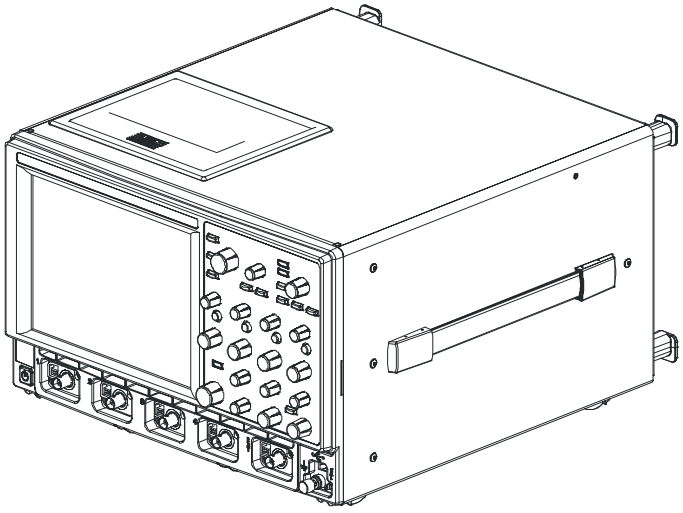
LeCroy Color Digital Oscilloscopes

WaveRunner 6000 Series

Service Manual



Version B- August 2004

LeCroy



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1. Warranty and Product Support

It is recommended that you thoroughly inspect the contents of the oscilloscope packaging immediately upon receipt. Check all contents against the packing list/invoice copy shipped with the instrument. Unless LeCroy is notified promptly of any missing or damaged item, responsibility for its replacement cannot be accepted. Contact your nearest LeCroy Customer Service Center or national distributor immediately (see chapter 2 for *contact numbers*).

1.1 Warranty

LeCroy warrants its oscilloscope products for normal use and operation within specifications for a period of three years from the date of shipment. Calibration each year is recommended to ensure in-spec. performance. Spares, replacement parts and repairs are warranted for 90 days. The instrument's firmware has been thoroughly tested and is thought to be functional, but is supplied without warranty of any kind covering detailed performance. Products not made by LeCroy are covered solely by the warranty of the original equipment manufacturer.

Under the LeCroy warranty, LeCroy will repair or, at its option, replace any product returned within the warranty period to a LeCroy authorized service center. However, this will be done only if the product is determined after examination by LeCroy to be defective due to workmanship or materials, and not to have been caused by misuse, neglect or accident, or by abnormal conditions or operation.

1.2 Product Assistance

***Note:** This warranty replaces all other warranties, expressed or implied, including but not limited to any implied warranty of merchantability, fitness, or adequacy for any particular purpose or use. LeCroy shall not be liable for any special, incidental, or consequential damages, whether in contract or otherwise. The client will be responsible for the transportation and insurance charges for the return of products to the service facility. LeCroy will return all products under warranty with transport prepaid.*

Help on installation, calibration, and the use of LeCroy equipment is available from the LeCroy Customer Service Center in your country.

1.3 Maintenance Agreements

LeCroy provides a variety of customer support services under Maintenance Agreements. Such agreements give extended warranty and allow clients to budget maintenance costs after the initial three-year warranty has expired. Other services such as installation, training, enhancements, on-site repairs and calibrations are available through special supplemental support agreements.



1.4 Staying Up to Date

LeCroy is dedicated to offering state-of-the-art instruments, by continually refining and improving the performance of LeCroy products. Because of the speed with which physical modifications may be implemented, this manual and related documentation may not agree in every detail with the products they describe. For example, there might be small discrepancies in the values of components affecting pulse shape, timing or offset, and — infrequently — minor logic changes. However, be assured the scope itself is in full order and incorporates the most up-to-date circuitry. LeCroy frequently updates firmware and software during servicing to improve scope performance, free of charge during warranty. You will be kept informed of such changes, through new or revised manuals and other publications.

Nevertheless, you should retain this, the original manual, for future reference to your scope's hardware specifications.

1.5 Service and Repair

Please return products requiring maintenance to the Customer Service Department in your country or to an authorized service facility. The customer is responsible for transportation charges to the factory, whereas all in-warranty products will be returned to you with transportation prepaid. Outside the warranty period, you will need to provide us with a purchase order number before we can repair your LeCroy product. You will be billed for parts and labor related to the repair work, and for shipping.

1.6 How to return a Product

Contact the nearest LeCroy Service Center or office to find out where to return the product. All returned products should be identified by model and serial number. You should describe the defect or failure, and provide your name and contact number. In the case of a product returned to the factory, a Return Authorization Number (RAN) should be used.

Return shipments should be made prepaid. We cannot accept COD (Cash On Delivery) or Collect Return shipments. We recommend air-freighting.

It is important that the RAN be clearly shown on the outside of the shipping package for prompt redirection to the appropriate LeCroy department.

1.7 What Comes with Your Scope

Refer to chapter 10 for a list of the items that ships standard with the different configurations of this oscilloscope.

Note: Wherever possible, please use the original shipping carton. If a substitute carton is used, it should be rigid and packed so that that the product is surrounded by a minimum of four inches or 10 cm of shock-absorbent material.

2. General Information

2.1 Product Assistance

Help on installation, calibration, and the use of LeCroy equipment is available from your local LeCroy office, or from LeCroy's

- Customer Care Center, 700 Chestnut Ridge Road, Chestnut Ridge, New York 10977–6499, U.S.A., tel. (845) 578–6020
- European Service Center, 4, Rue Moïse Marcinhes, Case postale 341, 1217 Meyrin 1, Geneva Switzerland, tel. (41) 22/719 21 11.
- LeCroy Japan Corporation, Sasazuka Center Bldg – 6th floor, 1-6, 2-Chome, Sasazuka, Shibuya-ku, Tokyo Japan 151-0073, tel. (81) 3 3376 9400

2.2 Installation for Safe and Efficient Operation

Operating Environment

The oscilloscope will operate to its specifications if the environment is maintained within the following parameters:

Temperature.....5 to 40 °C (41 to 104 °F) rated.

Humidity.....Maximum relative humidity 80 % RH (non-condensing) for temperatures up to 31 °C decreasing linearly to 50 % relative humidity at 40 °C

Altitude.....2000 m (6560 ft)

The oscilloscope has been qualified to the following EN61010-1 category:

Installation (Overvoltage) Category.....II

Pollution Degree..... 2

Safety Symbols

Where these symbols or indications appear on the front or rear panels, and in this manual, they have the following meanings:





.....**CAUTION**: Refer to accompanying documents (for Safety-related information). *See elsewhere in this manual wherever the symbol is present,as indicated in the Table of Contents*.



.....**CAUTION**: Risk of electric shock



.....**On (Supply)**

Off (Supply)



.....Earth (Ground) Terminal



.....**Protective Conductor Terminal**



.....**Earth (Ground) Terminal on BNC Connectors**

WARNING.....**Denotes a hazard. If a WARNING is indicated on the instrument, do not proceed until its conditions are understood and met.**



WARNING

Any use of this instrument in a manner not specified by the manufacturer may impair the instrument's safety protection.

The oscilloscope has *not* been designed to make direct measurements on the human body. Users who connect a LeCroy oscilloscope directly to a person do so at their own risk.

Power Requirements

The oscilloscope operates from a 115 V (90 to 132 V) or 220 V (180 to 250 V) AC power source at 45 Hz to 66 Hz. No voltage selection is required, since the instrument automatically adapts to the line voltage present.

The power supply of the oscilloscope is protected against short-circuit and overload by means of a 10.0 A/250 V AC, “T” rated fuses (size: 5 X 20 mm), located above the mains plug. Disconnect the power cord before inspecting or replacing a fuse. Open the fuse box by inserting a small screwdriver into the slot and turning counter clockwise.

For continued fire protection at all line voltages, replace only with fuse of the specified type and rating (T 10.0 A/250 V).

Maintain the ground line to avoid an electric shock.

None of the current-carrying conductors may exceed 250 V rms with respect to ground potential. The oscilloscope is provided with a three-wire electrical cord containing a three-terminal polarized plug for mains voltage and safety ground connection.

The plug's ground terminal is connected directly to the frame of the unit. For adequate protection against electrical hazard, this plug must be inserted into a mating outlet containing a safety ground contact.

Cleaning And Maintenance

Maintenance and repairs should be carried out exclusively by a LeCroy technician Cleaning should be limited to the exterior of the instrument only, using a damp, soft cloth. Do not use chemicals or abrasive elements. Under no circumstances should moisture be allowed to penetrate the oscilloscope. To avoid electric shocks, disconnect the instrument from the power supply before cleaning.



Risk of electrical shock: No user serviceable parts inside. Leave repair to qualified personnel.



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3. Specifications

3.1 Vertical System

	WaveRunner 6030(A)	WaveRunner 6050(A)	WaveRunner 6051(A)	WaveRunner 6100(A)	WaveRunner 6200(A)
Nominal Analog Bandwidth @ 50 Ω (-3 dB)	350 MHz	500 MHz	500 MHz	1 GHz	2 GHz
Rise Time (Typical)	1 ns	750 ps	750 ps	400 ps	225 ps
Input Channels	4	4	2	4	4
Bandwidth Limiters	20 MHz; 200 MHz				
Input Impedance	1MΩ//<20pF (10 MΩ // 9.5pF using PP007 probe)				
Input Coupling	50 Ω: DC, 1MΩ: AC, DC, GND				
Maximum Input Voltage, 50Ω	50 Ω: 5 Vrms, 1 MΩ: 250 V max (Peak AC: ≤ 10 kHz + DC)				
Channel to Channel Isolation	>40dB @ <100MHz (>30dB @ full bandwidth)				
Vertical Resolution	8 bits; up to 11 with enhanced resolution (ERES)				
Sensitivity	50 Ω: 2 mV/div - 1 V/div fully variable; 1 MΩ: 2 mV - 10 V/div fully variable				
DC Gain Accuracy	±1.0% of full scale (typical); ±1.5% of full scale ≥ 10mV/div (warranted)				
Offset Range	50 Ω: ± 400 mV @ 2-4.99 mV/div				
	± 1 V @ 5-100 mV/div				
	± 10 V @ 102 mV/div - 1V/div				
	1 MΩ: ± 500 mV @ 2-4.99 mV/div				
	± 1 V @ 5-100 mV/div				
	± 10 V @ 102 mV/div - 1V/div				
	± 100 V @ 1.02V/div - 10V/div				
Offset Accuracy	±(1.5% + 0.5% of offset value + 1 mV) all fixed gain < 2V/div ±(1.5% + 1.0% of offset value + 1 mV) all variable and V/div settings ≥ 2V/div				
Probing System	BNC or Probus®				

3.2 Horizontal System

Timebases	Internal timebase common to all input channels; an external clock may be applied at the auxiliary input
Time/Division Range	20 ps/div - 10 s/div
Math & Zoom Traces	4 independent zoom and 4 math/zoom traces standard
Clock Accuracy	≤ 5 ppm @ 25° C (≤ 10ppm @ 5-40° C)
Time Interval Accuracy	Clock Accuracy + Jitter Noise Floor
Sample Rate & Delay Time Accuracy	Equal to Clock Accuracy
Trigger & Interpolator Jitter (RMS)	≤ 3 ps rms (typical)
Channel to Channel Deskew Range	±9 x T/div setting, 100ms max, each channel
External Sample Clock	DC to 1 GHz; 50 Ω (limited BW in 1MΩ), BNC input, limited to 2 Ch operation (1 Ch in WR6051), (minimum rise time and amplitude requirements apply at low frequencies)
Roll Mode	User selectable, Available at lower time/div settings

3.3 Acquisition System

	WaveRunner 6030(A)	WaveRunner 6050(A)	WaveRunner 6051(A)	WaveRunner 6100(A)	WaveRunner 6200(A)
Single-Shot Sample Rate/Ch	2.5 GS/s	5 GS/s	5 GS/s	5 GS/s	5 GS/s
Interleaved Sample Rate (2 Ch)	5 GS/s	N/A	N/A	10 GS/s	10 GS/s
Random Interleaved Sampling (RIS)	200 GS/s				
Trigger Rate	125,000 waveforms/second				
Sequence Time Stamp Resolution	1 ns				
Minimum time Between Sequential Segments	8 µs				
Acquisition Memory	Max. Acquisition Points (4ch/2ch; 2ch/1ch in 6051)			Segments (Sequence Mode)	
Standard	1M / 2M			500	
Option S (Std for A models)	2M / 4M			500	
Option M	4M / 8M			1,000	
Option L	8M/16M			5,000	
Option VL	12M/24M			10,000	

3.4 Acquisition Processing

	WaveRunner 6030(A)	WaveRunner 6050(A)	WaveRunner 6051(A)	WaveRunner 6100(A)	WaveRunner 6200(A)
Time Resolution (min, Single-shot)	200 ps (5 GS/s)			100 ps (10 GS/s)	
Averaging	Summed and continuous averaging to 1 million sweeps				
ERES	From 8.5 to 11 bits vertical resolution				
Envelope (Extrema)	Envelope, floor, and roof for up to 1 million sweeps				
Interpolation	Linear, Sinx/x				

3.5 Triggering System

Trigger Modes	Normal, Auto, Single, Stop
Sources	Any input channel, External, Ext/10, or Line; slope and level unique to each source
Trigger Coupling	DC50 Ω, GND, DC1MΩ, AC1MΩ
Pre-trigger delay	0-100% of memory size (adjustable in 1% increments, or 100 ns)
Post-trigger delay	The smaller of 0 to 10,000 divisions or 86,400 seconds
Hold-off	2 ns to 20 s or 1 to 99,999,999 events
Internal trigger level range	±5 div from center (typical)

	WaveRunner	WaveRunner	WaveRunner	WaveRunner	WaveRunner
	6030(A)	6050(A)	6051(A)	6100(A)	6200(A)
Trig Sensitivity (Edge Trigger)	2 div@350 MHz	2 div@500 MHz	2 div@500 MHz	2 div@1 GHz	2 div@2 GHz
CH 1-4 + ext	1 div@250 MHz	1 div@350 MHz	1 div@350 MHz	1 div@750 MHz	1 div@1.8 GHz
Max Trig Freq with SMART Trigger®	350 MHz	500 MHz	500 MHz	750 MHz	750 MHz
CH 1-4 + ext	@ ≥ 10mV	@ ≥ 10mV	@ ≥ 10mV	@ ≥ 10mV	@ ≥ 10mV
Trigger Level DC Accuracy	±4% full scale ±2mV (typical)				
External trigger range	EXT/10 ±4V; EXT ±400mV				

3.6 Basic Triggers

Edge/Slope/Line	Triggers when signal meets slope (positive or negative) and level condition

3.7 SMART Triggers®

State or Edge Qualified	Triggers on any input source only if a defined state or edge occurred on another input source .
	Delay between sources is selectable by time or events.
Dropout	Triggers if signal drops out for longer than selected time between 2 ns and 20 s.
Pattern	Logic combination (AND, NAND, OR, NOR) of 5 inputs (4 channels and external trigger input - 2ch+EXT on 6051). Each source can be high, low, or don't care.
	The high and low level can be selected independently. Triggers at start or end of the pattern.

3.8 SMART Triggers® with Exclusion Technology

Glitch & Pulse Width	Triggers on positive or negative glitches with widths selectable from 600 ps to 20 s or on intermittent faults. (Subject to bandwidth limit of oscilloscope).
Signal or Pattern Width	Triggers on positive or negative pulse widths selectable from 600 ps to 20 s or on intermittent faults. (Subject to bandwidth limit of oscilloscope).
Signal or Pattern Interval	Triggers on intervals selectable between 2 ns and 20 s.
Timeout (State/Edge Qualified)	Triggers on any source if a given state (or transition edge) has occurred on another source.
	Delay between sources is 10ns to 20 s, or 1 to 99,999,999 events.
Exclusion Triggering	Trigger on intermittent faults by specifying the normal width or period.
Automatic Setup	
Auto Setup	Automatically sets timebase, trigger, and sensitivity to display a wide range
Vertical Find Scale	Automatically sets the vertical sensitivity and offset for the selected channels to display

3.9 Probes

Probes	One PP007 per channel standard; Optional passive and active probes available
Probe System; Probus	Automatically detects and supports a variety of compatible probes
Scale Factors	Automatically or manually selected, depending on probe used

3.10 Color Waveform Display

Type	Color 8.4" flat-panel TFT-LCD with high resolution touch screen
Resolution	SVGA; 800 x 600 pixels
Real Time Clock	Dates, hours, minutes, seconds displayed with waveform. Accurate to ±50ppm. SNTP support to synchronize to precision internet clocks.
Number of Traces	Display a maximum of 8 traces. Simultaneously display channel, zoom, memory, and math traces.
Grid Styles	Auto, Single, Dual, Quad, Octal, XY, Single + XY, Dual + XY
Waveform Styles	Sample dots joined or dots only

3.11 Analog Persistence Display

Analog & Color-Graded Persistence	Variable saturation levels; stores each trace's persistence data in memory.
Persistence Selections	Select analog, color, or three-dimensional.
Trace Selection	Activate persistence on all or any combination of traces.
Persistence	Aging Time Select from 500 ms to infinity.
Sweeps Displayed	All accumulated, or all accumulated with last trace highlighted.

3.12 Zoom Expansion Traces

Zoom Expansion Traces	Display up to 4 Math/Zoom traces;

3.13 CPU

Processor	Intel Celeron® 2 GHz or better.
Processing Memory	256 MB on Std & M option; 512 MB with L option & VL option
Operating System	Microsoft Windows® 2000 Professional (XP Professional “A” model)

3.14 Internal Waveform Memory

	M1, M2, M3, M4 Internal Waveform Memory (store full-length waveform with 16 bits/data point) or store to any number of files limited only by data storage media

3.15 Setup Storage

Front Panel and Instrument Status	Store to the internal hard drive, over the network, or to a USB-connected peripheral device.

3.16 Interface

Remote Control	Via Windows Automation, or via LeCroy Remote Command Set
GPIB Port (Optional)	Supports IEEE - 488.2
Ethernet Port	10/100Base-T Ethernet interface (RJ-45 connector)
USB Ports	5 USB ports (one on front of instrument) supports Windows-compatible devices
External Monitor Port	Standard 15-pin D-Type SVGA-compatible DB-15; connect a second monitor to use dual-monitor display mode.
Parallel Port	Standard DB-25
Serial Port	DB-9 RS232 port (not for remote oscilloscope control)

3.17 Auxiliary Input

Signal Types	Selected from External Trigger or External Clock input on front panel
Coupling	50 Ω: DC, 1MΩ: AC, DC, GND
Maximum Input Voltage	50 Ω: 5Vrms, 1MΩ: 250 Vmax (Peak AC; ≤ 10 Khz + DC)

3.18 Auxiliary Output

Signal Types	Trigger Enabled, Trigger Output, Pass/Fail, or Off
Output Level	TTL, ~3.3 V
Connector Types	BNC, located on rear panel

3.19 General

Auto Calibration	Ensures specified DC and timing accuracy is maintained for 1 year minimum
Power	100-240 Vrms (±10%) at 50/60 Hz; 100-120 Vrms (±10%) at 400 Hz Automatic AC Voltage Selection
	Installation Category: 300V CAT II; Max. Power Consumption: 425 VA/425 W

3.20 Environmental

Temperature: Operating	+5°C to 40°C
Temperature: Non-Operating	-20°C to +60°C
Humidity: Operating	5% to 80% RH (non-condensing) up to 30°C, Upper limit derates linearly to 50% RH (non-condensing) at 40°C
Humidity: Non-Operating	5% to 95% RH (non-condensing) as tested per MIL-PRF-28800F
Altitude: Operating	3,048m (10,000 ft) max at ≤ 25°C
Altitude: Non-Operating	12,190m (40,000 ft)

3.21 Physical Dimensions

Dimensions (HWD)	211mm x 355mm x 363mm (excluding feet) 8.3" x 13.8" x 14.3"
Net Weight	10 kg (22 lb), excluding printer
Shipping Weight	less than 13.6 kg (30 lb)

3.22 Certifications

	CE Approved, UL and cUL listed; Conforms to EN 61326-1, EN 61010-1, UL 3111-1, and CSA C22.2 No. 1010.1

3.23 Warranty and Service

	3-year warranty; calibration recommended annually. Optional service programs include extended warranty, upgrades, calibration, and customization services

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4. Theory of Operation

4.1 System Block Diagram

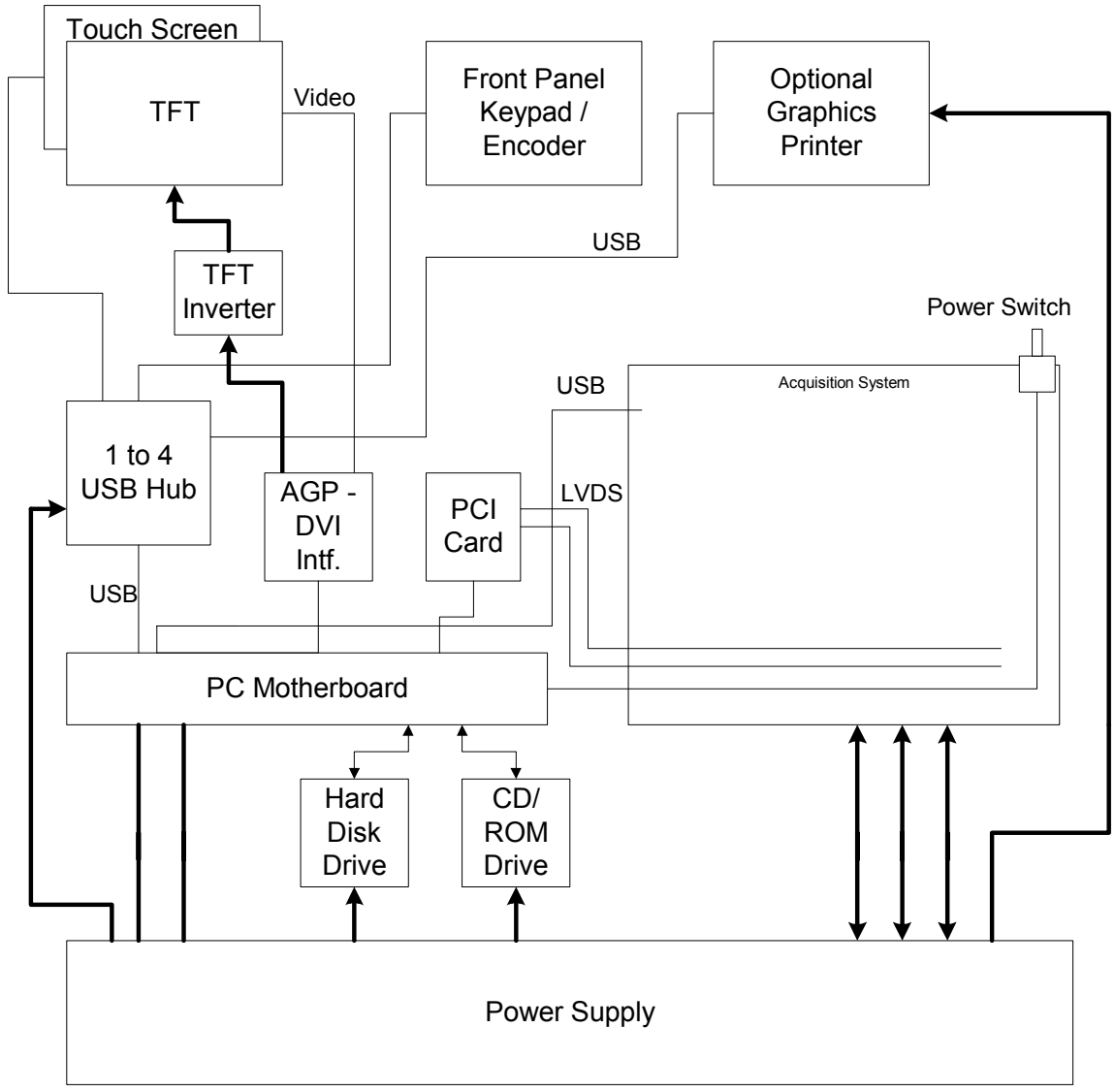


Figure 4-1 WaveRunner 6000 Block Diagram



4.2 **Computer** – The WaveRunner 6000 processor is a 1.7 GHz or 2.0 GHz Intel Celeron motherboard or better. This assembly will change more often than other assemblies due to the volatility of PC motherboards.

4.2.1 **Operating System** – The system uses Microsoft Windows 2000 as the operating system. The operating system license can be found on the rear panel of the instrument.

4.2.2 **Memory** – The standard memory configuration for a WaveRunner 6000 is 256MB, consisting of 1 piece of 32M x72 Bit PC2100 SDRAM DIMM. If option L or VL is installed into the acquisition system then the processor RAM needs to be 512MB.

4.2.3 **Interfaces** – The standard interfaces provided by the PC Motherboard are SVGA, Audio, Ethernet, RS-232, Centronics and USB. .

4.2.4 **Storage Devices** – The system has an internal hard drive of at least 40 GB in size. 5 GB is allocated for LeCroy use, the balance is in a user partition for the saving of panel setups, waveform memory, hard copies, application programs, user data, etc. The system also includes a CD-ROM drive. The CD-ROM drive requires an adapter PCA to provide the interconnection to the ribbon cable which makes connection to the motherboard.

4.2.5 **CMOS Settings** – The BIOS version is locked so that the System recovery CD will only work on WaveRunner 6000 scope. Changes can still be made to BIOS settings if needed, the lock is only relevant to the use of the System Recovery CD.

4.3 **PCI Card** - The PCI card is the interface between the PCI bus on the processor card and the acquisition system. It has the following interfaces:

- PCI card acts as a transaction repeater
- LVDS link between PCI card and Acquisition system
- PCI card also contains buzzer and unique chip ID.
- All digital functions (PCI and LVDS interface) contained in a Xilinx Spartan IIe
- Two Beeps at powerup indicates link is good
- PCI card can also be detected with device manager

4.4 **USB Hub** – The USB Hub is a 1 to 4 USB 1.1 Interface. Only three USB are actually created however the HUB interface chip is capable of making four USB ports. One of the ports connects to the Touch Screen Controller, one port is available for an internal graphics printer and the third port is for the front panel processor. The USB Hub is recognized by Windows as a Generic USB Hub.

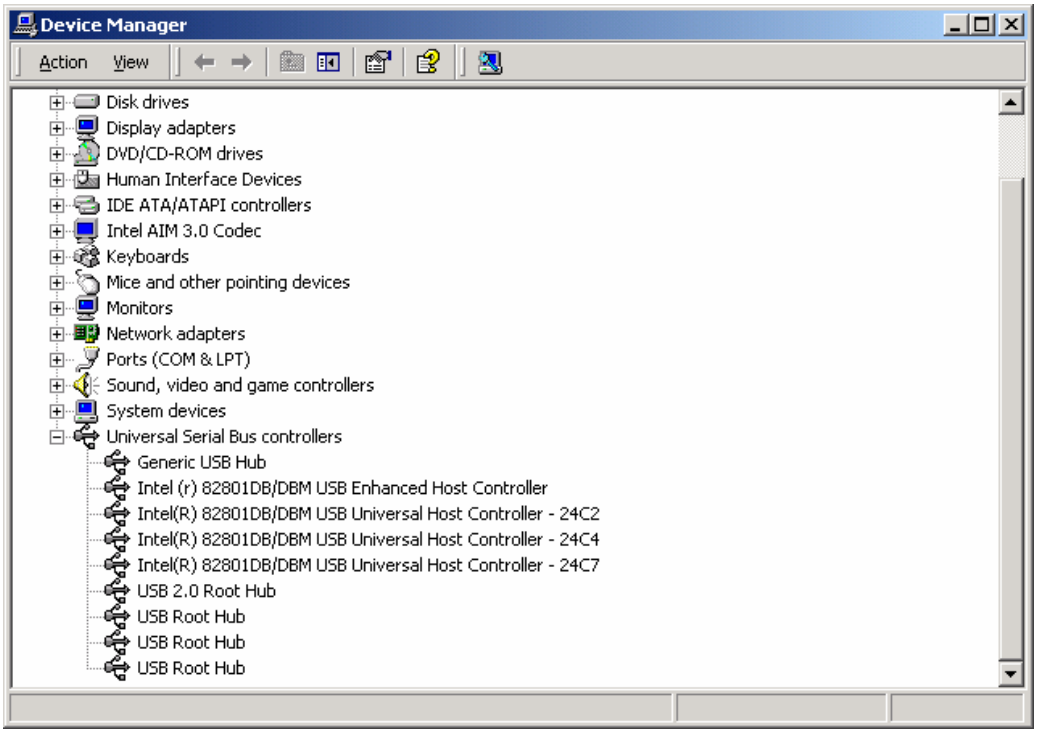


Figure 4-2 Device Manager



4.5 Display and Touch Screen

4.5.1 **Color LCD Module** – The display module is an NEC TFT (thin film transistor) active matrix color liquid crystal display (LCD) module comprising amorphous silicon TFT attached to each signal electrode, a driving circuit and a backlight. The 22cm diagonal display area contains 800x600 pixels (SVGA) and can display 262144 colors simultaneously.

4.5.2 **Inverter** – The inverter which supplies power to the TFT is supplied with +12V from the DVI card DVO/DVI processor, it then converts this to 1000-2000V AC to drive the TFT. The intensity control is kept at a constant 100%, dimming is not possible.

4.5.3 **Touch Screen** – The touch screen is a 4 wire resistive touch screen. It must be calibrated so that software can determine where a touch corresponds to a position on the screen. This calibration is done at five points and can be invoked through the Utilities menu.

4.6 **Acquisition System –**

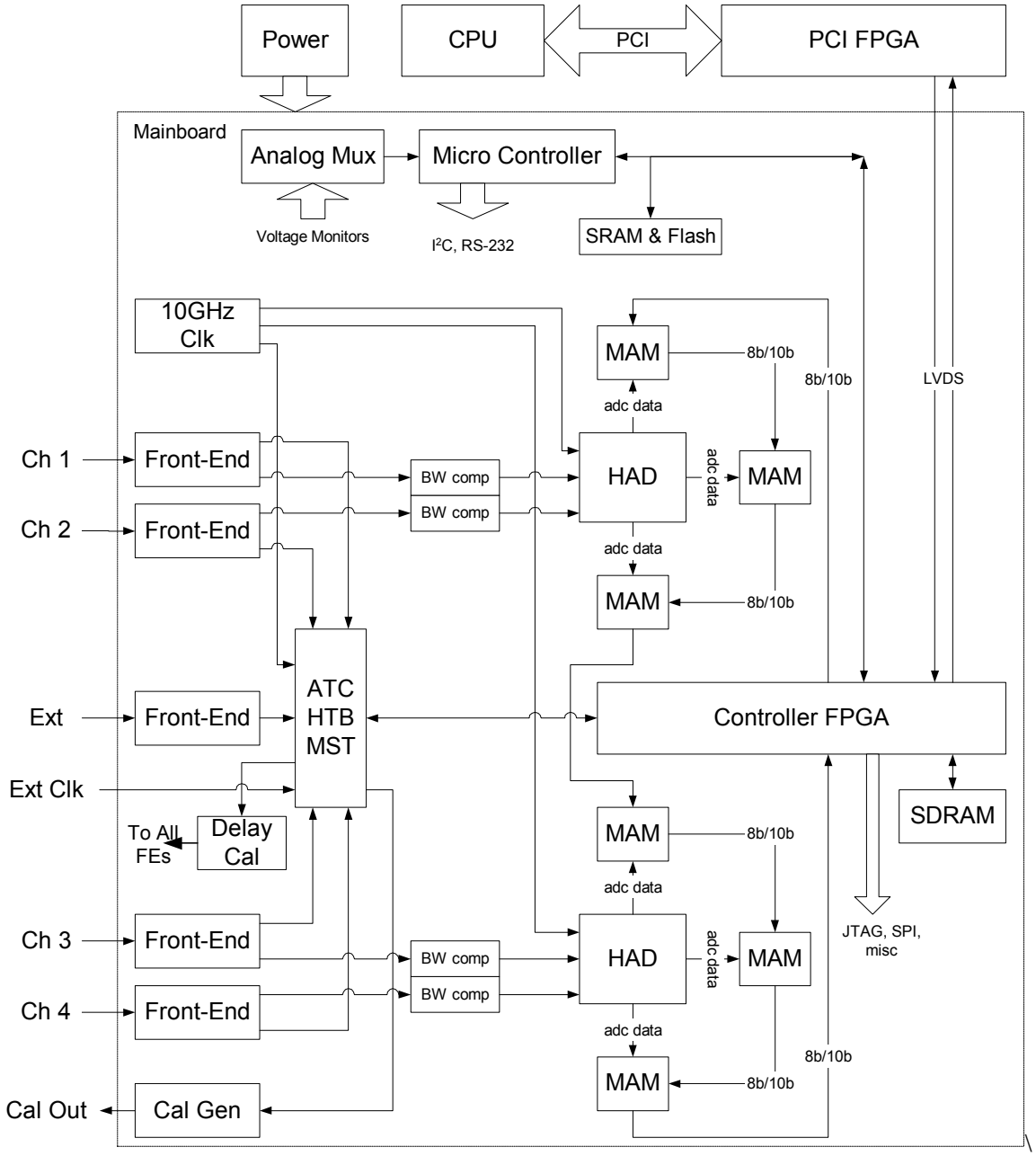


Figure 4-3 Acquisition Main Board Block Diagram



4.6.1 Main Card –

- Receives +12V, -12V, +3.3V, -3.3V, +5V, -5V, and “line sync” from Bulk AC power supply.

- Other I/O:
  - BNC Channel and External inputs
  - Probus
  - Trigger out/pass fail BNC (rear panel)
  - USB (pass thru)
  - Power Switch (pass thru)
  - Arm and Trigger LED (to front panel)
  - Calibrator Output (front panel probe hook)
  - External Clock Input through External BNC

- Sub systems
  - FE (50 Ohm, 1M Ohm)
  - ADC and Acquisition Memory
  - Timebase and Trigger
  - 10GHz clock
  - Controller FPGA
  - uP Controller
  - Power Supply
  - NCO
  - Probus

- Communication with devices
  - SPI
    - Slow Serial interface (2MHz). Used for communication with DACs, HFEs and FE control, NCO.
  - JTAG
    - Serial Interface for communicating with HTB, ADCs, and MAMs.
  - 8B/10B Gigabit Ethernet
    - Acqusition memory (MAM) readout
  - I2C
    - Probus
  - Parallel Interface
    - uC to Controller FPGA
  - GPIO
    - 16 bit general purpose I/O

4.6.1.1 JTAG Chains

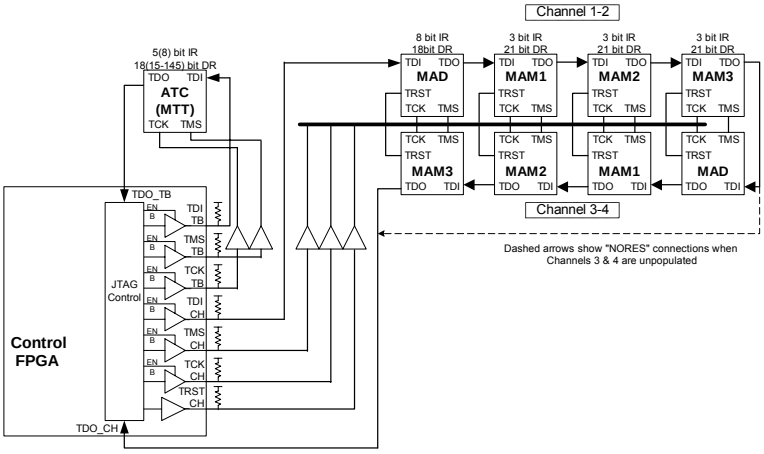


Figure 4-4 JTGA Device Chains

The software detects the devices on JTAG chain at startup

4.6.1.2 Serial chains

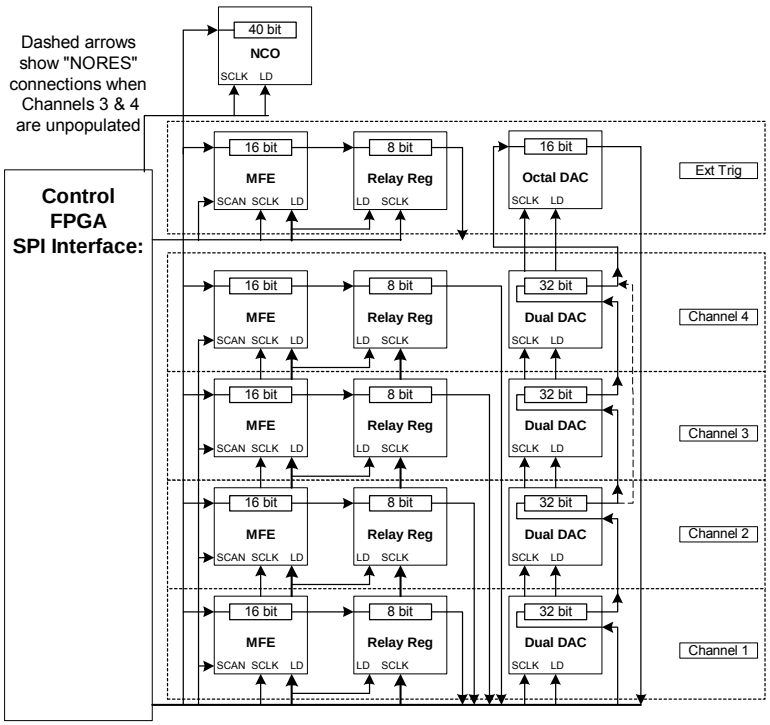


Figure 4-5 Serial Bus Device Chains



4.6.1.3 Controller FPGA

- Handles Communication to PCI card thru LVDS Link
- uC Interface
- GPIO Interface Controller
- JTAG Interface Controller
- SPI Interface Controller
- Time Stamp SDRAM Controller

4.6.1.4 MicroController

- Handles programming of Xilinx FPGAs on Acquisition Board (to Spartan IIe devices)
- Provides Scanning ADC for Monitoring:
    - Chip temperatures of ADC, MAMs, FE, HTB
    - System temperature
    - Bulk power supplies
    - Probus ring voltages
    - Channel overload protection
- Probus Communication via I2C
- RS232 Interface for programming FLASH (internal use only)

4.6.1.5 Timebase & Trigger

- Comprised of ATC FPGA, HTB645, MST429, SDRAM
- Trigger Threshold
- Generates many system clocks (125MHZ, 500MHz from 10GHz)
- Handles Starting and Stopping of ADCs and Memory
- Counters for pre and post trigger
- TDC for waveform trigger position
- Fanout for External Clock
- Smart Trigger
- Sequence Mode (Time stamp stored in SDRAM)

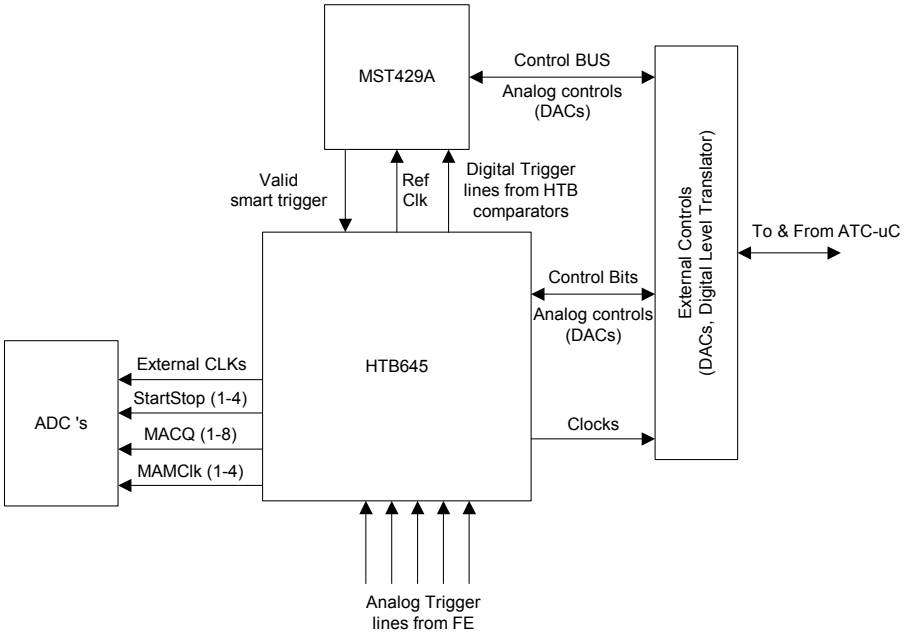


Figure 4-6 Trigger and Timebase Block Diagram

4.6.1.5.1 **HTB645** – Hybrid Timebase Trigger IC which performs all standard triggers and control of individual acquisitions by the ADC and Memory system.

4.6.1.5.1.1 **Trigger Bandwidth** – The trigger bandwidth of the system using standard triggers is 5 GHz.

4.6.1.5.1.2 **Trigger Signal I/O** – There are five differential trigger inputs, five differential trigger comparator outputs to be used by an external Smart Trigger IC, five analog trigger level threshold control lines, five analog trigger hysteresis control lines (they are all connected together in this implementation), five trigger selection lines and a validate trigger input from the smart trigger.



4.6.1.5.1.3 **TDC** – The HTB645 has an internal TDC and the ability to drive an external TDC. The TDC resolution is ≈1.4ps.

4.6.1.5.1.4 **Timebase** – Provides control of starting and stopping individual acquisition segments.

4.6.1.5.1.5 **Miscellaneous clocks** – provides 125MHz clock for the NCO and the probe cal generator.

4.6.1.5.2 **MST429A** – Smart Trigger IC

4.6.1.5.2.1 **Signal I/O** – there are 6 differential ECL trigger inputs, 6 differential ECL validate inputs and 2 single ended ECL inputs

4.6.1.5.2.2 **Trigger Functions**

- edge trigger
- timeout trigger
- pulse width trigger
- interval width trigger
- setup and hold time violation trigger

4.6.1.5.2.3 **Main trigger delay or holdoff selection**

- trigger delayed by time
- trigger holdoff by time
- trigger delayed by events
- trigger delayed by events and time
- trigger holdoff by events and time
- trigger delayed by time and events

4.6.1.5.2.4 **Qualifier selection**

- gate qualifier
- state qualifier
- edge qualifier
- number of events qualifier
- state with specified delay qualifier
- edge with restartable delay qualifier
- edge with not restartable delay qualifier
- pulse width qualifier
- interval width qualifier

4.6.1.5.2.5 **Polarity** – Polarity selection for trigger and qualifier (positive, negative or either)

4.6.1.5.2.6 **Analog Time Measure** – Analog time measure system used for specific trigger and qualifier from 500ps to 10ns with 250ps resolution, and from 10ns to 100ns with 500ps resolution

4.6.1.5.2.7 **Digital Time Measure** – Digital time measure system used for specific trigger and qualifier

from 100ns to about 70s with 2ns resolution (clock reference at 500 MHz)

4.6.1.5.2.8 **Trigger Frequency** – Main trigger frequency up to 750 MHz, Qualifier frequency up to 500 MHz

4.6.2 ADC & Memory - The ADC function is performed by a two dual channel 5 GS/s, 8 Bit ADC hybrids (HAD639) with 24 Megabytes of DRAM. They have an 8b/10b data link to transfer data to an off board processor. For each pair of channels (1&2 and 3&4) there is an 8 Bit Hybrid ADC and three 8 Megabyte DRAM IC's (MAM439). The ADC can be used either as a dual acquisition channel, or it may be used as part or a two channel system to interleave data to achieve a 10GS/s sampling rate

- Controlled via JTAG
- ADCs sample at 5GS/s for 4CH and 10GS/s when Interleaved to 2CH
- Digitized Data Decimated to achieve other sample rates
- Digitized data stored in MAMs and read out over 8b/10b bus
- Gain, Offset and Delay Dacs
- PRBS Generator

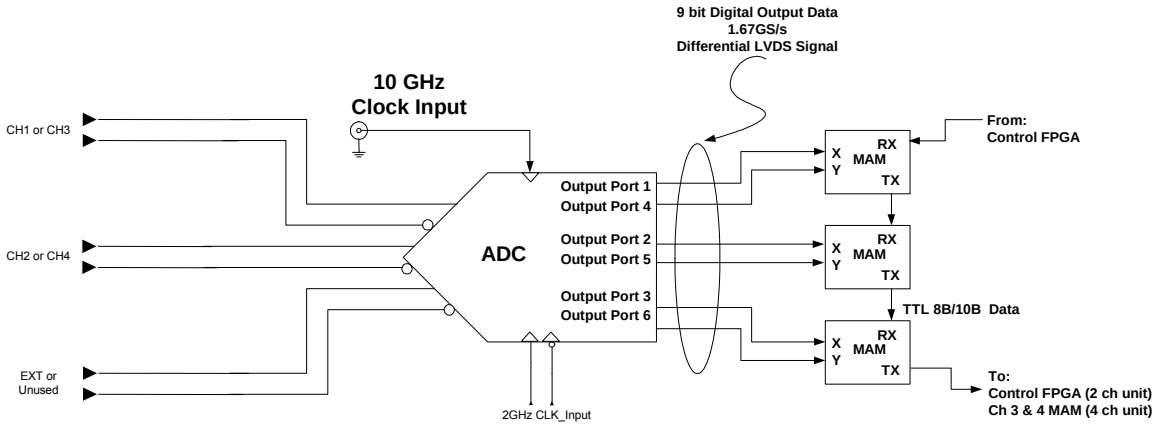


Figure 4-7 ADC and Memory Block Diagram

4.6.2.1 **HAD639** – 10 GS/s, 8 Bit ADC

4.6.2.1.1 **Signal I/O** – The HAD639 has three differential analog inputs and six output ports that each have nine differential output signals and two differential quadrature clock outputs.

4.6.2.1.2 **ADC's** – There are six 8 bit ADC's in this device. Each ADC operates at a clock speed of 1.667 GHz.

4.6.2.1.3 **Calibration** – There are several DAC's built into the HAD639 to calibrate its ADC's. For each ADC there are five internal DAC's, one for gain, one for offset, one for delay, one for output delay and one for sample delay.

4.6.2.1.4 **Control** – The operating mode of the ADC is controlled through JTAG, the control of each acquisition, start, stop etc is controlled by the HTB.

4.6.2.2 **MAM439** - 8 Megabytes DRAM

4.6.2.2.1 **Signal I/O** – The MAM439 has two, nine bit differential inputs, each with two differential quadrature clock inputs. Output is through an 8B/10B Ethernet transceiver.

4.6.2.2.2 **Control** – The state of MAM is controlled through JTAG and through the Gigabit Ethernet link, the control of each acquisition, clock, reset, stop etc is controlled by the HTB.

4.6.2.2.3 **Decimation** – When the sample rate is below 10GS/s, the MAM439 ignores or decimates the correct amount of samples so that the desired sample rate is achieved. The ADC always digitizes at 10 GSs.

4.6.2.3 8b/10b Bus

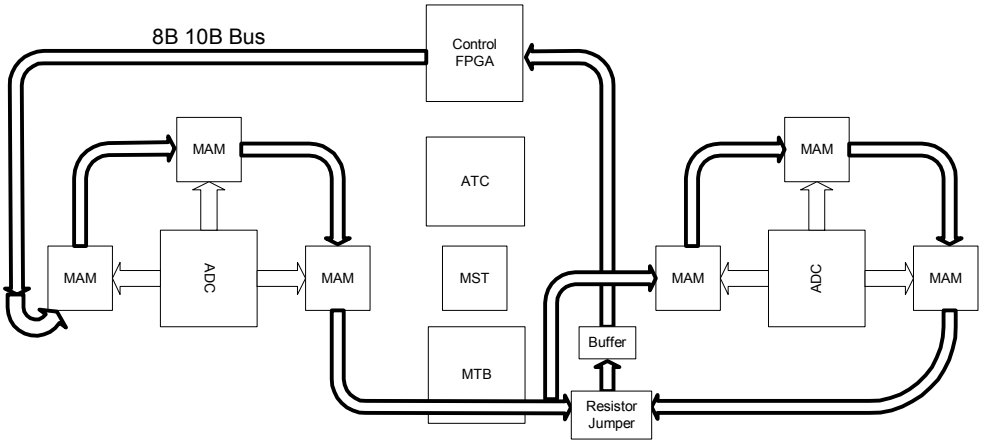


Figure 4-8 8b/10b Path

4.6.3 **Front End** – the front ends contain the attenuators, calibration signals and offset generation, and signal conditioning of the input signal. It outputs are differential analog signals used by the ADC's and trigger circuitry.

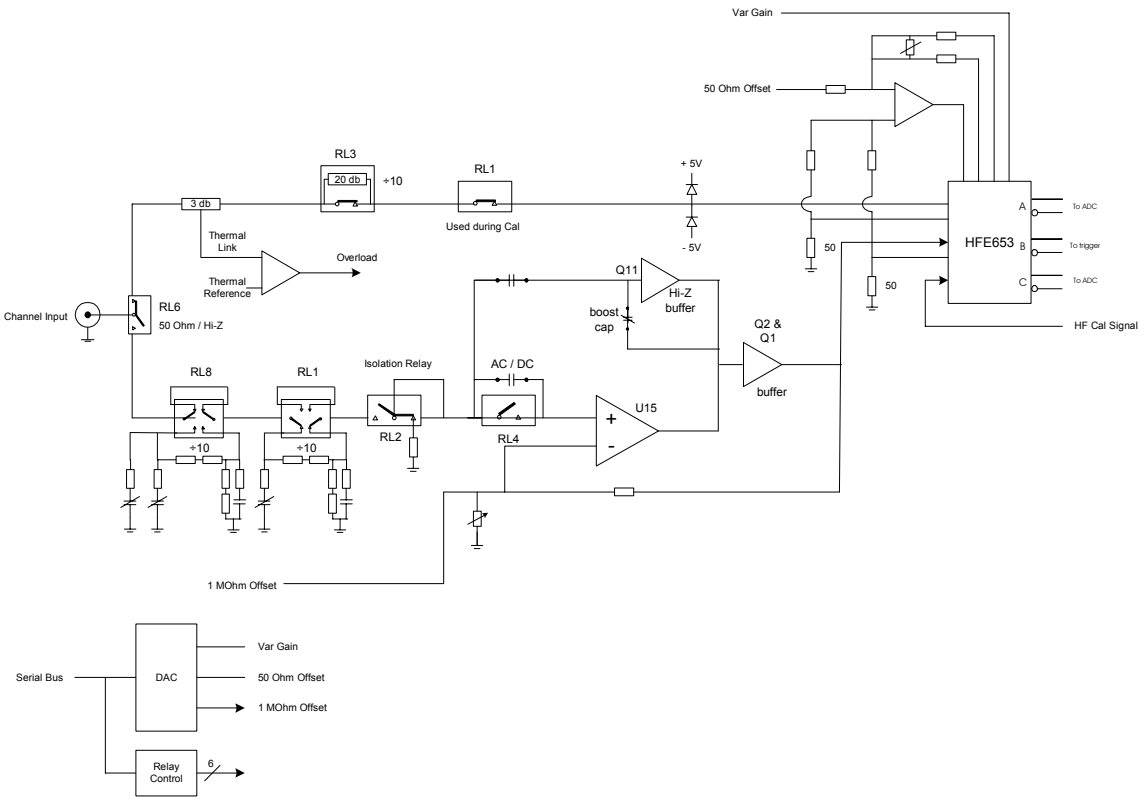


Figure 4-9 Front End Card Block Diagram

4.6.3.1 **Input Coupling** – There are two paths through the front end card. One is the high bandwidth (350 MHz to 2 GHz) 50Ω path , the other is the lower bandwidth (350 or 500 MHz) high impedance path which can be either DC or AC coupled. The path is determined by relay RL7.

4.6.3.2 **50Ω Path** – The 50Ω path has a 3db attenuator right after the input to limit the current into the front end from overload and then there are clamp diodes to protect the HFE653. There is a thermal link from the 3db attenuator to a diode which is used to sense an overloaded input by the heat dissipated by the 3db attenuator There is a switch able 20db attenuator (RL3) which is used for range settings of greater than 100mv/div. The input signal passes through the input to the HFE and is terminated with a 50Ω resistor on the front end card.



4.6.3.3 **1MΩ Path** – The Hi-Z path has a switchable 20db attenuator (RL8) which is used at input range settings of ≥ 102 mV/div. There are two adjustable capacitors C4 & C25 in this attenuator circuit, C25 is used to adjust the pulse shape when the 20db attenuator is switched in and C4 is used to adjust the input capacitance of the channel so that it is the same when the 20db attenuator is not switched in. After the /10 attenuator there is a second /10 attenuator which is additionally switched in at input range settings of ≥1.02 V/div. C59 is used to adjust the pulse shape when this attenuator is switched in. The signal then passes through RL6 which is used to terminate the input to the Hi-Z amplifier when 50Ω coupling is selected. Next the input signal splits and follows two paths, DC and high frequency. In the block diagram above, the upper path in the high impedance amplifier is the high frequency stage and lower path is the DC stage. The DC stage is preceded by RL4 which selects DC or AC coupling. R38 is used to match the transfer functions of the high frequency and low frequency path so that a square pulse shape can be obtained. The adjustable cap C85 is used to provide additional drive for the high-Z buffer and increase the bandwidth. The output of the buffer is then fed to the HFE653 and this input is also terminated with a 50Ω resistor on the front end card.

4.6.3.4 **HFE653** – The HFE653 monolithic amplifier is the primary component comprising the high bandwidth 50Ohm amplifier. The HFE provides the following functions:

4.6.3.4.1 Gain control on inputs based on the sensitivity settings of the DSO, so as to provide a 500mVpp differential signal at the output of the amplifier.

4.6.3.4.2 Provide the capability to choose from three input channels.

4.6.3.4.3 Using a serial chain control to

- Select one of the three input channels
- Choose either BW limit filter path or the full BW path
- Turn ON and OFF any output amplifiers
- Provide a read back capability to read the latch states and the device revision code.

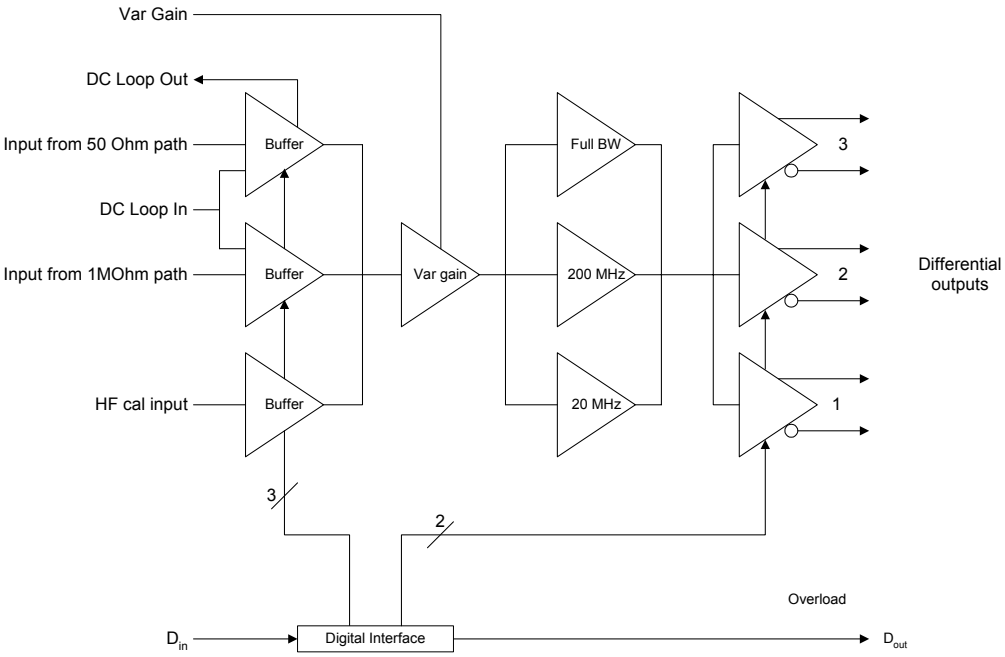


Figure 4-10: HFE653 Block Diagram

4.6.3.5 **Amplifier Signal Path** – The following diagrams illustrate the signal path taken during the various different scope input coupling and input attenuation modes:

4.6.3.5.1 **Power Off State** –

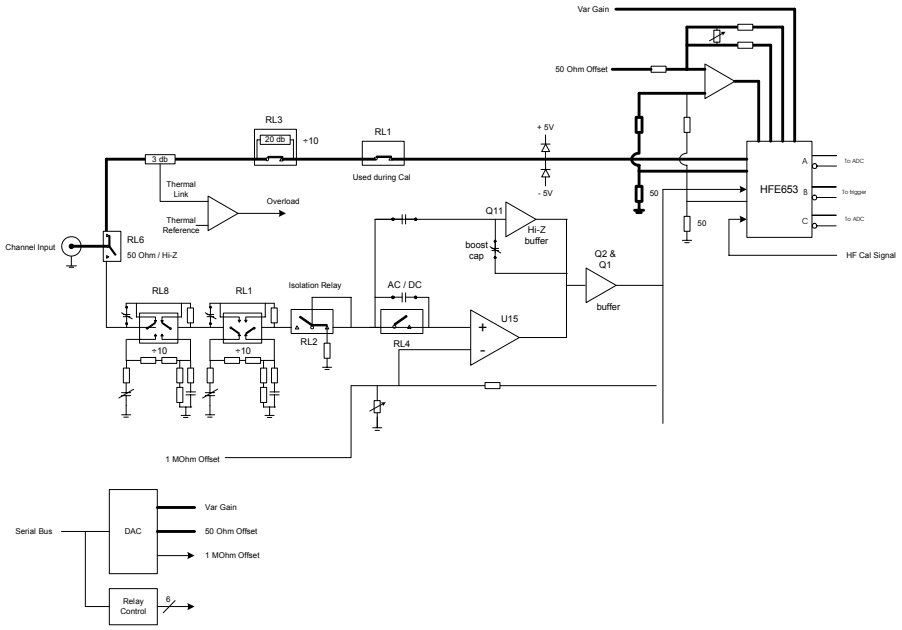


Figure 4-11 Front End Power Off State Block Diagram

4.6.3.5.2 50Ω /1 Path –

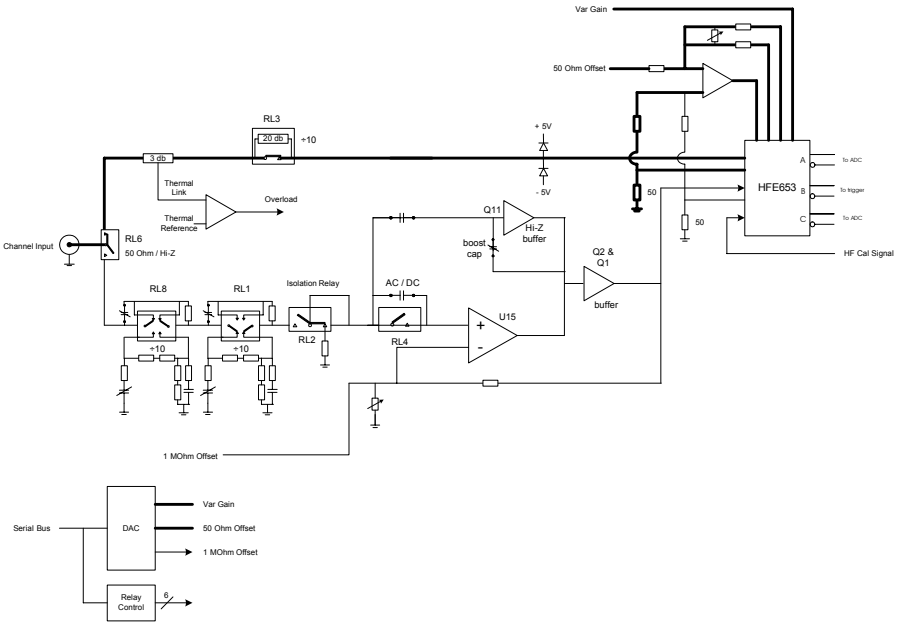


Figure 4-12 50Ω /1 Path Block Diagram

4.6.3.5.3 50Ω /10 Path –

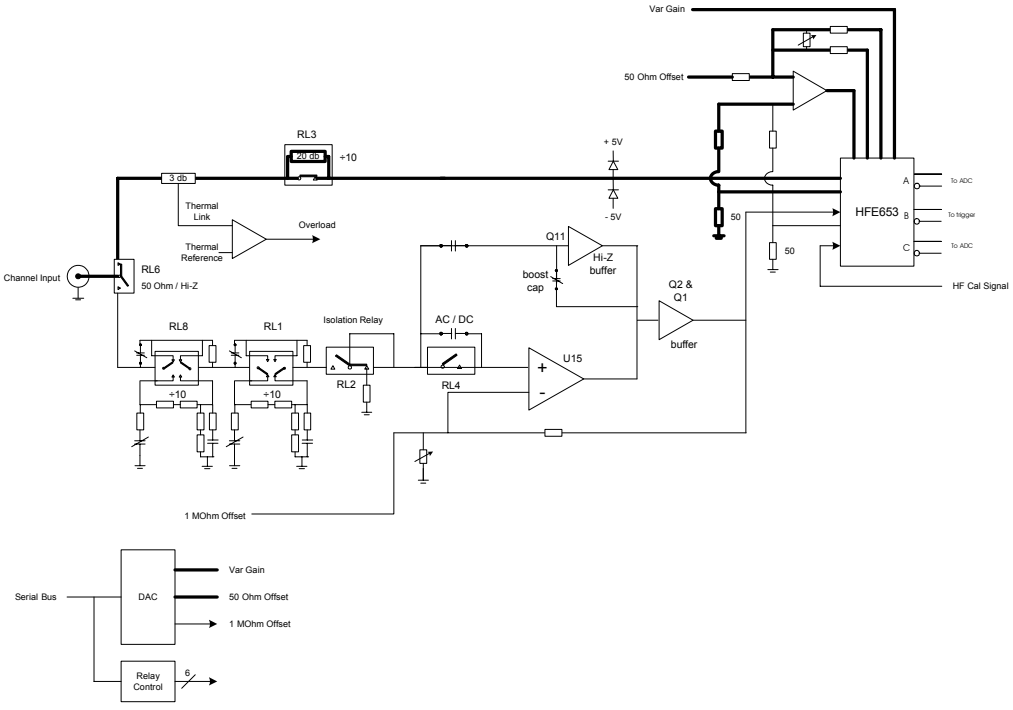


Figure 4-13 50Ω /10 Path Block Diagram

4.6.3.5.4 1 MΩ /1 Path DC Coupled –

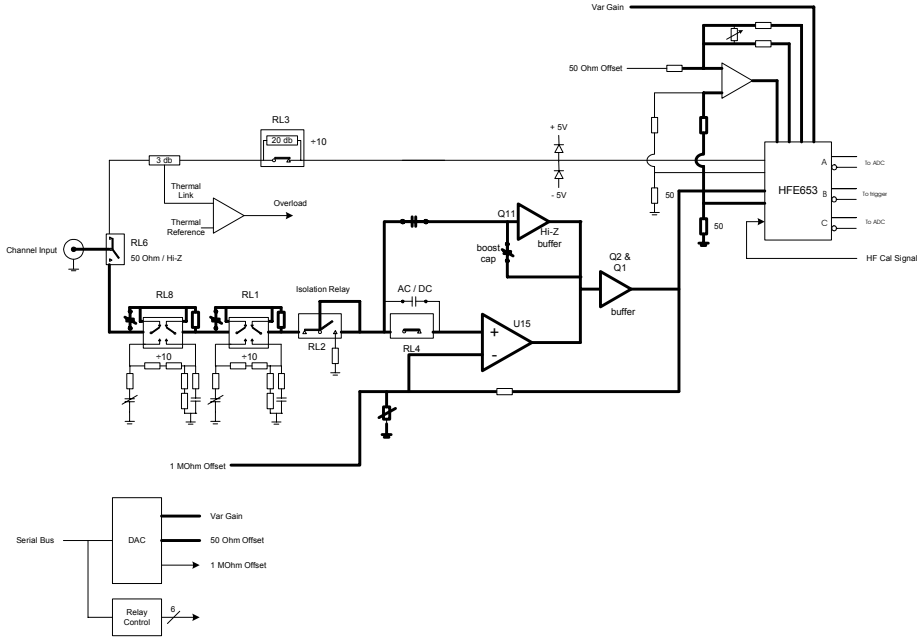


Figure 4-14 1MΩ /1 Path DC Coupled Block Diagram

4.6.3.5.5 1 MΩ /10 Path DC Coupled –

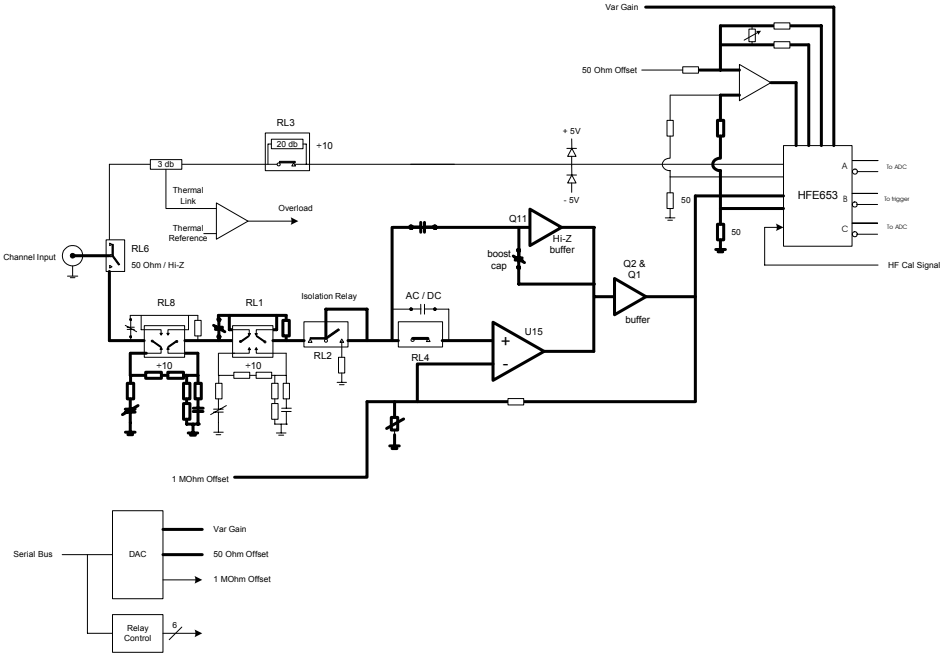


Figure 4-15 1MΩ /20 Path DC Coupled Block Diagram

4.6.3.5.6 1 MΩ /100 Path DC Coupled –

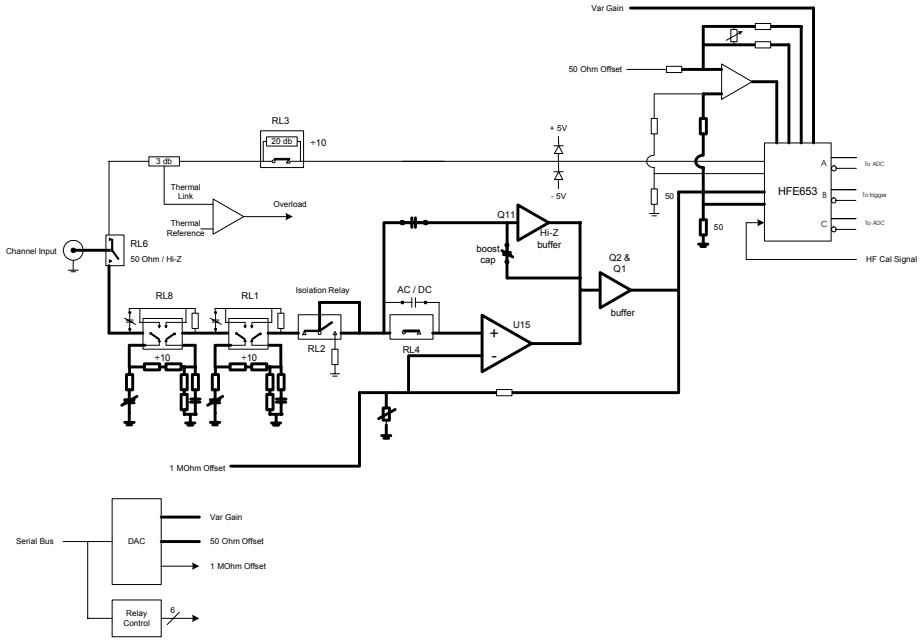


Figure 4-16 1MΩ /20 Path DC Coupled Block Diagram

4.6.3.5.7 1 MΩ /1 Path AC Coupled –

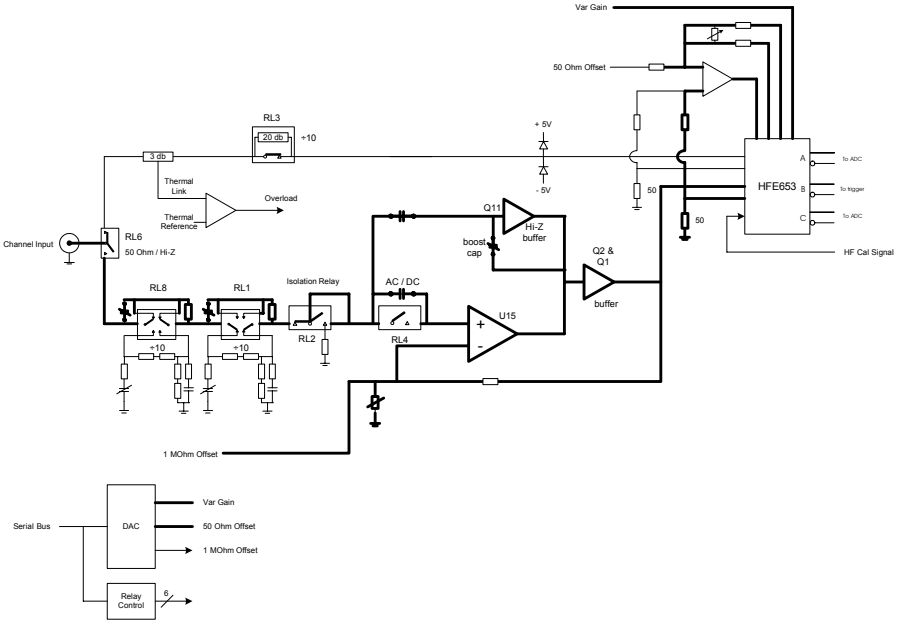


Figure 4-17 1MΩ /1 Path AC Coupled Block Diagram

4.6.4 Other Sub Systems

4.6.4.1 Power Supply

- Filtered and Linear regulated supplies

4.6.4.2 NCO (Numerically Controlled Osc.)

- Provides calibration signal to FEs for ADC calibration and External clock calibration

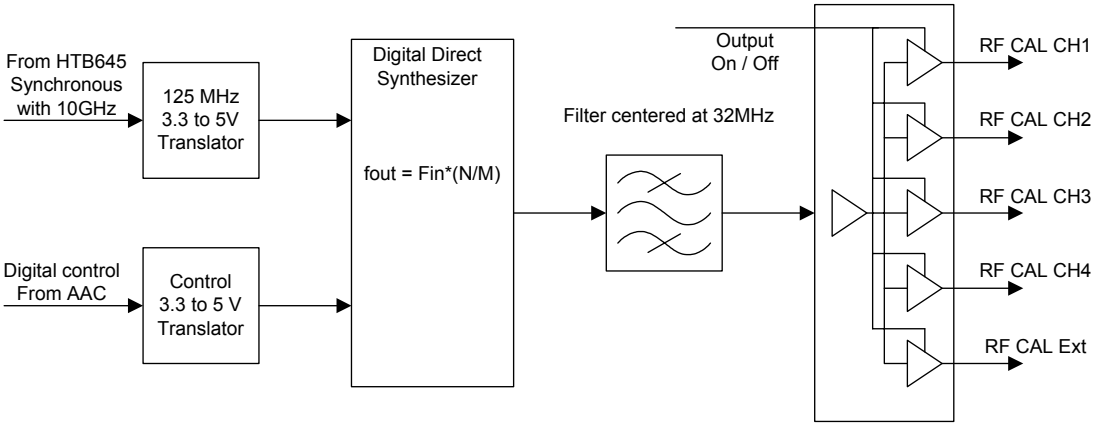


Figure 4-18 Cal Clock Block Diagram

4.6.4.3 10GHz Clock

- Generates 10GHz system clock from 10MHz oscillator. 10GHz piped thru system using semi-flex (ADCs and HTB)



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5. Performance Verification

5.1 Introduction

This chapter contains procedures suitable for determining if the WaveRunner 6000 Series,VBA6050, VBA6100 and LSA1225 Digital Storage Oscilloscope performs correctly and as warranted. They check all the characteristics listed in subsection 5.1.1.

