Tektronix
COMMITTED TO EXCELLENCE

Tektronix, Inc.
P.O. Box 500
Beaverton, Oregon 97077

Phone: (503) 644-0161
TWX: 910-467-8708

7854 WAVEFORM PROCESSING OSCILLOSCOPE

First Concept Simulation on DPO, Spring '75
First Working Model, Fall '77
Engineering Release, October '79
Product Announcement, February '80

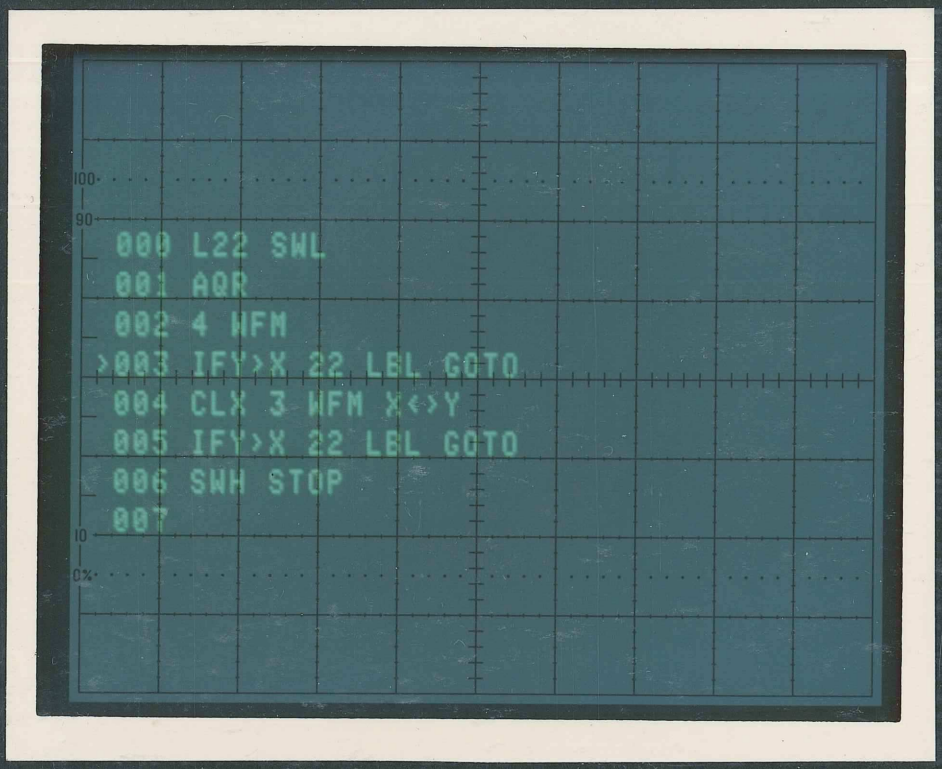
Development Team:

