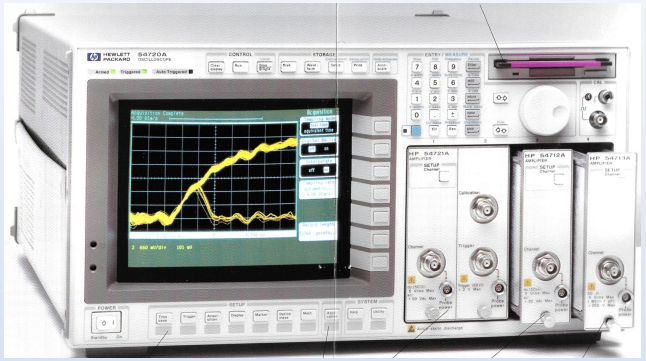
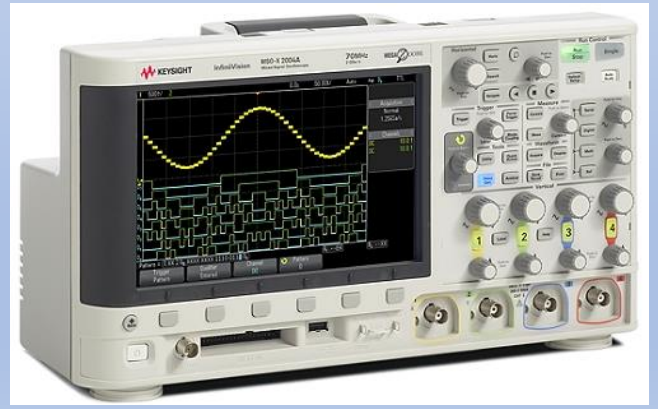


Anthology of the working years of John Campbell

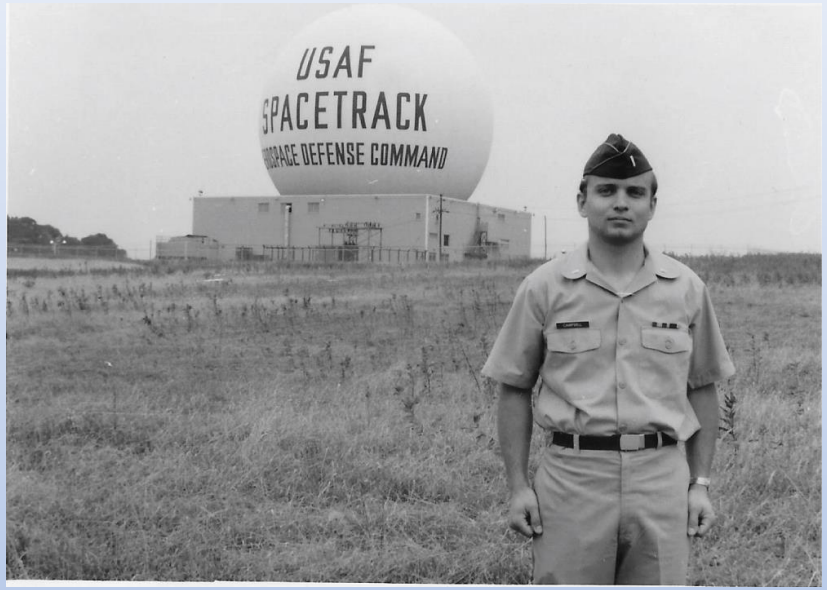
A look back at the projects and adventures from 1968 to 2011…..and beyond



After college at Bradley University, Peoria Illinois, in 1968, I spent 4 years in the US Air Force

I was a Space Systems Analyst and used Radar Signature Analysis to figure out what orbiting satellites and missiles looked like.

First assignment: USAF SPACETRACK radar at Moorestown, NJ.



RCA Missile and Surface Radar electronics division in Moorestown developed the tracking radar for the BMEWS and DEW line systems. They built the prototype for the radar here and it went on-line as a SPACETRACK sensor site for NORAD.

Shemya

2nd assignment:
SPACETRACK radar at Shemya, Alaska

After Shemya, I came to NORAD in Colorado Springs.

I did an in-depth analysis of the first Soviet Space Station, Salyut-1.

Starting in August, 1972 I began working at Hewlett-Packard in Colorado Springs.

On 5 June, I got a “don’t call us, we’ll call you” letter. I had not had the interview yet. 15 June I had an interview. On 22 June, I got the confirmation letter.

HEWLETT hp PACKARD

1900 Garden Of The Gods Road, Colorado Springs, Colorado 80907 TELEPHONE 303 636-5111

22 June 1972

Mr. John W. Campbell
3070 Fountain Blvd., Apt. 302
Colorado Springs, Colorado 80910

Dear John:

We certainly appreciate your time in visiting with us on June 15th. Everyone with whom you spoke rated you highly. This, along with your knowledge and experience, permits me to confirm our offer of $1100. per month. We have a quarterly wage and salary merit review cycle, and dependent on individual contribution, substantial changes could be made in salary levels. In addition to this, Hewlett-Packard's profit sharing and stock purchase plans adds to this by approximately 7% after one year.

We are pleased that you have accepted our offer and will be joining us. We will pay you a 20% relocation allowance, and if you have some things in Peoria that need to be moved to Colorado Springs, we will be glad to cover this expense also. I am enclosing information on our moving policy, as well as some literature about Hewlett-Packard which may be of interest to you.

If you have further questions, please feel free to call me at 598-1900, Ext. 562. We will look forward to seeing you on August 14th.

Sincerely,

HEWLETT-PACKARD COMPANY

Lewis V. Reimer
Personnel Administrator

LR:jh
Encl.

HEWLETT hp PACKARD

1900 Garden Of The Gods Road, Colorado Springs, Colorado 80907 TELEPHONE 303 636-5111

June 5, 1972

Mr. John W. Campbell
3070 Fountain Blvd. Apt. 302
Colorado Springs
Colorado 80910

Dear Mr. Campbell:

Thank you for your interest in employment with the Hewlett-Packard Company.

After reviewing your training and experience, we find that we do not have an opening at this time which would be commensurate with your background.

However, we do expect to have job openings in the future and will retain your application in our file. In the event we have a vacancy which we think would be of interest to you, we will contact you.

Again, thank you for your interest in Hewlett-Packard.

Sincerely,

HEWLETT-PACKARD COMPANY

Dick Ouellette

Dick Ouellette
Assistant Personnel Manager

DO:bl

RESUME: JOHN WILLIAM CAMPBELL

OBJECTIVE: To be associated with the design engineering or sales engineering activity of a manufacturer of industrial equipment/components. Mechanical, electro-mechanical or fluid dynamic devices/systems are of primary interest.

PERSONAL DATA:

Age:	27
Height:	5' 7"
Weight:	170
Health:	Excellent
Marital Status:	Married, no children
Address:	3070 Fountain Blvd. Apt. 302 Colorado Springs, Colorado 80910
Telephone:	303/473-7689

EDUCATION: Bradley University, Peoria, Illinois

Master of Science, Industrial Technology - 1968
Of primary concern were techniques of evaluation, industrial training, and real management problems encountered in industry.

Bachelor of Science, Machine Design Technology - 1967
This curriculum was centered around an application approach to engineering design. Emphasis was placed upon understanding of design problems in terms of use of materials, fabrication, and good design sense.

EXPERIENCE: United States Air Force

Current Rank:	Captain
Security Clearance:	Secret
Military Commitment:	4 year active duty commitment complete in July 1972

November 1970 to Present — Space Systems Analysis Manager. Management experience was gained while performing project officer duties in a wide variety of jobs. Latest management position is that of Chief of the Aerospace Defense Command's Space Object Identification Center.

July 1968 October 1970 — Space Systems Analyst. Specific job was evaluation of radar amplitude-time recordings of orbiting space vehicles and missiles. This work involved the determination of size, shape, orientation and other parameters of target vehicles. Knowledge of long range radar operation and electro-magnetic propagation theory was necessary.

June 1967 August 1967 — International Harvester Company, Hinsdale, Illinois

Design Engineer. Hired for summer job as a detail draftsman. After short time was switched to layout and design work. Performed design of sub-assemblies/systems in small tractor development. Excercised drafting and mechanical design talents.

REFERENCES: References will be forwarded upon request.

The “Yellow Box” scopes…….They were painted yellow on the outside.

My very first assignment was lab support of the AN-USM 338/339 “ruggedized” scopes for the Navy. These two products were, essentially, the 1700B and 1707B, option 300. The big deal was that they were supposed to be ruggedized and “drip-proof”. They had a special front panel with special rubber seals on the pot shafts and sealed switches. The chassis was housed in a “deep-drawn” aluminum container that had no openings. All this would allow water to be splashed on it without getting inside.

These products, as with the regular 1700’s, had the capability for internal battery power.

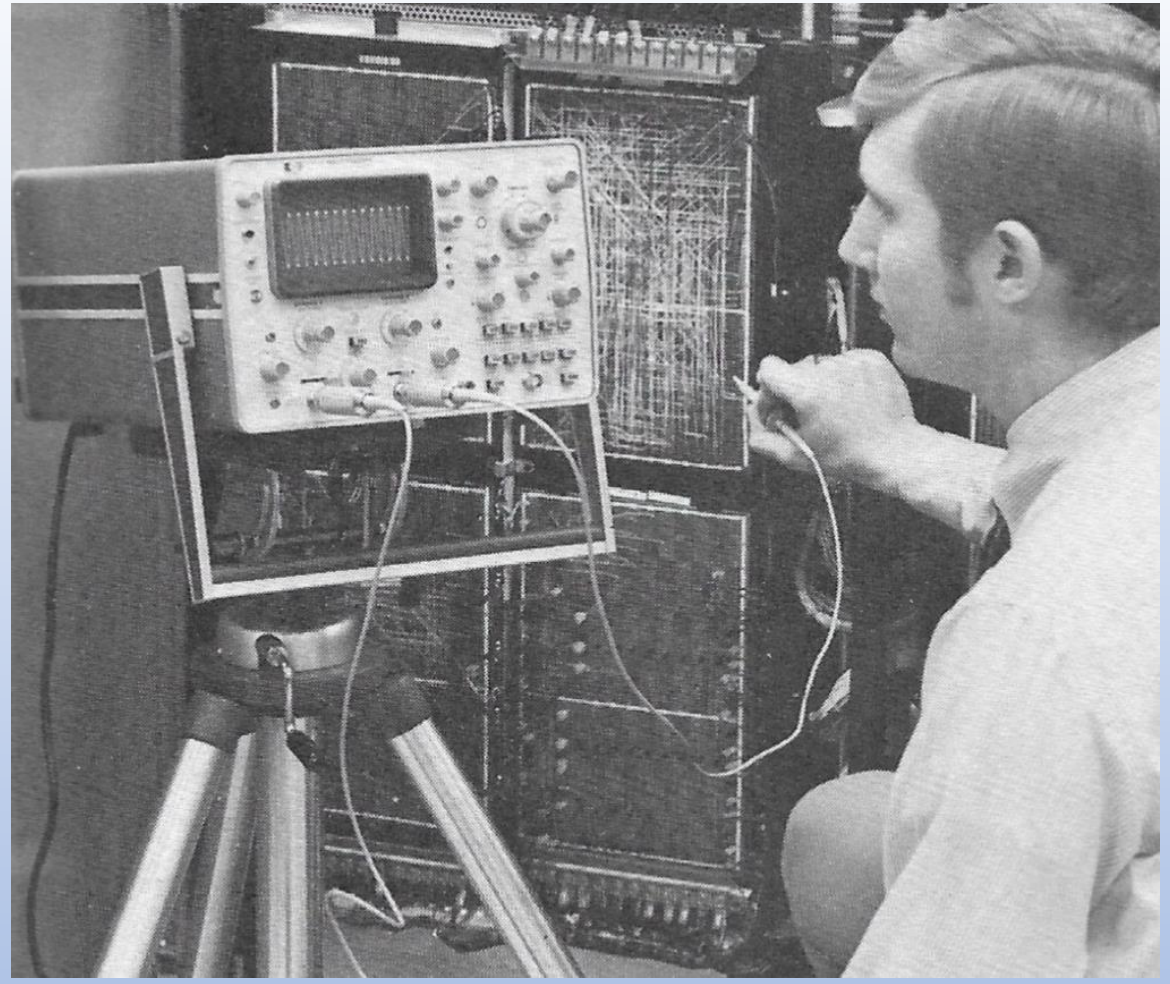
Some folks in the lab and marketing got an idea to promote the products for the commercial market. They took one of the units down to the YMCA pool and took pictures of it operating under water.

Of course, it did leak a little but stayed “up” long enough to take the photos. Tom Bohley from the lab went in the pool with it in scuba gear, along with a good looking employee in a two-piece.

Then someone got the idea to have the thing in a tank of water at a show in Milan. Well, it needed some work to get this unit really sealed to be in the tank for some time at the show.

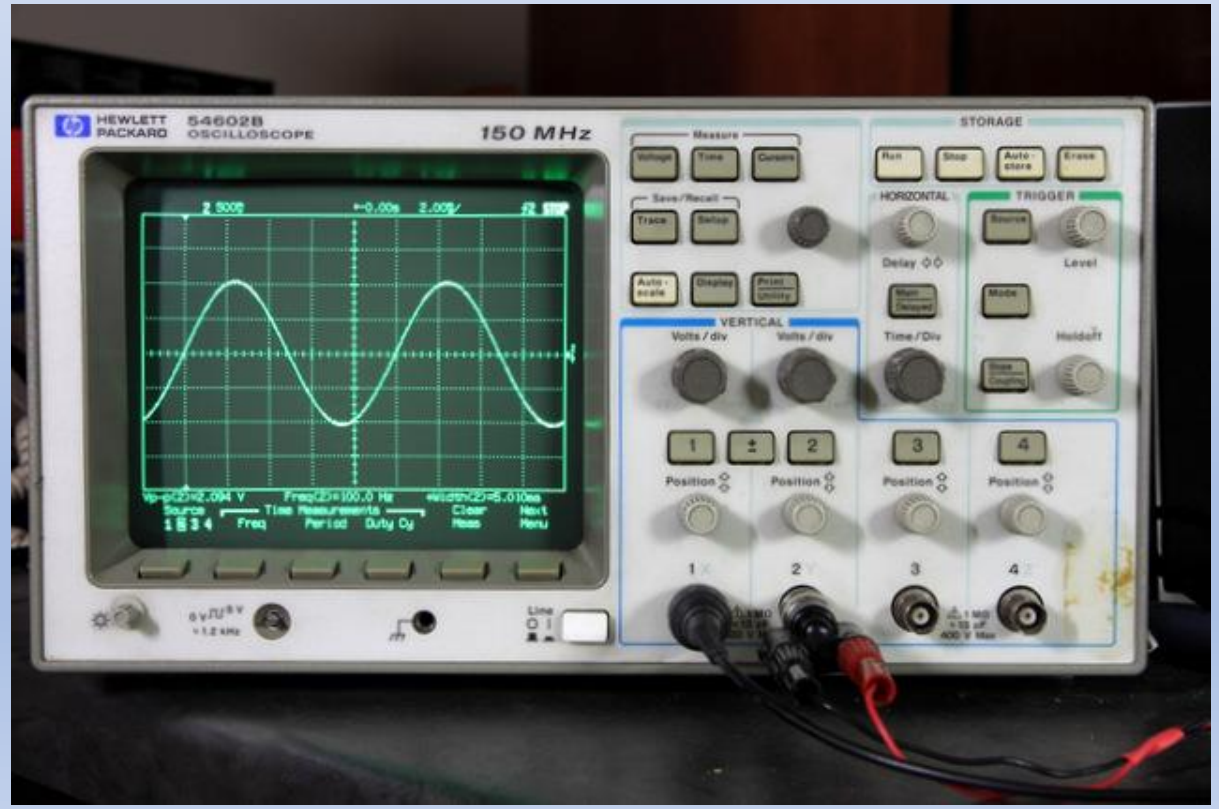
I got the job of improving the sealing for the show unit. I spent hours applying sealer and other stuff. I would test my efforts in the rinse water tank in the metal finishing shop.

I also had to improve the mechanical shock capability and make it qualify to the Navy “Hammer-Blow” test.



This is what some Oscilloscopes looked like in 1972

This was a more “modern” low-cost scope that came along a few years later.

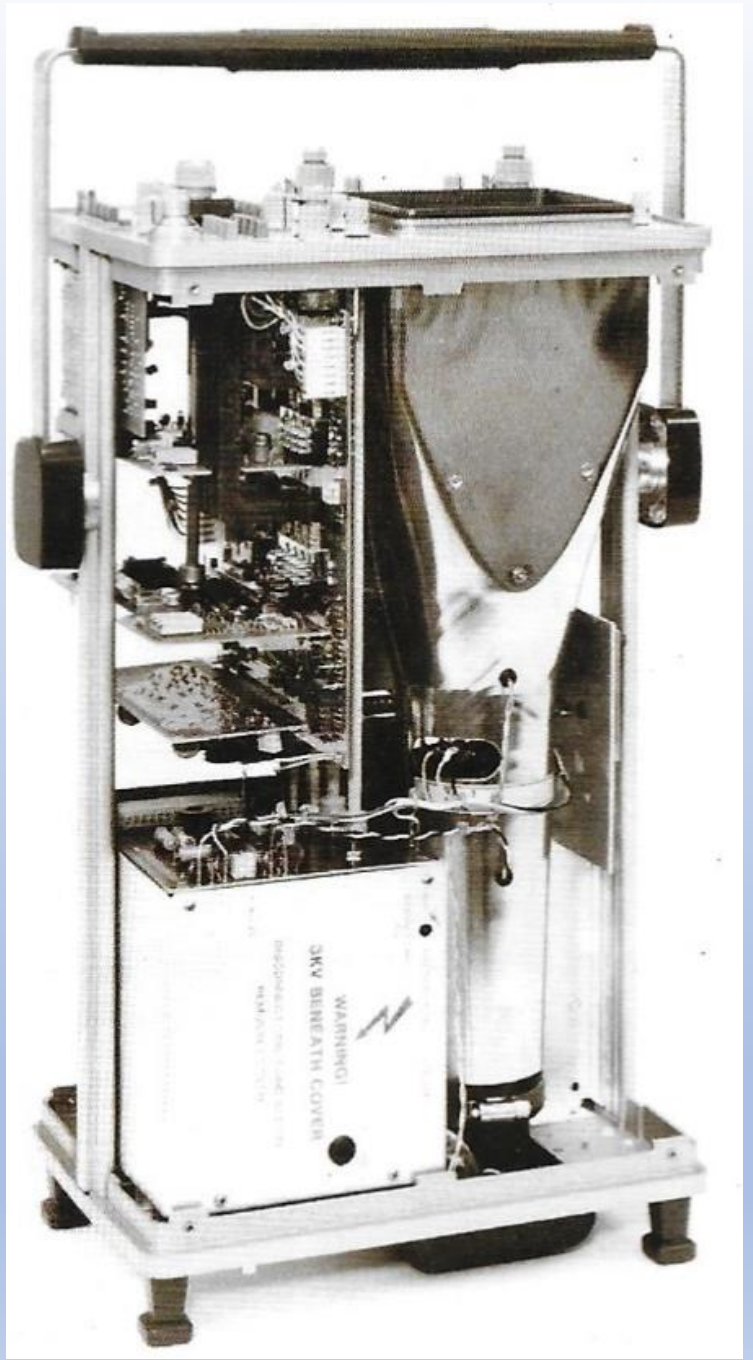


After the Yellow Box support, I was going to work on a new 1700 series product, the 1705. It was some sort of upgrade product. I got as far as layout of a new product number label for the handle and they cancelled the project.