In the absence of the computer automated calibration system based on LeCroy Calibration Software (Calsoft), this manual performance verification procedure can be followed to establish a traceable calibration. It is the calibrating entities' responsibility to ensure that all laboratory standards used to perform this procedure are operating within their specifications and traceable to required standards if a traceable calibration certificate is to be issued for the WaveRunner 6000 Digital Storage Oscilloscope.

5.1.1 List of Tested Characteristics

This subsection lists the characteristics that are tested in terms of quantifiable performance limits.

- Input Impedance
- Leakage Current
- Peak to Peak noise level
- Positive and Negative DC accuracy
- Positive and Negative Offset
- Bandwidth
- Trigger Accuracy
- Time Base Accuracy

5.1.2 Calibration Cycle

The WaveRunner 6000 Digital Storage Oscilloscope requires periodic verification of performance. Under normal use (2,000 hours of use per year) and environmental conditions, this instruments calibration cycle is 12 months.

5.2 Test Equipment Required

These procedures use external, traceable signal generators, DC precision power supply and digital multi-meter, to directly check specifications.

Instrument	Specifications	Recommended
Signal Generator Radio Frequency	Frequency : .5 MHz to 3 GHz Frequency Accuracy : 1 PPM	HP8648B/C, Fluke 9500 or equivalent
Signal Generator Audio Frequency	Frequency : 0 to 5 kHz Amplitude : 8 V peak to peak	HP33120A or equivalent
Voltage Generator DC Power Supply	Range of 0 to 20 V, in steps of no more than 15 mV	HP6633A or equivalent
Power Meter + Sensor	Accuracy ±1 %	HP437B + 8482A or equivalent
Digital Multimeter Volt & Ohm	Voltmeter Accuracy : 0.1 % Ohmmeter Accuracy : 0.1 %	Keithley 2000 or equivalent
Coaxial Cable, 5 ns	50Ω, BNC, length 100 cm,	
Coaxial Cable, 5 ns	50Ω, SMA, length 100 cm,	
2 Attenuators, 20 dB	50Ω, BNC, 1 % accuracy	
T adapter	50Ω, BNC T adapter	

Table 5-1 : Test Equipment

5.2.1 Test Records

The last pages of this document contain WaveRunner 6000 series test records in the format tables. Keep them as masters and use a photocopy for each calibration.

5.3 Turn On

If you are not familiar with operating the WaveRunner 6K series, refer to the operator's manual.

- Switch on the power using the power switch.
- Wait for about 20 minutes for the scope to reach a stable operating temperature:
- Insert the CD with panel setups

5.4 Input Impedance

Specifications

DC 50Ω ±1.5 %
EXT DC 50Ω ±1.5 %
DC 1MΩ ±1.25%

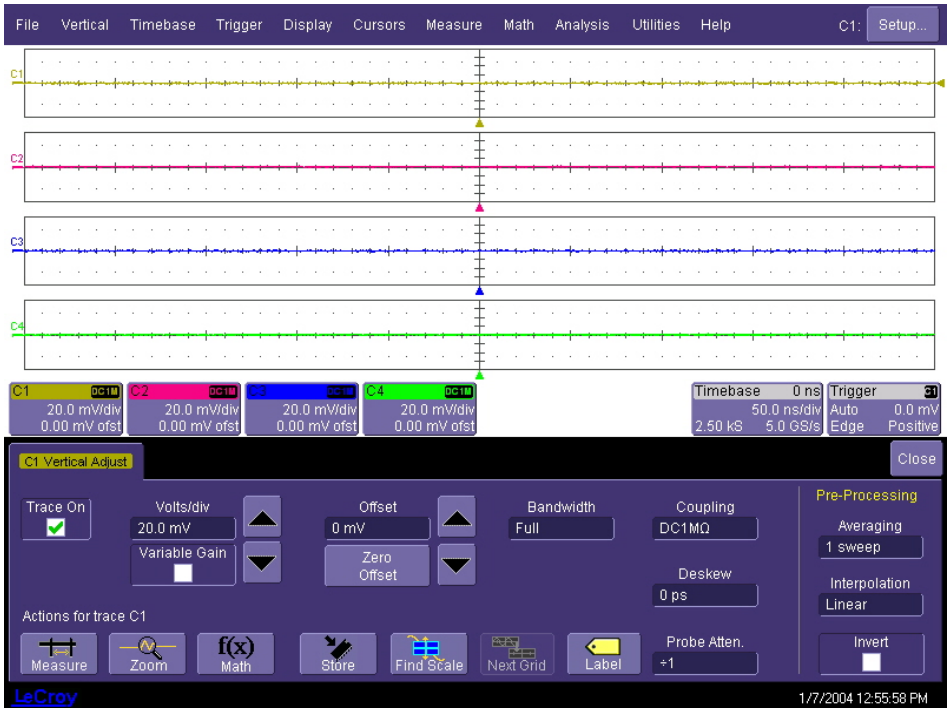
The impedance values for 50Ω coupling are measured with a high precision digital multimeter. The DMM is connected to the DSO in 4 wire configuration (input and sense), allowing for accurate measurements. **Check that the DMM used is measuring the 1 MΩ inputs in at least a 3 MΩ range. If tested in a lower range some readings may not be within specifications.**

5.4.1 Channel Input Impedance

a. DC 50Ω

- Recall **Input Impedance - 50 ohm x1.lss** or configure the DSO :

Panel Setups	:	**Recall FROM DEFAULT SETUP**
Channels Trace ON		**Channel 1, Channel 2, Channel 3 & Channel 4**
Input Coupling	:	**DC 50Ω** on all 4 Channels
Input gain	:	**20 mV/div.** on all 4 Channels
Time base	:	**50 ηsec/div.**
Trigger mode	:	**Auto**

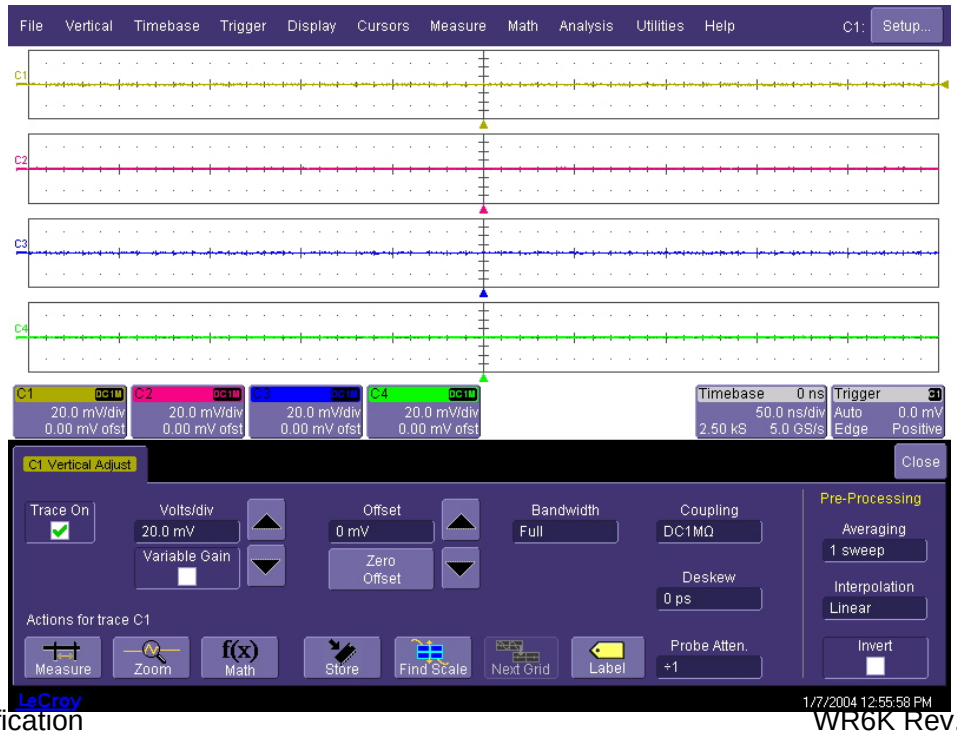


- Set the DMM with **Ohms and Ohms sense** to provide a 4 wire measurement.
- Connect it to Channel 1.
- Measure the **input impedance**, reverse the meter leads and measure the input impedance.
- **Average** these two numbers and record it in Table 2, and compare it to the limits.
- Repeat the above test for all input channels.
- Recall **Input Impedance - 50 ohm x10.lss** or Set Input gain to **200 mV/div.** on all 4 Channels
- Repeat the test for all input channels.
- Record the measurements in Table 2, and compare the test results to the limits in the test record.

b. DC 1MΩ

- Recall **Input Impedance - 1 Mohm DC x1.lss** or configure the DSO :

Panel Setups	:	**Recall FROM DEFAULT SETUP**
Channels Trace ON		**Channel 1, Channel 2, Channel 3 & Channel 4**
Input Coupling	:	**DC 1 MΩ** on all 4 Channels
Input gain	:	**20 mV/div.** on all 4 Channels
Time base	:	**50 ηsec/div.**
Trigger mode	:	**Auto**



- Set the DMM with **Ohms and Ohms sense** to provide a 4 wire measurement.
- Connect it to Channel 1.
- Measure the **input impedance**, reverse the meter leads and measure the input impedance.
- **Average** these two numbers and record it in Table 2, and compare it to the limits.
- Repeat the above test for all input channels.
- Recall **Input Impedance - 1 Mohm DC x10.lss** or Set Input gain to **200 mV/div.** on all 4 Channels
- Repeat the test for all input channels.
- Record the measurements in Table 2, and compare the test results to the limits in the test record.
- Recall **Input Impedance - 1 Mohm DC x100.lsss** or Set Input gain to **2 V/div.** on all 4 Channels
- Repeat the test for all input channels.
- Record the measurements in Table 2, and compare the test results to the limits in the test record.

5.4.2 External Trigger Input Impedance

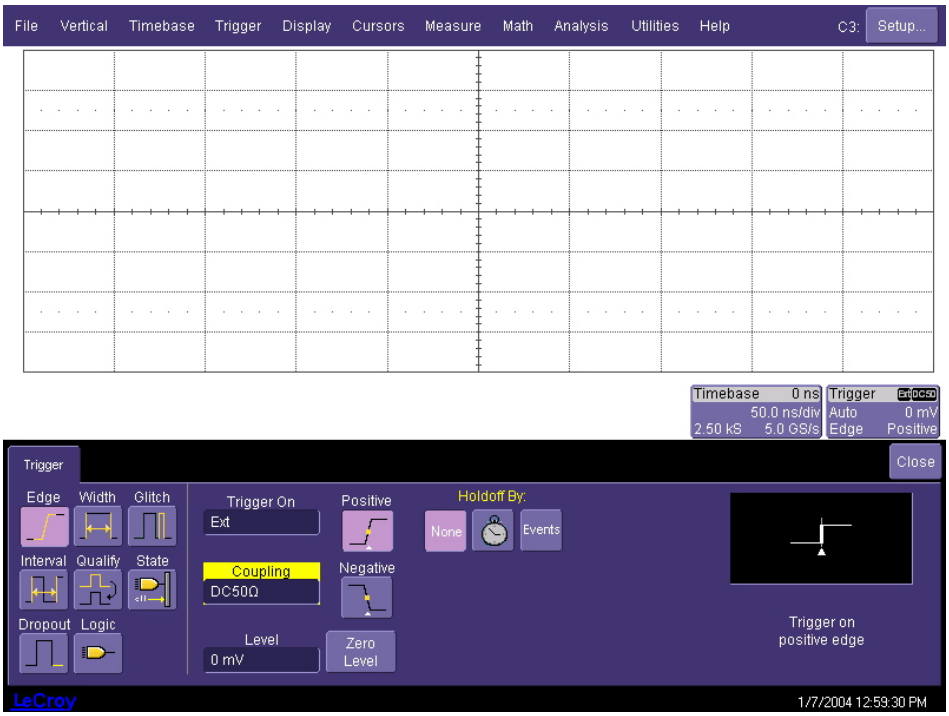
a. DC 50Ω

- Recall **Input Impedance - 50 ohm ext x1.lss** or configure the DSO :

  Select Setup trigger

  Trigger on : **EXT**

  Impedance : **DC 50Ω**



- Connect the DMM to External, and measure the **input impedance**, reverse the meter leads and measure the input impedance.

- **Average** these two numbers and record the input impedance in Table 2, and compare the result to the limit in the test record.

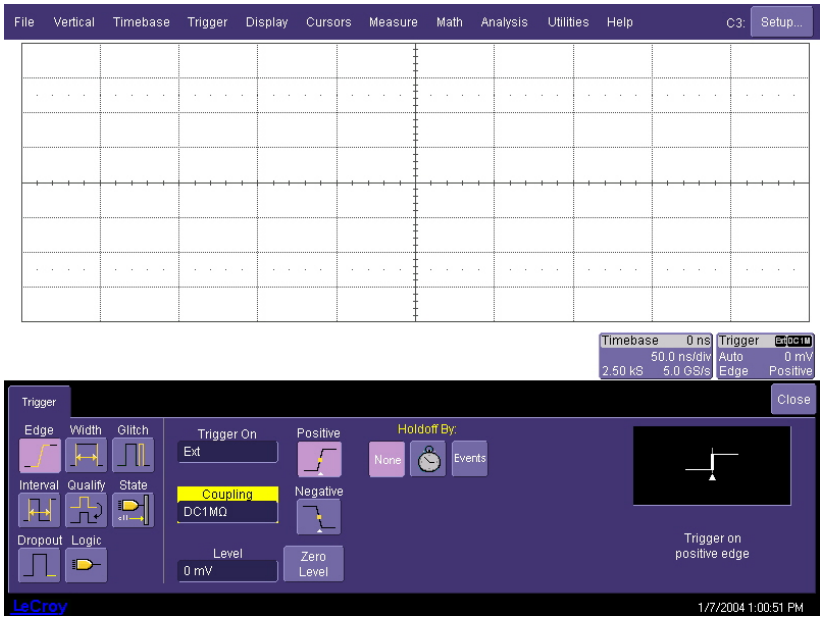
b. Ext DC 1MΩ Input Impedance

- Recall **Input Impedance - 1 Mohm DC Ext x1.lss** or configure the DSO :

  Select Setup trigger

Trigger on : **EXT**

Impedance : **DC 1MΩ**



- Connect the DMM to External, and measure the **input impedance**, reverse the meter leads and measure the input impedance.

- **Average** these two numbers and record the input impedance in Table 2, and compare the result to the limit in the test record.

5.5 Leakage Current

Specifications

DC 50Ω, EXT DC 50Ω : ±2 mV

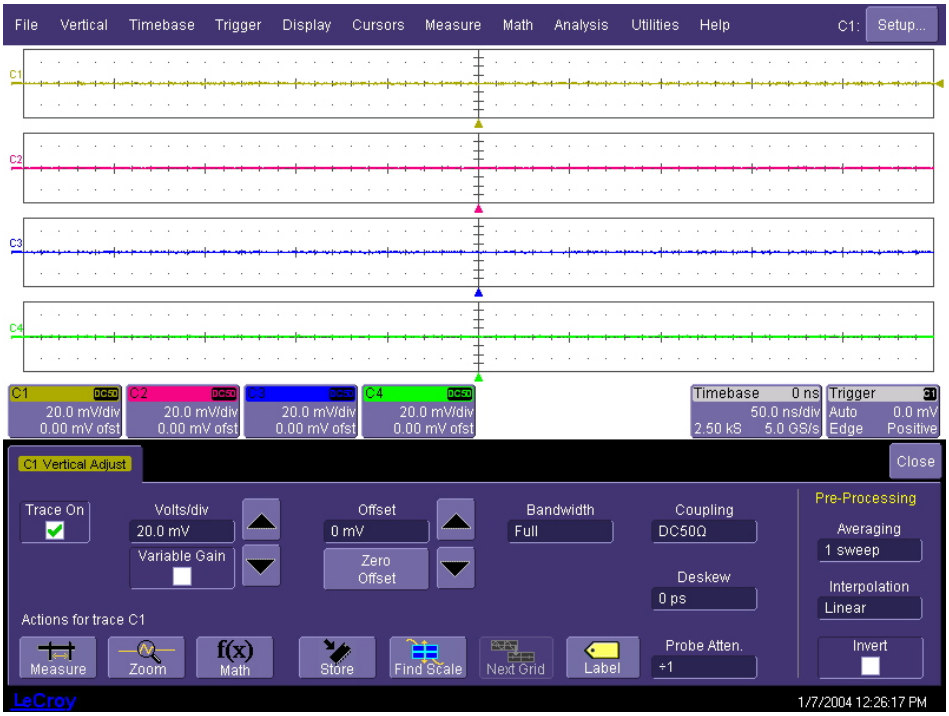
The leakage current is tested by measuring the voltage across the input channel.

5.5.1 Channel Leakage Current

a. DC 50Ω

- Recall **Leakage - 50 ohm x1.lss** or configure the DSO :

Panel Setups	:	**Recall FROM DEFAULT SETUP**
Channels Trace ON		**Channel 1, Channel 2, Channel 3 & Channel 4**
Input Coupling	:	**DC 50Ω** on all 4 Channels
Input gain	:	**20 mV/div.** on all 4 Channels
Trigger mode	:	**Auto**
Time base	:	**50 nsec/div.**



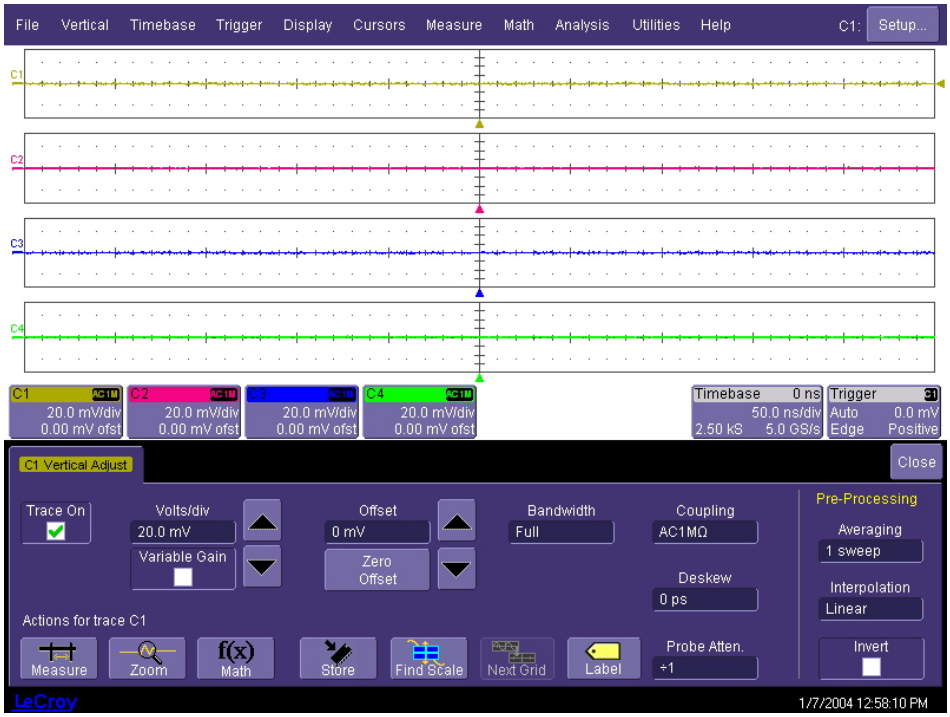
- Set the DMM to measure Volts, and connect it to Channel 1.
- Measure the **voltage** and enter it in Table 3. Compare it to the limits.
- Repeat the test for all input channels.
- Recall **Leakage - 50 ohm x10.lss** or set Input gain to **200 mV/div.** on all 4 Channels
- Repeat the test for all input channels. Record the measurements in Table 3, and compare the results to the limits in the test record.

b. DC 1MΩ

- Recall **Leakage - 1 Mohm x1.lss** or configure the DSO :

Panel Setups	:	**Recall FROM DEFAULT SETUP**
Channels Trace ON		**Channel 1, Channel 2, Channel 3 & Channel 4**
Input Coupling	:	**DC 1MΩ** on all 4 Channels
Input gain	:	**20 mV/div.** on all 4 Channels
Trigger mode	:	**Auto**
Time base	:	**50 nsec/div.**

- Set the DMM to measure Volts, and connect it to Channel 1.
- Measure the **voltage** and enter it in Table 3. Compare it to the limits.



- Repeat the test for all input channels.
- Recall **Leakage - 1 Mohm x10.lss** or set Input gain to **200 mV/div.** on all 4 Channels
- Repeat the test for all input channels. Record the measurements in Table 3, and compare the results to the limits in the test record.
- Recall **Leakage - 1 Mohm x100.lss** or set Input gain to **2 V/div.** on all 4 Channels
- Repeat the test for all input channels. Record the measurements in Table 3, and compare the results to the limits in the test record.

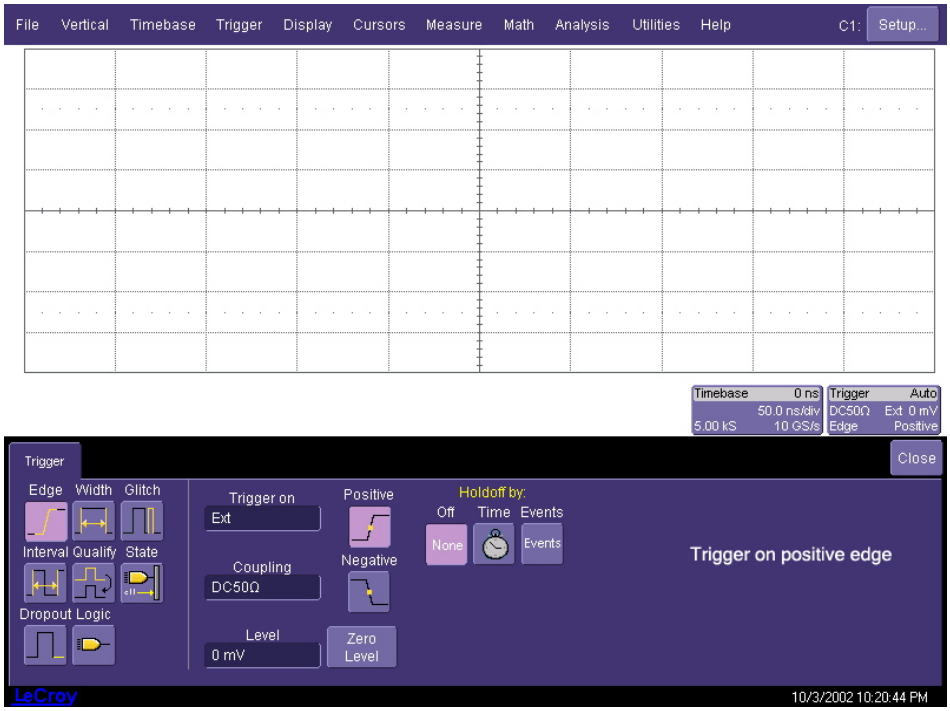
5.5.2 External Trigger Leakage Current

a. DC 50Ω

- Recall **Leakage - 50 ohm ext x1.lss** or configure the DSO as shown in 5.5.1 and make the following changes:

  Select Setup trigger
  Set Trigger on : **EXT**

  Impedance : **DC 50Ω**



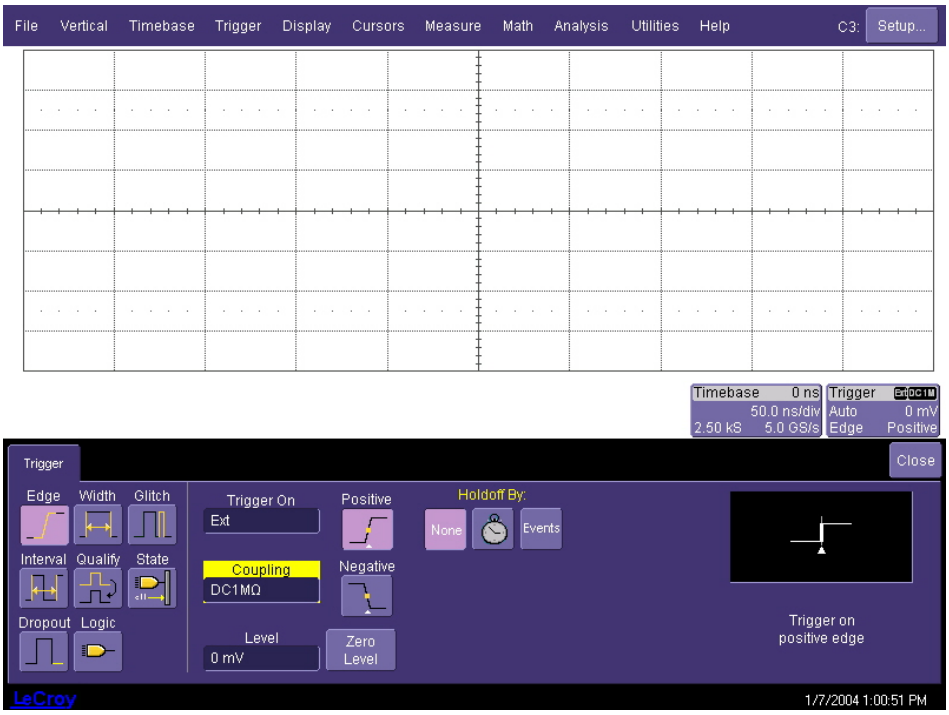
- Connect the DMM to External.
- Measure the **voltage** and enter it in Table 3. Compare it to the limits.

b. DC 1MΩ

- Recall **Leakage - 1 Mohm ext x1.lss** or configure the DSO as shown in 5.5.1 and make the following changes:

  Select Setup trigger
  Set Trigger on : **EXT**

  Impedance : **DC 1MΩ**



- Connect the DMM to External.
- Measure the **voltage** and enter it in Table 3. Compare it to the limits.



5.6 Peak-Peak Noise Level

Description

Noise tests with open inputs are executed on all channels with 0 mV offset, at a gain setting of 10 mV/div. The scope parameters functions are used to measure the Peak to Peak amplitude of the noise.

Specifications

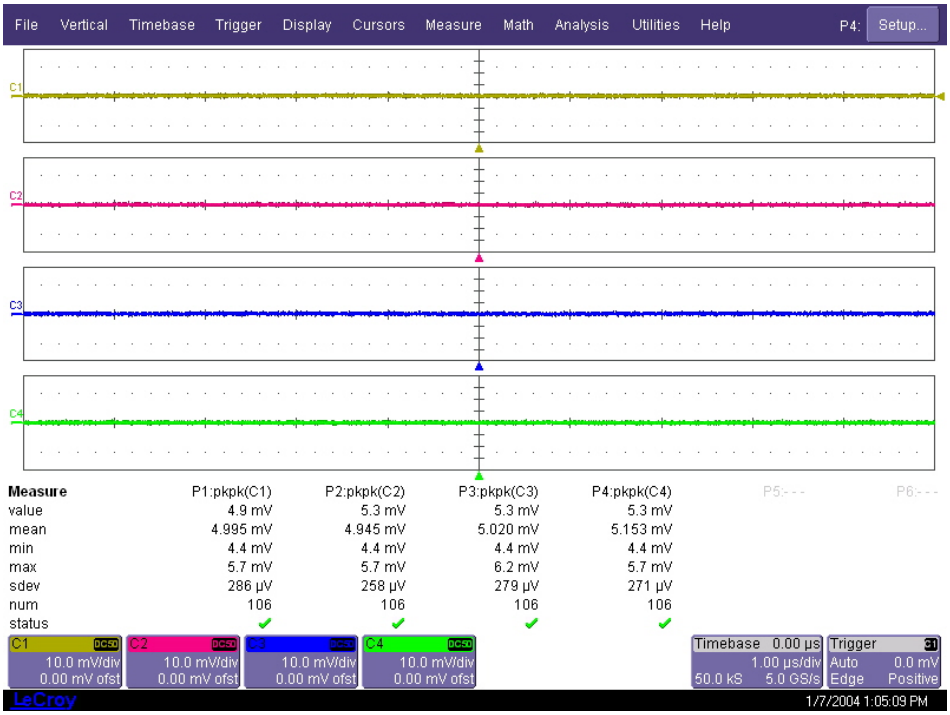
7.5 mV Peak-Peak at 10 mV/div.

5.6.1 5 GS/s 50 Ohm

With no signal connected to the inputs

- Recall **Noise - 10mv.lss** or configure the DSO :

Panel Setups	:	**Recall FROM DEFAULT SETUP**
Channels Trace ON		**Channel 1, Channel 2, Channel 3 & Channel 4**
Input Coupling	:	**DC 50Ω** on all 4 Channels
Input gain	:	**10 mV/div.** on all 4 Channels
Input offset	:	**0.0 mV** on all 4 Channels
Trigger setup	:	**Edge**
Trigger on	:	**C1**
Trigger Mode	:	**Auto**
Time base	:	**1 µsec/div.**
Channel use	:	**Automatic**
Press	:	**Measure, Measure Setup,**
Statistics	:	**On**
Add parameters		
P1	:	**Measure pkpk of Ch1**
P2	:	**Measure pkpk of Ch2**
P3	:	**Measure pkpk of Ch3**
P4	:	**Measure pkpk of Ch4**



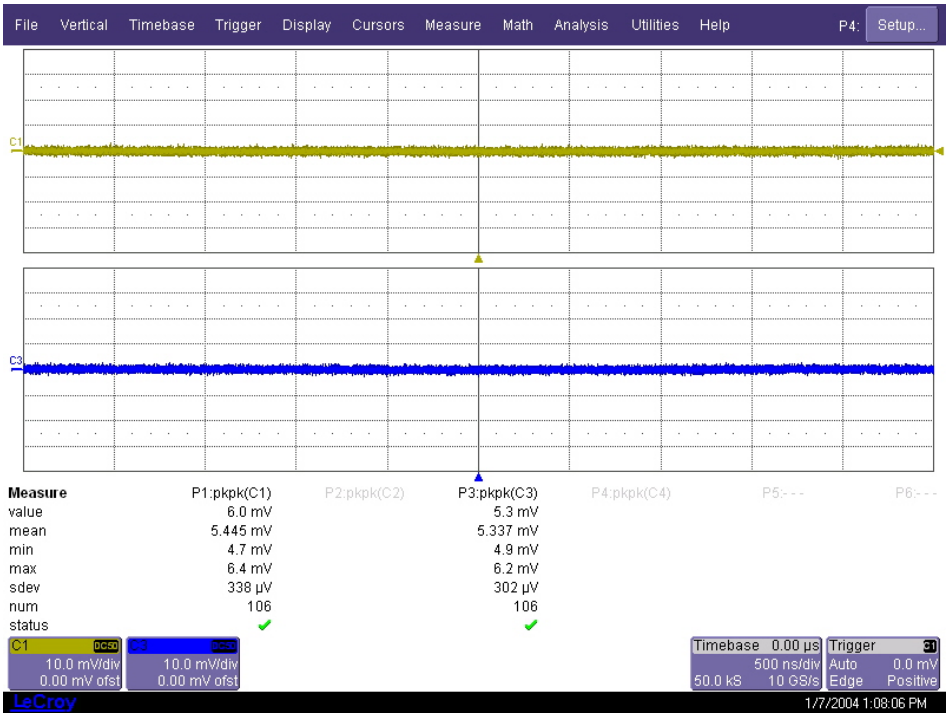
- Press **Clear Sweeps.**
- Measure for at least **50 sweeps**, and then press **Stop** to halt the acquisition.
- Record the four **max pk-pk** parameter values in Table 4, and compare the test results to the limits in the test record.
- Repeat the test for Time base : **1 msec/div.**
- Record the measurements (high pk-pk of 1,2,3,4) in Table 4, and compare the results to the limits in the test record.

5.6.2. 10 GS/s Channel Mode (WR6100 & WR6200 only)

a) Channel 1 & Channel 3

- Recall **Noise 10GS Ch1 & Ch3.lss** or configure the DSO as shown in 5.6.1 and make the following changes :

Input Coupling	:	**DC 50Ω** on all 4 Channels
Input gain	:	**10 mV/div.** On all 4 Channels
Channels Trace ON		**Channel 1**, **Channel 3**
Channels Trace OFF		**Channel 2**, **Channel 4**
Time base	:	**500 ηsec/div.**
Select Time base Setup		
Channel use	:	**Automatic**
Press	:	**Measure**
Change parameters		
P1	:	**Measure pkpk of Ch1**
P2	:	**Turn Off**
P3	:	**Measure pkpk of Ch3**
P4	:	**Turn Off**



- Check that the Sampling rate is **10 GS/s**
- Press **Clear Sweeps.**
- Measure for at least **50 sweeps**, then press **Stop** to halt the acquisition.
- Record the two **max pkpk of Ch1 & Ch3** in Table 4, and compare the test results to the limits in the test record.

b) Channel 2 & Channel 4

- Recall **Noise 10GS Ch2 & Ch4.lss** or configure the DSO as shown in 5.6.1.a**.** and make the following changes :

Input Coupling	:	**DC 50Ω** on all 4 Channels
Input gain	:	**10 mV/div.** On all 4 Channels
Channels Trace ON		**Channel 2**, **Channel 4**
Channels Trace OFF		**Channel 1**, **Channel 3**
Time base	:	**500 ηsec/div.**
Select Time base Setup		
Channel use	:	**Automatic**
Press	:	**Measure**
Change parameters		
P1	:	**Turn Off**
P2	:	**Measure pkpk of Ch4**
P3	:	**Turn Off**
P4	:	**Measure pkpk of Ch4**



- Check that the Sampling rate is **10 GS/s**
- Press **Clear Sweeps.**
- Measure for at least **50 sweeps**, then press **Stop** to halt the acquisition.
- Record the two **max pkpk of Ch2 & Ch4** in Table 4, and compare the test results to the limits in the test record.

5.7 DC Accuracy

Specification

≤ ±2 % of full scale + 2mv, with 0 mV offset.

Note: This limit applies to a single point measurement (absolute DC accuracy, as measured by this procedure), for measurements of gain accuracy (difference of two points) the specification is: ≤ ±1.0 % of full scale

Description

This test measures the DC Accuracy within the gain range specified.
It requires a DC source with a voltage range of 0 V to 6 V adjustable in steps of no more than 15 mV, and a calibrated DMM that can measure voltage to 0.1 %.
Measurements are made using voltage values applied by the external voltage reference source, measured by the DMM, and in the oscilloscope using the parameters Mean. For each known input voltage, the deviation is checked against the tolerance.

5.7.1 Positive 50Ω DC Accuracy

Procedure

- Recall **DC accuracy - 50 ohm 2mv.lss** or configure the DSO :

Panel Setups	:	**Recall FROM DEFAULT SETUP**
Channels Trace ON		**Channel 1, Channel 2, Channel 3 & Channel 4**
Input Coupling	:	**DC 50Ω** on all 4 Channels
Input offset	:	**0.0 mV** on all 4 Channels
Input gain	:	from **2mV/div to 1 V/div.** (see Table 5) on all 4 Ch
C1 Averaging	:	**5 sweeps**
C2 Averaging	:	**5 sweeps**
C3 Averaging	:	**5 sweeps**
C4 Averaging	:	**5 sweeps**
Trigger setup	:	**Edge**
Trigger on	:	**Line**
Mode	:	**Auto**
Time base	:	**1 µsec/div**.
Channel use	:	**4**
Change parameters		
P1	:	**Measure mean of C1**
P2	:	**Measure mean of C2**
P3	:	**Measure mean of C3**
P4	:	**Measure mean of C4**

- For the low sensitivities: **2 mV through 20 mV/div**., connect the test equipment as shown in Figure 5-1.

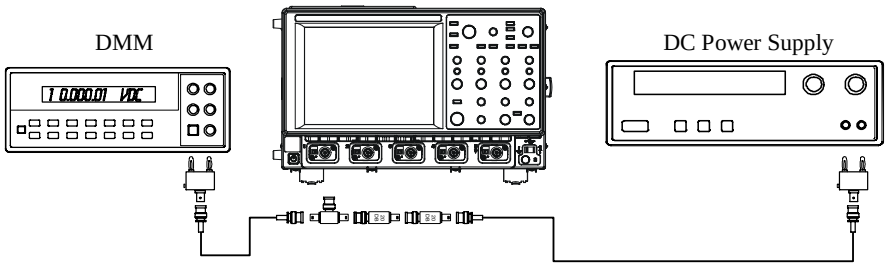


Figure 5-1 : DC 50Ω Accuracy Equipment Setup for 2 mV - 20 mV/div

- For the sensitivities: **50 mV** and **100 mV/div**, connect the test equipment as shown in Figure 5-2.

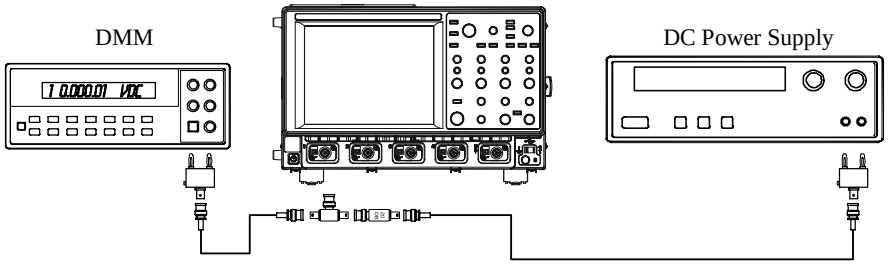


Figure 5-2 : DC 50Ω Accuracy Equipment Setup for 50 mV and 100 mV/div

- For the range **200 mV**, **500 mV** and **1 V/div** no attenuator is required, connect the test equipment as shown in Figure 5-3.

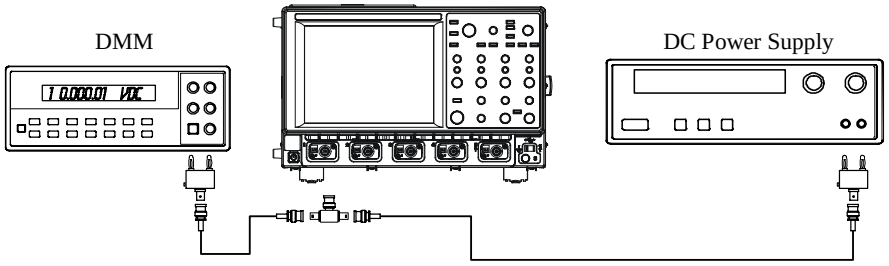


Figure 5-3 : DC 50Ω Accuracy Equipment Setup for 200 mV, 500 mV and 1 V/div.

- For each **DSO Volts/div**, set the output of the external **DC voltage reference source** as shown in Table 6, column **PS output**.

  1) Connect the DMM and record the **voltage reading** in Table 5, column **DMM.**

  2) Disconnect the DMM from the BNC T connector.

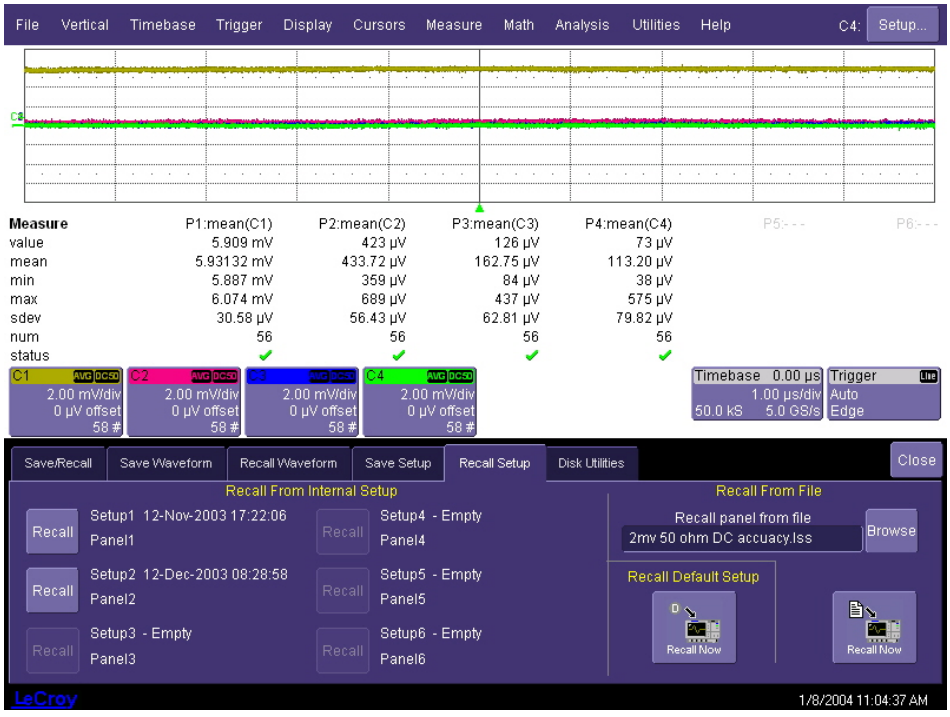
  3) Press **Clear Sweeps**

  4) After 100 sweeps, read off the **DSO mean parameter**, and record the measurement in Table 5, column **Mean**.

- For each DC voltage applied to the DSO input, repeat parts 1), 2), 3) and 4).

- Calculate the **Difference (Δ)** by subtracting the **DMM voltage** reading from the **DSO mean** voltage reading. Record the test result in Table 5, and compare the **Difference (Δ)** to the corresponding limit in the test record.

- Repeat step 5.7.1.a. for the other channels, substituting channel controls and Input connector.



5.7.2 Negative 50Ω DC Accuracy

- Recall **DC accuracy - 50 ohm 2mv.lss** or configure the DSO as shown in 5.7.1.
- Connect the test equipment as shown in either Figure 5-1 or 5-2 or 5-3.
- For each **DSO Volts/div**, set the output of the external **DC voltage reference source** as shown in Table 6, column PS output. (if a banana-BNC adapter is being used it can simply be turned to get the opposite polarity)



1) Connect the DMM and record the **voltage reading** in Table 6, column **DMM.**
2) Disconnect the DMM from the BNC T connector.
3) Press **Clear Sweeps**
4) After 100 sweeps, read off the **DSO mean parameter**, and record the measurement in Table 6, column **Mean**.

- For each DC voltage applied to the DSO input, repeat parts 1), 2), 3) and 4).
- Calculate the **Difference (Δ)** by subtracting the **DMM voltage** reading from the **DSO mean** voltage reading. Record the test result in Table 6, and compare the **Difference (Δ)** to the corresponding limit in the test record.
- Repeat step 5.7.2. for the other channels, substituting channel controls and input connector.

5.7.1 Positive 1MΩ DC Accuracy

Procedure

- Recall **DC accuracy - 1 Mohm 2mv.lss** or configure the DSO :

Panel Setups	:	**Recall FROM DEFAULT SETUP**
Channels Trace ON		**Channel 1, Channel 2, Channel 3 & Channel 4**
Input Coupling	:	**DC 1MΩ** on all 4 Channels
Input offset	:	**0.0 mV** on all 4 Channels
Input gain	:	from **2mV/div to 2 V/div.** (see Table 6) on all 4 Ch
C1 Averaging	:	**5 sweeps**
C2 Averaging	:	**5 sweeps**
C3 Averaging	:	**5 sweeps**
C4 Averaging	:	**5 sweeps**
Trigger setup	:	**Edge**
Trigger on	:	**Line**
Mode	:	**Auto**
Time base	:	**1 µsec/div**.
Channel use	:	**4**
Change parameters		
P1	:	**Measure mean of C1**
P2	:	**Measure mean of C2**
P3	:	**Measure mean of C3**
P4	:	**Measure mean of C4**

- For the low sensitivities: **2 mV through 20 mV/div**., connect the test equipment as shown in Figure 5-4.

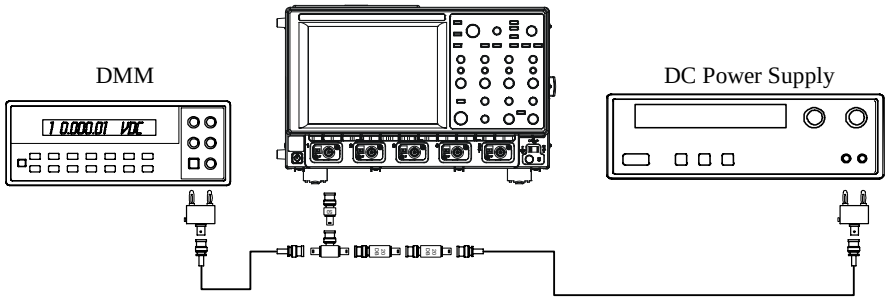


Figure 5-4 : DC 1MΩ Accuracy Equipment Setup for 2 mV - 20 mV/div

- For the sensitivities: **50 mV** and **100 mV/div**, connect the test equipment as shown in Figure 5-5.

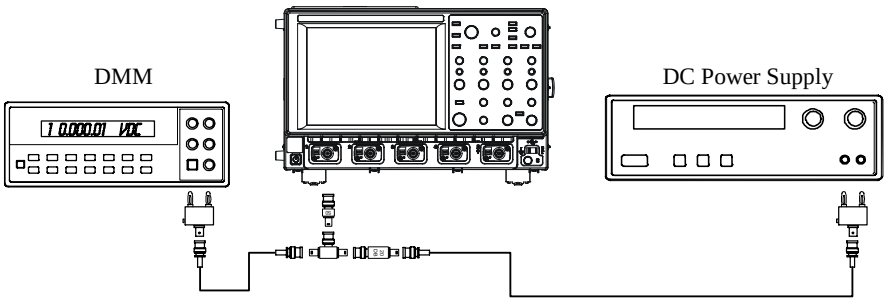


Figure 5-5 : DC 1MΩ Accuracy Equipment Setup for 50 mV and 100 mV/div

- For the range **200 mV**, - **2 V/div** no attenuator is required, connect the test equipment as shown in Figure 5-6.

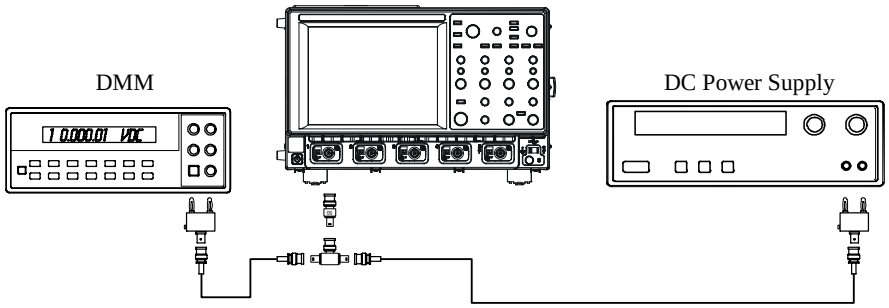


Figure 5-6 : DC 1MΩ Accuracy Equipment Setup for 200 mV, 500 mV and 1 V/div.

- For each **DSO Volts/div**, set the output of the external **DC voltage reference source** as shown in Table 7, column **PS output**.

  1) Connect the DMM and record the **voltage reading** in Table 7, column **DMM.**

  2) Disconnect the DMM from the BNC T connector.

  3) Press **Clear Sweeps**

  4) After 100 sweeps, read off the **DSO mean parameter**, and record the measurement in Table 7, column **Mean**.



- For each DC voltage applied to the DSO input, repeat parts 1), 2), 3) and 4).

- Calculate the **Difference (Δ)** by subtracting the **DMM voltage** reading from the **DSO mean** voltage reading. Record the test result in Table 7, and compare the **Difference (Δ)** to the corresponding limit in the test record.

- Repeat step 5.7.1.a. for the other channels, substituting channel controls and Input connector.

5.7.2 Negative 1MΩ DC Accuracy

- Recall **DC accuracy - 1 Mohm 2mv.lss** or configure the DSO as shown in 5.7.1.

- Connect the test equipment as shown in either Figure 5-4 or 5-5 or 5-6.

- For each **DSO Volts/div**, set the output of the external **DC voltage reference source** as shown in Table 8, column PS output. (if a banana-BNC adapter is being used it can simply be turned to get the opposite polarity)



1) Connect the DMM and record the **voltage reading** in Table 8, column **DMM.**
2) Disconnect the DMM from the BNC T connector.
3) Press **Clear Sweeps**
4) After 100 sweeps, read off the **DSO mean parameter**, and record the measurement in Table 8, column **Mean**.

- For each DC voltage applied to the DSO input, repeat parts 1), 2), 3) and 4).

- Calculate the **Difference (Δ)** by subtracting the **DMM voltage** reading from the **DSO mean** voltage reading. Record the test result in Table 8, and compare the **Difference (Δ)** to the corresponding limit in the test record.

- Repeat step 5.7.2. for the other channels, substituting channel controls and input connector.

5.8 Offset Accuracy

Specifications

±(1.5% of offset + .5% of FS + 1mv)

Description

The offset test is done at 50 mV/div, with a signal of ±0.750 Volt cancelled by an offset of the opposite polarity.

5.8.1 Positive 50Ω Offset Accuracy

Procedure

- Recall **Offset - 50 ohm Positive.lss** or configure the DSO:

Panel Setups	:	**Recall FROM DEFAULT SETUP**
Channels Trace ON		**Channel 1, Channel 2, Channel 3 & Channel 4**
Input Coupling	:	**DC 50Ω** on all 4 Channels
Input gain	:	**50mV/div** on all 4 Channels
Input offset	:	**+0.750 Volt** on all 4 Channels
C1 Averaging	:	**5 sweeps**
C2 Averaging	:	**5 sweeps**
C3 Averaging	:	**5 sweeps**
C4 Averaging	:	**5 sweeps**
Trigger setup	:	**Edge**
Trigger on	:	**Line**
Mode	:	**Auto**
Time base	:	**50 ηsec/div**.
Channel use	:	**4**
Statistics	:	**on**
Change parameters		
P1	:	**Measure mean of C1**
P2	:	**Measure mean of C2**
P3	:	**Measure mean of C3**
P4	:	**Measure mean of C4**

- Connect the test equipment as shown in Figure 5-7.

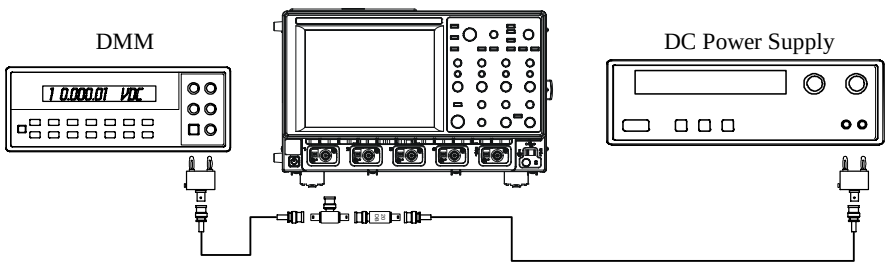


Figure 5-7 : Offset Accuracy Equipment Setup

- Set the output of the external **DC voltage reference source until the DVM measures –0.750 Volt.**

1) Verify that the displayed trace A : Average (1) is on the screen, near the center horizontal graticule line. If the trace is not visible, modify the **DC voltage reference source output** until the trace is within ± 2 divisions of center.

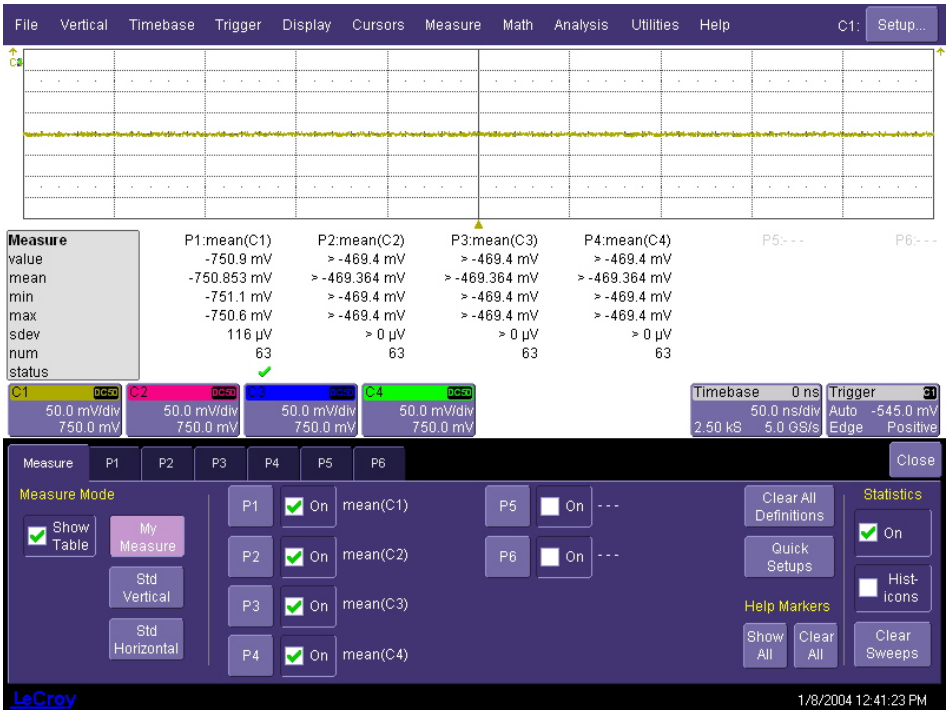
2) Connect the DMM and record the **voltage reading** in Table 9, column **DMM**.

3) Disconnect the DMM from the BNC T connector.

4) Press **Clear Sweeps**

5) After 100 sweeps, Read off the DSO Mean parameter voltage, and record the measurement in Table 9, column Mean.

- Repeat the test for the other channels, substituting channel controls and input connector. Record the measurements in Table 9.



- Calculate the **Difference (Δ)** by subtracting the **DMM voltage** reading from the **DSO mean** voltage reading.

- Record the test result in Table 9, and compare the **Difference (Δ)** to the corresponding limit in the test record.

5.8.2 Negative 50Ω Offset Accuracy

Procedure

- Recall **Offset - 50 ohm Negative.lss** or configure the DSO as shown in 5.8.1 and for each channel make the following change :

  Input offset : **–0.750 Volt** on all 4 Channels

- Connect the test equipment as shown in Figure 5-7.

- Set the output of the external **DC voltage** reference source until the DMM measures +0.750 Volt.

  1) Verify that the displayed trace A : Average (1) is on the screen, near the center horizontal graticule line. If the trace is not visible, modify the **DC voltage reference source output** until the trace is within ± 2 divisions of center.

  2) Connect the DMM and record the **voltage reading** in Table 10, column **DMM**.

  3) Disconnect the DMM from the BNC T connector.

  4) Press **Clear Sweeps**

  5) After 100 sweeps, Read off the **DSO Mean parameter** voltage, and record the measurement in Table 10, column **Mean**.

- Repeat the test for the other channels, substituting channel controls and input connector. Record the measurements in Table 10.

- Calculate the **Difference (Δ)** by subtracting the **DMM voltage** reading from the **DSO mean** voltage reading. Record the test result in Table 10, and compare the **Difference (Δ)** to the corresponding limit in the test record.

5.8.3 Positive 1MΩ Offset Accuracy

Procedure

- Recall **Offset - 1 Mohm Positive.lss** or configure the DSO:

Panel Setups	:	**Recall FROM DEFAULT SETUP**
Channels Trace ON		**Channel 1, Channel 2, Channel 3 & Channel 4**
Input Coupling	:	**DC 1MΩ** on all 4 Channels
Input gain	:	**50mV/div** on all 4 Channels
Input offset	:	**+0.750 Volt** on all 4 Channels
C1 Averaging	:	**5 sweeps**
C2 Averaging	:	**5 sweeps**
C3 Averaging	:	**5 sweeps**
C4 Averaging	:	**5 sweeps**
Trigger setup	:	**Edge**
Trigger on	:	**Line**
Mode	:	**Auto**
Time base	:	**50 ηsec/div**.
Channel use	:	**4**
Statistics	:	**on**
Change parameters		
P1	:	**Measure mean of C1**
P2	:	**Measure mean of C2**
P3	:	**Measure mean of C3**
P4	:	**Measure mean of C4**

- Connect the test equipment as shown in Figure 5-7.

- Set the output of the external **DC voltage reference source until the DVM measures –0.750 Volt.**

  1) Verify that the displayed trace A : Average (1) is on the screen, near the center horizontal graticule line. If the trace is not visible, modify the **DC voltage reference source output** until the trace is within ± 2 divisions of center.

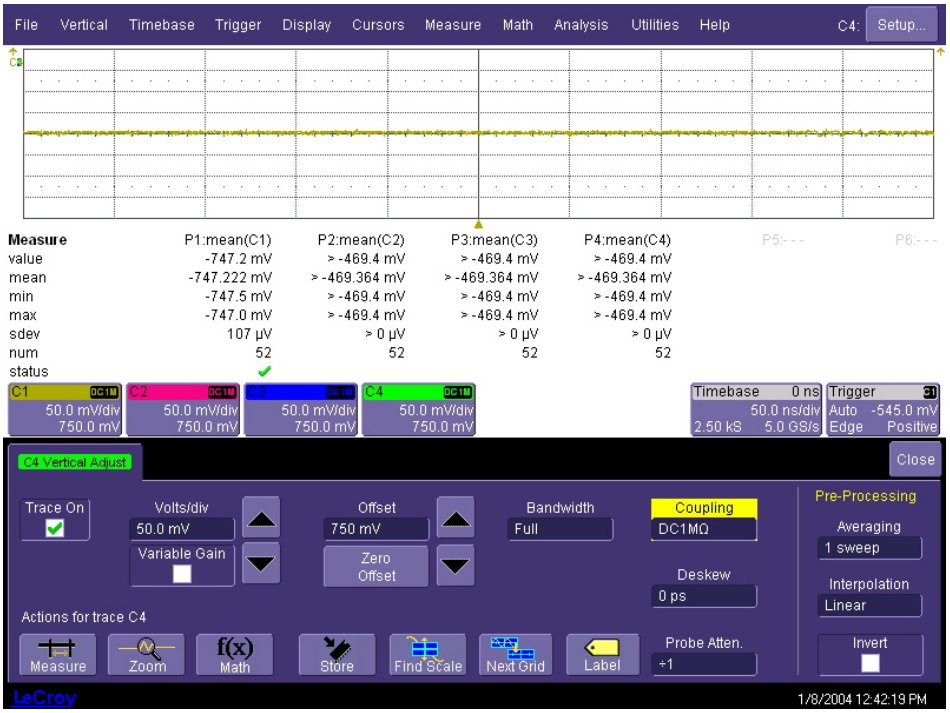
  2) Connect the DMM and record the **voltage reading** in Table 11, column **DMM**.

  3) Disconnect the DMM from the BNC T connector.

  4) Press **Clear Sweeps**

  5) After 100 sweeps, Read off the DSO Mean parameter voltage, and record the measurement in Table 11, column Mean.

- Repeat the test for the other channels, substituting channel controls and input connector. Record the measurements in Table 11.



- Calculate the **Difference (Δ)** by subtracting the **DMM voltage** reading from the **DSO mean** voltage reading.

- Record the test result in Table 11, and compare the **Difference (Δ)** to the corresponding limit in the test record.

5.8.4 Negative 1MΩ Offset Accuracy

Procedure

- Recall **Offset - 1 Mohm Negative.lss** or configure the DSO as shown in 5.8.1 and for each channel make the following change :

  Input offset : **–0.750 Volt** on all 4 Channels

- Connect the test equipment as shown in Figure 5-7.