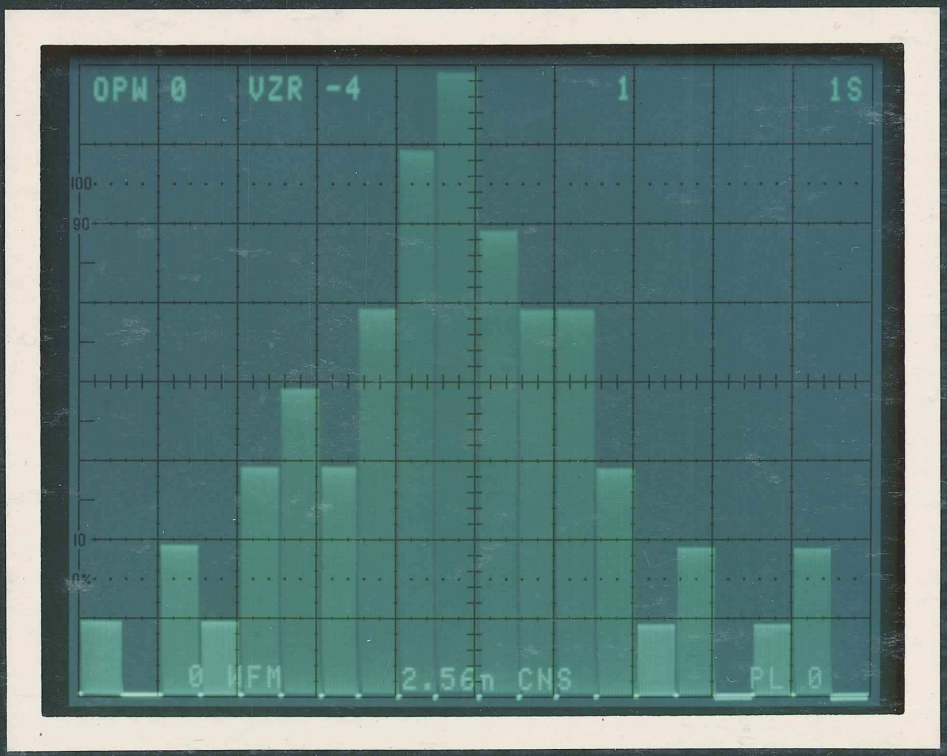
Jack Collins, Samplers
Ellen Deleganes, Firmware
Gary Fladstol, Display and Digital Circuits
Val Garuts, Product Concept and Definition
Tim Holte, High Speed Analog Circuits
Burt Johnson, Firmware
Bruce Kingsland, Technician
Wes Kosta, Analog Circuits
Les Larson, Digitizer
Tom Rousseau, Project Manager
Jim Schlegel, Firmware
Jim Tallman, Digital Circuits, Testability and Training
Kirk Wimmer, Power Supply and Digital Circuits

