

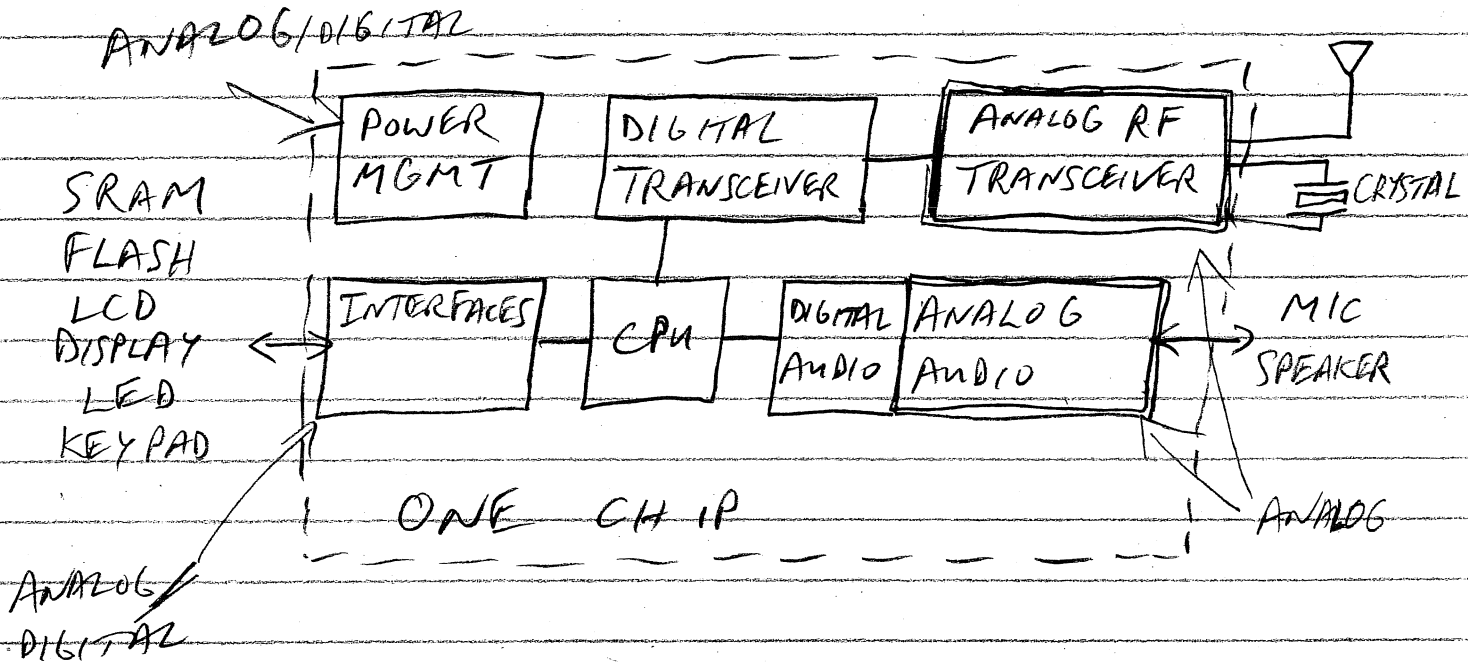
ANALOG SIGNAL PROCESSING

WHY STUDY ANALOG? ISN'T EVERYTHING DIGITAL?