- Set the output of the external **DC voltage** reference source until the DMM measures +0.750 Volt.

  1) Verify that the displayed trace A : Average (1) is on the screen, near the center horizontal graticule line. If the trace is not visible, modify the **DC voltage reference source output** until the trace is within ± 2 divisions of center.

  2) Connect the DMM and record the **voltage reading** in Table 12, column **DMM**.

  3) Disconnect the DMM from the BNC T connector.

  4) Press **Clear Sweeps**

  5) After 100 sweeps, Read off the **DSO Mean parameter** voltage, and record the measurement in Table 12, column **Mean**.

- Repeat the test for the other channels, substituting channel controls and input connector. Record the measurements in Table 12.

- Calculate the **Difference (Δ)** by subtracting the **DMM voltage** reading from the **DSO mean** voltage reading. Record the test result in Table 12, and compare the **Difference (Δ)** to the corresponding limit in the test record.

5.9 Bandwidth

5.9.1 Description

The purpose of this test is to ensure that the entire system has a bandwidth of at least 2 GHz for a WaveRunner 6200, 1 GHz for a WaveRunner 6100, 500 MHz for a WaveRunner 6050 or 6051 and 350 MHz for a WaveRunner 6030. An external source is used as the reference to provide a signal where amplitude and frequency are well controlled. The HP8648B may be used when testing the lower bandwidth scopes.
The amplitude of the generator and cable as a function of frequency and power is calibrated using an HP8482A sensor on an HP437B power meter or equivalent.
Note: If a leveled generator is used then the corrections needed by using the power meter may not be necessary.

Specifications

WaveRunner 6200, LSA1225
50Ω : DC to at least 2 GHz (**-**3 dB)

WaveRunner 6100, VBA6100
50Ω : DC to at least 1 GHz (**-**3 dB)

WaveRunner 6050, 6051 or VBA6050
50Ω : DC to at least 500 MHz (**-**3 dB)

WaveRunner 6030
50Ω : DC to at least 350 MHz (**-**3 dB)

- Recall **Bandwidth - CH1 10mv.lss** or configure the DSO:

Panel Setups	:	**Recall FROM DEFAULT SETUP**
Channels Trace ON		**Channel 1, Channel 2, Channel 3 & Channel 4**
Input Coupling	:	**DC 50Ω** on all 4 Channels
Input gain	:	**10 mV/div** on all 4 Channels
Input offset	:	**0 mV** on all 4 Channels
Trigger setup	:	**Edge**
Trigger on	:	**Line**
Slope line	:	**Pos**
Mode	:	**Auto**
Time base	:	**50 ηsec/div**.
Channel use	:	**Automatic**
Change parameters		
P1	:	**Sdev of C1**
P2	:	**Freq of C1**

- Connect the HP8482A power sensor to the power meter.

- Zero and **calibrate** the HP8482A power sensor using the power meter **Power Ref output**.

- Connect a **BNC adapter** to the HP8482A power sensor.

- Connect a 50Ω SMA cable to the **RF output** of the HP8648B/C generator and then through the necessary adapters to the power sensor. It is very important that the same cable/generator be used throughout this BW procedure and that the SMA connectors are torqued at all their mating locations.

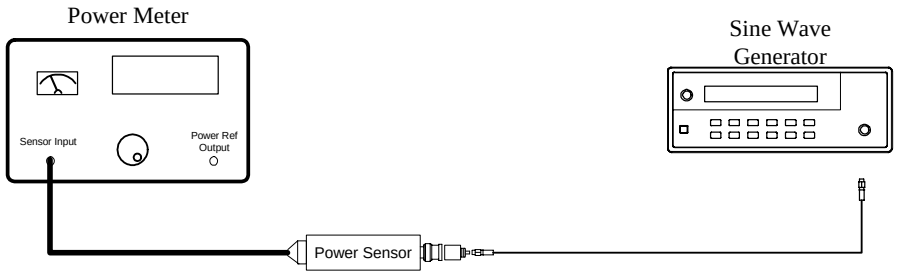


Figure 5-8 : Power Meter Equipment Setup

- Set the generator frequency to **10 MHz**

- Set the generator amplitude to measure **8 µW** on the power meter**.**

- Read the displayed **generator output amplitude,** and record it in the fourth column of Table 8.

- Repeat the above measurement for the apropiate scope model, **350.1 MHz, 500.1 MHz, 1000,1 & 2000.1 MHz.** Record the generator output amplitude readout in the fourth column of Table 8.

- Disconnect the **RF output** of the HP8648B/C generator from the power sensor.

- Connect the **RF output** of the HP8648B/C generator through the same cable that was calibrated in the previous step into Channel 1 and connect any attenuators as listed in the table.

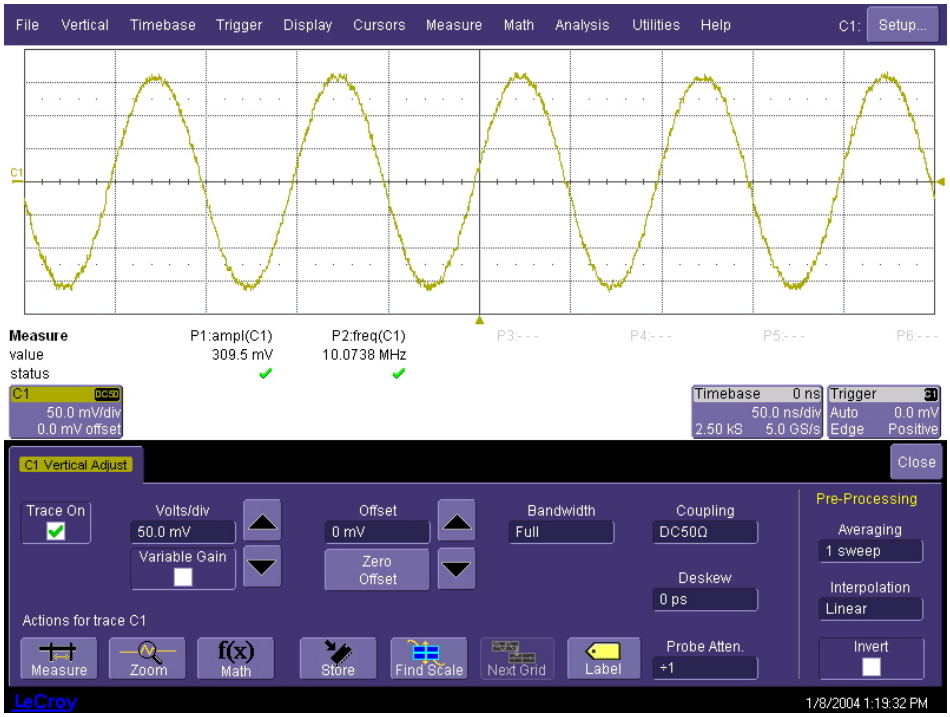


Figure 5-9 : 50Ω Bandwidth Equipment Setup

- Set the generator frequency to **10 MHz**.

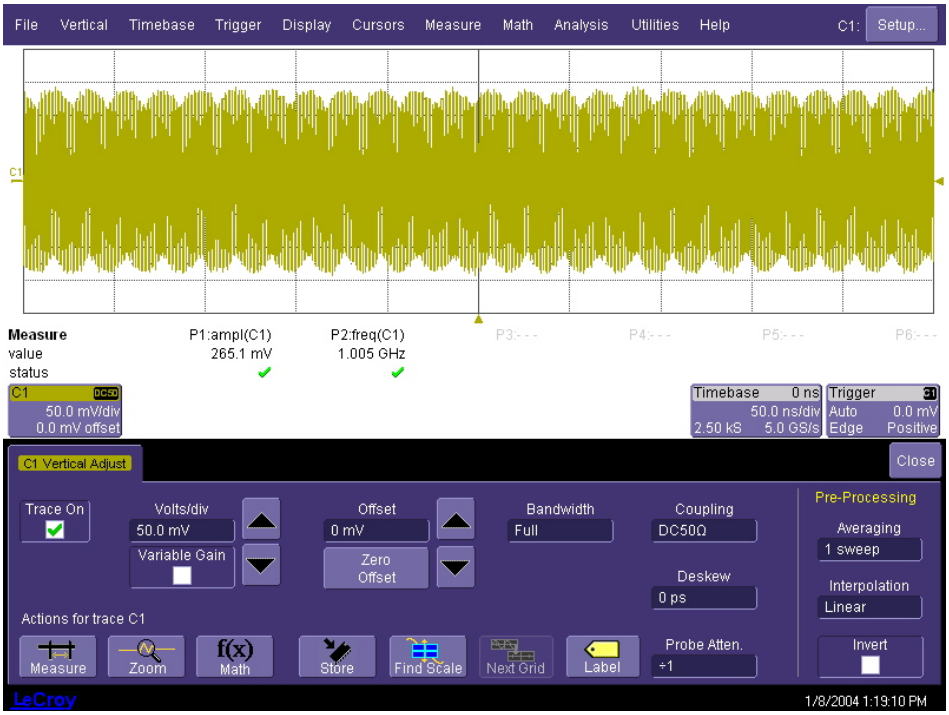
- From the generator, apply the **recorded generator signal amplitude** to Channel 1.

- Measure the value of **Sdev(1)** in Table 8.



- Increase the frequency of the generator to the maximum input frequency for that model, adjusting the amplitude so that the power remains constant and measure the value of Sdev. Record in Table 13.

- Repeat the above 3 steps for Channel 2, (**Bandwidth – CH2 10mv.lss**) 3 (**Bandwidth – CH3 10mv.lss**) & 4 (**Bandwidth – CH4 10mv.lss**) substituting channel controls and input connector. Record the measurements in Table 13.



- Calculate the ratio to 10 MHz for each channel, $sdev_{2000.1}$/ $sdev_{10}$ (for WaveRunner 6200), $sdev_{1000.1}$/ $sdev_{10}$ (for WaveRunner 6100), $sdev_{500.1}$/$sdev_{10}$ (for WaveRunner 6050 or 6051), $sdev_{350.1}$/ $sdev_{10}$ (for WaveRunner 6030) and compare the results to the limits in the test record.

- Repeat the above steps for V/div setting of 50 mV, 100 mV, and 500mV, using the appropriate **Bandwidth - CHx yymv.lss** (where x is channel and yy is V/div setting) panel setup and recording your results in Tables 14 through 16. Use the power setting and attenuators as shown in the tables.

5.10 Trigger Level

5.10.1 Description

The trigger capabilities are tested for several cases of the standard edge trigger:

- Channel (internal), and External Trigger sources
- Three DC levels: –2.5, 0, +2.5 major screen divisions
- Positive and negative slopes

5.10.2 Channel Trigger at 0 Division Threshold

Recall **Trigger - CH1 0 div neg slope.lss** or configure the DSO:

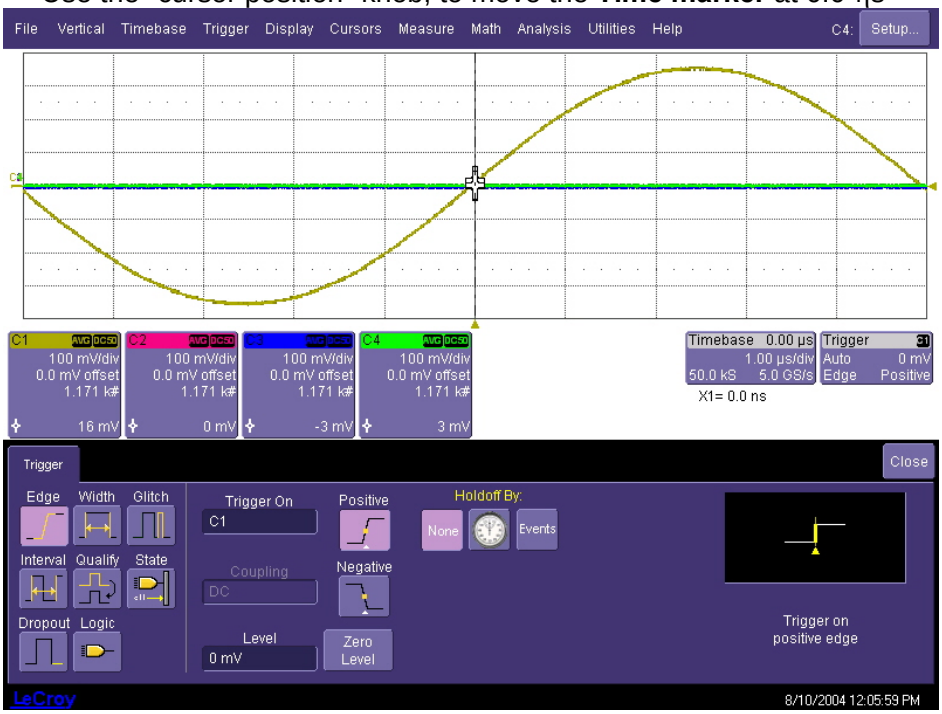
Panel Setups	:	**Recall FROM DEFAULT SETUP**
Channels Trace ON		**Channel 1, Channel 2, Channel 3 & Channel 4**
Input Coupling	:	**DC 50Ω** on all 4 Channels
Input gain	:	**100 mV/div.** on all 4 Channels
Input offset	:	**0 mV** on all 4 Channels (use show status to verify)
Trigger setup	:	**Edge**
Trigger on	:	**C1**
Slope 1	:	**Pos**
Mode	:	**Auto**
Set Trigger level	:	**DC 0.0 mV**
Pre-Trigger Delay	:	**50 %**
Time base	:	**1 µsec/div.**
C1 Pre-Processing:		**Averaging 10 sweeps**
C2 Pre-Processing:		**Averaging 10 sweeps**
C3 Pre-Processing:		**Averaging 10 sweeps**
C4 Pre-Processing:		**Averaging 10 sweeps**

- Set the output of the sine wave generator to **100 KHz.**
- Connect the output of the generator to Channel 1 through a 50 Ohm coaxial cable as shown in Figure 5-10 and adjust the sine wave output amplitude to get **90% of full scale.**

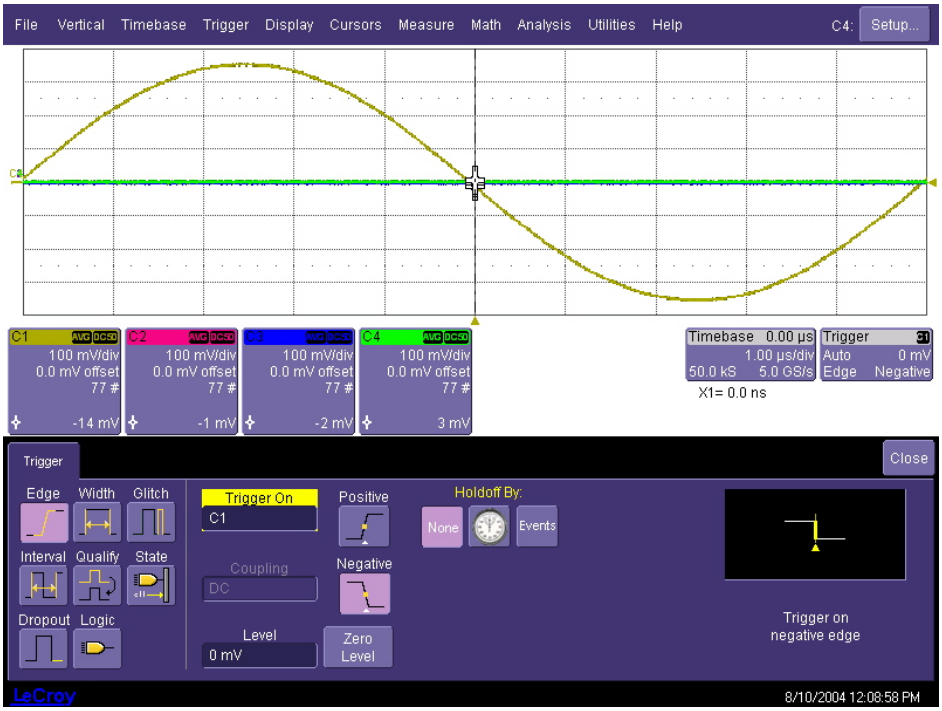


Figure 5-10 Channel Trigger Equipment Setup

- Select Measure: **Cursors, Horizontal Abs**
- Use the "cursor position" knob, to move the **Time marker** at 0.0 ηs



- Press **Clear Sweeps**,
- Acquire 10 sweeps and record in Table 15 the **level** readout displayed below 100 mV in the icon **1,** at top left**.**
- Compare the test results to the corresponding limit in the test record.
- Set Trigger Slope 1 : **Neg**



- Acquire 10 sweeps and record in Table 15 the **level** readout displayed below 100 mV in the icon **1,** at top left**.**
- Set trigger to channels 2, 3 and 4 and for both POS and NEG slope, move input signal to appropriate channel and compare the test results to the corresponding limit in the test record.

5.10.3 Channel Trigger at +2.5 Divisions Threshold

- Recall **Trigger - CH1 +2.5 div pos slope.lss** or configure the DSO as shown in 5.10.2 and for each Channel make the following change :

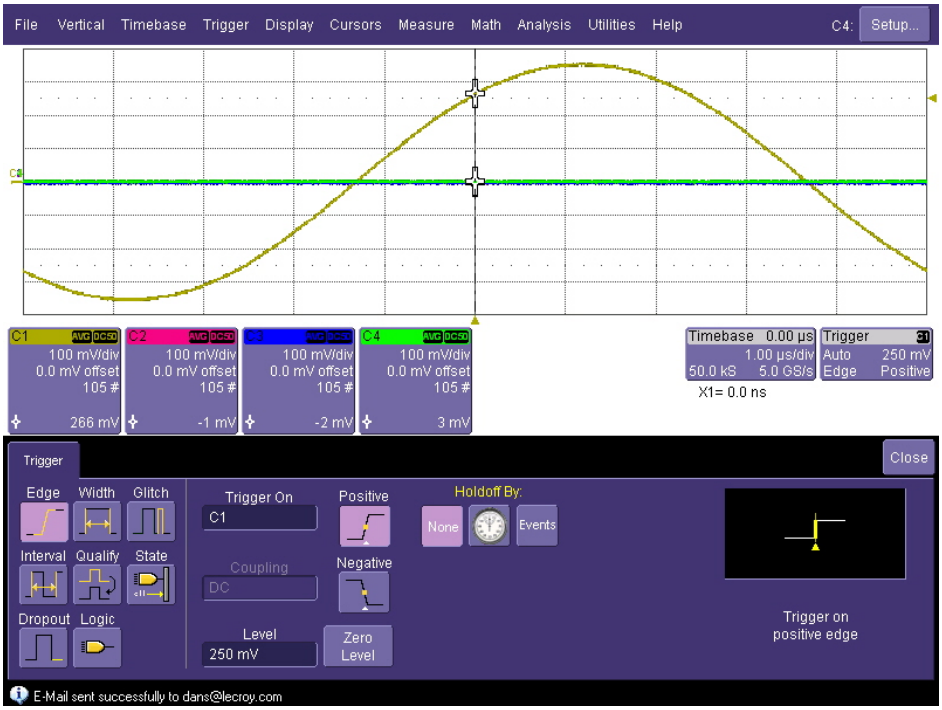
  Set Trigger level : **DC +250 mV**

- Connect the output of the generator to Channel 1 through a 50 Ohm coaxial cable.

- Press **Clear Sweeps**,

- Acquire 10 sweeps and record in Table 15 the **level** readout displayed below 100 mV in the icon **1,** at top left**.**

- Compare the test results to the corresponding limit in the test record.



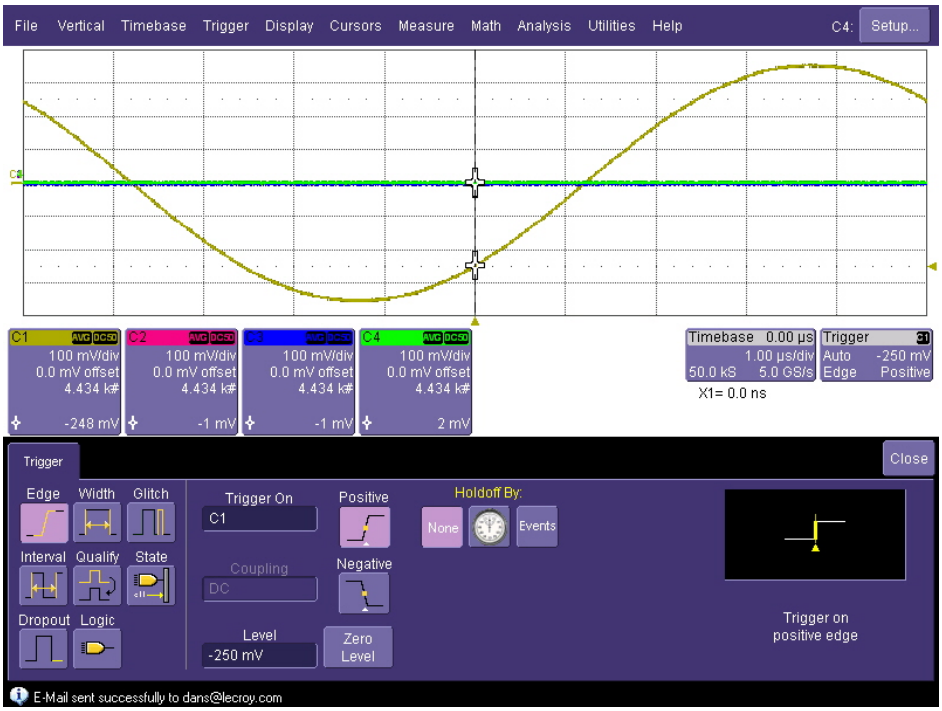
- Set Trigger Slope 1 : **Neg**
- Acquire 10 sweeps and record in Table 15 the **level** readout displayed below 100 mV in the icon **1,** at top left**.**
- Set trigger to channels 2, 3 and 4 and for both POS and NEG slope move input signal to appropriate channel and compare the test results to the corresponding limit in the test record.

5.10.4 Channel Trigger at –2.5 Divisions Threshold

- Recall **Trigger - CH1 -2.5 div pos slope.lss** or configure the DSO as shown in 5.10.2 and for each channel make the following change :

  Set Trigger level : **DC –250 mV**

- Connect the output of the generator to Channel 1 through a 50 Ohm coaxial cable.
- Press **Clear Sweeps**,
- Acquire 10 sweeps and record in Table 15 the **level** readout displayed below 100 mV in the icon **1,** at top left**.**



- Compare the test results to the corresponding limit in the test record.
- Set Trigger Slope 1 : **Neg**
- Acquire 10 sweeps and record in Table 17 the **level** readout displayed below 100 mV in the icon **1,** at top left**.**
- Set trigger to channels 2, 3 and 4 and for both POS and NEG slope move input signal to appropriate channel and compare the test results to the corresponding limit in the test record.

5.11 Time Base Accuracy

5.11.1 Description

An external sine wave generator of **10.0 MHz** with frequency accuracy better than 1 PPM is used.

Specifications

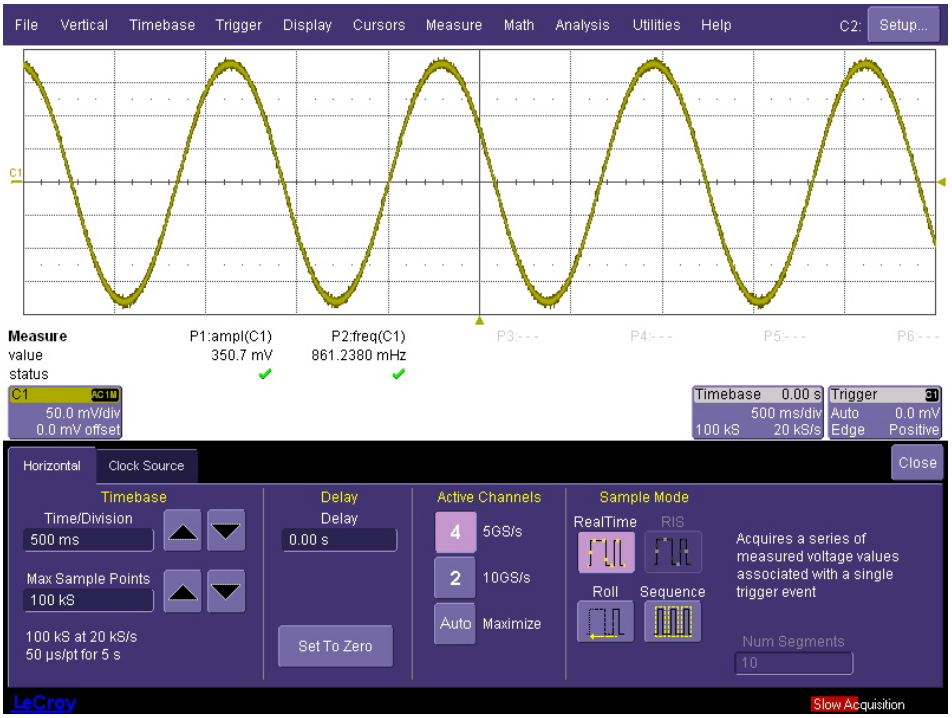
10 GHz clock : accuracy : ≤ ±**0.0005 % or** ≤ ±**5 PPM**

5.11.2 10 GHz Clock Verification Procedure

- Recall **Timebase Accuracy.lss** or configure the DSO

Panel Setups	:	**Recall FROM DEFAULT SETUP**
Channels trace ON		**Channel 1**
Input gain	:	**.1 V/div.**
Input offset	:	**0 mV**
Trigger setup	:	**Edge**
Trigger on	:	**C1**
Slope 1	:	**Pos**
Level 1	:	**100 mV**
Trigger mode	:	**Norm**
Delay	:	**0 %**
Time base	:	**500 msec/div.**
Channel use	:	**4**
Measure	:	**Parameters**
P1	:	**Amplitude of C1**
P2	:	**Frequency of C1**

- Connect the **RF output** of the signal generator through a 50 Ohm coaxial cable into Channel 1.
- Set the generator frequency to **10.0 MHz**.
- Adjust the generator output amplitude to get **6 divisions peak to peak.**
- Read of the frequency parameter (to 2 decimal places) and record the value in Table 18.
- Verify that the error is less than 50 Hz.


File Vertical Timebase Trigger Display Cursors Measure Math Analysis Utilities Help
C2: Setup...
C1
Measure
value
status
P1:ampl(C1)
350.7 mV
P2:freq(C1)
861.2380 mHz
P3:- - -
P4:- - -
P5:- - -
P6:- - -
C1 AC1M
50.0 mV/div
0.0 mV offset
Timebase 0.00 s
500 ms/div
100 kS 20 kS/s
Trigger
Auto 0.0 mV
Edge Positive
Horizontal
Clock Source
Close
Timebase
Time/Division
500 ms
Max Sample Points
100 kS
100 kS at 20 kS/s
50 µs/pt for 5 s
Delay
Delay
0.00 s
Set To Zero
Active Channels
4 5GS/s
2 10GS/s
Auto Maximize
Sample Mode
RealTime
RIS
Roll
Sequence
Acquires a series of measured voltage values associated with a single trigger event
Num Segments
10
LeCroy
Slow Acquisition

LeCroy Digital Storage Oscilloscope

Performance Certificate

WaveRunner 6K Manual Performance Test Procedure Version D – Feb. 2007

Model_____ Serial Number_____ Customer_____

Software Version_____

Inspection Date_____ Next Due_____

Temperature_____ Humidity_____%

Tested By_____ Report Number_____

Place of Inspection_____

Condition found_____ Condition Left_____

Approved By_____

Test Equipment Used

Instrument	Model	S/N	Cal Due Date
Signal Generator Radio Frequency	_____	_____	_____
Signal Generator Audio Frequency	_____	_____	_____
Voltage Generator DC Power Supply	_____	_____	_____
Digital Multimeter Voltmeter, Ohmmeter	_____	_____	_____

Traceable to_____

Table 1: WaveRunner Test Report

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Coupling	Volts/div.	Measured Channel 1 Impedance Ω, MΩ	Measured Channel 2 Impedance Ω, MΩ	Measured Channel 3 Impedance Ω, MΩ	Measured Channel 4 Impedance Ω, MΩ	Measured External Impedance Ω, MΩ	Lower Limit Ω, MΩ	Upper Limit Ω, MΩ
DC 1MΩ	20 mV/div						0.9875 MΩ	1.0125 MΩ
DC 1MΩ	200 mV/div						0.9875 MΩ	1.0125 MΩ
DC 1MΩ	2 V/div						0.9875 MΩ	1.0125 MΩ
DC 50Ω	20 mV/div						49.25 Ω	50.75 Ω
DC 50Ω	200 mV/div						49.25 Ω	50.75 Ω
DC 50Ω							49.25 Ω	50.75 Ω
DC 1MΩ							0.9875 MΩ	1.0125 MΩ

Table 2: Impedance Test Record

Coupling	Volts/div.	Measured Channel 1 Leakage mV	Measured Channel 2 Leakage mV	Measured Channel 3 Leakage mV	Measured Channel 4 Leakage mV	Measured External Leakage mV	Lower Limit mV	Upper Limit mV
DC 1MΩ	20 mV/div						–2	+2
DC 1MΩ	200 mV/div						-2	+2
DC 1MΩ	2 V/div						–2	+2
DC 50Ω	20 mV/div						–2	+2
DC 50Ω	200 mV/div						–2	+2
DC 50Ω							–2	+2
DC 1MΩ							–2	+2

Table 3: Leakage Voltage Test Record

Coupling	Time/Div.	Measured Pkpk Channel 1 mV	Measured Pkpk Channel 2 mV	Measured Pkpk Channel 3 mV	Measured Pkpk Channel 4 mV	Limits pk-pk mV
DC 50Ω	1 µs					7.5
DC 50Ω	1 ms					7.5
DC 50Ω : 2 Channel Mode	0.5 µs					7.5

Table 4: Peak to Peak Noise Test Record

Volts /div.	Attenuator	P S Output	Measured Channel 1 V & mV			Measured Channel 2 V & mV			Measured Channel 3 V & mV			Measured Channel 4 V & mV			Limits
			DMM 1	Mean (A)	Δ 1 Mean–DMM	DMM 2	Mean (B)	Δ 2 Mean–DMM	DMM 3	Mean (C)	Δ 3 Mean–DMM	DMM 4	Mean (D)	Δ 4 Mean–DMM	mV
2 mV	X 100	+0.6 V													±2.3
5 mV	X 100	+1.5 V													±2.8
10 mV	X 100	+3.0 V													±3.6
.1 V	X 10	+3.0 V													±18
1 V	X 1	+3.0 V													±162

Table 5: DC 50Ω, Positive DC Accuracy Test Record

Volts /div.	Attenuator	P S Output	Measured Channel 1 V & mV			Measured Channel 2 V & mV			Measured Channel 3 V & mV			Measured Channel 4 V & mV			Limits
			DMM 1	Mean (A)	Δ 1 Mean–DMM	DMM 2	Mean (B)	Δ 2 Mean–DMM	DMM 3	Mean (C)	Δ 3 Mean–DMM	DMM 4	Mean (D)	Δ 4 Mean–DMM	mV
2 mV	X 100	+0.6 V													±2.3
5 mV	X 100	+1.5 V													±2.8
10 mV	X 100	+3.0 V													±3.6
.1 V	X 10	+3.0 V													±18
1 V	X 1	+3.0 V													±162

Table 6: DC 50Ω, Negative DC Accuracy Test Record

Volts /div.	Attenuator	P S Output	Measured Channel 1 V & mV			Measured Channel 2 V & mV			Measured Channel 3 V & mV			Measured Channel 4 V & mV			Limits
			DMM 1	Mean (A)	Δ 1 Mean–DMM	DMM 2	Mean (B)	Δ 2 Mean–DMM	DMM 3	Mean (C)	Δ 3 Mean–DMM	DMM 4	Mean (D)	Δ 4 Mean–DMM	mV
2 mV	X 100	+0.6 V													±2.3
5 mV	X 100	+1.5 V													±2.8
10 mV	X 100	+3.0 V													±3.6
200 mV	X 10	+6.0 V													±34
2 V	X 1	+6.0 V													±322

Table 7: DC 1MΩ, Positive DC Accuracy Test Record

Volts /div.	Attenuator	P S Output	Measured Channel 1 V & mV			Measured Channel 2 V & mV			Measured Channel 3 V & mV			Measured Channel 4 V & mV			Limits
			DMM 1	Mean (A)	Δ 1 Mean–DMM	DMM 2	Mean (B)	Δ 2 Mean–DMM	DMM 3	Mean (C)	Δ 3 Mean–DMM	DMM 4	Mean (D)	Δ 4 Mean–DMM	mV
2 mV	X 100	+0.6 V													±2.3
5 mV	X 100	+1.5 V													±2.8
10 mV	X 100	+3.0 V													±3.6
200 mV	X 10	+6.0 V													±34
2 V	X 1	+6.0 V													±322

Table 8: DC 1MΩ, Negative DC Accuracy Test Record

Volt /div.	Coupling DC	DSO Offset V	P S Output V	Measured Channel 1 V & mV			Measured Channel 2 V & mV			Measured Channel 3 V & mV			Measured Channel 4 V & mV			Limits
				DMM 1	Mean (A)	Δ 1 Mean– DMM	DMM 2	Mean (B)	Δ 2 Mean– DMM	DMM 3	Mean (C)	Δ 3 Mean– DMM	DMM 4	Mean (D)	Δ 4 Mean– DMM	mV
50mV	50 Ω	+.750	–.750													±14.2

Table 9: Positive 50Ω Offset Test Record

Volt /div.	Coupling DC	DSO Offset V	P S Output V	Measured Channel 1 V & mV			Measured Channel 2 V & mV			Measured Channel 3 V & mV			Measured Channel 4 V & mV			Limits
				DMM 1	Mean (A)	Δ 1 Mean– DMM	DMM 2	Mean (B)	Δ 2 Mean– DMM	DMM 3	Mean (C)	Δ 3 Mean– DMM	DMM 4	Mean (D)	Δ 4 Mean– DMM	mV
50mV	50 Ω	+.750	–.750													±14.2

Table 10: Negative 50Ω Offset Test Record

Volt /div.	Coupling DC	DSO Offset V	P S Output V	Measured Channel 1 V & mV			Measured Channel 2 V & mV			Measured Channel 3 V & mV			Measured Channel 4 V & mV			Limits
				DMM 1	Mean (A)	Δ 1 Mean– DMM	DMM 2	Mean (B)	Δ 2 Mean– DMM	DMM 3	Mean (C)	Δ 3 Mean– DMM	DMM 4	Mean (D)	Δ 4 Mean– DMM	mV
50mV	1 MΩ	+.750	–.750													±14.2

Table 11: Positive 1MΩ Offset Test Record

Volt /div.	Coupling DC	DSO Offset V	P S Output V	Measured Channel 1 V & mV			Measured Channel 2 V & mV			Measured Channel 3 V & mV			Measured Channel 4 V & mV			Limits
				DMM 1	Mean (A)	Δ 1 Mean–DMM	DMM 2	Mean (B)	Δ 2 Mean–DMM	DMM 3	Mean (C)	Δ 3 Mean–DMM	DMM 4	Mean (D)	Δ 4 Mean–DMM	mV
50mV	1 MΩ	+.750	–.750													±14.2

Table 12: Negative 1MΩ Offset Test Record

Frequency	Measured Power	Generator Amplitude	Measured Channel 1		Measured Channel 2		Measured Channel 3		Measured Channel 4		Lower Limit
MHz	µW	mV	Sdev(1) mV	Ratio(1) to 10	Sdev(2) mV	Ratio(2) to 10	Sdev(3) mV	Ratio(3) to 10	Sdev(4) mV	Ratio(4) to 10	
10	8.0			N/A		N/A		N/A		N/A	N/A
350.1 (WR 6030)	8.0										0.707
500.1 (WR 6050, 6051)	8.0										0.707
1000.1 (WR 6100)	8.0										0.707
2000.1 (WR 6200)	8.0										0.707

Table 13: DC 50Ω, 10 mV/div. Bandwidth Test Record

Frequency	Measured Power	Generator Amplitude	Measured Channel 1		Measured Channel 2		Measured Channel 3		Measured Channel 4		Lower Limit
MHz	mW	mV	Sdev(1) mV	Ratio(1) to 10	Sdev(2) mV	Ratio(2) to 10	Sdev(3) mV	Ratio(3) to 10	Sdev(4) mV	Ratio(4) to 10	
10	0.22			N/A		N/A		N/A		N/A	N/A
350.1 (WR 6030)	0.22										0.707
500.1 (WR 6050, 6051)	0.22										0.707
1000.1 (WR 6100)	0.22										0.707
2000.1 (WR 6200)	0.22										0.707

Table 14: DC 50Ω, 50 mV/div. Bandwidth Test Record

Frequency	Measured Power	Generator Amplitude	Measured Channel 1		Measured Channel 2		Measured Channel 3		Measured Channel 4		Lower Limit
MHz	mW	mV	Sdev(1) mV	Ratio(1) to 10	Sdev(2) mV	Ratio(2) to 10	Sdev(3) mV	Ratio(3) to 10	Sdev(4) mV	Ratio(4) to 10	
10	0.8			N/A		N/A		N/A		N/A	N/A
350.1 (WR 6030)	0.8										0.707
500.1 (WR 6050, 6051)	0.8										0.707
1000.1 (WR 6100)	0.8										0.707
2000.1 (WR 6200)	0.8										0.707

Table 15: DC 50Ω, 100 mV/div. Bandwidth Test Record

Frequency	Measured Power	Generator Amplitude	Measured Channel 1		Measured Channel 2		Measured Channel 3		Measured Channel 4		Lower Limit
MHz	mW	mV	Sdev(1) mV	Ratio(1) to 10	Sdev(2) mV	Ratio(2) to 10	Sdev(3) mV	Ratio(3) to 10	Sdev(4) mV	Ratio(4) to 10	
10	22.0			N/A		N/A		N/A		N/A	N/A
350.1 (WR 6030)	22.0										0.707
500.1 (WR 6050, 6051)	22.0										0.707
1000.1 (WR 6100)	22.0										0.707
2000.1 (WR 6200)	22.0										0.707

Table 16: DC 50Ω, 500mV/div. Bandwidth Test Record

Trigger Level	Trigger Slope	Channel 1	Channel 2	Channel 3	Channel 4	Lower Limit	Upper Limit
mV		Measured DC Trigger Level (1) mV	Measured DC Trigger Level (2) mV	Measured DC Trigger Level (3) mV	Measured DC Trigger Level (4) mV	mV	mV
0	Pos					–44	+44
0	Neg					–44	+44
+250	Pos					+218	+282
+250	Neg					+218	+282
–250	Pos					-282	-218
–250	Neg					-282	-218

Table 17: Channel DC Trigger Test Record

Generator Frequency MHz	Freq.(1) (Hz)	Lower Limit	Upper Limit
10.0		-50	+50

Table 20: Time Base Test Record

6. Maintenance

6.1 Introduction

This section contains information necessary to disassemble, assemble, maintain, calibrate and troubleshoot the LeCroy WaveRunner6000.

6.1.1 Safety Precautions

The  symbol used in this manual indicates dangers that could result in personal injury.

The  symbol used in this manual identifies conditions or practices that could damage the instrument.

 The following servicing instructions are for use by qualified personnel only. Do not perform any servicing other than contained in service instructions. Refer to procedures prior to performing any service.

 Exercise extreme safety when testing high energy power circuits. Always turn the power OFF, disconnect the power cord and discharge all capacitors before disassembling the instrument.

6.1.2 Anti-static Precautions

 Any static charge that builds on your person or clothing may be sufficient to destroy CMOS components, integrated circuits, Gate array's.....etc.

In order to avoid possible damage, the usual precautions against static electricity are required.

- Handle the boards in anti-static boxes or containers with foam specially designed to prevent static build-up.
- Ground yourself with a suitable wrist strap.
- Disassemble the instrument at a properly grounded work station equipped with anti-static mat.
- When handling the boards, do not touch the pins.
- Stock the boards in anti-static bags.

6.2 Disassembly and Assembly Procedure

The disassembly and assembly procedures detailed below refer to the views of figures shown in section 8.

6.2.1 Disassembly Procedure

Please study the figures in section 8 before attempting disassembly. Before removing any parts from the LeCroy WaveRunner, be sure to read carefully the instructions referring to those parts, noting any precautions needed to avoid problems.

Note: Power is always present on the CPU motherboard and inside the Power Supply whenever the power cord is plugged into a power source. Remove the power cord from the instrument before removing or inserting any connectors to the CPU motherboard. Extreme caution should be taken in protecting the LCD face from damage (e.g. scratch marks, etc.) when handling, in particular when inserting or removing from the instrument.

a. Removal of the Upper Cover Assembly

The upper cover disassembly procedure refers to the view of figure 8-1.

Tools Needed:
- T15 Torx driver
- #2 Philips screwdriver

Procedure:

- Remove the front bezel (see procedure 6.2.1.a)
- Remove the twelve 6-32 x ¼" screws (five on right side, three on left side and four in the rear).
- Remove the two 6-32 x ½" screws that secure the two upper feet to the upper cover and rear panel.
- Carefully slide the upper cover off the unit. If the unit has an optional internal printer disconnect printer power cable and data cable.

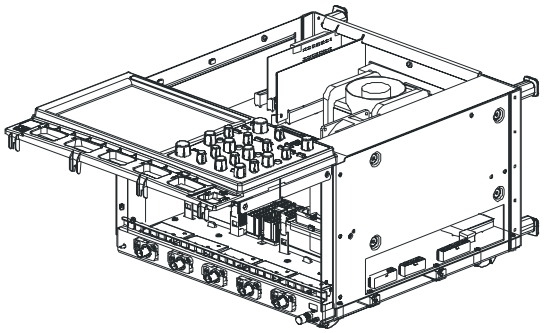
b. Opening of the Front Bezel

The front bezel disassembly procedure refers to the view of figure 8-2.

Tools Needed:
- T10 Torx driver
- #1 Philips screwdriver

Procedure:

- Remove four 6-32 x 5/16” screws underneath the plastic bezel.
- Remove two 6-32 x ¼” screws (one on each side of the front frame near the bottom)



- The Front Frame can now be pivoted up to allow access for further instrument disassembly. Pay close attention to the power switch and spring as these will fall off once the front frame is pivoted away from chassis.

c. Removal of the Acquisition System Assembly

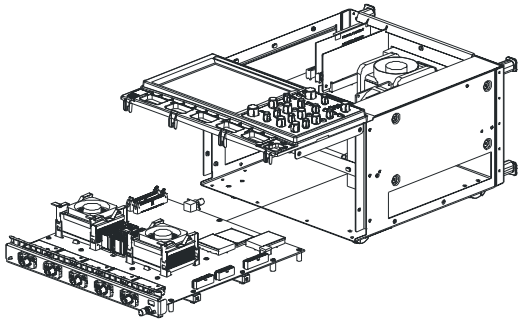
The Acquisition System removal procedure refers to the view of figure 8-1 & 8-4.

Tools Needed:

- #2 Philips screwdriver

Procedure:

- Remove the upper cover assembly (6.2.1.a)
- Open the front bezel (6.2.1.b)
- Disconnect the power connectors at J23, J19 and J15.
- Disconnect the USB cable at J26
- Disconnect the power switch cable at J24
- Disconnect the two ribbon cables from the PCI card at the acquisition board connectors J11 and J10.
- Remove the nine 6-32 x 5/16” screws through the bottom of the chassis.
- Gently slide the Acquisition board forward and disconnect the fan cable at J4 and the Triggered/Ready LED cable at J9000.



The acquisition system can now be removed from the oscilloscope.



d. Removal of the PCI Board

The PCI board removal procedure refers to the views of figure 8-5 and figure 8-9

Tools Needed:
- Diagonal cutting pliers

Procedure:

- Remove the upper cover assembly (6.2.1.a)
- Disconnect the two ribbon cables at J1 and J2 of the PCI card.
- Cut the cable clamp which secures the PCI card to the motherboard.
- Unplug the PCI card from the processor board.

e. Removal of the AGP-DVO Interface Board

The AGP-DVO removal procedure refers to the views of figure 8-5 and figure 8-9

Tools Needed:
- none

Procedure:

- Remove the upper cover assembly (6.2.1.a)
- Disconnect the video cable at J1 of the DVO Card.
- Disconnect the inverter power cable at J2.
- Bend the spring clamp on the AGP connector on the processor card slightly to disengage the lock to the AGP/DVO card.
- Unplug the AGP/DVO card from the processor board.

f. Removal of the Processor Board

The processor board disassembly procedure refers to the views of figure 8-7 and figure 8-9.

Tools Needed:
- #1 Philips screwdriver

Procedure:

- Remove the upper cover assembly (6.2.1.a)
- Remove the PCI card (6.2.1.d)
- Remove the AGP/DVI Interface (6.2.1.e).
- Disconnect the following cables on the processor board:

Processor Connector	Connects to
Primary IDE	Hard Drive
Secondary IDE	CD ROM drive
Main Power	Power supply harness
Supplemental Processor Power	Power supply harness
Front Panel USB	USB Hub & Acq Board
Front Panel Header	Power Switch – Acq Board

- Remove six 6-32 x ¼" screws which secure the processor card to the processor tray.
- Remove the processor board.

g. Removal of the Hard Disk Drive

The hard disk drive removal procedure refers to the view of figure 8-7 and 8-9.

Tools Needed:
- #1 Philips screwdriver

Procedure:

- Note: Critical files need to be backed up the disk drive is to be removed from the instrument. Refer to section 6.6 for instructions.
- Remove the upper cover assembly (6.2.1.a)
- Remove the PCI card (6.2.1.d)
- Remove the AGP/DVI Interface (6.2.1.e).
- Remove the processor card (6.2.1.f)
- Disconnect the power cable and ribbon cable from the hard disk drive.
- Remove the four 6-32 x 3/16" screws which secure the hard disk to the processor tray.
- Remove the hard disk drive from the unit

h. Removal of the CD ROM Drive

The CD ROM drive disassembly procedure refers to the view of figure 8-7, figure 8-8 and figure 8-9.

Tools Needed:
- T6 Torx driver
- T10 Torx driver
- T25 Torx driver

Procedure:

- Remove the upper cover assembly (6.2.1.a)
- Disconnect the ribbon cable and power cable from the CD ROM adapter board.
- Remove four 6-32 x ¼" screws which secure the CD ROM drive assembly to the chassis (two on rear, two on the right side)
- Remove the CD ROM drive assembly from the chassis.
- Remove the CD ROM adapter from the rear of the CD ROM drive by removing the two M2X6 screws.
- Remove the CD ROM Drive interface board from the CD ROM drive
- Remove four 6-32 x ¼" screws which secure the CD ROM drive to the CD ROM bracket.
- Remove the CD ROM Drive from the bracket.

.

i. Removal of the Power Supply



The power supply fan removal procedure refers to the views of figure 8-6.

Tools Needed:
- T15 Torx driver

Procedure:

- Remove the upper cover assembly (6.2.1.a)
- Disconnect the two power connectors to the processor board.
- Disconnect the power connector at the Hub board.
- Disconnect the power connectors at the CD-ROM and Hard Disk.
- Disconnect the three power connectors at the acquisition board.
- Remove the six 6-32 x ¼" screws which secure the power supply to the chassis (four on the side and two in the rear.
- Remove the power supply from the unit.

j. Removal of the Front Frame Assembly

The front frame removal procedure refers to the views of figure 8-5.

Tools Needed:
- T10 Torx driver

Procedure:

- Remove the upper cover assembly (6.2.1.a)
- Open the front bezel (6.2.1.b)
- Disconnect the video cable at J1 of the PCI card.
- Disconnect the inverter power cable at J2 of the PCI card.
- Disconnect the Trig/Ready LED at J1 of the USB Hub.
- Disconnect the USB cable at J3 of the USB Hub.
- Disconnect the power cable at P2 of the USB Hub.
- Remove two 6-32 x ¼" screws at the top location on each side of the front frame assy.
- Remove the front frame assembly from the chassis.

k. Removal of the Front Panel Encoder Board

The front panel encoder board removal procedure refers to the views of figure 8-4 and figure 8-13.

Tools Needed:
- T10 Torx driver
- T25 Torx driver
- ½" nut driver

Procedure:

- Remove the upper cover assembly (6.2.1.a)
- Open the front bezel (6.2.1.b)
- Remove the front frame assembly (6.2.1.j)
- Disconnect the ribbon cable from Jx of the USB Hub to the encoder board.
- Remove the six 4-40 x ¼" screws which secure the front bezel to the front frame assy.
- Remove the knobs from the encoders.
- Remove the front bezel.
- Remove nine M2.5 x.4-6mm screws which secure the encoder assembly to the front bezel.
- Remove the front panel encoder board and elastomeric keypad from the bezel.

l. Removal of the USB Hub Board

The front panel encoder board removal procedure refers to the views of figure 8-4, and figure 8-16.

Tools Needed:
- T10 Torx driver
- T25 Torx driver
- ½" nut driver

Procedure:

- Remove the upper cover assembly (6.2.1.a)
- Open the front bezel (6.2.1.b)
- Tilt the unit on its side.
- Disconnect the cables to the USB Hub board.
- Disconnect the eight screws (five 4-40 x ¼" and three 4-40 x 3/8")
- Remove the USB board.

m. Removal of the Display Inverter Board

The display inverter removal procedure refers to the view of figure 8-4 & 8-16.

Tools Needed:

- T6 Torx driver
- T10 Torx driver
- T25 Torx driver

Procedure:

- Remove the upper cover assembly (6.2.1.a)
- Open the front bezel (6.2.1.b)
- Tilt the unit on its side.
- Remove the four 4-40 x ¼" screws which secure the Inverter cover to the front frame.
- Disconnect LCD Display power cable cables from DC-AC Inverter board
- Disconnect the inverter power cable from the inverter board.
- Remove the two 4-40 x ¼" screws which secure the inverter to the front frame.
- Pay close attention to the two small standoffs which are behind the inverter board and come off when the screws are removed.

n. Removal of the Display and Touchscreen

The display and touchscreen removal procedure refers to the view of figure 8-4, figure 8-15 and figure 8-16.

Tools Needed:

- T10 Torx driver
- T25 Torx driver

Procedure:

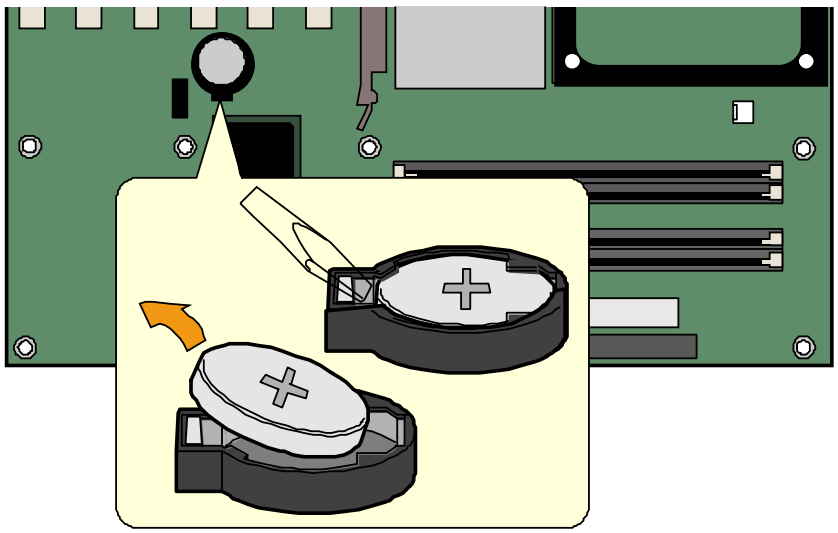
- Remove the upper cover assembly (6.2.1.a)
- Open the front bezel (6.2.1.b)
- Remove the front frame assembly (6.2.1.j)
- Disconnect the ribbon cable from P1 of the USB Hub to the encoder board.
- Remove the six 4-40 x ¼" screws which secure the front bezel to the front frame assy.
- Remove the knobs from the encoders.
- Remove the front bezel.
- Remove the four 4-40 x ¼" screws which secure the Inverter cover to the front frame.
- Disconnect the TFT power wires from the DC-DC inverter board.
- Remove the four 4-40 x ¼" screws which secure the display and touchscreen to the chassis.
- Remove the display and touchscreen from the chassis paying close attention to the wires as they pass through the chassis opening.

o. Replacing the Battery

A coin-cell battery (CR2032) powers the real-time clock and CMOS memory. When the computer is not plugged into a wall socket, the battery has an estimated life of three years. When the computer is plugged in, the standby current from the power supply extends the life of the battery. The clock is accurate to ±13 minutes/year at 25 ºC with 3.3 VSB applied. When the voltage drops below a certain level, the BIOS Setup program settings stored in CMOS RAM (for example, the date and time) might not be accurate. Replace the battery with an equivalent one.

To replace the battery, follow these steps:

1. Turn off all peripheral devices connected to the computer. Disconnect the computer's power cord from the AC power source (wall outlet or power adapter).
2. Remove the top cover.
3. Locate the battery on the board.
4. With a medium flat-bladed screwdriver, gently pry the battery free from its connector. Note the orientation of the "+" and "-" on the battery.
5. Install the new battery in the connector, orienting the "+" and "-" correctly.
6. Replace the top cover.





Assembly Procedure

Reassemble the unit in the reverse order, check that all screws shown on the drawings in section 8 are used and have the proper torque. Verify that all cables are correctly connected.

Assembly Note :

- **Bezel** : The plastic bezel should not be in contact with the touch screen.
- **Fans** : Check the fan air flow, the fans blow air down into the unit.
- **Feet** : Check that the lower feet and rear feet are aligned and properly tightened before re-assembly.
- **CD**: Check that the tray moves freely and shuts correctly. Insert a CD and eject it to check the mechanism.
- **Front Panel** : Check that knobs rotate freely, are the right size and in the right place.
- **Acquisition Board** : Make sure that no heatsinks get knocked from their fully seated position as intimate contact is required between the heatsink and the devices.
- **Processor** : Check that all of the cables are correctly inserted. The BIOS must be flashed if new CPU card is installed.
- **Printer** : If the graphic printer is used, before closing the top cover don't forget to plug the input power cable to the option and the driver cable to the USB Hub card.
- **Hard Drive** – Hard Drive image will need to be restored (depends on version of CPU motherboard) Touch Screen calibration will need to be performed if hard drive is replaced. Critical files will need to be restored (see section 6.6) or full factory calibration performed.
- **PCI Card** – If board is replaced, software keys for software option licensing and model identification will need to be reissued.
- **USB Hub Card** – Make sure that video cable to TFT is tie-wrapped to the mounting block.

6.2.2 Installing Hardware Options

6.3 Software Update Procedure

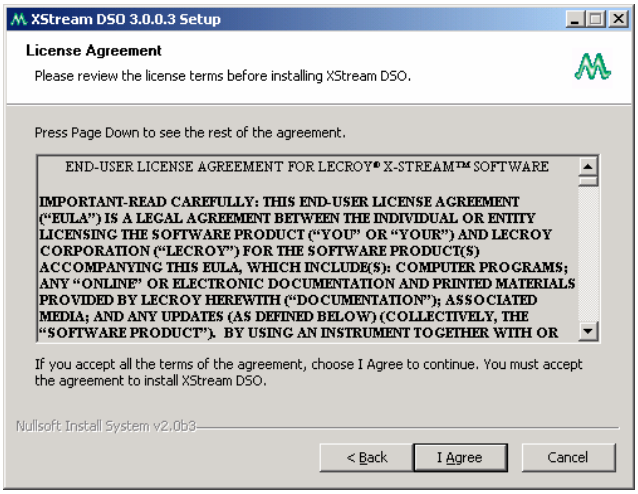
6.3.1 Installing New X-Stream DSO Application Software

In order to load new X-Stream DSO software the system must be capable of booting up to the Windows desktop.

- If the Wavemaster application is running, exit it through the File, Exit menu option.
- Insert the CD ROM containing the version to be installed into the CD ROM drive.
- From the windows desktop, select My Computer, then select the CD ROM drive.
- Launch XStreamDSOInstallerx.x.x.x.exe (where x.x.x.x is the version number) application.



- Press Next, You will be prompted to read and accept the software license agreement.



6.3.2 Software End User License Agreement



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infringement under Title 17 of the United States Code; (B) such circumvention is confined to those parts of the Software Product and to such acts as are necessary to achieve the Permitted Objective; (C) the information to be gained thereby has not already been made readily available to you or has not been provided by LeCroy within a reasonable time after a written request by you to LeCroy to provide such information; (D) the information gained is not used for any purpose other than the Permitted Objective and is not disclosed to any other person except as may be necessary to achieve the Permitted Objective; and (E) the information obtained is not used (1) to create a computer program substantially similar in its expression to the Software Product including, but not limited to, expressions of the Software Product in other computer languages, or (2) for any other act restricted by LeCroy's intellectual property rights in the Software Product. "Interoperability" will have the same meaning in this EULA as defined in the Digital Millennium Copyright Act, 17 U.S.C. §1201(f), the ability of computer programs to exchange information and of such programs mutually to use the information which has been exchanged.

2. SUPPORT SERVICES. At LeCroy's sole discretion, from time to time, LeCroy may provide Updates to the Software Product. LeCroy shall have no obligation to revise or update the Software Product or to support any version of the Software Product. At LeCroy's sole discretion, upon your request, LeCroy may provide you with support services related to the Software Product ("Support Services") pursuant to the LeCroy policies and programs described in the Documentation or otherwise then in effect, and such Support Services will be subject to LeCroy's then-current fees therefor, if any. Any Update or other supplemental software code provided to you pursuant to the Support Services will be considered part of the Software Product and will be subject to the terms and conditions of this EULA. LeCroy may use any technical information you provide to LeCroy during LeCroy's provision of Support Services, for LeCroy's business purposes, including for product support and development. LeCroy will not utilize such technical information in a form that personally identifies you.

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4. TERMINATION. This EULA will remain in force until termination pursuant to the terms hereof. You may terminate this EULA at any time. This EULA will also terminate if you breach any of the terms or conditions of this EULA. You agree that if this EULA terminates for any reason, the License will immediately terminate and you will destroy all copies of the Software Product (and all Derivatives), installed or otherwise, the Documentation, and the Confidential Information (and all derivatives of any of the foregoing) that are in your possession or under your control. The provisions of Sections 1.3, 4, 6, 7, 8, and 9 will survive any termination or expiration hereof.



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8.3 Indemnification. You will defend, indemnify and hold harmless LeCroy and its officers, directors, affiliates, contractors, agents, and employees from, against and in respect of any and all assessments, damages, deficiencies, judgments, losses, obligations and liabilities (including costs of collection and reasonable attorneys' fees, expert witness fees and expenses) imposed upon or suffered or incurred by them arising from or related to your use of the Software Product.

9. GENERAL PROVISIONS.

9.1 Compliance with Laws. You will comply with all laws, legislation, rules, regulations, and governmental requirements with respect to the Software Product, and the performance by you of your obligations hereunder, of any jurisdiction in or from which you directly or indirectly cause the Software Product to be used or accessed.

9.2 No Agency. Nothing contained in this EULA will be deemed to constitute either party as the agent or representative of the other party, or both parties as joint venturers or partners for any purpose.

9.3 Entire Agreement; Waiver; Severability. This EULA constitutes the entire agreement between the parties with regard to the subject matter hereof. No provision of, right, power or privilege under this EULA will be deemed to have been waived by any act, delay, omission or acquiescence by LeCroy, its agents, or employees, but only by an instrument in writing signed by an authorized officer of LeCroy. No waiver by LeCroy of any breach or default of any provision of this EULA by you will be effective as to any other breach or default, whether of the same or any other provision and whether occurring prior to, concurrent with, or subsequent to the date of such

waiver. If any provision of this EULA is declared by a court of competent jurisdiction to be invalid, illegal or unenforceable, such provision will be severed from this EULA and all the other provisions will remain in full force and effect.

9.4 Governing Law; Jurisdiction; Venue. This EULA will be governed by and construed in accordance with the laws of the State of New York, USA, without regard to its choice of law provisions. The United Nations Convention on Contracts for the International Sale of Goods will not apply to this EULA. Exclusive jurisdiction and venue for any litigation arising under this EULA is in the federal and state courts located in New York, New York, USA and both parties hereby consent to such jurisdiction and venue for this purpose.

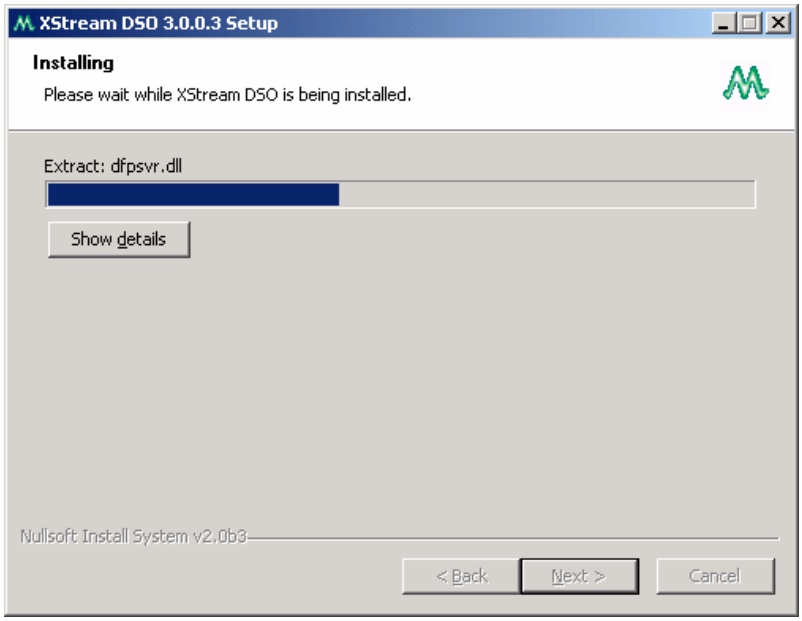
9.5 Assignment. This EULA and the rights and obligations hereunder, may not be assigned, in whole or in part by you, except to a successor to the whole of your business, without the prior written consent of LeCroy. In the case of any permitted assignment or transfer of or under this EULA, this EULA or the relevant provisions will be binding upon, and inure to the benefit of, the successors, executors, heirs, representatives, administrators and assigns of the parties hereto.

9.6 Notices. All notices or other communications between LeCroy and you under this EULA will be in writing and delivered personally, sent by confirmed fax, by confirmed e-mail, by certified mail, postage prepaid and return receipt requested, or by a nationally recognized express delivery service. All notices will be in English and will be effective upon receipt.

9.7 Headings. The headings used in this EULA are intended for convenience only and will not be deemed to supersede or modify any provisions.

9.8 Acknowledgment. Licensee acknowledges that (a) it has read and understands this EULA, (b) it has had an opportunity to have its legal counsel review this EULA, (c) this EULA has the same force and effect as a signed agreement, and (d) issuance of this EULA does not constitute general publication of the Software Product or other Confidential Information.

- Accept the agreement and press Next. The software installation process will begin and a progress bar will be displayed. Wait until completion.



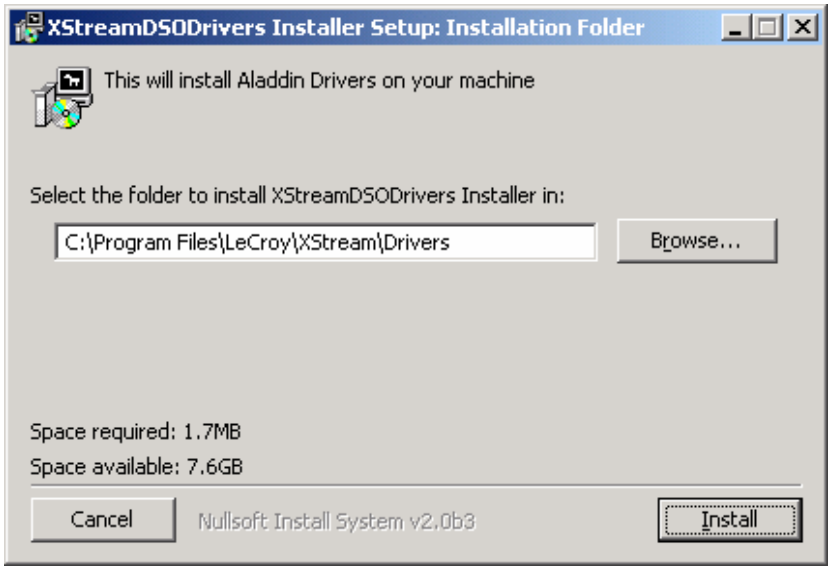
- At the completion on the software installation you will receive a dialog box as shown below:



- The check box should be checked to install the Windows device drivers and to upgrade the Microcode in the instrument.

6.3.3 Installing Device Drivers

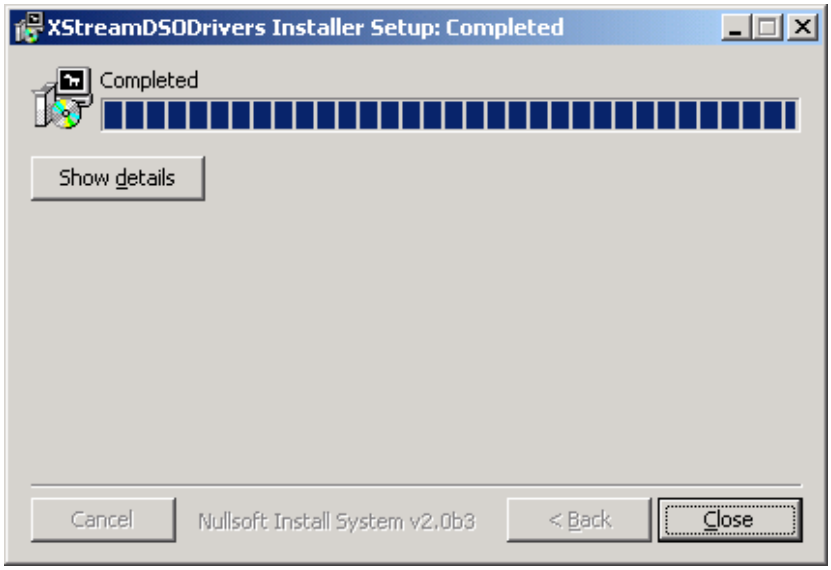
- Pressing finish will first install the device drivers. You will be prompted with a dialog box as shown below:



- Press Install, several new windows will open like shown below, it will take approximately 30 seconds for the drivers to be installed. A Found New Hardware Dialog Box may appear. DO NOT INTERVENE. The installer will automatically close this dialog box after a few seconds and the drivers will be installed.