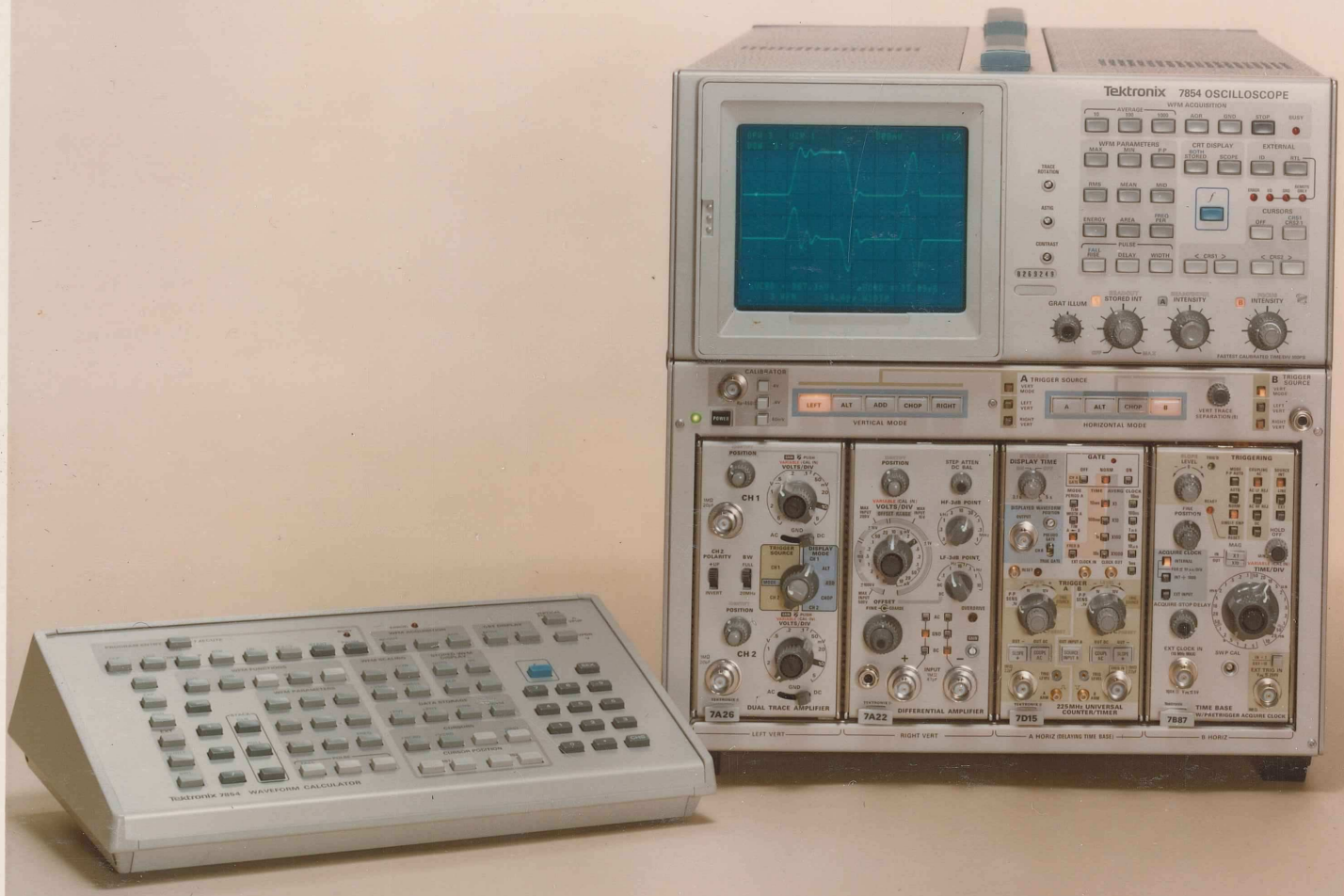
AN EQUAL OPPORTUNITY EMPLOYER

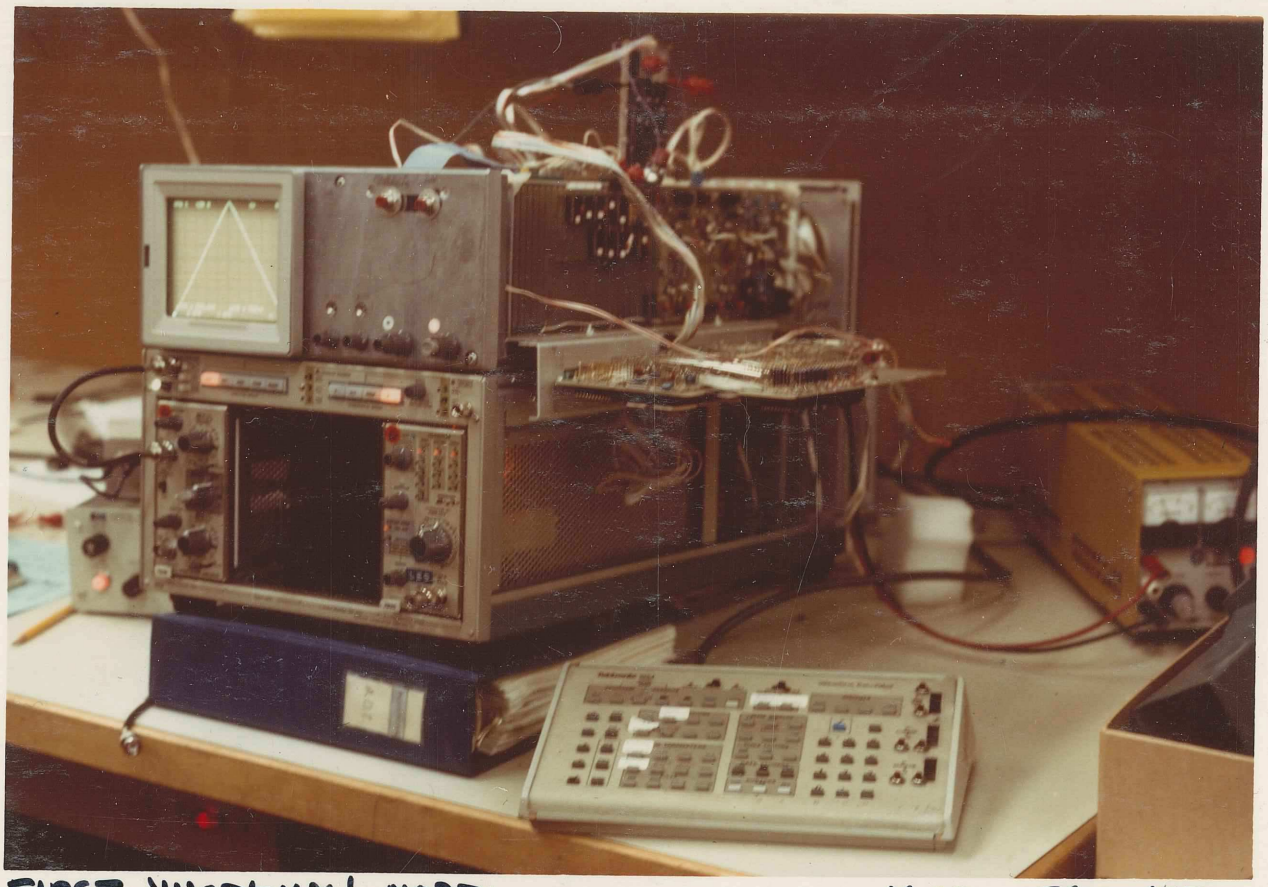
25 Nov 79 TR

Tektronix 7854 OSCILLOSCOPE
WFM ACQUISITION
VERTICAL MODE
HORIZONTAL MODE
7A26
DUAL TRACE AMPLIFIER
7A22
DIFFERENTIAL AMPLIFIER
7D15
225MHz UNIVERSAL COUNTER/TIMER
7B87
Tektronix 7854 WAVEFORM CALCULATOR

