2430 FIRMWARE V2.1 REPORT

The following list of system firmware bugs are corrected in version 2.1. Use this list to help identify hardware verses software problems. Replace the five system ROMs when a 2430 enters the Service Center and the two Waveform Processor ROMs, if they are not version 2.0. MOD kit 045-0114-01 now contains all 7 ROMs.

GENERAL OPERATION

1. ID 218:
   V2.0-The front panel probe code software routines may interfere with other processes, resulting in lock up and the loss of external calibration constants.

   V2.1-Probe code changes are now ignored until the system is ready to process them.

2. ID 90
   V2.0-If the 2430 is set up in XY with cursors enabled and power is cycled, all four cursors will appear solid and the two X-axis cursors will have a dot at mid graticule. Cursor positioning can be selected, but only the Y-axis cursors will be dashed. Selecting YT then XY restores operation.

   V2.1-The power up function scheduler now checks to see if the XY cursor routine should be run.

3. ID 21:
   V2.0-If a front panel set up is saved with holdoff set to some value, the holdoff will be reset to minimum when the set up is recalled.

   V2.1-Changed the H/O set up routine so only a change in T/D, or setting H/O to off, will reset H/O.

4. ID 18:
   V2.0-The INIT function sets the TV LINE count to 525 instead of 1. This will cause an error if a TV interlaced signal was applied before an init.

   V2.1-This version sets the init value for TV LINE count to 1.

5. ID 32:
   V2.0- The FORCE DAC label for amplifier gain calibration is CURS, which does not describe its purpose.

V2.1-Changed the FORCE DAC label to CALA.

6. ID 16:
V2.0-A COLD START did not initialize the trigger 'T'.

V2.1-The COLD START now sets the 'T' to ON.

7. ID 274:
V2.0-The volts variable gain adjustment speed is too quick for precise settings.

V2.1-The rate of change for volts variable is set to achieve full range in ten seconds. This results in easier small interval adjustments.

8. ID 79:
V2.0- 2430 trigger operation may confuse the user if he doesn't know A*B trigger source is selected.

V2.1-The A*B trigger source is now shown in the Trigger Status Display when it is switched on.

9. ID 15:
V2.0-If the scope is in A-INTEN and B sweep rate >1000 times faster than A sweep, the entire waveform will appear intensified. This can be observed by setting
A to 100ms
B to 100us
Horiz MODE to A INTEN
DELAY TIME to minimum
Set the delay time to some value off minimum. View the symptom by changing the B T/D from 100us to 20us. The symptom can also be seen when B T/D is set to 50us. Slowly change the delay time and notice the intensified sweep alternates on and off as the delay time changes.

V2.1-The processor now properly calculates waveform timing.

10. ID 12:
V2.0-Acquisitions are not being reset when in average or envelope mode and a TV trigger control is changed.

V2.1-This firmware version resets acquisition when any TV control is changed.

11. ID 370:
V2.0-XY plotter character writing is distorted if the plotter slew rate is slower than 50ms.

V2.1-This version has a wait state of 100ms between the end of one character and the beginning of the next (a 50ms increase). Also, a 50ms timeout was added to allow the last stroke of each character to be completed.

12. ID 163:
V2.0-Some single trigger acquisitions may be declared unstable (metastable) and all acquisitions >500ns are thrown out by the processor. The scope thinks it does not have a good signal source and just sit there blinking.

V2.1-The processor saves any single acquisition, thereby avoiding loss of waveform.

GPIB General

13. ID 22:
V2.0-Some GPIB ICs (9914A) may not go into talk only mode when the command is sent while the IC is in its software reset state.

V2.1-The system processor now writes the talk-only command when the 9914A is not in its software reset state.

14. ID 172:
V2.0-If the controller sends mta too soon after sending the fastxmit command, the 2430 will not respond with the waveform data. The user can overcome this problem by putting a 50ms delay into his program just before the mta statement.

V2.1-Command processing changes eliminated the need for a delay before mta.

15. ID 165:
V2.0-Any query sent with a semicolon (;) for a terminator, will leave the controller (e.g. 4041) waiting forever for the scope to respond.

V2.1-The query parser now treats the semicolon as an optional <eoi>, which releases the scope for the appropriate action.

16. ID 153:
V2.0-This firmware version does not send an operation complete (OPC) code to indicate when the scope is finished with a GPIB printer operation.

V2.1-The scope now sends an OPC when the output buffer is empty and the output routine has

completed.

17. ID 9:
V2.0-Some responses to commands sent over GPIB or from the front panel may say the task has terminated before it has actually completed (e.g. CURSOR? DISPLAY:VALUE or ATRIGGER MODE:AUTOLEVEL).

V2.1-The command handlers now wait for the task to complete and then sets the done flag or sends the GPIB terminator.

GPIB COMMANDS

18. ID 14:
FASTXMIT,NORMAL:BOTH
V2.0- Fast transmit , using the link argument of BOTH, returns incorrect data for channel 2.

V2.1-Corrected an address pointer so the proper bits are sent for both CH1 and CH2.

19. ID 277:
PCROSS?
V2.0-Pcross has a built in hysteresis value of 5 digitizing levels.

V2.1-The hysteresis value can now be set using the HYSTERESIS command.

20. ID 184:
SET?
V2.0-Set up data can be recovered from the scope and sent back later for any reason. If the data includes trigger coupling for TV, a format error will be present in the returned data string. The error concerns the command LOGSRC OFF.

V2.1-The SET? string now has the LOGSRC formatted correctly.

21. ID 8:
MAX? or MIN?
V2.0-The absolute maximum or minimum data points (7Fh or 80h) are not supposed to be included in the returned data. The result, if one of these points is included, can be an out of range value.