Several found new hardware boxes will momentarily appear, no intervention is required.

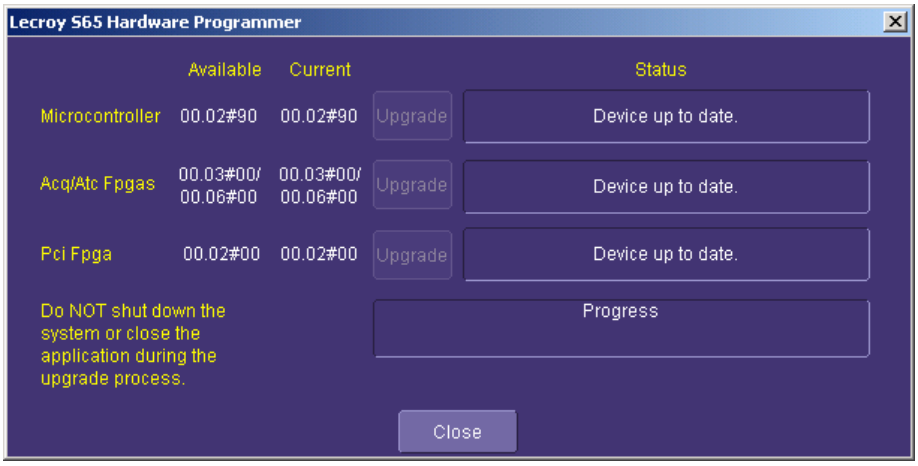




- After this is complete press close:

6.3.4 Upgrading Microcode

- Next the Hardware Programmer Dialog box will appear:



- If any update is required the update buttons will not be grayed out as shown above. Press one update button and wait for it to complete before pressing any other update buttons. **It is extremely important that this process not be interrupted while the parts are being programmed. Any interruption of power or interruption of the process may require that the instrument be returned to the factory for correction.**

- Once the update process is completed and no errors have been displayed, the power must then be cycled to invoke the new program settings. If no update was required then it is not necessary to cycle the power.
- The XStreamDSO application should automatically begin after power has been restored and after Windows has finished booting up. As the XstreamDSO application is launching the screen will appear as:



6.3.5 Verifying Microcode

If the version of the programmed hardware needs to be checked to see if it is at the correct revision for the software which is installed, the WavemasterHardwareProgrammer may be manually invoked by pressing Start, Programs, LeCroy, XStream, Service, hwprogrammer.exe. Follow the instructions list in section 6.3.3 above.

6.3.6 Restoring the Operating System

There may be circumstances where it is desired to completely wipe the C: partition of the hard drive and reinstall the operating system and Wavemaster software. Each WaveRunner is supplied with a System Recovery CD which will restore the original operating system configuration of the instrument. It will not disturb anything which is installed on to the D: drive. Any application software which had been



previously installed will need to be reinstalled. The following steps must be followed:

- Plug a keyboard into the instrument.
- Insert the System Recovery CD into the CDROM drive.
- Turn on power to the instrument, the system will boot from the CD (if it does not boot from the CD, the BIOS settings regarding boot order may have been changed, restart the computer while pressing F2 on the keyboard to get to the BIOS settings screen. Change the boot order to boot from the CD first).
- After booting the screen should display the X-Stream System Recovery CD screen.
- Select Continue , press enter
- An additional warning “All C drive data will be lost” appears – press enter for YES
- The software installation progress bars will appear, this loading process will take app. 5 minutes.
- Remove CD when prompted - press enter
- Wait for the operation to take place (10-15 minutes) and an A:\> prompt to appear. (If the message “ cannot load the file a:\command.com insert correct disk and strike a key” appears, cycle power on the scope.
- Remove the CD ROM from the drive and cycle power.
- Insert the Wavemaster Installation CD ROM into the drive.
- When the system boots up, Windows 2000 setup will need to be completed before the XStreamDSO Software can be installed onto it Accept the license agreement and press Next.
- You will be prompted for the product key, this can be found on the Windows License label on the rear panel of the instrument.
- When prompted for Computername, type the serial number located on the rear panel (e.g. LCRY0601P63247).
- The unit will finish the setup process.
- At network setup press next.
- When LeCroyuser setup comes up, press next (with a blank password). Press finish.
- Close the add new hardware dialog box.
- Follow directions above for installing new XStreamDSO software.
- Once complete with the XStreamDSO software and driver installation, launch the DSO application.
- Perform the touch screen calibration procedure in step 6.6.2.
- Installation is complete.

6.3.7 Software Options

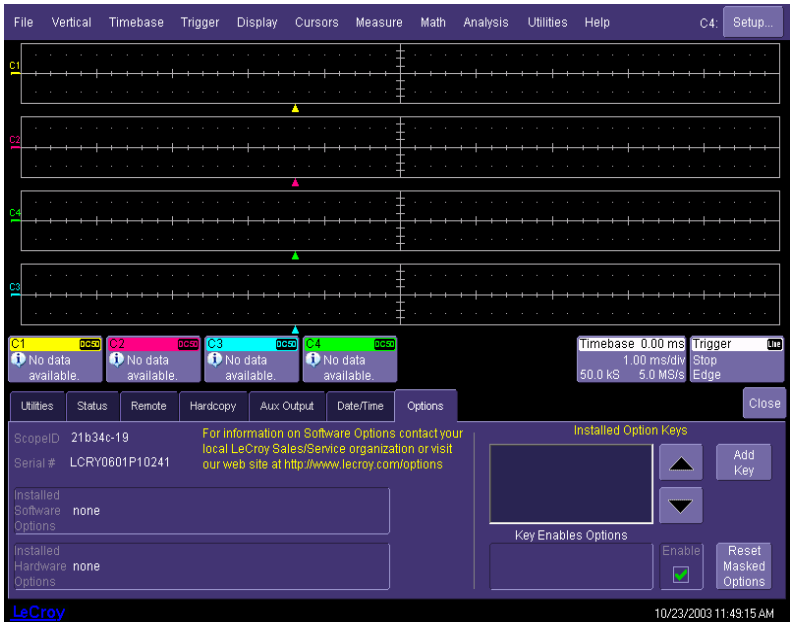
There are many software options available, new ones are being developed all of the time, refer to the LeCroy website for the latest selection of options available.

6.3.7.1 Changing Software Option Key

a. Scope ID, Scope Serial Number

The scope ID and scope s/n: are used to request a Software Option Key

- Enter the scope's Software Options menu (located under Utilities, Options)



.Note the **SCOPE ID**, i.e.: 12c5c6-a4 and **Scope s/n**: LCRY0601P10241 that are found on that menu.

b. Entering Option Key in the DSO

- Enter the scope's Software Options menu (**Utilities, Options** menu).
- Press the **ADD KEY** button on the DSO touch screen
- Enter the new option key, i.e.: **5F4F-3184-2C81-8EF*8**
- Press **O.K.** to add the key
- Verify that the correct options are enabled (e.g. DDM2, JTA2, XMAP).



6.4 Board Exchange Procedure

6.4.1 Processor Board Exchange Procedure

The WaveRunner 6000 system may be built with different processor configurations as the WaveRunner 6000 series uses an Intel motherboard. Currently the units are built with 1.8Ghz Celerons. Different hard disk images must be loaded based on the type of processor board installed. Only use the System Recovery CD which was delivered with your WaveRunner 6000.

6.4.2 Hard Drive Replacement Procedure

The Hard Drive contains important calibration files which must be restored if the hard drive is to be completely erased or replaced. (see section 6.6 for instructions) Please note: if the hard drive is restored using the System Recovery CD which is supplied with the WaveRunner these files will not be damaged or removed.

6.5 Equipment and Spare Parts Recommended for Service

6.5.1 Test Equipment Required

See Table 5-1 in section 5.2.

6.5.2 WaveRunner Spare Parts

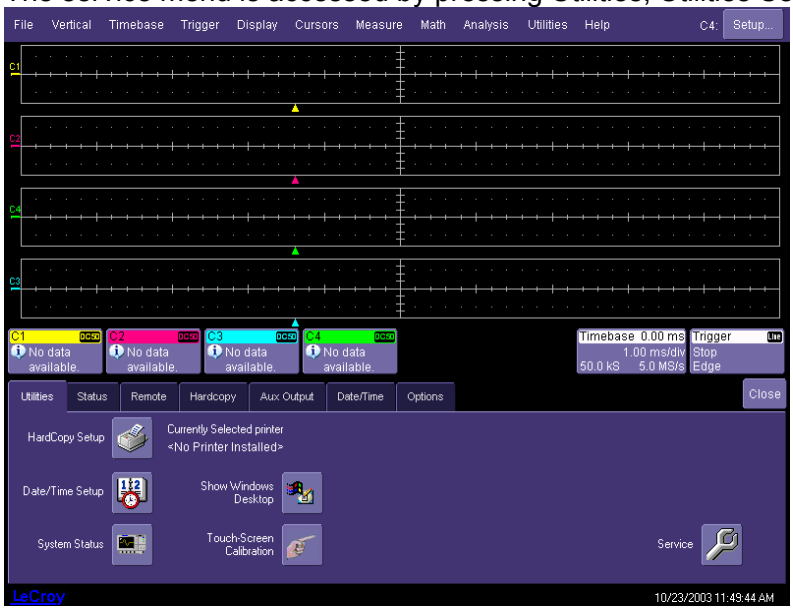
LeCroy P/N	Assembly	Adjustments	Performance Tests
258000007	TFT DC-AC Inverter	None	None
901461-00	Rear Fan Assy	None	None
900893-00	Power Supply Assy	6.7.1	None
901740-00	2 ch Front Panel Keyboard Assy	None	None
900896-00	4 ch Front Panel Keyboard Assy	None	None
258000008	Display and Touchscreen	6.7.2	None
901549-00	AGP/DVO Interface	None	None
900890-00	PCI Interface	None	None
334600003	PC Motherboard	None	None
227500020	2.0 GHz Celeron Processor	None	None
330000005	Hard Disk Drive	None	None
330000033	CD R Drive	None	None
335830015	CD R/W Drive	None	None
901851-00	USB Hub	None	None
900888-00	2 GHz 5GS/s 4 Ch Acq. Board	Factory	Chapter 5
901765-00	1 GHz 5GS/s 4 Ch Acq. Board	Factory	Chapter 5
901764-00	500 MHz 5GS/s 4 Ch Acq. Board	Factory	Chapter 5
901763-00	500 MHz 5GS/s 2 Ch Acq. Board	Factory	Chapter 5
901806-00	350 MHz 5GS/s 4 Ch Acq. Board	Factory	Chapter 5

See chapter 7, 8 & 9 for mechanical and electrical replaceable parts.

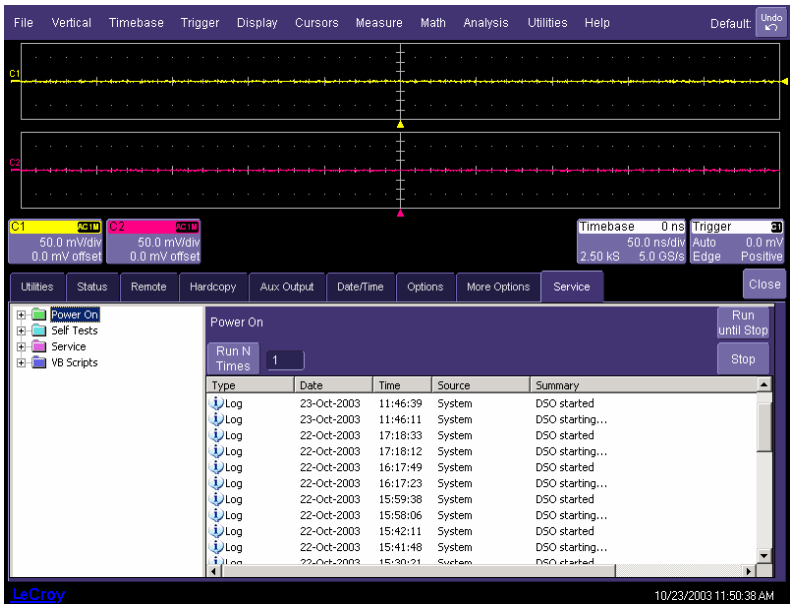
6.6 Service Menu

6.6.1 Accessing Service Menu

The service menu is accessed by pressing Utilities, Utilities Setup.



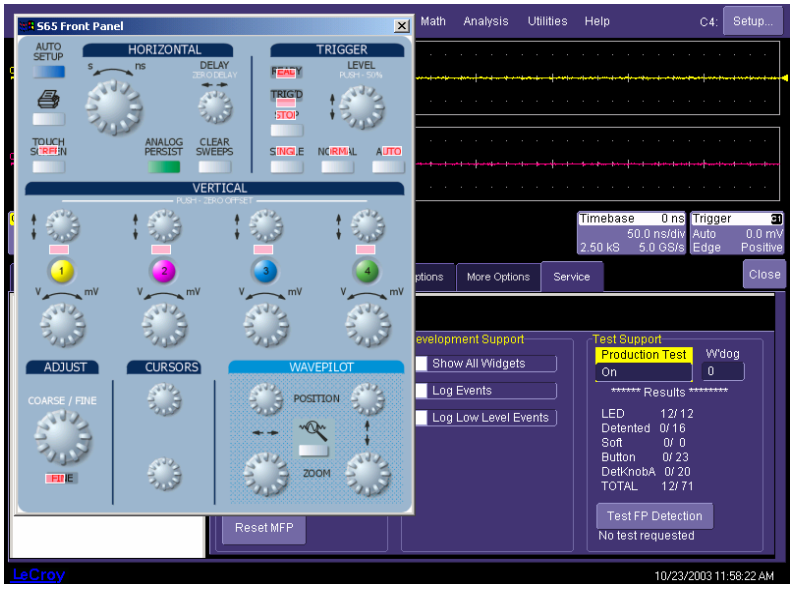
Press the service button in the lower right corner, you will be prompted with a password dialog box. Enter password 9472. You will be granted service center access.



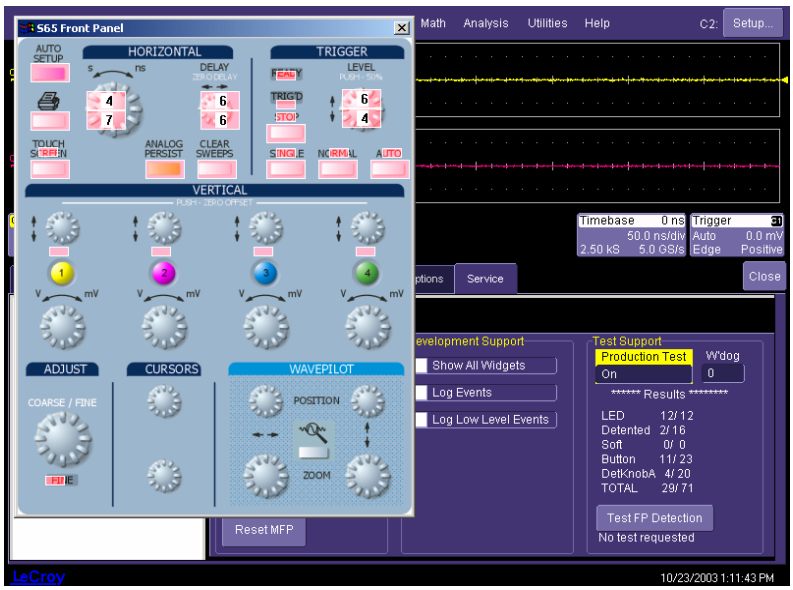
6.6.2 Mainframe Tests

6.6.2.1 Front Panel Test

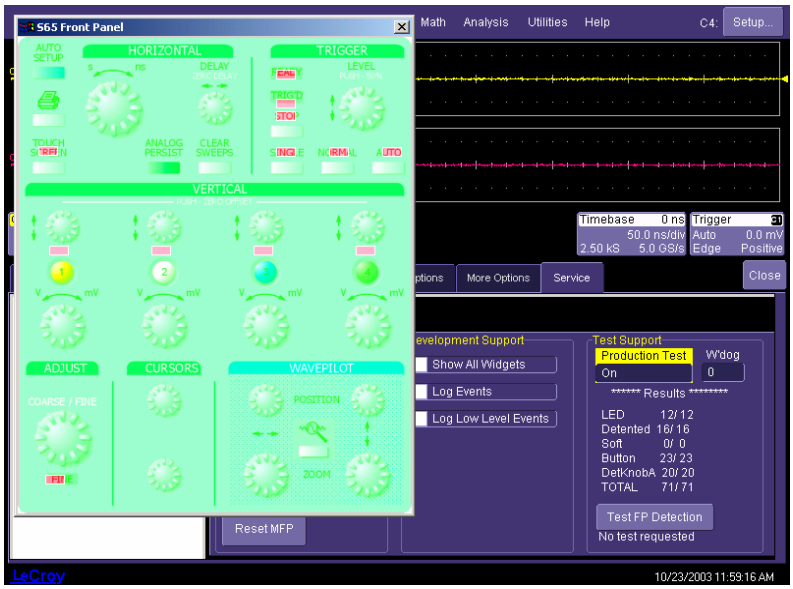
From the service menu select Front Panel and select Production Test. Select On. A picture of the front panel will appear on the screen as shown below:



Press each button in turn and turn each knob in both directions, they will change color as shown below:



Continue until all buttons and knobs have been tested and the front panel turns green indicating completion.



Select Production test and then off to turn off the test. The front panel LED's will be left in an abnormal state. This will be corrected when either the functions are used or when the application is restarted.

6.6.2.2 Critical File Backup

The hard disk contains critical factory calibration constants which must be backed up and restored if the hard drive is to be replaced or erased. These files will fit on a single floppy disk drive or USB storage device. From the service menu select Critical Files Backup, you will be prompted with a screen as shown below.



Select the device to back up to and press the backup button. The system will create a zip file named serialnumber.zip wherial serial number is of the form LCRY0602P12345) and copy it to the selected device.

6.6.2.3 Critical File Restore

After the hard drive has been replaced, the critical calibration files must be restored. Using the utility described above, select the storage device where the critical files exist and press restore. Note: the files can only be restored onto the same serial number unit that the files came from.

6.6.3 Acquisition System Tests

6.6.3.1 Critical Acquisition System Component Temperatures

In the service menu under AladdinAcqBoard there is a screen as shown below where the temperatures of the critical components on the main card can be monitored. The MFE and MFEEXT is the front end amplifier, the MAD is the ADC hybrid and the MAM is the acquisition memory. (the MAM listed under channel 1 are for channel 1 & 2, the ones under channel 2 are actually for channel 3 & 4) .The MTB is on the time base and trigger chip. The Ambient is not measured. The MFE and MTB have traditional heatsinks mounted to them, the MAD & MAM's have a fan cooled heatsink mounted to them. A temperature above 100°C is a cause for concern and should be corrected. Verify that the air inlet holes or exhaust holes are not covered and that the fans are operating correctly.



6.6.3.2 Automatic Calibrations

There is a screen entitled AutoCal in the service menu which will allow you do disable the calibrations performed by the software. There may be instances where the unit is stuck in a continuous calibration loop and until the calibrations are disabled, it can be very difficult to troubleshoot. Disabling the calibrations will allow you to inject signals and view traces. Refer to the troubleshooting trees for further information on using the function of this screen.





6.7 Calibration Procedures

The following section includes the manual and software assisted adjustments that can be made in the Wavemaster system

6.7.1 System Power Supply Calibration Procedure

- Measure the power supply voltages as shown in the table below. If any are found to be outside of their specifications proceed with the remainder of this procedure to adjust them.
- The power supply will need to be removed from the unit and have the cables connected to the main acquisition card for a load.
- +5V should be present on pin 1 of J6. This +5V must be connected to J6 pin 4 to enable the supply outputs. Once connected, the outputs should all reach their approximate intended output voltage.
- Measure each voltage as shown in the table below and adjust the potentiometers accessible through the cover as shown until each voltage is within its specified range.

The following table lists the nominal, min and max voltages for the outputs from the main power supply.

Nominal Output Voltage (Vset)
+3.3V ±2%
+5.05V ±3%
-3.3V ±2%
+12V ±2%
-12V ±2%
-5.05V ±3%
+24V ±2%
+5VSB ±3%

Measurement Locations:

CPU Brd Main Power Connector (J1)

Pin #	Signal	Wire Color	Pin #	Signal	Wire Color
1	+3.3VDC	Orange	11	+3.3VDC	Orange
2	+3.3VDC	Orange	12	-12VDC	Blue
3	COM	Black	13	COM	Black
4	+5VDC	Red	14	OUTPUT_EN/	Green
5	COM	Black	15	COM	Black
6	+5VDC	Red	16	COM	Black
7	COM	Black	17	COM	Black
8	PWR_OK	Gray	18	NC	
9	+5VSB	Purple	19	+5VDC	Red
10	+12VDC	Yellow	20	+5VDC	Red

CPU Brd +12 V Power Connector (J2)

Pin #	Signal	Wire Color	Pin #	Signal	Wire Color
1	COM	Black	3	+12VDC	Yellow
2	COM	Black	4	+12VDC	Yellow

Top Box Peripheral Connector (J3)

Pin #	Signal	Wire Color	Pin #	Signal	Wire Color
1	+3.3VDC	Orange	8	COM	Black
2	+3.3VDC	Orange	9	COM	Black
3	+3.3VDC	Orange	10	COM	Black
4	+5VDC	Red	11	COM	Black
5	+5VDC	Red	12	COM	Black
6	+5VDC	Red	13	COM	Black
7	+12VDC	Yellow	14	COM	Black

Acquisition Board Connector (J4)

Pin #	Signal	Wire Color	Pin #	Signal	Wire Color
1	-3.3VDC	White	9	COM	Black
2	-3.3VDC	White	10	COM	Black
3	-3.3VDC	White	11	COM	Black
4	-3.3VDC	White	12	COM	Black
5	-3.3VDC	White	13	COM	Black
6	-3.3VDC	White	14	COM	Black
7	-3.3VDC	White	15	COM	Black
8	-3.3VDC	White	16	-3.3VRS-	Brown

Acquisition Board Connector (J5)

Pin #	Signal	Wire Color	Pin #	Signal	Wire Color
1	+3.3VDC	Orange	12	COM	Black
2	+3.3VDC	Orange	13	COM	Black
3	+3.3VDC	Orange	14	COM	Black
4	+3.3VDC	Orange	15	COM	Black
5	+3.3VDC	Orange	16	COM	Black
6	+3.3VDC	Orange	17	COM	Black
7	+3.3VDC	Orange	18	COM	Black
8	+3.3VDC	Orange	19	COM	Black
9	+3.3VDC	Orange	20	COM	Black
10	+3.3VDC	Orange	21	LFS	Purple/White
11	+3.3VRS+	Brown	22	RS Common	Black/Red



Acquisition Board Connector (J6)

Pin #	Signal	Wire Color	Pin #	Signal	Wire Color
1	+12VDC	Yellow	10	COM	Black
2	+12VDC	Yellow	11	COM	Black
3	+12VDC	Yellow	12	COM	Black
4	-12VDC	Blue	13	COM	Black
5	-12VDC	Blue	14	COM	Black
6	-5VDC	Blue/White	15	COM	Black
7	-5VDC	Blue/White	16	COM	Black
8	+5VDC	Red	17	COM	Black
9	+5VDC	Red	18	+5VDC	Red

Hard-Drive Connector (J7)

Pin #	Signal	Wire Color
1	+12VDC	Yellow
2	COM	Black
3	COM	Black
4	+5VDC	Red

CD-ROM Connector (J8)

Pin #	Signal	Wire Color
1	+5VDC	Red
2	COM	Black
3	Not	Used
4	Not	Used

Printer Connector (J9)

Pin #	Signal	Wire Color
1	+24VDC	White/Black
2	+24VDC	White/Black
3	+5VDC	Red
4	COM	Black
5	COM	Black
6	COM	Black

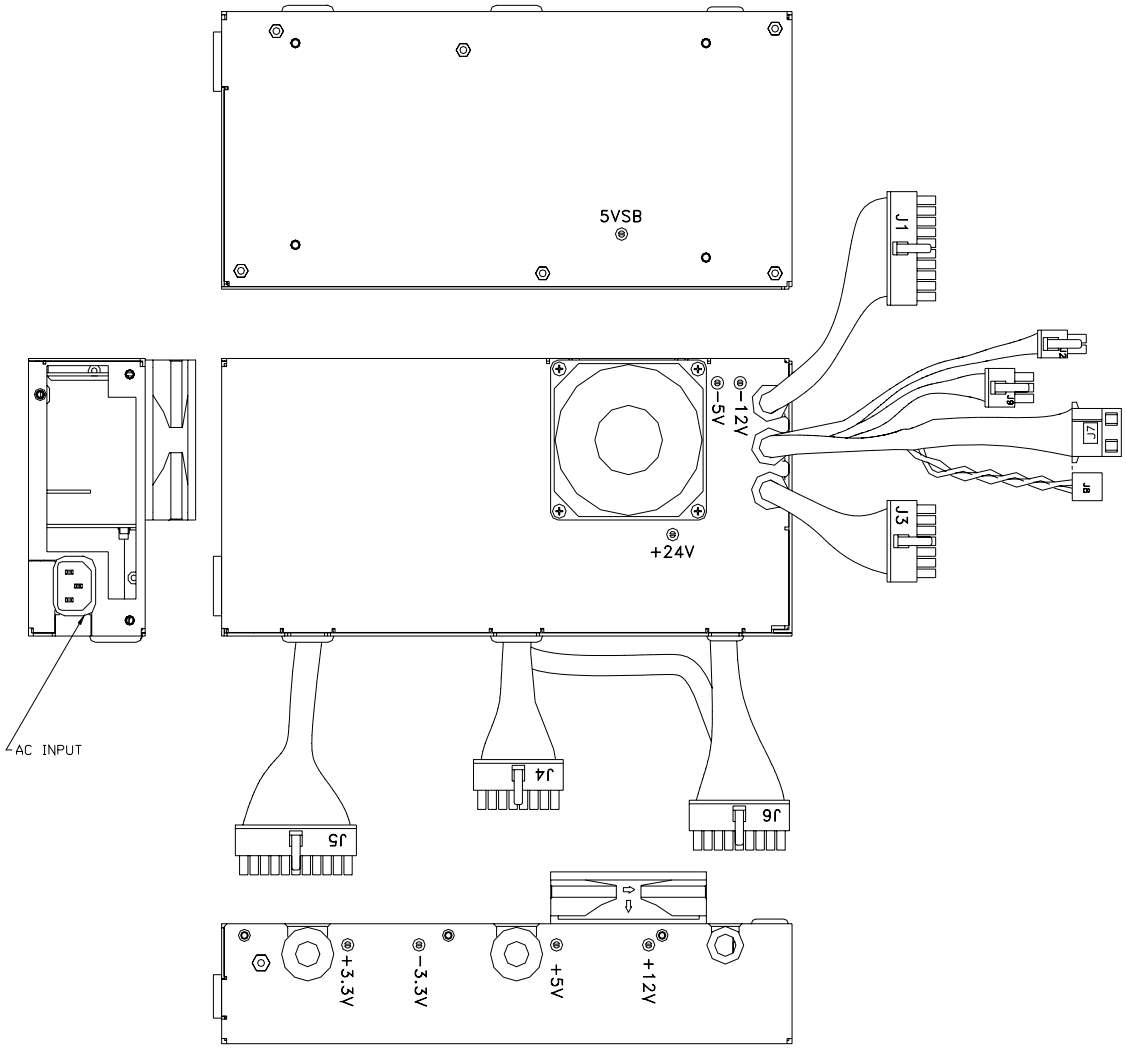


Figure 6-3: View of the power supply adjustment locations

6.7.2 Touch Screen Calibration Procedure

The touch screen must be calibrated based on the users vantage point to the screen, the size of their finger and their visual alignment with the tip of their finger to the screen. The calibration procedure can be invoked through the Utilities menu, Utilities tab. Press the touch screen button called “Touch Screen Calibration”.

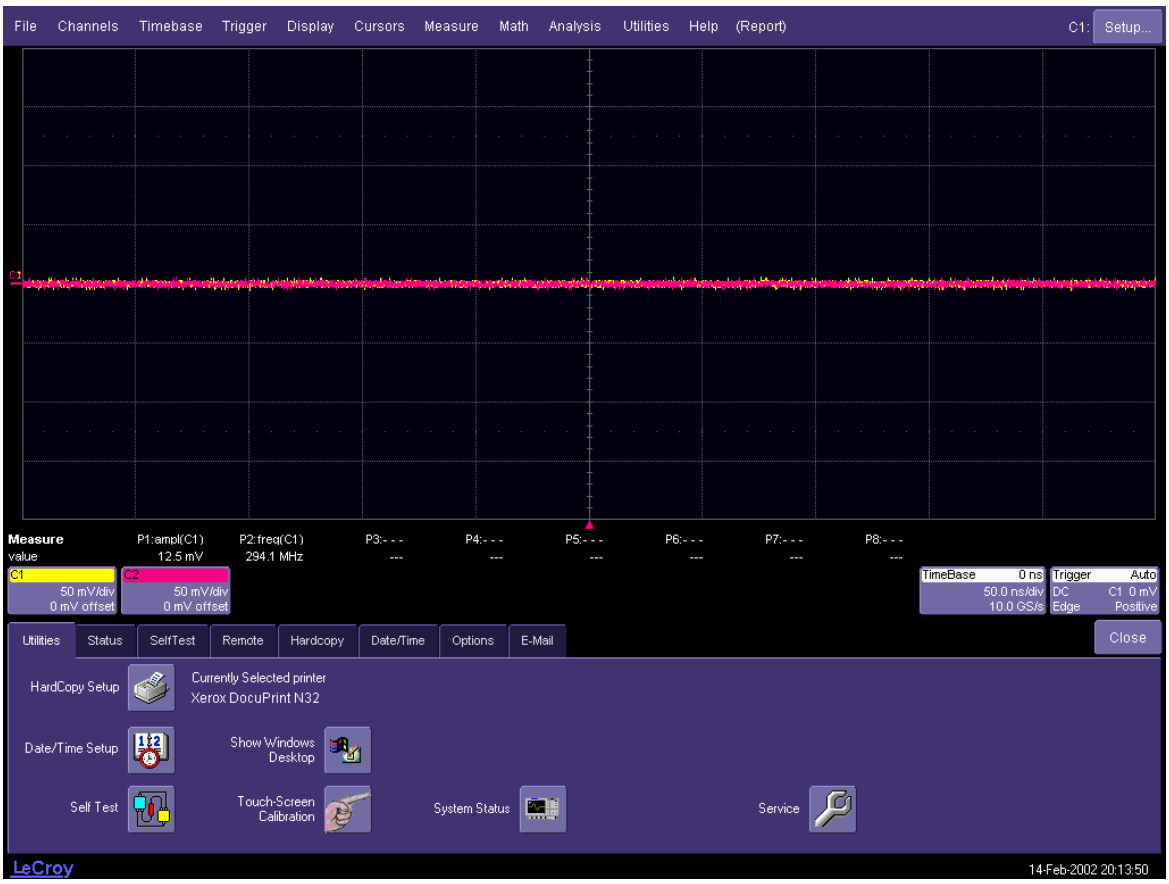


Figure 6-4 Touch Screen Calibration Menu

The user will be prompted with 5 locations on the screen for them to touch. They will appear one at a time and after touching each one, a new spot will appear. After all five spots have been touched, the touch screen is calibrated. It is important that you have the same vantage point to the screen that you will when the scope is in operation to have the easiest use of the touch screen.



Point 1



Point 2



Point 3



Point 4



Point 5



After the last point is pressed, a screen will be displayed indicating the error determined between the alignment of all the calibration points. If this error is too large, the calibration will be voided and the calibration sequence must be repeated. If the error is small then the calibration constants are applied.

6.8 Troubleshooting and Flow Charts

6.8.1 Introduction

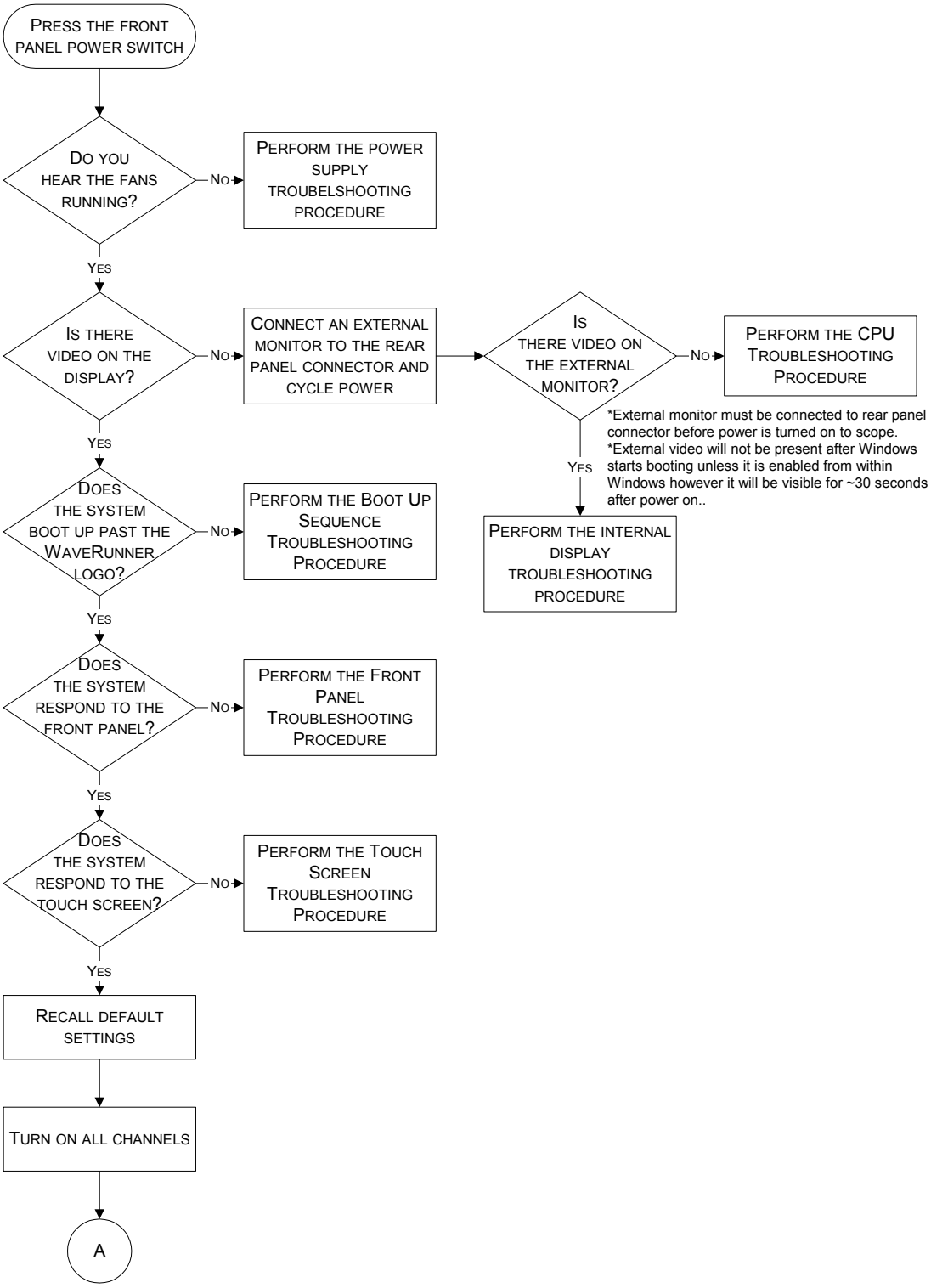

The troubleshooting information contained in this section is intended for use by qualified personnel having a basic understanding of electronics (analog and digital). In order to simplify servicing and minimize downtime, the following list of possible symptoms, likely causes, and troubleshooting steps have been prepared. The first step in troubleshooting is to check for obvious items like blown fuses. The power supply is the next item to check before proceeding to more detailed troubleshooting, since noise or low power supply voltages can cause a variety of digital and analog problems.

6.8.2 Repair Level

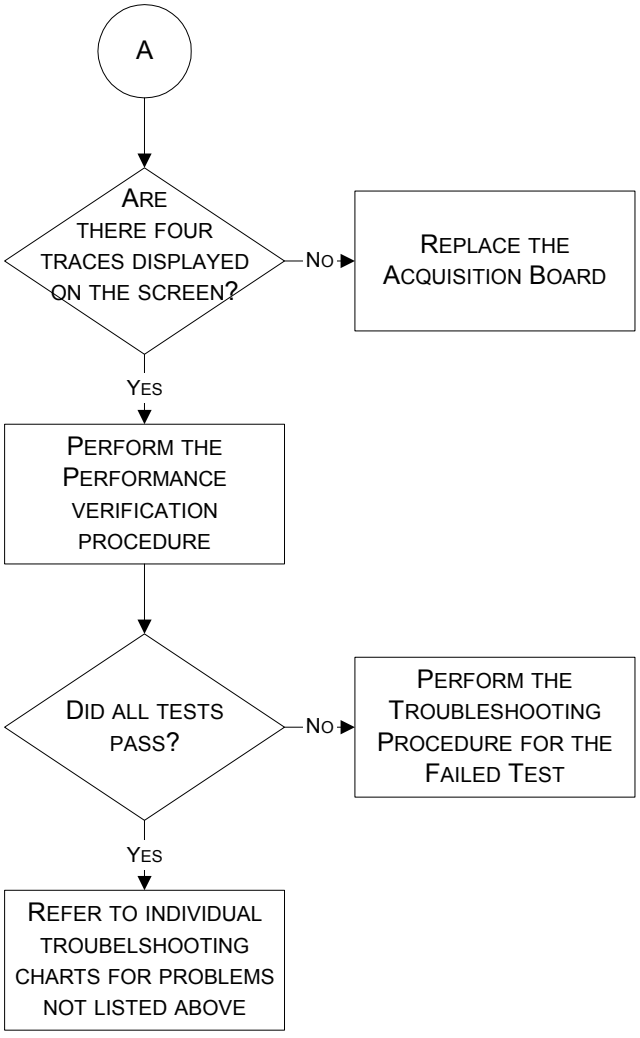
Most procedures in this section will allow troubleshooting down to the **BOARD LEVEL.**

Defective circuit boards will be repaired or exchanged by the regional LeCroy service office or the local representative (see section 2.2).

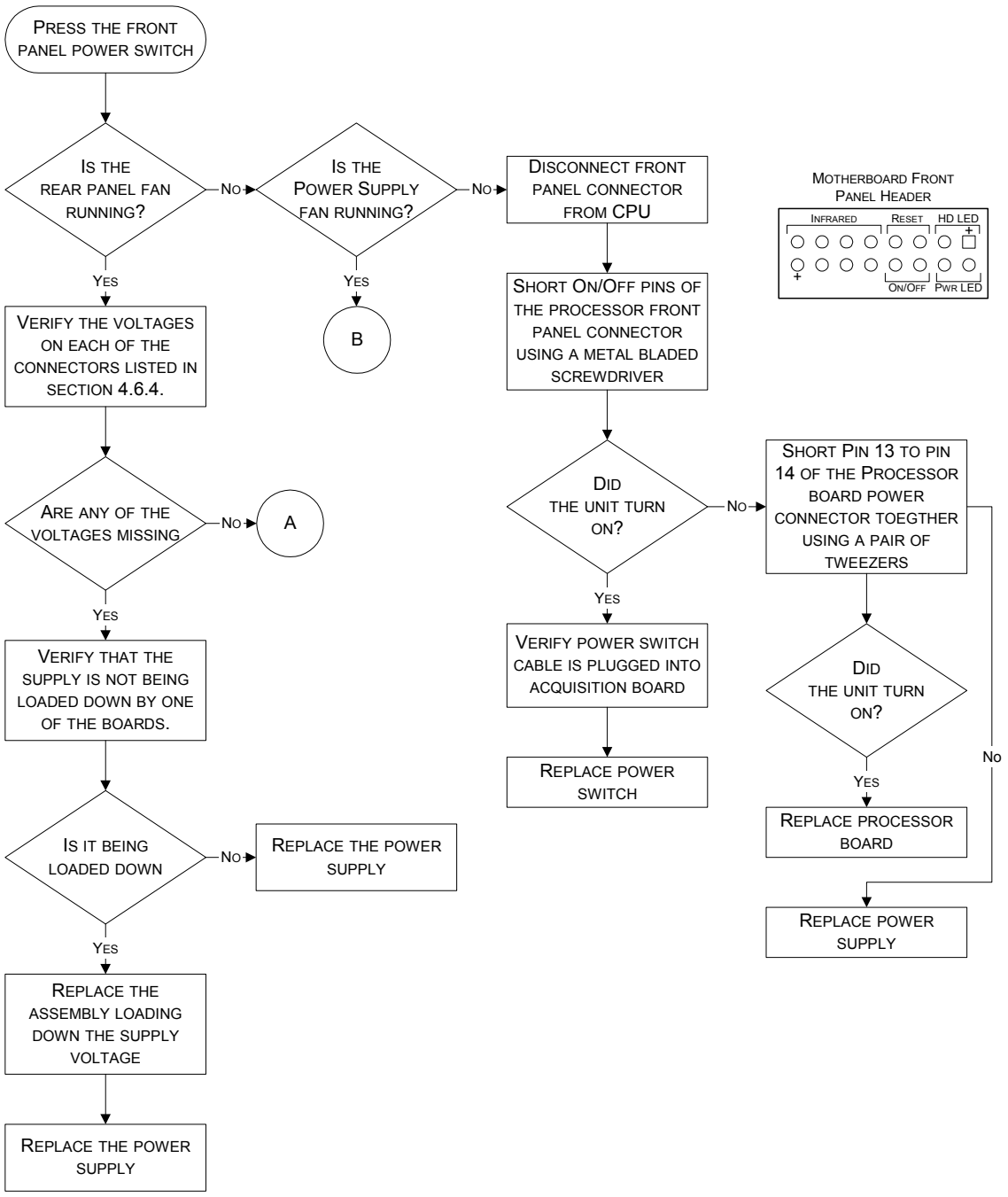
6.8.3 Initial Troubleshooting



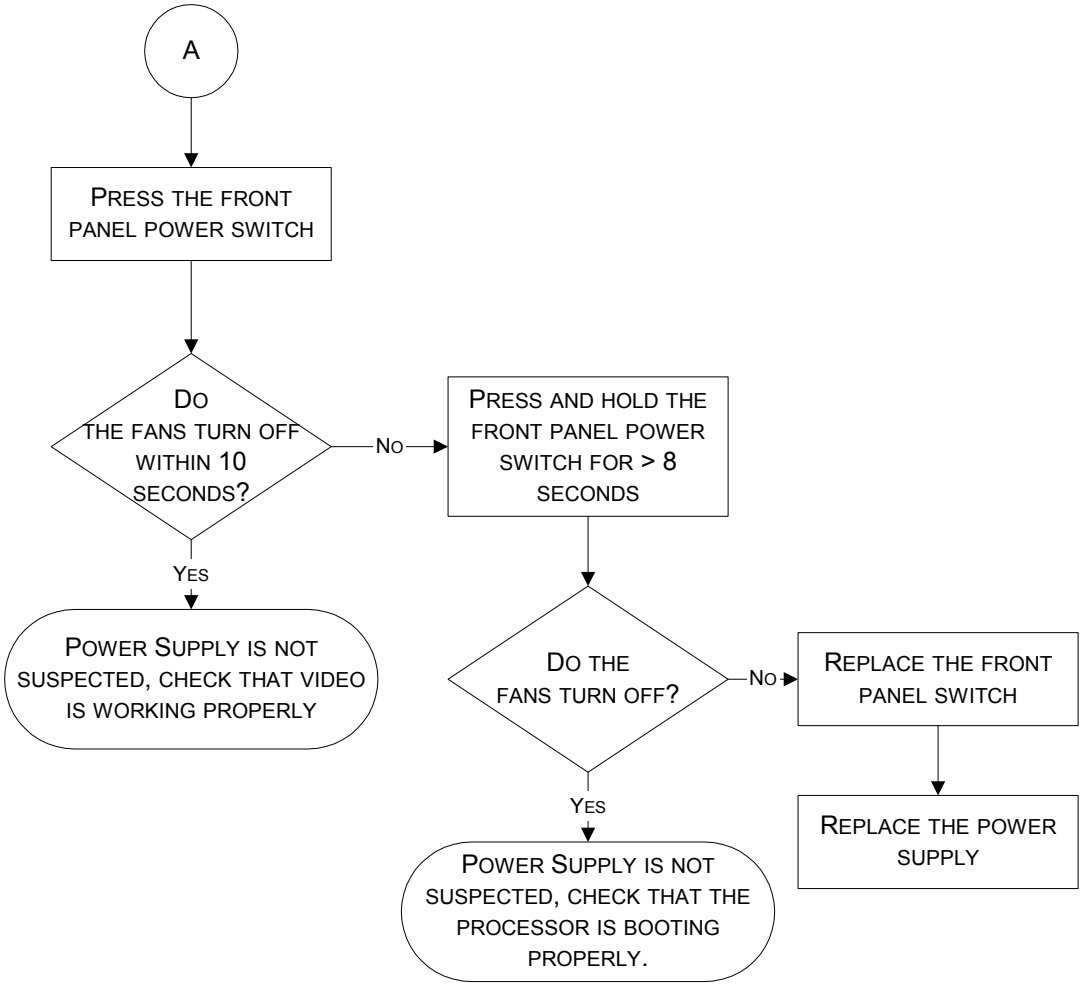
Initial Troubleshooting (continued)



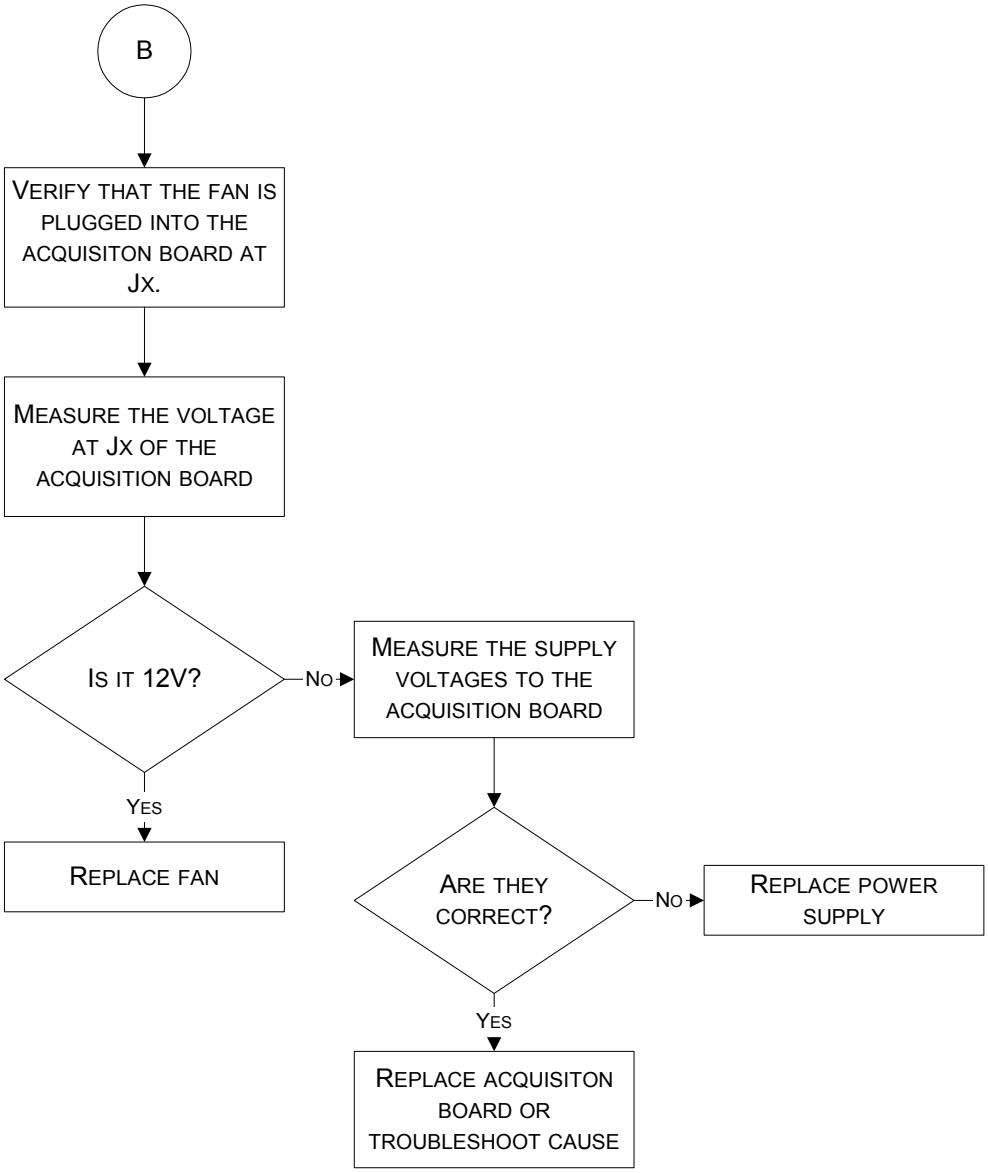
6.8.4 Power Supply Problem



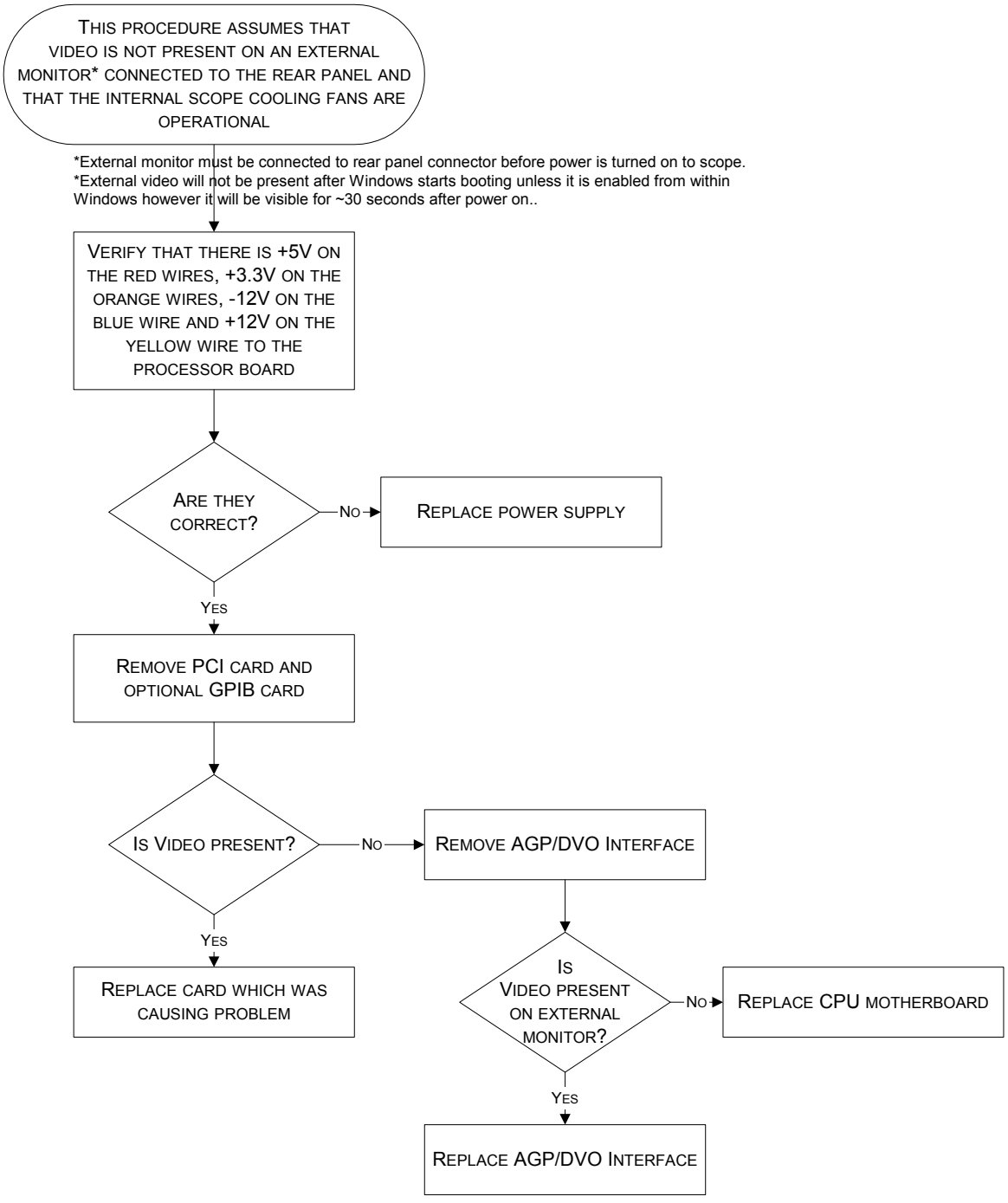
Power Supply Problem (continued)



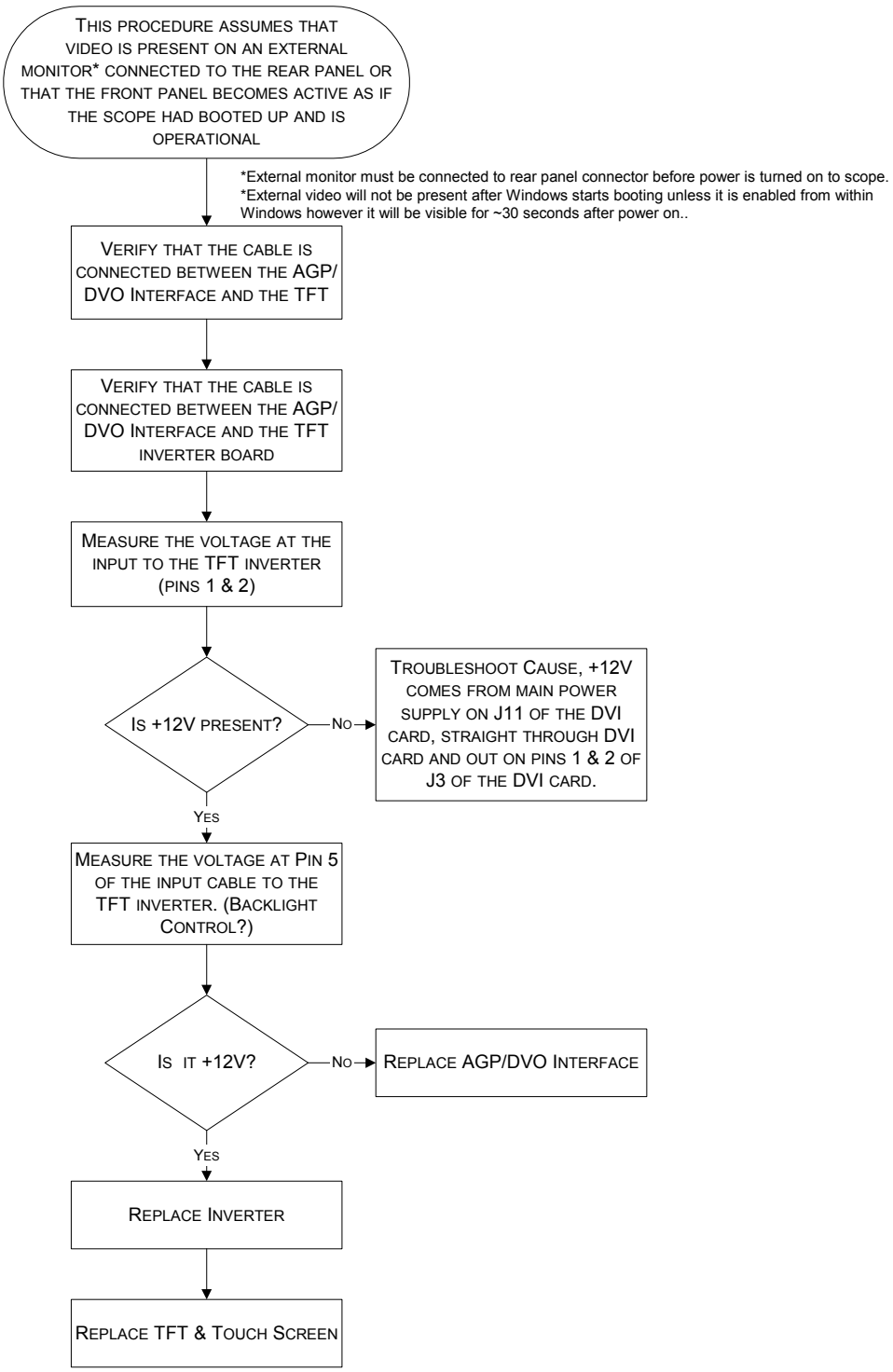
Power Supply Problem (continued)



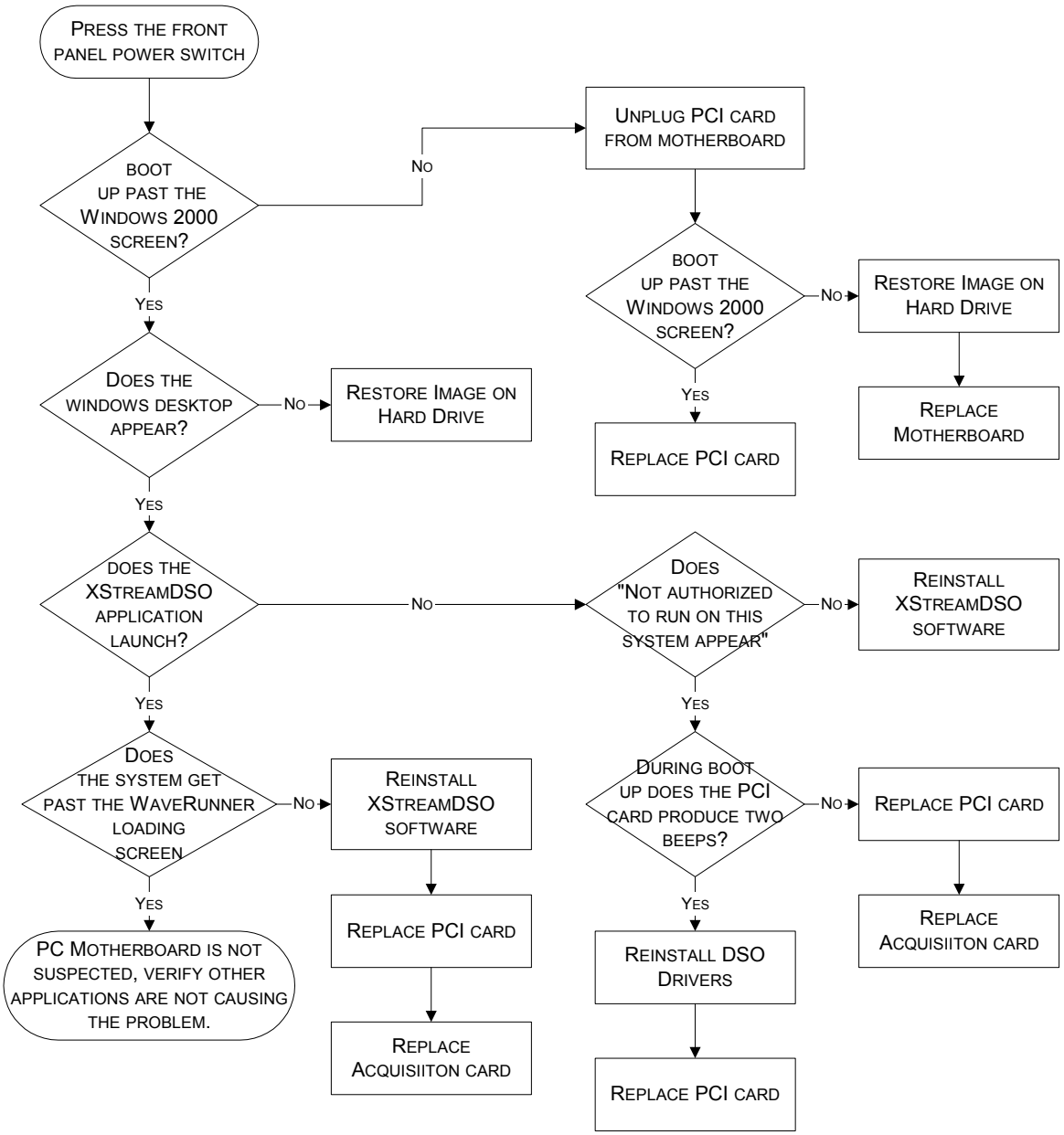
6.8.5 No Display (Internal or External)