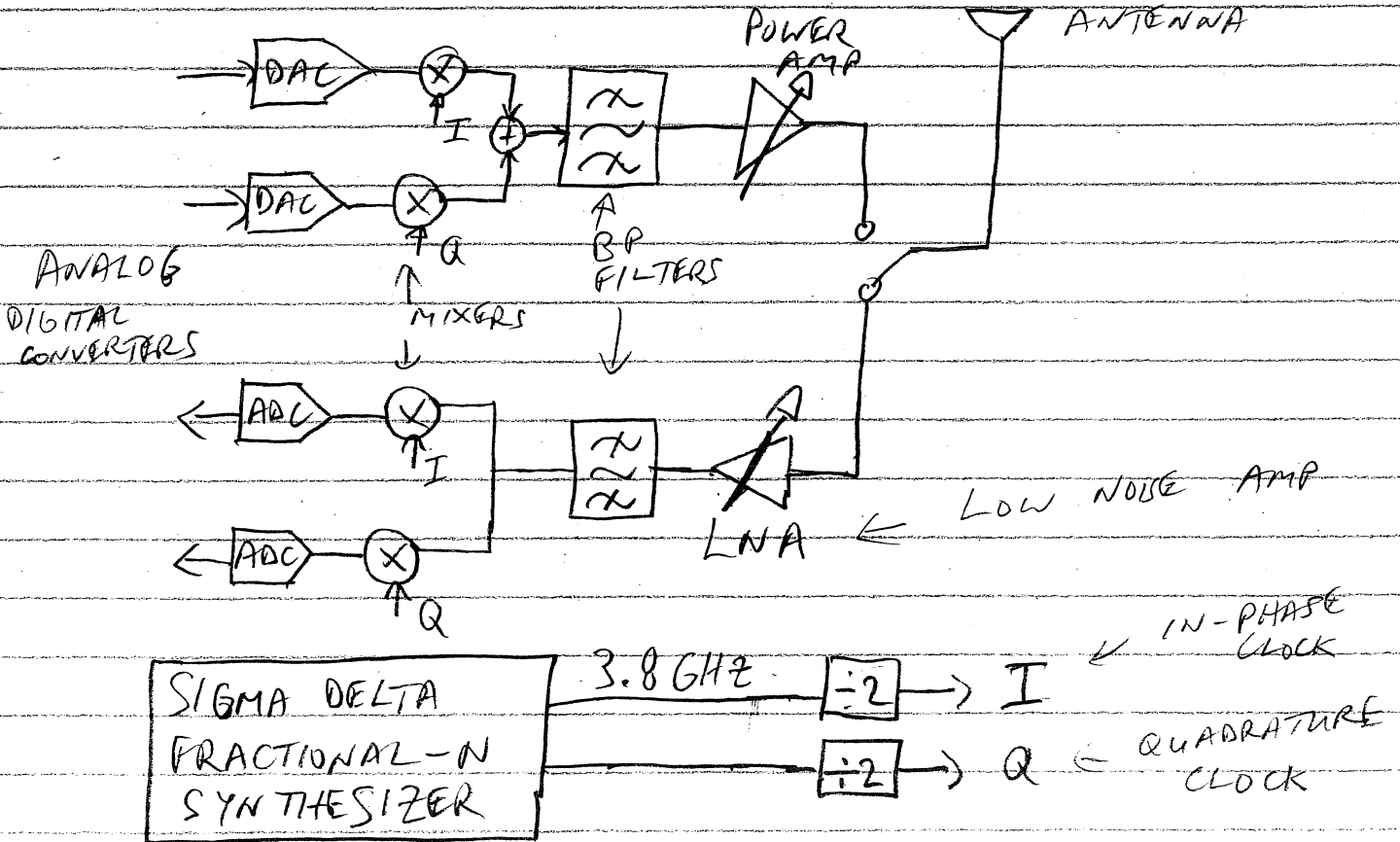
- MODERN CHIPS ARE NOW SYSTEMS
- MOST CHIPS CONTAIN ANALOG & DIGITAL
PERHAPS 20% ANALOG & 80% DIGITAL
- DESIGN TIME OF ENTIRE CHIP
=> 50% ANALOG 50% DIGITAL
- NUMBER OF ANALOG TRANSISTORS IS INCREASING
=> THERE ARE MORE ANALOG TRANSISTORS IN DIGITAL PHONE THAN ANALOG PHONE