This was my first major project……the 1740A

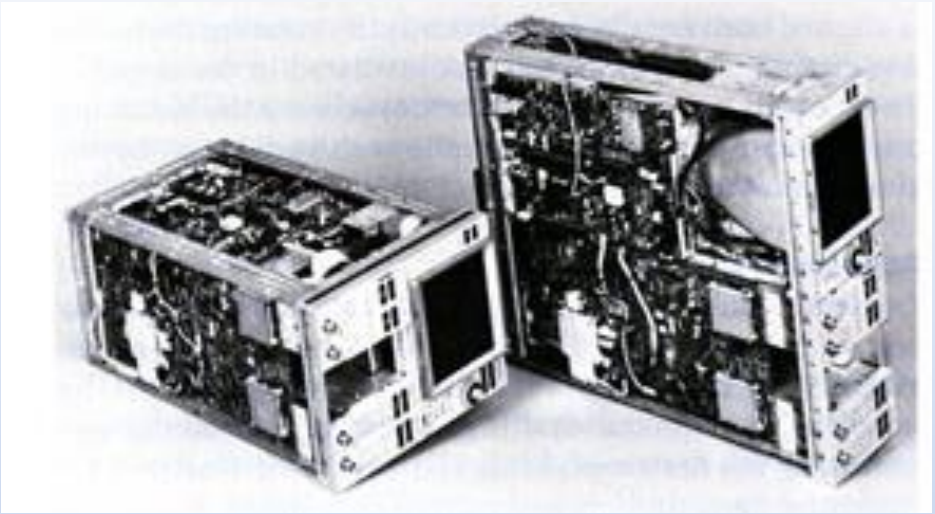
I designed the “Horizontal” area of the control panel to be more logical with respect to the “Main Sweep” and the “Delayed Sweep.”

I designed the right side of the front panel layout and did most of the interior construction. The interior was a significant contribution that connected the various board assemblies together with an interface board, rather than a “rat’s nest” of cabling, typical of products of the time. I also designed a new handle, since the previous one was prone to breakage. The new handle contained fewer parts and had a modern, simple look with a rubber grip area over-mold. I also initiated the use of a new, larger size knob for the attenuator range and sweep which made them easier and more precise to use.



My second big project was the 1980A/B

The 1980 A/B was designed to be two different physical configurations. The wide version was know as the “rack” and narrow, vertical version was the “cabinet”.



The design intent was to have both configurations utilize the same, identical set of PC board assemblies, connected with the same identical cable assemblies.

Only one board, the “interface board” (just like the 1740) was different. This contributed to the mechanical simplicity of having two different configurations but also helped keep the electrical differences to a minimum.

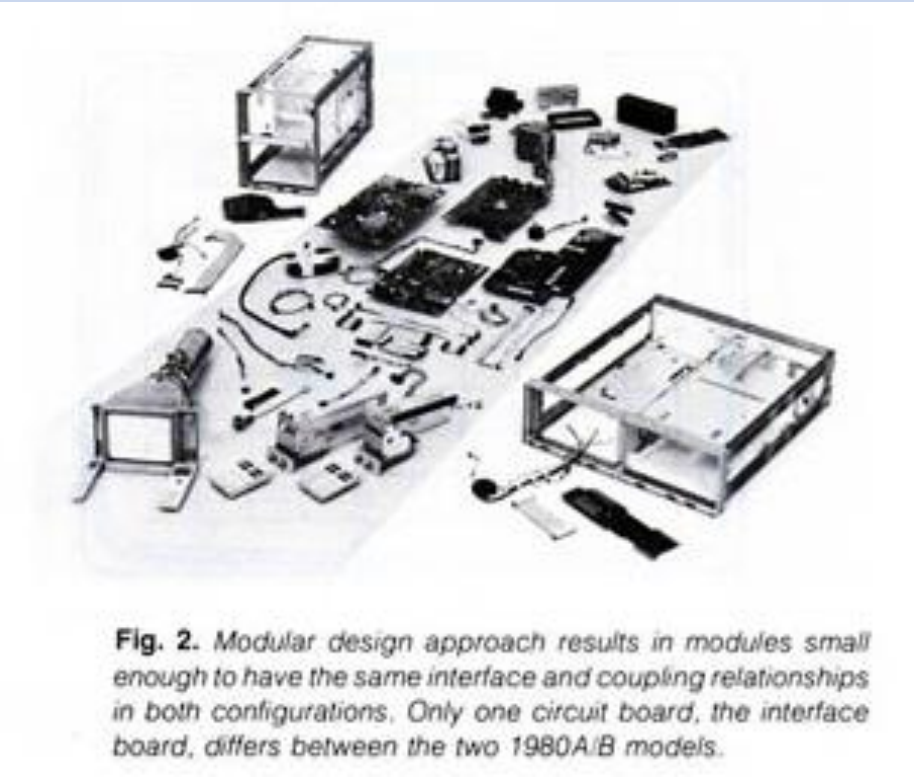


Fig. 2. *Modular design approach results in modules small enough to have the same interface and coupling relationships in both configurations. Only one circuit board, the interface board, differs between the two 1980A/B models.*

One contribution was the knob that controlled a digital encoder that allowed analog-like adjustments to various settings. There were times when you needed “fine” adjustment and other times when you had to “spin” the control from one end of the range to the other. So, I designed a knob with a small diameter to “spin” the control and a large diameter to enable “fine” adjustment.

Bottom View

Top view

I also invented a shock mount device that supported the CRT and allowed for precise rotational positioning.
The assembly folks had to adjust the positioning of the display since the CRT had graticule lines and had to look straight.

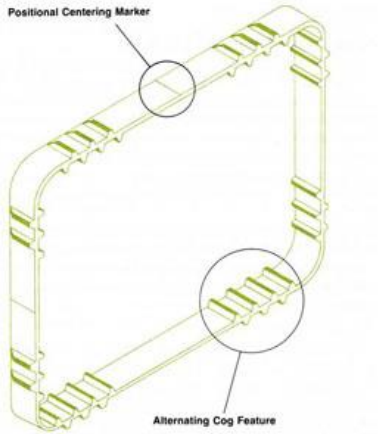


Fig. 3. *Injection-molded elastomer belt for shock-mounting and alignment of 1980A/B CRT.*

instrument. Second, an injection-molded elastomer belt (Fig. 3) solved the shock-mounting and alignment problems. The belt serves as a shock mount that adapts to different glass sizes. It does this via flexure of the belt within the areas of the alternating cog features. It is also a positive-displacement rotational adjustment device which leaves the CRT in rotational equilibrium regardless of adjustment position. The belt takes advantage of the curvature of the sides of the glass faceplate. As an illustration, a perfectly symmetrical tube with properly aligned graticule is shown in Fig. 4a. With the belt centered on the glass, the graticule is aligned horizontally and vertically. By rotating the belt in one direction (Fig. 4b), the glass is rotated in the opposite direction and remains in equilibrium because the mounting cogs attempt to fill and then relieve the voids left by the glass curvature on each side.

Acknowledgments

I would like to acknowledge the efforts of the other members of the mechanical design group that developed the 1980A/B package: Donna Burton, now a graphic artist, for persevering with the drafting, redrafting, checking and analyzing the drawings, Ernie Hastings, who finalized the structural parts designs and carried the cabinet model into production, Will Taylor for all of the many designs he contributed in addition to the attenuator design, Jim Carner, now a process manufacturing engineer, for the initial enhancement module design, and Carolyn Finch for the panel assembly design.

John W. Campbell

John Campbell, who has been with Hewlett-Packard since 1972, worked on the 1740A Oscilloscope before becoming mechanical design project leader for the 1980A/B System. Before joining Hewlett-Packard, John spent four years as a space systems analyst in the Air Force. He received a BS degree in applied engineering in 1967 and an MS in industrial management in 1968, both from Bradley University in Peoria, Illinois. John is married, has two sons, and lives in Colorado Springs. He enjoys skiing, dirt biking, and golfing, but his primary hobby is model railroading.

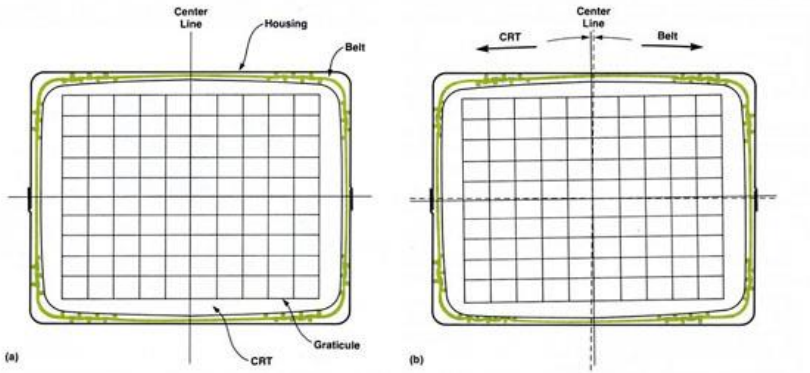


Fig. 4. *(a) Symmetrical CRT with properly aligned graticule. (b) With elastomer belt rotated in one direction, the glass tube is rotated in the other direction but remains in equilibrium.*

From HP Journal

Another innovation I made was the modular front panel assemblies Which made it easy to change light bulbs and other things. (The right side panel had 42 light bulbs)

I had the opportunity to explain all this to Dave Packard at a Division Review

HEWLETT-PACKARD

MOUNTAIN EXPRESSOR

JUNE, 1979
Special SCOPES Issue!

C. S. DIVISION REVIEW

Reviewers look for People, Planning and Progress . . . .

John Campbell chats with Dave Packard about *"producibility, reliability, and serviceability."*

WHAT IS A DIVISION REVIEW?

Reviewers Look for People, Planning and Progress . . .

You may have noticed during the month of May, a flurry of excitement, meetings, rehearsals, product displays, last minute changes, luncheons and some official looking people walking around the facilities. Why? Division Review. The *Mountain Expressor* asked questions of an official review participant and was given the following answers. You will probably find the answers to questions you've had about this annual event.

Q. What is a Division Review? Why do we have one?

A. The movement of Divisions away from the Palo Alto headquarters caused the need for Division Reviews. It is an annual opportunity to explain our business, strategy and future plans. The most important part of the review is the one-on-one conversations between Colorado Springs people and our bosses.

Q. How often?

A. Historically, Division Reviews have been held annually, but due to the large number (40 to 50) now required, the timing may be changed to once every 18 months.

Q. What happens during a Review?

A. Presentations are made by our managers on their functional areas or on topics in which they are experts. Each of these presentations lasts about 30 minutes. During the talks a good two-way interchange is held between the reviewers and the speaker.

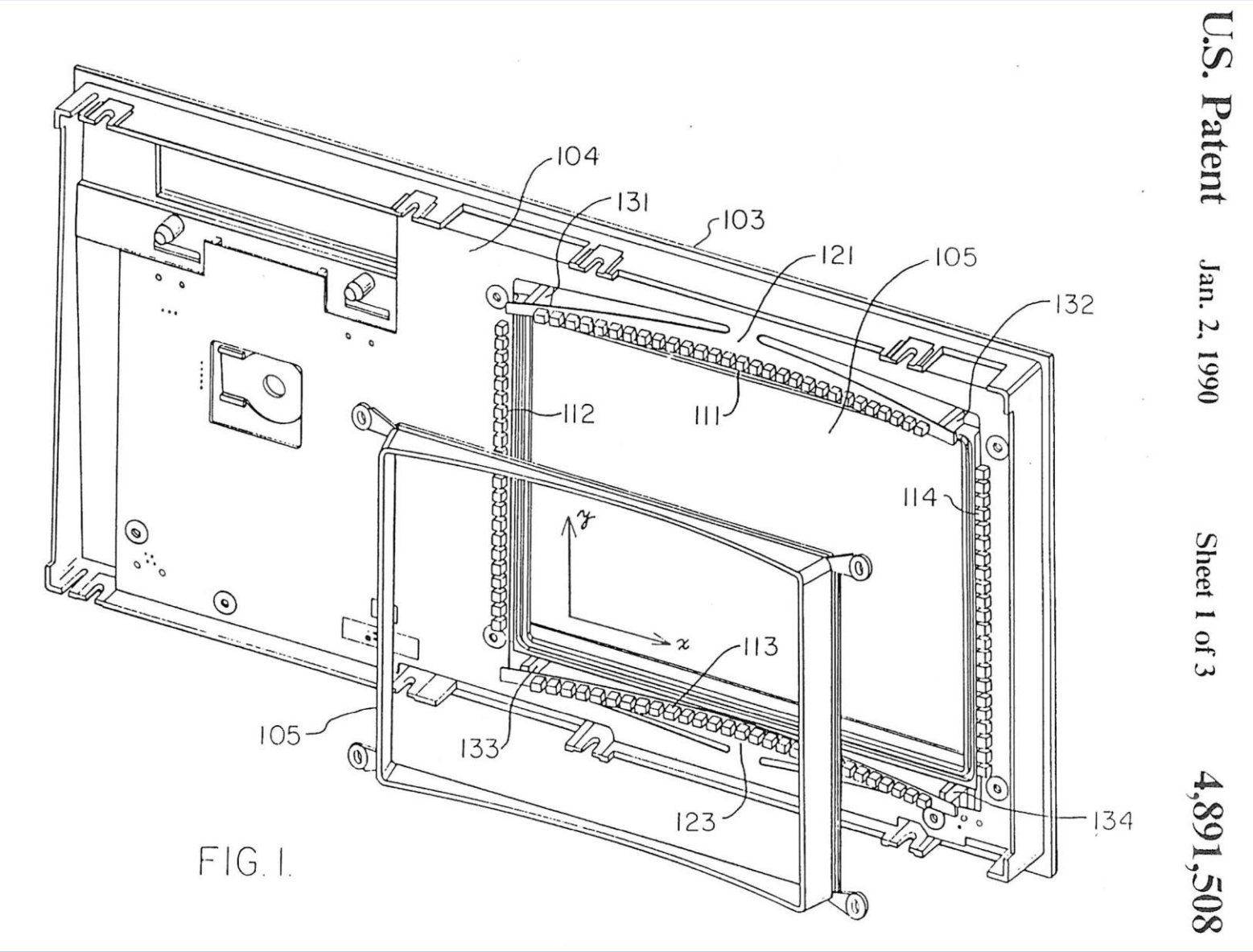
(continued)

Next project was the 16500 Logic Analyzer mainframe. This product had a card cage in the rear that could be loaded with a variety of measurement assemblies.

I designed the card cage parts inside using the technology of foam molding, which we had not used before.

The display in the 16500 was a Sony cylindrical face CRT. The control configuration utilized a “Touch” panel. The shape of the display CRT created a non-uniform “touch” sensitivity, particularly in the corners as compared to the center. The touch system at that time utilized sets of “IRED’s” (Infrared transmitters and detectors) These were all mounted on a PC board and had to be positioned so as to “see” over the curvature of the CRT. Touching the CRT face would cause a beam between a transmitter and receiver to be broken, triggering a touch response. It can be seen that The beams near the corners and sides would be located farther from the CRT face, thus causing a variation in touch sensitivity.

My solution was to “flex” the mounting areas of one set of sensors to follow the curvature of the CRT.
This allowed the “touch” sensitivity to be the same in all areas of the CRT. The flexible mounting tabs
Were tapered so they would tend to bend in a radius, rather than bending only at the attachment in the center.



I was awarded a patent for this. Naturally, this need did not last too long with the advent of newer touch panel technologies and the development of flat panel-type displays.

United States Patent [19]

Campbell

[11] Patent Number: **4,891,508**

[45] Date of Patent: **Jan. 2, 1990**

[54] **PRECISION INFRARED POSITION DETECTOR APPARATUS FOR TOUCH SCREEN SYSTEM**

[75] Inventor: **John W. Campbell**, Monument, Colo.

[73] Assignee: **Hewlett-Packard Company**, Palo Alto, Calif.

[21] Appl. No.: **213,405**

[22] Filed: **Jun. 30, 1988**

[51] **Int. Cl.**[4] **G01V 9/04**

[52] **U.S. Cl.** **250/221;** 340/712

[58] **Field of Search** 250/221; 340/706, 708, 340/709, 712, 555, 556; 341/31; 178/18

[56] **References Cited**

U.S. PATENT DOCUMENTS

4,437,632	4/1988	Kawabe et al.	250/221
4,737,631	4/1988	Sasaki et al.	250/221
4,751,379	6/1988	Sasaki et al.	340/556
4,764,885	8/1988	Greanias et al.	340/708
4,766,424	8/1988	Adler et al.	250/221
4,812,830	3/1989	Doering	250/221

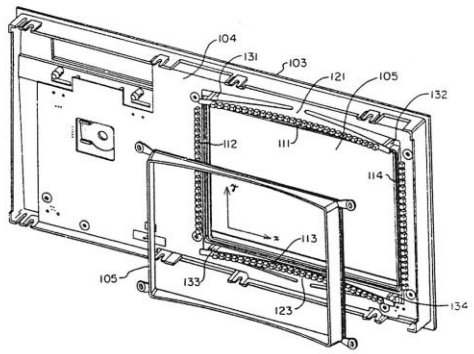
Primary Examiner—David C. Nelms

Attorney, Agent, or Firm—Karl E. Bring

[57] **ABSTRACT**

The precision infrared position detector apparatus uses an information display device that has a substantially cylindrical shaped screen to limit curvature of the screen to a single dimension. In addition, to compensate for this curvature, a flexible printed circuit board is used to align the row of infrared light sources and detectors along the same curvature as the screen of the information display device. A first flexible printed circuit board is equipped with a single row of infrared light sources while a second flexible printed circuit board is equipped with a signal row of corresponding infrared light detectors. A frame member is used to bend the flexible printed circuit board into a substantially cylindrical shape that matches the curvature of the screen of the information display device. In this manner, the first and second flexible printed circuit boards are placed at opposite ends of the rectangular shaped screen of the information display device to thereby transmit a plurality of parallel beams of infrared light, each of which is a predetermined distance above the screen of the information display device even though the screen of the information display device curves in the shape of a cylinder.

14 Claims, 3 Drawing Sheets



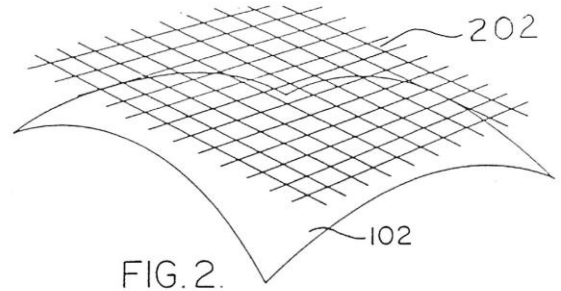


FIG. 2.

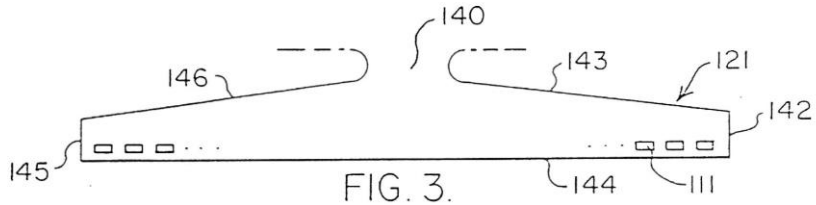


FIG. 3.

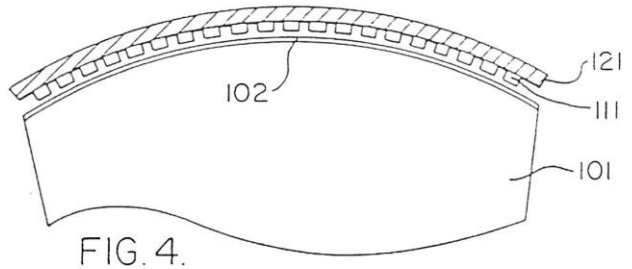


FIG. 4.

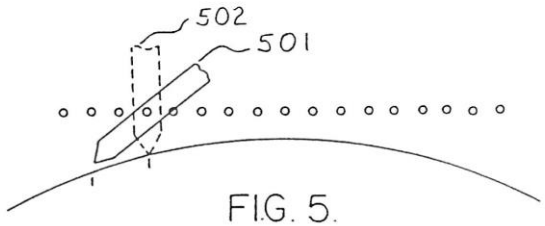


FIG. 5.

There was a project that brought a team from Singapore to Colorado Springs. Some of us were assigned as “mentor” to the various folks from Singapore. I was assigned to the mechanical engineer. The intent of the Singapore team was to design and produce an oscilloscope in Singapore. For one reason or another, the project was cancelled. However, the parts developed here were sent to the home of William Tok (team manager) in Singapore and there, the guys assembled the stuff into a working scope. This is a picture some of folks involved at a lunch.

