

Project 4

Voice Mail System

For this project, you will implement a voice mail system that records a message. When a user presses the record button, the system will record a message for as long as the system allows. A user may then playback the message by pressing a different button. A user can record over the previous message. User's may play back message at normal, half, or double speeds. You must implement an intuitive LED display to let the user know under which particular mode a system is operating (you can use the onboard LEDs or 7-segments).

1. Playback: 50 points

You earn points as follows: (The TA will play the recorded message several times to judge quality)

- Voice
 - 35 – Telephone quality
 - 30 – Good
 - 25 – Fair
 - 20 – Poor
 - 0 – Non-intelligible
- Playback Time
 - 1 pt is earned for every second of playback time (up to 15 points)

2. Operation: 40 points

- 10 – Message recording
- 10 – Message playback
- 5 – Double Speed playback
- 5 – Half Speed playback
- 5 – previous message overwritten by a new message
- 5 – an LED display as described above

3. Customer Satisfaction: +/-10 points

Points will be rewarded or deducted based on your customer's satisfaction with the project.

- + Solid presentation – includes explaining your project at both a high and functional level.
- + Understanding of the extensibility of your project.
- - Previous message remnants, plays after current message.
- - Quirky operation
- - Unfamiliarity with any aspect of your project
- - Messy Wiring

How will it operate?

Note Title

11/12/2008

Discussion on AD
conversion

Anti-aliasing filtering

Preamplifier for microphone

Speaker driver

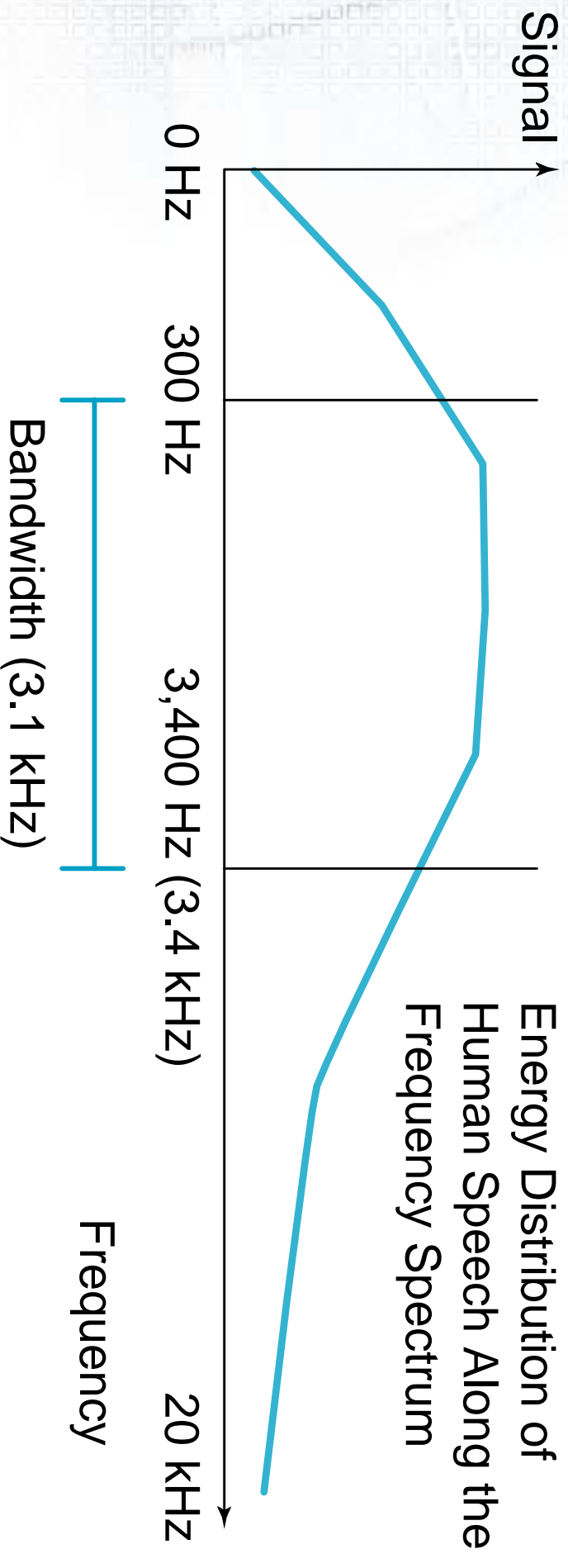
How to configure A/D

How to write into memory



Figure 6-12: Analog-to-Digital Conversion (ADC): Bandpass Filtering and Pulse Code Modulation (PCM)