EXAMPLE

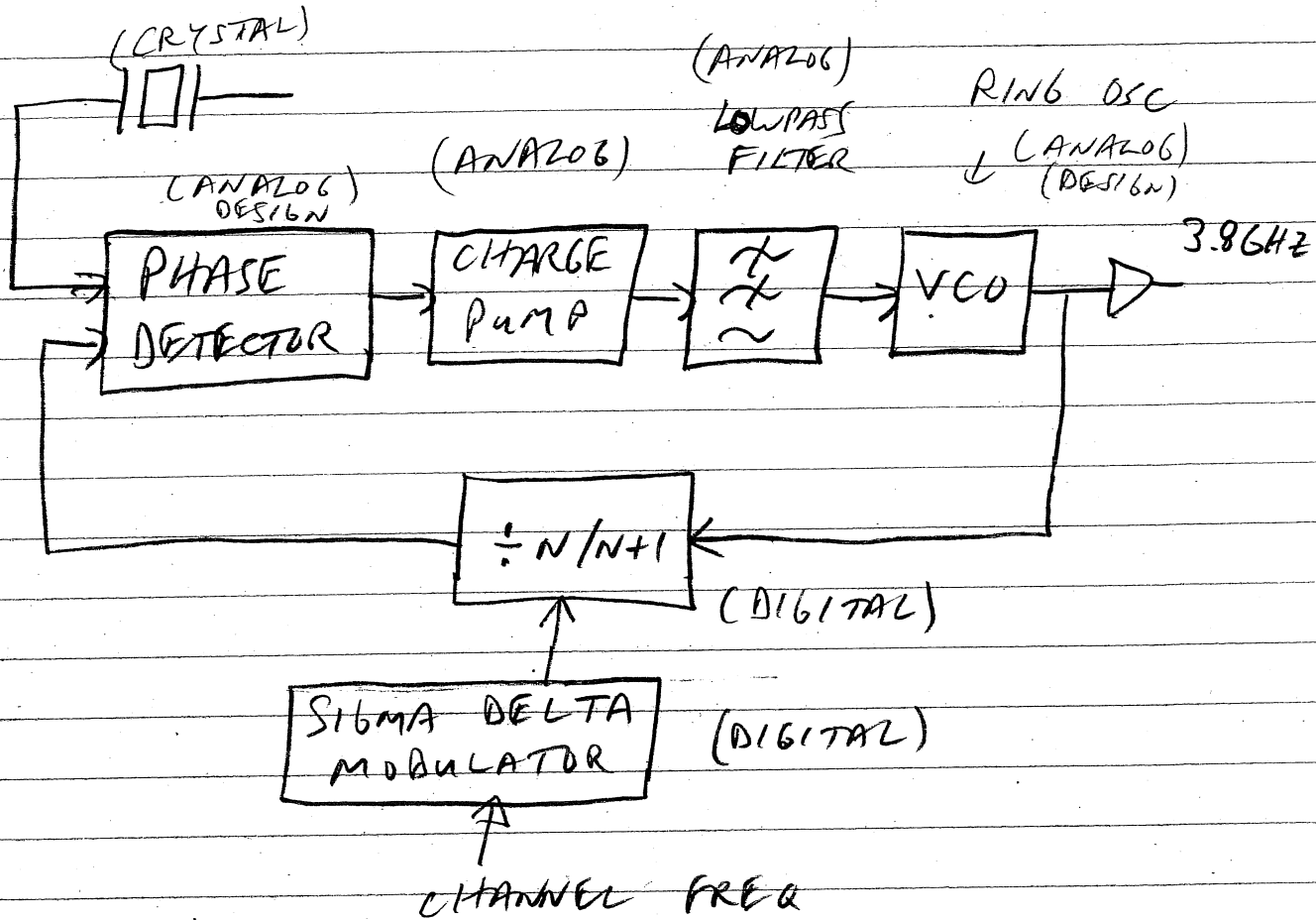
SINGLE CHIP DIGITAL CELLPHONE



ANALOG RF TRANSCEIVER (SEE ABOVE)