Yvonne Self Laverne Gress Donna Burton Me, Roy Wheeler, Jim Williams, unknown, William Tok, George Blinn, unknown

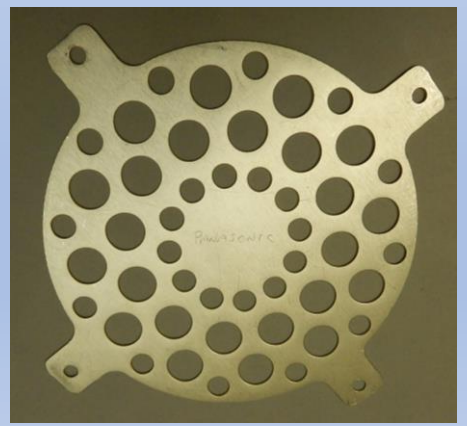
Another project was the 54100A

My main contribution to this project was design and cooling of the internal card cage with a stack up of 10 acquisition and processing boards

I brought the cooling air in the rear with a fan and exited it out the top front. At this time, the corporate reliability folks had decided that product Designs should be held to a max internal temperature rise of 10 degrees C.

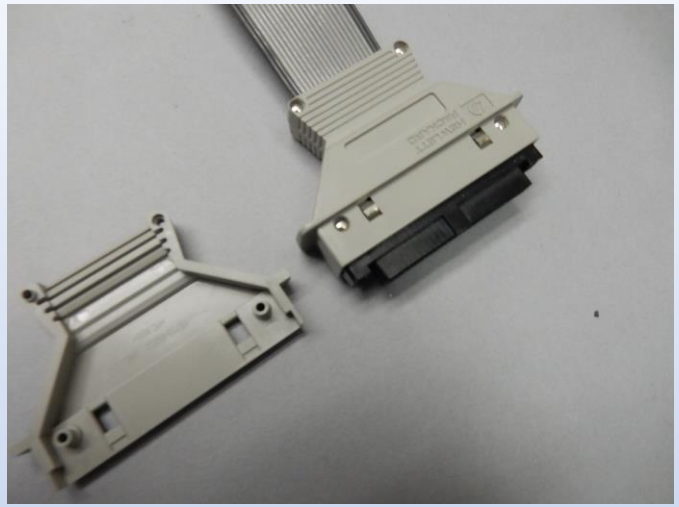
I had to spread the airflow out to drive each of those 10 PC assemblies in the card cage. After a lot of experimenting, I discovered that a plate with holes, mounted on the inside of the fan would allow this to work.

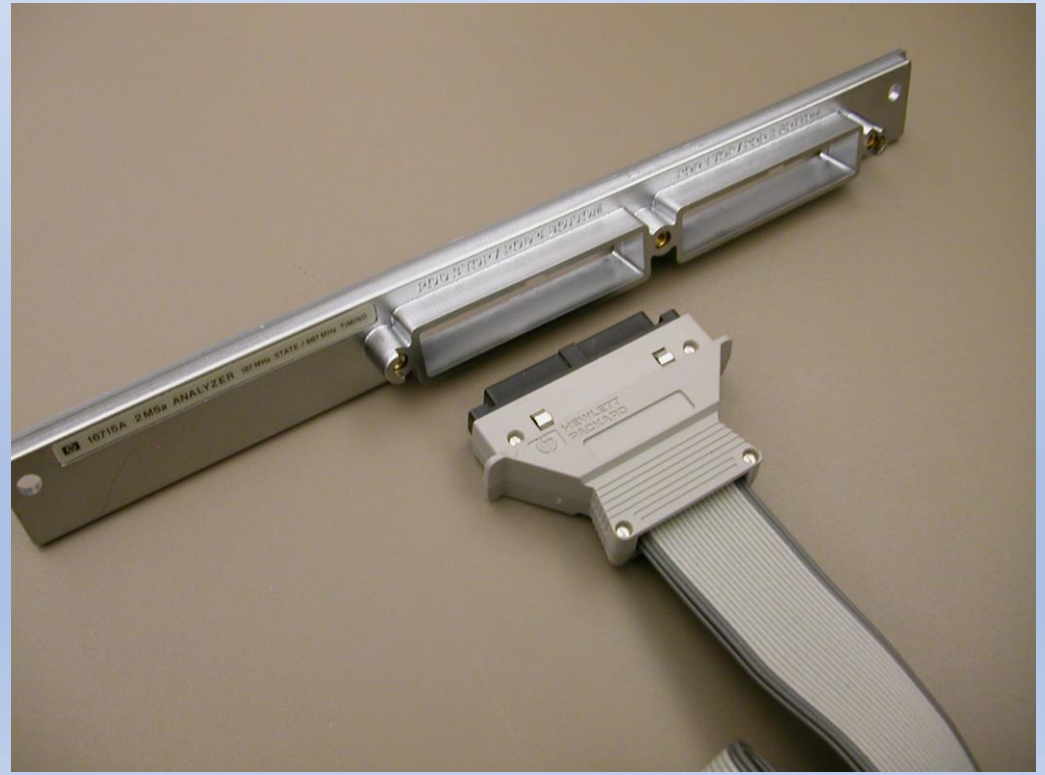
At that time, I decided to call this part the “Shower Drain Cover”. Kind of goofy, but it worked quite well and I maintained the 10 Degree rise spec throughout the card cage.



There were many little projects intermingled with the big projects.

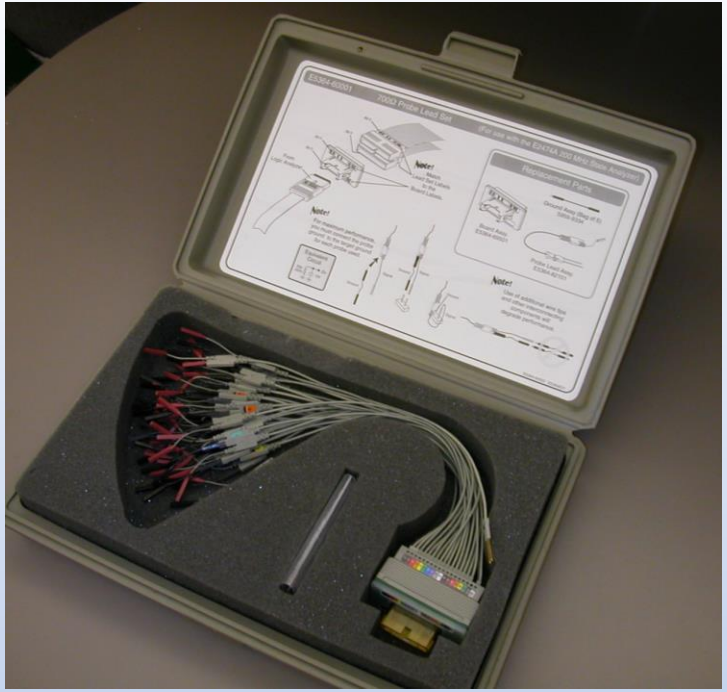
This was for the "LAX" logic product

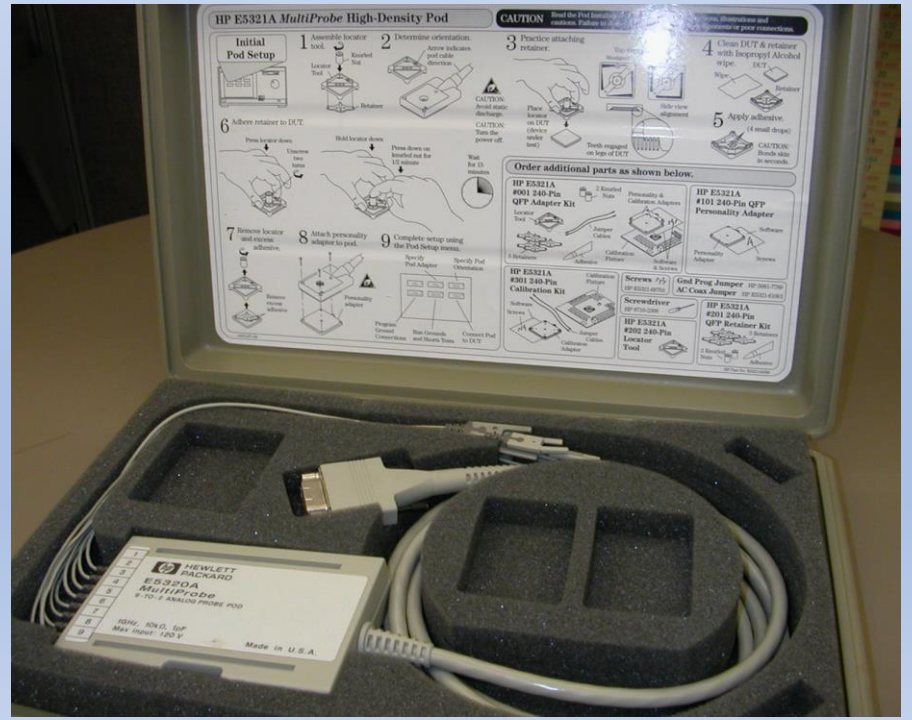




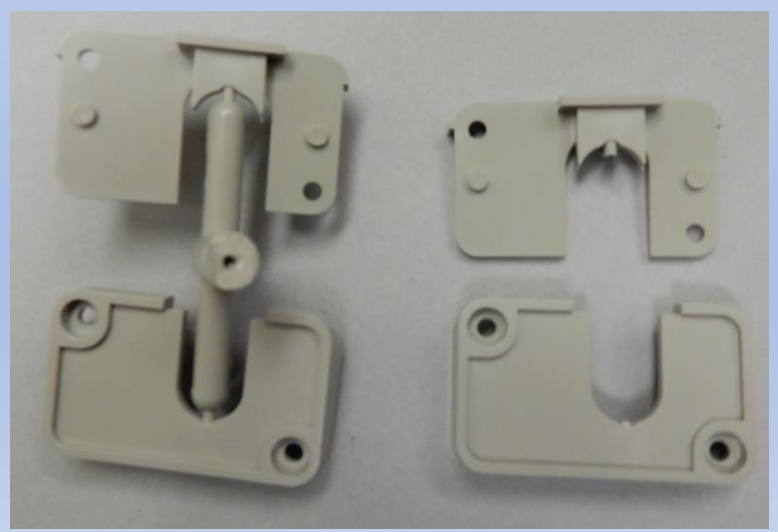
This cable termination part allowed for "grounding" of all the ground braids of the coax lines in this cable. The PC Termination board inside the two shell parts contained connections for all the coax braids and these then connected to some contacts protruding from the two shell parts to make contact with the rear panel mating and connector and surrounding contacts. This was something new that we had not done before. The rear panel shown was ABS plastic with chrome plating so it worked like metal.

Over time, I did a number of accessory kits with organized packaging and detailed instructions showing how to use the parts. Installing an instruction label in the cover of the box was something new for us.

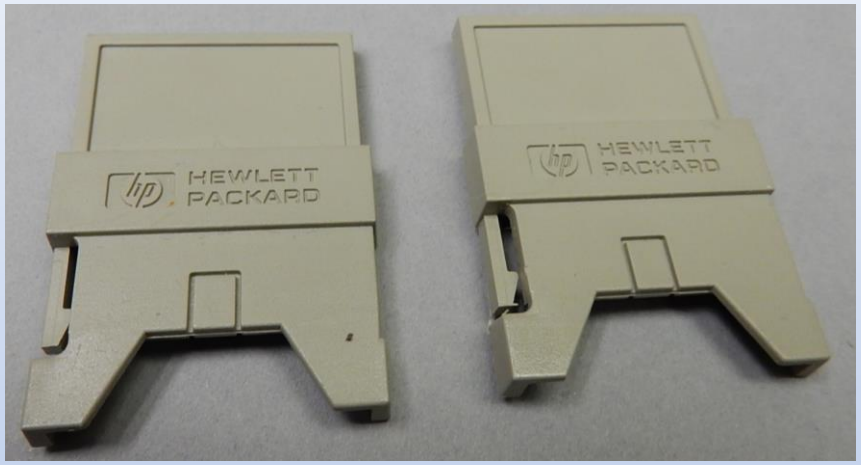




This cable attachment part allowed it to be applied to a cable in a probe housing after the cable, already attached to a board, was installed in the housing. Otherwise,
a part without the split configuration would have to be slipped onto the cable prior to attachment to the board. We were working with another company using some of their technology for our probe. They liked this deign so much, that they asked if they could use it on their own products.

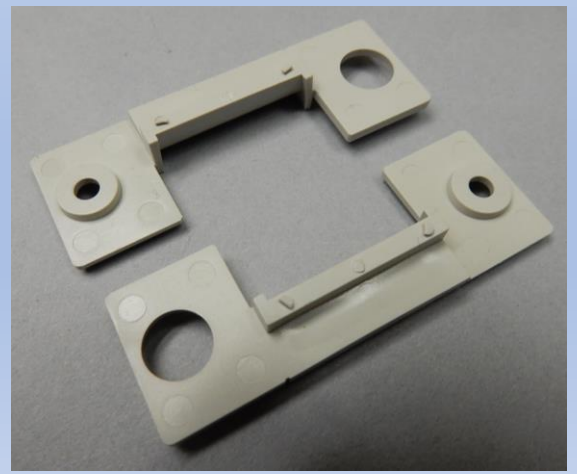


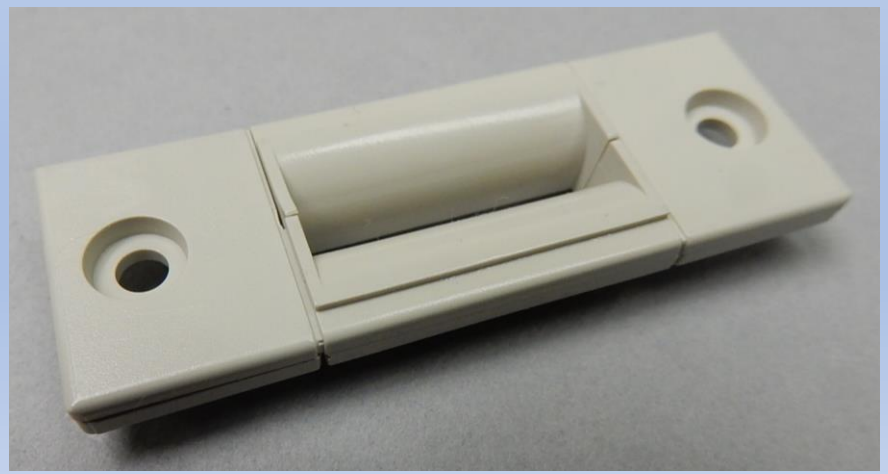
Another cable termination cover was quite simple. This was on of those parts that we would not use very many of. So, the cost needed to be controlled. By making a single part, two parts could be obtained by cutting out the polarity notch in one part. The part provided the polarity key and a retention snap on both sides.

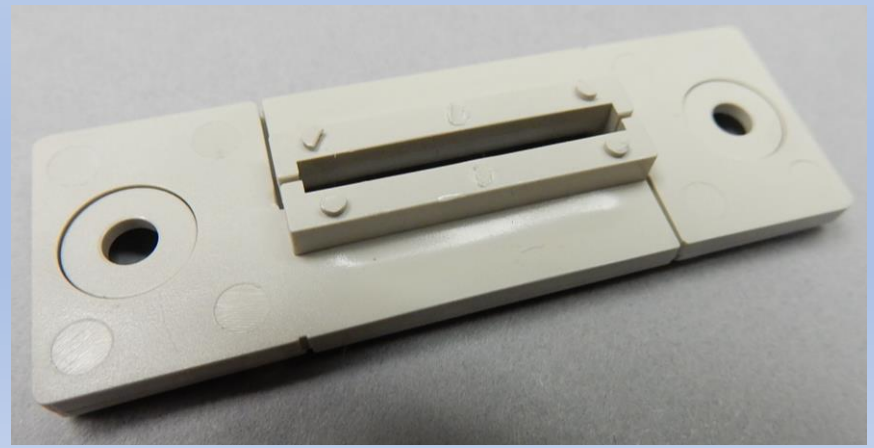


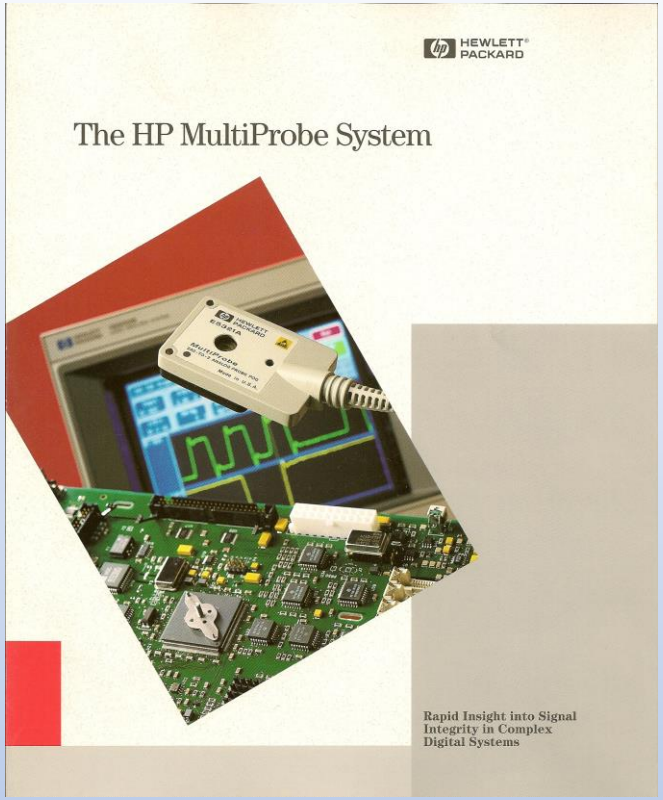
Another Adapter

Another example of a single part that provided a complete retainer for the cable, and still be applied after the cable had been attached in the intended assembly.

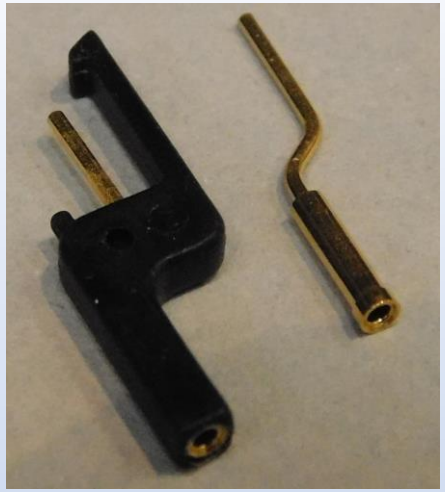








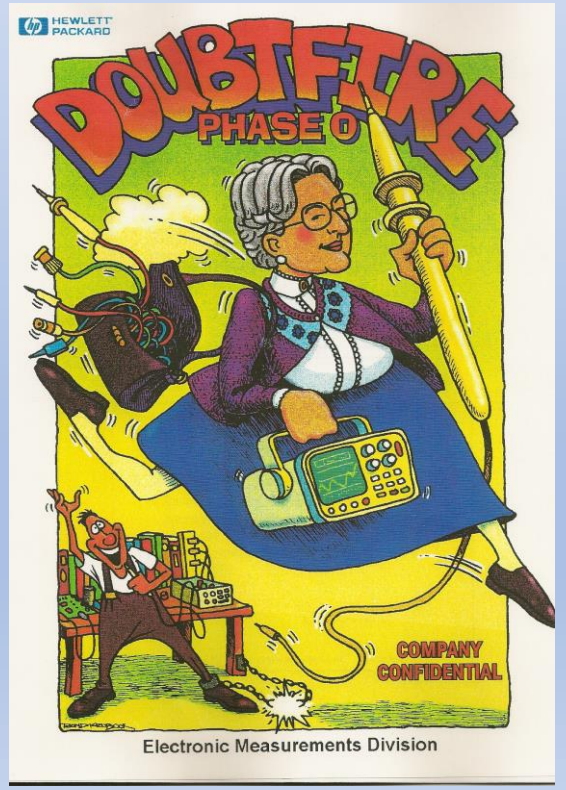
This part terminated a cable assembly to a probe interface for “Quad Flat Packs”



The offset logic clip connector was originally a Multi-piece part. I simplified it and lowered the Cost.

