters radius around the base. Beside it has a base dial pad plus intercommunication between base and handset.
Following paragraphs describe the detail of major building blocks.

1)Ringer Detection

a) Base
Incoming ringer signal is first attenuated by R129 C19 Z3 and input to PC2 , which is an optically isolated transistor. The secondary signal is then feed to micro controller (MPU) U201 for generating response signal according to the setting of inputs. When the ringer switch is set to on position MPU generates ringer signal to speaker amplifier U8 upon receiving ringer input. At the same time MPU sends digitally coded information to handset via RF link.

In case of power failure, The ringer is directly generated by the incoming signal by rectifying the ringer signal at U1. In this situation, RF link is disabled in order to save power consumption.

b) Handset
When digitally coded information is received from the base it will be decoded at MPU U1. Then necessary ringer signal is generated and applied to Q13, which drives the transducer BZ1.

2) Surge protection

The surge absorber V1 is mounted in the Base unit. It designed to operate when voltage over 330V. In general it is common to have induced surges in the telephone line due to lightening. If it allow entering the unit damage to the unit is imminent. The relay, Fuse and hybrid transformer is most venerable to high voltage surges and V1 surge absorber can prevent it.

3) Line control and Hook control.

When the unit is operated by remote handset, line control is done by MPU. It turns on transistor Q5. Then Telephone line power feeds to Speech circuit U2 and around component. U2 is integrated circuit that acts as a bridge between telephone line and internal voice path. When the unit is operated by picking corded handset it will detect by MPU and it turns on Q5.

4) Speakerphone and Volume control

Hand-free function is available in this telephone. User can select either answer or initiate a call using base keypad. Special microphone and speaker is located in the base unit. IC U3 controls this function. Send and receiver signal is on or off according to level setting

at the IC U3. It allows user to talk with second party without interrupting. Voice signal is selected according to user commands by MPU. IC U4 controls receiver voice according to user input. The received signal from telephone line that feeds to speaker amplifier U8.

5) Caller identification and DTMF generation

The unit is fitted with caller identification feature provided by IC U202. It can detect and input FSK signal and input decoded signal to MPU. MPU then display message and numbers also sends necessary digital information to handset via RF link. MPU controls IC U202 via parallel data port and also it makes use of Dual Tone generator inside the U202. According to user input relevant DTMF tones are been generated by U202 and sent to telephone line.

6) Power Control

Base Unit

The main power is come from AC/DC adapter, which provide 12V DC to the unit. Inside the unit there are three different voltages available for different modules. 12V non-back up voltage is supplied to the speaker amplifier. Radio part is supplied with non-backup regulated 5V voltage. Then the MPU , speech network and speaker phone related circuit were supplied with regulated 5V with a backup source. The backup power is taken form6 X dry cell batteries. In case of power failure and there is no backup batteries were inserted, telephone line power is taken in order to keep minimum operation.

Handset

Three cells of Ni-Cd battery (3.6V) provide necessary power to the handset. In order to keep power consumption to minimum, the radio receiver is turn on and off periodically by MPU and Q7. The MPU is supplied with regulated 3.6V by U4.

7) Battery charging

The unit is equipped with separate battery charger so that handset batteries can be charged when necessary. The charger is operated with AC/DC power adapter.

8) Radio module

Both handset and base use 900MHz analogue radio that transmits and receive signal in full duplex mode. Audio and data signal is FM modulated before transmitting from the module. The radio module is fully covered with shield plate in order to minimize interference to other equipment.

Frequency Table

10CH	Hand TX	Base TX
	~~925.30~~	~~902.80~~
1	925.35	902.85
	~~925.40~~	~~902.90~~
	~~925.45~~	~~902.95~~
	~~925.50~~	~~903.00~~
2	925.55	903.05
	~~925.60~~	~~903.10~~
	~~925.65~~	~~903.15~~
	~~925.70~~	~~903.20~~
3	925.75	903.25
	~~925.80~~	~~903.30~~
	~~925.85~~	~~903.35~~
	~~925.90~~	~~903.40~~
4	925.95	903.45
	~~926.00~~	~~903.50~~
	~~926.05~~	~~903.55~~
	~~926.10~~	~~903.60~~
5	926.15	903.65
	~~926.20~~	~~903.70~~
	~~926.25~~	~~903.75~~
	~~926.30~~	~~903.80~~
6	926.35	903.85
	~~926.40~~	~~903.90~~
	~~926.45~~	~~903.95~~
	~~926.50~~	~~904.00~~
7	926.55	904.05
	~~926.60~~	~~904.10~~
	~~926.65~~	~~904.15~~
	~~926.70~~	~~904.20~~
8	926.75	904.25
	~~926.80~~	~~904.30~~
	~~926.85~~	~~904.35~~
	~~926.90~~	~~904.40~~
9	926.95	904.45
	~~927.00~~	~~904.50~~
	~~927.05~~	~~904.55~~
	~~927.10~~	~~904.60~~
10	927.15	904.65
	~~927.20~~	~~904.70~~
	~~927.25~~	~~904.75~~

Antenna is used for both RF transmission and RF reception (same for both B/U & H/S)

For the transmission, audio signal is sent to the RF Module. The RF Module can convert it to RF frequency. The RF frequency goes out from the Module Antenna pin, through PCB layout pattern, antenna fixing screw and then radiated out from Antenna.

For the reception, RF signal is pick up by the Antenna and goes through antenna fixing screw, and then goes through PCB layout pattern, and sent to Module Antenna pin. The FR Module can convert it to audio signal and output through the Audio output pin.

Please note that the RF module for 43-3506 & 43-3507 is Sambo (SBM-3020A-HIW - H/S, SBM-3020A-BIW - B/U)