SIGMA-DELTA FRAC-N SYNTHESIZER



SINCE JITTER SD IMPORTANT, VCO

AND PHASE DETECTOR DONE BY ANALOG

DESIGNERS THOUGH FUNCTIONALITY IS DIGITAL

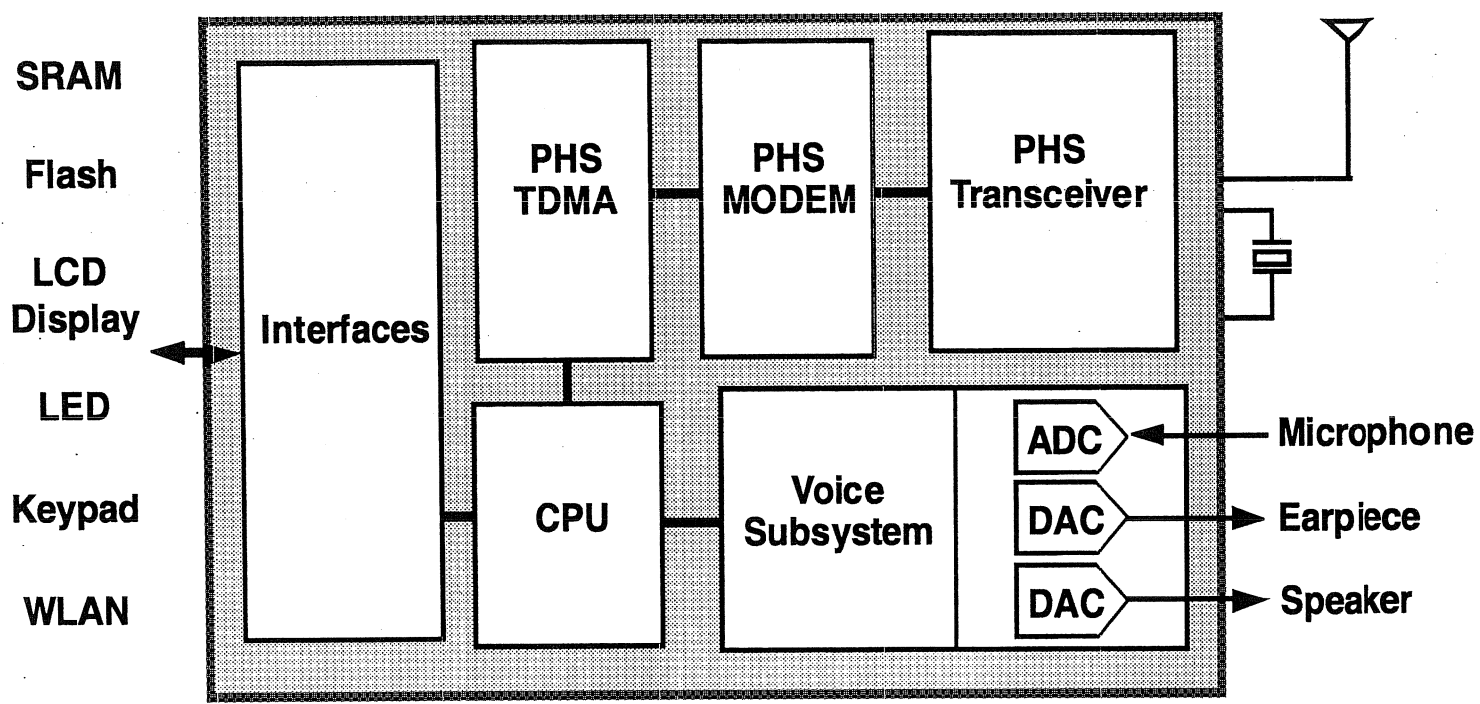


Figure 26.8.1: Block diagram of the single-chip PHS cellphone.

