FAA20
RELEASE NOTES

Release 1.1.0
Hardware, Software and Documentation Changes

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This document provides release information for FAA20 Release 1.1.0.

INTRODUCTION

This new FAA20 release includes changes in the main software, CPLD firmware and associated documentation. The next section provides a configuration update summary. Subsequent sections provide change details.

CONFIGURATION ITEM SUMMARY

The configuration item summary is provided below:

ITEM	For HW	NEW	CURRENT VER
Main Software	A and B	✓	**1.1.0**
Boot Software	A and B		1.0.0
PSD Firmware	A only		1.0.0
PSD2 Firmware	B only		1.0.0
CPLD Firmware	B only	✓	**1.1.0**
Board Manual	A* and B	✓	**1.1.0**
Test Vector Utilities	A and B		1.0.0
FAA20 CDROM	A and B	✓	**1.1.0**

* The manual is designed around the more plentiful revision B hardware, but is also useful for the earlier revision A hardware.

The Main Software and CPLD Firmware updates can be installed independently of one another, e.g., the Main Software can be updated without requiring the CPLD to also be updated.

The Main Software can be updated in the field. The CPLD Firmware can only be updated at the factory.

This white paper has been prepared for the Federal Aviation Administration.

CHANGE DESCRIPTION

<u>Main Application Software Changes</u>

1. <u>FIX: The decoder doesn't function properly when the GO signal is inactive.</u>

   Problem: The decoder must operate independently of the state of the GO signal. The GO signal is intended to control the encoder only.

   Solution: The problem was isolated to the behavior in the encoder task. This task totally reinitialized the vocoder (both encoder/decode portions) when the GO signal was inactive. The software was modified to only reinitialize the encoder. This problem is fixed in release 1.1.0 and later.

2. <u>FIX: VOC SDBIT Command doesn't work properly</u>

   Problem: In release 1.0.0, the command used to change the number of soft detection bits needed to be entered twice in order to change the number of soft detection bits. This was due to the vocoder update function being called before the new value had been set. This issue only affects the FAA20 when serial port test vectors are used. Normal operation is not affected, i.e., this problem does not affect MITRE or VCM system equipment.

   Solution: This order of function calls was changed to eliminate this problem. Fixed in releases 1.1.0 and later.

3. <u>FIX: LOOP Command Status Printout is incorrect.</u>

   Problem: While the LOOP command execution was correct, the incorrect LOOP status was reported.

   Solution: The problem was isolated to status printout. The AUD loop status was incorrectly used in the printout for all three ports (AUD, PCM, and NIB). The software was modified to print the correct loop status for all three ports. This problem is fixed in release 1.1.0 and later.

4. <u>FIX: TEST mode settings were changed to ignore additional vocoder control bits.</u>

   Problem: The TEST mode still allows some external vocoder bits/signals to control the vocoder.

   Solution: The TEST mode is intended to allow one FAA20 to test another when configured in a back to back configuration. While in TEST mode, the FAA20 should ignore external vocoder control bits (DIN signals and the DCS nibble). This allows the unit in TEST mode to remain in control of it's own vocoder and to ignore the controls from an FAA20 unit 'under test'. The TEST mode was modified to ignore LOST, MUTE, and INIT control bits in the DCS nibble. Note: The DEMO mode also ignores external vocoder controls.

5. <u>ENHANCEMENT: New STATUS Command</u>

   A new command, i.e. STATUS, has been added. It prints error status details. This command can be used to determine the reason for a solid red ERR LED indication.

6.   ENHANCEMENT: Sample/Packet Add/Drop (SPAD) Event Changes.

The software was revised to change how sample/packet add/delete (SPAD) counts are captured. Previously, SPAD counts were incremented for unused ports. In this release, SPAD counts (and the associated wink of the ERR LED) are only incremented for active ports. Thus, the ERR LED no longer winks or lights solid for SPAD events on unused ports. In addition, the COUNT command does not count events on unused ports.

7.   ENHANCEMENT: Activity and peak threshold changes.

The activity threshold was lowered from -33.12 dBm0 to -36 dBm0. This increases the activity range. The peak threshold was lowered from +2.99 dBm0 to 2.9 dBm0. This provides a better indication of peak activity.

8.   ENHANCEMENT: Additional activity and peak detectors on PCM and AUD ports.

PCM port detectors were added between the loopback point and the rate adapter to capture peak events that might be eliminated in the rate adapter filter. AUD port detectors were added between the gain/attenuation/mute (GAM) and calibration (CAL) blocks to capture peak events associated with GAM settings.

Note: Detectors are not required between the CAL block and the codec because of the nature of the calibration gain factors. The CALTX setting always applies attenuation to compensate for high gain inserted in the analog front end, thus a peak event would always be detected by the GAM detector. The CALRX setting always add gain, thus a peak event at the analog interface would always be detected by the GAM detector.

9.   ENHANCEMENT: All references to LCVM have been changed to LNIB.

This change makes terminology more consistent in the software. Just as the LPCM bit controls internal/external PCM timing, the newly renamed LNIB bit controls internal/external NIB timing.

10.   ENHANCEMENT: Changed default COM router settings to OFF.

This change in tandem with the Enhancement #6 eliminates counting of SPAD events on unused COM ports.

CPLD Firmware Changes

1.   FIX: Incorrect Polarity for the Reset Status Signal (RESX).

Problem: The VC20 RESX signal is active low. The CPLD firmware is incorrectly programmed to make this an active high signal. This issue is a problem for the MITRE system equipment, but does not affect the VCM equipment. The MITRE equipment uses the RESX line to detect the presence of the vocoder.

Solution: The CPLD has been updated to make RESX an active low signal. The FAA20 must be returned to CIE to have this update installed. Fixed in releases 1.1.0 and later.

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Board Manual Changes

The manual was updated to correct grammar and typographical errors. The manual was modified to reflect the software and firmware changes made. In addition, more detailed information was included on loading the main application using the boot application software.

CDROM Changes

The downloadable S-record file for the main application software was replaced with the updated version. The board manual was replaced with the updated version. In addition, the FAA20 Release Notes document was added.

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