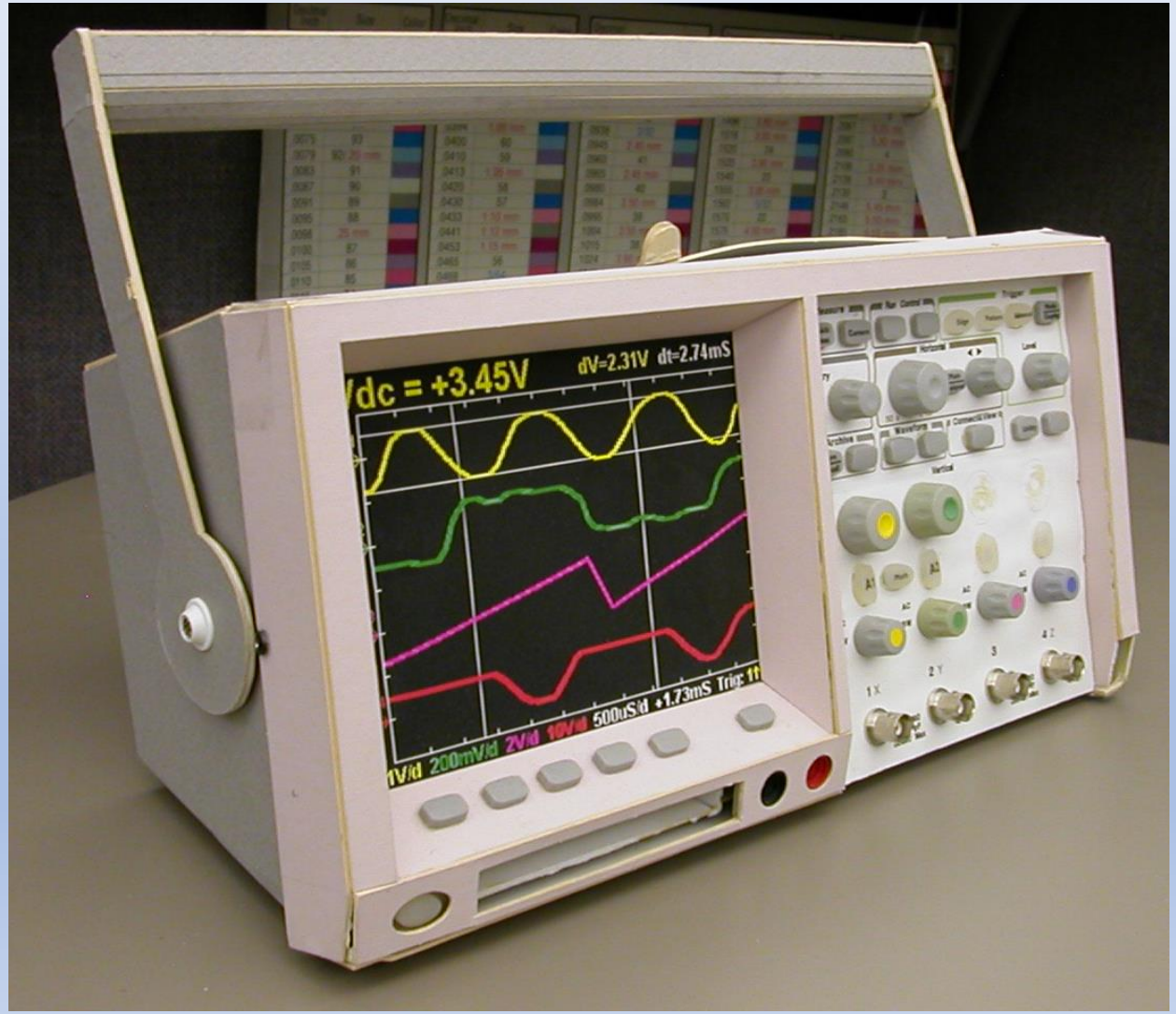
This part was used to protect, attach, and strain-relieve a sensitive cable.

There was the “Doubtfire” project I was assigned to in 1998. It was managed under some folks in Loveland. The concept was to develop a product that had the capability of a high quality, “laboratory”, bench scope, but was small in size and competitive in cost.
The project was cancelled, but some of the ideas generated became reality in later designs. This project involved travel, around the US and to foreign locations for the purpose of customer research and “partner” coordination. I went to various market research sites around the country and in Munich, Germany. The research folks would sit behind glass and listen to a moderator solicit comments, opinions and desires of potential customers. The team went to Almalo, Netherlands to visit with an engineering and manufacturing partner.



Doubtfire had a panel shape that protected the knobs
And a “Tackle Box” (see the little tab on top)

When the project was cancelled, there was a big meeting in Denver. One of the marketing folks from Loveland put flowers in the “Tackle Box” to let the scope “rest in peace”.



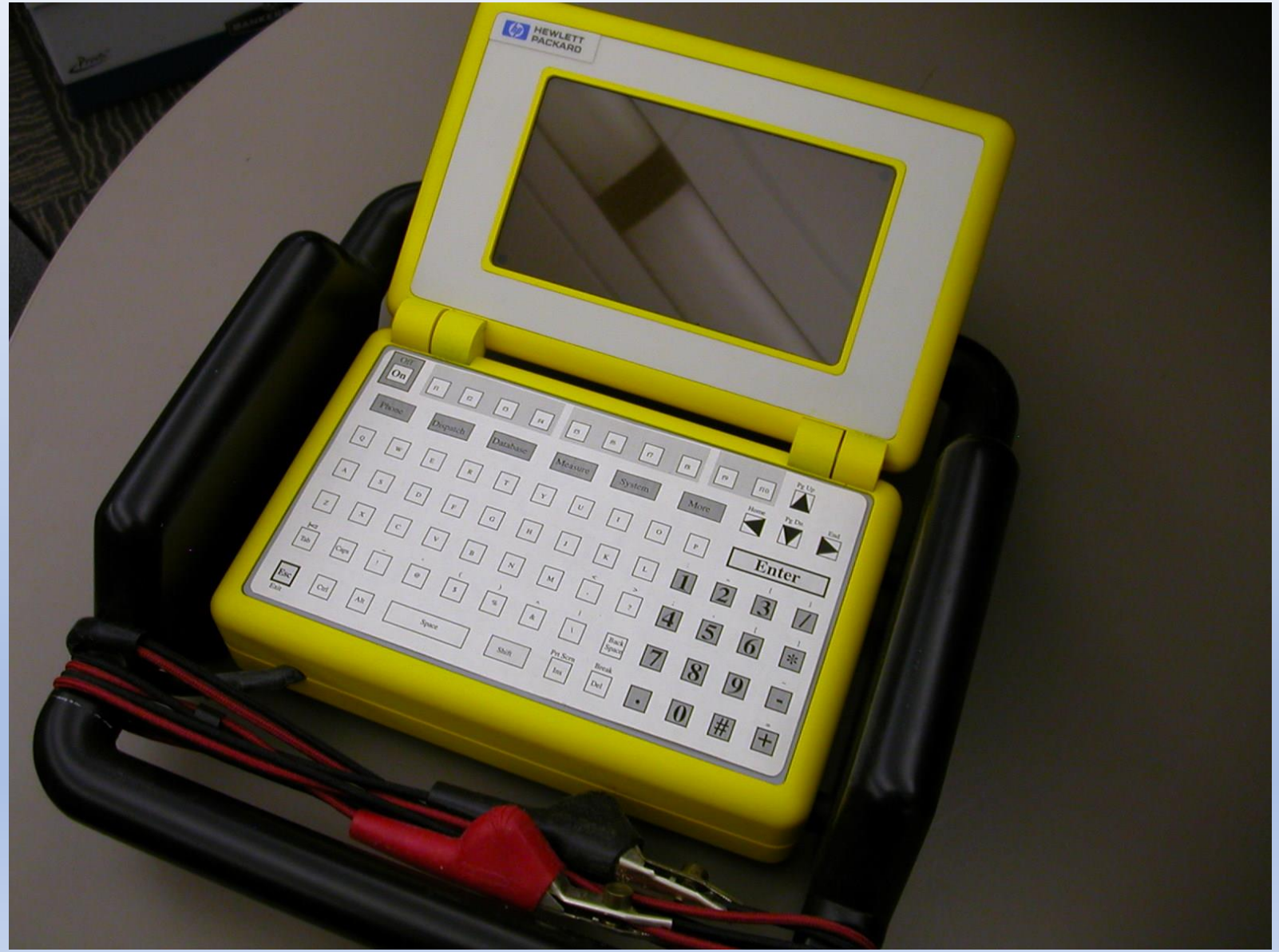
This was one of my thoughts for a project called “Cinema”. I was asked to investigate ideas for larger screen display use in our smaller scope products.

This was a mock-up of some thoughts I had around the time of Doubtfire but before Panther. It had the protected knob concept, a fully integrated rear foot concept and a larger, 8” display.

Other concepts that eventually made it into Panther were the MSO control buttons next to the display, and the Infiniium probe inputs.

I designed it in CAD and the shop CNC-milled it out of foam material

There was a project we worked on for the development of a state of the art “Butt Set” for the phone system. This project involved other divisions and was to be a total solution including communications and scheduling for the phone service industry. Our part of it involved advanced analysis scope capability for high speed data lines.



Don Henry and I worked together on this. It had batteries and radio antenna built into the handle.

Cooling system modification for the Infiniium 2-fan units.

The Infiniium was not a product that I developed. There were two versions of the original Infiniium products. The lower bandwidth series had a single inlet cooling fan and the higher bandwidth units had 2 inlet fans.

The two-fan units displayed a higher acoustic noise level and, as it turned out, we were informed that German customers refused to purchase them because they were of the opinion that the unit was too loud. Apparently, it passed the 50 dBA spec, but that is quite loud.

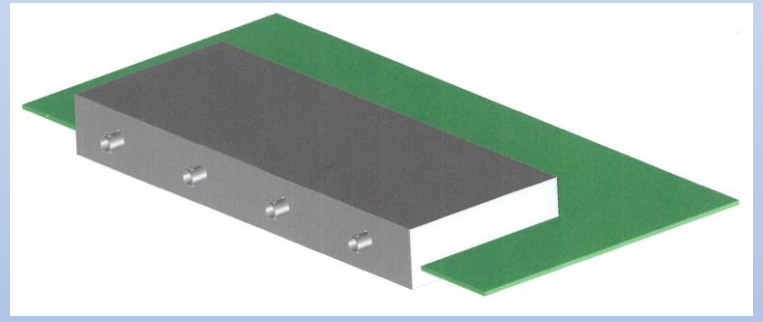
I was asked by the lab manager to look into it. Some production engineers had been working on it……getting sample fans that promised a lower acoustic level.

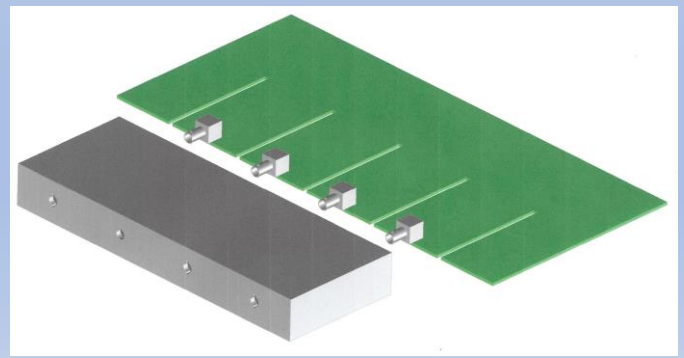
So, I went at it by making some improvements to the cooling holes in the sheet metal, and moving the fans a little farther away from the external sheet metal holes in the cover. Then I investigated the “junction” temperatures of the custom ASIC devices and decided that I could lower the fan voltage at “room” temperature, and then let it go to max under higher ambient temperature conditions. I had the electrical folks change the fan voltage ramp. I measured the part temperatures which were ok. The Unit was considerably quieter and was now acceptable to the customers.

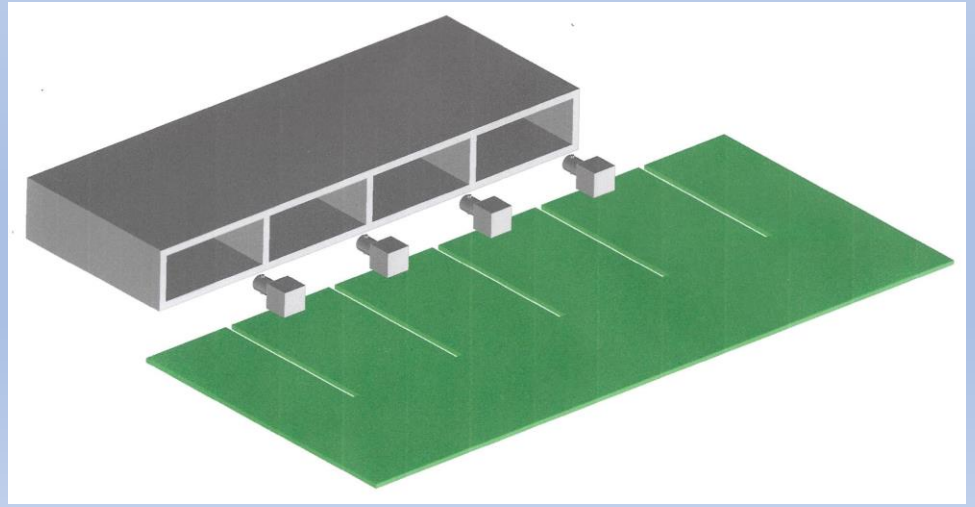
Another problem with the Infiniium that I was asked to solve.

The acquisition board in the bottom had 4 attenuator sections with BNC's protruding out the front. There was need to electrically isolate and shield the 4 channels from the rest of the electronics, the outside world, and each other. The original designers put a sheet metal box over each channel, on each side of the board, a total of 8 separate shields. These boxes were attached to the board with small clips which were soldered to the board. There were 117 total clips. The problem encountered was it was difficult to align and connect the shields to all those clips. The process became difficult and expensive. I was asked to find a better solution.

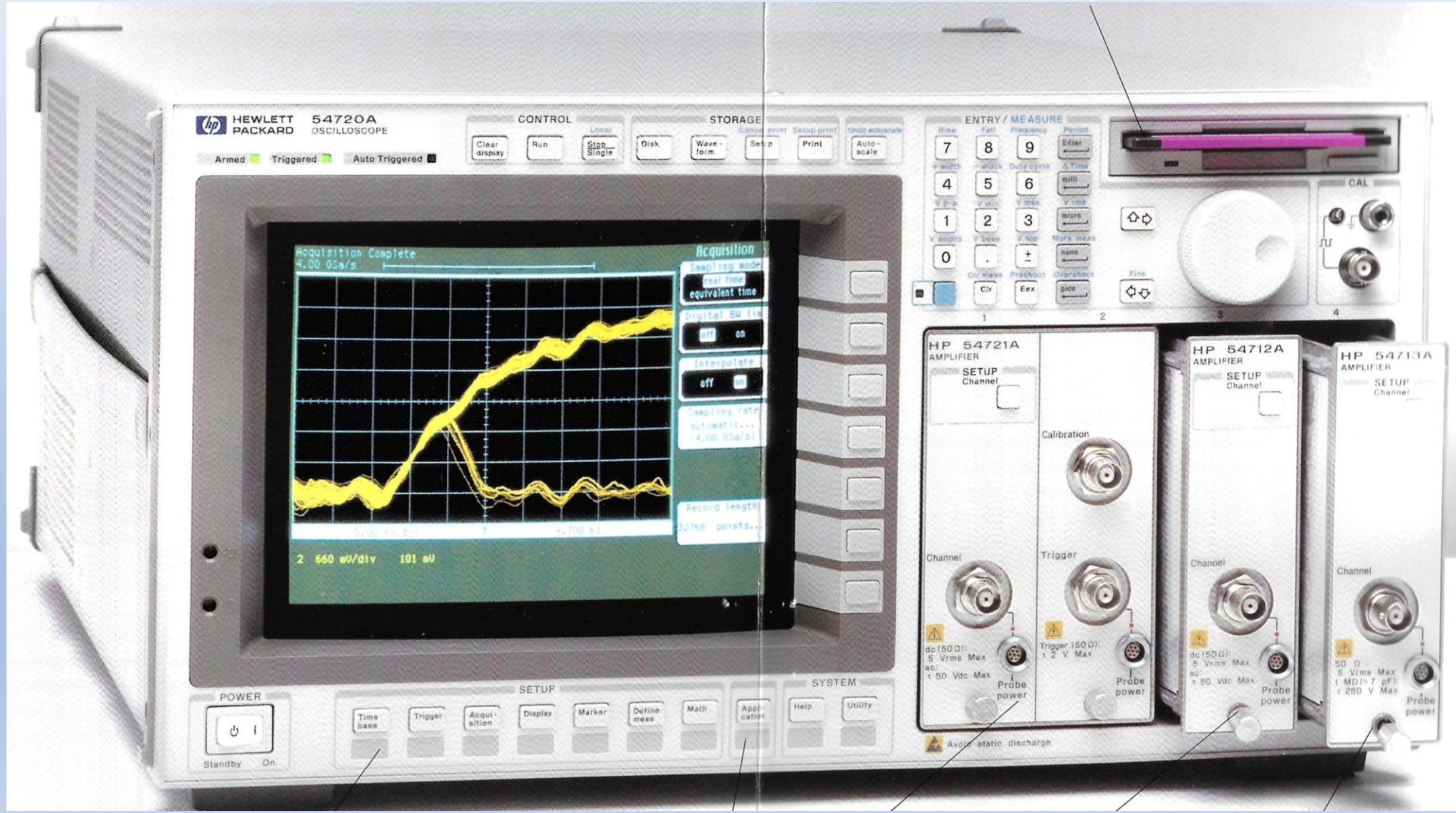
I designed a 4-compartment box, either die-cast metal, or molded plastic with metal plating. The 4 attenuator sections had slots between them, which allowed them to be totally isolated and shielded. The walls of the box went into the slots. This design represented a high level of simplicity and shielding. When management saw it they liked it, but they did not want to go through a re-layout of the board! So, it was not done and production had to continue to live with the problem.







The 54720A was a high performance scope with variable, plug-in measurements. In addition to providing a simple mechanical design, and better electrostatic shielding, there was a desire to provide better electro-magnetic shielding. This product had a CRT display which worked via magnetic coils on the CRT. When products with such displays were stacked, one on top of the other, the displays in each could be affected by the other and could appear to “swim”.



My solution was to build a single-unit steel welded box. This allowed the elimination of many “cracks” and slots typical of the assembly of previous packaging types. The steel provided additional magnetic shielding for the display, both susceptible and radiated. The chart shows it worked well.

It was manufactured by a supplier for us who made all the pieces, welded it and painted it with textured paint.

