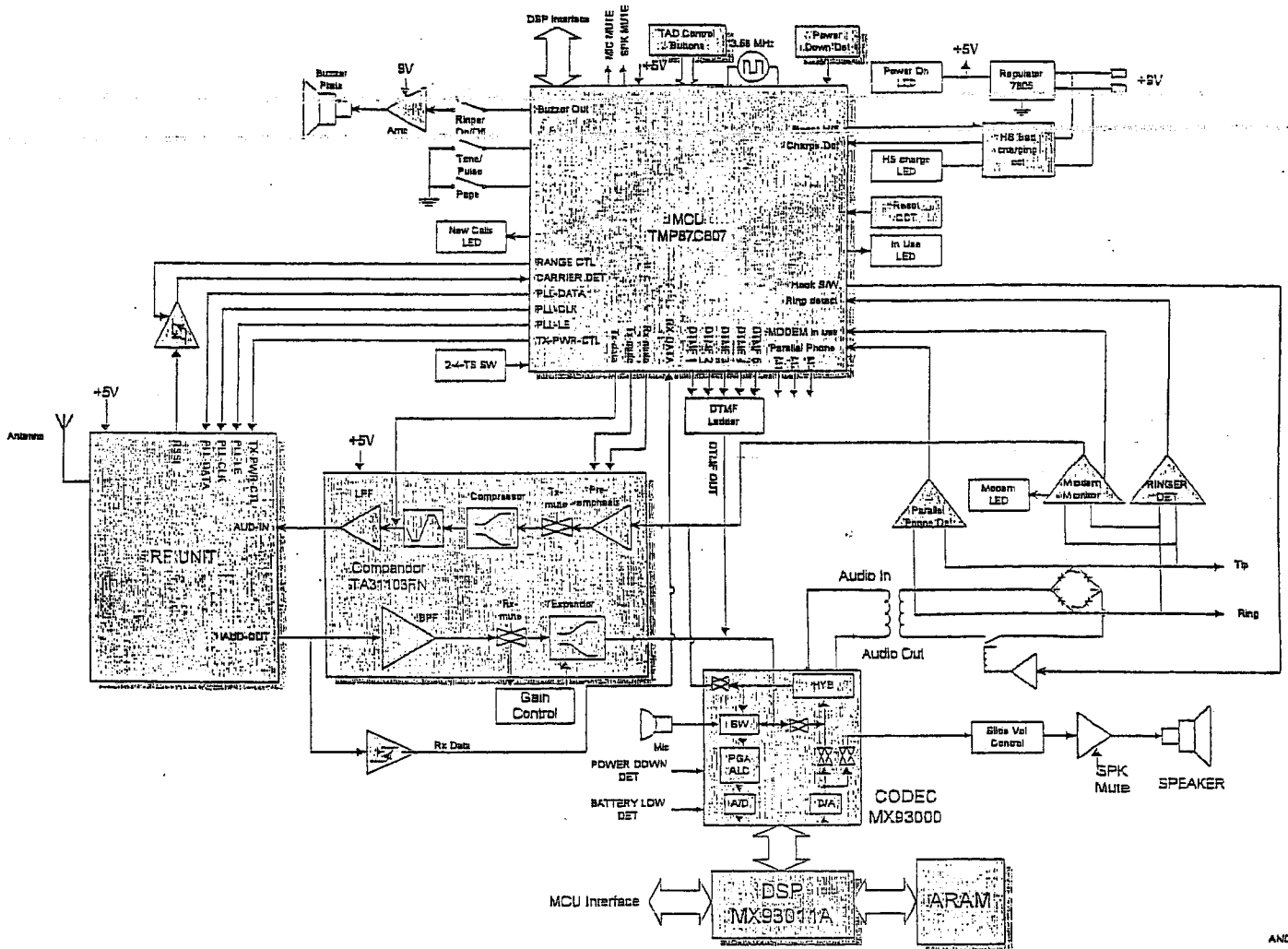


# Technical Description

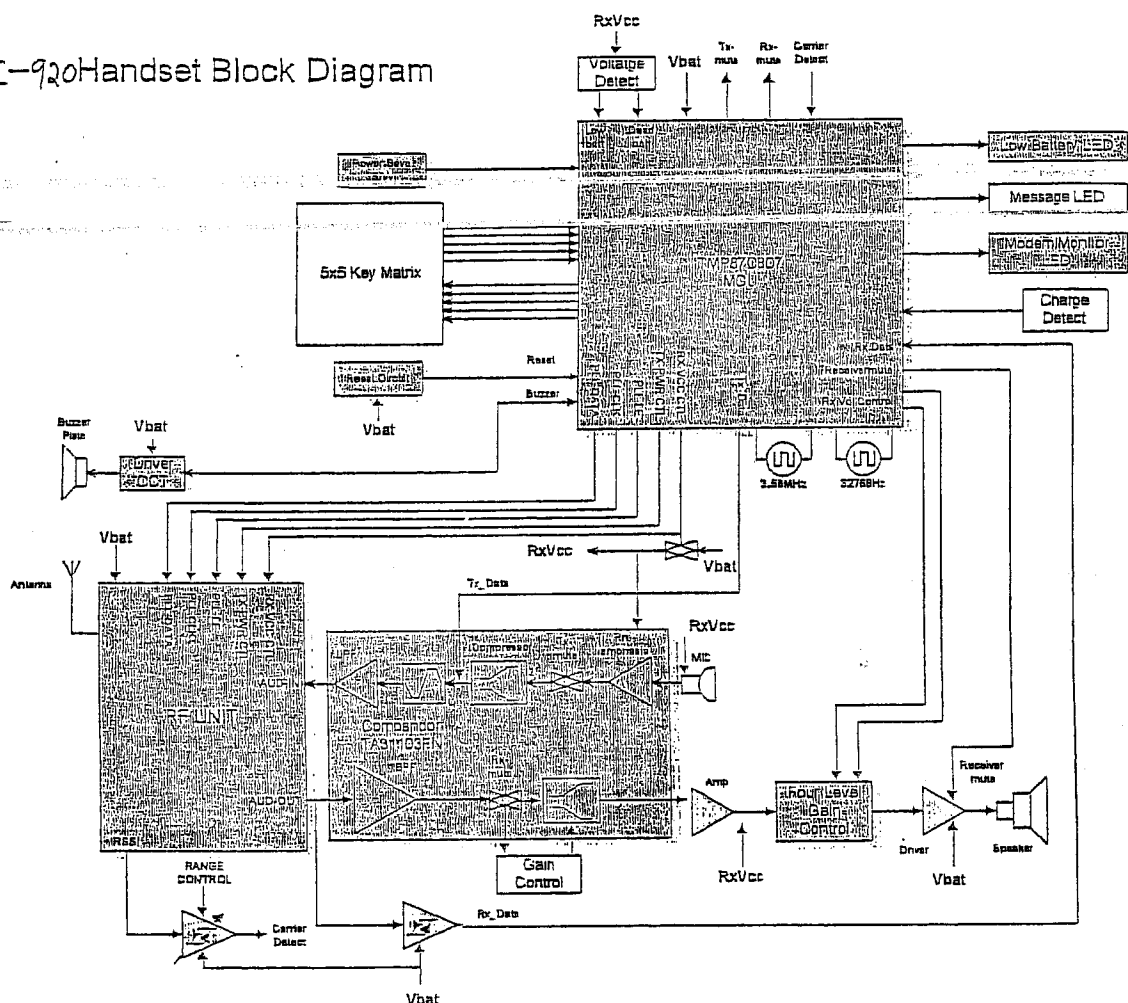


TC-920 Base Block Diagram

- ⇒ A single 12V DC adapter is used to supply power for all components on the main board including handset battery charging.
- ⇒ In order to retain messages stored in ARAM, a 9V battery, no recharging, is used.
- ⇒ A MCU TMP87C807 running at 3.58MHz is used to centralize all controls and data handshaking with handset as well as with DAM DSP.
- ⇒ When the hook switch is connected, signal at tip and ring (T&R) will pass through the sidetone filter and the speech network before feeding into the compressor. The output of the LPF of the compressor will then directly modulate the main carrier which is locked by the PLL programmed by the MCU.
- ⇒ The tuned RF signal strength will be used as RSSI to issue an out of range alert from MCU.
- ⇒ Tuned audio signal is split into 2 paths; one of them is fed to a data recovery circuit before entering the MCU while the other path goes to the expander. Unlike receiving path, the signal out of the expander will be fed into the CODEC IC of the DAM before the speech network and sidetone filter and the telephone line.
- ⇒ The DAM section is much like a self-contained module running at 3.58MHz with power-down capability.

- ⇒ Signal from line is tapped from the input path of the compressor while the signal to line signal is processed at the CODEC itself.
- ⇒ All LEDs, keys, and switches of the DAM are monitored and controlled by the DSP independently and only a serial bus connects with the MCU to maintain minimal handshake.