Step 1: Bandpass Filtering

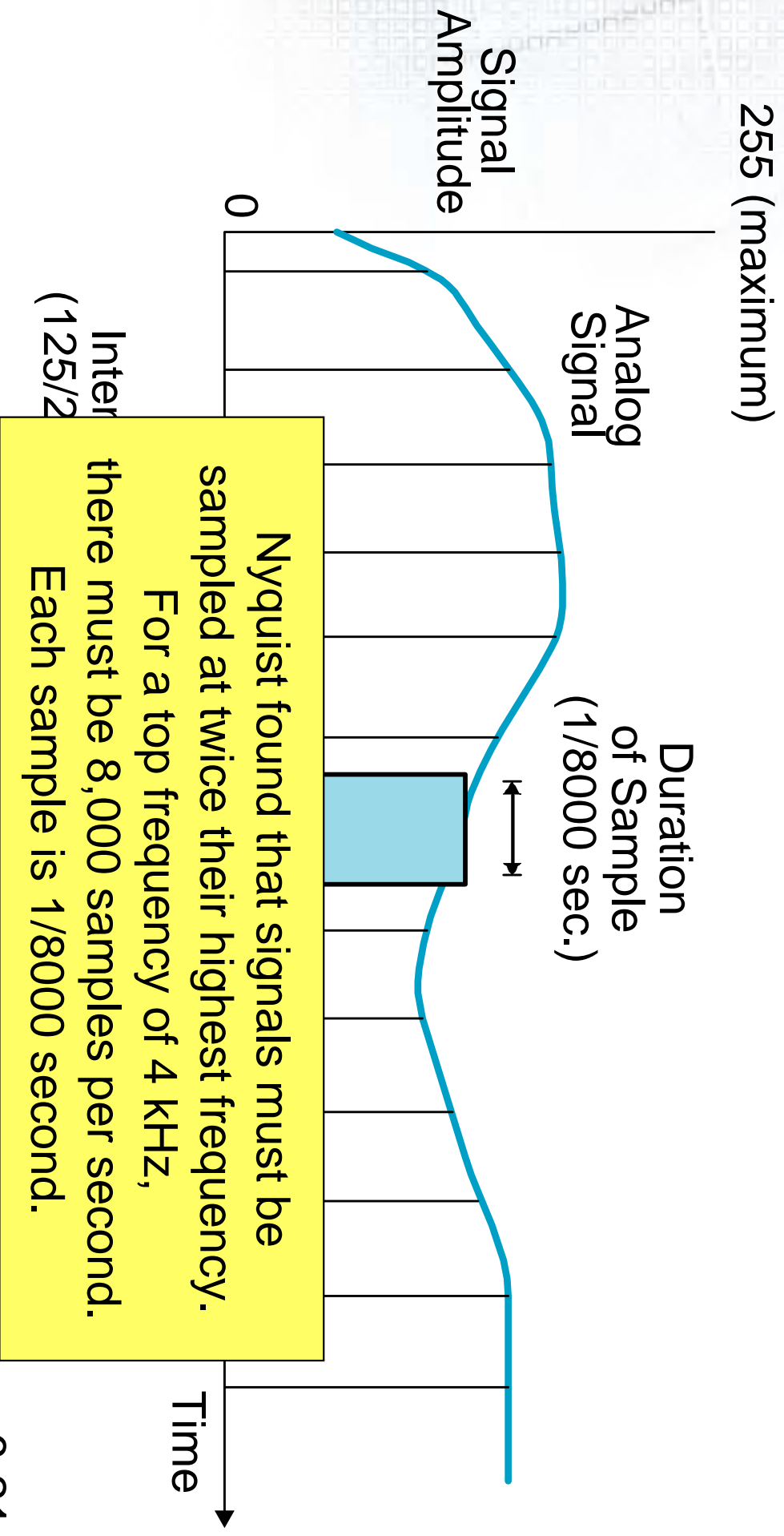


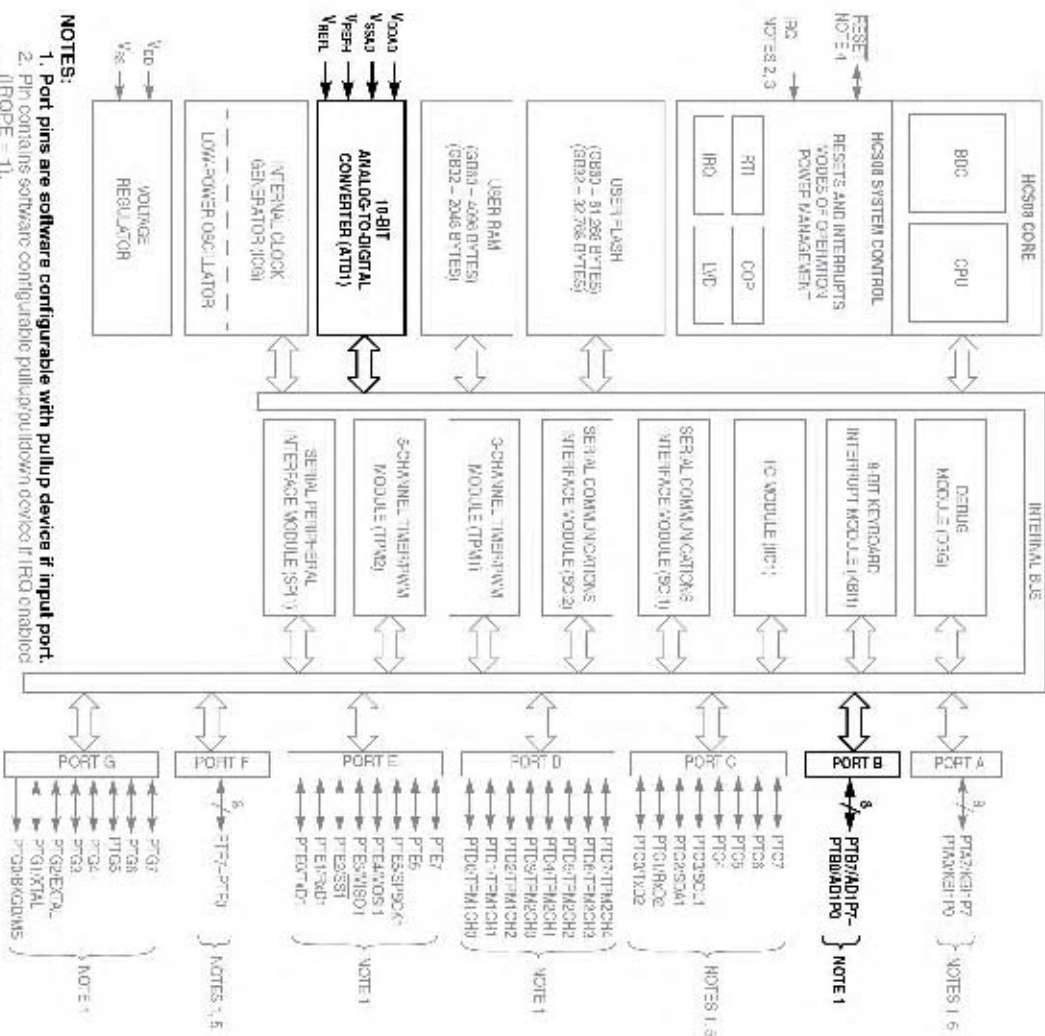
Actually, to provide a safety margin, the signal is filtered to between about 300 Hz and 3.4 kHz instead of from 0 Hz to 4 kHz.



Figure 6-12: Analog-to-Digital Conversion (ADC): Bandpass Filtering and Pulse Code Modulation (PCM)

Step 2: Pulse Code Modulation (PCM) Sampling





- NOTES:**
1. Port pins are software configurable with pullup device if input port.
 2. Pin contains software configurable pullup/pulldown device if I/O enabled (I/OPE = 1).
 3. I/O does not have a clamp diode to V_{DD}. I/O should not be driven above V_{DD}.
 4. Pin contains integrated pullup device.
 5. High current drive.
 6. Pins PTA[7:4] contain both pullup and pulldown devices. Pulldown available when KBI enabled (KBIEN = 1).

Figure 14-1. MC9S08GBxx Block Diagram Highlighting ATD Block and Pins