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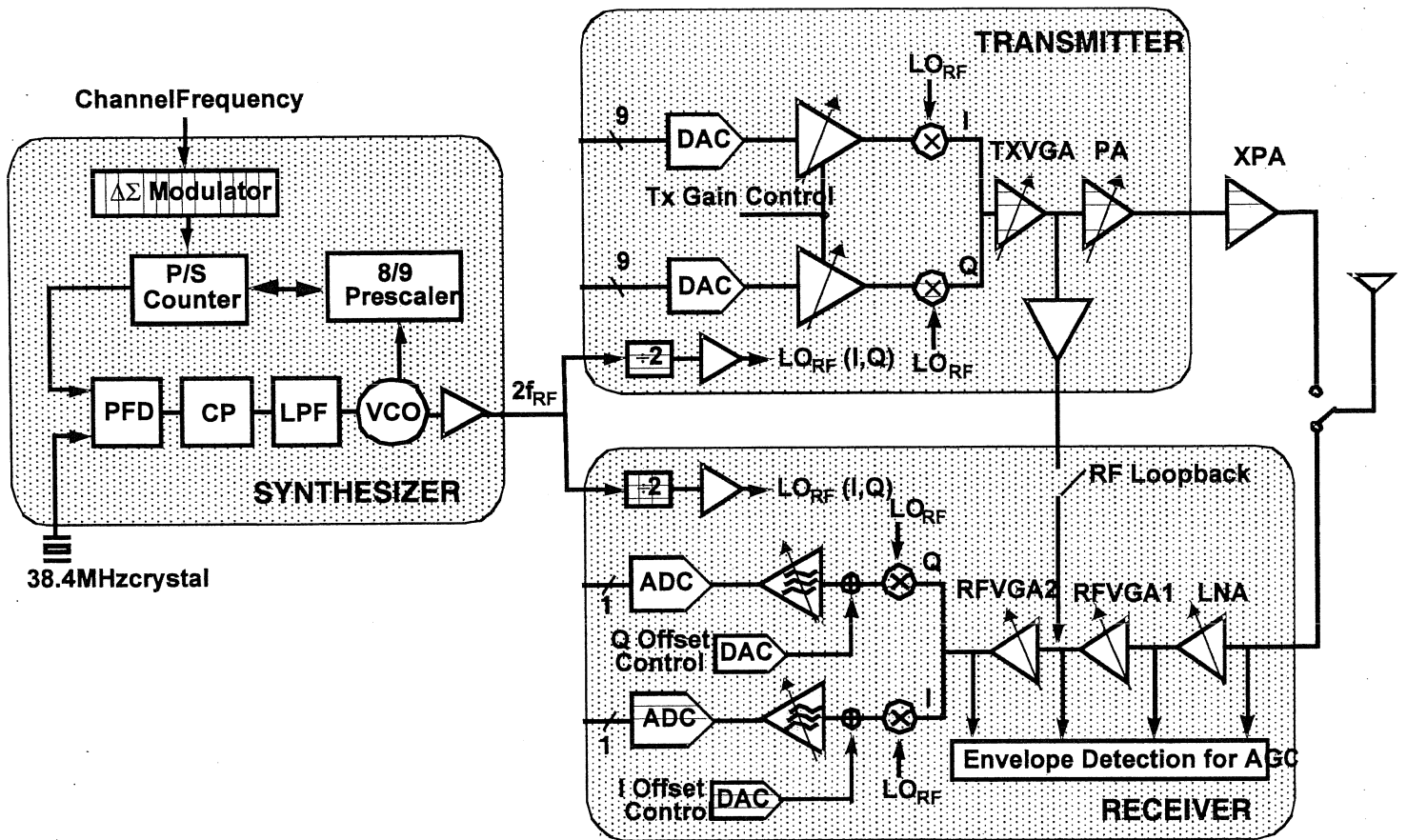


Figure 26.8.2: Block diagram of CMOS RF PHS transceiver.