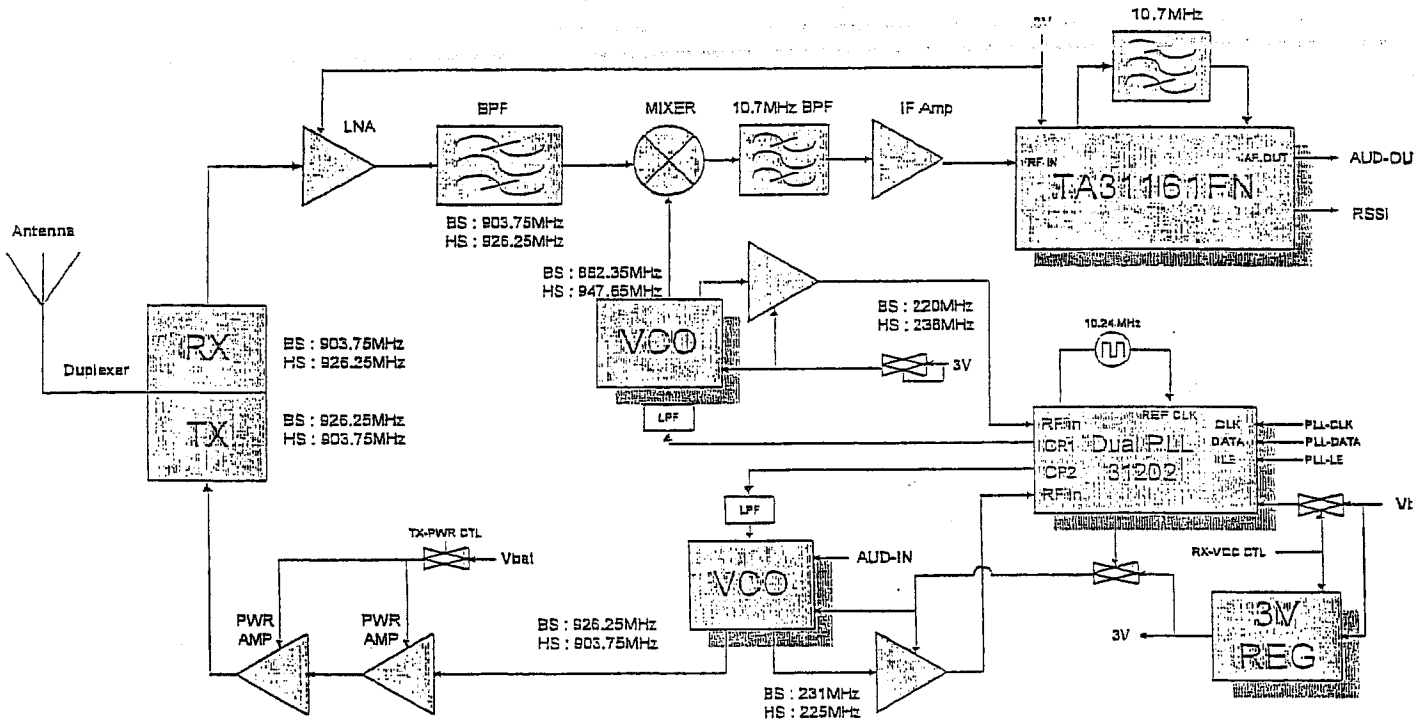
### TC-920 Handset Block Diagram



ANCA\_F  
9807

- ⇒ A MCU TMP87C807 running at 3.58MHz is used to centralize all controls and data handshaking.
- ⇒ A battery detection circuit is used to determine if the battery is normal, low voltage, or unusable. If unusable, the MCU will shut down all functions and sleep to preserve memory.
- ⇒ The signal from mic is first amplified before feeding into the compressor. The output of the LPF of the compressor will then directly modulate the main carrier which is locked by the PLL programmed by the MCU.
- ⇒ The tuned RF signal strength will be used as RSSI to issue an out of range alert from MCU.
- ⇒ Tuned audio signal is split into 2 paths; one of them is fed to a data recovery circuit before entering the MCU while the other path goes to the expander. The output of the expander will be amplified to drive the receiver.

# RF Block



US\_RF.  
98071

- ⇒ A reference clock of 10.24MHz is employed here for PLL 31202.
- ⇒ The 2 PLLs of 31202 are programmed through a micro-wire® bus connected directly to MCU.
- ⇒ The VCOs will be locked at 1/4 of the desired carrier frequencies.
- ⇒ In case of transmission, the audio signal will directly modulate the VCO and the transmit frequency is selected from the amplified 4th-harmonic of the VCO.
- ⇒ In case of receiving, the RF signal is first amplified by a low noise amplifier (LNA) before mixing with the 4th-harmonic of the local oscillator generated by the VCO. The down mixed signal then passes through a 10.7MHz ceramic filter and demodulated. The TA31161 is responsible for the signal demodulation and RSSI generation.

The Transmit frequencies for Base and Handset are as follow: -

CH #	HS Tx freq	BS Tx freq
1	902580000	925080000
2	902640000	925140000
3	902700000	925200000
4	902760000	925260000
5	902820000	925320000
6	902880000	925380000
7	902940000	925440000
8	903000000	925500000
9	903060000	925560000
10	903120000	925620000
11	903180000	925680000
12	903240000	925740000
13	903300000	925800000
14	903360000	925860000
15	903420000	925920000
16	903480000	925980000
17	903540000	926040000
18	903600000	926100000
19	903660000	926160000
20	903720000	926220000
21	903780000	926280000
22	903840000	926340000
23	903900000	926400000
24	903960000	926460000
25	904020000	926520000
26	904080000	926580000
27	904140000	926640000
28	904200000	926700000
29	904260000	926760000
30	904320000	926820000
31	904380000	926880000
32	904440000	926940000
33	904500000	927000000
34	904560000	927060000
35	904620000	927120000
36	904680000	927180000
37	904740000	927240000
38	904800000	927300000
39	904860000	927360000
40	904920000	927420000