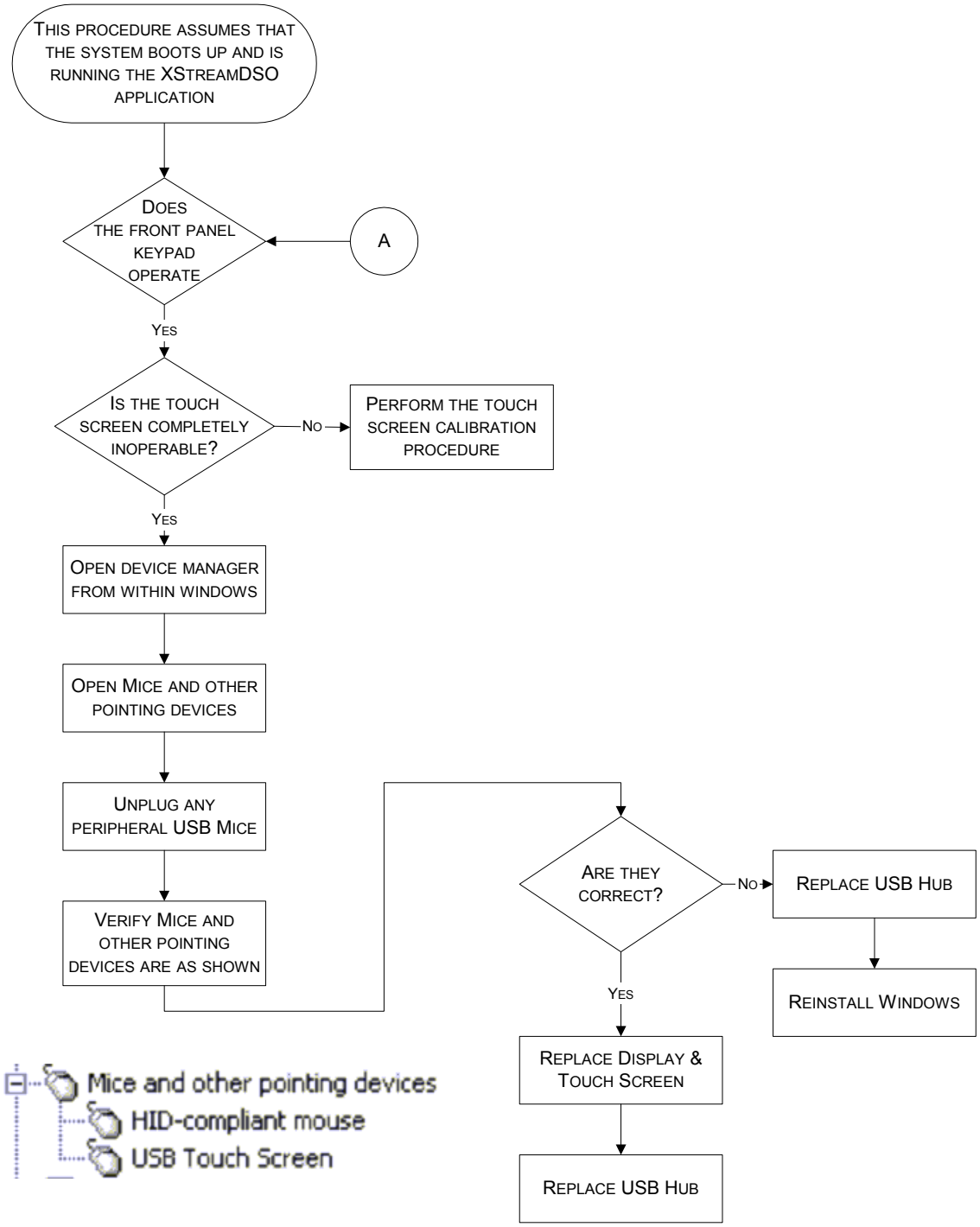
6.8.6 Internal Display Problem



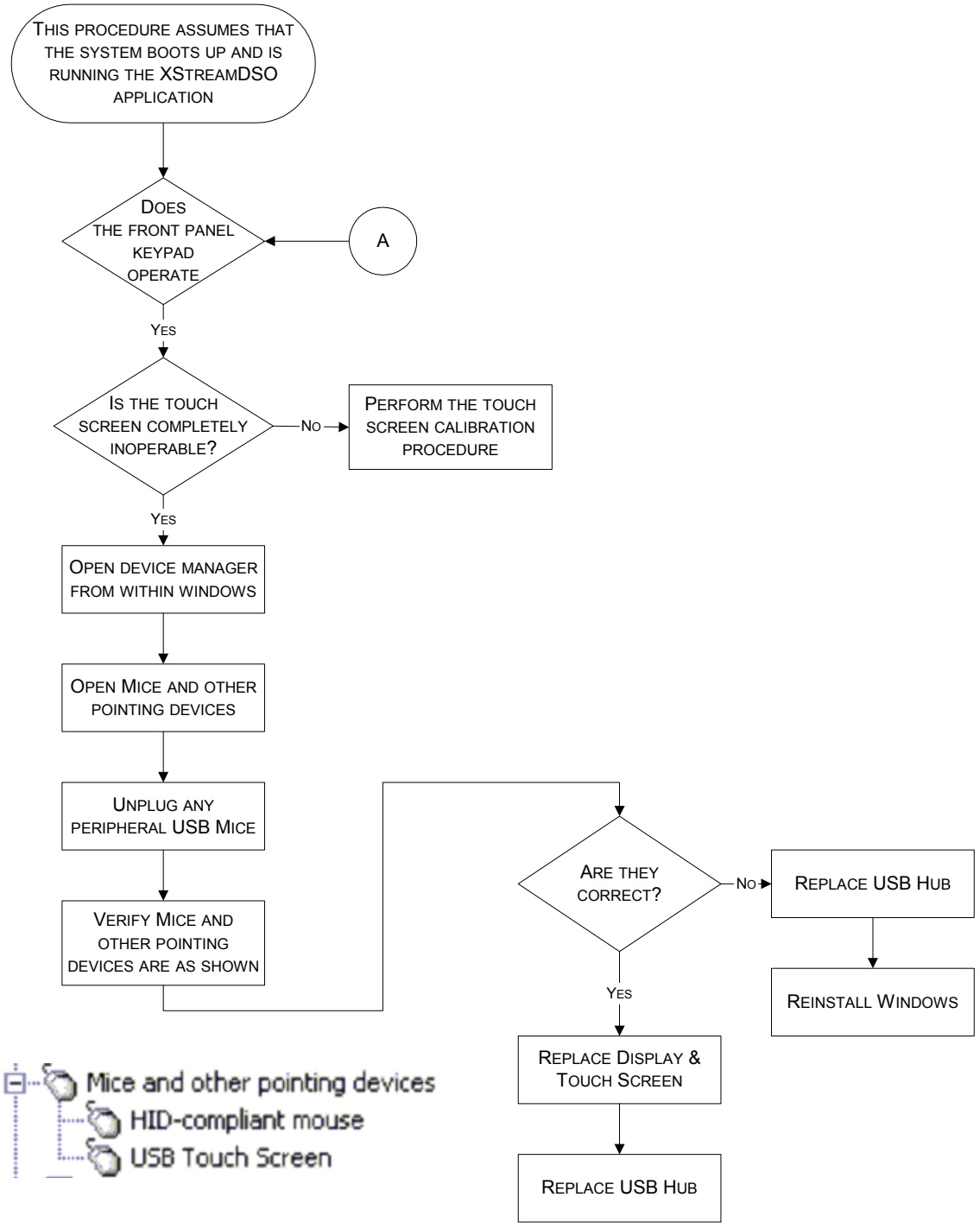
6.8.7 Boot Up Sequence



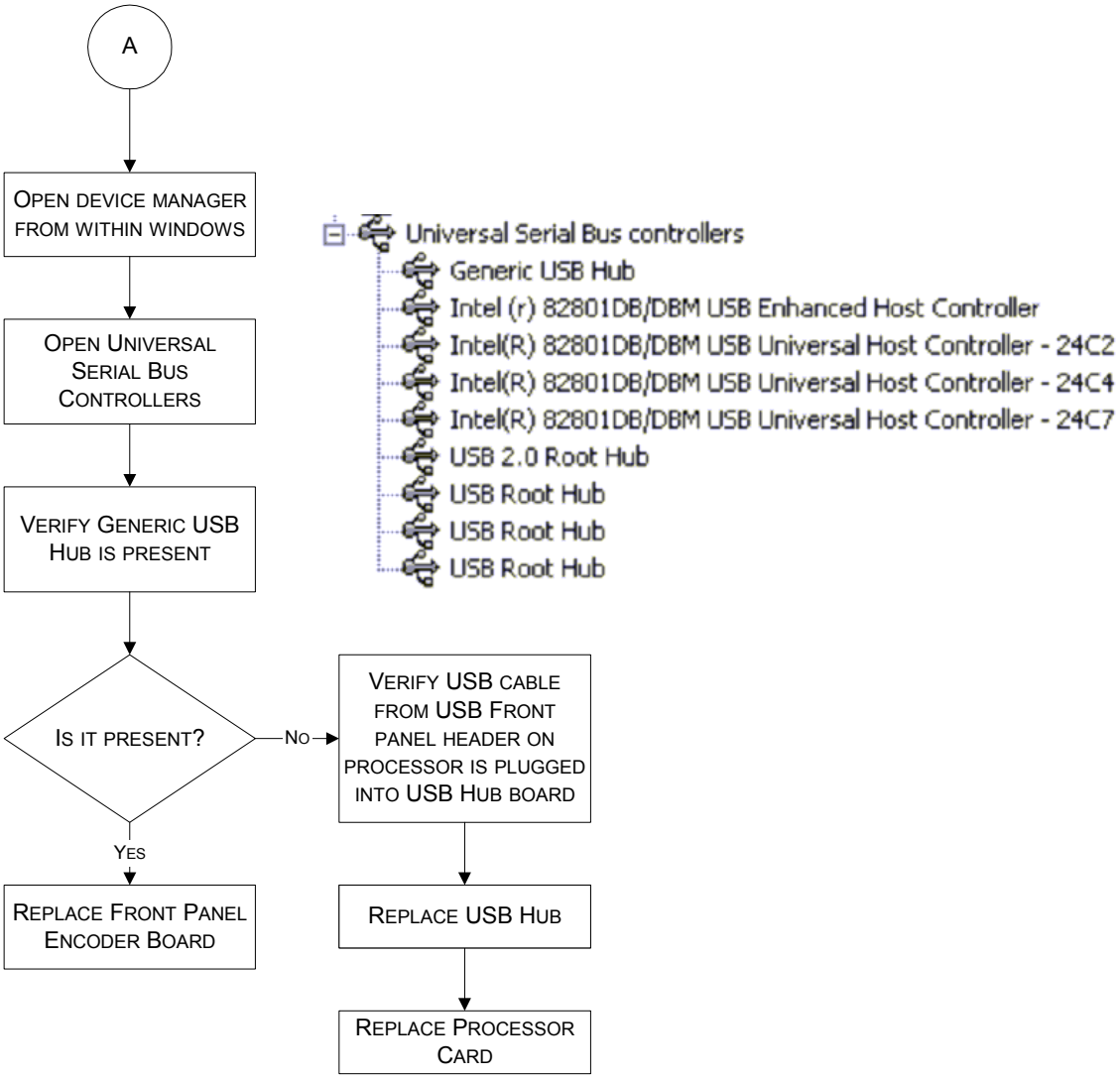
6.8.8 Front Panel Controls Do not Operate



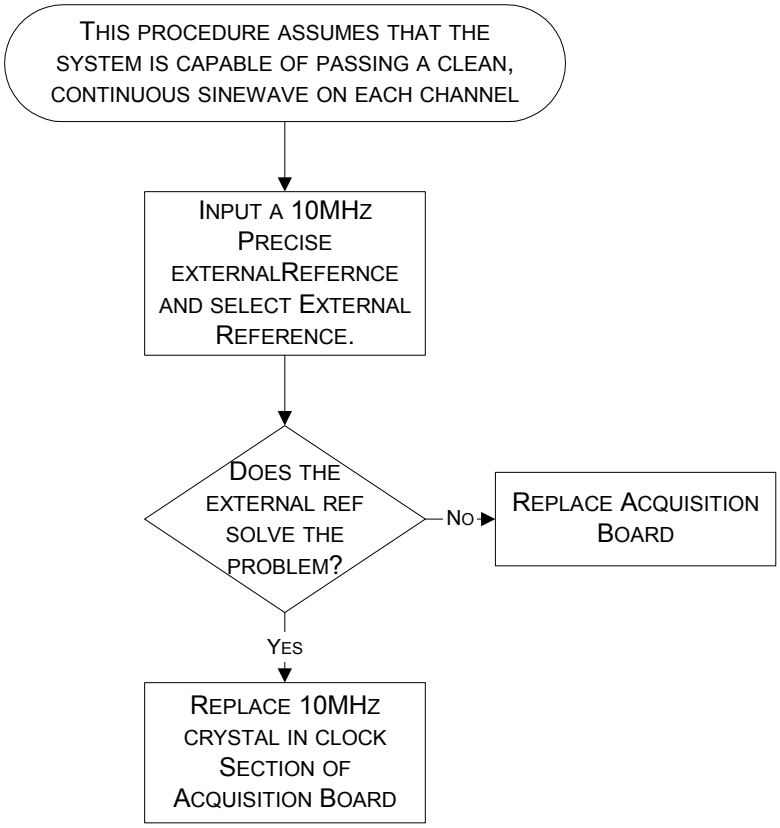
6.8.9 Touch Screen Problems



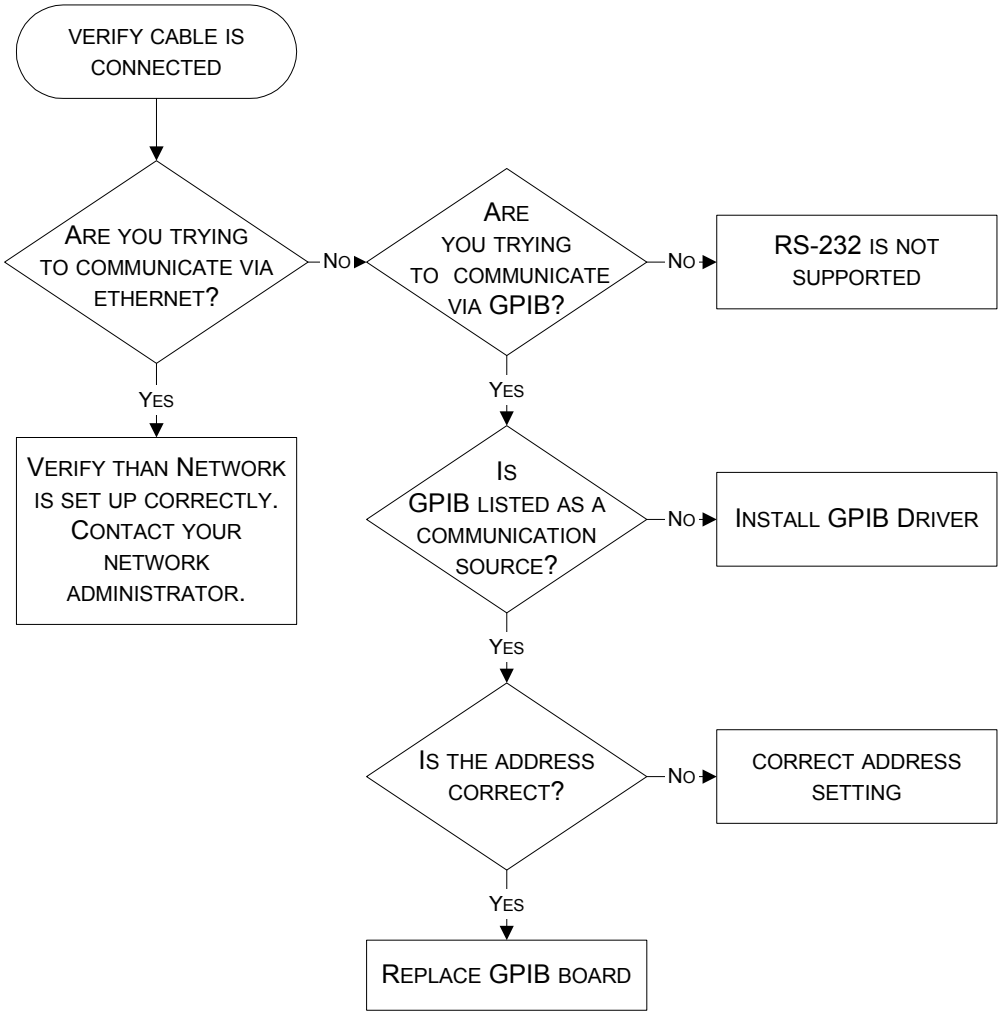
Touch Screen Problems (continued)



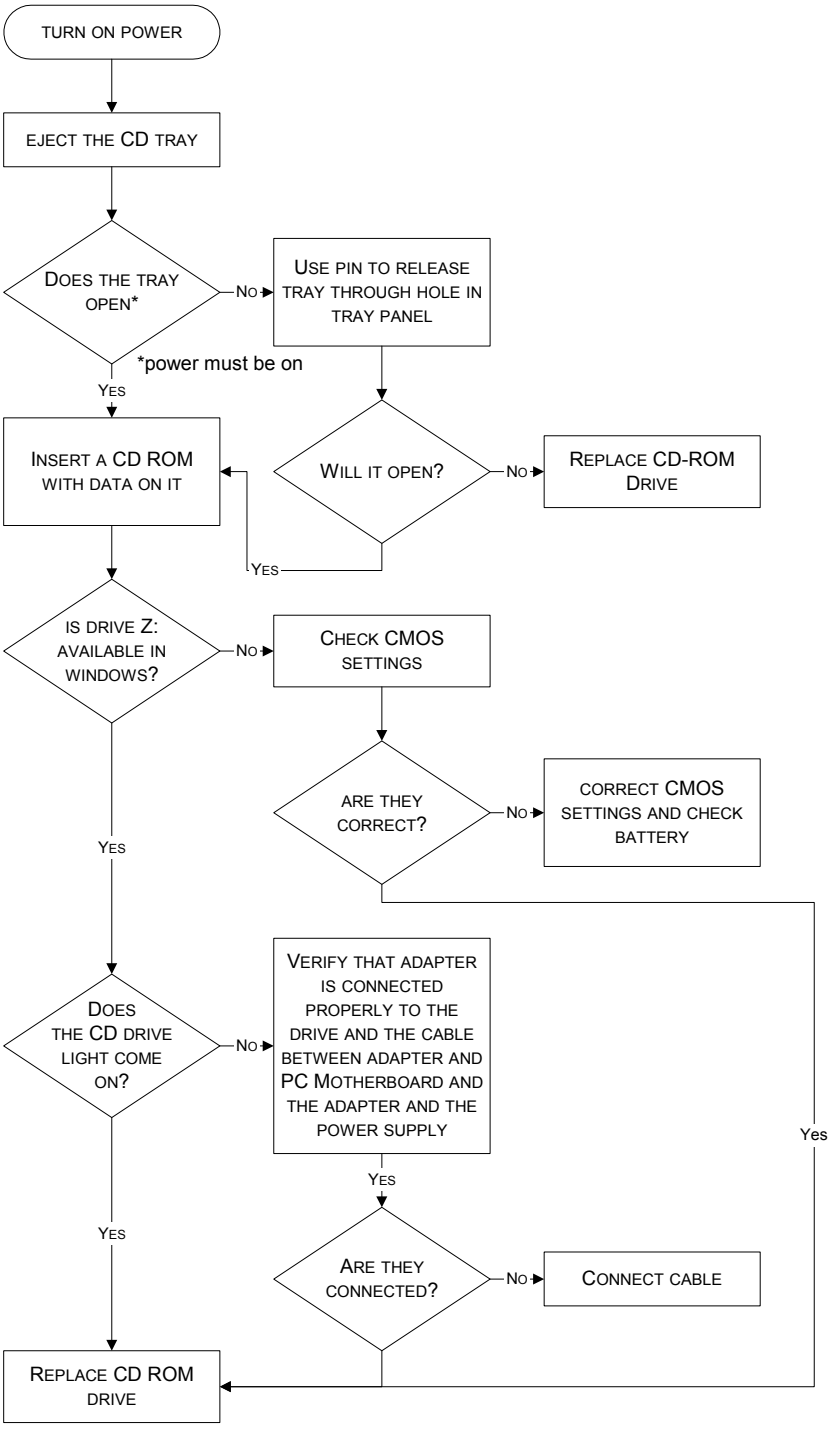
6.8.10 Timebase Problem



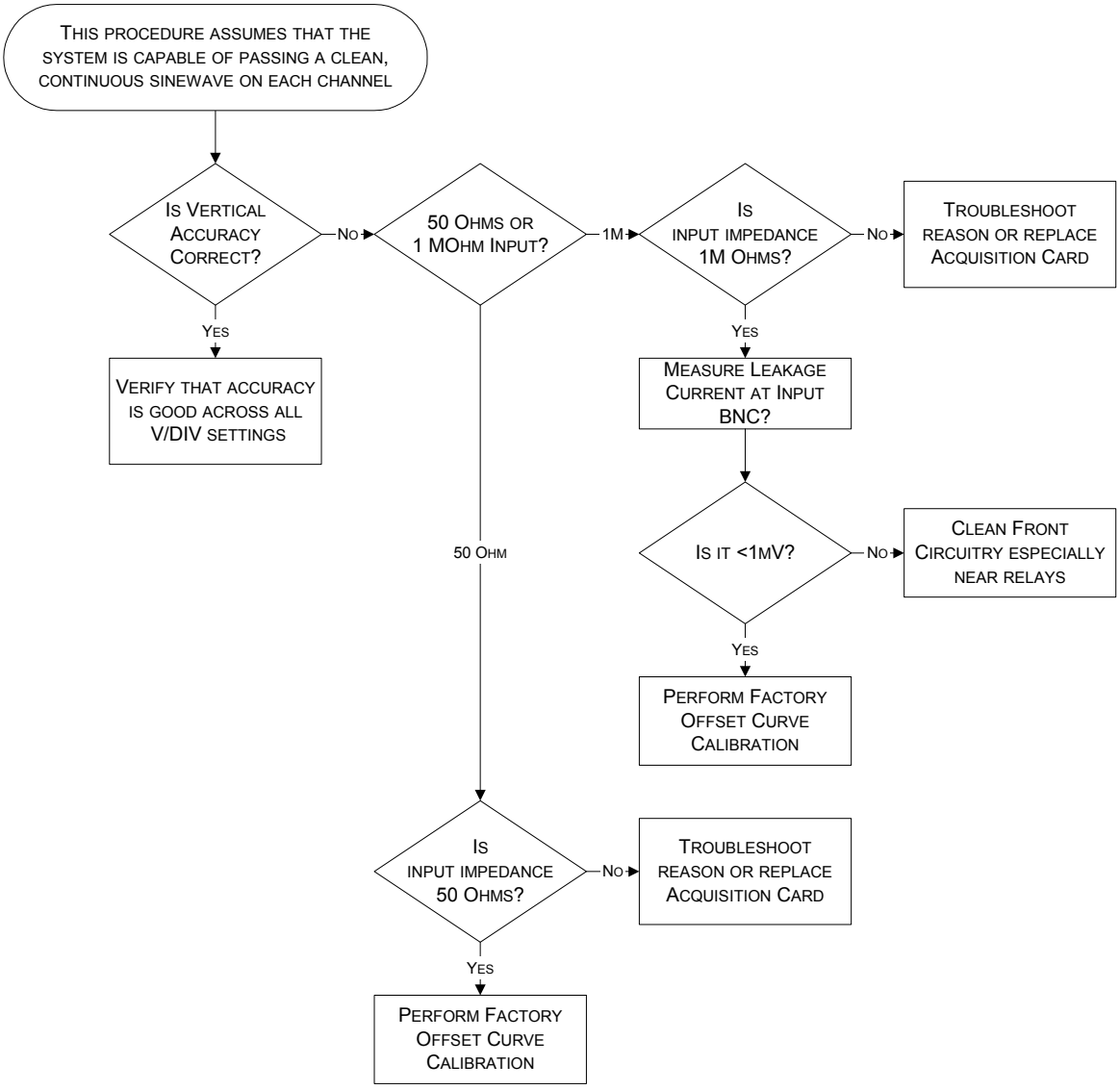
6.8.11 Remote Control Problem



6.8.12 CD-ROM Problem



6.8.13 Vertical Accuracy Problem



7. Replaceable Parts

To order parts, contact your local LeCroy service office. A list of the service centers is given in section 2 of this manual. For boards, you can either order a new board or an exchange board. Exchange assemblies are factory repaired, inspected, tested and calibrated. If you order an exchange board, you must return the defective board.

This section applies to the following model:

WaveRunner 6030, 6050, 6051, 6100, 6200 Field Replaceable Units

Component	Description
227200020	Celeron Processor 2.0GHz
258000008	TFT/Touchscreen Assembly
330000033	CD-ROM DRIVE 33.3MB
334600003	Processor Board (requires 2.0 Ghz Celeron)
335830015	CD-R/W Drive 24x Speed Half-Ht
900888-00	WR 6200 2 GHz 5 GS/s 4 Ch Acquisition Board
900890-00	PCI Interface
900896-00	4 Channel Encoder Board
901740-00	2 Channel Encoder Board
901761-00	Top Cover Assy
901763-00	WR 6051 500 MHz 5 GS/s 2 Ch Acquisition Board
901764-00	WR 6050 500 MHz 5 GS/s 4 Ch Acquisition Board
901765-00	WR 6100 1 GHz 5 GS/s 4 Ch Acquisition Board
901806-00	WR 6030 350 MHz 2.5 GS/s 4 Ch Acquisition Board
901851-00	USB Hub
901949-00	AGP/DVO Interface

WaveRunner 6030A, 6050A, 6051A, 6100A, 6200A Field Replaceable Units

Component	Description
227200020	Celeron Processor 2.0GHz
330000033	CD-ROM DRIVE 33.3MB
334600003	Processor Board (requires 2.0 Ghz Celeron)
335830015	CD-R/W Drive 24x Speed Half-Ht
900890-00	PCI Interface
902373-00	4 Channel Encoder Board
902375-00	2 Channel Encoder Board
902434-00	Top Cover Assy
902448-00	TFT/Touchscreen Assembly
902572-00	AGP/DVO Interface
902579-00	USB Hub with Audio
902600-00	WR 6030A 350 MHz 2.5 GS/s 4 Ch Acquisition Board
902601-00	WR 6051A 500 MHz 5 GS/s 2 Ch Acquisition Board
902602-00	WR 6050A 500 MHz 5 GS/s 4 Ch Acquisition Board
902603-00	WR 6100A 1 GHz 5 GS/s 4 Ch Acquisition Board
902604-00	WR 6200A 2 GHz 5 GS/s 4 Ch Acquisition Board



7.1 900888-00: WR6020 2 GHz, 5GS/s 4 Ch Acq Board

Part Number	Qty	Description
309000010	1	Crystal Oscillator 10MHZ 9PPM
335970001	1	Probe Hook
402120004	1	Conn RT Angle Fem Bnc
416162005	1	Switch R/A PCB Mtg SPDT MOM
430500003	4	20DB Attenuator Relay DC-3GHZ
454000018	1	Hdr Sold Tail Male 18 Pin HI T
454004002	1	Conn Receptacle USB R/A 4 Pos
454016002	1	Conn Hdr Vert 16 Pos Wire-BD
454022001	1	HEADER VERT 22 POS WIRE BD
454117003	4	Friction Header Straight .1 CE
454312010	4	Hdr Sold Tail/Male 10
469040002	1	Metal Banana Jack/Binding Post
505000013	2	CPU Cooler for Intel P4
520000102	1	Spacer Nylon TO-8V
522632120	6	Standoff Hex 6-32X5/8 F/F
524632015	4	Standoff Hex 6-32 X 1/2 FF
550011106	10	Screw Pan HD M2X6 Blk W/Nylock
551620100	10	#2 Flat Washer S.steel/Black O
555465002	1	Washer Lock Split 1/4
561632405	16	Screw TX Pan #6-32UNC 5/16" S1
709614300	5	Bulkhead Receptical Female Bnc
709614301	5	BNC Lock Washer
709614302	5	BNC Nut
7093XXP01	5	Right Angle Recept. Connector
7093XXP41	5	Probe Holder
7093XXP91	5	Probe Ring Contact
901140-00	4	Chip Atten. 3dB .5% Trim Res
901251-00	1	THERMAL TAPE DIE-CUT 13X13mm
901257-00	1	HEATSINK CLIP PLASTIC
901336-00	1	Heatsink S65 MST/MTB
901436-00	1	S65 Front Card Panel Assy Update
901437-00	2	Heatsink Base - HAD
901439-00	2	S65 backbone
901440-00	1	Heatsink Base mst/mtb
901441-00	1	Heatsink clip mst-mtb
901467-00	6	Thermal Gap Pad Die Cut
901562-00	1	FE Heatsink - 30mm
901586-00	1	S65 MAINBOARD Assy
901609-00	1	EMI Shield
901622-00	1	EMI shield - 10 GHZ clock
901685-00	5	Upper front end EMI shield
901686-00	5	Lower front end EMI shield
901693-00	1	Gap pad MST die cut

900888-00: WR6020 2 GHz, 5GS/s 4 Ch Acq Board (con't)

Part Number	Qty	Description
901694-00	1	Gap pad HTB die cut
901709-00	5	Malico 30mm heat sink assy
901790-00	2	S65 CLOCK EMI SHIELD 0.4 IN. H
901807-00	1	ALUM. SPACER
901835-00	1	CABLE S65 10GHz MTB COAX
901835-01	1	CABLE S65 10GHz CH1 COAX
901835-02	1	CABLE S65 10GHz CH3 COAX
901836-00	1	Waverunner Acq. PCB
CH599041022	1	Heat Sink Compound 251
HAD639C-02	2	Packaged MAD440E 10GS/s SiGe
HFE653B	5	Front End Amplifier
HTB645	1	Hybrid Pkgd Timebase Trigger
MAM439	6	Monolithic 8 Megabyte Dram Mem
MST429A	1	IC Smart Trigger Gate-Array
SM158021002	10	Cap Variable 0.5-2.5pF 250V
SM158070200	10	Cap Variable 4.5-20.0 PF
SM185457102	5	Res Vari Cermet 1 K
SM185457201	1	Res Vari Cermet 200 Ohms
SM185457503	5	Res Vari Cermet 50 K
SM200180032	1	IC 2-in OR Gate 74VHC1G32
SM200588014	1	Hex Schmitt-Trig Inv 74HCT14
SM201274033	1	IC Ecl Divide BY 4 MC10EL33
SM201570016	2	IC Ecl Diff Receiver 10EL16D
SM201774025	3	Diff Ecl-Ttl Transl 10ELT25
SM202057002	1	IC Triple 2-CH Analog Mux
SM202059003	1	ECL Diff Rec/Driv w/Enable Out
SM202100004	1	IC PLL Freq Synth 4106 6 GHz
SM202102001	1	IC ECL /PECL 1:5 DIFF CLK DRVR
SM202107002	1	100EP57 4:1 MUX
SM205129160	1	IC FLASH MEM 16 MBIT HY29LV160 TSOP-48
SM205200002	1	IC 8M x 8 Bit 133MHz SDRAM
SM205616001	5	IC 8-Bit Shift Reg 74LV594ADR
SM205625616	1	IC 256K X 16 CMOS SRAM
SM205715003	2	IC PAL FG456 Fine-Pitch BGA
SM206178125	1	IC Quad Bfr Line Drvr 3 State
SM206370024	3	IC Ttl TO Diff Ecl Transl MC10
SM207010002	3	IC CMOS 8 BIT LOW RES BUS SWITCH
SM207010011	2	IC Quad 10-Bit DAC LTC1664
SM207010014	1	16 Bit Buffer/Driver 3-State
SM207131660	1	IC Dac Octal 10BIT Serial Unip
SM207231654	4	IC Dual 14-Bit Serial Dac
SM207770442	5	IC Analog Switch DG442
SM207944351	5	OCTAL ANALOG MUX/DEMUX 74HCT4351
SM208400001	3	IC MMIC Amplifier 12GHz NBB-300
SM208400002	1	IC MMIC Amplifier 8GHz NBB-400



900888-00: WR6020 2 GHz, 5GS/s 4 Ch Acq Board (con't)

Part Number	Qty	Description
SM208450686	5	IC Wideband OP Amp OPA686
SM208470353	8	IC Dual OP Amp LF353
SM208470705	10	IC OP Amp Picoamp Input AD705
SM208472022	7	Opamp, Dual, Low Pwr TLE2022C
SM208475460	5	IC OP Amp Sin-Sup RtoR Ins Amp
SM208476482	2	IC Dual OP Amp Rail TO Rail 64
SM208550004	8	IC Volt Reg Pos Adjust LDO
SM208550337	1	IC Volt Reg Adj LM337
SM208550821	1	Voltage Monitor MAX821
SM208556138	1	IC Volt Ref 4.096V 0.1% 25ppm
SM208701023	11	IC Temperature Sensor
SM208909850	1	DDS-125MHZ Cmos Synth AD9850
SM227110161	1	16 BIT MICROCONTROLLER C161PI
SM229020150	5	MLC Trans Volt Suppressor
SM232022824	1	Diode Array Schottky HSMS2824
SM232030001	10	Diode Array Schottky HSMS-282C
SM232442828	5	Diode Bridge HSMS2828
SM236030099	10	Diode SO-Pkg BAV99
SM252005303	10	Pin Diode Bar 63-03W
SM252023066	20	Pin Diode Bar 66
SM252023304	5	Dual Pin Diode Silicon Bar 63-
SM256232013	1	Diode Light Emitting Red
SM270050520	15	NPN 9GHZ Wideband Transistor
SM270130092	6	Transistor Npn BFR92A
SM270330848	2	Transistor Npn BC848C
SM275030550	5	Transistor Pnp BF550
SM275132907	1	Transistor Pnp 2907A
SM280122416	5	Trans. Jfet N MMBF4416/LC6A
SM280217505	2	Mosfet, Nchanel, 75A, 50V, D2P
SM281115003	4	P-CH Hdtmos Pwr E-Fet MTB50P03
SM289772003	5	Transistor Array 2003
SM300092390	1	Inductor Wound 2% 39 NH
SM300095151	2	Inductor Wound 150NH
SM300600009	2	Inductor 9.3uH 7.2A Wound
SM301001001	19	BEAD FERRITE
SM301001002	6	Bead SHF 0.3A
SM301001016	4	Inductor Pwr Toroid 272uH .36A
SM301001017	3	Inductor Chip 10% 15uH 1210
SM301001018	1	Inductor Shielded 100uH 10%
SM301004001	70	Bead Ferrite 50 Ohms 3AMPS 120
SM311000005	1	Crystal Oscillator 16 MHz 3.3V
SM311000006	1	Voltage Controlled Oscillator 5 GHz
SM430530001	20	Relay Smd Dual Form C 5V
SM431030005	5	Relay SPDT HF 50 Ohm 4.5V

900888-00: WR6020 2 GHz, 5GS/s 4 Ch Acq Board (con't)

Part Number	Qty	Description
SM433695250	2	PTC Resettable Device 2.5A
SM453005001	3	Header 1 x 5 Shrouded
SM454204040	2	Hdr Male 40 Pos Idc
SM507000002	2	Heatsink Surface Mount TO-263
SM651081102	8	Res Chip 0.1% 1 Kohm
SM652000005	10	Res RF 100 Ohm .25% 1/3W 1206
SM652041000	49	Res Zero ohms
SM652041011	25	Res Chip 1% 49.9 Ohms
SM652041200	11	Res 20 Ohms +/-1% 1/16W 0402 S
SM652061000	4	Res Chip 0 Ohm Jumper
SM652061000	11	Res Chip 0 Ohm Jumper
SM652061100	5	Res Chip 1% 10.0 Ohm .063W
SM652061100	10	Res Chip 1% 10.0 Ohm .063W
SM652061101	4	Res Chip 1% 100 Ohm .063W
SM652061101	5	Res Chip 1% 100 Ohm .063W
SM652061101	7	Res Chip 1% 100 Ohm .063W
SM652061101	10	Res Chip 1% 100 Ohm .063W
SM652061102	5	Res Chip 1% 1.0K Ohm .063W
SM652061102	16	Res Chip 1% 1.0K Ohm .063W
SM652061102	23	Res Chip 1% 1.0K Ohm .063W
SM652061103	7	Res Chip 1% 10K Ohm .063W
SM652061103	19	Res Chip 1% 10K Ohm .063W
SM652061105	1	Res Chip 1% 1.0M Ohm .063W
SM652061105	5	Res Chip 1% 1.0M Ohm .063W
SM652061106	5	Res Chip 1% 10M Ohm .063W
SM652061112	10	Res Chip 1% 1.1K Ohm .063W
SM652061121	15	Res Chip 1% 120 Ohm .063W
SM652061121	50	Res Chip 1% 120 Ohm .063W
SM652061131	5	Res Chip 1% 130 Ohm .063W
SM652061154	5	Res Chip 1% 150K Ohm .063W
SM652061161	15	Res Chip 1% 160 Ohm .063W
SM652061200	1	Res Chip 1% 20.0 Ohm .063W
SM652061201	1	Res Chip 1% 200 Ohm .063W
SM652061201	5	Res Chip 1% 200 Ohm .063W
SM652061201	15	Res Chip 1% 200 Ohm .063W
SM652061203	11	Res Chip 1% 20K Ohm .063W
SM652061221	18	Res Chip 1% 220 Ohm .063W
SM652061222	2	Res Chip 1% 2.2K Ohm .063W
SM652061222	4	Res Chip 1% 2.2K Ohm .063W
SM652061222	5	Res Chip 1% 2.2K Ohm .063W
SM652061240	1	Res Chip 1% 24.0 Ohm .063W
SM652061240	5	Res Chip 1% 24.0 Ohm .063W
SM652061271	2	Res Chip 1% 270 Ohm .063W
SM652061271	2	Res Chip 1% 270 Ohm .063W
SM652061271	10	Res Chip 1% 270 Ohm .063W



900888-00: WR6020 2 GHz, 5GS/s 4 Ch Acq Board (con't)

Part Number	Qty	Description
SM652061271	20	Res Chip 1% 270 Ohm .063W
SM652061273	5	Res Chip 1% 27K Ohm .063W
SM652061273	20	Res Chip 1% 27K Ohm .063W
SM652061330	5	Res Chip 1% 33.0 Ohm .063W
SM652061332	4	Res Chip 1% 3.3K Ohm .063W
SM652061332	5	Res Chip 1% 3.3K Ohm .063W
SM652061334	1	Res Chip 1% 330K Ohm .063W
SM652061361	3	Res Chip 1% 360 Ohm .063W
SM652061361	5	Res Chip 1% 360 Ohm .063W
SM652061361	15	Res Chip 1% 360 Ohm .063W
SM652061390	5	Res Chip 1% 39.0 Ohm .063W
SM652061390	35	Res Chip 1% 39.0 Ohm .063W
SM652061393	1	Res Chip 1% 39K Ohm .063W
SM652061393	5	Res Chip 1% 39K Ohm .063W
SM652061393	15	Res Chip 1% 39K Ohm .063W
SM652061394	5	Res Chip 1% 390K Ohm .063W
SM652061430	10	Res Chip 1% 43.2 Ohm .063W
SM652061431	1	Res Chip 1% 430 Ohm .063W
SM652061432	6	Res Chip 1% 4.3K Ohm .063W
SM652061471	5	Res Chip 1% 470 Ohm .063W
SM652061510	5	Res Chip 1% 51.0 Ohm .063W
SM652061510	12	Res Chip 1% 51.0 Ohm .063W
SM652061510	25	Res Chip 1% 51.0 Ohm .063W
SM652061511	2	Res Chip 1% 510 Ohm .063W
SM652061512	5	Res Chip 1% 5.1K Ohm .063W
SM652061513	5	Res Chip 1% 51K Ohm .063W
SM652061562	5	Res Chip 1% 5.6K Ohm .063W
SM652061681	5	Res Chip 1% 681 Ohm .063W
SM652061751	1	Res Chip 1% 750 Ohm .063W
SM652061751	5	Res Chip 1% 750 Ohm .063W
SM652061824	5	Res Chip 1% 820K Ohm .063W
SM652061912	5	Res Chip 1% 9.1K Ohm .063W
SM652101101	2	Res Chip (E24) 1% 100 Ohm
SM652101302	1	Res Chip (E24) 1% 3 K
SM653041297	5	RES CHIP 1% 100 OHMS 0402
SM653101226	1	Res Chip 1% 18.2 Ohms
SM653101262	9	Res Chip 1% 43.2 Ohms
SM653101277	7	Res Chip 1% 61.9 Ohms
SM653101285	5	Res Chip 1 % 75.0 Ohms
SM653101297	18	Res Chip 1% 100 Ohms
SM653101322	17	Res Chip 1% 182 Ohms
SM653101326	7	Res Chip 1% 200 Ohms
SM653101334	8	Res Chip 1% 243 Ohms
SM653101347	1	Res Chip 1% 332 Ohms

900888-00: WR6020 2 GHz, 5GS/s 4 Ch Acq Board (con't)

Part Number	Qty	Description
SM653101354	14	Res Chip 1% 392 Ohms
SM653101377	9	Res Chip 1% 681 Ohms
SM653101393	33	Res Chip 1% 1.00 K
SM653101397	1	Res Chip 1% 1.10 K
SM653101401	4	Res Chip 1% 1.21 K
SM653101410	13	Res Chip 1% 1.50 K
SM653101422	4	Res Chip 1% 2.00 K
SM653101422	12	Res Chip 1% 2.00 K
SM653101422	35	Res Chip 1% 2.00 K
SM653101426	9	Res Chip 1 % 2.21K
SM653101430	3	Res Chip 1% 2.43 K
SM653101435	2	Res Chip 1% 2.74 K
SM653101458	10	Res Chip 1 % 4.75 K
SM653101461	7	Res Chip 1% 5.11 K
SM653101469	1	Res Chip 1% 6.19 K
SM653101477	13	Res Chip 1% 7.50 K
SM653101489	4	Res Chip 1 % 10.0 K
SM653101489	21	Res Chip 1 % 10.0 K
SM653101506	5	Res Chip 1% 15.0 K
SM653101518	7	Res Chip 1% 20.0 K
SM653101539	6	Res Chip 1% 33.2 K
SM653101589	9	Res Chip 1% 110 K
SM654101000	11	Chip Jumper Zero Ohms
SM654101000	12	Chip Jumper Zero Ohms
SM655020002	10	RES CHIP 1% 174 OHMS
SM655020017	30	Res Thk Film 1% 1K Ohm 1/16W
SM655020025	18	Res Thk Film 1% 2.74 Ohm 1/16W
SM655030040	10	Res Thk Film +/-1% 5.11 Ohm .1W
SM655030042	5	Res Thk Film 1% 5.6M Ohm 1/16W
SM655040022	5	Res Chip .5% 50ppm 180K 150V
SM655040023	5	Res Chip .5% 50ppm 240K 150V
SM655040024	40	Res Chip .5% 50ppm 300K 150V
SM655040025	10	Res Chip .5% 50ppm 110K 150V
SM655040026	1	Res Thk Film 41.2 Ohm .5% 1/8W
SM655040027	2	Res Thk Film 20 Ohm .5% 1/8W
SM655080004	5	Res Thk Film 1 Ohm +/- 5% 1/2W
SM655080005	8	Res Thk Film 1% 105 Ohm 1/2W
SM655080009	1	Res Thk Film 0.5% 41.2 Ohm 1W
SM661010002	10	Cap Cera Chip 27PF +/- 5%
SM661011001	5	Cap Cera Chip 3.9pF 200V
SM661028100	1	Cap Cera Chip 1UF 10V
SM661028100	15	Cap Cera Chip 1UF 10V
SM661066102	5	Cap Cera Chip 10% 1000PF/50V
SM661066102	10	Cap Cera Chip 10% 1000PF/50V
SM661066102	88	Cap Cera Chip 10% 1000PF/50V



900888-00: WR6020 2 GHz, 5GS/s 4 Ch Acq Board (con't)

Part Number	Qty	Description
SM661068104	5	Cap Cera Chip 0.1uF 0603
SM661068104	25	Cap Cera Chip 0.1uF 0603
SM661068104	120	Cap Cera Chip 0.1uF 0603
SM661073068	5	Cap Cera 6.8+/- 0.1PF 50V Npo
SM661073300	5	Cap Cera 30PF+/- 5% 50V Npo
SM661073331	3	Cap Cera 330PF+/- 5% 50V Npo
SM661073820	7	Cap Cera 82PF+/- 5% 50V Npo
SM661165102	3	Cap Cera Chip 1000PF
SM661207103	6	Cap Cera Chip 20% .01 UF
SM661207104	10	Cap Cera Chip 20 % .1 UF
SM661207104	223	Cap Cera Chip 20 % .1 UF
SM661207223	5	Cap Cera Chip 20% .022 UF
SM661255015	1	Cap Cera Chip 1.5 PF
SM661255121	3	Cap Cera Chip 5% 120 PF
SM661540056	10	Cap Cera Chip 5.6PF 500V
SM661540068	5	Cap Cera Chip 6.8PF 500V
SM662131003	47	Cap Cera Chip 5% 50V .01 UF
SM662135001	14	Cap Cera +/-.1% 50V 1.2pF NPO
SM662151001	42	Cap Cera Chip 10% 16V 0.1 UF
SM662152001	18	Cap Cera Chip 10% 16V 100nF
SM662212001	5	Cap Cera .015uF 10% 25V X7R
SM662232001	8	10000pf 0603 capacitor
SM662241001	5	Cap Cera 22pF +/- 5% 100V Npo
SM662252001	5	Cap Cera .068uF 10% 16V X7R
SM662382001	5	Cap Cera 1000pF 10% 500V X7R
SM662432001	1	Cap Cera 4700pF 10% 50V X7R
SM662432002	1	Cap Cera Chip 0.22uF 10% 50V
SM666267227	22	Cap Tant 220UF 10V 20%
SM668010335	15	Cap,tant 3.3UF/10V 20% L/Esr
SM668016226	58	Cap tant 22UF/16V 20 % L Esr
SM668025106	19	Cap,tant 10UF/25V 20% L Esr
SM668025334	10	Cap,tant .33UF/25V 20% L/Esr
SM669049001	28	Inductor 3.3 nH +/-0.3 nH

7.2 900890-00: PCI Interface

Part Number	Qty	Description
454040002	2	Conn Hdr 40-POS Male AMP Latch
530040006	1	Buzzer 85DB 4 TO 7V
901824-00	1	WaveRunner Acquisition interface PCB
SM205108433	1	IC Eeprom 4K Bit W/ Serial Num
SM205717001	1	IC PAL PQ208 Plastic QFP
SM207010016	5	IC CMOS 10 Bit 2 Port Bus Switch
SM208540002	1	IC Adj Pos Volt Reg 3A LDO
SM236020050	2	Diode Rectifier 50V 1A
SM280120138	1	N Channel Pwr Mosfet BSS138LT
SM311200125	1	Gigabit Crystal Osc. 125Mhz
SM652061000	3	Res Chip 0 Ohm Jumper
SM652061103	1	Res Chip 1% 10K Ohm .063W
SM652061221	15	Res Chip 1% 220 Ohm .063W
SM652061240	1	Res Chip 1% 24.0 Ohm .063W
SM652061301	1	Res Chip 1% 300 Ohm .063W
SM652061332	1	Res Chip 1% 3.3K Ohm .063W
SM652061472	7	Res Chip 1% 4.7K Ohm .063W
SM655030037	46	Res Thk Film 1% 121 Ohm 1/16W
SM655030041	1	Res Thk Film 1% 53.6 Ohm 1/16W
SM661068104	39	Cap Cera Chip 0.1uF 0603
SM662232001	6	10000pf 0603 capacitor
SM666086022	4	Cap Mold Tant Chip 22 UF



7.3 900894-00: Processor Assy

Part Number	Qty	Description
227500020	1	Celeron Processor 2.0GHz OEM
330000005	1	Hard Drive 40GB 3.5" 7200 RPM
334600003	1	Motherboard P4 uATX
334740001	1	Memory Module 256MB PC2100 P4
377242001	1	License Label MS W2K Pro
505000013	1	CPU Cooler for Intel P4
900549-02	1	PC IO Label
CH599041022	0	Heat Sink Compound 251

7.4 900896-00: 4 Channel Encoder Board

Part Number	Qty	Description
425100007	5	Encoder 20mm Detent
425100009	4	Encoder 20mm Detent JOG
425100010	9	Encoder 20mm Detent JOG PB
901788-00	1	WaveRunner 4-Ch Front Panel PCB
SM190105001	1	Resistor Network 10K Ohm 5%
SM190105003	2	Resistor Network 100K Ohm 5%
SM202051011	2	IC 3-to-8 Line Decoder VHC138
SM202109001	1	IC 16-Bit IIC LED Driver PCA9552
SM207630574	1	IC 8-Bit I/O Expander I2C Bus
SM253032820	59	Diode Schottky 2820
SM256000001	1	DIODE LED RED 2MM
SM256000004	1	DIODE LED BLUE 2MM
SM256000005	9	DIODE LED AQUA GREEN 2MM
SM256000006	1	DIODE LED SP YELLOW 2MM
SM453026002	1	Conn .050" Hdr 26-Pos Male
SM653101273	1	Res Chip 1% 56.2 Ohms
SM653101301	8	Res Chip 1% 110 Ohms
SM653101343	1	Res Chip 1% 301 Ohms
SM653101489	8	Res Chip 1 % 10.0 K
SM654101000	2	Chip Jumper Zero Ohms
SM654101000	2	Chip Jumper Zero Ohms
SM654101000	2	Chip Jumper Zero Ohms
SM661207104	4	Cap Cera Chip 20 % .1 UF
SM666487105	2	Cap Mold EIA Chip 1uF 10%

7.5 901949-00: AGP/DVO Interface

Part Number	Qty	Description
901948-00	1	DVO Display PCB
SM205108132	1	IC Eeprom 32K Bit IIC Bus
SM207010002	1	IC CMOS 8 BIT LOW RES BUS SWITCH
SM207010013	1	Display Driver DVO to LVDS TFT
SM208542915	1	1.5A Low-Dropout volt reg adj
SM280120605	2	Low Power Nmosfet
SM281126402	2	P-Channel Mosfet IRLML6402
SM311414318	1	Crystal Oscillator 14.31818MHZ
SM453005002	1	Header 1 x 5 Shrouded Side Entry
SM453020004	1	Conn Hdr R/A 20 Pos Wire-BD
SM652061101	2	Res Chip 1% 100 Ohm .063W
SM652061102	2	Res Chip 1% 1.0K Ohm .063W
SM652061102	3	Res Chip 1% 1.0K Ohm .063W
SM652061102	15	Res Chip 1% 1.0K Ohm .063W
SM652061510	2	Res Chip 1% 51.0 Ohm .063W
SM652101102	4	Res Chip (E24) 1% 1 K
SM652101222	4	Res Chip (E24) 1% 2.2 K
SM652101331	1	Res Chip (E24) 1% 330 Ohm
SM653101458	6	Res Chip 1 % 4.75 K
SM653101653	1	Res Thk Flm 1% 511K Ohm
SM654101000	2	Chip Jumper Zero Ohms
SM654101000	1	Chip Jumper Zero Ohms
SM655030036	2	Res Thk Film 1% 80.6 Ohm 1/16W
SM655040017	4	Res Chip 1.24K OHM 1% 1/10W 0805.
SM661028100	1	Cap Cera Chip 1UF 10V
SM661207103	4	Cap Cera Chip 20% .01 UF
SM661207104	14	Cap Cera Chip 20 % .1 UF
SM661255471	2	Cap Cera Chip 5 % 470 PF
SM668016226	5	Cap tant 22UF/16V 20 % L Esr
SM669080181	4	Chip Ferrite Bead



7.6 901593-00: 4 channel front frame

Part Number	Qty	Description
258000007	1	LCD Backlight Inverter
258000008	1	LCD 8.4" 800x600 w/TP 185 Nits
519260001	1	Shorty Bushing ID .312 OD 7/16"
530009005	3	Shield (RFI/EMI) Finger Stock
544220007	1	Spring Compression 0.34L
561440404	21	SCREW TX PAN 4# -40UNF 1/4IN S1
561440406	3	Screw TX Pan #4-40 UNF 3/8" S1
563425006	9	SCREW TX PAN M2.5X0.4-6MM S1
575100004	3	Washer Flat M2.5 6mmOD .5mmS
592060001	1	3.5 Inch Cable Assy 26-Pos
594120004	2	Cable Tie With Screw Base
594120006	1	Tiewrap
594120010	1	Cable Tie R/A Mount 1/8" Dia.
900896-00	1	WaveRunner Front Panel Assembly
901279-00	1	WaveRunner front chassis panel assembly
901433-00	1	Elastomeric Keymat for Front Panel
901444-00	1	WaveRunner 4 channel bezel
901445-00	1	WaveRunner power button
901459-00	1	Shield - Backlight Inverter
901489-00	1	WaveRunner Proto Front Panel Overlay
901524-00	1	Cable Assy BL Power
901527-00	1	Cable Assy LCD Display
901582-00	9	Knob small
901583-00	7	Knob medium
901584-00	2	Knob large
901700-00	1	INPUT OVERLAY
901851-00	1	WaveRunner Hub Assembly

7.7 901594-00: 2 channel front frame

Part Number	Qty	Description
258000007	1	LCD Backlight Inverter
258000008	1	LCD 8.4" 800x600 w/TP 185 Nits
519260001	1	Shorty Bushing ID .312 OD 7/16"
530009005	3	Shield (RFI/EMI) Finger Stock
544220007	1	Spring Compression 0.34L
561440404	22	SCREW TX PAN 4# -40UNF 1/4IN S1
561440406	2	Screw TX Pan #4-40 UNF 3/8" S1
563425006	10	SCREW TX PAN M2.5X0.4-6MM S1
575100004	3	Washer Flat M2.5 6mmOD .5mmS
592060001	1	3.5 Inch Cable Assy 26-Pos
594120004	2	Cable Tie With Screw Base
594120006	1	Tiewrap
594120010	1	Cable Tie R/A Mount 1/8" Dia.
901279-00	1	WaveRunner front chassis panel assembly
901445-00	1	WaveRunner power button
901459-00	1	Shield - Backlight Inverter
901524-00	1	Cable Assy BL Power
901527-00	1	Cable Assy LCD Display
901582-00	7	Knob small
901583-00	5	Knob medium
901584-00	2	Knob large
901700-00	1	INPUT OVERLAY
901722-00	1	Elastomeric keymat - 2 channel
901740-00	1	WaveRunner 2-Ch Front Panel Assembly
901756-00	1	WaveRunner 2 channel bezel
901757-00	1	WaveRunner 2 Channel Front Frame Overlay
901851-00	1	WaveRunner Hub Assembly



7.8 901697-00: CD R/W Assy

Part Number	Qty	Description
335830015	1	CD-R/W Drive 24x Speed Half-Ht
350480007	1	Gasket, EMI Fabric 3X3MMX3.9IN
454315004	1	Hdr Sold Tail/Male 4
454510104	1	Hdr Vert Male Shrouded 4 Pos
561632604	6	Screw TX Pan #6-32 UNC 1/4" S3
563420003	4	SCREW TX PAN M2-0.4 X 3MM S1
563460006	2	SCREW TX PAN M2X0.4-6MM S1
900517-00	2	Retaining Spacer M2 2.85mm long
901502-00	1	S65 CDROM Adapter PCB
901504-00	1	CDROM Adapter PCA
901525-00	1	Cable Assy CDROM Drive
901856-00	1	S65 CD-ROM BRACKET
901857-00	1	S65 CD-ROM EMI COVER
901858-00	1	CD-ROM Mounting Bracket
SM454204040	1	Hdr Male 40 Pos Idc
SM454520050	1	Conn Header 50 PIN Smt

7.9 901740-00: 2 Channel Encoder Board

Part Number	Qty	Description
425100007	3	Encoder 20mm Detent
425100009	4	Encoder 20mm Detent JOG
425100010	7	Encoder 20mm Detent JOG PB
901741-00	1	S65 2-Ch Front Panel PCB
SM190105001	1	Resistor Network 10K Ohm 5%
SM190105003	2	Resistor Network 100K Ohm 5%
SM202051011	2	IC 3-to-8 Line Decoder VHC138
SM202109001	1	IC 16-Bit IIC LED Driver PCA9552
SM207630574	1	IC 8-Bit I/O Expander I2C Bus
SM253032820	47	Diode Schottky 2820
SM256000001	1	DIODE LED RED 2MM
SM256000005	8	DIODE LED AQUA GREEN 2MM
SM256000006	1	DIODE LED SP YELLOW 2MM
SM453026002	1	Conn .050" Hdr 26-Pos Male
SM653101301	8	Res Chip 1% 110 Ohms
SM653101343	1	Res Chip 1% 301 Ohms
SM653101489	8	Res Chip 1 % 10.0 K
SM654101000	2	Chip Jumper Zero Ohms
SM654101000	3	Chip Jumper Zero Ohms
SM661207104	4	Cap Cera Chip 20 % .1 UF
SM666487105	2	Cap Mold EIA Chip 1uF 10%

7.10 901754-00: Chassis Mechanical

Part Number	Qty	Description
485025001	1	SET of 4 Feet Black
561440404	6	SCREW TX PAN 4# -40UNF 1/4IN S1
561632405	21	Screw TX Pan #6-32UNC 5/16" S1
561632408	4	Screw TX Pan #6-32 UNC 1/2" S1
561632604	30	Screw TX Pan #6-32 UNC 1/4" S3
562632403	18	Screw TX Flat UCUT #6-32 3/16"
575610002	4	Washer Flat Reg OD Size 6
594120006	5	Tiewrap
900890-00	1	WaveRunner Acquisition Interface
900893-00	1	WaveRunner Power Supply
901277-00	1	WaveRunner Chassis Bottom Assy
901278-00	1	WaveRunner Motherboard Support Tray
901446-00	4	WaveRunner Rear Foot
901461-00	1	SYSTEM FAN ASSEMBLY
901496-00	1	Waverunner 6100 FP Overlay
901523-00	2	Cable Assy Acquisition
901526-00	1	Cable Assy Hard Drive
901529-00	1	Cable Assy Switch
901530-00	1	Cable Assy Trig and Ready LED
901531-00	1	Cable Assy USB
901593-00	1	WaveRunner 4-ch front frame assembly
901647-00	1	STIFFENER RIB
901754-00	1	4CH 1GHz 5GS/s DSO
901761-00	1	WaveRunner Upper Cover (no printer)
901765-00	1	4CH 1GHz 5GS/s ACQ ASSY
901768-00	1	WR6XXX 4 CH ACCESSORIES
901853-00	1	CD Reader Assembly
901878-00	1	WaveRunner Shipping Package Assy
901880-00	1	GPIB Blanking Plate
901887-00	1	Oscilloscope Backbone Licence
901898-00	2	WaveRunner PC CARD RETAINER
901936-00	1	WaveRunner Serial Number label
901949-00	1	DVO Display PCA

7.11 901761-00: Top Cover Assy

Part Number	Qty	Description
530301022	1	Handle Assembly 9" 184F
562632404	6	Screw TX Flat #6-32UNC 1/4" S1
901280-00	1	WaveRunner Chassis Top
901487-00	4	WaveRunner Side Foot



7.12 901763-00: WR 6051 500 MHz 5 GS/s 2 Ch Acquisition Board

Part Number	Qty	Description
309000010	1	Crystal Oscillator 10MHZ 9PPM
335970001	1	Probe Hook
402120004	1	Conn RT Angle Fem Bnc
416162005	1	Switch R/A PCB Mtg SPDT MOM
430500003	2	20DB Attenuator Relay DC-3GHZ
454000018	1	Hdr Sold Tail Male 18 Pin HI T
454004002	1	Conn Receptacle USB R/A 4 Pos
454016002	1	Conn Hdr Vert 16 Pos Wire-BD
454022001	1	HEADER VERT 22 POS WIRE BD
454117003	3	Friction Header Straight .1 CE
454312010	4	Hdr Sold Tail/Male 10
469040002	1	Metal Banana Jack/Binding Post
505000013	1	CPU Cooler for Intel P4
522632120	6	Standoff Hex 6-32X5/8 F/F
524632015	4	Standoff Hex 6-32 X 1/2 FF
550011106	6	Screw Pan HD M2X6 Blk W/Nylock
551620100	6	#2 Flat Washer S.steel/Black O
561632405	16	Screw TX Pan #6-32UNC 5/16" S1
709614300	3	Bulkhead Receptical Female Bnc
709614301	3	BNC Lock Washer
709614302	3	BNC Nut
7093XXP01	5	Right Angle Recept. Connector
7093XXP41	3	Probe Holder
7093XXP91	3	Probe Ring Contact
901140-00	2	Chip Atten. 3dB .5% Trim Res
901251-00	1	THERMAL TAPE DIE-CUT 13X13mm
901257-00	1	HEATSINK CLIP PLASTIC
901336-00	1	Heatsink S65 MST/MTB
901436-00	1	S65 Front Card Panel Assy Update
901437-00	1	Heatsink Base - HAD
901439-00	2	S65 backbone
901440-00	1	Heatsink Base mst/mtb
901441-00	1	Heatsink clip mst-mtb
901467-00	3	Thermal Gap Pad Die Cut
901562-00	1	FE Heatsink - 30mm
901586-01	1	2ch 500MHz 5GS/s PCA
901609-00	1	EMI Shield
901622-00	1	EMI shield - 10 GHZ clock
901685-00	3	Upper front end EMI shield
901686-00	3	Lower front end EMI shield
901693-00	1	Gap pad MST die cut
901694-00	1	Gap pad HTB die cut
901709-00	5	Malico 30mm heat sink assy

901763-00: WR 6051 500 MHz 5 GS/s 2 Ch Acquisition Board (con't)

Part Number	Qty	Description
901790-00	2	S65 CLOCK EMI SHIELD 0.4 IN. H
901800-00	1	S65 MAINBOARD PCB
901807-00	1	ALUM. SPACER
901835-00	1	CABLE S65 10GHz MTB COAX
901835-01	1	CABLE S65 10GHz CH1 COAX
901835-02	1	CABLE S65 10GHz CH3 COAX
CH599041022	1	Heat Sink Compound 251
HAD639C-02	1	Packaged MAD440E 10GS/s SiGe
HFE653B	3	Front End Amplifier
HTB645	1	Hybrid Pkgd Timebase Trigger
MAM439	3	Monolithic 8 Megabyte Dram Mem
MST429A	1	IC Smart Trigger Gate-Array
SM158011000	6	Cap Variable .5PF-1.3PF Npo CE
SM158070200	10	Cap Variable 4.5-20.0 PF
SM185457102	5	Res Vari Cermet 1 K
SM185457201	1	Res Vari Cermet 200 Ohms
SM185457503	5	Res Vari Cermet 50 K
SM191260100	4	RES/Cap Network 10 Ohm 100 PF
SM200180032	1	IC 2-in OR Gate 74VHC1G32
SM200588014	1	Hex Schmitt-Trig Inv 74HCT14
SM201274033	1	IC Ecl Divide BY 4 MC10EL33
SM201570016	2	IC Ecl Diff Receiver 10EL16D
SM201774025	3	Diff Ecl-Ttl Transl 10ELT25
SM202057002	1	IC Triple 2-CH Analog Mux
SM202059003	1	ECL Diff Rec/Driv w/Enable Out
SM202100004	1	IC PLL Freq Synth 4106 6 GHz
SM202102001	1	IC ECL /PECL 1:5 DIFF CLK DRVR
SM202107002	1	100EP57 4:1 MUX
SM205129160	1	IC FLASH MEM 16 MBIT HY29LV160 TSOP-48
SM205200002	1	IC 8M x 8 Bit 133MHz SDRAM
SM205616001	5	IC 8-Bit Shift Reg 74LV594ADR
SM205625616	1	IC 256K X 16 CMOS SRAM
SM205715003	2	IC PAL FG456 Fine-Pitch BGA
SM206178125	1	IC Quad Bfr Line Drvr 3 State
SM206370024	3	IC Ttl TO Diff Ecl Transl MC10
SM207010002	3	IC CMOS 8 BIT LOW RES BUS SWITCH
SM207010011	2	IC Quad 10-Bit DAC LTC1664
SM207010014	1	16 Bit Buffer/Driver 3-State
SM207131660	1	IC Dac Octal 10BIT Serial Unip
SM207231654	2	IC Dual 14-Bit Serial Dac
SM207770442	5	IC Analog Switch DG442
SM207944351	5	OCTAL ANALOG MUX/DEMUX 74HCT4351
SM208400001	3	IC MMIC Amplifier 12GHz NBB-300
SM208400002	1	IC MMIC Amplifier 8GHz NBB-400
SM208450686	3	IC Wideband OP Amp OPA686



901763-00: WR 6051 500 MHz 5 GS/s 2 Ch Acquisition Board (con't)

Part Number	Qty	Description
SM208470353	8	IC Dual OP Amp LF353
SM208470705	6	IC OP Amp Picoamp Input AD705
SM208472022	7	Opamp, Dual, Low Pwr TLE2022C
SM208475460	5	IC OP Amp Sin-Sup RtoR Ins Amp
SM208476482	2	IC Dual OP Amp Rail TO Rail 64
SM208550004	6	IC Volt Reg Pos Adjust LDO
SM208550337	1	IC Volt Reg Adj LM337
SM208550821	1	Voltage Monitor MAX821
SM208556138	1	IC Volt Ref 4.096V 0.1% 25ppm
SM208701023	11	IC Temperature Sensor
SM208909850	1	DDS-125MHZ Cmos Synth AD9850
SM227110161	1	16 BIT MICROCONTROLLER C161PI
SM229020150	5	MLC Trans Volt Suppressor
SM232022824	1	Diode Array Schottky HSMS2824
SM232030001	10	Diode Array Schottky HSMS-282C
SM232442828	5	Diode Bridge HSMS2828
SM236030099	10	Diode SO-Pkg BAV99
SM252005303	10	Pin Diode Bar 63-03W
SM252023066	20	Pin Diode Bar 66
SM252023304	5	Dual Pin Diode Silicon Bar 63-
SM256232013	1	Diode Light Emitting Red
SM270050520	15	NPN 9GHZ Wideband Transistor
SM270130092	6	Transistor Npn BFR92A
SM270330848	2	Transistor Npn BC848C
SM275030550	5	Transistor Pnp BF550
SM275132907	1	Transistor Pnp 2907A
SM280122416	5	Trans. Jfet N MMBF4416/LC6A
SM280217505	2	Mosfet, Nchanel, 75A, 50V, D2P
SM281115003	4	P-CH Hdtmos Pwr E-Fet MTB50P03
SM289772003	5	Transistor Array 2003
SM300092390	1	Inductor Wound 2% 39 NH
SM300095151	2	Inductor Wound 150NH
SM300295082	28	Inductor 8.2 NH 5%
SM300600009	2	Inductor 9.3uH 7.2A Wound
SM301001001	19	BEAD FERRITE
SM301001002	6	Bead SHF 0.3A
SM301001016	4	Inductor Pwr Toroid 272uH .36A
SM301001017	3	Inductor Chip 10% 15uH 1210
SM301001018	1	Inductor Shielded 100uH 10%
SM301004001	70	Bead Ferrite 50 Ohms 3AMPS 120
SM311000005	1	Crystal Oscillator 16 MHz 3.3V
SM311000006	1	Voltage Controlled Oscillator 5 GHz
SM430530001	12	Relay Smd Dual Form C 5V
SM431030005	3	Relay SPDT HF 50 Ohm 4.5V

901763-00: WR 6051 500 MHz 5 GS/s 2 Ch Acquisition Board (con't)

Part Number	Qty	Description
SM433695250	2	PTC Resettable Device 2.5A
SM453005001	3	Header 1 x 5 Shrouded
SM454204040	2	Hdr Male 40 Pos Idc
SM507000002	2	Heatsink Surface Mount TO-263
SM651081102	10	Res Chip 0.1% 1 Kohm
SM652000005	10	Res RF 100 Ohm .25% 1/3W 1206
SM652041000	56	Res Zero ohms
SM652041011	18	Res Chip 1% 49.9 Ohms
SM652041200	11	Res 20 Ohms +/-1% 1/16W 0402 S
SM652061000	4	Res Chip 0 Ohm Jumper
SM652061000	11	Res Chip 0 Ohm Jumper
SM652061100	4	Res Chip 1% 10.0 Ohm .063W
SM652061100	10	Res Chip 1% 10.0 Ohm .063W
SM652061101	4	Res Chip 1% 100 Ohm .063W
SM652061101	7	Res Chip 1% 100 Ohm .063W
SM652061101	10	Res Chip 1% 100 Ohm .063W
SM652061102	5	Res Chip 1% 1.0K Ohm .063W
SM652061102	16	Res Chip 1% 1.0K Ohm .063W
SM652061102	22	Res Chip 1% 1.0K Ohm .063W
SM652061103	6	Res Chip 1% 10K Ohm .063W
SM652061103	19	Res Chip 1% 10K Ohm .063W
SM652061105	1	Res Chip 1% 1.0M Ohm .063W
SM652061105	5	Res Chip 1% 1.0M Ohm .063W
SM652061106	5	Res Chip 1% 10M Ohm .063W
SM652061112	10	Res Chip 1% 1.1K Ohm .063W
SM652061121	15	Res Chip 1% 120 Ohm .063W
SM652061121	50	Res Chip 1% 120 Ohm .063W
SM652061131	5	Res Chip 1% 130 Ohm .063W
SM652061154	5	Res Chip 1% 150K Ohm .063W
SM652061161	15	Res Chip 1% 160 Ohm .063W
SM652061200	1	Res Chip 1% 20.0 Ohm .063W
SM652061201	1	Res Chip 1% 200 Ohm .063W
SM652061201	5	Res Chip 1% 200 Ohm .063W
SM652061201	15	Res Chip 1% 200 Ohm .063W
SM652061203	11	Res Chip 1% 20K Ohm .063W
SM652061221	18	Res Chip 1% 220 Ohm .063W
SM652061222	2	Res Chip 1% 2.2K Ohm .063W
SM652061222	4	Res Chip 1% 2.2K Ohm .063W
SM652061222	5	Res Chip 1% 2.2K Ohm .063W
SM652061240	1	Res Chip 1% 24.0 Ohm .063W
SM652061240	5	Res Chip 1% 24.0 Ohm .063W
SM652061240	5	Res Chip 1% 24.0 Ohm .063W
SM652061271	2	Res Chip 1% 270 Ohm .063W
SM652061271	2	Res Chip 1% 270 Ohm .063W
SM652061271	10	Res Chip 1% 270 Ohm .063W



901763-00: WR 6051 500 MHz 5 GS/s 2 Ch Acquisition Board (con't)