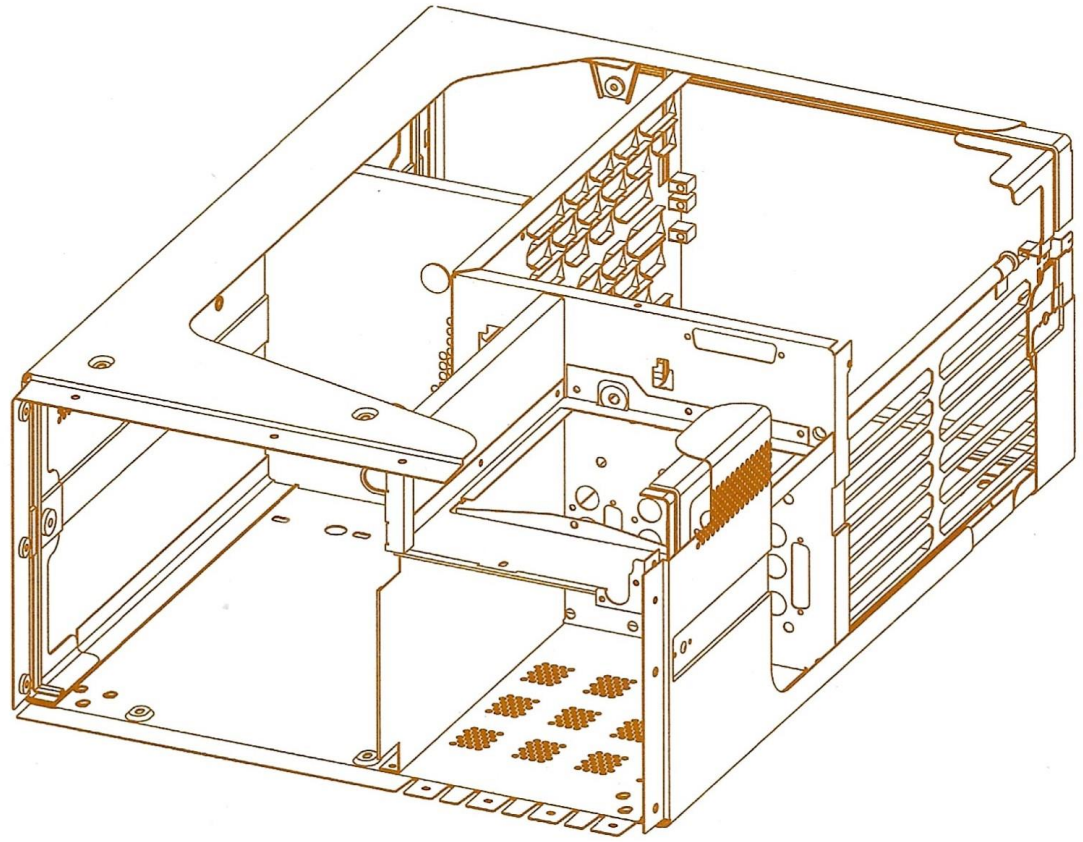


Fig. 1. View of the oscilloscope cabinet from the front. Internal compartment elements and the external cosmetic shell are welded into a single structure. Clockwise from the left front are compartments for the display, the fan, the cardcage, and the plug-ins. The compartment at the right front above the plug-ins houses the plug-in fan and disk drive.

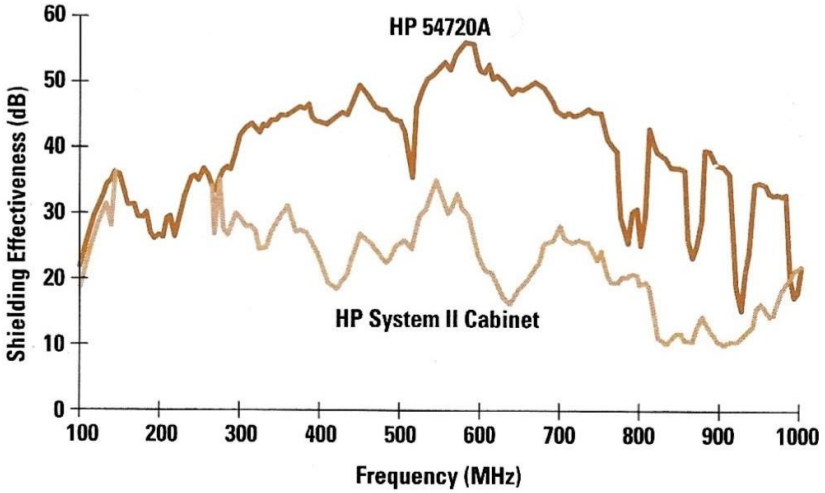


Fig. 2. Chassis shielding effectiveness was measured against other packages using a harmonic comb generator mounted inside the package.

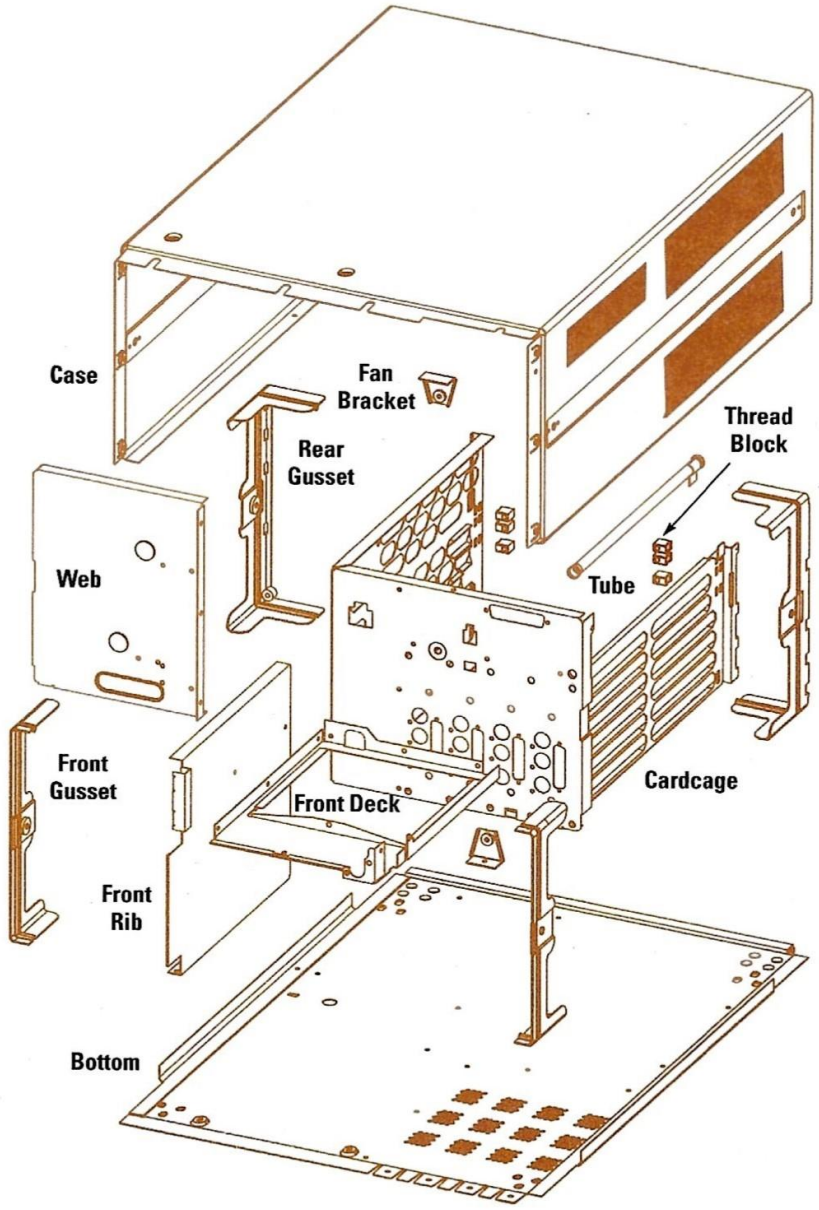


Fig. 4. Nineteen parts are welded by the supplier to complete a cabinet ready to accept circuit boards and other components. The vertical plane of sheet metal at the center of the drawing is the bulkhead, which establishes the z location of the plug-ins.

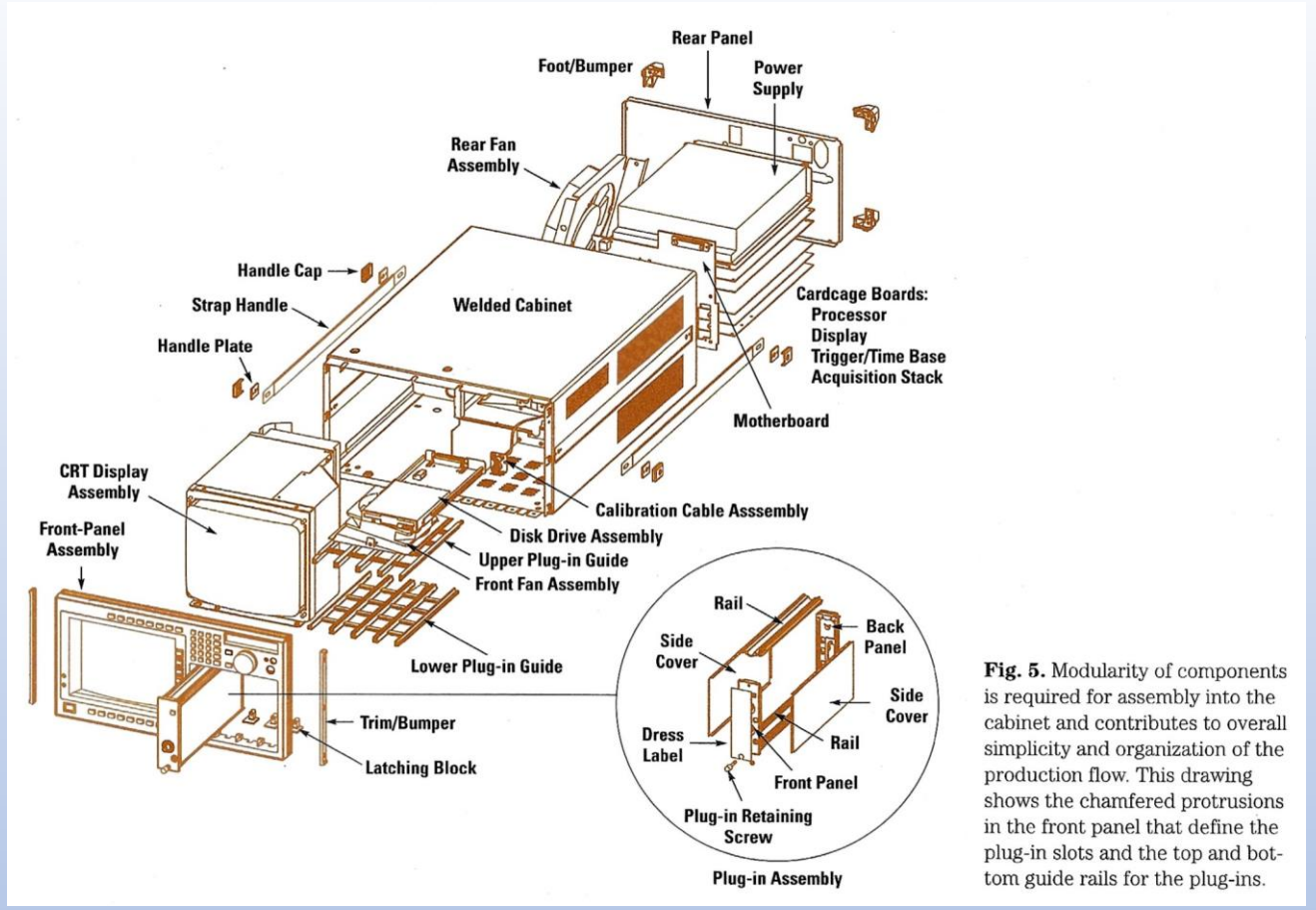


Fig. 5. Modularity of components is required for assembly into the cabinet and contributes to overall simplicity and organization of the production flow. This drawing shows the chamfered protrusions in the front panel that define the plug-in slots and the top and bottom guide rails for the plug-ins.

In production assembly of the product, the part was supported in roll-around carts that could tilt. The assembler would work from the rear or the front and install all the internal parts from front and rear. At one point I described it as something like “building a ship in a bottle”.

The rear panel made a good shield connection.

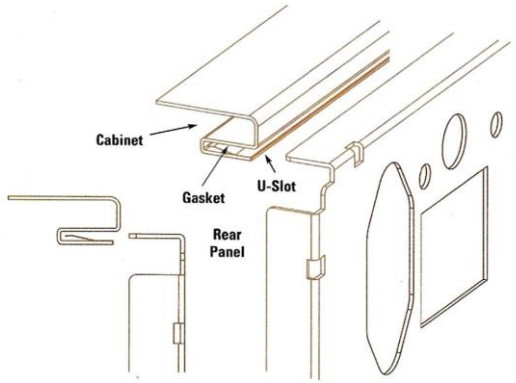
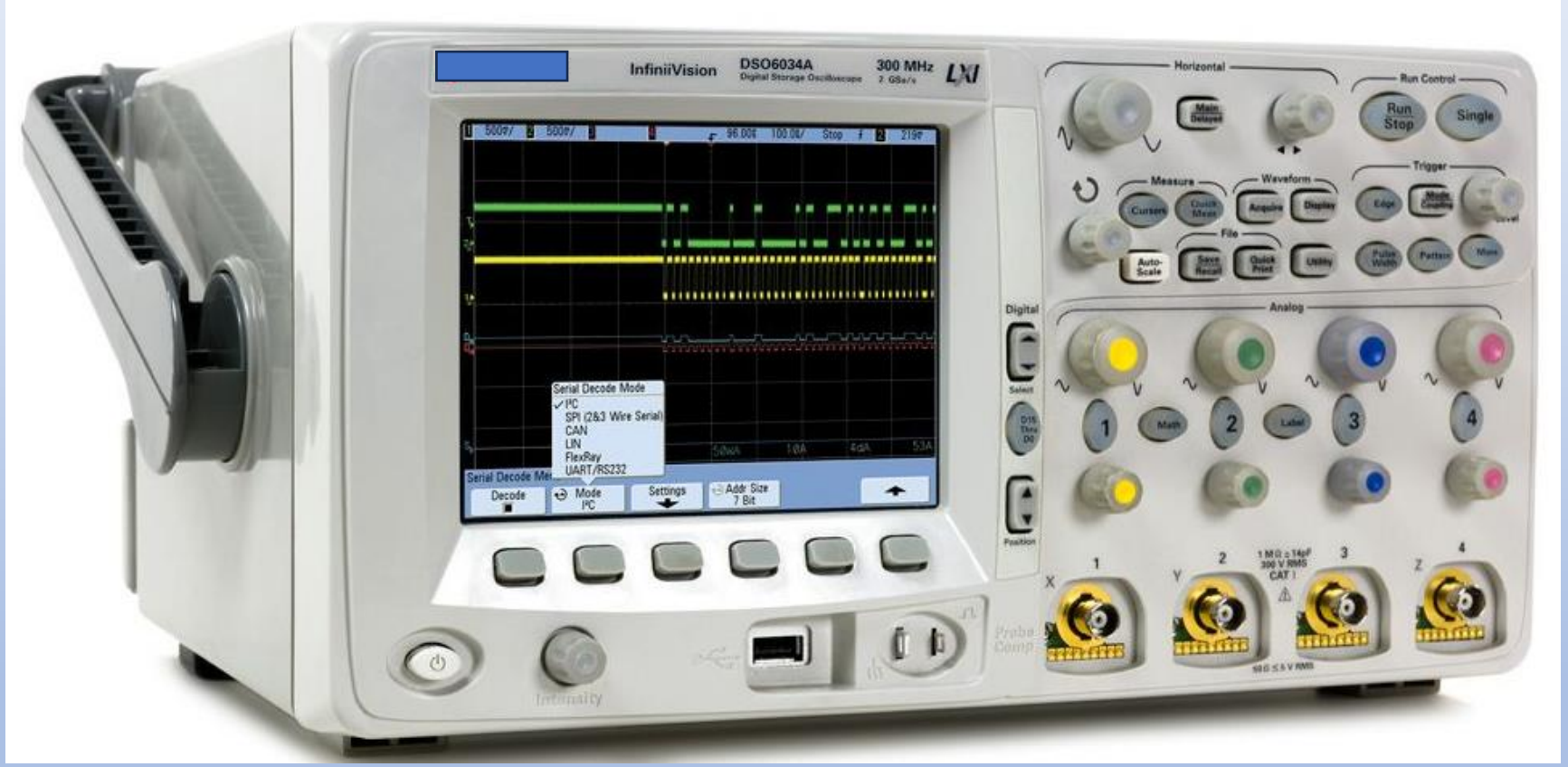


Fig. 3. A sliding-fit spring contact strip mounted in the rear U slots makes low-pressure, repeatable contact with the rear panel.

I designed this product, the 6000 Series just after we became Agilent Technologies, the spin-off from HP. It had the code name “Panther”.

This was the first product we introduced directly into our manufacturing facility in Penang, Malaysia.



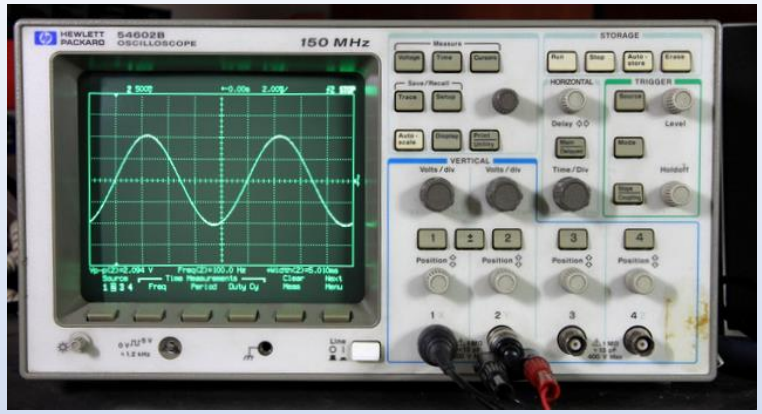
Some key industrial design features:

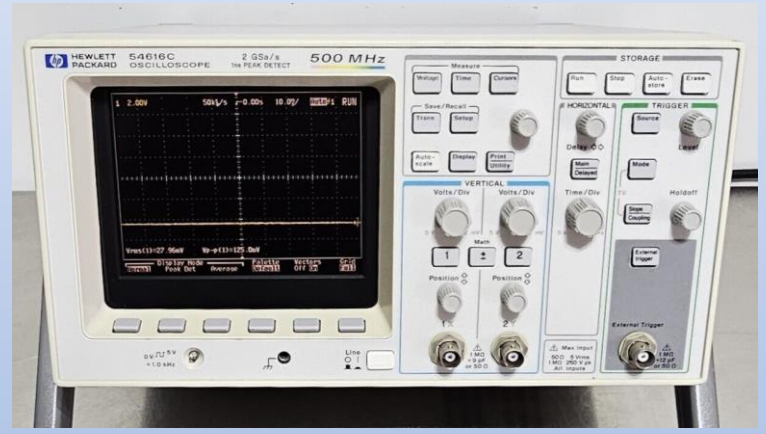
Differential Z-Axis panel levels to get away from flat

All areas on panel have curvature, rather than square corners and edges

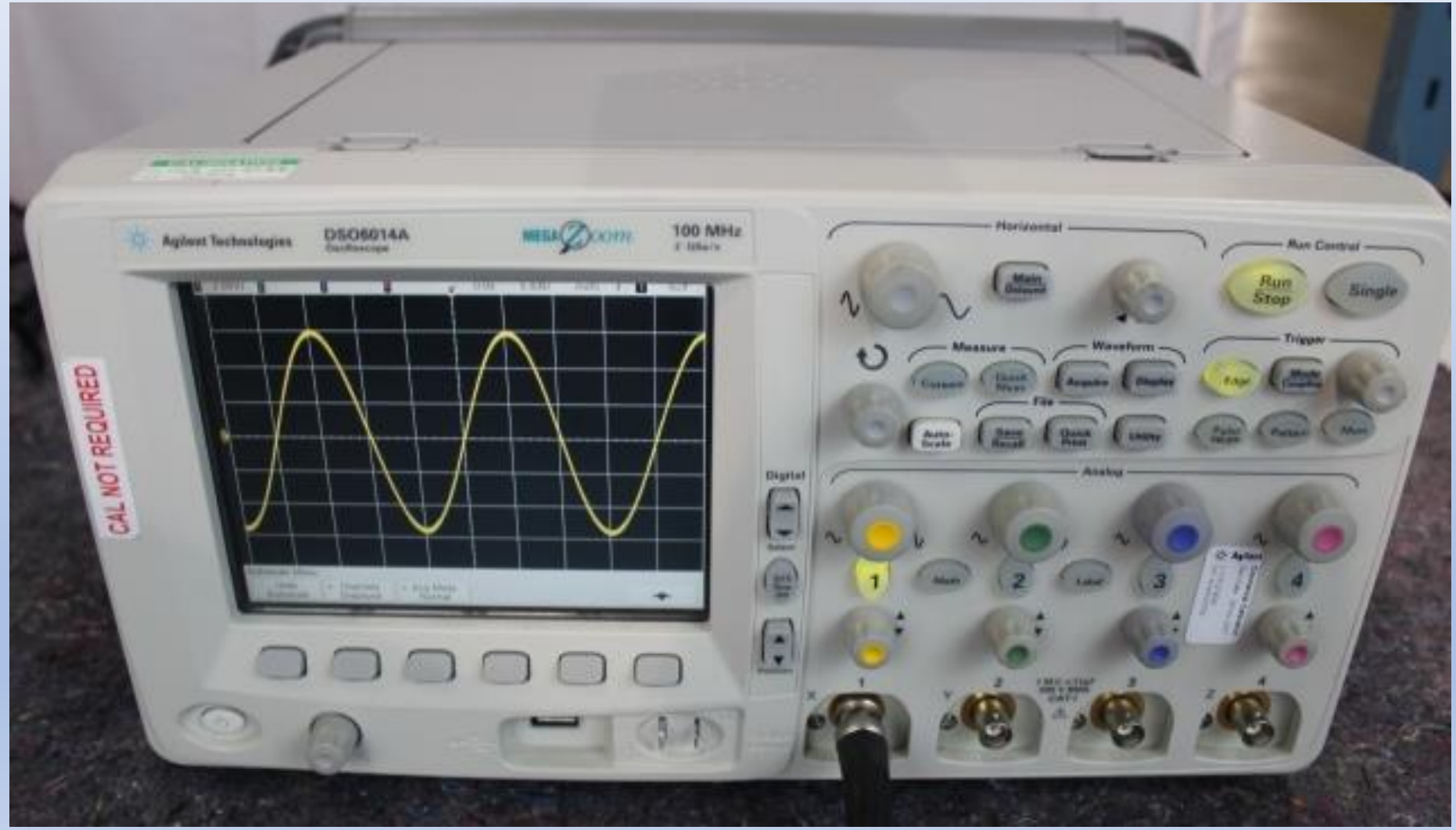
Reduction of display recess (depth) from front of panel.