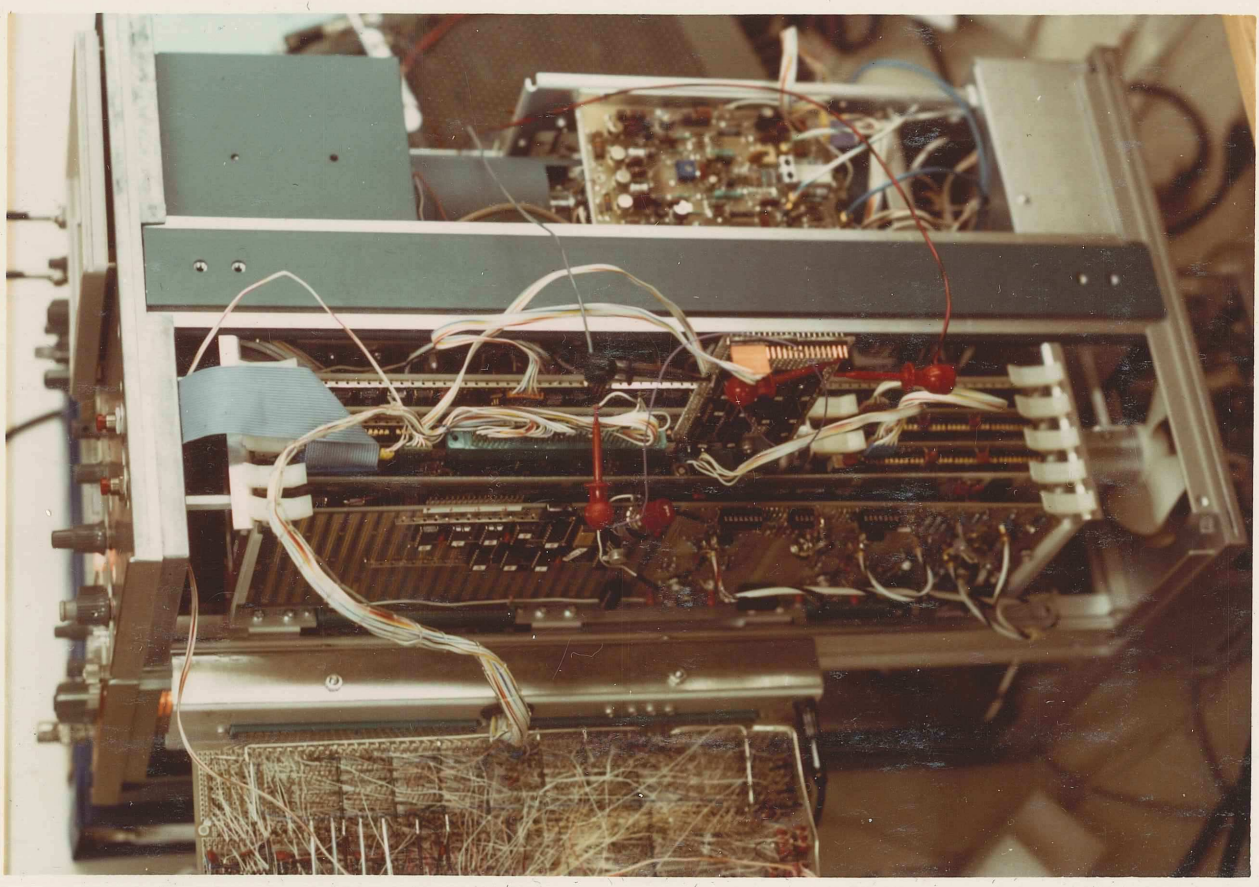

100
90
000 L22 SWL
001 AQR
002 4 WFM
>003 IFY>X 22 LBL GOTO
004 CLX 3 WFM X<>Y
005 IFY>X 22 LBL GOTO
006 SWH STOP
007
10
0%


OPW 0
VZR -4
1
1S
100
90
10
0%
0 WFM
2.56m CNS
PL 0


Tektronix 7854 OSCILLOSCOPE
WFM ACQUISITION
WFM PARAMETERS
CRT DISPLAY
EXTERNAL
CURSORS
PULSE
GRAT ILLUM
STORED INT
INTENSITY
CALIBRATOR
VERTICAL MODE
HORIZONTAL MODE
A TRIGGER SOURCE
B TRIGGER SOURCE
LEFT
ALT
ADD
CHOP
RIGHT
A
B
CH 1
CH 2
VOLTS/DIV
POSITION
7A26
DUAL TRACE AMPLIFIER
7A22
DIFFERENTIAL AMPLIFIER
7D15
225MHz UNIVERSAL COUNTER/TIMER
7B87
TIME BASE
W/PRETRIGGER ACQUIRE CLOCK
TRIGGERING
TIME/DIV
LEFT VERT
RIGHT VERT
A HORIZ (DELAYING TIME BASE)
B HORIZ
Tektronix 7854 WAVEFORM CALCULATOR



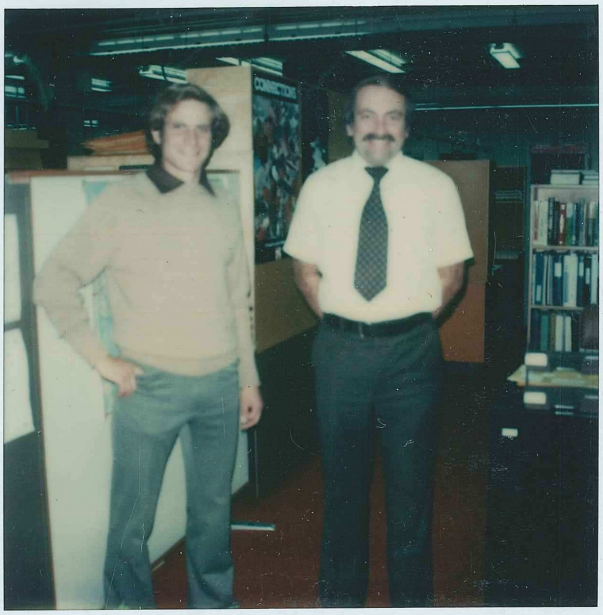
FIRST 'WORKING' MODEL X-02 FALL '77



PROGRAM ENTRY
EXECUTE
BUSY
ERROR
WFM ACQUISITION
CRT DISPLAY
VERTICAL POSITION
WFM FUNCTIONS
WFM SCALING
STORED WFM DISPLAY
WFM PARAMETERS
DATA STORAGE
CURSORS
CURSOR POSITION
Tektronix 7854 WAVEFORM CALCULATOR