Part Number	Qty	Description
SM652061271	20	Res Chip 1% 270 Ohm .063W
SM652061273	5	Res Chip 1% 27K Ohm .063W
SM652061273	20	Res Chip 1% 27K Ohm .063W
SM652061330	10	Res Chip 1% 33.0 Ohm .063W
SM652061332	4	Res Chip 1% 3.3K Ohm .063W
SM652061332	5	Res Chip 1% 3.3K Ohm .063W
SM652061334	1	Res Chip 1% 330K Ohm .063W
SM652061361	3	Res Chip 1% 360 Ohm .063W
SM652061361	5	Res Chip 1% 360 Ohm .063W
SM652061361	15	Res Chip 1% 360 Ohm .063W
SM652061390	5	Res Chip 1% 39.0 Ohm .063W
SM652061390	35	Res Chip 1% 39.0 Ohm .063W
SM652061393	1	Res Chip 1% 39K Ohm .063W
SM652061393	5	Res Chip 1% 39K Ohm .063W
SM652061393	15	Res Chip 1% 39K Ohm .063W
SM652061394	5	Res Chip 1% 390K Ohm .063W
SM652061430	5	Res Chip 1% 43.2 Ohm .063W
SM652061431	1	Res Chip 1% 430 Ohm .063W
SM652061432	6	Res Chip 1% 4.3K Ohm .063W
SM652061471	5	Res Chip 1% 470 Ohm .063W
SM652061510	5	Res Chip 1% 51.0 Ohm .063W
SM652061510	12	Res Chip 1% 51.0 Ohm .063W
SM652061510	25	Res Chip 1% 51.0 Ohm .063W
SM652061511	2	Res Chip 1% 510 Ohm .063W
SM652061512	5	Res Chip 1% 5.1K Ohm .063W
SM652061513	5	Res Chip 1% 51K Ohm .063W
SM652061562	5	Res Chip 1% 5.6K Ohm .063W
SM652061681	5	Res Chip 1% 681 Ohm .063W
SM652061751	1	Res Chip 1% 750 Ohm .063W
SM652061751	5	Res Chip 1% 750 Ohm .063W
SM652061824	5	Res Chip 1% 820K Ohm .063W
SM652061912	5	Res Chip 1% 9.1K Ohm .063W
SM652101101	2	Res Chip (E24) 1% 100 Ohm
SM652101302	1	Res Chip (E24) 1% 3 K
SM653041297	5	RES CHIP 1% 100 OHMS 0402
SM653101226	1	Res Chip 1% 18.2 Ohms
SM653101262	9	Res Chip 1% 43.2 Ohms
SM653101277	7	Res Chip 1% 61.9 Ohms
SM653101285	5	Res Chip 1 % 75.0 Ohms
SM653101297	19	Res Chip 1% 100 Ohms
SM653101322	16	Res Chip 1% 182 Ohms
SM653101326	7	Res Chip 1% 200 Ohms
SM653101334	4	Res Chip 1% 243 Ohms
SM653101347	1	Res Chip 1% 332 Ohms

901763-00: WR 6051 500 MHz 5 GS/s 2 Ch Acquisition Board (con't)

Part Number	Qty	Description
SM653101354	14	Res Chip 1% 392 Ohms
SM653101377	9	Res Chip 1% 681 Ohms
SM653101393	33	Res Chip 1% 1.00 K
SM653101397	1	Res Chip 1% 1.10 K
SM653101401	4	Res Chip 1% 1.21 K
SM653101410	11	Res Chip 1% 1.50 K
SM653101422	4	Res Chip 1% 2.00 K
SM653101422	12	Res Chip 1% 2.00 K
SM653101422	35	Res Chip 1% 2.00 K
SM653101426	9	Res Chip 1 % 2.21K
SM653101430	3	Res Chip 1% 2.43 K
SM653101435	2	Res Chip 1% 2.74 K
SM653101458	10	Res Chip 1 % 4.75 K
SM653101461	7	Res Chip 1% 5.11 K
SM653101469	1	Res Chip 1% 6.19 K
SM653101477	13	Res Chip 1% 7.50 K
SM653101489	4	Res Chip 1 % 10.0 K
SM653101489	21	Res Chip 1 % 10.0 K
SM653101506	5	Res Chip 1% 15.0 K
SM653101518	7	Res Chip 1% 20.0 K
SM653101539	6	Res Chip 1% 33.2 K
SM653101589	9	Res Chip 1% 110 K
SM654101000	11	Chip Jumper Zero Ohms
SM654101000	12	Chip Jumper Zero Ohms
SM655020002	10	RES CHIP 1% 174 OHMS
SM655020017	30	Res Thk Film 1% 1K Ohm 1/16W
SM655020025	18	Res Thk Film 1% 2.74 Ohm 1/16W
SM655030040	10	Res Thk Film +/-1% 5.11 Ohm .1W
SM655030042	5	Res Thk Film 1% 5.6M Ohm 1/16W
SM655040022	5	Res Chip .5% 50ppm 180K 150V
SM655040023	5	Res Chip .5% 50ppm 240K 150V
SM655040024	40	Res Chip .5% 50ppm 300K 150V
SM655040025	10	Res Chip .5% 50ppm 110K 150V
SM655040026	1	Res Thk Film 41.2 Ohm .5% 1/8W
SM655040027	2	Res Thk Film 20 Ohm .5% 1/8W
SM655080004	1	Res Thk Film 1 Ohm +/- 5% 1/2W
SM655080005	8	Res Thk Film 1% 105 Ohm 1/2W
SM655080009	1	Res Thk Film 0.5% 41.2 Ohm 1W
SM661010002	10	Cap Cera Chip 27PF +/- 5%
SM661028100	1	Cap Cera Chip 1UF 10V
SM661028100	15	Cap Cera Chip 1UF 10V
SM661066102	5	Cap Cera Chip 10% 1000PF/50V
SM661066102	88	Cap Cera Chip 10% 1000PF/50V
SM661068104	5	Cap Cera Chip 0.1uF 0603
SM661068104	20	Cap Cera Chip 0.1uF 0603



901763-00: WR 6051 500 MHz 5 GS/s 2 Ch Acquisition Board (con't)

Part Number	Qty	Description
SM661068104	130	Cap Cera Chip 0.1uF 0603
SM661073068	10	Cap Cera 6.8+/- 0.1PF 50V Npo
SM661073300	5	Cap Cera 30PF+/- 5% 50V Npo
SM661073331	3	Cap Cera 330PF+/- 5% 50V Npo
SM661073820	7	Cap Cera 82PF+/- 5% 50V Npo
SM661165102	3	Cap Cera Chip 1000PF
SM661207103	5	Cap Cera Chip 20% .01 UF
SM661207104	10	Cap Cera Chip 20 % .1 UF
SM661207104	222	Cap Cera Chip 20 % .1 UF
SM661207223	5	Cap Cera Chip 20% .022 UF
SM661255015	1	Cap Cera Chip 1.5 PF
SM661255121	3	Cap Cera Chip 5% 120 PF
SM661540056	15	Cap Cera Chip 5.6PF 500V
SM662131003	40	Cap Cera Chip 5% 50V .01 UF
SM662137001	14	Cap Cera +/-.1% 50V 1.5pF NPO
SM662137002	14	Cap Cera +/-.25% 50V 2.2pF NPO
SM662151001	42	Cap Cera Chip 10% 16V 0.1 UF
SM662152001	18	Cap Cera Chip 10% 16V 100nF
SM662212001	5	Cap Cera .015uF 10% 25V X7R
SM662232001	8	10000pf 0603 capacitor
SM662241001	5	Cap Cera 22pF +/- 5% 100V Npo
SM662252001	5	Cap Cera .068uF 10% 16V X7R
SM662382001	5	Cap Cera 1000pF 10% 500V X7R
SM662412001	1	Cap Cera 0.47uF 10% 25V X7R
SM662432001	1	Cap Cera 4700pF 10% 50V X7R
SM666267227	22	Cap Tant 220UF 10V 20%
SM668010335	15	Cap,tant 3.3UF/10V 20% L/Esr
SM668016226	57	Cap tant 22UF/16V 20 % L Esr
SM668025106	14	Cap,tant 10UF/25V 20% L Esr
SM668025334	10	Cap,tant .33UF/25V 20% L/Esr

7.13 901764-00: WR 6050 500 MHz 5 GS/s 4 Ch Acquisition Board

Part Number	Qty	Description
309000010	1	Crystal Oscillator 10MHZ 9PPM
335970001	1	Probe Hook
402120004	1	Conn RT Angle Fem Bnc
416162005	1	Switch R/A PCB Mtg SPDT MOM
430500003	4	20DB Attenuator Relay DC-3GHZ
454000018	1	Hdr Sold Tail Male 18 Pin HI T
454004002	1	Conn Receptacle USB R/A 4 Pos
454016002	1	Conn Hdr Vert 16 Pos Wire-BD
454022001	1	HEADER VERT 22 POS WIRE BD
454117003	4	Friction Header Straight .1 CE
454312010	4	Hdr Sold Tail/Male 10
469040002	1	Metal Banana Jack/Binding Post
505000013	2	CPU Cooler for Intel P4
520000102	1	Spacer Nylon TO-8V
522632120	6	Standoff Hex 6-32X5/8 F/F
524632015	4	Standoff Hex 6-32 X 1/2 FF
550011106	10	Screw Pan HD M2X6 Blk W/Nylock
551620100	10	#2 Flat Washer S.steel/Black O
555465002	1	Washer Lock Split 1/4
561632405	16	Screw TX Pan #6-32UNC 5/16" S1
709614300	5	Bulkhead Receptical Female Bnc
709614301	5	BNC Lock Washer
709614302	5	BNC Nut
7093XXP01	5	Right Angle Recept. Connector
7093XXP41	5	Probe Holder
7093XXP91	5	Probe Ring Contact
901140-00	4	Chip Atten. 3dB .5% Trim Res
901251-00	1	THERMAL TAPE DIE-CUT 13X13mm
901257-00	1	HEATSINK CLIP PLASTIC
901336-00	1	Heatsink S65 MST/MTB
901436-00	1	S65 Front Card Panel Assy Update
901437-00	2	Heatsink Base - HAD
901439-00	2	S65 backbone
901440-00	1	Heatsink Base mst/mtb
901441-00	1	Heatsink clip mst-mtb
901467-00	6	Thermal Gap Pad Die Cut
901562-00	1	FE Heatsink - 30mm
901586-02	1	4ch 500MHz 5GS/s PCA
901609-00	1	EMI Shield
901622-00	1	EMI shield - 10 GHZ clock
901685-00	5	Upper front end EMI shield
901686-00	5	Lower front end EMI shield
901693-00	1	Gap pad MST die cut
901694-00	1	Gap pad HTB die cut



901764-00: WR 6050 500 MHz 5 GS/s 4 Ch Acquisition Board (con't)

Part Number	Qty	Description
901709-00	5	Malico 30mm heat sink assy
901790-00	2	S65 CLOCK EMI SHIELD 0.4 IN. H
901807-00	1	ALUM. SPACER
901835-00	1	CABLE S65 10GHz MTB COAX
901835-01	1	CABLE S65 10GHz CH1 COAX
901835-02	1	CABLE S65 10GHz CH3 COAX
901836-00	1	Waverunner Acq. PCB
CH599041022	1	Heat Sink Compound 251
HAD639C-02	2	Packaged MAD440E 10GS/s SiGe
HFE653B	5	Front End Amplifier
HTB645	1	Hybrid Pkgd Timebase Trigger
MAM439	6	Monolithic 8 Megabyte Dram Mem
MST429A	1	IC Smart Trigger Gate-Array
SM158021002	10	Cap Variable 0.5-2.5pF 250V
SM158070200	10	Cap Variable 4.5-20.0 PF
SM185457102	5	Res Vari Cermet 1 K
SM185457201	1	Res Vari Cermet 200 Ohms
SM185457503	5	Res Vari Cermet 50 K
SM200180032	1	IC 2-in OR Gate 74VHC1G32
SM200588014	1	Hex Schmitt-Trig Inv 74HCT14
SM201274033	1	IC Ecl Divide BY 4 MC10EL33
SM201570016	2	IC Ecl Diff Receiver 10EL16D
SM201774025	3	Diff Ecl-Ttl Transl 10ELT25
SM202057002	1	IC Triple 2-CH Analog Mux
SM202059003	1	ECL Diff Rec/Driv w/Enable Out
SM202100004	1	IC PLL Freq Synth 4106 6 GHz
SM202102001	1	IC ECL /PECL 1:5 DIFF CLK DRVR
SM202107002	1	100EP57 4:1 MUX
SM205129160	1	IC FLASH MEM 16 MBIT HY29LV160 TSOP-48
SM205200002	1	IC 8M x 8 Bit 133MHz SDRAM
SM205616001	5	IC 8-Bit Shift Reg 74LV594ADR
SM205625616	1	IC 256K X 16 CMOS SRAM
SM205715003	2	IC PAL FG456 Fine-Pitch BGA
SM206178125	1	IC Quad Bfr Line Drvr 3 State
SM206370024	3	IC Ttl TO Diff Ecl Transl MC10
SM207010002	3	IC CMOS 8 BIT LOW RES BUS SWITCH
SM207010011	2	IC Quad 10-Bit DAC LTC1664
SM207010014	1	16 Bit Buffer/Driver 3-State
SM207131660	1	IC Dac Octal 10BIT Serial Unip
SM207231654	4	IC Dual 14-Bit Serial Dac
SM207770442	5	IC Analog Switch DG442
SM207944351	5	OCTAL ANALOG MUX/DEMUX 74HCT4351
SM208400001	3	IC MMIC Amplifier 12GHz NBB-300
SM208400002	1	IC MMIC Amplifier 8GHz NBB-400

901764-00: WR 6050 500 MHz 5 GS/s 4 Ch Acquisition Board (con't)

Part Number	Qty	Description
SM208450686	5	IC Wideband OP Amp OPA686
SM208470353	8	IC Dual OP Amp LF353
SM208470705	10	IC OP Amp Picoamp Input AD705
SM208472022	7	Opamp, Dual, Low Pwr TLE2022C
SM208475460	5	IC OP Amp Sin-Sup RtoR Ins Amp
SM208476482	2	IC Dual OP Amp Rail TO Rail 64
SM208550004	8	IC Volt Reg Pos Adjust LDO
SM208550337	1	IC Volt Reg Adj LM337
SM208550821	1	Voltage Monitor MAX821
SM208556138	1	IC Volt Ref 4.096V 0.1% 25ppm
SM208701023	11	IC Temperature Sensor
SM208909850	1	DDS-125MHZ Cmos Synth AD9850
SM227110161	1	16 BIT MICROCONTROLLER C161PI
SM229020150	5	MLC Trans Volt Suppressor
SM232022824	1	Diode Array Schottky HSMS2824
SM232030001	10	Diode Array Schottky HSMS-282C
SM232442828	5	Diode Bridge HSMS2828
SM236030099	10	Diode SO-Pkg BAV99
SM252005303	10	Pin Diode Bar 63-03W
SM252023066	20	Pin Diode Bar 66
SM252023304	5	Dual Pin Diode Silicon Bar 63-
SM256232013	1	Diode Light Emitting Red
SM270050520	15	NPN 9GHZ Wideband Transistor
SM270130092	6	Transistor Npn BFR92A
SM270330848	2	Transistor Npn BC848C
SM275030550	5	Transistor Pnp BF550
SM275132907	1	Transistor Pnp 2907A
SM280122416	5	Trans. Jfet N MMBF4416/LC6A
SM280217505	2	Mosfet, Nchanel, 75A, 50V, D2P
SM281115003	4	P-CH Hdtmos Pwr E-Fet MTB50P03
SM289772003	5	Transistor Array 2003
SM300092390	1	Inductor Wound 2% 39 NH
SM300095151	2	Inductor Wound 150NH
SM300295082	28	Inductor 8.2 NH 5%
SM300600009	2	Inductor 9.3uH 7.2A Wound
SM301001001	19	BEAD FERRITE
SM301001002	6	Bead SHF 0.3A
SM301001016	4	Inductor Pwr Toroid 272uH .36A
SM301001017	3	Inductor Chip 10% 15uH 1210
SM301001018	1	Inductor Shielded 100uH 10%
SM301004001	70	Bead Ferrite 50 Ohms 3AMPS 120
SM311000005	1	Crystal Oscillator 16 MHz 3.3V
SM311000006	1	Voltage Controlled Oscillator 5 GHz
SM430530001	20	Relay Smd Dual Form C 5V
SM431030005	5	Relay SPDT HF 50 Ohm 4.5V



901764-00: WR 6050 500 MHz 5 GS/s 4 Ch Acquisition Board (con't)

Part Number	Qty	Description
SM433695250	2	PTC Resettable Device 2.5A
SM453005001	3	Header 1 x 5 Shrouded
SM454204040	2	Hdr Male 40 Pos Idc
SM507000002	2	Heatsink Surface Mount TO-263
SM651081102	8	Res Chip 0.1% 1 Kohm
SM652000005	10	Res RF 100 Ohm .25% 1/3W 1206
SM652041000	49	Res Zero ohms
SM652041011	25	Res Chip 1% 49.9 Ohms
SM652041200	11	Res 20 Ohms +/-1% 1/16W 0402 S
SM652061000	4	Res Chip 0 Ohm Jumper
SM652061000	11	Res Chip 0 Ohm Jumper
SM652061100	5	Res Chip 1% 10.0 Ohm .063W
SM652061100	10	Res Chip 1% 10.0 Ohm .063W
SM652061101	4	Res Chip 1% 100 Ohm .063W
SM652061101	5	Res Chip 1% 100 Ohm .063W
SM652061101	7	Res Chip 1% 100 Ohm .063W
SM652061101	10	Res Chip 1% 100 Ohm .063W
SM652061102	5	Res Chip 1% 1.0K Ohm .063W
SM652061102	16	Res Chip 1% 1.0K Ohm .063W
SM652061102	23	Res Chip 1% 1.0K Ohm .063W
SM652061103	7	Res Chip 1% 10K Ohm .063W
SM652061103	19	Res Chip 1% 10K Ohm .063W
SM652061105	1	Res Chip 1% 1.0M Ohm .063W
SM652061105	5	Res Chip 1% 1.0M Ohm .063W
SM652061106	5	Res Chip 1% 10M Ohm .063W
SM652061112	10	Res Chip 1% 1.1K Ohm .063W
SM652061121	15	Res Chip 1% 120 Ohm .063W
SM652061121	50	Res Chip 1% 120 Ohm .063W
SM652061154	5	Res Chip 1% 150K Ohm .063W
SM652061161	15	Res Chip 1% 160 Ohm .063W
SM652061200	1	Res Chip 1% 20.0 Ohm .063W
SM652061201	1	Res Chip 1% 200 Ohm .063W
SM652061201	5	Res Chip 1% 200 Ohm .063W
SM652061201	15	Res Chip 1% 200 Ohm .063W
SM652061203	11	Res Chip 1% 20K Ohm .063W
SM652061221	18	Res Chip 1% 220 Ohm .063W
SM652061222	2	Res Chip 1% 2.2K Ohm .063W
SM652061222	4	Res Chip 1% 2.2K Ohm .063W
SM652061222	5	Res Chip 1% 2.2K Ohm .063W
SM652061240	1	Res Chip 1% 24.0 Ohm .063W
SM652061240	5	Res Chip 1% 24.0 Ohm .063W
SM652061271	2	Res Chip 1% 270 Ohm .063W
SM652061271	2	Res Chip 1% 270 Ohm .063W
SM652061271	10	Res Chip 1% 270 Ohm .063W

901764-00: WR 6050 500 MHz 5 GS/s 4 Ch Acquisition Board (con't)

Part Number	Qty	Description
SM652061271	20	Res Chip 1% 270 Ohm .063W
SM652061273	5	Res Chip 1% 27K Ohm .063W
SM652061273	20	Res Chip 1% 27K Ohm .063W
SM652061330	5	Res Chip 1% 33.0 Ohm .063W
SM652061332	4	Res Chip 1% 3.3K Ohm .063W
SM652061332	5	Res Chip 1% 3.3K Ohm .063W
SM652061334	1	Res Chip 1% 330K Ohm .063W
SM652061361	3	Res Chip 1% 360 Ohm .063W
SM652061361	5	Res Chip 1% 360 Ohm .063W
SM652061361	15	Res Chip 1% 360 Ohm .063W
SM652061390	5	Res Chip 1% 39.0 Ohm .063W
SM652061390	35	Res Chip 1% 39.0 Ohm .063W
SM652061393	1	Res Chip 1% 39K Ohm .063W
SM652061393	5	Res Chip 1% 39K Ohm .063W
SM652061393	15	Res Chip 1% 39K Ohm .063W
SM652061394	5	Res Chip 1% 390K Ohm .063W
SM652061430	10	Res Chip 1% 43.2 Ohm .063W
SM652061431	1	Res Chip 1% 430 Ohm .063W
SM652061432	6	Res Chip 1% 4.3K Ohm .063W
SM652061471	5	Res Chip 1% 470 Ohm .063W
SM652061510	5	Res Chip 1% 51.0 Ohm .063W
SM652061510	12	Res Chip 1% 51.0 Ohm .063W
SM652061510	25	Res Chip 1% 51.0 Ohm .063W
SM652061511	2	Res Chip 1% 510 Ohm .063W
SM652061512	5	Res Chip 1% 5.1K Ohm .063W
SM652061513	5	Res Chip 1% 51K Ohm .063W
SM652061562	5	Res Chip 1% 5.6K Ohm .063W
SM652061680	5	Res Chip 1% 68.0 Ohm .063W
SM652061681	5	Res Chip 1% 681 Ohm .063W
SM652061751	1	Res Chip 1% 750 Ohm .063W
SM652061751	5	Res Chip 1% 750 Ohm .063W
SM652061824	5	Res Chip 1% 820K Ohm .063W
SM652061912	5	Res Chip 1% 9.1K Ohm .063W
SM652101101	2	Res Chip (E24) 1% 100 Ohm
SM652101302	1	Res Chip (E24) 1% 3 K
SM653041297	5	RES CHIP 1% 100 OHMS 0402
SM653101226	1	Res Chip 1% 18.2 Ohms
SM653101262	9	Res Chip 1% 43.2 Ohms
SM653101277	7	Res Chip 1% 61.9 Ohms
SM653101285	5	Res Chip 1 % 75.0 Ohms
SM653101297	18	Res Chip 1% 100 Ohms
SM653101322	17	Res Chip 1% 182 Ohms
SM653101326	7	Res Chip 1% 200 Ohms
SM653101334	8	Res Chip 1% 243 Ohms
SM653101347	1	Res Chip 1% 332 Ohms



901764-00: WR 6050 500 MHz 5 GS/s 4 Ch Acquisition Board (con't)

Part Number	Qty	Description
SM653101354	14	Res Chip 1% 392 Ohms
SM653101377	9	Res Chip 1% 681 Ohms
SM653101393	33	Res Chip 1% 1.00 K
SM653101397	1	Res Chip 1% 1.10 K
SM653101401	4	Res Chip 1% 1.21 K
SM653101410	13	Res Chip 1% 1.50 K
SM653101422	4	Res Chip 1% 2.00 K
SM653101422	12	Res Chip 1% 2.00 K
SM653101422	35	Res Chip 1% 2.00 K
SM653101426	9	Res Chip 1 % 2.21K
SM653101430	3	Res Chip 1% 2.43 K
SM653101435	2	Res Chip 1% 2.74 K
SM653101458	10	Res Chip 1 % 4.75 K
SM653101461	7	Res Chip 1% 5.11 K
SM653101469	1	Res Chip 1% 6.19 K
SM653101477	13	Res Chip 1% 7.50 K
SM653101489	4	Res Chip 1 % 10.0 K
SM653101489	21	Res Chip 1 % 10.0 K
SM653101506	5	Res Chip 1% 15.0 K
SM653101518	7	Res Chip 1% 20.0 K
SM653101539	6	Res Chip 1% 33.2 K
SM653101589	9	Res Chip 1% 110 K
SM654101000	11	Chip Jumper Zero Ohms
SM654101000	12	Chip Jumper Zero Ohms
SM655020002	10	RES CHIP 1% 174 OHMS
SM655020017	30	Res Thk Film 1% 1K Ohm 1/16W
SM655020025	18	Res Thk Film 1% 2.74 Ohm 1/16W
SM655030040	10	Res Thk Film +/-1% 5.11 Ohm .1W
SM655030042	5	Res Thk Film 1% 5.6M Ohm 1/16W
SM655040022	5	Res Chip .5% 50ppm 180K 150V
SM655040023	5	Res Chip .5% 50ppm 240K 150V
SM655040024	40	Res Chip .5% 50ppm 300K 150V
SM655040025	10	Res Chip .5% 50ppm 110K 150V
SM655040026	1	Res Thk Film 41.2 Ohm .5% 1/8W
SM655040027	2	Res Thk Film 20 Ohm .5% 1/8W
SM655080004	5	Res Thk Film 1 Ohm +/- 5% 1/2W
SM655080005	8	Res Thk Film 1% 105 Ohm 1/2W
SM655080009	1	Res Thk Film 0.5% 41.2 Ohm 1W
SM661010002	10	Cap Cera Chip 27PF +/- 5%
SM661011001	5	Cap Cera Chip 3.9pF 200V
SM661028100	1	Cap Cera Chip 1UF 10V
SM661028100	15	Cap Cera Chip 1UF 10V
SM661066102	5	Cap Cera Chip 10% 1000PF/50V
SM661066102	10	Cap Cera Chip 10% 1000PF/50V

901764-00: WR 6050 500 MHz 5 GS/s 4 Ch Acquisition Board (con't)

Part Number	Qty	Description
SM661066102	88	Cap Cera Chip 10% 1000PF/50V
SM661068104	5	Cap Cera Chip 0.1uF 0603
SM661068104	25	Cap Cera Chip 0.1uF 0603
SM661068104	120	Cap Cera Chip 0.1uF 0603
SM661073068	5	Cap Cera 6.8+/- 0.1PF 50V Npo
SM661073300	5	Cap Cera 30PF+/- 5% 50V Npo
SM661073331	3	Cap Cera 330PF+/- 5% 50V Npo
SM661073820	7	Cap Cera 82PF+/- 5% 50V Npo
SM661165102	3	Cap Cera Chip 1000PF
SM661207103	6	Cap Cera Chip 20% .01 UF
SM661207104	10	Cap Cera Chip 20 % .1 UF
SM661207104	223	Cap Cera Chip 20 % .1 UF
SM661207223	5	Cap Cera Chip 20% .022 UF
SM661255015	1	Cap Cera Chip 1.5 PF
SM661255121	3	Cap Cera Chip 5% 120 PF
SM661540056	10	Cap Cera Chip 5.6PF 500V
SM661540068	5	Cap Cera Chip 6.8PF 500V
SM662131003	47	Cap Cera Chip 5% 50V .01 UF
SM662137001	14	Cap Cera +/-.1% 50V 1.5pF NPO
SM662137002	13	Cap Cera +/-.25% 50V 2.2pF NPO
SM662151001	42	Cap Cera Chip 10% 16V 0.1 UF
SM662152001	18	Cap Cera Chip 10% 16V 100nF
SM662212001	5	Cap Cera .015uF 10% 25V X7R
SM662232001	8	10000pf 0603 capacitor
SM662241001	5	Cap Cera 22pF +/- 5% 100V Npo
SM662252001	5	Cap Cera .068uF 10% 16V X7R
SM662382001	5	Cap Cera 1000pF 10% 500V X7R
SM662432001	1	Cap Cera 4700pF 10% 50V X7R
SM662432002	1	Cap Cera Chip 0.22uF 10% 50V
SM666267227	22	Cap Tant 220UF 10V 20%
SM668010335	15	Cap,tant 3.3UF/10V 20% L/Esr
SM668016226	58	Cap tant 22UF/16V 20 % L Esr
SM668025106	19	Cap,tant 10UF/25V 20% L Esr
SM668025334	10	Cap,tant .33UF/25V 20% L/Esr



7.14 901765-00: WR 6100 1 GHz 5 GS/s 4 Ch Acquisition Board

Part Number	Qty	Description
309000010	1	Crystal Oscillator 10MHZ 9PPM
335970001	1	Probe Hook
402120004	1	Conn RT Angle Fem Bnc
416162005	1	Switch R/A PCB Mtg SPDT MOM
430500003	4	20DB Attenuator Relay DC-3GHZ
454000018	1	Hdr Sold Tail Male 18 Pin HI T
454004002	1	Conn Receptacle USB R/A 4 Pos
454016002	1	Conn Hdr Vert 16 Pos Wire-BD
454022001	1	HEADER VERT 22 POS WIRE BD
454117003	4	Friction Header Straight .1 CE
454312010	4	Hdr Sold Tail/Male 10
469040002	1	Metal Banana Jack/Binding Post
505000013	2	CPU Cooler for Intel P4
520000102	1	Spacer Nylon TO-8V
522632120	6	Standoff Hex 6-32X5/8 F/F
524632015	4	Standoff Hex 6-32 X 1/2 FF
550011106	10	Screw Pan HD M2X6 Blk W/Nylock
551620100	10	#2 Flat Washer S.steel/Black O
555465002	1	Washer Lock Split 1/4
561632405	16	Screw TX Pan #6-32UNC 5/16" S1
709614300	5	Bulkhead Receptical Female Bnc
709614301	5	BNC Lock Washer
709614302	5	BNC Nut
7093XXP01	5	Right Angle Recept. Connector
7093XXP41	5	Probe Holder
7093XXP91	5	Probe Ring Contact
901140-00	4	Chip Atten. 3dB .5% Trim Res
901251-00	1	THERMAL TAPE DIE-CUT 13X13mm
901257-00	1	HEATSINK CLIP PLASTIC
901336-00	1	Heatsink WaveRunner MST/MTB
901436-00	1	WaveRunner Front Card Panel Assy Update
901437-00	2	Heatsink Base - HAD
901439-00	2	WaveRunner backbone
901440-00	1	Heatsink Base mst/mtb
901441-00	1	Heatsink clip mst-mtb
901467-00	6	Thermal Gap Pad Die Cut
901562-00	1	FE Heatsink - 30mm
901586-03	1	4ch 1GHz 5GS/s PCA
901609-00	1	EMI Shield
901622-00	1	EMI shield - 10 GHZ clock
901685-00	5	Upper front end EMI shield
901686-00	5	Lower front end EMI shield
901693-00	1	Gap pad MST die cut

901765-00: WR 6100 1 GHz 5 GS/s 4 Ch Acquisition Board (con't)

Part Number	Qty	Description
901694-00	1	Gap pad HTB die cut
901709-00	5	Malico 30mm heat sink assy
901790-00	2	WaveRunner CLOCK EMI SHIELD 0.4 IN. H
901807-00	1	ALUM. SPACER
901835-00	1	CABLE WaveRunner 10GHz MTB COAX
901835-01	1	CABLE WaveRunner 10GHz CH1 COAX
901835-02	1	CABLE WaveRunner 10GHz CH3 COAX
901836-00	1	Waverunner Acq. PCB
CH599041022	1	Heat Sink Compound 251
HAD639C-02	2	Packaged MAD440E 10GS/s SiGe
HFE653B	5	Front End Amplifier
HTB645	1	Hybrid Pkgd Timebase Trigger
MAD440E	1	Monolithic 10GS/s SiGe 9bit AD
MAM439	6	Monolithic 8 Megabyte Dram Mem
MFE652B	1	Monolithic front-end amplifier
MST429A	1	IC Smart Trigger Gate-Array
SM158021002	10	Cap Variable 0.5-2.5pF 250V
SM158070200	10	Cap Variable 4.5-20.0 PF
SM185457102	5	Res Vari Cermet 1 K
SM185457201	1	Res Vari Cermet 200 Ohms
SM185457503	5	Res Vari Cermet 50 K
SM191260100	4	RES/Cap Network 10 Ohm 100 PF
SM200180032	1	IC 2-in OR Gate 74VHC1G32
SM200588014	1	Hex Schmitt-Trig Inv 74HCT14
SM201274033	1	IC Ecl Divide BY 4 MC10EL33
SM201570016	2	IC Ecl Diff Receiver 10EL16D
SM201774025	3	Diff Ecl-Ttl Transl 10ELT25
SM202057002	1	IC Triple 2-CH Analog Mux
SM202059003	1	ECL Diff Rec/Driv w/Enable Out
SM202100004	1	IC PLL Freq Synth 4106 6 GHz
SM202102001	1	IC ECL /PECL 1:5 DIFF CLK DRVR
SM202107002	1	100EP57 4:1 MUX
SM205129160	1	IC FLASH MEM 16 MBIT HY29LV160 TSOP-48
SM205200002	1	IC 8M x 8 Bit 133MHz SDRAM
SM205616001	5	IC 8-Bit Shift Reg 74LV594ADR
SM205625616	1	IC 256K X 16 CMOS SRAM
SM205715003	2	IC PAL FG456 Fine-Pitch BGA
SM206178125	1	IC Quad Bfr Line Drvr 3 State
SM206370024	3	IC Ttl TO Diff Ecl Transl MC10
SM207010002	3	IC CMOS 8 BIT LOW RES BUS SWITCH
SM207010011	2	IC Quad 10-Bit DAC LTC1664
SM207010014	1	16 Bit Buffer/Driver 3-State
SM207131660	1	IC Dac Octal 10BIT Serial Unip
SM207231654	4	IC Dual 14-Bit Serial Dac
SM207770442	5	IC Analog Switch DG442



901765-00: WR 6100 1 GHz 5 GS/s 4 Ch Acquisition Board (con't)

Part Number	Qty	Description
SM207944351	5	OCTAL ANALOG MUX/DEMUX 74HCT4351
SM208400001	3	IC MMIC Amplifier 12GHz NBB-300
SM208400002	1	IC MMIC Amplifier 8GHz NBB-400
SM208450686	5	IC Wideband OP Amp OPA686
SM208470353	8	IC Dual OP Amp LF353
SM208470705	10	IC OP Amp Picoamp Input AD705
SM208472022	7	Opamp, Dual, Low Pwr TLE2022C
SM208475460	5	IC OP Amp Sin-Sup RtoR Ins Amp
SM208476482	2	IC Dual OP Amp Rail TO Rail 64
SM208550004	8	IC Volt Reg Pos Adjust LDO
SM208550337	1	IC Volt Reg Adj LM337
SM208550821	1	Voltage Monitor MAX821
SM208556138	1	IC Volt Ref 4.096V 0.1% 25ppm
SM208701023	11	IC Temperature Sensor
SM208909850	1	DDS-125MHZ Cmos Synth AD9850
SM227110161	1	16 BIT MICROCONTROLLER C161PI
SM229020150	5	MLC Trans Volt Suppressor
SM232022824	1	Diode Array Schottky HSMS2824
SM232030001	10	Diode Array Schottky HSMS-282C
SM232442828	5	Diode Bridge HSMS2828
SM236030099	10	Diode SO-Pkg BAV99
SM252005303	10	Pin Diode Bar 63-03W
SM252023066	20	Pin Diode Bar 66
SM252023304	5	Dual Pin Diode Silicon Bar 63-
SM256232013	1	Diode Light Emitting Red
SM270050520	15	NPN 9GHZ Wideband Transistor
SM270130092	6	Transistor Npn BFR92A
SM270330848	2	Transistor Npn BC848C
SM275030550	5	Transistor Pnp BF550
SM275132907	1	Transistor Pnp 2907A
SM280122416	5	Trans. Jfet N MMBF4416/LC6A
SM280217505	2	Mosfet, Nchanel, 75A, 50V, D2P
SM281115003	4	P-CH Hdtmos Pwr E-Fet MTB50P03
SM289772003	5	Transistor Array 2003
SM300092390	1	Inductor Wound 2% 39 NH
SM300095151	2	Inductor Wound 150NH
SM300295082	28	Inductor 8.2 NH 5%
SM300600009	2	Inductor 9.3uH 7.2A Wound
SM301001001	19	BEAD FERRITE
SM301001002	6	Bead SHF 0.3A
SM301001016	4	Inductor Pwr Toroid 272uH .36A
SM301001017	3	Inductor Chip 10% 15uH 1210
SM301001018	1	Inductor Shielded 100uH 10%
SM301004001	70	Bead Ferrite 50 Ohms 3AMPS 120

901765-00: WR 6100 1 GHz 5 GS/s 4 Ch Acquisition Board (con't)

Part Number	Qty	Description
SM311000005	1	Crystal Oscillator 16 MHz 3.3V
SM311000006	1	Voltage Controlled Oscillator 5 GHz
SM430530001	20	Relay Smd Dual Form C 5V
SM431030005	5	Relay SPDT HF 50 Ohm 4.5V
SM433695250	2	PTC Resettable Device 2.5A
SM453005001	3	Header 1 x 5 Shrouded
SM454204040	2	Hdr Male 40 Pos Idc
SM507000002	2	Heatsink Surface Mount TO-263
SM651081102	8	Res Chip 0.1% 1 Kohm
SM652000005	10	Res RF 100 Ohm .25% 1/3W 1206
SM652041000	49	Res Zero ohms
SM652041011	25	Res Chip 1% 49.9 Ohms
SM652041200	11	Res 20 Ohms +/-1% 1/16W 0402 S
SM652061000	4	Res Chip 0 Ohm Jumper
SM652061000	11	Res Chip 0 Ohm Jumper
SM652061100	5	Res Chip 1% 10.0 Ohm .063W
SM652061100	10	Res Chip 1% 10.0 Ohm .063W
SM652061101	10	Res Chip 1% 100 Ohm .063W
SM652061101	7	Res Chip 1% 100 Ohm .063W
SM652061101	4	Res Chip 1% 100 Ohm .063W
SM652061101	5	Res Chip 1% 100 Ohm .063W
SM652061102	5	Res Chip 1% 1.0K Ohm .063W
SM652061102	16	Res Chip 1% 1.0K Ohm .063W
SM652061102	23	Res Chip 1% 1.0K Ohm .063W
SM652061103	7	Res Chip 1% 10K Ohm .063W
SM652061103	19	Res Chip 1% 10K Ohm .063W
SM652061105	1	Res Chip 1% 1.0M Ohm .063W
SM652061105	5	Res Chip 1% 1.0M Ohm .063W
SM652061106	5	Res Chip 1% 10M Ohm .063W
SM652061112	10	Res Chip 1% 1.1K Ohm .063W
SM652061121	15	Res Chip 1% 120 Ohm .063W
SM652061121	50	Res Chip 1% 120 Ohm .063W
SM652061131	5	Res Chip 1% 130 Ohm .063W
SM652061154	5	Res Chip 1% 150K Ohm .063W
SM652061161	15	Res Chip 1% 160 Ohm .063W
SM652061200	1	Res Chip 1% 20.0 Ohm .063W
SM652061201	5	Res Chip 1% 200 Ohm .063W
SM652061201	1	Res Chip 1% 200 Ohm .063W
SM652061201	15	Res Chip 1% 200 Ohm .063W
SM652061203	11	Res Chip 1% 20K Ohm .063W
SM652061221	18	Res Chip 1% 220 Ohm .063W
SM652061222	2	Res Chip 1% 2.2K Ohm .063W
SM652061222	4	Res Chip 1% 2.2K Ohm .063W
SM652061222	5	Res Chip 1% 2.2K Ohm .063W
SM652061240	1	Res Chip 1% 24.0 Ohm .063W



901765-00: WR 6100 1 GHz 5 GS/s 4 Ch Acquisition Board (con't)

Part Number	Qty	Description
SM652061240	5	Res Chip 1% 24.0 Ohm .063W
SM652061271	2	Res Chip 1% 270 Ohm .063W
SM652061271	2	Res Chip 1% 270 Ohm .063W
SM652061271	20	Res Chip 1% 270 Ohm .063W
SM652061271	10	Res Chip 1% 270 Ohm .063W
SM652061273	5	Res Chip 1% 27K Ohm .063W
SM652061273	20	Res Chip 1% 27K Ohm .063W
SM652061330	5	Res Chip 1% 33.0 Ohm .063W
SM652061332	5	Res Chip 1% 3.3K Ohm .063W
SM652061332	4	Res Chip 1% 3.3K Ohm .063W
SM652061334	1	Res Chip 1% 330K Ohm .063W
SM652061361	15	Res Chip 1% 360 Ohm .063W
SM652061361	5	Res Chip 1% 360 Ohm .063W
SM652061361	3	Res Chip 1% 360 Ohm .063W
SM652061390	35	Res Chip 1% 39.0 Ohm .063W
SM652061390	5	Res Chip 1% 39.0 Ohm .063W
SM652061393	5	Res Chip 1% 39K Ohm .063W
SM652061393	1	Res Chip 1% 39K Ohm .063W
SM652061393	15	Res Chip 1% 39K Ohm .063W
SM652061394	5	Res Chip 1% 390K Ohm .063W
SM652061430	10	Res Chip 1% 43.2 Ohm .063W
SM652061431	1	Res Chip 1% 430 Ohm .063W
SM652061432	6	Res Chip 1% 4.3K Ohm .063W
SM652061471	5	Res Chip 1% 470 Ohm .063W
SM652061510	12	Res Chip 1% 51.0 Ohm .063W
SM652061510	5	Res Chip 1% 51.0 Ohm .063W
SM652061510	25	Res Chip 1% 51.0 Ohm .063W
SM652061511	2	Res Chip 1% 510 Ohm .063W
SM652061512	5	Res Chip 1% 5.1K Ohm .063W
SM652061513	5	Res Chip 1% 51K Ohm .063W
SM652061562	5	Res Chip 1% 5.6K Ohm .063W
SM652061681	5	Res Chip 1% 681 Ohm .063W
SM652061751	5	Res Chip 1% 750 Ohm .063W
SM652061751	1	Res Chip 1% 750 Ohm .063W
SM652061824	5	Res Chip 1% 820K Ohm .063W
SM652061912	5	Res Chip 1% 9.1K Ohm .063W
SM652101101	2	Res Chip (E24) 1% 100 Ohm
SM652101302	1	Res Chip (E24) 1% 3 K
SM653001050	6	Res Chip 50OHM .2W +/-1%
SM653041297	5	RES CHIP 1% 100 OHMS 0402
SM653101226	1	Res Chip 1% 18.2 Ohms
SM653101262	9	Res Chip 1% 43.2 Ohms
SM653101277	7	Res Chip 1% 61.9 Ohms
SM653101285	5	Res Chip 1 % 75.0 Ohms

901765-00: WR 6100 1 GHz 5 GS/s 4 Ch Acquisition Board (con't)

Part Number	Qty	Description
SM653101297	18	Res Chip 1% 100 Ohms
SM653101322	17	Res Chip 1% 182 Ohms
SM653101326	7	Res Chip 1% 200 Ohms
SM653101334	8	Res Chip 1% 243 Ohms
SM653101347	1	Res Chip 1% 332 Ohms
SM653101354	14	Res Chip 1% 392 Ohms
SM653101377	9	Res Chip 1% 681 Ohms
SM653101393	33	Res Chip 1% 1.00 K
SM653101397	1	Res Chip 1% 1.10 K
SM653101401	4	Res Chip 1% 1.21 K
SM653101410	13	Res Chip 1% 1.50 K
SM653101422	35	Res Chip 1% 2.00 K
SM653101422	4	Res Chip 1% 2.00 K
SM653101422	12	Res Chip 1% 2.00 K
SM653101426	9	Res Chip 1 % 2.21K
SM653101430	3	Res Chip 1% 2.43 K
SM653101435	2	Res Chip 1% 2.74 K
SM653101458	10	Res Chip 1 % 4.75 K
SM653101461	7	Res Chip 1% 5.11 K
SM653101469	1	Res Chip 1% 6.19 K
SM653101477	13	Res Chip 1% 7.50 K
SM653101489	21	Res Chip 1 % 10.0 K
SM653101489	4	Res Chip 1 % 10.0 K
SM653101506	5	Res Chip 1% 15.0 K
SM653101518	7	Res Chip 1% 20.0 K
SM653101539	6	Res Chip 1% 33.2 K
SM653101589	9	Res Chip 1% 110 K
SM654101000	11	Chip Jumper Zero Ohms
SM654101000	12	Chip Jumper Zero Ohms
SM655020002	10	RES CHIP 1% 174 OHMS
SM655020017	30	Res Thk Film 1% 1K Ohm 1/16W
SM655020025	18	Res Thk Film 1% 2.74 Ohm 1/16W
SM655030040	10	Res Thk Film +/-1% 5.11 Ohm .1W
SM655030042	5	Res Thk Film 1% 5.6M Ohm 1/16W
SM655040022	5	Res Chip .5% 50ppm 180K 150V
SM655040023	5	Res Chip .5% 50ppm 240K 150V
SM655040024	40	Res Chip .5% 50ppm 300K 150V
SM655040025	10	Res Chip .5% 50ppm 110K 150V
SM655040026	1	Res Thk Film 41.2 Ohm .5% 1/8W
SM655040027	2	Res Thk Film 20 Ohm .5% 1/8W
SM655080004	5	Res Thk Film 1 Ohm +/- 5% 1/2W
SM655080005	8	Res Thk Film 1% 105 Ohm 1/2W
SM655080009	1	Res Thk Film 0.5% 41.2 Ohm 1W
SM661010002	10	Cap Cera Chip 27PF +/- 5%
SM661011001	5	Cap Cera Chip 3.9pF 200V



901765-00: WR 6100 1 GHz 5 GS/s 4 Ch Acquisition Board (con't)

Part Number	Qty	Description
SM661028100	15	Cap Cera Chip 1UF 10V
SM661028100	1	Cap Cera Chip 1UF 10V
SM661066102	5	Cap Cera Chip 10% 1000PF/50V
SM661066102	88	Cap Cera Chip 10% 1000PF/50V
SM661066102	10	Cap Cera Chip 10% 1000PF/50V
SM661068104	25	Cap Cera Chip 0.1uF 0603
SM661068104	120	Cap Cera Chip 0.1uF 0603
SM661068104	5	Cap Cera Chip 0.1uF 0603
SM661073068	5	Cap Cera 6.8+/- 0.1PF 50V Npo
SM661073300	5	Cap Cera 30PF+/- 5% 50V Npo
SM661073331	3	Cap Cera 330PF+/- 5% 50V Npo
SM661073820	7	Cap Cera 82PF+/- 5% 50V Npo
SM661165102	3	Cap Cera Chip 1000PF
SM661207103	6	Cap Cera Chip 20% .01 UF
SM661207104	10	Cap Cera Chip 20 % .1 UF
SM661207104	223	Cap Cera Chip 20 % .1 UF
SM661207223	5	Cap Cera Chip 20% .022 UF
SM661255015	1	Cap Cera Chip 1.5 PF
SM661255121	3	Cap Cera Chip 5% 120 PF
SM661540056	10	Cap Cera Chip 5.6PF 500V
SM661540068	5	Cap Cera Chip 6.8PF 500V
SM662131003	47	Cap Cera Chip 5% 50V .01 UF
SM662137001	14	Cap Cera +/-.1% 50V 1.5pF NPO
SM662151001	42	Cap Cera Chip 10% 16V 0.1 UF
SM662152001	18	Cap Cera Chip 10% 16V 100nF
SM662212001	5	Cap Cera .015uF 10% 25V X7R
SM662232001	8	10000pf 0603 capacitor
SM662241001	5	Cap Cera 22pF +/- 5% 100V Npo
SM662252001	5	Cap Cera .068uF 10% 16V X7R
SM662382001	5	Cap Cera 1000pF 10% 500V X7R
SM662432001	1	Cap Cera 4700pF 10% 50V X7R
SM662432002	1	Cap Cera Chip 0.22uF 10% 50V
SM666267227	22	Cap Tant 220UF 10V 20%
SM668010335	15	Cap,tant 3.3UF/10V 20% L/Esr
SM668016226	58	Cap tant 22UF/16V 20 % L Esr
SM668025106	19	Cap,tant 10UF/25V 20% L Esr
SM668025334	10	Cap,tant .33UF/25V 20% L/Esr

7.15 901768-00: Accessories

Part Number	Qty	Description
771000001	1	Optical Wheel Mouse
901335-00	1	End User License Agreement
901477-00	1	LeCroy Blue Cal Void Sticker
901779-00	1	WaveRunner shipping cover
901799-00	1	Protective Cover Logo Label
901891-00	1	WR6xxx CECERT
901926-00	1	CD and Case XStream DSO App SW
CALIB-DE1	1	Calibration Document Envelope
PP007-2	2	PP007 Passive Probe x2

7.16 901806-00: WR 6030 350 MHz 2.5 GS/s 4 Ch Acquisition Board

Part Number	Qty	Description
309000010	1	Crystal Oscillator 10MHZ 9PPM
335970001	1	Probe Hook
402120004	1	Conn RT Angle Fem Bnc
416162005	1	Switch R/A PCB Mtg SPDT MOM
430500003	4	20DB Attenuator Relay DC-3GHZ
454000018	1	Hdr Sold Tail Male 18 Pin HI T
454004002	1	Conn Receptacle USB R/A 4 Pos
454016002	1	Conn Hdr Vert 16 Pos Wire-BD
454022001	1	HEADER VERT 22 POS WIRE BD
454117003	4	Friction Header Straight .1 CE
454312010	4	Hdr Sold Tail/Male 10
469040002	1	Metal Banana Jack/Binding Post
505000013	2	CPU Cooler for Intel P4
520000102	1	Spacer Nylon TO-8V
522632120	6	Standoff Hex 6-32X5/8 F/F
524632015	4	Standoff Hex 6-32 X 1/2 FF
550011106	10	Screw Pan HD M2X6 Blk W/Nylock
551620100	10	#2 Flat Washer S.steel/Black O
555465002	1	Washer Lock Split 1/4
561632405	16	Screw TX Pan #6-32UNC 5/16" S1
709614300	5	Bulkhead Receptical Female Bnc
709614301	5	BNC Lock Washer
709614302	5	BNC Nut
7093XXP01	5	Right Angle Recept. Connector
7093XXP41	5	Probe Holder
7093XXP91	5	Probe Ring Contact
901140-00	4	Chip Atten. 3dB .5% Trim Res
901251-00	1	THERMAL TAPE DIE-CUT 13X13mm
901257-00	1	HEATSINK CLIP PLASTIC
901336-00	1	Heatsink S65 MST/MTB
901436-00	1	S65 Front Card Panel Assy Update



901806-00: WR 6030 350 MHz 2.5 GS/s 4 Ch Acquisition Board (con't)

Part Number	Qty	Description
901437-00	2	Heatsink Base - HAD
901439-00	2	S65 backbone
901440-00	1	Heatsink Base mst/mtb
901441-00	1	Heatsink clip mst-mtb
901467-00	6	Thermal Gap Pad Die Cut
901562-00	1	FE Heatsink - 30mm
901586-02	1	4ch 500MHz 5GS/s PCA
901609-00	1	EMI Shield
901622-00	1	EMI shield - 10 GHZ clock
901685-00	5	Upper front end EMI shield
901686-00	5	Lower front end EMI shield
901693-00	1	Gap pad MST die cut
901694-00	1	Gap pad HTB die cut
901709-00	5	Malico 30mm heat sink assy
901790-00	2	S65 CLOCK EMI SHIELD 0.4 IN. H
901807-00	1	ALUM. SPACER
901835-00	1	CABLE S65 10GHz MTB COAX
901835-01	1	CABLE S65 10GHz CH1 COAX
901835-02	1	CABLE S65 10GHz CH3 COAX
901836-00	1	Waverunner Acq. PCB
CH599041022	1	Heat Sink Compound 251
HAD639C-02	2	Packaged MAD440E 10GS/s SiGe
HFE653B	5	Front End Amplifier
HTB645	1	Hybrid Pkgd Timebase Trigger
MAM439	6	Monolithic 8 Megabyte Dram Mem
MST429A	1	IC Smart Trigger Gate-Array
SM158021002	10	Cap Variable 0.5-2.5pF 250V
SM158070200	10	Cap Variable 4.5-20.0 PF
SM185457102	5	Res Vari Cermet 1 K
SM185457201	1	Res Vari Cermet 200 Ohms
SM185457503	5	Res Vari Cermet 50 K
SM200180032	1	IC 2-in OR Gate 74VHC1G32
SM200588014	1	Hex Schmitt-Trig Inv 74HCT14
SM201274033	1	IC Ecl Divide BY 4 MC10EL33
SM201570016	2	IC Ecl Diff Receiver 10EL16D
SM201774025	3	Diff Ecl-Ttl Transl 10ELT25
SM202057002	1	IC Triple 2-CH Analog Mux
SM202059003	1	ECL Diff Rec/Driv w/Enable Out
SM202100004	1	IC PLL Freq Synth 4106 6 GHz
SM202102001	1	IC ECL /PECL 1:5 DIFF CLK DRVR
SM202107002	1	100EP57 4:1 MUX
SM205129160	1	IC FLASH MEM 16 MBIT HY29LV160 TSOP-48
SM205200002	1	IC 8M x 8 Bit 133MHz SDRAM
SM205616001	5	IC 8-Bit Shift Reg 74LV594ADR

901806-00: WR 6030 350 MHz 2.5 GS/s 4 Ch Acquisition Board (con't)

Part Number	Qty	Description
SM205625616	1	IC 256K X 16 CMOS SRAM
SM205715003	2	IC PAL FG456 Fine-Pitch BGA
SM206178125	1	IC Quad Bfr Line Drvr 3 State
SM206370024	3	IC Ttl TO Diff Ecl Transl MC10
SM207010002	3	IC CMOS 8 BIT LOW RES BUS SWITCH
SM207010011	2	IC Quad 10-Bit DAC LTC1664
SM207010014	1	16 Bit Buffer/Driver 3-State
SM207131660	1	IC Dac Octal 10BIT Serial Unip
SM207231654	4	IC Dual 14-Bit Serial Dac
SM207770442	5	IC Analog Switch DG442
SM207944351	5	OCTAL ANALOG MUX/DEMUX 74HCT4351
SM208400001	3	IC MMIC Amplifier 12GHz NBB-300
SM208400002	1	IC MMIC Amplifier 8GHz NBB-400
SM208450686	5	IC Wideband OP Amp OPA686
SM208470353	8	IC Dual OP Amp LF353
SM208470705	10	IC OP Amp Picoamp Input AD705
SM208472022	7	Opamp, Dual, Low Pwr TLE2022C
SM208475460	5	IC OP Amp Sin-Sup RtoR Ins Amp
SM208476482	2	IC Dual OP Amp Rail TO Rail 64
SM208550004	8	IC Volt Reg Pos Adjust LDO
SM208550337	1	IC Volt Reg Adj LM337
SM208550821	1	Voltage Monitor MAX821
SM208556138	1	IC Volt Ref 4.096V 0.1% 25ppm
SM208701023	11	IC Temperature Sensor
SM208909850	1	DDS-125MHZ Cmos Synth AD9850
SM227110161	1	16 BIT MICROCONTROLLER C161PI
SM229020150	5	MLC Trans Volt Suppressor
SM232022824	1	Diode Array Schottky HSMS2824
SM232030001	10	Diode Array Schottky HSMS-282C
SM232442828	5	Diode Bridge HSMS2828
SM236030099	10	Diode SO-Pkg BAV99
SM252005303	10	Pin Diode Bar 63-03W
SM252023066	20	Pin Diode Bar 66
SM252023304	5	Dual Pin Diode Silicon Bar 63-
SM256232013	1	Diode Light Emitting Red
SM270050520	15	NPN 9GHZ Wideband Transistor
SM270130092	6	Transistor Npn BFR92A
SM270330848	2	Transistor Npn BC848C
SM275030550	5	Transistor Pnp BF550
SM275132907	1	Transistor Pnp 2907A
SM280122416	5	Trans. Jfet N MMBF4416/LC6A
SM280217505	2	Mosfet, Nchanel, 75A, 50V, D2P
SM281115003	4	P-CH Hdtmos Pwr E-Fet MTB50P03
SM289772003	5	Transistor Array 2003
SM300092390	1	Inductor Wound 2% 39 NH



901806-00: WR 6030 350 MHz 2.5 GS/s 4 Ch Acquisition Board (con't)

Part Number	Qty	Description
SM300095151	2	Inductor Wound 150NH
SM300295082	28	Inductor 8.2 NH 5%
SM300600009	2	Inductor 9.3uH 7.2A Wound
SM301001001	19	BEAD FERRITE
SM301001002	6	Bead SHF 0.3A
SM301001016	4	Inductor Pwr Toroid 272uH .36A
SM301001017	3	Inductor Chip 10% 15uH 1210
SM301001018	1	Inductor Shielded 100uH 10%
SM301004001	70	Bead Ferrite 50 Ohms 3AMPS 120
SM311000005	1	Crystal Oscillator 16 MHz 3.3V
SM311000006	1	Voltage Controlled Oscillator 5 GHz
SM430530001	20	Relay Smd Dual Form C 5V
SM431030005	5	Relay SPDT HF 50 Ohm 4.5V
SM433695250	2	PTC Resettable Device 2.5A
SM453005001	3	Header 1 x 5 Shrouded
SM454204040	2	Hdr Male 40 Pos Idc
SM507000002	2	Heatsink Surface Mount TO-263
SM651081102	8	Res Chip 0.1% 1 Kohm
SM652000005	10	Res RF 100 Ohm .25% 1/3W 1206
SM652041000	49	Res Zero ohms
SM652041011	25	Res Chip 1% 49.9 Ohms
SM652041200	11	Res 20 Ohms +/-1% 1/16W 0402 S
SM652061000	4	Res Chip 0 Ohm Jumper
SM652061000	11	Res Chip 0 Ohm Jumper
SM652061100	5	Res Chip 1% 10.0 Ohm .063W
SM652061100	10	Res Chip 1% 10.0 Ohm .063W
SM652061101	4	Res Chip 1% 100 Ohm .063W
SM652061101	5	Res Chip 1% 100 Ohm .063W
SM652061101	7	Res Chip 1% 100 Ohm .063W
SM652061101	10	Res Chip 1% 100 Ohm .063W
SM652061102	5	Res Chip 1% 1.0K Ohm .063W
SM652061102	16	Res Chip 1% 1.0K Ohm .063W
SM652061102	23	Res Chip 1% 1.0K Ohm .063W
SM652061103	7	Res Chip 1% 10K Ohm .063W
SM652061103	19	Res Chip 1% 10K Ohm .063W
SM652061105	1	Res Chip 1% 1.0M Ohm .063W
SM652061105	5	Res Chip 1% 1.0M Ohm .063W
SM652061106	5	Res Chip 1% 10M Ohm .063W
SM652061112	10	Res Chip 1% 1.1K Ohm .063W
SM652061121	15	Res Chip 1% 120 Ohm .063W
SM652061121	50	Res Chip 1% 120 Ohm .063W
SM652061154	5	Res Chip 1% 150K Ohm .063W
SM652061161	15	Res Chip 1% 160 Ohm .063W
SM652061200	1	Res Chip 1% 20.0 Ohm .063W

901806-00: WR 6030 350 MHz 2.5 GS/s 4 Ch Acquisition Board (con't)

Part Number	Qty	Description
SM652061201	1	Res Chip 1% 200 Ohm .063W
SM652061201	5	Res Chip 1% 200 Ohm .063W
SM652061201	15	Res Chip 1% 200 Ohm .063W
SM652061203	11	Res Chip 1% 20K Ohm .063W
SM652061221	18	Res Chip 1% 220 Ohm .063W
SM652061222	2	Res Chip 1% 2.2K Ohm .063W
SM652061222	4	Res Chip 1% 2.2K Ohm .063W
SM652061222	5	Res Chip 1% 2.2K Ohm .063W
SM652061240	1	Res Chip 1% 24.0 Ohm .063W
SM652061240	5	Res Chip 1% 24.0 Ohm .063W
SM652061271	2	Res Chip 1% 270 Ohm .063W
SM652061271	2	Res Chip 1% 270 Ohm .063W
SM652061271	10	Res Chip 1% 270 Ohm .063W
SM652061271	20	Res Chip 1% 270 Ohm .063W
SM652061273	5	Res Chip 1% 27K Ohm .063W
SM652061273	20	Res Chip 1% 27K Ohm .063W
SM652061330	5	Res Chip 1% 33.0 Ohm .063W
SM652061332	4	Res Chip 1% 3.3K Ohm .063W
SM652061332	5	Res Chip 1% 3.3K Ohm .063W
SM652061334	1	Res Chip 1% 330K Ohm .063W
SM652061361	3	Res Chip 1% 360 Ohm .063W
SM652061361	5	Res Chip 1% 360 Ohm .063W
SM652061361	15	Res Chip 1% 360 Ohm .063W
SM652061390	5	Res Chip 1% 39.0 Ohm .063W
SM652061390	35	Res Chip 1% 39.0 Ohm .063W
SM652061393	1	Res Chip 1% 39K Ohm .063W
SM652061393	5	Res Chip 1% 39K Ohm .063W
SM652061393	15	Res Chip 1% 39K Ohm .063W
SM652061394	5	Res Chip 1% 390K Ohm .063W
SM652061430	10	Res Chip 1% 43.2 Ohm .063W
SM652061431	1	Res Chip 1% 430 Ohm .063W
SM652061432	6	Res Chip 1% 4.3K Ohm .063W
SM652061471	5	Res Chip 1% 470 Ohm .063W
SM652061510	5	Res Chip 1% 51.0 Ohm .063W
SM652061510	12	Res Chip 1% 51.0 Ohm .063W
SM652061510	25	Res Chip 1% 51.0 Ohm .063W
SM652061511	2	Res Chip 1% 510 Ohm .063W
SM652061512	5	Res Chip 1% 5.1K Ohm .063W
SM652061513	5	Res Chip 1% 51K Ohm .063W
SM652061562	5	Res Chip 1% 5.6K Ohm .063W
SM652061680	5	Res Chip 1% 68.0 Ohm .063W
SM652061681	5	Res Chip 1% 681 Ohm .063W
SM652061751	1	Res Chip 1% 750 Ohm .063W
SM652061751	5	Res Chip 1% 750 Ohm .063W
SM652061824	5	Res Chip 1% 820K Ohm .063W



901806-00: WR 6030 350 MHz 2.5 GS/s 4 Ch Acquisition Board (con't)

Part Number	Qty	Description
SM652061912	5	Res Chip 1% 9.1K Ohm .063W
SM652101101	2	Res Chip (E24) 1% 100 Ohm
SM652101302	1	Res Chip (E24) 1% 3 K
SM653041297	5	RES CHIP 1% 100 OHMS 0402
SM653101226	1	Res Chip 1% 18.2 Ohms
SM653101262	9	Res Chip 1% 43.2 Ohms
SM653101277	7	Res Chip 1% 61.9 Ohms
SM653101285	5	Res Chip 1 % 75.0 Ohms
SM653101297	18	Res Chip 1% 100 Ohms
SM653101322	17	Res Chip 1% 182 Ohms
SM653101326	7	Res Chip 1% 200 Ohms
SM653101334	8	Res Chip 1% 243 Ohms
SM653101347	1	Res Chip 1% 332 Ohms
SM653101354	14	Res Chip 1% 392 Ohms
SM653101377	9	Res Chip 1% 681 Ohms
SM653101393	33	Res Chip 1% 1.00 K
SM653101397	1	Res Chip 1% 1.10 K
SM653101401	4	Res Chip 1% 1.21 K
SM653101410	13	Res Chip 1% 1.50 K
SM653101422	4	Res Chip 1% 2.00 K
SM653101422	12	Res Chip 1% 2.00 K
SM653101422	35	Res Chip 1% 2.00 K
SM653101426	9	Res Chip 1 % 2.21K
SM653101430	3	Res Chip 1% 2.43 K
SM653101435	2	Res Chip 1% 2.74 K
SM653101458	10	Res Chip 1 % 4.75 K
SM653101461	7	Res Chip 1% 5.11 K
SM653101469	1	Res Chip 1% 6.19 K
SM653101477	13	Res Chip 1% 7.50 K
SM653101489	4	Res Chip 1 % 10.0 K
SM653101489	21	Res Chip 1 % 10.0 K
SM653101506	5	Res Chip 1% 15.0 K
SM653101518	7	Res Chip 1% 20.0 K
SM653101539	6	Res Chip 1% 33.2 K
SM653101589	9	Res Chip 1% 110 K
SM654101000	11	Chip Jumper Zero Ohms
SM654101000	12	Chip Jumper Zero Ohms
SM655020002	10	RES CHIP 1% 174 OHMS
SM655020017	30	Res Thk Film 1% 1K Ohm 1/16W
SM655020025	18	Res Thk Film 1% 2.74 Ohm 1/16W
SM655030040	10	Res Thk Film +/-1% 5.11 Ohm .1W
SM655030042	5	Res Thk Film 1% 5.6M Ohm 1/16W
SM655040022	5	Res Chip .5% 50ppm 180K 150V
SM655040023	5	Res Chip .5% 50ppm 240K 150V

901806-00: WR 6030 350 MHz 2.5 GS/s 4 Ch Acquisition Board (con't)