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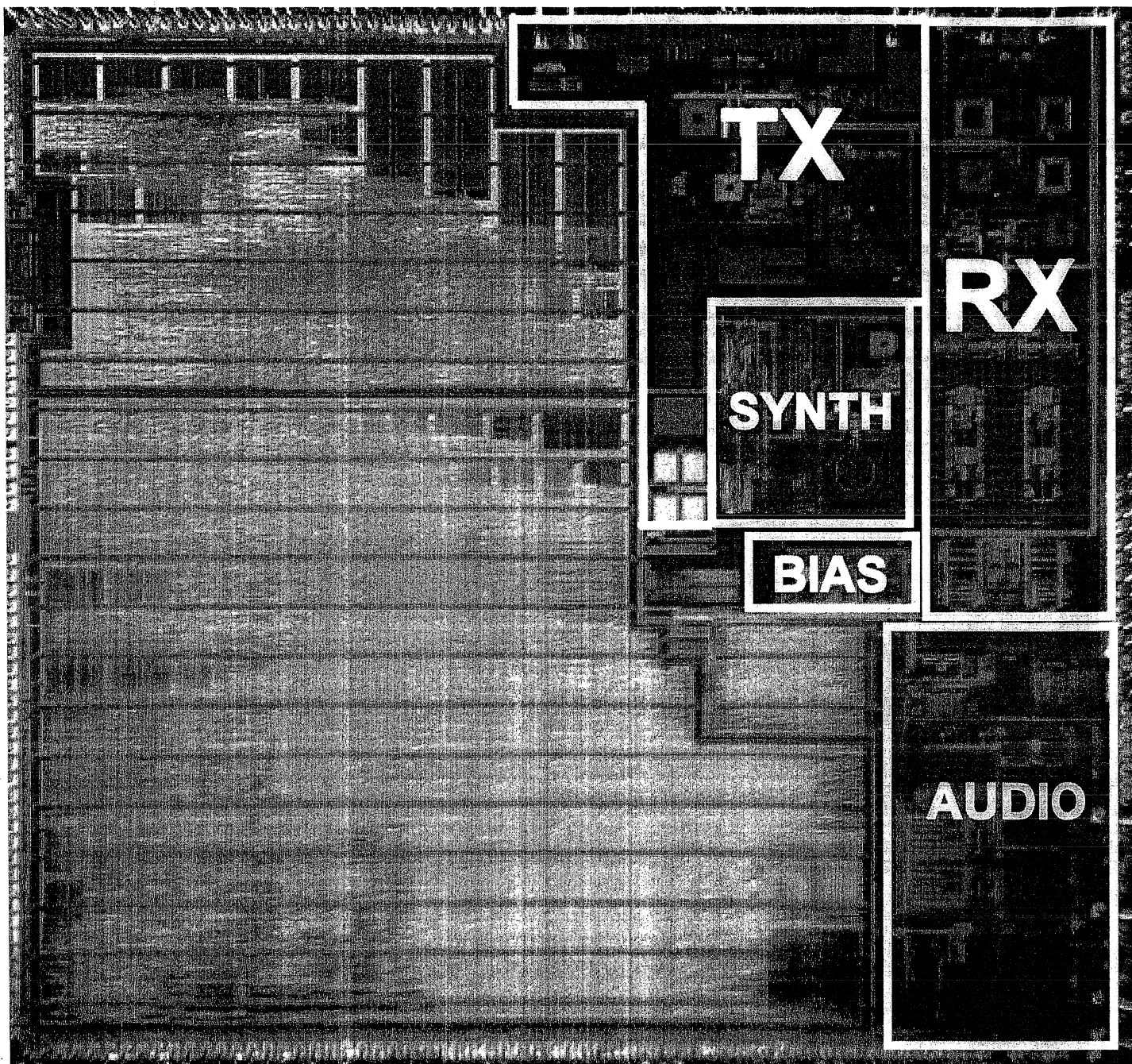


Figure 26.8.6: Chip micrograph of the single-chip PHS cellphone.