7854
GRADUATION!

ER 26 OCT 79



Tom Rousseau Val Garuts
7854 ER 26 Oct 79

Design Team 7854 ER
26 Oct 79

Tom Rousseau Deane Kidd
7854 ER 26 Oct 79

7854 - early engineering notes

POWER SUPPLY

30 Dec 75 Val estimated Smarts to require 20 watts, absolute maximum. Val, Paul & D agreed that the smarts should possibly have its own final regulator. Possible the mainframe would supply 7V, 20KHz, or 7VDC unregulated. 7V 20KHz would allow smarts to generate its own voltages rather than standard 5K series

12 Jan 76 Jim T. estimated Smarts to require ≈ 40 watts (excluding Les' AD, sampler). This to come from +5, +12V 5.4 amps of +5, .99 amps of +12, 2.2 ma of -5.

19 Jan 76 (3) Paul has estimated impact of smarts on power supply:

	Usable Power	Power from Inverter	Supply Losses(2)	Line Power (1)
7603A	102 watts	127 watts	49 watts (24)	151 watts
7604	119	148	58 (28)	176 watts
7604 SS	158	207	88 (39)	246

(1) Assumes .84 inverter eff.
(2) Parentheses show inverter losses, based on 84% eff.

	7603A	7604	7604SS
Main Frame	39 watts	39 watts	39
Plug-Ins	49.5	66	66
Probe & Camera	13.8	13.8	13.8
Smarts			39
Total	102 watts	119 watts	158 watts

3 hole to 4 hole requires additional 4 watts inverter losses, + 9 watts total losses
4 hole to Smarts requires additional 11 watts " " " 30 watts " "
3 hole to smarts " " 15 watts " " 39 watts " "
∴ 3 hole to 4 hole smarts requires
Costs: Paul estimates that 4 hole smarts will increase power supply costs by ≈ 42#. His estimate includes 18# for fan, 8# for +5 V regulator, 7# for +12V regulator, 5# for additional rectifies.

20 Jan 76 (3) Paul + D decided that a 35°C case rise would be reasonable goal for series pass regulators. This assumes: 55°C (Ambient) → (heat sink) 90°C (Case) → 110°C (Junction)

21 Jan 76 (3) Will try to lower regulator ECB to make mounting of series pass transistors easier. This means hacking into the Main interface about 1/2 inch lower. Means rerouting lines on that board.