Part Number	Qty	Description
SM655040024	40	Res Chip .5% 50ppm 300K 150V
SM655040025	10	Res Chip .5% 50ppm 110K 150V
SM655040026	1	Res Thk Film 41.2 Ohm .5% 1/8W
SM655040027	2	Res Thk Film 20 Ohm .5% 1/8W
SM655080004	5	Res Thk Film 1 Ohm +/- 5% 1/2W
SM655080005	8	Res Thk Film 1% 105 Ohm 1/2W
SM655080009	1	Res Thk Film 0.5% 41.2 Ohm 1W
SM661010002	10	Cap Cera Chip 27PF +/- 5%
SM661011001	5	Cap Cera Chip 3.9pF 200V
SM661028100	15	Cap Cera Chip 1UF 10V
SM661066102	5	Cap Cera Chip 10% 1000PF/50V
SM661066102	10	Cap Cera Chip 10% 1000PF/50V
SM661066102	88	Cap Cera Chip 10% 1000PF/50V
SM661068104	5	Cap Cera Chip 0.1uF 0603
SM661068104	25	Cap Cera Chip 0.1uF 0603
SM661068104	120	Cap Cera Chip 0.1uF 0603
SM661073068	5	Cap Cera 6.8+/- 0.1PF 50V Npo
SM661073300	5	Cap Cera 30PF+/- 5% 50V Npo
SM661073331	3	Cap Cera 330PF+/- 5% 50V Npo
SM661073820	7	Cap Cera 82PF+/- 5% 50V Npo
SM661165102	3	Cap Cera Chip 1000PF
SM661207103	6	Cap Cera Chip 20% .01 UF
SM661207104	10	Cap Cera Chip 20 % .1 UF
SM661207104	223	Cap Cera Chip 20 % .1 UF
SM661207223	5	Cap Cera Chip 20% .022 UF
SM661255121	3	Cap Cera Chip 5% 120 PF
SM661540056	10	Cap Cera Chip 5.6PF 500V
SM661540068	5	Cap Cera Chip 6.8PF 500V
SM662131003	47	Cap Cera Chip 5% 50V .01 UF
SM662137001	14	Cap Cera +/-.1% 50V 1.5pF NPO
SM662137002	13	Cap Cera +/-.25% 50V 2.2pF NPO
SM662151001	42	Cap Cera Chip 10% 16V 0.1 UF
SM662152001	18	Cap Cera Chip 10% 16V 100nF
SM662212001	5	Cap Cera .015uF 10% 25V X7R
SM662232001	8	10000pf 0603 capacitor
SM662241001	5	Cap Cera 22pF +/- 5% 100V Npo
SM662252001	5	Cap Cera .068uF 10% 16V X7R
SM662382001	5	Cap Cera 1000pF 10% 500V X7R
SM662432001	1	Cap Cera 4700pF 10% 50V X7R
SM662432002	1	Cap Cera Chip 0.22uF 10% 50V
SM666267227	22	Cap Tant 220UF 10V 20%
SM668010335	15	Cap,tant 3.3UF/10V 20% L/Esr
SM668016226	58	Cap tant 22UF/16V 20 % L Esr
SM668025106	19	Cap,tant 10UF/25V 20% L Esr
SM668025334	10	Cap,tant .33UF/25V 20% L/Esr



7.17 901851-00: USB Hub

Part Number	Qty	Description
454014002	1	Conn Hdr R/A 14-Pos Wire-BD
454340002	4	Hdr Sold Tail/WW 2
901892-00	1	Waverunner HUB PCB
SM208550006	1	IC Volt Detector 4.5V TC54VC45
SM208580002	1	IC Reset M51957BFP
SM227470001	1	IC USB Hub Controller 1.1
SM227900002	1	IC 16-Bit Microcomputer USB
SM232550001	1	SCR/Diode ESD & OVP Array 6-Ch
SM270132222	2	Transistor Npn 2N2222A
SM275132907	2	Transistor Pnp 2907A
SM310000002	1	Crystal Resonator 6MHz
SM310716000	1	Crystal 16 MHz
SM311000010	1	Crystal Osc 6.0MHz 32pF
SM334010001	1	IC USB Touch Screen Contoller
SM453004002	1	Conn 4 Pos 1mm FFC FMS Series
SM453005001	3	Header 1 x 5 Shrouded
SM453026002	1	Conn .050" Hdr 26-Pos Male
SM652101152	1	Res Chip E24 1% 1.5 K
SM652101392	1	Res Chip (E24) 1% 3.9 K
SM652101472	21	Res Chip (E24) 1% 4.7 K
SM652101512	1	Res Chip (E24) 1% 5.1 K
SM653101230	10	Res Chip 1% 20.0 Ohms
SM653101330	1	Res Chip 1% 221 Ohms
SM653101393	2	Res Chip 1% 1.00 K
SM653101410	2	Res Chip 1% 1.50 K
SM653101439	1	Res Chip 1% 3.01 K
SM653101489	6	Res Chip 1 % 10.0 K
SM653101506	8	Res Chip 1% 15.0 K
SM654101000	1	Chip Jumper Zero Ohms
SM661073471	1	Cap Cera 470PF+/- 5% 50V Npo
SM661207103	1	Cap Cera Chip 20% .01 UF
SM661207104	10	Cap Cera Chip 20 % .1 UF
SM661540100	2	Cap Cera 10PF/500V Npo
SM662131003	4	Cap Cera Chip 5% 50V .01 UF
SM666267227	4	Cap Tant 220UF 10V 20%
SM668016226	2	Cap tant 22UF/16V 20 % L Esr

7.18 901853-00: CD R Assy

Part Number	Qty	Description
330000033	1	CD-ROM DRIVE 33.3MB
350480007	1	Gasket, EMI Fabric 3X3MMX3.9IN
561632604	6	Screw TX Pan #6-32 UNC 1/4" S3
563420003	4	SCREW TX PAN M2-0.4 X 3MM S1
563460006	2	SCREW TX PAN M2X0.4-6MM S1
900517-00	2	Retaining Spacer M2 2.85mm long
901504-00	1	CDROM Adapter PCA
454315004	1	Hdr Sold Tail/Male 4
454510104	1	Hdr Vert Male Shrouded 4 Pos
901502-00	1	WaveRunner CDROM Adapter PCB
901525-00	1	Cable Assy CDROM Drive
SM454204040	1	Hdr Male 40 Pos Idc
SM454520050	1	Conn Header 50 PIN Smt
901856-00	1	WaveRunner CD-ROM BRACKET
901857-00	1	WaveRunner CD-ROM EMI COVER
901858-00	1	CD-ROM Mounting Bracket

7.19 902029-00: WR6000 A Series, 2 Ch Front Frame Assy

Part Number	Qty	Description
902448-00	1	Display/Touchscreen Assy 8.4 I
258000010	1	LCD Backlight DC - AC Inverter
902375-00	1	S65 Sharp 2Ch Frnt Pnl Assy
902520-00	1	S65 Chassis Front Panel
901722-00	1	Elastomeric keymat - 2 channel
519260004	1	Shorty Snap-In Bushing ID .250
902206-00	1	Shield Backlight Inverter
901757-00	1	S65 2 Channel Front Frame Over
902579-00	1	S65 LVDS TTL Hub with Audio
575401007	4	Washer Flat Fiber #4
902558-00	1	2Ch Bezel w/ Fibre Washer
901445-00	1	S65 power button
901582-00	7	Knob small
901583-00	5	Knob medium
901584-00	2	Knob large
902359-00	1	S65 Sharp Backlight Cable
902432-00	1	Hub to LCD display cable
901700-00	1	INPUT OVERLAY
544220007	1	Spring Compression 0.34L
561440404	12	Screw TX Pan #4-40 UNC 1/4 in
563425006	10	SCREW TX PAN M2.5X0.4-6MM S1
594120004	3	Cable Tie With Screw Base
594120006	2	Tiewrap
901983-00	1	Cable Assy Audio



902029-00: WR6000 A Series, 2 Ch Front Frame Assy (con't)

Part Number	Qty	Description
592060001	1	3.5 Inch Cable Assy 26-Pos
561440406	3	Screw TX Pan #4-40 UNF 3/8" S1
519260003	2	Shorty Snap-In Bushing ID .500
530009005	3	Shield (RFI/EMI) Finger Stock
575100004	3	Washer Flat M2.5 6mmOD .5mmS
350187001	1	Gasket Ultra Soft Knit 13 in
561440401	4	Screw TX Pan #4-40 UNC 3/16"
902485-00	1	Speaker Assembly
551430100	4	Flat Washer M3
902431-00	1	DVO to Hub board cable

7.20 902030-00: WR6000 A Series, 4 Ch Front Frame Assy

Part Number	Qty	Description
902448-00	1	Display/Touchscreen Assy 8.4 I
902373-00	1	S65 Sharp 4Ch Front Pnl Assy
902520-00	1	S65 Chassis Front Panel
902579-00	1	S65 LVDS TTL Hub with Audio
902534-00	1	Bezel w/ Fibre Washer
902359-00	1	S65 Sharp Backlight Cable
902432-00	1	Hub to LCD display cable
901983-00	1	Cable Assy Audio
902485-00	1	Speaker Assembly
902431-00	1	DVO to Hub board cable
258000010	1	LCD Backlight DC - AC Inverter
901433-00	1	Elastomeric Keymat for Front P
519260004	1	Shorty Snap-In Bushing ID .250
902206-00	1	Shield Backlight Inverter
901489-00	1	WR6K 4 Ch Front Panel Overlay
575401007	4	Washer Flat Fiber #4
901445-00	1	S65 power button
901582-00	9	Knob small
901583-00	7	Knob medium
901584-00	2	Knob large
901700-00	1	INPUT OVERLAY
544220007	1	Spring Compression 0.34L
561440404	12	Screw TX Pan #4-40 UNC 1/4 in
563425006	9	SCREW TX PAN M2.5X0.4-6MM S1
594120004	3	Cable Tie With Screw Base
594120006	2	Tiewrap
592060001	1	3.5 Inch Cable Assy 26-Pos
561440406	3	Screw TX Pan #4-40 UNF 3/8" S1
519260003	2	Shorty Snap-In Bushing ID .500

902030-00: WR6000 A Series, 4 Ch Front Frame Assy (con't)

Part Number	Qty	Description
530009005	3	Shield (RFI/EMI) Finger Stock
575100004	3	Washer Flat M2.5 6mmOD .5mmS
350187001	1	Gasket Ultra Soft Knit 13 in
561440401	4	Screw TX Pan #4-40 UNC 3/16"
551430100	4	Flat Washer M3

7.21 902373-00: 4 Channel Encoder Board

Part Number	Qty	Description
425100007	5	Encoder 20mm Detent
425100009	4	Encoder 20mm Detent JOG
425100010	9	Encoder 20mm Detent JOG PB
902374-00	1	4-Ch Sharp Frnt Pnl PCB 4-Laye
SM190105001	1	Resistor Network 10K Ohm 5%
SM190105003	2	Resistor Network 100K Ohm 5%
SM202051011	2	IC 3-to-8 Line Decoder VHC138
SM202109001	1	IC 16-Bit IIC LED Driver PCA95
SM207630574	1	IC 8-Bit I/O Expander I2C Bus
SM253032820	59	Diode Schottky 2820
SM256000001	1	DIODE LED RED 2MM
SM256000004	1	DIODE LED BLUE 2MM
SM256000005	9	DIODE LED AQUA GREEN 2MM
SM256000006	1	DIODE LED SP YELLOW 2MM
SM453026002	1	Conn .050 inch Hdr 26-Pos Male
SM653101273	1	Res Chip 1% 56.2 Ohms
SM653101301	8	Res Chip 1% 110 Ohms
SM653101343	1	Res Chip 1% 301 Ohms
SM653101489	8	Res Chip 1 % 10.0 K
SM654101000	2	Chip Jumper Zero Ohms
SM654101000	2	Chip Jumper Zero Ohms
SM654101000	2	Chip Jumper Zero Ohms
SM661207104	4	Cap Cera Chip 20 % .1 UF
SM666487105	2	Cap Mold EIA Chip 1uF 10%



7.22 902375-00: 2 Channel Encoder Board

Part Number	Qty	Description
425100007	3	Encoder 20mm Detent
425100009	4	Encoder 20mm Detent JOG
425100010	7	Encoder 20mm Detent JOG PB
902376-00	1	Sharp 2Ch Frnt Pnl PCB 4-Layer
SM190105001	1	Resistor Network 10K Ohm 5%
SM190105003	2	Resistor Network 100K Ohm 5%
SM202051011	2	IC 3-to-8 Line Decoder VHC138
SM202109001	1	IC 16-Bit IIC LED Driver PCA95
SM207630574	1	IC 8-Bit I/O Expander I2C Bus
SM253032820	47	Diode Schottky 2820
SM256000001	1	DIODE LED RED 2MM
SM256000005	8	DIODE LED AQUA GREEN 2MM
SM256000006	1	DIODE LED SP YELLOW 2MM
SM453026002	1	Conn .050 inch Hdr 26-Pos Male
SM653101301	8	Res Chip 1% 110 Ohms
SM653101343	1	Res Chip 1% 301 Ohms
SM653101489	8	Res Chip 1 % 10.0 K
SM654101000	3	Chip Jumper Zero Ohms
SM654101000	2	Chip Jumper Zero Ohms
SM661207104	4	Cap Cera Chip 20 % .1 UF
SM666487105	2	Cap Mold EIA Chip 1uF 10%

7.23 902434-00: Top Cover Assy

Part Number	Qty	Description
530301022	1	Handle Assembly 9" 184F
562632404	6	Screw TX Flat #6-32UNC 1/4" S1
902430-00	1	WaveRunner Top Cover Standard
901487-00	4	WaveRunner Side Foot

7.24 902572-00: AGP/DVO Interface

Part Number	Qty	Description
902571-00	1	DVO Display Adapter PCB
SM205108132	1	IC Eeprom 32K Bit IIC Bus
SM207010002	1	IC CMOS 8 BIT LOW RES BUS SWIT
SM207010013	1	Display Driver DVO to LVDS TFT
SM208542915	1	1.5A Low-Dropout volt reg adj
SM280120605	2	Low Power Nmosfet
SM281126402	3	P-Channel Mosfet IRLML6402
SM301004001	2	Bead Ferrite 50 Ohms 3AMPS 120
SM311414318	1	Crystal Oscillator 14.31818MHZ
SM453005002	1	Header 1 x 5 Shrouded Side Ent
SM453020004	1	Conn Hdr R/A 20 Pos Wire-BD
SM652061102	2	Res Chip 1% 1.0K Ohm .063W
SM652061101	2	Res Chip 1% 100 Ohm .063W
SM652061102	3	Res Chip 1% 1.0K Ohm .063W
SM652061102	15	Res Chip 1% 1.0K Ohm .063W
SM652061510	2	Res Chip 1% 51.0 Ohm .063W
SM652101102	4	Res Chip (E24) 1% 1 K
SM652101222	4	Res Chip (E24) 1% 2.2 K
SM652101331	1	Res Chip (E24) 1% 330 Ohm
SM653101458	6	Res Chip 1 % 4.75 K
SM653101653	1	Res Thk Flm 1% 511K Ohm
SM654101000	2	Chip Jumper Zero Ohms
SM654101000	1	Chip Jumper Zero Ohms
SM655030036	2	Res Thk Film 1% 80.6 Ohm 1/16W
SM655040017	4	Res Chip 1.24K OHM 1% 1/10W 08
SM661028100	1	Cap Cera Chip 1UF 10V
SM661207103	4	Cap Cera Chip 20% .01 UF
SM661207104	14	Cap Cera Chip 20 % .1 UF
SM661255471	2	Cap Cera Chip 5 % 470 PF
SM668016226	5	Cap tant 22UF/16V 20 % L Esr
SM669080181	2	Chip Ferrite Bead



7.25 902579-00: USB Hub with Audio

Part Number	Qty	Description
454004003	1	Conn Header Vert 4-Pos Wire-BD
454014002	1	Conn Hdr R/A 14-Pos Wire-BD
454340002	4	Hdr Sold Tail/WW 2
902578-00	1	WaveRunner LVDS TTL Hub with Audio PC
SM207010027	1	IC LVDS FatLink Receiver
SM208400008	1	IC Mono 1.5W Stereo 250mW Amp
SM208550006	1	IC Volt Detector 4.5V TC54VC45
SM208580002	1	IC Reset M51957BFP
SM227470001	1	IC USB Hub Controller 1.1
SM227900002	1	IC 16-Bit Microcomputer USB
SM232550001	1	SCR/Diode ESD and OVP Array 6-
SM270132222	1	Transistor Npn 2N2222A
SM275132907	1	Transistor Pnp 2907A
SM301004001	2	Bead Ferrite 50 Ohms 3AMPS 120
SM310000002	1	Crystal Resonator 6MHz
SM310716000	1	Crystal 16 MHz
SM311000010	1	Crystal Osc 6.0MHz 32pF
SM334010001	1	IC USB Touch Screen Contoller
SM453004003	1	Conn FFC/FPC ZIF 4 Pos R/A
SM453005001	4	Header 1 x 5 Shrouded
SM453020004	1	Conn Hdr R/A 20 Pos Wire-BD
SM453026002	1	Conn .050 inch Hdr 26-Pos Male
SM453030002	1	Conn Hdr R/A 30-Pos Wire-BD
SM652061000	24	Res Chip 0 Ohm Jumper
SM652061101	4	Res Chip 1% 100 Ohm .063W
SM652101152	1	Res Chip E24 1% 1.5 K
SM652101392	1	Res Chip E24 1% 3.9 K
SM652101472	13	Res Chip E24 1% 4.7 K
SM652101512	1	Res Chip E24 1% 5.1 K
SM653101230	10	Res Chip 1% 20.0 Ohms
SM653101330	1	Res Chip 1% 221 Ohms
SM653101393	3	Res Chip 1% 1.00 K
SM653101410	3	Res Chip 1% 1.50 K
SM653101439	1	Res Chip 1% 3.01 K
SM653101489	6	Res Chip 1 % 10.0 K
SM653101506	8	Res Chip 1% 15.0 K
SM653101518	2	Res Chip 1% 20.0 K
SM653101535	2	Res Chip 1% 30.1 K
SM653101585	1	Res Chip 1% 100 K
SM654101000	1	Chip Jumper Zero Ohms
SM654101000	1	Chip Jumper Zero Ohms
SM661068104	7	Cap Cera Chip 0.1uF 0603
SM661073471	1	Cap Cera 470PF+/- 5% 50V Npo

902579-00: USB Hub with Audio (con't)

Part Number	Qty	Description
SM661207103	1	Cap Cera Chip 20% .01 UF
SM661207104	10	Cap Cera Chip 20 % .1 UF
SM661540100	2	Cap Cera 10PF/500V Npo
SM662111001	4	Cap Cera Chip 1.00 UF 16V
SM662131003	4	Cap Cera Chip 5% 50V .01 UF
SM662232001	9	10000pf 0603 capacitor
SM666267227	4	Cap Tant 220UF 10V 20%
SM668016226	4	Cap tant 22UF/16V 20 % L Esr
SM669080181	7	Chip Ferrite Bead

7.26 902600-00: WR 6030A 350 MHz 2.5 GS/s 4 Ch Acquisition Board

Part Number	Qty	Description
335970001	1	Probe Hook
402120004	1	Conn RT Angle Fem Bnc
416162005	1	Switch R/A PCB Mtg SPDT MOM
430500003	4	20DB Attenuator Relay DC-3GHZ
454000018	1	Hdr Sold Tail Male 18 Pin HI T
454004002	1	Conn Receptacle USB R/A 4 Pos
454016002	1	Conn Hdr Vert 16 Pos Wire-BD
454022001	1	HEADER VERT 22 POS WIRE BD
454040003	2	Conn Hdr Vert 40-Pos Male Shrd
454117003	4	Friction Header Straight .1 CE
454312010	4	Hdr Sold Tail/Male 10
469040002	1	Metal Banana Jack/Binding Post
522632120	6	Standoff Hex 6-32X5/8 F/F
524632015	4	Standoff Hex 6-32 X 1/2 FF
550011106	10	Screw Pan HD M2X6 Blk W/Nylock
551620100	10	#2 Flat Washer S.steel/Black O
555465002	1	Washer Lock Split 1/4
561632405	16	Screw TX Pan #6-32UNC 5/16" S1
590441024	0.07	Wire Teflon 7/32 Yel 24
594120006	2	Tiewrap
709614300	5	Bulkhead Receptical Female Bnc
709614301	5	BNC Lock Washer
709614302	5	BNC Nut
7093XXP01	5	Right Angle Recept. Connector
7093XXP41	5	Probe Holder
7093XXP91	5	Probe Ring Contact
901140-00	4	Chip Atten. 3dB .5% Trim Res
901336-00	1	Heatsink WaveRunner MST/MTB
901436-00	1	WaveRunner Front Card Panel Assy Upda
901437-00	2	Heatsink Base - HAD
901440-00	1	Heatsink Base mst/mtb



902600-00: WR 6030A 350 MHz 2.5 GS/s 4 Ch Acq Board (con't)

Part Number	Qty	Description
901441-00	1	Heatsink clip mst-mtb
901622-00	1	EMI shield - 10 GHZ clock
901685-00	5	Upper front end EMI shield
901686-00	5	Lower front end EMI shield
901693-00	1	Gap pad MST die cut
901694-00	1	Gap pad HTB die cut
901709-00	5	Malico 30mm heat sink assy
901790-00	2	WaveRunner CLOCK EMI SHIELD 0.4 IN. H
901807-00	1	ALUM. SPACER
901835-00	1	CABLE WaveRunner 10GHz MTB COAX
901835-01	1	CABLE WaveRunner 10GHz CH1 COAX
901835-02	1	CABLE WaveRunner 10GHz CH3 COAX
901882-00	1	Waverunner Acq. PCB
902138-00	2	Die cut GDS material with adhe
902463-00	2	WaveRunner Backbone
902528-00	6	Thermal Gap Pad Die-Cut
902530-00	2	Integrated Chip Cooler
CH599012012	0.1	5-Minute Epoxy
CH599041022	1	Heat Sink Compound 251
HAD639C-02	2	Packaged MAD440E 10GS/s SiGe
HFE653B	5	Front End Amplifier
HTB645	1	Hybrid Pkgd Timebase Trigger
MAM439	6	Monolithic 8 Megabyte Dram Mem
MST429A	1	IC Smart Trigger Gate-Array
SM158021002	10	Cap Variable 0.5-2.5pF 250V
SM158070200	10	Cap Variable 4.5-20.0 PF
SM185457102	5	Res Vari Cermet 1 K
SM185457201	1	Res Vari Cermet 200 Ohms
SM185457503	5	Res Vari Cermet 50 K
SM200180032	1	IC 2-in OR Gate 74VHC1G32
SM200588014	1	Hex Schmitt-Trig Inv 74HCT14
SM201274033	1	IC Ecl Divide BY 4 MC10EL33
SM201570016	2	IC Ecl Diff Receiver 10EL16D
SM201774025	3	Diff Ecl-Ttl Transl 10ELT25
SM202057002	1	IC Triple 2-CH Analog Mux
SM202059003	1	ECL Diff Rec/Driv w/Enable Out
SM202100004	1	IC PLL Freq Synth 4106 6 GHz
SM202102001	1	IC ECL /PECL 1:5 DIFF CLK DRVR
SM202107002	1	100EP57 4:1 MUX
SM205129160	1	IC FLASH MEM 16 MBIT HY29LV160
SM205200002	1	IC 8M x 8 Bit 133MHz SDRAM
SM205616001	5	IC 8-Bit Shift Reg 74LV594ADR
SM205625616	1	IC 256K X 16 CMOS SRAM

902600-00: WR 6030A 350 MHz 2.5 GS/s 4 Ch Acq Board (con't)

Part Number	Qty	Description
SM205715003	2	IC PAL FG456 Fine-Pitch BGA
SM206178125	1	IC Quad Bfr Line Drvr 3 State
SM206370024	3	IC Ttl TO Diff Ecl Transl MC10
SM207010002	3	IC CMOS 8 BIT LOW RES BUS SWIT
SM207010011	2	IC Quad 10-Bit DAC LTC1664
SM207010014	1	16 Bit Buffer/Driver 3-State
SM207131660	1	IC Dac Octal 10BIT Serial Unip
SM207231654	4	IC Dual 14-Bit Serial Dac
SM207770442	5	IC Analog Switch DG442
SM207944351	5	OCTAL ANALOG MUX/DEMUX 74HCT43
SM208400001	3	IC MMIC Amplifier 12GHz NBB-30
SM208400002	1	IC MMIC Amplifier 8GHz NBB-400
SM208470353	8	IC Dual OP Amp LF353
SM208470656	5	IC FET-Input OP Amp OPA656U
SM208470705	11	IC OP Amp Picoamp Input AD705
SM208472022	7	Opamp, Dual, Low Pwr TLE2022C
SM208475460	5	IC OP Amp Sin-Sup RtoR Ins Amp
SM208476482	2	IC Dual OP Amp Rail TO Rail 64
SM208550004	8	IC Volt Reg Pos Adjust LDO
SM208550337	1	IC Volt Reg Adj LM337
SM208550821	1	Voltage Monitor MAX821
SM208556138	1	IC Volt Ref 4.096V 0.1% 25ppm
SM208701023	11	IC Temperature Sensor
SM208909850	1	DDS-125MHZ Cmos Synth AD9850
SM227110161	1	16 BIT MICROCONTROLLER C161PI
SM229020150	5	MLC Trans Volt Suppressor
SM232022824	1	Diode Array Schottky HSMS2824
SM232030001	10	Diode Array Schottky HSMS-282C
SM232442828	5	Diode Bridge HSMS2828
SM236030099	11	Diode SO-Pkg BAV99
SM252005303	10	Pin Diode Bar 63-03W
SM252023066	20	Pin Diode Bar 66
SM252023304	5	Dual Pin Diode Silicon Bar 63-
SM256232013	1	Diode Light Emitting Red
SM270050520	15	NPN 9GHZ Wideband Transistor
SM270130092	6	Transistor Npn BFR92A
SM270330848	2	Transistor Npn BC848C
SM275030550	5	Transistor Pnp BF550
SM275132907	1	Transistor Pnp 2907A
SM280122416	5	Trans. Jfet N MMBF4416/LC6A
SM280217505	2	Mosfet Nchanel 75A 50V D2P
SM281115003	4	P-CH Hdtmos Pwr E-Fet MTB50P03
SM289772003	5	Transistor Array 2003
SM300092390	1	Inductor Wound 2% 39 NH



902600-00: WR 6030A 350 MHz 2.5 GS/s 4 Ch Acq Board (con't)

Part Number	Qty	Description
SM300600009	2	Inductor 9.3uH 7.2A Wound
SM300600012	2	Inductor 150nH 5% Wound
SM301001001	16	BEAD FERRITE
SM301001002	6	Bead SHF 0.3A
SM301001016	4	Inductor Pwr Toroid 272uH .36A
SM301001017	3	Inductor Chip 10% 15uH 1210
SM301001018	1	Inductor Shielded 100uH 10%
SM301004001	40	Bead Ferrite 50 Ohms 3AMPS 120
SM311000005	1	Crystal Oscillator 16 MHz 3.3V
SM311000006	1	Voltage Controlled Oscillator
SM311000013	1	Crystal Osc TCXO 10MHz
SM430530001	20	Relay Smd Dual Form C 5V
SM431030005	5	Relay SPDT HF 50 Ohm 4.5V
SM433695250	2	PTC Resettable Device 2.5A
SM453005001	3	Header 1 x 5 Shrouded
SM507000002	2	Heatsink Surface Mount TO-263
SM651081102	8	Res Chip 0.1% 1 Kohm
SM652000005	10	Res RF 100 Ohm .25% 1/3W 1206
SM652041000	49	Res Zero ohms
SM652041011	52	Res Chip 1% 49.9 Ohms
SM652041200	11	Res 20 Ohms +/-1% 1/16W 0402 S
SM652041750	1	Res 75 OHM +/-1% 1/16W
SM652061000	11	Res Chip 0 Ohm Jumper
SM652061000	10	Res Chip 0 Ohm Jumper
SM652061100	20	Res Chip 1% 10.0 Ohm .063W
SM652061100	10	Res Chip 1% 10.0 Ohm .063W
SM652061101	10	Res Chip 1% 100 Ohm .063W
SM652061101	12	Res Chip 1% 100 Ohm .063W
SM652061101	3	Res Chip 1% 100 Ohm .063W
SM652061102	5	Res Chip 1% 1.0K Ohm .063W
SM652061102	16	Res Chip 1% 1.0K Ohm .063W
SM652061102	23	Res Chip 1% 1.0K Ohm .063W
SM652061103	19	Res Chip 1% 10K Ohm .063W
SM652061103	6	Res Chip 1% 10K Ohm .063W
SM652061105	1	Res Chip 1% 1.0M Ohm .063W
SM652061105	5	Res Chip 1% 1.0M Ohm .063W
SM652061106	5	Res Chip 1% 10M Ohm .063W
SM652061112	10	Res Chip 1% 1.1K Ohm .063W
SM652061121	15	Res Chip 1% 120 Ohm .063W
SM652061121	50	Res Chip 1% 120 Ohm .063W
SM652061133	4	Res Chip 1% 13K Ohm .063W
SM652061154	5	Res Chip 1% 150K Ohm .063W
SM652061161	15	Res Chip 1% 160 Ohm .063W

902600-00: WR 6030A 350 MHz 2.5 GS/s 4 Ch Acq Board (con't)

Part Number	Qty	Description
SM652061200	1	Res Chip 1% 20.0 Ohm .063W
SM652061201	5	Res Chip 1% 200 Ohm .063W
SM652061201	14	Res Chip 1% 200 Ohm .063W
SM652061201	1	Res Chip 1% 200 Ohm .063W
SM652061203	11	Res Chip 1% 20K Ohm .063W
SM652061221	18	Res Chip 1% 220 Ohm .063W
SM652061222	2	Res Chip 1% 2.2K Ohm .063W
SM652061222	4	Res Chip 1% 2.2K Ohm .063W
SM652061222	5	Res Chip 1% 2.2K Ohm .063W
SM652061240	5	Res Chip 1% 24.0 Ohm .063W
SM652061240	1	Res Chip 1% 24.0 Ohm .063W
SM652061271	10	Res Chip 1% 270 Ohm .063W
SM652061271	2	Res Chip 1% 270 Ohm .063W
SM652061271	4	Res Chip 1% 270 Ohm .063W
SM652061271	20	Res Chip 1% 270 Ohm .063W
SM652061273	5	Res Chip 1% 27K Ohm .063W
SM652061273	20	Res Chip 1% 27K Ohm .063W
SM652061332	5	Res Chip 1% 3.3K Ohm .063W
SM652061332	4	Res Chip 1% 3.3K Ohm .063W
SM652061334	1	Res Chip 1% 330K Ohm .063W
SM652061361	3	Res Chip 1% 360 Ohm .063W
SM652061361	15	Res Chip 1% 360 Ohm .063W
SM652061361	5	Res Chip 1% 360 Ohm .063W
SM652061390	5	Res Chip 1% 39.0 Ohm .063W
SM652061390	41	Res Chip 1% 39.0 Ohm .063W
SM652061393	5	Res Chip 1% 39K Ohm .063W
SM652061393	1	Res Chip 1% 39K Ohm .063W
SM652061393	5	Res Chip 1% 39K Ohm .063W
SM652061394	5	Res Chip 1% 390K Ohm .063W
SM652061430	10	Res Chip 1% 43.2 Ohm .063W
SM652061431	1	Res Chip 1% 430 Ohm .063W
SM652061432	6	Res Chip 1% 4.3K Ohm .063W
SM652061471	5	Res Chip 1% 470 Ohm .063W
SM652061510	12	Res Chip 1% 51.0 Ohm .063W
SM652061510	25	Res Chip 1% 51.0 Ohm .063W
SM652061510	5	Res Chip 1% 51.0 Ohm .063W
SM652061511	6	Res Chip 1% 510 Ohm .063W
SM652061512	5	Res Chip 1% 5.1K Ohm .063W
SM652061513	5	Res Chip 1% 51K Ohm .063W
SM652061562	5	Res Chip 1% 5.6K Ohm .063W
SM652061680	5	Res Chip 1% 68.0 Ohm .063W
SM652061681	1	Res Chip 1% 681 Ohm .063W
SM652061681	5	Res Chip 1% 681 Ohm .063W
SM652061751	1	Res Chip 1% 750 Ohm .063W



902600-00: WR 6030A 350 MHz 2.5 GS/s 4 Ch Acq Board (con't)

Part Number	Qty	Description
SM652061751	5	Res Chip 1% 750 Ohm .063W
SM652061824	5	Res Chip 1% 820K Ohm .063W
SM652061912	5	Res Chip 1% 9.1K Ohm .063W
SM652069393	10	Res Chip (E24) .1% 39K
SM652101101	2	Res Chip (E24) 1% 100 Ohm
SM652101302	1	Res Chip (E24) 1% 3 K
SM652101395	5	Res Chip (E24) 1% 3.9 M
SM653041297	5	RES CHIP 1% 100 OHMS 0402
SM653101226	1	Res Chip 1% 18.2 Ohms
SM653101262	9	Res Chip 1% 43.2 Ohms
SM653101277	7	Res Chip 1% 61.9 Ohms
SM653101285	5	Res Chip 1 % 75.0 Ohms
SM653101297	19	Res Chip 1% 100 Ohms
SM653101322	17	Res Chip 1% 182 Ohms
SM653101326	7	Res Chip 1% 200 Ohms
SM653101334	8	Res Chip 1% 243 Ohms
SM653101347	1	Res Chip 1% 332 Ohms
SM653101354	16	Res Chip 1% 392 Ohms
SM653101377	7	Res Chip 1% 681 Ohms
SM653101393	33	Res Chip 1% 1.00 K
SM653101397	1	Res Chip 1% 1.10 K
SM653101401	4	Res Chip 1% 1.21 K
SM653101410	16	Res Chip 1% 1.50 K
SM653101422	33	Res Chip 1% 2.00 K
SM653101422	4	Res Chip 1% 2.00 K
SM653101422	12	Res Chip 1% 2.00 K
SM653101426	9	Res Chip 1 % 2.21K
SM653101430	3	Res Chip 1% 2.43 K
SM653101435	2	Res Chip 1% 2.74 K
SM653101458	10	Res Chip 1 % 4.75 K
SM653101461	8	Res Chip 1% 5.11 K
SM653101469	1	Res Chip 1% 6.19 K
SM653101477	13	Res Chip 1% 7.50 K
SM653101489	20	Res Chip 1 % 10.0 K
SM653101489	4	Res Chip 1 % 10.0 K
SM653101506	5	Res Chip 1% 15.0 K
SM653101518	7	Res Chip 1% 20.0 K
SM653101539	8	Res Chip 1% 33.2 K
SM653101589	9	Res Chip 1% 110 K
SM653185193	1	Res Thick Film 9.09 Ohms
SM654101000	9	Chip Jumper Zero Ohms
SM654101000	12	Chip Jumper Zero Ohms
SM655020002	10	RES CHIP 1% 174 OHMS

902600-00: WR 6030A 350 MHz 2.5 GS/s 4 Ch Acq Board (con't)

Part Number	Qty	Description
SM655020017	30	Res Thk Film 1% 1K Ohm 1/16W
SM655020025	18	Res Thk Film 1% 2.74 Ohm 1/16W
SM655020031	10	Res Thk Film 1% 8.25 Ohm 1/16W
SM655030040	10	Res Thk Film +/-1% 5.11 Ohm .1
SM655030042	5	Res Thk Film 1% 5.6M Ohm 1/16W
SM655040022	5	Res Chip .5% 50ppm 180K 150V
SM655040023	5	Res Chip .5% 50ppm 240K 150V
SM655040024	40	Res Chip .5% 50ppm 300K 150V
SM655040025	10	Res Chip .5% 50ppm 110K 150V
SM655040026	1	Res Thk Film 41.2 Ohm .5% 1/8W
SM655040027	2	Res Thk Film 20 Ohm .5% 1/8W
SM655063001	2	Res Thk Film 5% 1.5 Ohms 1/8W
SM655080004	5	Res Thk Film 1 Ohm +/- 5% 1/2W
SM655080005	8	Res Thk Film 1% 105 Ohm 1/2W
SM655080009	1	Res Thk Film 0.5% 41.2 Ohm 1W
SM661010002	10	Cap Cera Chip 27PF +/- 5%
SM661010003	10	Cap Cera Chip 10% 16V 33nF
SM661011001	5	Cap Cera Chip 3.9pF 200V
SM661028100	15	Cap Cera Chip 1UF 10V
SM661028100	1	Cap Cera Chip 1UF 10V
SM661066102	88	Cap Cera Chip 10% 1000PF/50V
SM661066102	17	Cap Cera Chip 10% 1000PF/50V
SM661068104	5	Cap Cera Chip 0.1uF 0603
SM661068104	120	Cap Cera Chip 0.1uF 0603
SM661068104	21	Cap Cera Chip 0.1uF 0603
SM661073020	5	Cap Cera 2.0+/- 0.1PF 50V Npo
SM661073056	5	Cap Cera 5.6+/- 0.1PF 50V Npo
SM661073300	5	Cap Cera 30PF+/- 5% 50V Npo
SM661073331	3	Cap Cera 330PF+/- 5% 50V Npo
SM661073820	7	Cap Cera 82PF+/- 5% 50V Npo
SM661165102	3	Cap Cera Chip 1000PF
SM661207103	6	Cap Cera Chip 20% .01 UF
SM661207104	10	Cap Cera Chip 20 % .1 UF
SM661207104	218	Cap Cera Chip 20 % .1 UF
SM661207223	5	Cap Cera Chip 20% .022 UF
SM661255015	1	Cap Cera Chip 1.5 PF
SM661255121	3	Cap Cera Chip 5% 120 PF
SM661540056	10	Cap Cera Chip 5.6PF 500V
SM661540068	5	Cap Cera Chip 6.8PF 500V
SM662131003	48	Cap Cera Chip 5% 50V .01 UF
SM662135002	28	Cap Cera +/-.1pF 50V 1.0pF NPO
SM662137003	14	Cap Cera +/-.25% 50V 8.2pF NPO
SM662151001	42	Cap Cera Chip 10% 16V 0.1 UF
SM662152001	18	Cap Cera Chip 10% 16V 100nF



902600-00: WR 6030A 350 MHz 2.5 GS/s 4 Ch Acq Board (con't)

Part Number	Qty	Description
SM662212001	5	Cap Cera .015uF 10% 25V X7R
SM662232001	8	10000pf 0603 capacitor
SM662241001	5	Cap Cera 22pF +/- 5% 100V Npo
SM662252001	5	Cap Cera .068uF 10% 16V X7R
SM662382001	5	Cap Cera 1000pF 10% 500V X7R
SM662432001	1	Cap Cera 4700pF 10% 50V X7R
SM662432002	1	Cap Cera Chip 0.22uF 10% 50V
SM662913001	63	Cap Cera Chip 10uF 20% 25V X5R
SM666267227	24	Cap Tant 220UF 10V 20%
SM668016226	48	Cap tant 22UF/16V 20 % L Esr
SM668025106	2	Cap,tant 10UF/25V 20% L Esr
SM669045002	28	Inductor 15nH 5%
SM669117001	12	Inductor Chip 2.2uH 20% 350mA
SM669854001	2	Inductor Chip 15uH 15% 2.97A

7.27 902601-00: WR 6051A 500 MHz 5 GS/s 2 Ch Acquisition Board

Part Number	Qty	Description
335970001	1	Probe Hook
402120004	1	Conn RT Angle Fem Bnc
416162005	1	Switch R/A PCB Mtg SPDT MOM
430500003	2	20DB Attenuator Relay DC-3GHZ
454000018	1	Hdr Sold Tail Male 18 Pin HI T
454004002	1	Conn Receptacle USB R/A 4 Pos
454016002	1	Conn Hdr Vert 16 Pos Wire-BD
454022001	1	HEADER VERT 22 POS WIRE BD
454040003	2	Conn Hdr Vert 40-Pos Male Shrd
454117003	3	Friction Header Straight .1 CE
454312010	4	Hdr Sold Tail/Male 10
469040002	1	Metal Banana Jack/Binding Post
522632120	6	Standoff Hex 6-32X5/8 F/F
524632015	4	Standoff Hex 6-32 X 1/2 FF
550011106	6	Screw Pan HD M2X6 Blk W/Nylock
551620100	6	#2 Flat Washer S.steel/Black O
555465002	1	Washer Lock Split 1/4
561632405	16	Screw TX Pan #6-32UNC 5/16" S1
590441024	0.07	Wire Teflon 7/32 Yel 24
594120006	2	Tiewrap
709614300	3	Bulkhead Receptical Female Bnc
709614301	3	BNC Lock Washer
709614302	3	BNC Nut
7093XXP01	3	Right Angle Recept. Connector
7093XXP41	3	Probe Holder
7093XXP91	3	Probe Ring Contact
901140-00	2	Chip Atten. 3dB .5% Trim Res
901336-00	1	Heatsink WaveRunner MST/MTB
901436-00	1	WaveRunner Front Card Panel Assy Upda
901437-00	1	Heatsink Base - HAD
901440-00	1	Heatsink Base mst/mtb
901441-00	1	Heatsink clip mst-mtb
901622-00	1	EMI shield - 10 GHZ clock
901685-00	3	Upper front end EMI shield
901686-00	3	Lower front end EMI shield
901693-00	1	Gap pad MST die cut
901694-00	1	Gap pad HTB die cut
901709-00	3	Malico 30mm heat sink assy
901790-00	2	WaveRunner CLOCK EMI SHIELD 0.4 IN. H
901807-00	1	ALUM. SPACER
901835-00	1	CABLE WaveRunner 10GHz MTB COAX
901835-01	1	CABLE WaveRunner 10GHz CH1 COAX
901882-00	1	Waverunner Acq. PCB
902138-00	1	Die cut GDS material with adhe



902601-00: WR 6051A 500 MHz 5 GS/s 2 Ch Acq Board (con't)

Part Number	Qty	Description
902463-00	2	WaveRunner Backbone
902528-00	3	Thermal Gap Pad Die-Cut
902530-00	1	Integrated Chip Cooler
CH599012012	0.1	5-Minute Epoxy
CH599041022	1	Heat Sink Compound 251
HAD639C-02	1	Packaged MAD440E 10GS/s SiGe
HFE653B	3	Front End Amplifier
HTB645	1	Hybrid Pkgd Timebase Trigger
MAM439	3	Monolithic 8 Megabyte Dram Mem
MST429A	1	IC Smart Trigger Gate-Array
SM158021002	6	Cap Variable 0.5-2.5pF 250V
SM158070200	6	Cap Variable 4.5-20.0 PF
SM185457102	3	Res Vari Cermet 1 K
SM185457201	1	Res Vari Cermet 200 Ohms
SM185457503	3	Res Vari Cermet 50 K
SM200180032	1	IC 2-in OR Gate 74VHC1G32
SM200588014	1	Hex Schmitt-Trig Inv 74HCT14
SM201274033	1	IC Ecl Divide BY 4 MC10EL33
SM201570016	2	IC Ecl Diff Receiver 10EL16D
SM201774025	3	Diff Ecl-Ttl Transl 10ELT25
SM202057002	1	IC Triple 2-CH Analog Mux
SM202059003	1	ECL Diff Rec/Driv w/Enable Out
SM202100004	1	IC PLL Freq Synth 4106 6 GHz
SM202102001	1	IC ECL /PECL 1:5 DIFF CLK DRVR
SM202107002	1	100EP57 4:1 MUX
SM205129160	1	IC FLASH MEM 16 MBIT HY29LV160
SM205200002	1	IC 8M x 8 Bit 133MHz SDRAM
SM205616001	3	IC 8-Bit Shift Reg 74LV594ADR
SM205625616	1	IC 256K X 16 CMOS SRAM
SM205715003	2	IC PAL FG456 Fine-Pitch BGA
SM206178125	1	IC Quad Bfr Line Drvr 3 State
SM206370024	3	IC Ttl TO Diff Ecl Transl MC10
SM207010002	3	IC CMOS 8 BIT LOW RES BUS SWIT
SM207010011	2	IC Quad 10-Bit DAC LTC1664
SM207010014	1	16 Bit Buffer/Driver 3-State
SM207131660	1	IC Dac Octal 10BIT Serial Unip
SM207231654	2	IC Dual 14-Bit Serial Dac
SM207770442	3	IC Analog Switch DG442
SM207944351	5	OCTAL ANALOG MUX/DEMUX 74HCT43
SM208400001	3	IC MMIC Amplifier 12GHz NBB-30
SM208400002	1	IC MMIC Amplifier 8GHz NBB-400
SM208470353	8	IC Dual OP Amp LF353
SM208470656	3	IC FET-Input OP Amp OPA656U

902601-00: WR 6051A 500 MHz 5 GS/s 2 Ch Acq Board (con't)

Part Number	Qty	Description
SM208470705	7	IC OP Amp Picoamp Input AD705
SM208472022	5	Opamp, Dual, Low Pwr TLE2022C
SM208475460	3	IC OP Amp Sin-Sup RtoR Ins Amp
SM208476482	2	IC Dual OP Amp Rail TO Rail 64
SM208550004	7	IC Volt Reg Pos Adjust LDO
SM208550337	1	IC Volt Reg Adj LM337
SM208550821	1	Voltage Monitor MAX821
SM208556138	1	IC Volt Ref 4.096V 0.1% 25ppm
SM208701023	7	IC Temperature Sensor
SM208909850	1	DDS-125MHZ Cmos Synth AD9850
SM227110161	1	16 BIT MICROCONTROLLER C161PI
SM229020150	3	MLC Trans Volt Suppressor
SM232022824	1	Diode Array Schottky HSMS2824
SM232030001	6	Diode Array Schottky HSMS-282C
SM232442828	3	Diode Bridge HSMS2828
SM236030099	9	Diode SO-Pkg BAV99
SM252005303	6	Pin Diode Bar 63-03W
SM252023066	12	Pin Diode Bar 66
SM252023304	3	Dual Pin Diode Silicon Bar 63-
SM256232013	1	Diode Light Emitting Red
SM270050520	9	NPN 9GHZ Wideband Transistor
SM270130092	6	Transistor Npn BFR92A
SM270330848	2	Transistor Npn BC848C
SM275030550	3	Transistor Pnp BF550
SM275132907	1	Transistor Pnp 2907A
SM280122416	3	Trans. Jfet N MMBF4416/LC6A
SM280217505	2	Mosfet Nchanel 75A 50V D2P
SM281115003	4	P-CH Hdtmos Pwr E-Fet MTB50P03
SM289772003	3	Transistor Array 2003
SM300092390	1	Inductor Wound 2% 39 NH
SM300295082	16	Inductor 8.2 NH 5%
SM300600009	2	Inductor 9.3uH 7.2A Wound
SM300600012	2	Inductor 150nH 5% Wound
SM301001001	16	BEAD FERRITE
SM301001002	6	Bead SHF 0.3A
SM301001016	4	Inductor Pwr Toroid 272uH .36A
SM301001017	3	Inductor Chip 10% 15uH 1210
SM301001018	1	Inductor Shielded 100uH 10%
SM301004001	34	Bead Ferrite 50 Ohms 3AMPS 120
SM311000005	1	Crystal Oscillator 16 MHz 3.3V
SM311000006	1	Voltage Controlled Oscillator
SM311000013	1	Crystal Osc TCXO 10MHz
SM430530001	12	Relay Smd Dual Form C 5V
SM431030005	3	Relay SPDT HF 50 Ohm 4.5V



902601-00: WR 6051A 500 MHz 5 GS/s 2 Ch Acq Board (con't)

Part Number	Qty	Description
SM433695250	2	PTC Resettable Device 2.5A
SM453005001	3	Header 1 x 5 Shrouded
SM507000002	2	Heatsink Surface Mount TO-263
SM651081102	8	Res Chip 0.1% 1 Kohm
SM652000005	6	Res RF 100 Ohm .25% 1/3W 1206
SM652041000	49	Res Zero ohms
SM652041011	36	Res Chip 1% 49.9 Ohms
SM652041200	7	Res 20 Ohms +/-1% 1/16W 0402 S
SM652041750	1	Res 75 OHM +/-1% 1/16W
SM652061000	6	Res Chip 0 Ohm Jumper
SM652061000	7	Res Chip 0 Ohm Jumper
SM652061100	6	Res Chip 1% 10.0 Ohm .063W
SM652061100	14	Res Chip 1% 10.0 Ohm .063W
SM652061101	6	Res Chip 1% 100 Ohm .063W
SM652061101	3	Res Chip 1% 100 Ohm .063W
SM652061101	8	Res Chip 1% 100 Ohm .063W
SM652061102	10	Res Chip 1% 1.0K Ohm .063W
SM652061102	23	Res Chip 1% 1.0K Ohm .063W
SM652061102	3	Res Chip 1% 1.0K Ohm .063W
SM652061103	11	Res Chip 1% 10K Ohm .063W
SM652061103	6	Res Chip 1% 10K Ohm .063W
SM652061105	3	Res Chip 1% 1.0M Ohm .063W
SM652061105	1	Res Chip 1% 1.0M Ohm .063W
SM652061106	3	Res Chip 1% 10M Ohm .063W
SM652061112	6	Res Chip 1% 1.1K Ohm .063W
SM652061121	48	Res Chip 1% 120 Ohm .063W
SM652061121	9	Res Chip 1% 120 Ohm .063W
SM652061133	4	Res Chip 1% 13K Ohm .063W
SM652061154	3	Res Chip 1% 150K Ohm .063W
SM652061161	9	Res Chip 1% 160 Ohm .063W
SM652061200	1	Res Chip 1% 20.0 Ohm .063W
SM652061201	8	Res Chip 1% 200 Ohm .063W
SM652061201	1	Res Chip 1% 200 Ohm .063W
SM652061201	3	Res Chip 1% 200 Ohm .063W
SM652061203	7	Res Chip 1% 20K Ohm .063W
SM652061221	18	Res Chip 1% 220 Ohm .063W
SM652061222	2	Res Chip 1% 2.2K Ohm .063W
SM652061222	2	Res Chip 1% 2.2K Ohm .063W
SM652061222	3	Res Chip 1% 2.2K Ohm .063W
SM652061240	3	Res Chip 1% 24.0 Ohm .063W
SM652061240	1	Res Chip 1% 24.0 Ohm .063W
SM652061271	12	Res Chip 1% 270 Ohm .063W
SM652061271	4	Res Chip 1% 270 Ohm .063W

902601-00: WR 6051A 500 MHz 5 GS/s 2 Ch Acq Board (con't)

Part Number	Qty	Description
SM652061271	6	Res Chip 1% 270 Ohm .063W
SM652061271	2	Res Chip 1% 270 Ohm .063W
SM652061273	12	Res Chip 1% 27K Ohm .063W
SM652061273	5	Res Chip 1% 27K Ohm .063W
SM652061332	2	Res Chip 1% 3.3K Ohm .063W
SM652061332	5	Res Chip 1% 3.3K Ohm .063W
SM652061334	1	Res Chip 1% 330K Ohm .063W
SM652061361	9	Res Chip 1% 360 Ohm .063W
SM652061361	3	Res Chip 1% 360 Ohm .063W
SM652061361	3	Res Chip 1% 360 Ohm .063W
SM652061390	25	Res Chip 1% 39.0 Ohm .063W
SM652061390	3	Res Chip 1% 39.0 Ohm .063W
SM652061393	3	Res Chip 1% 39K Ohm .063W
SM652061393	1	Res Chip 1% 39K Ohm .063W
SM652061393	3	Res Chip 1% 39K Ohm .063W
SM652061394	3	Res Chip 1% 390K Ohm .063W
SM652061430	6	Res Chip 1% 43.2 Ohm .063W
SM652061431	1	Res Chip 1% 430 Ohm .063W
SM652061432	4	Res Chip 1% 4.3K Ohm .063W
SM652061471	3	Res Chip 1% 470 Ohm .063W
SM652061510	1	Res Chip 1% 51.0 Ohm .063W
SM652061510	3	Res Chip 1% 51.0 Ohm .063W
SM652061510	15	Res Chip 1% 51.0 Ohm .063W
SM652061510	12	Res Chip 1% 51.0 Ohm .063W
SM652061511	6	Res Chip 1% 510 Ohm .063W
SM652061512	3	Res Chip 1% 5.1K Ohm .063W
SM652061513	5	Res Chip 1% 51K Ohm .063W
SM652061562	3	Res Chip 1% 5.6K Ohm .063W
SM652061680	3	Res Chip 1% 68.0 Ohm .063W
SM652061681	1	Res Chip 1% 681 Ohm .063W
SM652061681	3	Res Chip 1% 681 Ohm .063W
SM652061751	3	Res Chip 1% 750 Ohm .063W
SM652061751	1	Res Chip 1% 750 Ohm .063W
SM652061824	3	Res Chip 1% 820K Ohm .063W
SM652061912	3	Res Chip 1% 9.1K Ohm .063W
SM652069393	6	Res Chip (E24) .1% 39K
SM652101101	1	Res Chip (E24) 1% 100 Ohm
SM652101302	1	Res Chip (E24) 1% 3 K
SM652101395	3	Res Chip (E24) 1% 3.9 M
SM653041297	5	RES CHIP 1% 100 OHMS 0402
SM653101226	1	Res Chip 1% 18.2 Ohms
SM653101262	5	Res Chip 1% 43.2 Ohms
SM653101277	7	Res Chip 1% 61.9 Ohms
SM653101285	5	Res Chip 1 % 75.0 Ohms



902601-00: WR 6051A 500 MHz 5 GS/s 2 Ch Acq Board (con't)

Part Number	Qty	Description
SM653101297	18	Res Chip 1% 100 Ohms
SM653101322	17	Res Chip 1% 182 Ohms
SM653101326	7	Res Chip 1% 200 Ohms
SM653101334	7	Res Chip 1% 243 Ohms
SM653101347	1	Res Chip 1% 332 Ohms
SM653101354	16	Res Chip 1% 392 Ohms
SM653101377	7	Res Chip 1% 681 Ohms
SM653101393	33	Res Chip 1% 1.00 K
SM653101397	1	Res Chip 1% 1.10 K
SM653101401	4	Res Chip 1% 1.21 K
SM653101410	15	Res Chip 1% 1.50 K
SM653101422	33	Res Chip 1% 2.00 K
SM653101422	16	Res Chip 1% 2.00 K
SM653101426	9	Res Chip 1 % 2.21K
SM653101430	3	Res Chip 1% 2.43 K
SM653101435	2	Res Chip 1% 2.74 K
SM653101458	10	Res Chip 1 % 4.75 K
SM653101461	8	Res Chip 1% 5.11 K
SM653101469	1	Res Chip 1% 6.19 K
SM653101477	13	Res Chip 1% 7.50 K
SM653101489	20	Res Chip 1 % 10.0 K
SM653101489	2	Res Chip 1 % 10.0 K
SM653101506	5	Res Chip 1% 15.0 K
SM653101518	7	Res Chip 1% 20.0 K
SM653101539	8	Res Chip 1% 33.2 K
SM653101589	9	Res Chip 1% 110 K
SM653185193	1	Res Thick Film 9.09 Ohms
SM654101000	11	Chip Jumper Zero Ohms
SM654101000	11	Chip Jumper Zero Ohms
SM654101000	1	Chip Jumper Zero Ohms
SM655020002	6	RES CHIP 1% 174 OHMS
SM655020017	18	Res Thk Film 1% 1K Ohm 1/16W
SM655020025	10	Res Thk Film 1% 2.74 Ohm 1/16W
SM655020031	6	Res Thk Film 1% 8.25 Ohm 1/16W
SM655030040	6	Res Thk Film +/-1% 5.11 Ohm .1
SM655030042	3	Res Thk Film 1% 5.6M Ohm 1/16W
SM655040022	3	Res Chip .5% 50ppm 180K 150V
SM655040023	3	Res Chip .5% 50ppm 240K 150V
SM655040024	24	Res Chip .5% 50ppm 300K 150V
SM655040025	6	Res Chip .5% 50ppm 110K 150V
SM655040026	1	Res Thk Film 41.2 Ohm .5% 1/8W
SM655040027	2	Res Thk Film 20 Ohm .5% 1/8W
SM655063001	2	Res Thk Film 5% 1.5 Ohms 1/8W

902601-00: WR 6051A 500 MHz 5 GS/s 2 Ch Acq Board (con't)

Part Number	Qty	Description
SM655080004	3	Res Thk Film 1 Ohm +/- 5% 1/2W
SM655080005	8	Res Thk Film 1% 105 Ohm 1/2W
SM655080009	1	Res Thk Film 0.5% 41.2 Ohm 1W
SM661010002	6	Cap Cera Chip 27PF +/- 5%
SM661010003	6	Cap Cera Chip 10% 16V 33nF
SM661011001	3	Cap Cera Chip 3.9pF 200V
SM661028100	1	Cap Cera Chip 1UF 10V
SM661028100	9	Cap Cera Chip 1UF 10V
SM661066102	52	Cap Cera Chip 10% 1000PF/50V
SM661066102	13	Cap Cera Chip 10% 1000PF/50V
SM661068104	72	Cap Cera Chip 0.1uF 0603
SM661068104	3	Cap Cera Chip 0.1uF 0603
SM661068104	21	Cap Cera Chip 0.1uF 0603
SM661073020	3	Cap Cera 2.0+/- 0.1PF 50V Npo
SM661073056	3	Cap Cera 5.6+/- 0.1PF 50V Npo
SM661073300	3	Cap Cera 30PF+/- 5% 50V Npo
SM661073331	3	Cap Cera 330PF+/- 5% 50V Npo
SM661073820	7	Cap Cera 82PF+/- 5% 50V Npo
SM661165102	3	Cap Cera Chip 1000PF
SM661207103	6	Cap Cera Chip 20% .01 UF
SM661207104	6	Cap Cera Chip 20 % .1 UF
SM661207104	190	Cap Cera Chip 20 % .1 UF
SM661207223	3	Cap Cera Chip 20% .022 UF
SM661255121	3	Cap Cera Chip 5% 120 PF
SM661540056	6	Cap Cera Chip 5.6PF 500V
SM661540068	3	Cap Cera Chip 6.8PF 500V
SM662131003	32	Cap Cera Chip 5% 50V .01 UF
SM662135002	16	Cap Cera +/-.1pF 50V 1.0pF NPO
SM662137004	8	Cap Cera +/-.25% 50V 3.3pF NPO
SM662151001	42	Cap Cera Chip 10% 16V 0.1 UF
SM662152001	10	Cap Cera Chip 10% 16V 100nF
SM662212001	3	Cap Cera .015uF 10% 25V X7R
SM662232001	8	10000pf 0603 capacitor
SM662241001	3	Cap Cera 22pF +/- 5% 100V Npo
SM662252001	3	Cap Cera .068uF 10% 16V X7R
SM662382001	3	Cap Cera 1000pF 10% 500V X7R
SM662432001	1	Cap Cera 4700pF 10% 50V X7R
SM662432002	1	Cap Cera Chip 0.22uF 10% 50V
SM662913001	46	Cap Cera Chip 10uF 20% 25V X5R
SM666267227	18	Cap Tant 220UF 10V 20%
SM668016226	42	Cap tant 22UF/16V 20 % L Esr
SM668025106	2	Cap,tant 10UF/25V 20% L Esr
SM669117001	8	Inductor Chip 2.2uH 20% 350mA
SM669854001	2	Inductor Chip 15uH 15% 2.97A



7.28 902602-00: WR 6050A 500 MHz 5 GS/s 4 Ch Acquisition Board

Part Number	Qty	Description
335970001	1	Probe Hook
402120004	1	Conn RT Angle Fem Bnc
416162005	1	Switch R/A PCB Mtg SPDT MOM
430500003	4	20DB Attenuator Relay DC-3GHZ
454000018	1	Hdr Sold Tail Male 18 Pin HI T
454004002	1	Conn Receptacle USB R/A 4 Pos
454016002	1	Conn Hdr Vert 16 Pos Wire-BD
454022001	1	HEADER VERT 22 POS WIRE BD
454040003	2	Conn Hdr Vert 40-Pos Male Shrd
454117003	4	Friction Header Straight .1 CE
454312010	4	Hdr Sold Tail/Male 10
469040002	1	Metal Banana Jack/Binding Post
522632120	6	Standoff Hex 6-32X5/8 F/F
524632015	4	Standoff Hex 6-32 X 1/2 FF
550011106	10	Screw Pan HD M2X6 Blk W/Nylock
551620100	10	#2 Flat Washer S.steel/Black O
555465002	1	Washer Lock Split 1/4
561632405	16	Screw TX Pan #6-32UNC 5/16" S1
590441024	0.07	Wire Teflon 7/32 Yel 24
594120006	2	Tiewrap
709614300	5	Bulkhead Receptical Female Bnc
709614301	5	BNC Lock Washer
709614302	5	BNC Nut
7093XXP01	5	Right Angle Recept. Connector
7093XXP41	5	Probe Holder
7093XXP91	5	Probe Ring Contact
901140-00	4	Chip Atten. 3dB .5% Trim Res
901336-00	1	Heatsink WaveRunner MST/MTB
901436-00	1	WaveRunner Front Card Panel Assy Upda
901437-00	2	Heatsink Base - HAD
901440-00	1	Heatsink Base mst/mtb
901441-00	1	Heatsink clip mst-mtb
901622-00	1	EMI shield - 10 GHZ clock
901685-00	5	Upper front end EMI shield
901686-00	5	Lower front end EMI shield
901693-00	1	Gap pad MST die cut
901694-00	1	Gap pad HTB die cut
901709-00	5	Malico 30mm heat sink assy
901790-00	2	WaveRunner CLOCK EMI SHIELD 0.4 IN. H
901807-00	1	ALUM. SPACER
901835-00	1	CABLE WaveRunner 10GHz MTB COAX
901835-01	1	CABLE WaveRunner 10GHz CH1 COAX
901835-02	1	CABLE WaveRunner 10GHz CH3 COAX

902602-00: WR 6050A 500 MHz 5 GS/s 4 Ch Acq Board (con't)

Part Number	Qty	Description
901882-00	1	Waverunner Acq. PCB
902138-00	2	Die cut GDS material with adhe
902463-00	2	WaveRunner Backbone
902528-00	6	Thermal Gap Pad Die-Cut
902530-00	2	Integrated Chip Cooler
CH599012012	0.1	5-Minute Epoxy
CH599041022	1	Heat Sink Compound 251
HAD639C-02	2	Packaged MAD440E 10GS/s SiGe
HFE653B	5	Front End Amplifier
HTB645	1	Hybrid Pkgd Timebase Trigger
MAM439	6	Monolithic 8 Megabyte Dram Mem
MST429A	1	IC Smart Trigger Gate-Array
SM158021002	10	Cap Variable 0.5-2.5pF 250V
SM158070200	10	Cap Variable 4.5-20.0 PF
SM185457102	5	Res Vari Cermet 1 K
SM185457201	1	Res Vari Cermet 200 Ohms
SM185457503	5	Res Vari Cermet 50 K
SM200180032	1	IC 2-in OR Gate 74VHC1G32
SM200588014	1	Hex Schmitt-Trig Inv 74HCT14
SM201274033	1	IC Ecl Divide BY 4 MC10EL33
SM201570016	2	IC Ecl Diff Receiver 10EL16D
SM201774025	3	Diff Ecl-Ttl Transl 10ELT25
SM202057002	1	IC Triple 2-CH Analog Mux
SM202059003	1	ECL Diff Rec/Driv w/Enable Out
SM202100004	1	IC PLL Freq Synth 4106 6 GHz
SM202102001	1	IC ECL /PECL 1:5 DIFF CLK DRVR
SM202107002	1	100EP57 4:1 MUX
SM205129160	1	IC FLASH MEM 16 MBIT HY29LV160
SM205200002	1	IC 8M x 8 Bit 133MHz SDRAM
SM205616001	5	IC 8-Bit Shift Reg 74LV594ADR
SM205625616	1	IC 256K X 16 CMOS SRAM
SM205715003	2	IC PAL FG456 Fine-Pitch BGA
SM206178125	1	IC Quad Bfr Line Drvr 3 State
SM206370024	3	IC Ttl TO Diff Ecl Transl MC10
SM207010002	3	IC CMOS 8 BIT LOW RES BUS SWIT
SM207010011	2	IC Quad 10-Bit DAC LTC1664
SM207010014	1	16 Bit Buffer/Driver 3-State
SM207131660	1	IC Dac Octal 10BIT Serial Unip
SM207231654	4	IC Dual 14-Bit Serial Dac
SM207770442	5	IC Analog Switch DG442
SM207944351	5	OCTAL ANALOG MUX/DEMUX 74HCT43
SM208400001	3	IC MMIC Amplifier 12GHz NBB-30
SM208400002	1	IC MMIC Amplifier 8GHz NBB-400
SM208470353	8	IC Dual OP Amp LF353



902602-00: WR 6050A 500 MHz 5 GS/s 4 Ch Acq Board (con't)

Part Number	Qty	Description
SM208470656	5	IC FET-Input OP Amp OPA656U
SM208470705	11	IC OP Amp Picoamp Input AD705
SM208472022	7	Opamp, Dual, Low Pwr TLE2022C
SM208475460	5	IC OP Amp Sin-Sup RtoR Ins Amp
SM208476482	2	IC Dual OP Amp Rail TO Rail 64
SM208550004	8	IC Volt Reg Pos Adjust LDO
SM208550337	1	IC Volt Reg Adj LM337
SM208550821	1	Voltage Monitor MAX821
SM208556138	1	IC Volt Ref 4.096V 0.1% 25ppm
SM208701023	11	IC Temperature Sensor
SM208909850	1	DDS-125MHZ Cmos Synth AD9850
SM227110161	1	16 BIT MICROCONTROLLER C161PI
SM229020150	5	MLC Trans Volt Suppressor
SM232022824	1	Diode Array Schottky HSMS2824
SM232030001	10	Diode Array Schottky HSMS-282C
SM232442828	5	Diode Bridge HSMS2828
SM236030099	11	Diode SO-Pkg BAV99
SM252005303	10	Pin Diode Bar 63-03W
SM252023066	20	Pin Diode Bar 66
SM252023304	5	Dual Pin Diode Silicon Bar 63-
SM256232013	1	Diode Light Emitting Red
SM270050520	15	NPN 9GHZ Wideband Transistor
SM270130092	6	Transistor Npn BFR92A
SM270330848	2	Transistor Npn BC848C
SM275030550	5	Transistor Pnp BF550
SM275132907	1	Transistor Pnp 2907A
SM280122416	5	Trans. Jfet N MMBF4416/LC6A
SM280217505	2	Mosfet Nchanel 75A 50V D2P
SM281115003	4	P-CH Hdtmos Pwr E-Fet MTB50P03
SM289772003	5	Transistor Array 2003
SM300092390	1	Inductor Wound 2% 39 NH
SM300295082	28	Inductor 8.2 NH 5%
SM300600009	2	Inductor 9.3uH 7.2A Wound
SM300600012	2	Inductor 150nH 5% Wound
SM301001001	16	BEAD FERRITE
SM301001002	6	Bead SHF 0.3A
SM301001016	4	Inductor Pwr Toroid 272uH .36A
SM301001017	3	Inductor Chip 10% 15uH 1210
SM301001018	1	Inductor Shielded 100uH 10%
SM301004001	40	Bead Ferrite 50 Ohms 3AMPS 120
SM311000005	1	Crystal Oscillator 16 MHz 3.3V
SM311000006	1	Voltage Controlled Oscillator
SM311000013	1	Crystal Osc TCXO 10MHz