Typical Scopes of the era





This was the first product to incorporate a “Tackle Box” built into the top of the cabinet. This replaced the previous accessory bags we had used before. It would hold manuals, probes, power cord, etc. The lid was hinged at the rear and had two snap release features in front. The rear hinge features were designed to “break-away” and not break if it was pushed open too far.



The cooling fan was installed inside the rear of the product, not on the rear panel. As a means of simplifying installation and to acoustically isolate the fan from the sheet metal, I designed this rubber mount that snapped onto the fan and snapped into slots in the sheet metal deck. The molded mount included a grommet to be cut off and used to protect the cable where it passed through the sheet metal. This part and the internal mounting of the fan contributed to lower noise.

This shows another innovative design I developed for Panther. Previous products had a plastic “bucket” to enclose the unit. For shielding, that design employed the application of aluminum to the inside surface of the bucket via a process known as “vacuum metalization”. It was a little costly and contact with the surfaces could be questionable. When we began producing the products in Malaysia, this process was not easily available, so a copper paint process was acquired. This was costly and messy due to the masking required. Contact was also a problem.

For Panther, I developed internal, stainless steel shields. This material was “half hard”, so formed spring elements could be shaped in the part to make good contact with the aluminum chassis. These shields were easily installed without tools and, when the “bucket” was installed, it pressed the spring elements into contact with the chassis.
It was very easy to install and worked quite well.

Shield over Power Supply

The main shield on the bottom.

Note the Fan assembly previously shown.

This was my first trip to introduce Panther to the factory. I demonstrated the assembly procedure.

The first trip in Singapore and Penang……

Dave Burrows, me, John Hammand, Kent Hardage

The Penang Bridge

Went from Penang Island to the mainland

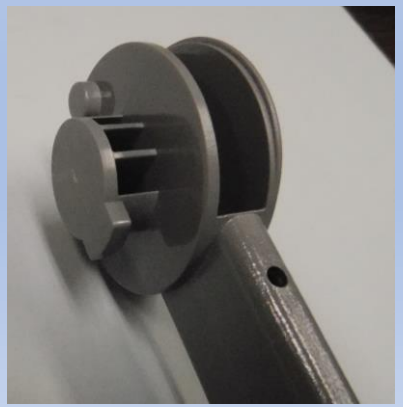
The tall building was the hotel we always stayed at

Singapore

The restaurant front doors were ok, but you don't want to look in the back doors.

There was desire to make a short-depth version of Panther to compete more directly with a competitor product. This was the result. We referred to it as the Lunch-Box. All of the front panel, display, etc was identical to the original, but the interior deck and acquisition board were shortened and a new rear “bucket” was designed.

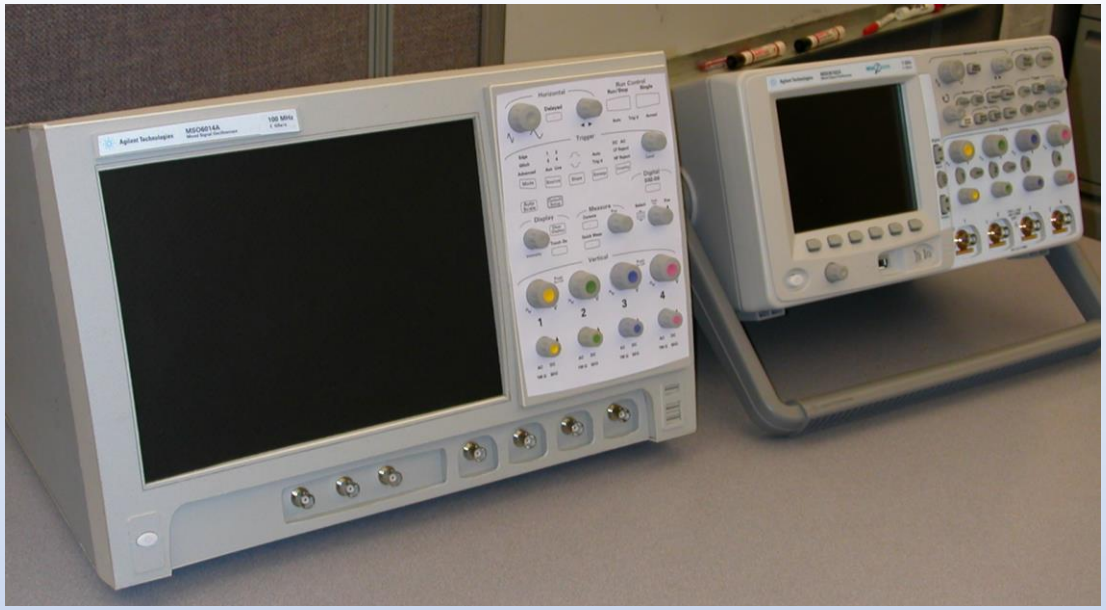
The competitor product had a different handle than we had, so there was a desire to do a similar handle. The design called for a molding process called “Gas Assist”. This process allowed a part to be molded “hollow” inside without cored-out openings showing outside.
It was a troublesome development and tooling process.



The Panther product line expanded into a third form, the 6000L. This unit had the same acquisition board and had all the capability of the original products, but without a display and front panel controls. The purpose of this product was to fulfill a need in the “production test” area for manufacturers. Multiple copies of the product could be installed in a rack system without requiring a lot of vertical panel area yet provide lots of channels of acquisition. I had to design the cooling system to work in this shallow chassis. Kent Hardage and I developed it and John Hammand, materials engineer, took care of putting the parts in production.

Make the most of your rack space with an InfiniiVision 6000L Series oscilloscope.

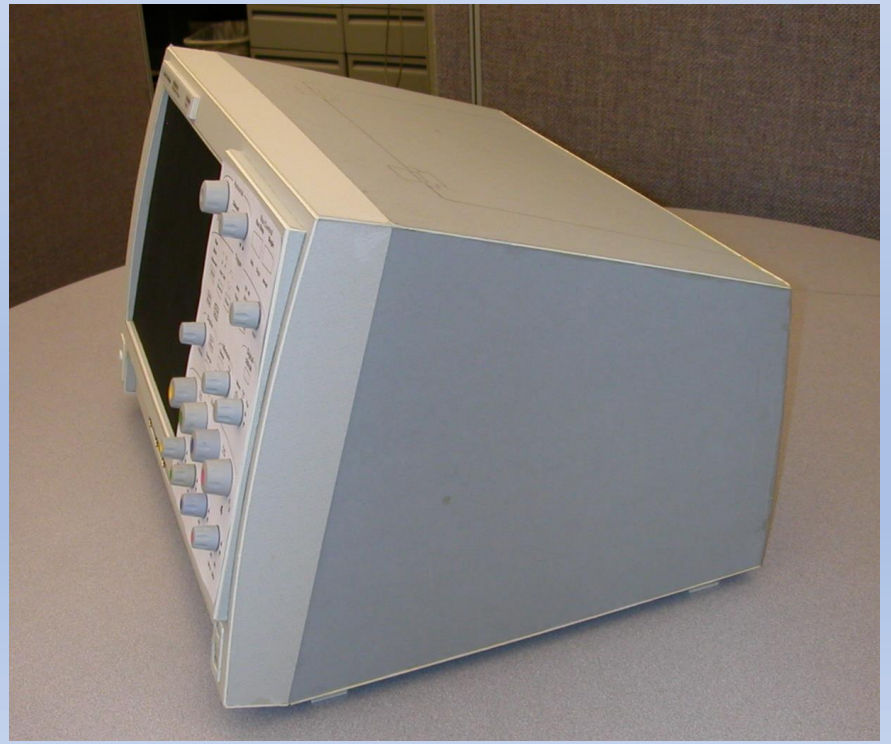
I worked briefly on a project called “Vista”. This was intended to be a higher end product, with a 12” display and all new chassis and front panel design. I developed a concept for the product which would have been rather radical in that it was shaped to have a built-in tilt configuration. I developed a new front panel layout. In Penang, a team was organized and I went over to introduce the new concepts in January 2006. However, I did not continue with it because I was assigned to work on the little “Lunchbox” version of Panther. My panel design was picked up for the “Lincoln” project designed in Penang as well as some other higher-end products in CS.



Built-in tilt configuragtion

Vista Team

The panel design for Vista that was used for Lincoln.

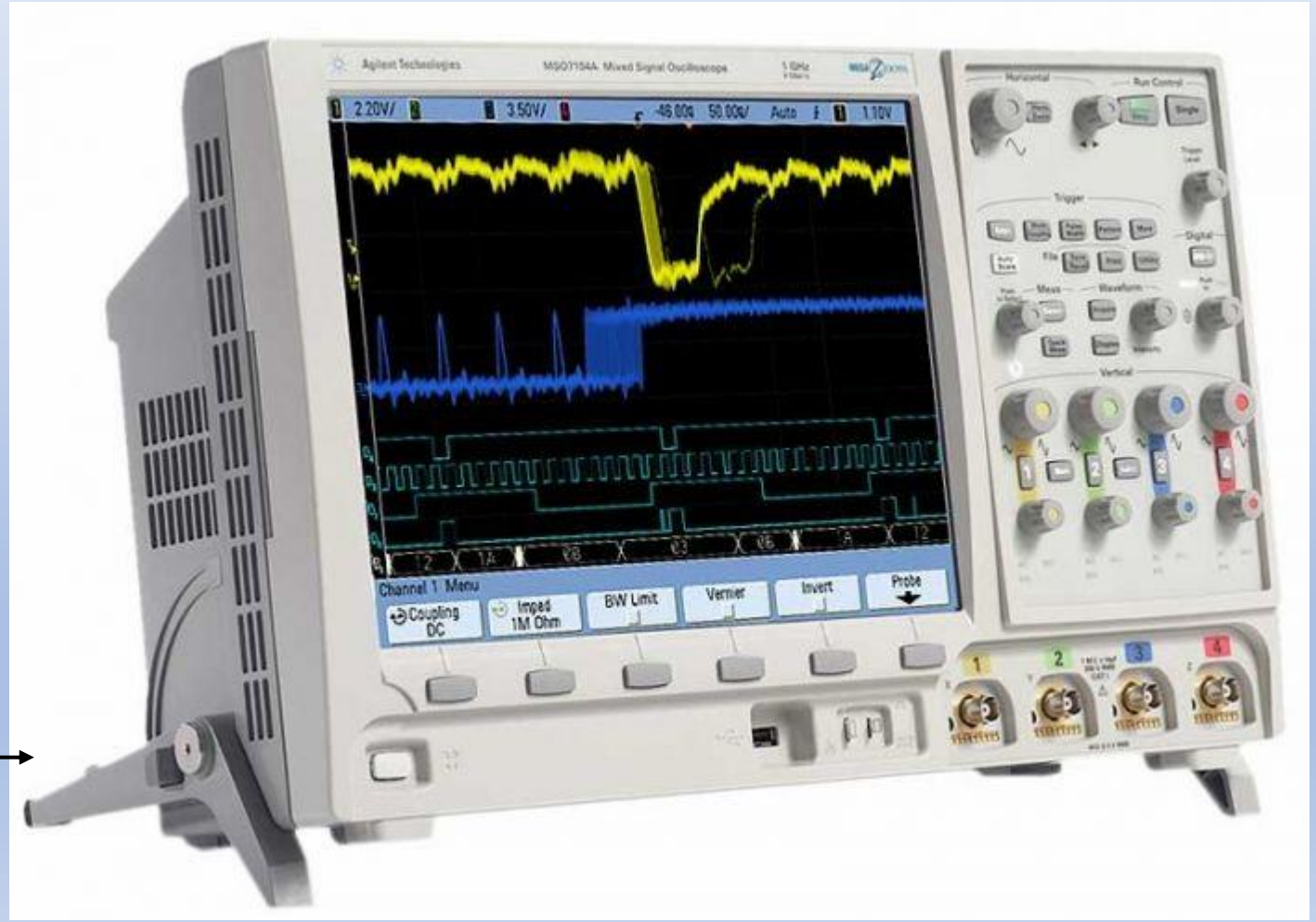


My Vista concept had a curved front, protruding control, area and protruding product ID label area.

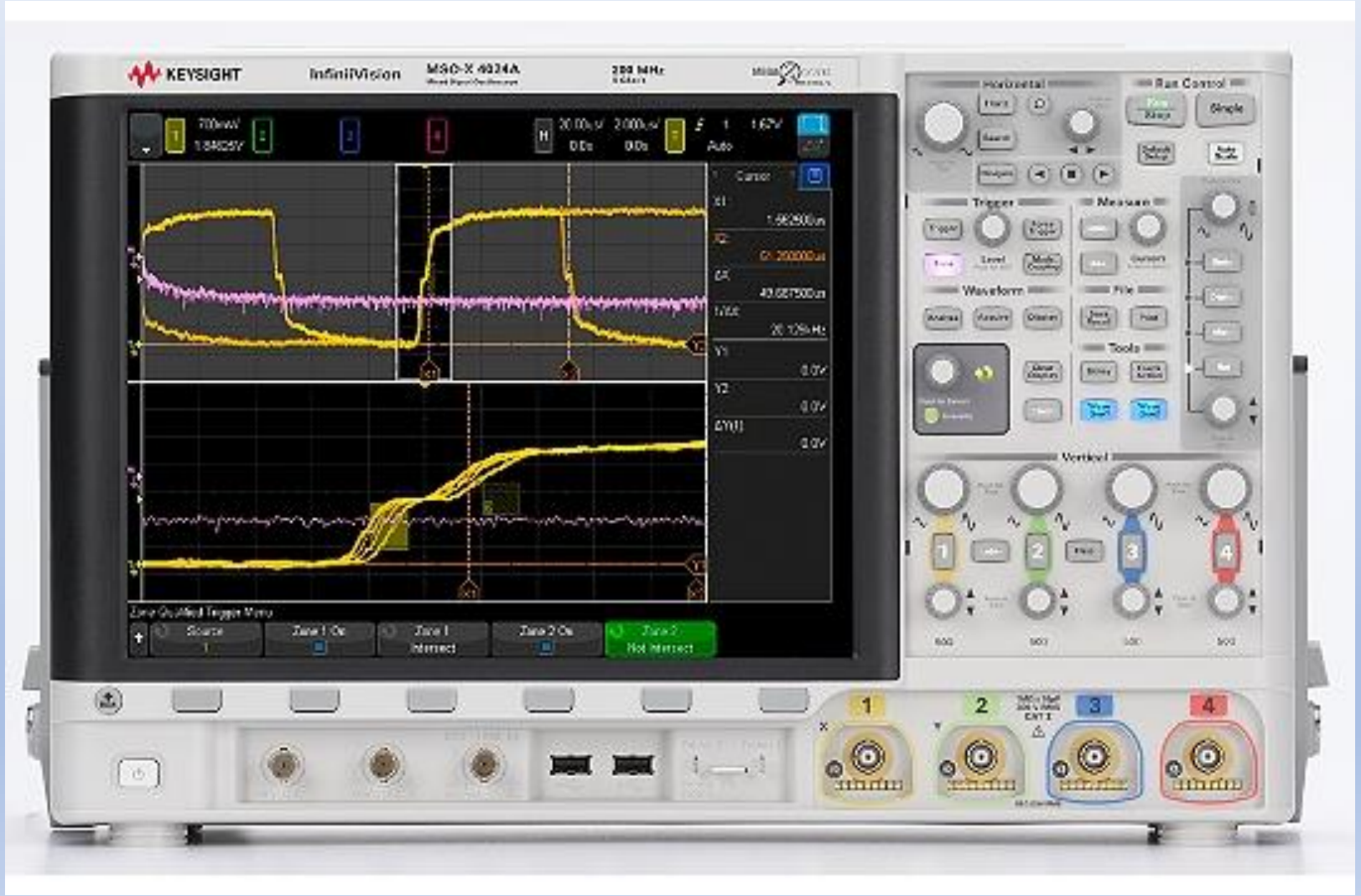
The Panther acquisition board was also used in a product code named “Lincoln”. Again, it had all the attributes of “Panther”, but had a 12” display. This product was designed by our R&D lab in Penang, Malaysia, using the Front panel design concept I developed for “Vista”.

This was the original “Lincoln” design

I designed the “Anti-Tip-Over” tilt and stabilization device.

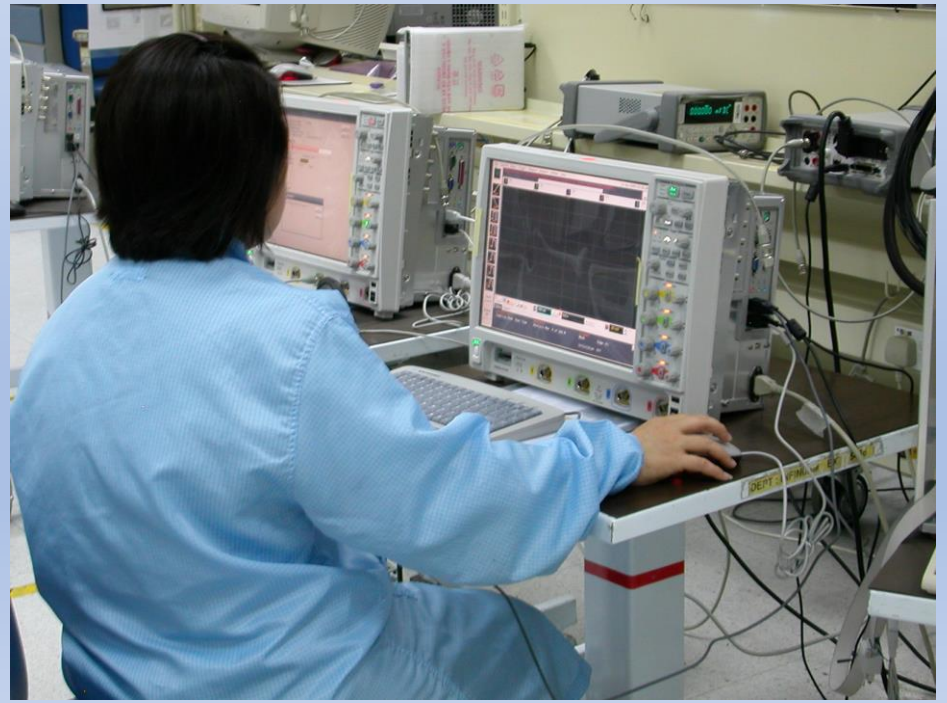


The large display “Lincoln” project migrated into further configurations. This one came along in later years and shows A clear view of the “anti-tip-over” tilt and support leg I designed. It also shows an application of the industrial design I did on another product several years later with the rounded corners and black display surround, and the new knobs.