MAIN INTERFACE

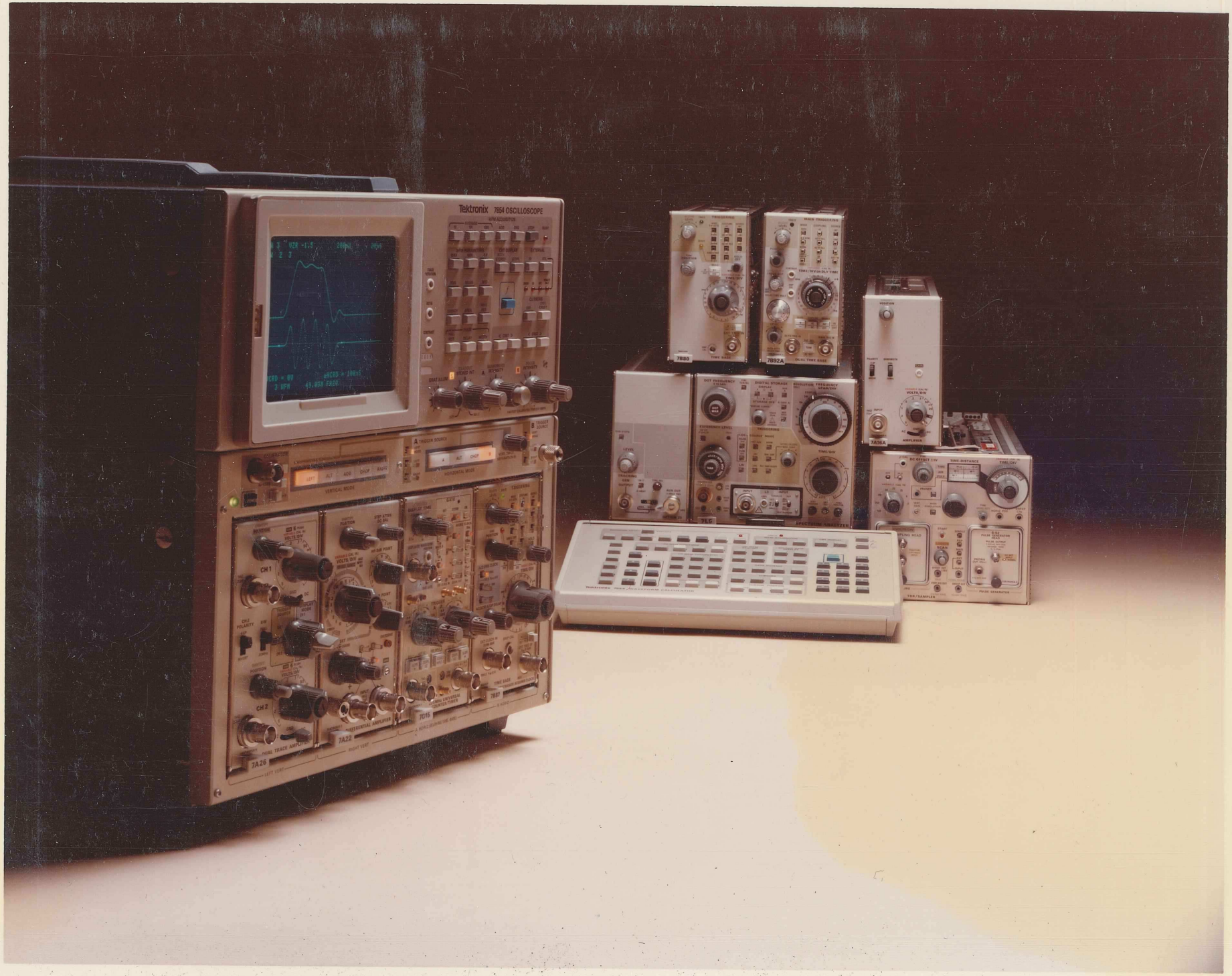
21 Oct 75 WK43 — No major problems with new scheme. Next go around will clean problems: Remove grounds from ground emitters of Ch Sw.; Termination resistors relocated. Move some runs. Trig Silet circuit not firm. Should have new version in couple of weeks.

1 Dec 75 WK 49 — Was checked with plant & says MI is flow solderable by hanging ECB such that it passes thru soldery without the connector ~~tail~~ body tail touching solder. He will check into shortening the tail.

23 Jan 76 WK3 — Lowering power supply connection to MI means extra connectors must be added for routing lines to the mainframe upper level. Squeeze is too tight to get all the lines thru with lowered position.

TEK STANDARD PACKAGE

SMNB Marlowe – Concerned about meeting UL + Government Specs – EMI – Says no way can do a 5 1/4" 7000 series rack + serious drawback to doing 5800 series. Cooling is also a problem with stackable cabinets. Considering front panel ventilation.


Tektronix 7854 OSCILLOSCOPE
7B80
7B92A
7A16A
7L5
7A26
7A22
7D15
7B57
CH 1
CH 2