V2.1-The max and min points are excluded from the returned data.

22. ID 283:

any query
V2.0-If the scope's query parser is waiting for a terminator, the scope may return a talk-with-nothing-to-say response in error.

V2.1-The tasking system now waits for the controller to send the terminator.

23. ID 284:
BTR? SOU
V2.0-This query (B trigger, source) returns an incorrect argument.

V2.1-The logical source is now checked and the correct argument returned.

24. ID 285
SETTV? TVLINE
V2.0-The query response will return the wrong line if the signal is interlaced TV and CNT RST has been set to F1..

V2.1-The query response now matches what is shown on the display.

25. ID 295:
AVG?
V2.0-The 2430 is somewhat slow to respond to this command.

V2.1-The average function is now processed using assembly code, which speeds up the calculations.

CALIBRATION

26. ID 291:
V2.0-If the probe code value changes during calibration or diagnostics (e.g. removing or adding a X10 probe), interrupts from the front panel processor interferes with CAL or DIAG and causes preamp gain failures and internal trigger gain failures.

V2.1-This version defers probe code processing until CAL or DIAG has completed.

27. ID 299:
V2.0-The COLD START 50 ohm gain initializing constants has not changed with gain modifications to the preamp hybrids.

V2.1-The COLD START gain constants are now set to match current preamps.

28. ID 247:
V2.0-When running extended diagnostics and run mode RUN CONTINUOUS, the bottom readout lines fail to reappear on the second loop, leaving the user puzzled over how to stop the process.

V2.1-This version now restores display RAM, after RAM test, with display information.

29. ID 35:
V2.0-If EXT CAL ADJUSTS is performed while SAVE ON DELTA is enabled, the front panel will be locked out. Power must be cycled to restore operation.

V2.1-When EXT CAL ADJUSTS is performed, SAVE ON DELTA is disabled and will be off when normal operation returns.

30. ID 217:
V2.0-EXT CAL ATTEN occasionally results in a FAIL or at least poorer gain accuracy than possible. This is due to setting gain from a single acquisition.

V2.1- The ATTEN calibration routine now averages four acquisitions. This change improves both gain calibration accuracy, by a factor of two, and the position between the ground marker (+) and the sweep base line, when the input is at absolute zero.

DIAGNOSTICS

31. ID 271:
V2.0-If the user is testing for an intermittent failure using RUN UNTIL FAIL, and push MENU OFF to terminate the test, the process will lock in the RUN mode. Power must be cycled to restore normal operation.

V2.1-MENU OFF is now ignored until the diagnostic cycle is halted.

32. ID 318:
V2.0-The front panel will become unlocked if EXT DIAG is running and MENU OFF is pushed several times. This allows any additional front panel control changes to be processed into the task buffer and may cause a buffer overflow crash.

V2.1-MENU OFF is ignored until the EXT DIAG test has terminated.

33. ID 332:
V2.0-While running diagnostic loop RUN CONTINUOUS or RUN UNTIL FAIL, the readout intensity may gradually increase until its at maximum brightness.

V2.1-The intensity control is now locked out while in diagnostics. Set the readout intensity for an acceptable display before running a test.

34. ID 214:
V2.0-The operating system may lockup while in RUN UNTIL FAIL and, after power is cycled, will result in a diagnostic failure of memory function FRONT PANEL LAST. A second power cycle will clear this failure message.

V2.1-This version corrected some internal data transfer errors.

35. ID 300:
V2.0-Display RAM (A11U431 or A11U440) error messages may occur while in RUN UNTIL FAIL. The error clears on the next diagnostic run (RUN ONCE).

V2.1-New controls block the waveform processor from randomly writing to these RAM chips while in diagnostic RAM test.

36. ID 297:
V2.0-NVRAM (A12U664) data is stored in display RAM during RAM test. If power is lost while U664 is the test target, all CAL constants are lost. The system will boot to the COLD START constants on the next power up.

V2.1-NVRAM tests are now run only in SELF DIAG or EXT DIAG. (Power up diagnostics no longer performs NVRAM tests). NOTE: The CAL jumper (J156) must be removed to run NVRAM test.

37. ID 278:
V2.0-The Front Panel Processor register tests can never fail.

V2.1-This version contains corrected test logic.

38. ID 287:
V2.0-If the TRIG POS button is pushed while the power up diagnostics are running, the front panel processor will not be initialized. (GPIB is not affected). Also, the front panel error messages are encoded.

V2.1-The system processor will now always try to boot the front panel processor and if a front panel error is detected, the error is decoded for CRT display.

39. ID 333:
V2.0-The HALT command is ignored until the end of diagnostics.

V2.1-The HALT command is responded to as soon as the system processor can react to front panel processor interrupts.

40. ID 222:
V2.0-The HALT command may not work. The only way to halt a diagnostic loop may be to cycle power. Power down must occur only when CRT display is present or NVRAM data may be lost.

V2.1-The HALT command is enabled while executing diagnostic tests 7000, 8000, and 9000.

41. ID 298:
V2.0-The attribute RAM (A11U430) power up diagnostic test result is not being properly reported to the system processor.

V2.1-The attribute RAM diagnostic bit is now properly enabled to allow meaningful test results.

42. ID 279:
V2.0-All of the RAM chips are serially tested during diagnostics. The time required to perform these tests is long enough to lead some users to believe the scope is locked up. If power is cycled near the end of RAM test, NVRAM data may be lost and a COLD START will occur on the next power up.

V2.1-The Front Panel Processor alternately lights the + and - SLOPE leds to show the RAM tests are running.