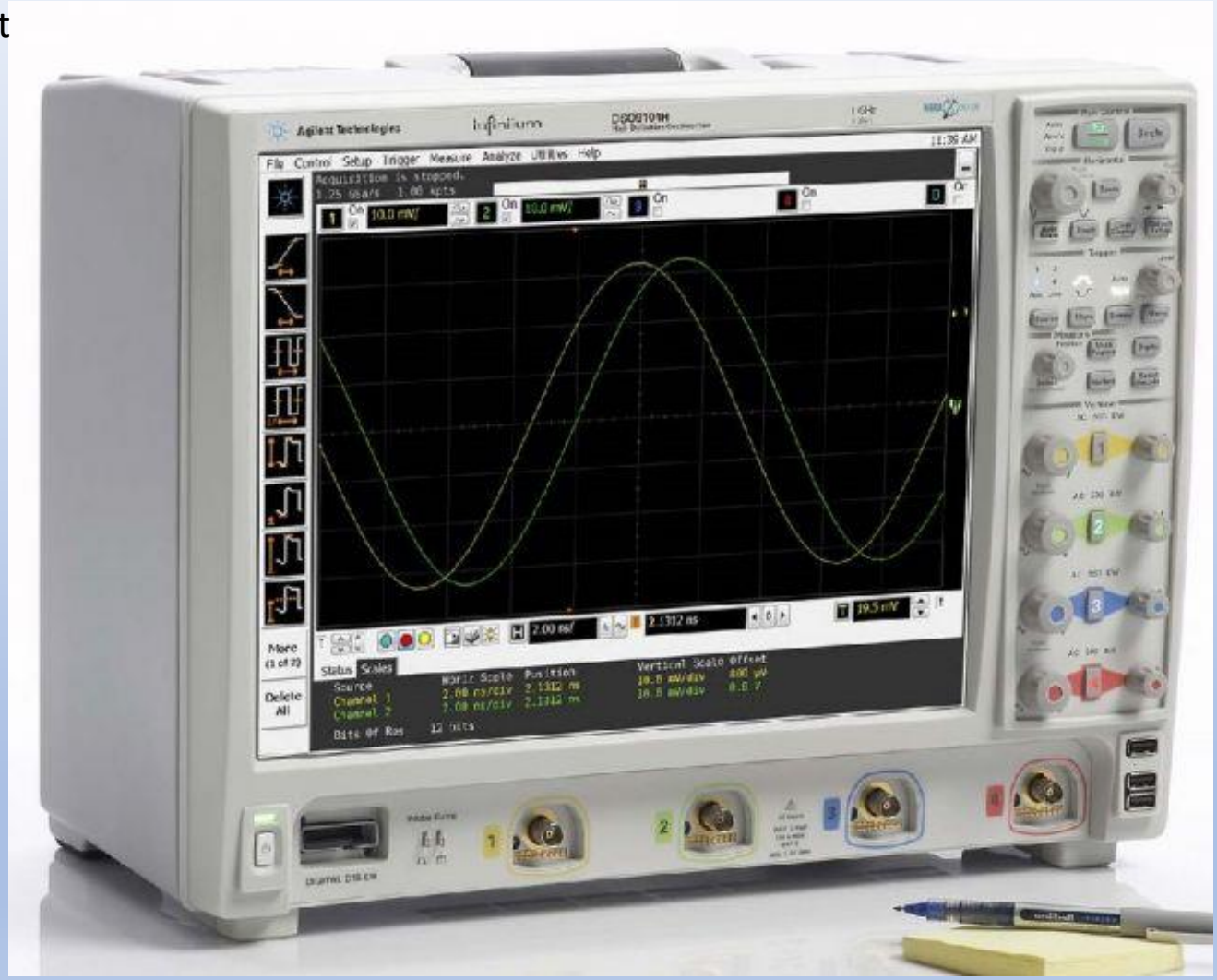


I designed this product for the first time for introduction in 2009. The original challenge with this product was maintaining a shallow depth which was a key improvement over a competitor product which was much deeper. The original design called for a 12” display, but electrical design difficulties were causing the vertical dimension to grow. It got so bad, that it was starting to look “wrong” with the 12” display. I was successful in talking management and marketing into going to a 15” display, and implementing my design for a vertical orientation of the channel knobs, as opposed to the traditional horizontal.

Some people balked at this……afraid the customers would not like it. As it turned out, the field sales folks were asked if they thought this was ok. Their response was, “Not only is it OK, but we like it!”

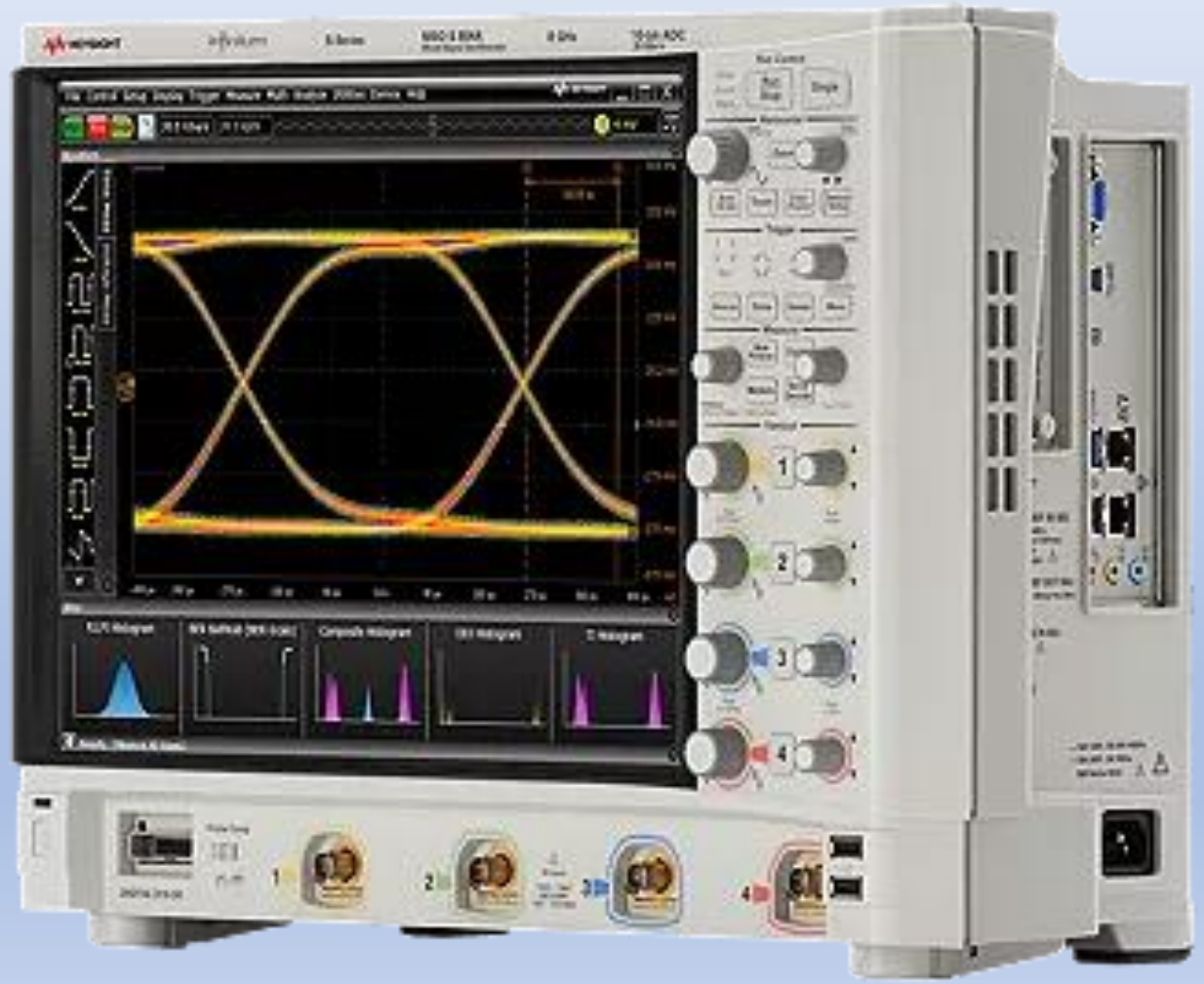


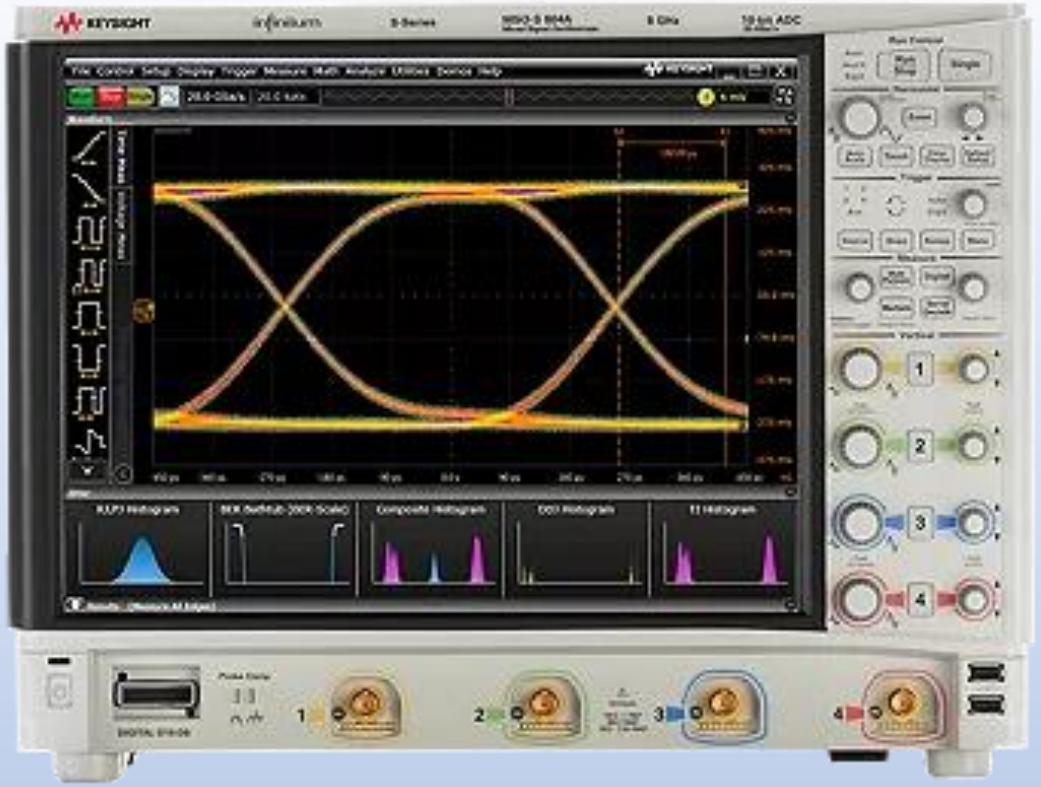
The Raptor project

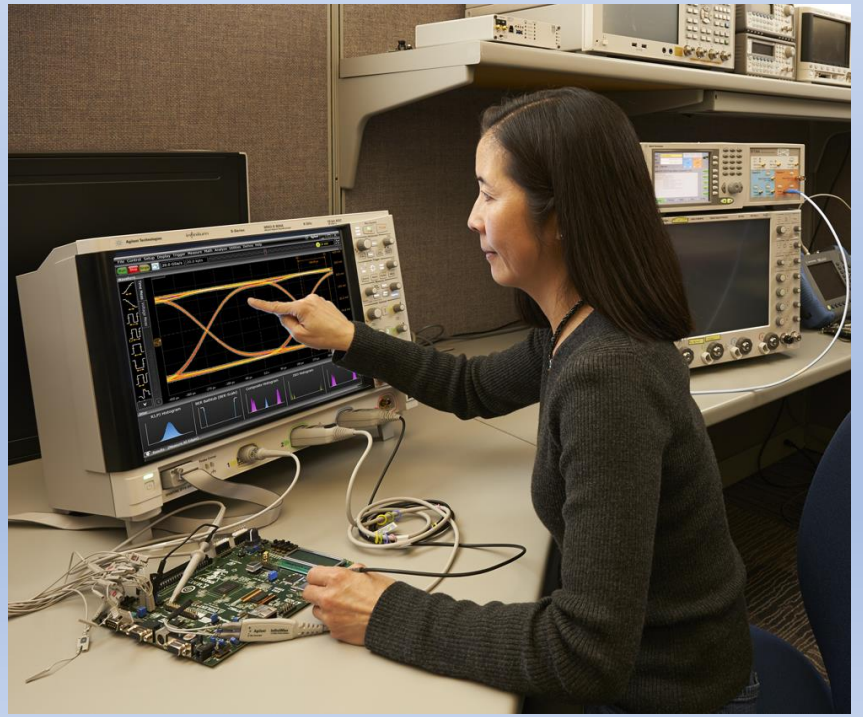


After I retired, I was asked to re-do the industrial design.

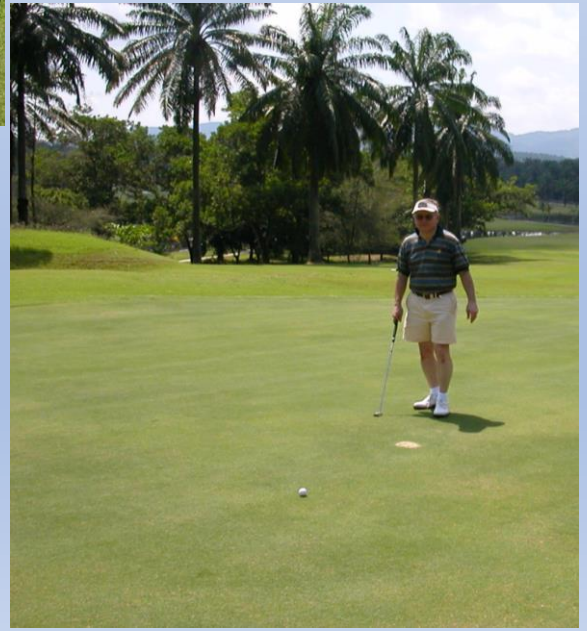
The industrial design on this redesign was based on my latest Ideas put into use on another project. By the time I did this one, I had done the new knob design and it showed up on this.







Of course, there was golf in Malaysia…….

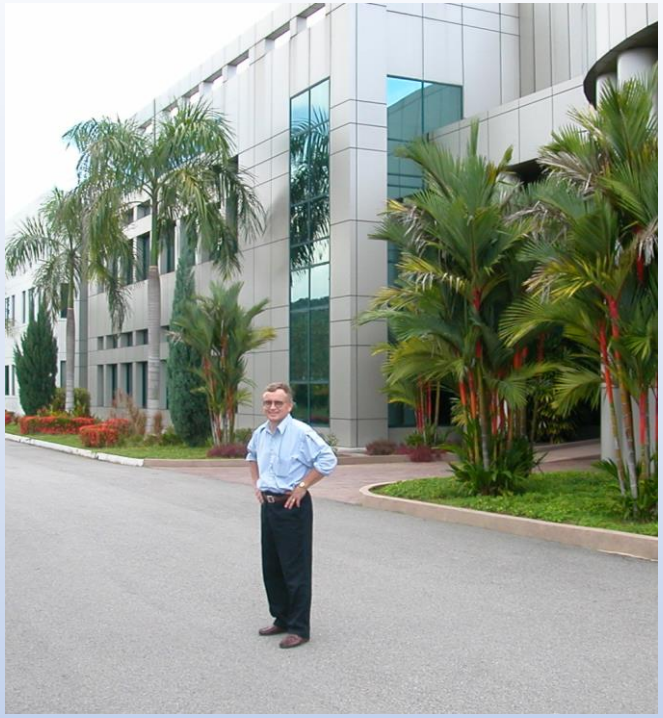


My good friend Muniandy.
He was a VP at our supplier, JABIL

Our caddy…..
She was from Indonisia

An interesting thing…….
Apparently, this caddy was relatively new at the job.
On the last hole, I pulled a 4-iron to hit my second shot to the green. I walked out to the ball and the caddy followed me and she had pulled a 4-wood out of the bag. She tried to hand me the wood, and I said I could get there with the iron. She kept shoving the wood at me, so I took the wood. When I hit it, I rolled up in front of the green….. short! I guess she knew more about it than I thought!

Many trips to suppliers and such…..



Wong Engineering in Kulim

On ferry boat from Butterworth to Georgetown

LH Beng Huan

AE

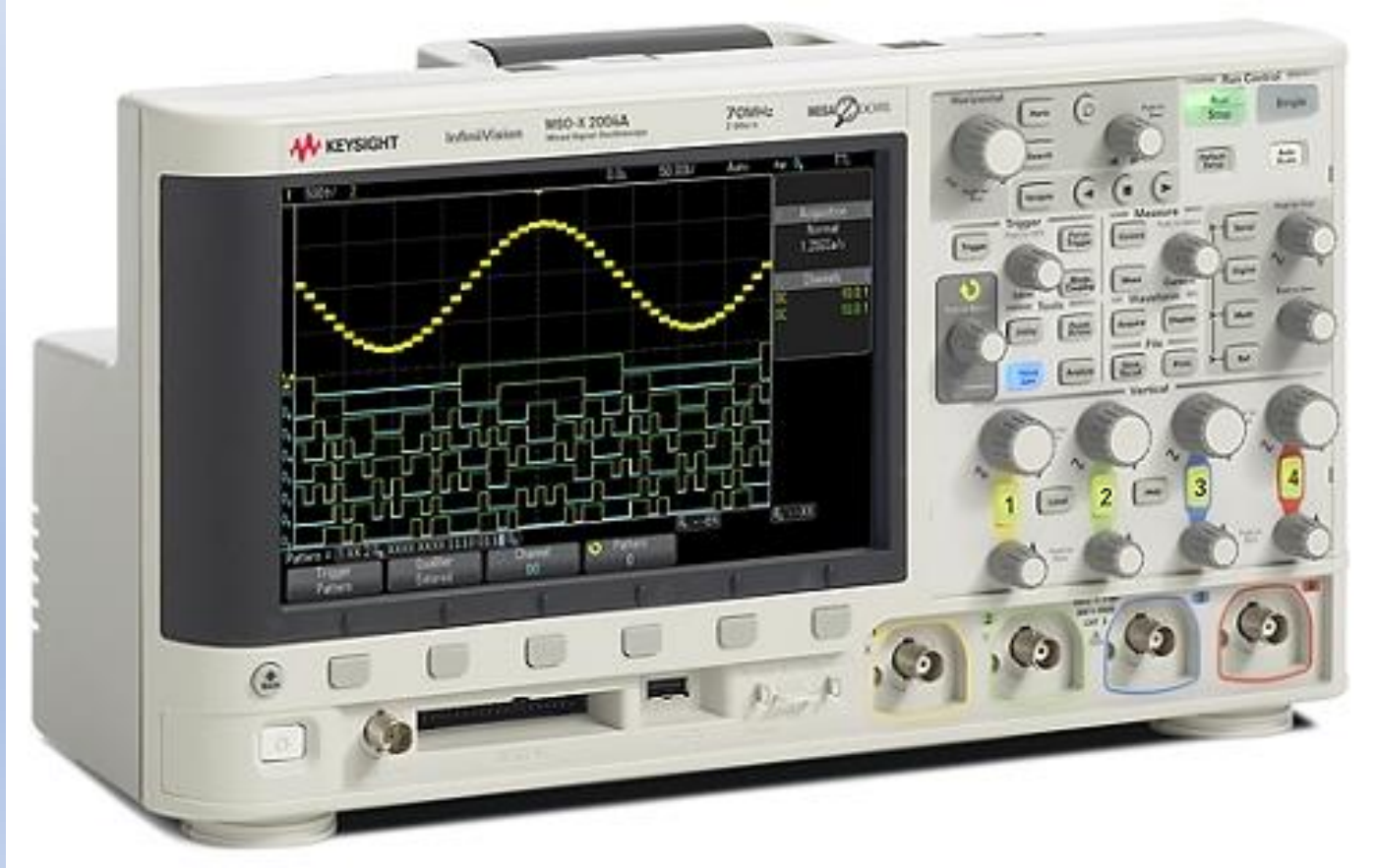
Omni
in Johor Bahru

Sometimes, the folks from over there came over here

Din

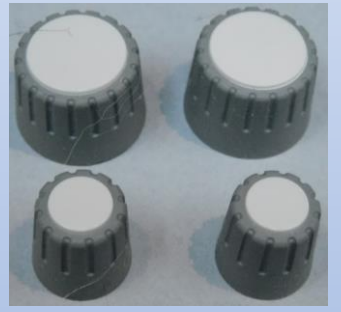
The 2000/3000 products were the last project I did prior to my official retirement. The code name for this was “Jackal”

This design incorporated the wrap-around black surround for the display. This had the effect of making the display seem larger. The minimal set-back of the display into the panel created a more modern look. The other benefit of the black display surround was that it became a positive, easily recognizable feature of our products in comparison to other suppliers. This also included the new knob which I wanted to do on the previous “Raptor” product but did not have time to do on that project. This knob was a big improvement over the previous knobs we were using in that they had a modern look and were considerably easier to push on to the shafts or remove. After this, everything we made received the new knob.

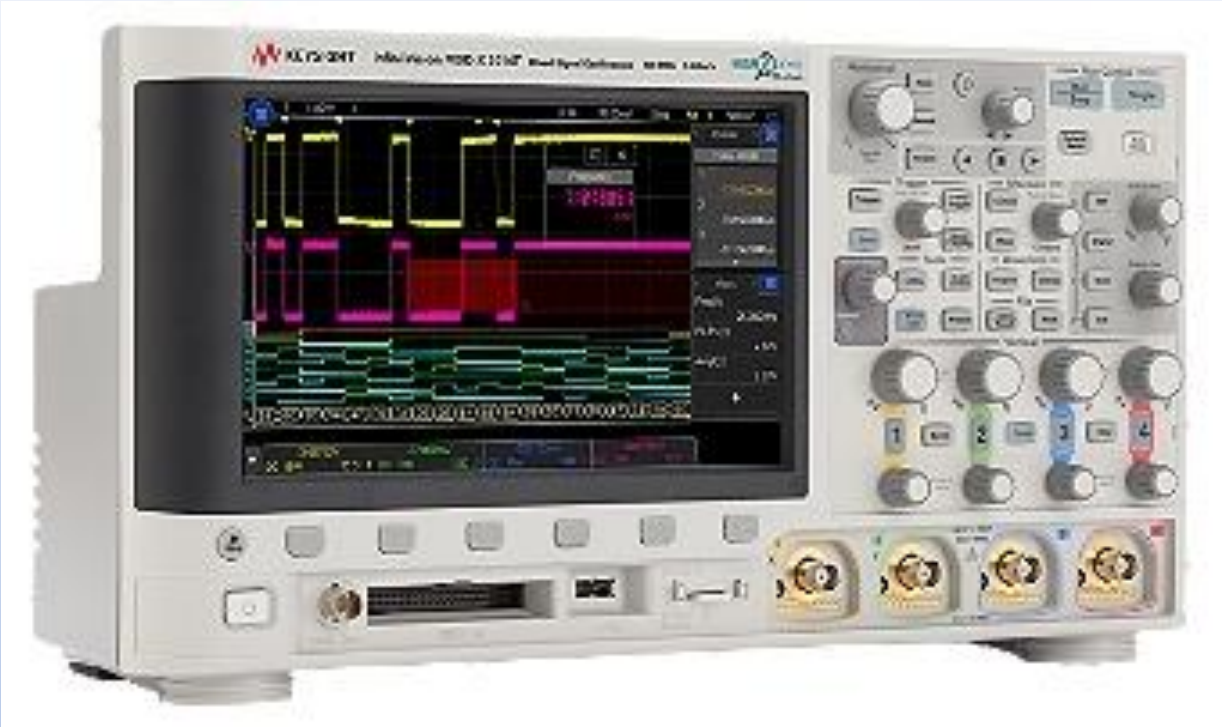


This product incorporated a “tackle box” much like the Panther product. In this case, it was small, but had enough space for some probes and accessories. Like the Panther design, the lid hinge was designed to “break-away” to prevent damage. The handle was a new design as well. I also managed to do the new knob design I had been thinking about.

The new knob fixed a problem we had with the old knobs. The old ones had no spring retaining device, So they required a lot of pressure to install and remove, or might be loose on some shafts. I developed a simple Spring pressure feature that fit a broad variety of shafts without undo pressure being applied. The knob also gave us a newer, “modern” look. This knob has now been applied to all of the scope products and some other divisions have picked it up.



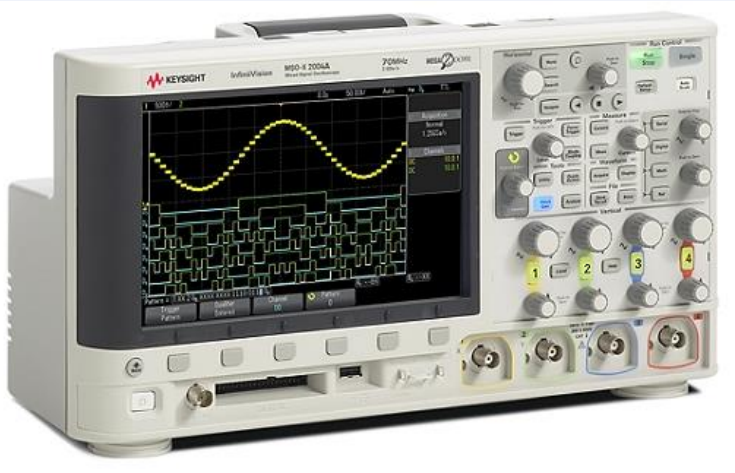
The original design looked like this……



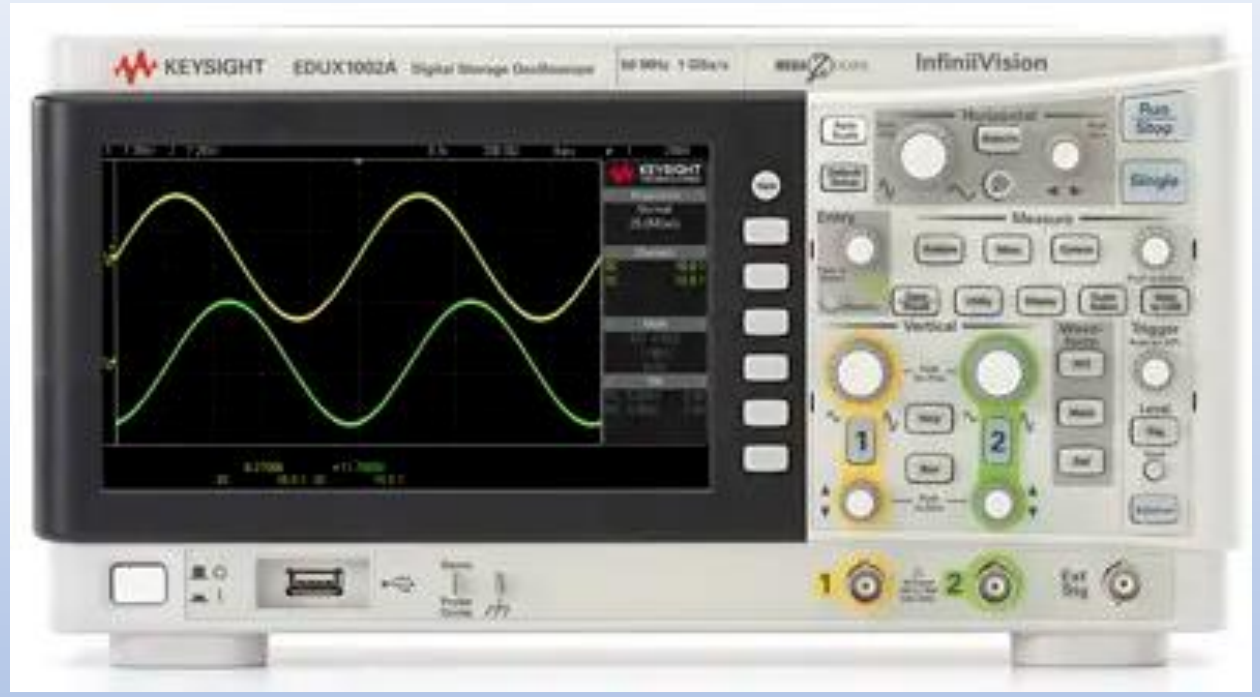
A few years later, the new corporate “black” color palate made it look like this.

The black display surround was maintained,
but it lost some of the unique, recognizable brand identity and control grouping area identification.

Some of the other company divisions picked up on the design features including the curved ends, black surround, and the knob.



Working as a contractor after retirement, I did the industrial design for the “Marsupial” project, the 1000 Series. This product is built by a “partner” company in China, and has a very low selling price.

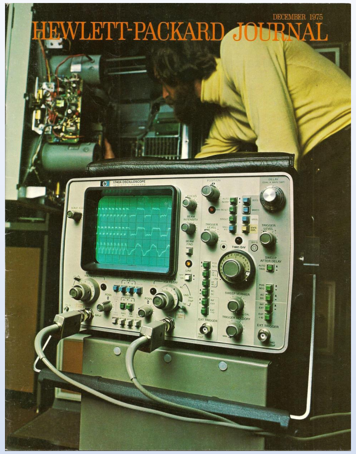


This design took the wrap-around display surround a step further employing a Z-axis protrusion effect that continues across the entire panel, wrapping around the right as well as the left ends. The curvature of the top and bottom of the control area on the right adds to the “free-flowing” design concept.

Again, the original design received the corporate “black” color palette which tends to reduce the effect of corporate brand identity and control grouping area identification.

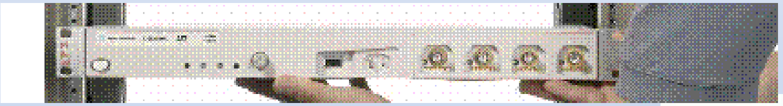
The very last project I did was a redesign of a logic analyzer, the 16861, 16862, 16863, 16864 (34 – 136 Channel)
This was an older product that had issues of assembly and cabling complexity along with “lifetime-buy” components.

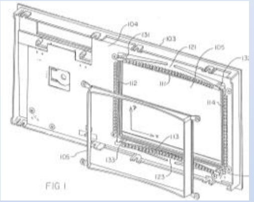
I simplified some of the sheet metal and significantly reduced the complexity of cabling. I improved the cooling system, eliminating one of the fans, and reducing the noise. The contract supplier in Malaysia liked what
we did and reduced their assembly cost.


HEWLETT-PACKARD JOURNAL



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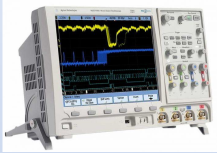

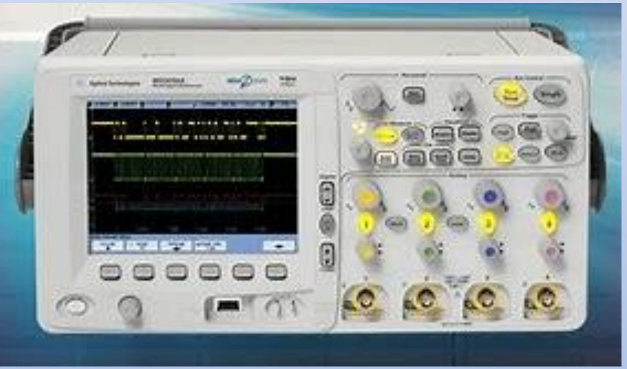

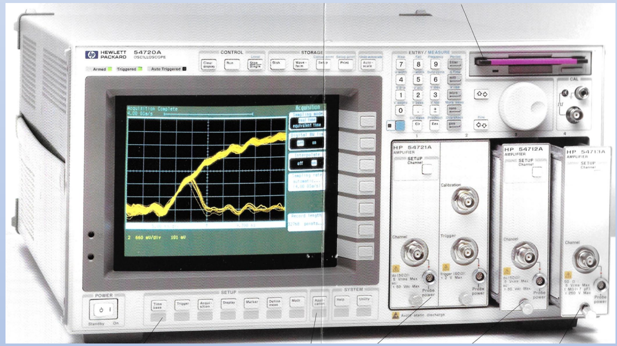
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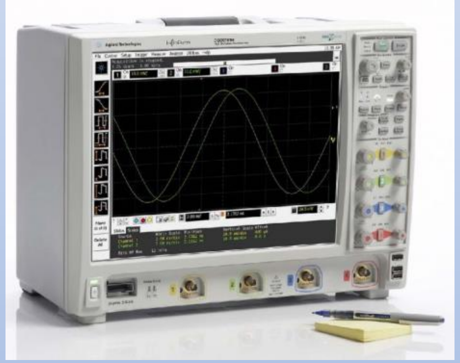
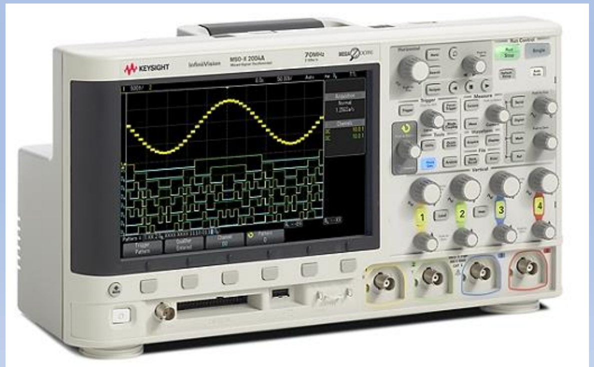
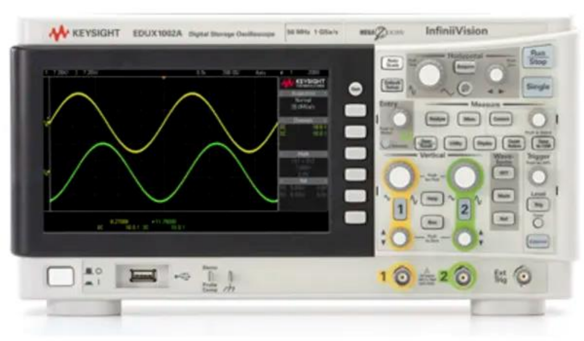


KEYSIGHT
InfiniiVision

KEYSIGHT

KEYSIGHT
EDUX1002A
InfiniiVision


In 2002 there was a 30-year anniversary party for those of us who had been there that long.

Below I posed with Kent Hardage who was my boss at the time when we were doing the “Panther” project

Some of my other good friends:

Donna Burton Joetta Hoewish Don Smith

After Agilent became our new company, there was a re-establishment of the corporate Industrial Design Department.

I was selected to go to a corporate industrial design conference. We were told to have a slide to introduce ourselves.

Chris Fox, a graphic artist in Logic Marketing made up this slide of me, having obvious reference to my interest in trains and holding a couple of our products.

The projects shown are not the entire story. There were many individual tasks performed to contribute to other projects, lots of accessory kits, even being asked to find a solution for some other products' problems.

From 2003 through 2010 I made about 10 trips to our facility in Penang, Malaysia to put my products into production and help develop our mechanical suppliers in that region. I made many good friends over there. On my last trip, they put on a nice lunch party for my impending retirement

Din

Azrina

Beng Huan

LH

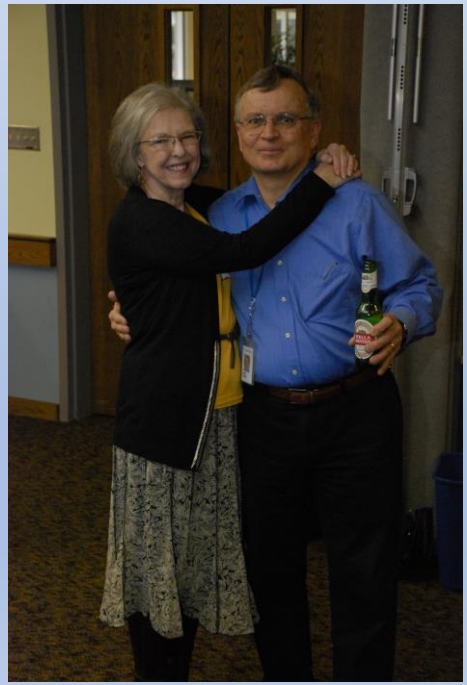
Weng Kett

My retirement party……January 2011

Bob Snow, my boss on Jackel Glenda

Sherry

Kent



Bob Don Smith

Jim Cannon


Introducing the Agilent InfiniiVision 2000
& 3000 X-Series oscilloscopes
Oscilloscopes redefined:
Breakthrough technology delivers more scope for the same budget

I got a nice memo from Jay

Hi John,
Just want to make sure you saw this message from Jay.
Linda

OLSON,LINDA (A-ColSprings,ex1)

From: ALEXANDER,JAY A (A-ColSprings,ex1)
Sent: Saturday, January 29, 2011 10:15 PM
To: OLSON,LINDA (A-ColSprings,ex1); SNOW,BOB (A-ColSprings,ex1)
Subject: Message for John

From: ALEXANDER,JAY A (A-ColSprings,ex1)
Sent: Saturday, January 29, 2011 10:10 PM
To: CAMPBELL,JOHN W (A-ColSprings,ex1)
Subject: Message for John

Hi John,

I'm sorry I missed your sendoff yesterday. I'm just now home from Europe and leave again on Monday for DesignCon. Please send me a personal e-mail address and then I'd love to have lunch with you in Monument sometime in February or March.

John, let me just say now what a pleasure it has been working with you over the past 15+ years. (We've both been here longer than that but I didn't move into R&D until 1993 and met you a little after that.) You are such a creative individual, both on the mechanical engineering front and also the industrial design front. You have really shaped our products for the better! Jackal is but the latest example and it is going to touch thousands and thousands of customers over the coming years. It is exciting for me to know that we're on the cusp of that impact. And of course it comes after other signature programs like Panther with its tackle box ☺ and Lincoln with its awesome feet and MANY other products. Suffice it to say you have a lot to be proud of and I will miss you. THANK YOU for all you've done and best wishes going forward.

Jay A.

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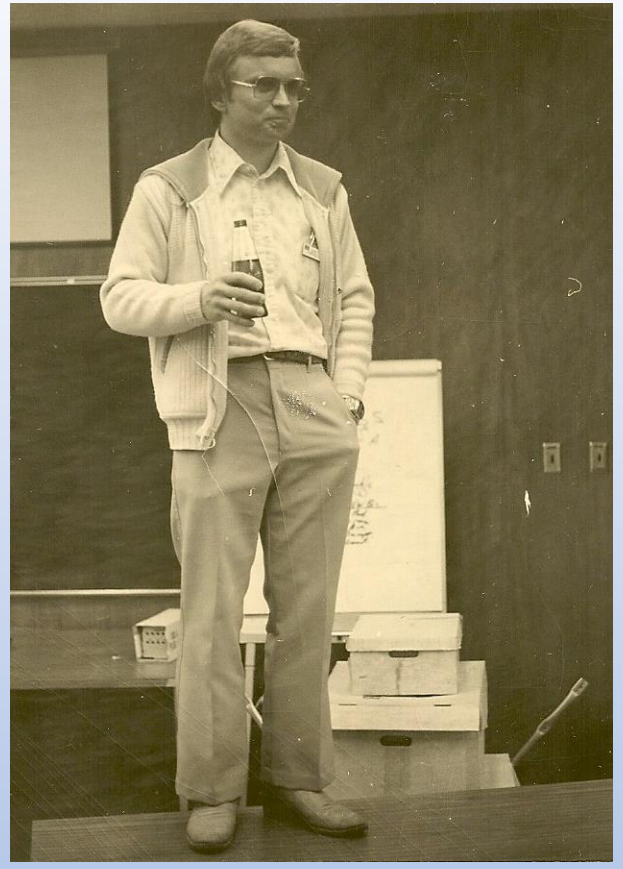

The end