902602-00: WR 6050A 500 MHz 5 GS/s 4 Ch Acq Board (con't)

Part Number	Qty	Description
SM430530001	20	Relay Smd Dual Form C 5V
SM431030005	5	Relay SPDT HF 50 Ohm 4.5V
SM433695250	2	PTC Resettable Device 2.5A
SM453005001	3	Header 1 x 5 Shrouded
SM507000002	2	Heatsink Surface Mount TO-263
SM651081102	8	Res Chip 0.1% 1 Kohm
SM652000005	10	Res RF 100 Ohm .25% 1/3W 1206
SM652041000	49	Res Zero ohms
SM652041011	52	Res Chip 1% 49.9 Ohms
SM652041200	11	Res 20 Ohms +/-1% 1/16W 0402 S
SM652041750	1	Res 75 OHM +/-1% 1/16W
SM652061000	11	Res Chip 0 Ohm Jumper
SM652061000	10	Res Chip 0 Ohm Jumper
SM652061100	20	Res Chip 1% 10.0 Ohm .063W
SM652061100	10	Res Chip 1% 10.0 Ohm .063W
SM652061101	10	Res Chip 1% 100 Ohm .063W
SM652061101	12	Res Chip 1% 100 Ohm .063W
SM652061101	3	Res Chip 1% 100 Ohm .063W
SM652061102	5	Res Chip 1% 1.0K Ohm .063W
SM652061102	16	Res Chip 1% 1.0K Ohm .063W
SM652061102	23	Res Chip 1% 1.0K Ohm .063W
SM652061103	19	Res Chip 1% 10K Ohm .063W
SM652061103	6	Res Chip 1% 10K Ohm .063W
SM652061105	1	Res Chip 1% 1.0M Ohm .063W
SM652061105	5	Res Chip 1% 1.0M Ohm .063W
SM652061106	5	Res Chip 1% 10M Ohm .063W
SM652061112	10	Res Chip 1% 1.1K Ohm .063W
SM652061121	15	Res Chip 1% 120 Ohm .063W
SM652061121	50	Res Chip 1% 120 Ohm .063W
SM652061133	4	Res Chip 1% 13K Ohm .063W
SM652061154	5	Res Chip 1% 150K Ohm .063W
SM652061161	15	Res Chip 1% 160 Ohm .063W
SM652061200	1	Res Chip 1% 20.0 Ohm .063W
SM652061201	5	Res Chip 1% 200 Ohm .063W
SM652061201	14	Res Chip 1% 200 Ohm .063W
SM652061201	1	Res Chip 1% 200 Ohm .063W
SM652061203	11	Res Chip 1% 20K Ohm .063W
SM652061221	18	Res Chip 1% 220 Ohm .063W
SM652061222	2	Res Chip 1% 2.2K Ohm .063W
SM652061222	4	Res Chip 1% 2.2K Ohm .063W
SM652061222	5	Res Chip 1% 2.2K Ohm .063W
SM652061240	5	Res Chip 1% 24.0 Ohm .063W
SM652061240	1	Res Chip 1% 24.0 Ohm .063W
SM652061271	10	Res Chip 1% 270 Ohm .063W



902602-00: WR 6050A 500 MHz 5 GS/s 4 Ch Acq Board (con't)

Part Number	Qty	Description
SM652061271	2	Res Chip 1% 270 Ohm .063W
SM652061271	4	Res Chip 1% 270 Ohm .063W
SM652061271	20	Res Chip 1% 270 Ohm .063W
SM652061273	5	Res Chip 1% 27K Ohm .063W
SM652061273	20	Res Chip 1% 27K Ohm .063W
SM652061332	5	Res Chip 1% 3.3K Ohm .063W
SM652061332	4	Res Chip 1% 3.3K Ohm .063W
SM652061334	1	Res Chip 1% 330K Ohm .063W
SM652061361	3	Res Chip 1% 360 Ohm .063W
SM652061361	15	Res Chip 1% 360 Ohm .063W
SM652061361	5	Res Chip 1% 360 Ohm .063W
SM652061390	5	Res Chip 1% 39.0 Ohm .063W
SM652061390	41	Res Chip 1% 39.0 Ohm .063W
SM652061393	5	Res Chip 1% 39K Ohm .063W
SM652061393	1	Res Chip 1% 39K Ohm .063W
SM652061393	5	Res Chip 1% 39K Ohm .063W
SM652061394	5	Res Chip 1% 390K Ohm .063W
SM652061430	10	Res Chip 1% 43.2 Ohm .063W
SM652061431	1	Res Chip 1% 430 Ohm .063W
SM652061432	6	Res Chip 1% 4.3K Ohm .063W
SM652061471	5	Res Chip 1% 470 Ohm .063W
SM652061510	12	Res Chip 1% 51.0 Ohm .063W
SM652061510	25	Res Chip 1% 51.0 Ohm .063W
SM652061510	5	Res Chip 1% 51.0 Ohm .063W
SM652061511	6	Res Chip 1% 510 Ohm .063W
SM652061512	5	Res Chip 1% 5.1K Ohm .063W
SM652061513	5	Res Chip 1% 51K Ohm .063W
SM652061562	5	Res Chip 1% 5.6K Ohm .063W
SM652061680	5	Res Chip 1% 68.0 Ohm .063W
SM652061681	1	Res Chip 1% 681 Ohm .063W
SM652061681	5	Res Chip 1% 681 Ohm .063W
SM652061751	1	Res Chip 1% 750 Ohm .063W
SM652061751	5	Res Chip 1% 750 Ohm .063W
SM652061824	5	Res Chip 1% 820K Ohm .063W
SM652061912	5	Res Chip 1% 9.1K Ohm .063W
SM652069393	10	Res Chip (E24) .1% 39K
SM652101101	2	Res Chip (E24) 1% 100 Ohm
SM652101302	1	Res Chip (E24) 1% 3 K
SM652101395	5	Res Chip (E24) 1% 3.9 M
SM653041297	5	RES CHIP 1% 100 OHMS 0402
SM653101226	1	Res Chip 1% 18.2 Ohms
SM653101262	9	Res Chip 1% 43.2 Ohms
SM653101277	7	Res Chip 1% 61.9 Ohms
SM653101285	5	Res Chip 1 % 75.0 Ohms

902602-00: WR 6050A 500 MHz 5 GS/s 4 Ch Acq Board (con't)

Part Number	Qty	Description
SM653101297	19	Res Chip 1% 100 Ohms
SM653101322	17	Res Chip 1% 182 Ohms
SM653101326	7	Res Chip 1% 200 Ohms
SM653101334	8	Res Chip 1% 243 Ohms
SM653101347	1	Res Chip 1% 332 Ohms
SM653101354	16	Res Chip 1% 392 Ohms
SM653101377	7	Res Chip 1% 681 Ohms
SM653101393	33	Res Chip 1% 1.00 K
SM653101397	1	Res Chip 1% 1.10 K
SM653101401	4	Res Chip 1% 1.21 K
SM653101410	16	Res Chip 1% 1.50 K
SM653101422	33	Res Chip 1% 2.00 K
SM653101422	4	Res Chip 1% 2.00 K
SM653101422	12	Res Chip 1% 2.00 K
SM653101426	9	Res Chip 1 % 2.21K
SM653101430	3	Res Chip 1% 2.43 K
SM653101435	2	Res Chip 1% 2.74 K
SM653101458	10	Res Chip 1 % 4.75 K
SM653101461	8	Res Chip 1% 5.11 K
SM653101469	1	Res Chip 1% 6.19 K
SM653101477	13	Res Chip 1% 7.50 K
SM653101489	20	Res Chip 1 % 10.0 K
SM653101489	4	Res Chip 1 % 10.0 K
SM653101506	5	Res Chip 1% 15.0 K
SM653101518	7	Res Chip 1% 20.0 K
SM653101539	8	Res Chip 1% 33.2 K
SM653101589	9	Res Chip 1% 110 K
SM653185193	1	Res Thick Film 9.09 Ohms
SM654101000	9	Chip Jumper Zero Ohms
SM654101000	12	Chip Jumper Zero Ohms
SM655020002	10	RES CHIP 1% 174 OHMS
SM655020017	30	Res Thk Film 1% 1K Ohm 1/16W
SM655020025	18	Res Thk Film 1% 2.74 Ohm 1/16W
SM655020031	10	Res Thk Film 1% 8.25 Ohm 1/16W
SM655030040	10	Res Thk Film +/-1% 5.11 Ohm .1
SM655030042	5	Res Thk Film 1% 5.6M Ohm 1/16W
SM655040022	5	Res Chip .5% 50ppm 180K 150V
SM655040023	5	Res Chip .5% 50ppm 240K 150V
SM655040024	40	Res Chip .5% 50ppm 300K 150V
SM655040025	10	Res Chip .5% 50ppm 110K 150V
SM655040026	1	Res Thk Film 41.2 Ohm .5% 1/8W
SM655040027	2	Res Thk Film 20 Ohm .5% 1/8W
SM655063001	2	Res Thk Film 5% 1.5 Ohms 1/8W
SM655080004	5	Res Thk Film 1 Ohm +/- 5% 1/2W



902602-00: WR 6050A 500 MHz 5 GS/s 4 Ch Acq Board (con't)

Part Number	Qty	Description
SM655080005	8	Res Thk Film 1% 105 Ohm 1/2W
SM655080009	1	Res Thk Film 0.5% 41.2 Ohm 1W
SM661010002	10	Cap Cera Chip 27PF +/- 5%
SM661010003	10	Cap Cera Chip 10% 16V 33nF
SM661011001	5	Cap Cera Chip 3.9pF 200V
SM661028100	15	Cap Cera Chip 1UF 10V
SM661028100	1	Cap Cera Chip 1UF 10V
SM661066102	88	Cap Cera Chip 10% 1000PF/50V
SM661066102	17	Cap Cera Chip 10% 1000PF/50V
SM661068104	5	Cap Cera Chip 0.1uF 0603
SM661068104	120	Cap Cera Chip 0.1uF 0603
SM661068104	21	Cap Cera Chip 0.1uF 0603
SM661073020	5	Cap Cera 2.0+/- 0.1PF 50V Npo
SM661073056	5	Cap Cera 5.6+/- 0.1PF 50V Npo
SM661073300	5	Cap Cera 30PF+/- 5% 50V Npo
SM661073331	3	Cap Cera 330PF+/- 5% 50V Npo
SM661073820	7	Cap Cera 82PF+/- 5% 50V Npo
SM661165102	3	Cap Cera Chip 1000PF
SM661207103	6	Cap Cera Chip 20% .01 UF
SM661207104	10	Cap Cera Chip 20 % .1 UF
SM661207104	218	Cap Cera Chip 20 % .1 UF
SM661207223	5	Cap Cera Chip 20% .022 UF
SM661255015	1	Cap Cera Chip 1.5 PF
SM661255121	3	Cap Cera Chip 5% 120 PF
SM661540056	10	Cap Cera Chip 5.6PF 500V
SM661540068	5	Cap Cera Chip 6.8PF 500V
SM662131003	48	Cap Cera Chip 5% 50V .01 UF
SM662135002	28	Cap Cera +/-.1pF 50V 1.0pF NPO
SM662137004	14	Cap Cera +/-.25% 50V 3.3pF NPO
SM662151001	42	Cap Cera Chip 10% 16V 0.1 UF
SM662152001	18	Cap Cera Chip 10% 16V 100nF
SM662212001	5	Cap Cera .015uF 10% 25V X7R
SM662232001	8	10000pf 0603 capacitor
SM662241001	5	Cap Cera 22pF +/- 5% 100V Npo
SM662252001	5	Cap Cera .068uF 10% 16V X7R
SM662382001	5	Cap Cera 1000pF 10% 500V X7R
SM662432001	1	Cap Cera 4700pF 10% 50V X7R
SM662432002	1	Cap Cera Chip 0.22uF 10% 50V
SM662913001	63	Cap Cera Chip 10uF 20% 25V X5R
SM666267227	24	Cap Tant 220UF 10V 20%
SM668016226	48	Cap tant 22UF/16V 20 % L Esr
SM668025106	2	Cap,tant 10UF/25V 20% L Esr
SM669117001	12	Inductor Chip 2.2uH 20% 350mA
SM669854001	2	Inductor Chip 15uH 15% 2.97A

7.29 902603-00: WR 6100A 1 GHz 5 GS/s 4 Ch Acquisition Board

Part Number	Qty	Description
335970001	1	Probe Hook
402120004	1	Conn RT Angle Fem Bnc
416162005	1	Switch R/A PCB Mtg SPDT MOM
430500003	4	20DB Attenuator Relay DC-3GHZ
454000018	1	Hdr Sold Tail Male 18 Pin HI T
454004002	1	Conn Receptacle USB R/A 4 Pos
454016002	1	Conn Hdr Vert 16 Pos Wire-BD
454022001	1	HEADER VERT 22 POS WIRE BD
454040003	2	Conn Hdr Vert 40-Pos Male Shrd
454117003	4	Friction Header Straight .1 CE
454312010	4	Hdr Sold Tail/Male 10
469040002	1	Metal Banana Jack/Binding Post
522632120	6	Standoff Hex 6-32X5/8 F/F
524632015	4	Standoff Hex 6-32 X 1/2 FF
550011106	10	Screw Pan HD M2X6 Blk W/Nylock
551620100	10	#2 Flat Washer S.steel/Black O
555465002	1	Washer Lock Split 1/4
561632405	16	Screw TX Pan #6-32UNC 5/16" S1
590441024	0.07	Wire Teflon 7/32 Yel 24
594120006	2	Tiewrap
709614300	5	Bulkhead Receptical Female Bnc
709614301	5	BNC Lock Washer
709614302	5	BNC Nut
7093XXP01	5	Right Angle Recept. Connector
7093XXP41	5	Probe Holder
7093XXP91	5	Probe Ring Contact
901140-00	4	Chip Atten. 3dB .5% Trim Res
901336-00	1	Heatsink WaveRunner MST/MTB
901436-00	1	WaveRunner Front Card Panel Assy Upda
901437-00	2	Heatsink Base - HAD
901440-00	1	Heatsink Base mst/mtb
901441-00	1	Heatsink clip mst-mtb
901622-00	1	EMI shield - 10 GHZ clock
901685-00	5	Upper front end EMI shield
901686-00	5	Lower front end EMI shield
901693-00	1	Gap pad MST die cut
901694-00	1	Gap pad HTB die cut
901709-00	5	Malico 30mm heat sink assy
901790-00	2	WaveRunner CLOCK EMI SHIELD 0.4 IN. H
901807-00	1	ALUM. SPACER
901835-00	1	CABLE WaveRunner 10GHz MTB COAX
901835-01	1	CABLE WaveRunner 10GHz CH1 COAX
901835-02	1	CABLE WaveRunner 10GHz CH3 COAX
901882-00	1	Waverunner Acq. PCB



902603-00: WR 6100A 1 GHz 5 GS/s 4 Ch Acq Board (con't)

Part Number	Qty	Description
902138-00	2	Die cut GDS material with adhe
902463-00	2	WaveRunner Backbone
902528-00	6	Thermal Gap Pad Die-Cut
902530-00	2	Integrated Chip Cooler
CH599012012	0.1	5-Minute Epoxy
CH599041022	1	Heat Sink Compound 251
HAD639C-02	2	Packaged MAD440E 10GS/s SiGe
HFE653B	5	Front End Amplifier
HTB645	1	Hybrid Pkgd Timebase Trigger
MAM439	6	Monolithic 8 Megabyte Dram Mem
MST429A	1	IC Smart Trigger Gate-Array
Part Number	NetQty	ItemDesc
SM158021002	10	Cap Variable 0.5-2.5pF 250V
SM158070200	10	Cap Variable 4.5-20.0 PF
SM185457102	5	Res Vari Cermet 1 K
SM185457201	1	Res Vari Cermet 200 Ohms
SM185457503	5	Res Vari Cermet 50 K
SM200180032	1	IC 2-in OR Gate 74VHC1G32
SM200588014	1	Hex Schmitt-Trig Inv 74HCT14
SM201274033	1	IC Ecl Divide BY 4 MC10EL33
SM201570016	2	IC Ecl Diff Receiver 10EL16D
SM201774025	3	Diff Ecl-Ttl Transl 10ELT25
SM202057002	1	IC Triple 2-CH Analog Mux
SM202059003	1	ECL Diff Rec/Driv w/Enable Out
SM202100004	1	IC PLL Freq Synth 4106 6 GHz
SM202102001	1	IC ECL /PECL 1:5 DIFF CLK DRVR
SM202107002	1	100EP57 4:1 MUX
SM205129160	1	IC FLASH MEM 16 MBIT HY29LV160
SM205200002	1	IC 8M x 8 Bit 133MHz SDRAM
SM205616001	5	IC 8-Bit Shift Reg 74LV594ADR
SM205625616	1	IC 256K X 16 CMOS SRAM
SM205715003	2	IC PAL FG456 Fine-Pitch BGA
SM206178125	1	IC Quad Bfr Line Drvr 3 State
SM206370024	3	IC Ttl TO Diff Ecl Transl MC10
SM207010002	3	IC CMOS 8 BIT LOW RES BUS SWIT
SM207010011	2	IC Quad 10-Bit DAC LTC1664
SM207010014	1	16 Bit Buffer/Driver 3-State
SM207131660	1	IC Dac Octal 10BIT Serial Unip
SM207231654	4	IC Dual 14-Bit Serial Dac
SM207770442	5	IC Analog Switch DG442
SM207944351	5	OCTAL ANALOG MUX/DEMUX 74HCT43
SM208400001	3	IC MMIC Amplifier 12GHz NBB-30
SM208400002	1	IC MMIC Amplifier 8GHz NBB-400
SM208470353	8	IC Dual OP Amp LF353

902603-00: WR 6100A 1 GHz 5 GS/s 4 Ch Acq Board (con't)

Part Number	Qty	Description
SM208470656	5	IC FET-Input OP Amp OPA656U
SM208470705	11	IC OP Amp Picoamp Input AD705
SM208472022	7	Opamp, Dual, Low Pwr TLE2022C
SM208475460	5	IC OP Amp Sin-Sup RtoR Ins Amp
SM208476482	2	IC Dual OP Amp Rail TO Rail 64
SM208550004	8	IC Volt Reg Pos Adjust LDO
SM208550337	1	IC Volt Reg Adj LM337
SM208550821	1	Voltage Monitor MAX821
SM208556138	1	IC Volt Ref 4.096V 0.1% 25ppm
SM208701023	11	IC Temperature Sensor
SM208909850	1	DDS-125MHZ Cmos Synth AD9850
SM227110161	1	16 BIT MICROCONTROLLER C161PI
SM229020150	5	MLC Trans Volt Suppressor
SM232022824	1	Diode Array Schottky HSMS2824
SM232030001	10	Diode Array Schottky HSMS-282C
SM232442828	5	Diode Bridge HSMS2828
SM236030099	11	Diode SO-Pkg BAV99
SM252005303	10	Pin Diode Bar 63-03W
SM252023066	20	Pin Diode Bar 66
SM252023304	5	Dual Pin Diode Silicon Bar 63-
SM256232013	1	Diode Light Emitting Red
SM270050520	15	NPN 9GHZ Wideband Transistor
SM270130092	6	Transistor Npn BFR92A
SM270330848	2	Transistor Npn BC848C
SM275030550	5	Transistor Pnp BF550
SM275132907	1	Transistor Pnp 2907A
SM280122416	5	Trans. Jfet N MMBF4416/LC6A
SM280217505	2	Mosfet Nchanel 75A 50V D2P
SM281115003	4	P-CH Hdtmos Pwr E-Fet MTB50P03
SM289772003	5	Transistor Array 2003
SM300092390	1	Inductor Wound 2% 39 NH
SM300295082	28	Inductor 8.2 NH 5%
SM300600009	2	Inductor 9.3uH 7.2A Wound
SM300600012	2	Inductor 150nH 5% Wound
SM301001001	16	BEAD FERRITE
SM301001002	6	Bead SHF 0.3A
SM301001016	4	Inductor Pwr Toroid 272uH .36A
SM301001017	3	Inductor Chip 10% 15uH 1210
SM301001018	1	Inductor Shielded 100uH 10%
SM301004001	40	Bead Ferrite 50 Ohms 3AMPS 120
SM311000005	1	Crystal Oscillator 16 MHz 3.3V
SM311000006	1	Voltage Controlled Oscillator
SM311000013	1	Crystal Osc TCXO 10MHz
SM430530001	20	Relay Smd Dual Form C 5V
SM431030005	5	Relay SPDT HF 50 Ohm 4.5V



902603-00: WR 6100A 1 GHz 5 GS/s 4 Ch Acq Board (con't)

Part Number	Qty	Description
SM433695250	2	PTC Resettable Device 2.5A
SM453005001	3	Header 1 x 5 Shrouded
SM507000002	2	Heatsink Surface Mount TO-263
SM651081102	8	Res Chip 0.1% 1 Kohm
SM652000005	10	Res RF 100 Ohm .25% 1/3W 1206
SM652041000	49	Res Zero ohms
SM652041011	52	Res Chip 1% 49.9 Ohms
SM652041200	11	Res 20 Ohms +/-1% 1/16W 0402 S
SM652041750	1	Res 75 OHM +/-1% 1/16W
SM652061000	11	Res Chip 0 Ohm Jumper
SM652061000	10	Res Chip 0 Ohm Jumper
SM652061100	20	Res Chip 1% 10.0 Ohm .063W
SM652061100	10	Res Chip 1% 10.0 Ohm .063W
SM652061101	10	Res Chip 1% 100 Ohm .063W
SM652061101	12	Res Chip 1% 100 Ohm .063W
SM652061101	3	Res Chip 1% 100 Ohm .063W
SM652061102	5	Res Chip 1% 1.0K Ohm .063W
SM652061102	16	Res Chip 1% 1.0K Ohm .063W
SM652061102	23	Res Chip 1% 1.0K Ohm .063W
SM652061103	19	Res Chip 1% 10K Ohm .063W
SM652061103	6	Res Chip 1% 10K Ohm .063W
SM652061105	1	Res Chip 1% 1.0M Ohm .063W
SM652061105	5	Res Chip 1% 1.0M Ohm .063W
SM652061106	5	Res Chip 1% 10M Ohm .063W
SM652061112	10	Res Chip 1% 1.1K Ohm .063W
SM652061121	15	Res Chip 1% 120 Ohm .063W
SM652061121	50	Res Chip 1% 120 Ohm .063W
SM652061131	5	Res Chip 1% 130 Ohm .063W
SM652061133	4	Res Chip 1% 13K Ohm .063W
SM652061154	5	Res Chip 1% 150K Ohm .063W
SM652061161	15	Res Chip 1% 160 Ohm .063W
SM652061200	1	Res Chip 1% 20.0 Ohm .063W
SM652061201	5	Res Chip 1% 200 Ohm .063W
SM652061201	14	Res Chip 1% 200 Ohm .063W
SM652061201	1	Res Chip 1% 200 Ohm .063W
SM652061203	11	Res Chip 1% 20K Ohm .063W
SM652061221	18	Res Chip 1% 220 Ohm .063W
SM652061222	2	Res Chip 1% 2.2K Ohm .063W
SM652061222	4	Res Chip 1% 2.2K Ohm .063W
SM652061222	5	Res Chip 1% 2.2K Ohm .063W
SM652061240	5	Res Chip 1% 24.0 Ohm .063W
SM652061240	1	Res Chip 1% 24.0 Ohm .063W
SM652061271	10	Res Chip 1% 270 Ohm .063W
SM652061271	2	Res Chip 1% 270 Ohm .063W

902603-00: WR 6100A 1 GHz 5 GS/s 4 Ch Acq Board (con't)

Part Number	Qty	Description
SM652061271	4	Res Chip 1% 270 Ohm .063W
SM652061271	20	Res Chip 1% 270 Ohm .063W
SM652061273	5	Res Chip 1% 27K Ohm .063W
SM652061273	20	Res Chip 1% 27K Ohm .063W
SM652061332	5	Res Chip 1% 3.3K Ohm .063W
SM652061332	4	Res Chip 1% 3.3K Ohm .063W
SM652061334	1	Res Chip 1% 330K Ohm .063W
SM652061361	3	Res Chip 1% 360 Ohm .063W
SM652061361	15	Res Chip 1% 360 Ohm .063W
SM652061361	5	Res Chip 1% 360 Ohm .063W
SM652061390	5	Res Chip 1% 39.0 Ohm .063W
SM652061390	41	Res Chip 1% 39.0 Ohm .063W
SM652061393	5	Res Chip 1% 39K Ohm .063W
SM652061393	1	Res Chip 1% 39K Ohm .063W
SM652061393	5	Res Chip 1% 39K Ohm .063W
SM652061394	5	Res Chip 1% 390K Ohm .063W
SM652061430	10	Res Chip 1% 43.2 Ohm .063W
SM652061431	1	Res Chip 1% 430 Ohm .063W
SM652061432	6	Res Chip 1% 4.3K Ohm .063W
SM652061471	5	Res Chip 1% 470 Ohm .063W
SM652061510	12	Res Chip 1% 51.0 Ohm .063W
SM652061510	25	Res Chip 1% 51.0 Ohm .063W
SM652061510	5	Res Chip 1% 51.0 Ohm .063W
SM652061511	6	Res Chip 1% 510 Ohm .063W
SM652061512	5	Res Chip 1% 5.1K Ohm .063W
SM652061513	5	Res Chip 1% 51K Ohm .063W
SM652061562	5	Res Chip 1% 5.6K Ohm .063W
SM652061681	1	Res Chip 1% 681 Ohm .063W
SM652061681	5	Res Chip 1% 681 Ohm .063W
SM652061751	1	Res Chip 1% 750 Ohm .063W
SM652061751	5	Res Chip 1% 750 Ohm .063W
SM652061824	5	Res Chip 1% 820K Ohm .063W
SM652061912	5	Res Chip 1% 9.1K Ohm .063W
SM652069393	10	Res Chip (E24) .1% 39K
SM652101101	2	Res Chip (E24) 1% 100 Ohm
SM652101302	1	Res Chip (E24) 1% 3 K
SM652101395	5	Res Chip (E24) 1% 3.9 M
SM653041297	5	RES CHIP 1% 100 OHMS 0402
SM653101226	1	Res Chip 1% 18.2 Ohms
SM653101262	9	Res Chip 1% 43.2 Ohms
SM653101277	7	Res Chip 1% 61.9 Ohms
SM653101285	5	Res Chip 1 % 75.0 Ohms
SM653101297	19	Res Chip 1% 100 Ohms
SM653101322	17	Res Chip 1% 182 Ohms



902603-00: WR 6100A 1 GHz 5 GS/s 4 Ch Acq Board (con't)

Part Number	Qty	Description
SM653101326	7	Res Chip 1% 200 Ohms
SM653101334	8	Res Chip 1% 243 Ohms
SM653101347	1	Res Chip 1% 332 Ohms
SM653101354	16	Res Chip 1% 392 Ohms
SM653101377	7	Res Chip 1% 681 Ohms
SM653101393	33	Res Chip 1% 1.00 K
SM653101397	1	Res Chip 1% 1.10 K
SM653101401	4	Res Chip 1% 1.21 K
SM653101410	16	Res Chip 1% 1.50 K
SM653101422	33	Res Chip 1% 2.00 K
SM653101422	4	Res Chip 1% 2.00 K
SM653101422	12	Res Chip 1% 2.00 K
SM653101426	9	Res Chip 1 % 2.21K
SM653101430	3	Res Chip 1% 2.43 K
SM653101435	2	Res Chip 1% 2.74 K
SM653101458	10	Res Chip 1 % 4.75 K
SM653101461	8	Res Chip 1% 5.11 K
SM653101469	1	Res Chip 1% 6.19 K
SM653101477	13	Res Chip 1% 7.50 K
SM653101489	20	Res Chip 1 % 10.0 K
SM653101489	4	Res Chip 1 % 10.0 K
SM653101506	5	Res Chip 1% 15.0 K
SM653101518	7	Res Chip 1% 20.0 K
SM653101539	8	Res Chip 1% 33.2 K
SM653101589	9	Res Chip 1% 110 K
SM653185193	1	Res Thick Film 9.09 Ohms
SM654101000	9	Chip Jumper Zero Ohms
SM654101000	12	Chip Jumper Zero Ohms
SM655020002	10	RES CHIP 1% 174 OHMS
SM655020017	30	Res Thk Film 1% 1K Ohm 1/16W
SM655020025	18	Res Thk Film 1% 2.74 Ohm 1/16W
SM655020031	10	Res Thk Film 1% 8.25 Ohm 1/16W
SM655030040	10	Res Thk Film +/-1% 5.11 Ohm .1
SM655030042	5	Res Thk Film 1% 5.6M Ohm 1/16W
SM655040022	5	Res Chip .5% 50ppm 180K 150V
SM655040023	5	Res Chip .5% 50ppm 240K 150V
SM655040024	40	Res Chip .5% 50ppm 300K 150V
SM655040025	10	Res Chip .5% 50ppm 110K 150V
SM655040026	1	Res Thk Film 41.2 Ohm .5% 1/8W
SM655040027	2	Res Thk Film 20 Ohm .5% 1/8W
SM655063001	2	Res Thk Film 5% 1.5 Ohms 1/8W
SM655080004	5	Res Thk Film 1 Ohm +/- 5% 1/2W
SM655080005	8	Res Thk Film 1% 105 Ohm 1/2W
SM655080009	1	Res Thk Film 0.5% 41.2 Ohm 1W

902603-00: WR 6100A 1 GHz 5 GS/s 4 Ch Acq Board (con't)

Part Number	Qty	Description
SM661010002	10	Cap Cera Chip 27PF +/- 5%
SM661010003	10	Cap Cera Chip 10% 16V 33nF
SM661011001	5	Cap Cera Chip 3.9pF 200V
SM661028100	15	Cap Cera Chip 1UF 10V
SM661028100	1	Cap Cera Chip 1UF 10V
SM661066102	88	Cap Cera Chip 10% 1000PF/50V
SM661066102	17	Cap Cera Chip 10% 1000PF/50V
SM661068104	5	Cap Cera Chip 0.1uF 0603
SM661068104	120	Cap Cera Chip 0.1uF 0603
SM661068104	21	Cap Cera Chip 0.1uF 0603
SM661073020	5	Cap Cera 2.0+/- 0.1PF 50V Npo
SM661073056	5	Cap Cera 5.6+/- 0.1PF 50V Npo
SM661073300	5	Cap Cera 30PF+/- 5% 50V Npo
SM661073331	3	Cap Cera 330PF+/- 5% 50V Npo
SM661073820	7	Cap Cera 82PF+/- 5% 50V Npo
SM661165102	3	Cap Cera Chip 1000PF
SM661207103	6	Cap Cera Chip 20% .01 UF
SM661207104	10	Cap Cera Chip 20 % .1 UF
SM661207104	218	Cap Cera Chip 20 % .1 UF
SM661207223	5	Cap Cera Chip 20% .022 UF
SM661255015	1	Cap Cera Chip 1.5 PF
SM661255121	3	Cap Cera Chip 5% 120 PF
SM661540056	10	Cap Cera Chip 5.6PF 500V
SM661540068	5	Cap Cera Chip 6.8PF 500V
SM662131003	48	Cap Cera Chip 5% 50V .01 UF
SM662135002	42	Cap Cera +/-.1pF 50V 1.0pF NPO
SM662151001	42	Cap Cera Chip 10% 16V 0.1 UF
SM662152001	18	Cap Cera Chip 10% 16V 100nF
SM662212001	5	Cap Cera .015uF 10% 25V X7R
SM662232001	8	10000pf 0603 capacitor
SM662241001	5	Cap Cera 22pF +/- 5% 100V Npo
SM662252001	5	Cap Cera .068uF 10% 16V X7R
SM662382001	5	Cap Cera 1000pF 10% 500V X7R
SM662432001	1	Cap Cera 4700pF 10% 50V X7R
SM662432002	1	Cap Cera Chip 0.22uF 10% 50V
SM662913001	63	Cap Cera Chip 10uF 20% 25V X5R
SM666267227	24	Cap Tant 220UF 10V 20%
SM668016226	48	Cap tant 22UF/16V 20 % L Esr
SM668025106	2	Cap,tant 10UF/25V 20% L Esr
SM669117001	12	Inductor Chip 2.2uH 20% 350mA
SM669854001	2	Inductor Chip 15uH 15% 2.97A



7.30 902604-00: WR 6200A 2 GHz 5 GS/s 4 Ch Acquisition Board

Part Number	Qty	Description
335970001	1	Probe Hook
402120004	1	Conn RT Angle Fem Bnc
416162005	1	Switch R/A PCB Mtg SPDT MOM
430500003	4	20DB Attenuator Relay DC-3GHZ
454000018	1	Hdr Sold Tail Male 18 Pin HI T
454004002	1	Conn Receptacle USB R/A 4 Pos
454016002	1	Conn Hdr Vert 16 Pos Wire-BD
454022001	1	HEADER VERT 22 POS WIRE BD
454040003	2	Conn Hdr Vert 40-Pos Male Shrd
454117003	4	Friction Header Straight .1 CE
454312010	4	Hdr Sold Tail/Male 10
469040002	1	Metal Banana Jack/Binding Post
522632120	6	Standoff Hex 6-32X5/8 F/F
524632015	4	Standoff Hex 6-32 X 1/2 FF
550011106	10	Screw Pan HD M2X6 Blk W/Nylock
551620100	10	#2 Flat Washer S.steel/Black O
555465002	1	Washer Lock Split 1/4
561632405	16	Screw TX Pan #6-32UNC 5/16" S1
590441024	0.07	Wire Teflon 7/32 Yel 24
594120006	2	Tiewrap
709614300	5	Bulkhead Receptical Female Bnc
709614301	5	BNC Lock Washer
709614302	5	BNC Nut
7093XXP01	5	Right Angle Recept. Connector
7093XXP41	5	Probe Holder
7093XXP91	5	Probe Ring Contact
901140-00	4	Chip Atten. 3dB .5% Trim Res
901336-00	1	Heatsink WaveRunner MST/MTB
901436-00	1	WaveRunner Front Card Panel Assy Upda
901437-00	2	Heatsink Base - HAD
901440-00	1	Heatsink Base mst/mtb
901441-00	1	Heatsink clip mst-mtb
901622-00	1	EMI shield - 10 GHZ clock
901685-00	5	Upper front end EMI shield
901686-00	5	Lower front end EMI shield
901693-00	1	Gap pad MST die cut
901694-00	1	Gap pad HTB die cut
901709-00	5	Malico 30mm heat sink assy
901790-00	2	WaveRunner CLOCK EMI SHIELD 0.4 IN. H
901807-00	1	ALUM. SPACER
901835-00	1	CABLE WaveRunner 10GHz MTB COAX
901835-01	1	CABLE WaveRunner 10GHz CH1 COAX
901835-02	1	CABLE WaveRunner 10GHz CH3 COAX

902604-00: WR 6200A 2 GHz 5 GS/s 4 Ch Acq Board (con't)

Part Number	Qty	Description
901882-00	1	Waverunner Acq. PCB
902138-00	2	Die cut GDS material with adhe
902463-00	2	WaveRunner Backbone
902528-00	6	Thermal Gap Pad Die-Cut
902530-00	2	Integrated Chip Cooler
CH599012012	0.1	5-Minute Epoxy
CH599041022	1	Heat Sink Compound 251
HAD639C-02	2	Packaged MAD440E 10GS/s SiGe
HFE653B	5	Front End Amplifier
HTB645	1	Hybrid Pkgd Timebase Trigger
MAM439	6	Monolithic 8 Megabyte Dram Mem
MST429A	1	IC Smart Trigger Gate-Array
SM158021002	10	Cap Variable 0.5-2.5pF 250V
SM158070200	10	Cap Variable 4.5-20.0 PF
SM185457102	5	Res Vari Cermet 1 K
SM185457201	1	Res Vari Cermet 200 Ohms
SM185457503	5	Res Vari Cermet 50 K
SM200180032	1	IC 2-in OR Gate 74VHC1G32
SM200588014	1	Hex Schmitt-Trig Inv 74HCT14
SM201274033	1	IC Ecl Divide BY 4 MC10EL33
SM201570016	2	IC Ecl Diff Receiver 10EL16D
SM201774025	3	Diff Ecl-Ttl Transl 10ELT25
SM202057002	1	IC Triple 2-CH Analog Mux
SM202059003	1	ECL Diff Rec/Driv w/Enable Out
SM202100004	1	IC PLL Freq Synth 4106 6 GHz
SM202102001	1	IC ECL /PECL 1:5 DIFF CLK DRVR
SM202107002	1	100EP57 4:1 MUX
SM205129160	1	IC FLASH MEM 16 MBIT HY29LV160
SM205200002	1	IC 8M x 8 Bit 133MHz SDRAM
SM205616001	5	IC 8-Bit Shift Reg 74LV594ADR
SM205625616	1	IC 256K X 16 CMOS SRAM
SM205715003	2	IC PAL FG456 Fine-Pitch BGA
SM206178125	1	IC Quad Bfr Line Drvr 3 State
SM206370024	3	IC Ttl TO Diff Ecl Transl MC10
SM207010002	3	IC CMOS 8 BIT LOW RES BUS SWIT
SM207010011	2	IC Quad 10-Bit DAC LTC1664
SM207010014	1	16 Bit Buffer/Driver 3-State
SM207131660	1	IC Dac Octal 10BIT Serial Unip
SM207231654	4	IC Dual 14-Bit Serial Dac
SM207770442	5	IC Analog Switch DG442
SM207944351	5	OCTAL ANALOG MUX/DEMUX 74HCT43
SM208400001	3	IC MMIC Amplifier 12GHz NBB-30
SM208400002	1	IC MMIC Amplifier 8GHz NBB-400
SM208470353	8	IC Dual OP Amp LF353



902604-00: WR 6200A 2 GHz 5 GS/s 4 Ch Acq Board (con't)

Part Number	Qty	Description
SM208470656	5	IC FET-Input OP Amp OPA656U
SM208470705	11	IC OP Amp Picoamp Input AD705
SM208472022	7	Opamp, Dual, Low Pwr TLE2022C
SM208475460	5	IC OP Amp Sin-Sup RtoR Ins Amp
SM208476482	2	IC Dual OP Amp Rail TO Rail 64
SM208550004	8	IC Volt Reg Pos Adjust LDO
SM208550337	1	IC Volt Reg Adj LM337
SM208550821	1	Voltage Monitor MAX821
SM208556138	1	IC Volt Ref 4.096V 0.1% 25ppm
SM208701023	11	IC Temperature Sensor
SM208909850	1	DDS-125MHZ Cmos Synth AD9850
SM227110161	1	16 BIT MICROCONTROLLER C161PI
SM229020150	5	MLC Trans Volt Suppressor
SM232022824	1	Diode Array Schottky HSMS2824
SM232030001	10	Diode Array Schottky HSMS-282C
SM232442828	5	Diode Bridge HSMS2828
SM236030099	11	Diode SO-Pkg BAV99
SM252005303	10	Pin Diode Bar 63-03W
SM252023066	20	Pin Diode Bar 66
SM252023304	5	Dual Pin Diode Silicon Bar 63-
SM256232013	1	Diode Light Emitting Red
SM270050520	15	NPN 9GHZ Wideband Transistor
SM270130092	6	Transistor Npn BFR92A
SM270330848	2	Transistor Npn BC848C
SM275030550	5	Transistor Pnp BF550
SM275132907	1	Transistor Pnp 2907A
SM280122416	5	Trans. Jfet N MMBF4416/LC6A
SM280217505	2	Mosfet Nchanel 75A 50V D2P
SM281115003	4	P-CH Hdtmos Pwr E-Fet MTB50P03
SM289772003	5	Transistor Array 2003
SM300092390	1	Inductor Wound 2% 39 NH
SM300600009	2	Inductor 9.3uH 7.2A Wound
SM300600012	2	Inductor 150nH 5% Wound
SM301001001	16	BEAD FERRITE
SM301001002	6	Bead SHF 0.3A
SM301001016	4	Inductor Pwr Toroid 272uH .36A
SM301001017	3	Inductor Chip 10% 15uH 1210
SM301001018	1	Inductor Shielded 100uH 10%
SM301004001	40	Bead Ferrite 50 Ohms 3AMPS 120
SM311000005	1	Crystal Oscillator 16 MHz 3.3V
SM311000006	1	Voltage Controlled Oscillator
SM311000013	1	Crystal Osc TCXO 10MHz
SM430530001	20	Relay Smd Dual Form C 5V
SM431030005	5	Relay SPDT HF 50 Ohm 4.5V

902604-00: WR 6200A 2 GHz 5 GS/s 4 Ch Acq Board (con't)

Part Number	Qty	Description
SM433695250	2	PTC Resettable Device 2.5A
SM453005001	3	Header 1 x 5 Shrouded
SM507000002	2	Heatsink Surface Mount TO-263
SM651081102	8	Res Chip 0.1% 1 Kohm
SM652000005	10	Res RF 100 Ohm .25% 1/3W 1206
SM652041000	49	Res Zero ohms
SM652041011	52	Res Chip 1% 49.9 Ohms
SM652041200	11	Res 20 Ohms +/-1% 1/16W 0402 S
SM652041750	1	Res 75 OHM +/-1% 1/16W
SM652061000	11	Res Chip 0 Ohm Jumper
SM652061000	10	Res Chip 0 Ohm Jumper
SM652061100	20	Res Chip 1% 10.0 Ohm .063W
SM652061100	10	Res Chip 1% 10.0 Ohm .063W
SM652061101	10	Res Chip 1% 100 Ohm .063W
SM652061101	12	Res Chip 1% 100 Ohm .063W
SM652061101	3	Res Chip 1% 100 Ohm .063W
SM652061102	5	Res Chip 1% 1.0K Ohm .063W
SM652061102	16	Res Chip 1% 1.0K Ohm .063W
SM652061102	23	Res Chip 1% 1.0K Ohm .063W
SM652061103	19	Res Chip 1% 10K Ohm .063W
SM652061103	6	Res Chip 1% 10K Ohm .063W
SM652061105	1	Res Chip 1% 1.0M Ohm .063W
SM652061105	5	Res Chip 1% 1.0M Ohm .063W
SM652061106	5	Res Chip 1% 10M Ohm .063W
SM652061112	10	Res Chip 1% 1.1K Ohm .063W
SM652061121	15	Res Chip 1% 120 Ohm .063W
SM652061121	50	Res Chip 1% 120 Ohm .063W
SM652061131	5	Res Chip 1% 130 Ohm .063W
SM652061133	4	Res Chip 1% 13K Ohm .063W
SM652061154	5	Res Chip 1% 150K Ohm .063W
SM652061161	15	Res Chip 1% 160 Ohm .063W
SM652061200	1	Res Chip 1% 20.0 Ohm .063W
SM652061201	5	Res Chip 1% 200 Ohm .063W
SM652061201	14	Res Chip 1% 200 Ohm .063W
SM652061201	1	Res Chip 1% 200 Ohm .063W
SM652061203	11	Res Chip 1% 20K Ohm .063W
SM652061221	18	Res Chip 1% 220 Ohm .063W
SM652061222	2	Res Chip 1% 2.2K Ohm .063W
SM652061222	4	Res Chip 1% 2.2K Ohm .063W
SM652061222	5	Res Chip 1% 2.2K Ohm .063W
SM652061240	5	Res Chip 1% 24.0 Ohm .063W
SM652061240	1	Res Chip 1% 24.0 Ohm .063W
SM652061271	10	Res Chip 1% 270 Ohm .063W
SM652061271	2	Res Chip 1% 270 Ohm .063W



902604-00: WR 6200A 2 GHz 5 GS/s 4 Ch Acq Board (con't)

Part Number	Qty	Description
SM652061271	4	Res Chip 1% 270 Ohm .063W
SM652061271	20	Res Chip 1% 270 Ohm .063W
SM652061273	5	Res Chip 1% 27K Ohm .063W
SM652061273	20	Res Chip 1% 27K Ohm .063W
SM652061332	5	Res Chip 1% 3.3K Ohm .063W
SM652061332	4	Res Chip 1% 3.3K Ohm .063W
SM652061334	1	Res Chip 1% 330K Ohm .063W
SM652061361	3	Res Chip 1% 360 Ohm .063W
SM652061361	15	Res Chip 1% 360 Ohm .063W
SM652061361	5	Res Chip 1% 360 Ohm .063W
SM652061390	5	Res Chip 1% 39.0 Ohm .063W
SM652061390	41	Res Chip 1% 39.0 Ohm .063W
SM652061393	5	Res Chip 1% 39K Ohm .063W
SM652061393	1	Res Chip 1% 39K Ohm .063W
SM652061393	5	Res Chip 1% 39K Ohm .063W
SM652061394	5	Res Chip 1% 390K Ohm .063W
SM652061430	10	Res Chip 1% 43.2 Ohm .063W
SM652061431	1	Res Chip 1% 430 Ohm .063W
SM652061432	6	Res Chip 1% 4.3K Ohm .063W
SM652061471	5	Res Chip 1% 470 Ohm .063W
SM652061510	12	Res Chip 1% 51.0 Ohm .063W
SM652061510	25	Res Chip 1% 51.0 Ohm .063W
SM652061510	5	Res Chip 1% 51.0 Ohm .063W
SM652061511	6	Res Chip 1% 510 Ohm .063W
SM652061512	5	Res Chip 1% 5.1K Ohm .063W
SM652061513	5	Res Chip 1% 51K Ohm .063W
SM652061562	5	Res Chip 1% 5.6K Ohm .063W
SM652061681	1	Res Chip 1% 681 Ohm .063W
SM652061681	5	Res Chip 1% 681 Ohm .063W
SM652061751	1	Res Chip 1% 750 Ohm .063W
SM652061751	5	Res Chip 1% 750 Ohm .063W
SM652061824	5	Res Chip 1% 820K Ohm .063W
SM652061912	5	Res Chip 1% 9.1K Ohm .063W
SM652069393	10	Res Chip (E24) .1% 39K
SM652101101	2	Res Chip (E24) 1% 100 Ohm
SM652101302	1	Res Chip (E24) 1% 3 K
SM652101395	5	Res Chip (E24) 1% 3.9 M
SM653041297	5	RES CHIP 1% 100 OHMS 0402
SM653101226	1	Res Chip 1% 18.2 Ohms
SM653101262	9	Res Chip 1% 43.2 Ohms
SM653101277	7	Res Chip 1% 61.9 Ohms
SM653101285	5	Res Chip 1 % 75.0 Ohms
SM653101297	19	Res Chip 1% 100 Ohms

902604-00: WR 6200A 2 GHz 5 GS/s 4 Ch Acq Board (con't)

Part Number	Qty	Description
SM653101322	17	Res Chip 1% 182 Ohms
SM653101326	7	Res Chip 1% 200 Ohms
SM653101334	8	Res Chip 1% 243 Ohms
SM653101347	1	Res Chip 1% 332 Ohms
SM653101354	16	Res Chip 1% 392 Ohms
SM653101377	7	Res Chip 1% 681 Ohms
SM653101393	33	Res Chip 1% 1.00 K
SM653101397	1	Res Chip 1% 1.10 K
SM653101401	4	Res Chip 1% 1.21 K
SM653101410	16	Res Chip 1% 1.50 K
SM653101422	33	Res Chip 1% 2.00 K
SM653101422	4	Res Chip 1% 2.00 K
SM653101422	12	Res Chip 1% 2.00 K
SM653101426	9	Res Chip 1 % 2.21K
SM653101430	3	Res Chip 1% 2.43 K
SM653101435	2	Res Chip 1% 2.74 K
SM653101458	10	Res Chip 1 % 4.75 K
SM653101461	8	Res Chip 1% 5.11 K
SM653101469	1	Res Chip 1% 6.19 K
SM653101477	13	Res Chip 1% 7.50 K
SM653101489	20	Res Chip 1 % 10.0 K
SM653101489	4	Res Chip 1 % 10.0 K
SM653101506	5	Res Chip 1% 15.0 K
SM653101518	7	Res Chip 1% 20.0 K
SM653101539	8	Res Chip 1% 33.2 K
SM653101589	9	Res Chip 1% 110 K
SM653185193	1	Res Thick Film 9.09 Ohms
SM654101000	9	Chip Jumper Zero Ohms
SM654101000	12	Chip Jumper Zero Ohms
SM655020002	10	RES CHIP 1% 174 OHMS
SM655020017	30	Res Thk Film 1% 1K Ohm 1/16W
SM655020025	18	Res Thk Film 1% 2.74 Ohm 1/16W
SM655020031	10	Res Thk Film 1% 8.25 Ohm 1/16W
SM655030040	10	Res Thk Film +/-1% 5.11 Ohm .1
SM655030042	5	Res Thk Film 1% 5.6M Ohm 1/16W
SM655040022	5	Res Chip .5% 50ppm 180K 150V
SM655040023	5	Res Chip .5% 50ppm 240K 150V
SM655040024	40	Res Chip .5% 50ppm 300K 150V
SM655040025	10	Res Chip .5% 50ppm 110K 150V
SM655040026	1	Res Thk Film 41.2 Ohm .5% 1/8W
SM655040027	2	Res Thk Film 20 Ohm .5% 1/8W
SM655063001	2	Res Thk Film 5% 1.5 Ohms 1/8W
SM655080004	5	Res Thk Film 1 Ohm +/- 5% 1/2W
SM655080005	8	Res Thk Film 1% 105 Ohm 1/2W



902604-00: WR 6200A 2 GHz 5 GS/s 4 Ch Acq Board (con't)

Part Number	Qty	Description
SM655080009	1	Res Thk Film 0.5% 41.2 Ohm 1W
SM661010002	10	Cap Cera Chip 27PF +/- 5%
SM661010003	10	Cap Cera Chip 10% 16V 33nF
SM661011001	5	Cap Cera Chip 3.9pF 200V
SM661028100	15	Cap Cera Chip 1UF 10V
SM661028100	1	Cap Cera Chip 1UF 10V
SM661066102	88	Cap Cera Chip 10% 1000PF/50V
SM661066102	17	Cap Cera Chip 10% 1000PF/50V
SM661068104	5	Cap Cera Chip 0.1uF 0603
SM661068104	120	Cap Cera Chip 0.1uF 0603
SM661068104	21	Cap Cera Chip 0.1uF 0603
SM661073020	5	Cap Cera 2.0+/- 0.1PF 50V Npo
SM661073056	5	Cap Cera 5.6+/- 0.1PF 50V Npo
SM661073300	5	Cap Cera 30PF+/- 5% 50V Npo
SM661073331	3	Cap Cera 330PF+/- 5% 50V Npo
SM661073820	7	Cap Cera 82PF+/- 5% 50V Npo
SM661165102	3	Cap Cera Chip 1000PF
SM661207103	6	Cap Cera Chip 20% .01 UF
SM661207104	10	Cap Cera Chip 20 % .1 UF
SM661207104	218	Cap Cera Chip 20 % .1 UF
SM661207223	5	Cap Cera Chip 20% .022 UF
SM661255015	1	Cap Cera Chip 1.5 PF
SM661255121	3	Cap Cera Chip 5% 120 PF
SM661540056	10	Cap Cera Chip 5.6PF 500V
SM661540068	5	Cap Cera Chip 6.8PF 500V
SM662131003	48	Cap Cera Chip 5% 50V .01 UF
SM662135002	28	Cap Cera +/-.1pF 50V 1.0pF NPO
SM662151001	42	Cap Cera Chip 10% 16V 0.1 UF
SM662152001	18	Cap Cera Chip 10% 16V 100nF
SM662212001	5	Cap Cera .015uF 10% 25V X7R
SM662232001	8	10000pf 0603 capacitor
SM662241001	5	Cap Cera 22pF +/- 5% 100V Npo
SM662252001	5	Cap Cera .068uF 10% 16V X7R
SM662382001	5	Cap Cera 1000pF 10% 500V X7R
SM662432001	1	Cap Cera 4700pF 10% 50V X7R
SM662432002	1	Cap Cera Chip 0.22uF 10% 50V
SM662913001	63	Cap Cera Chip 10uF 20% 25V X5R
SM666267227	24	Cap Tant 220UF 10V 20%
SM668016226	48	Cap tant 22UF/16V 20 % L Esr
SM668025106	2	Cap,tant 10UF/25V 20% L Esr
SM669049003	28	Inductor 3.3nH +/-5%
SM669117001	12	Inductor Chip 2.2uH 20% 350mA
SM669854001	2	Inductor Chip 15uH 15% 2.97A

8. Mechanical Parts

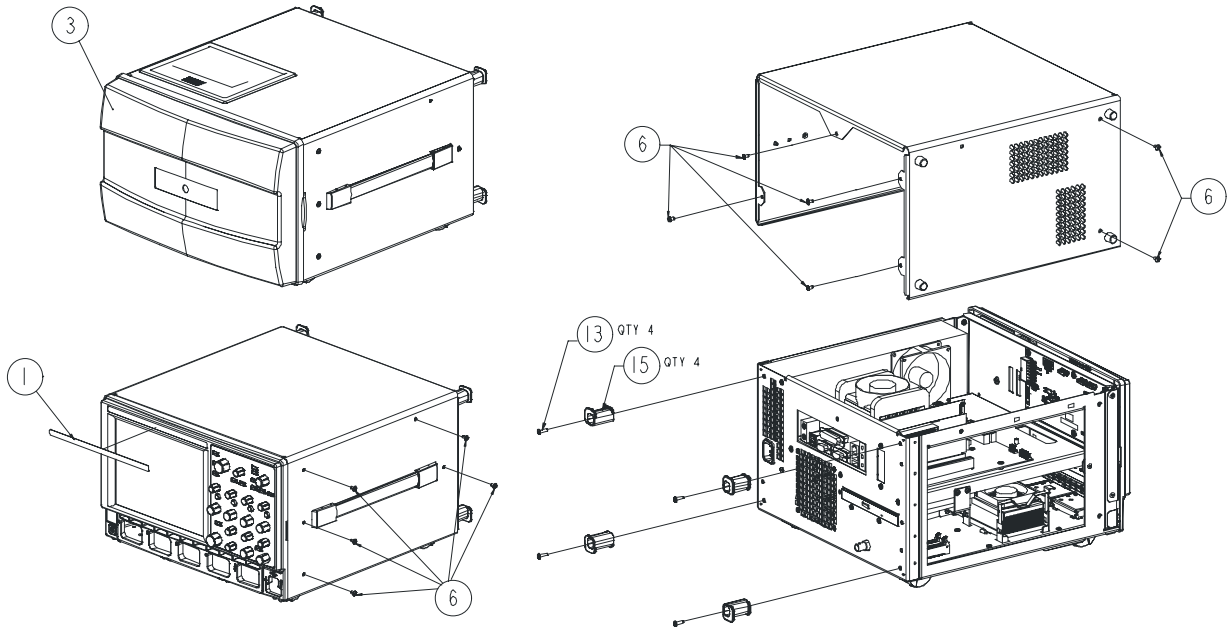


Figure 8-1: WaveRunner Top Cover Removal

Item	LeCroy Part Number	Qty	Description
13	901446-00	4	Rear Foot
15	561632408	4	Screw TX Pan #6-32 UNC 1/2" S1
1	901496-03	1	Front Panel Overlay WaveRunner 6200
1	901496-00	1	Front Panel Overlay WaveRunner 6100
1	901496-01	1	Front Panel Overlay WaveRunner 6050
1	901496-02	1	Front Panel Overlay WaveRunner 6051
1	901496-04	1	Front Panel Overlay WaveRunner 6030
1	902491-00	1	Front Panel Overlay WaveRunner 6100A
1	902491-01	1	Front Panel Overlay WaveRunner 6050A
1	902491-02	1	Front Panel Overlay WaveRunner 6051A
1	902491-03	1	Front Panel Overlay WaveRunner 6030A
1	902491-04	1	Front Panel Overlay WaveRunner 6200A
6	561632604	10	Screw TX Pan #6-32 UNC 1/4" S3

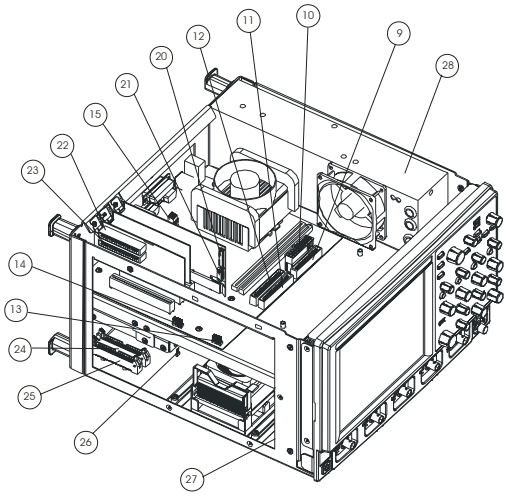


Figure 8-2 Cable Interconnections

	From		
Function	Item	Board	Connector
Front Panel keypad	1	Front Panel Encoder	U5
Front Panel keypad	2	USB Hub	P1
Power	3	USB Hub	P2
Trig/Ready LED Drive	4	USB Hub	J1
Inverter Power	5	Inverter	
Internal Printer	6	USB Hub	J23
USB 1 to 4	7	USB Hub	J3
Video	8	TFT	
Floppy Drive	9	Processor	FDD
Power	10	Processor	PS
Hard Drive	11	Processor	IDE
CD ROM Drive	12	Processor	SEC IDE
Power Switch	13	Processor	FRONT PANEL
USB Dual	14	Processor	FP USB
Power	15	Processor	J5C1
Power	16	Acquisition Board	J15
Power	17	Acquisition Board	J19
Power	18	Acquisition Board	J23
Front panel USB	19	Acquisition Board	J25
Video	20	DVO to LVDS Flat Panel	J1
Inverter Power	21	DVO to LVDS Flat Panel	J2
LVDS Data	22	PCI	J1
LVDS Data	23	PCI	J2
LVDS Data	24	Acquisition Board	J11
LVDS Data	25	Acquisition Board	J10
Trig/Ready LED Drive	26	Acquisition Board	J9000
Power Switch	27	Acquisition Board	J24
Rear Fan	Not shown	Fan	N/A
Hard Drive Power	Not shown	Not shown	
CD ROM Power	Not shown	Not shown	

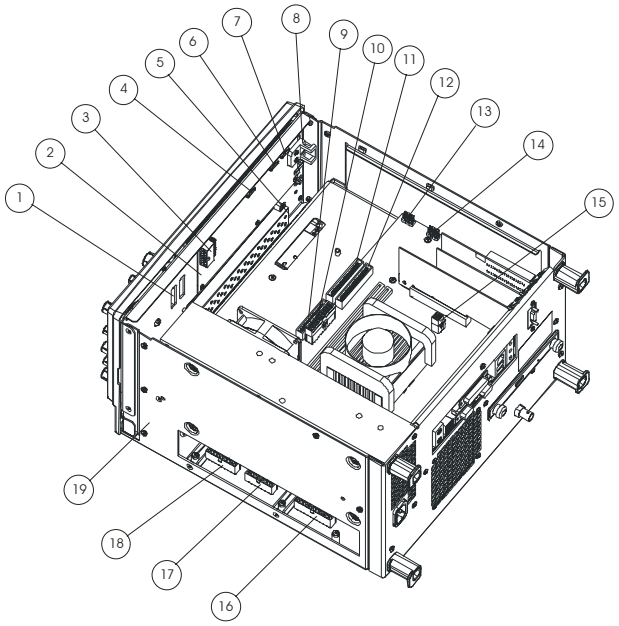


Figure 8-3 Cable Interconnections

To			
Item	Board	Connector	Cable P/N
2	USB Hub	P1	592060001
1	Front Panel Encoder	U5	592060001
28	Power Supply	J3	N/A
26	Acquisition Board	J9000	901530-00
8	DVO to LVDS Flat Panel	J2	901524-00
Not shown	Internal Printer		
14	Processor Board	FP USB	901531-00
20	DVO to LVDS Flat Panel	J1	901527-00
N/A	Not used	N/A	N/A
28	Power Supply	J1	N/A
Not shown	Hard Drive		901526-00
Not shown	CD ROM Drive		901525-00
27	Acquisition Board	J10	901529-00
7 & 19	USB Hub, Acquisition Board	J3, J25	901531-00
28	Power Supply	J2	N/A
28	Power Supply	J5	N/A
28	Power Supply	J4	N/A
28	Power Supply	J6	N/A
14	Processor Board	FP USB	901531-00
8	TFT		901527-00
5	Inverter		901524-00
25	Acquisition Board	J10	901523-00
24	Acquisition Board	J11	901523-00
23	PCI	J2	901523-00
22	PCI	J1	901523-00
4	USB Hub	J1	901530-00
13	Processor Board	FRONT PANEL	901529-00
Not shown	Acquisition Board	J4	N/A
28	Power Supply	J7	N/A
28	Power Supply	J8	N/A

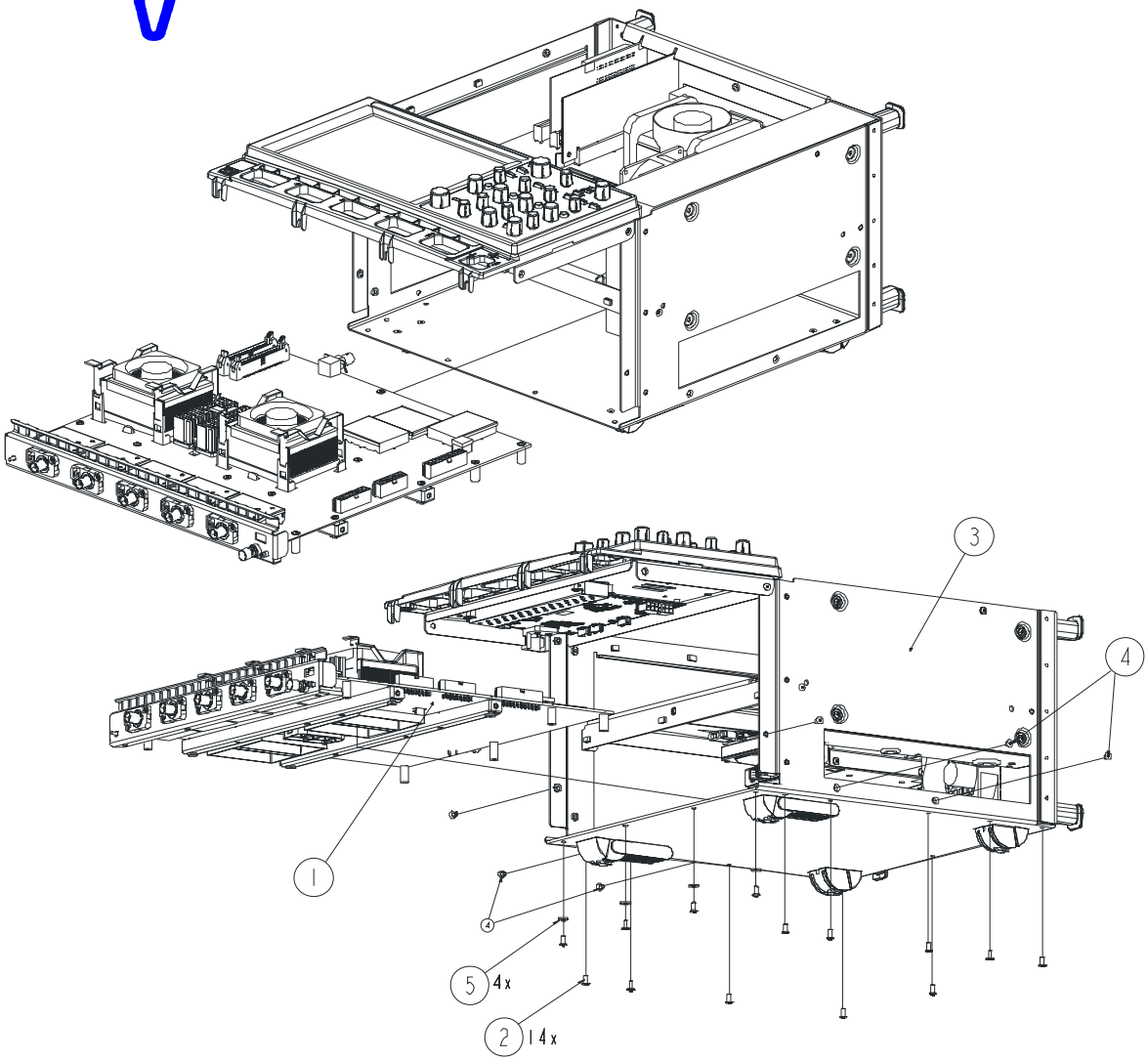


Figure 8-4 Bezel Open & Acquisition Board Installation

Item	LeCroy Part Number	Qty	Description
1	900888-00	1	2 GHz 5GS/s 4 Channel Acq System
1	901765-00	1	1 GHz 5GS/s 4 Channel Acq System
1	901764-00	1	500 MHz 5GS/s 4 Channel Acq System
1	901763-00	1	500 MHz 5GS/s 2 Channel Acq System
1	901806-00	1	350 MHz 2.5GS/s 4 Channel Acq System
1*	902600-00	1	350 MHz 2.5GS/s 4 Channel Acq System
1*	902601-00	1	500 MHz 5GS/s 2 Channel Acq System
1*	902602-00	1	500 MHz 5GS/s 4 Channel Acq System
1*	902603-00	1	1 GHz 5GS/s 4 Channel Acq System
1*	902604-00	1	2 GHz 5GS/s 4 Channel Acq System
2	561632405	14	Screw TX Pan #6-32UNC 5/16" S1
3	901277-00	1	Chassis Bottom
4	562632403	4	Screw TX Flat UCUT #6-32 3/16"
5	575610002	4	Washer Flat Reg OD Size 6

*used in WR6000 “A” series

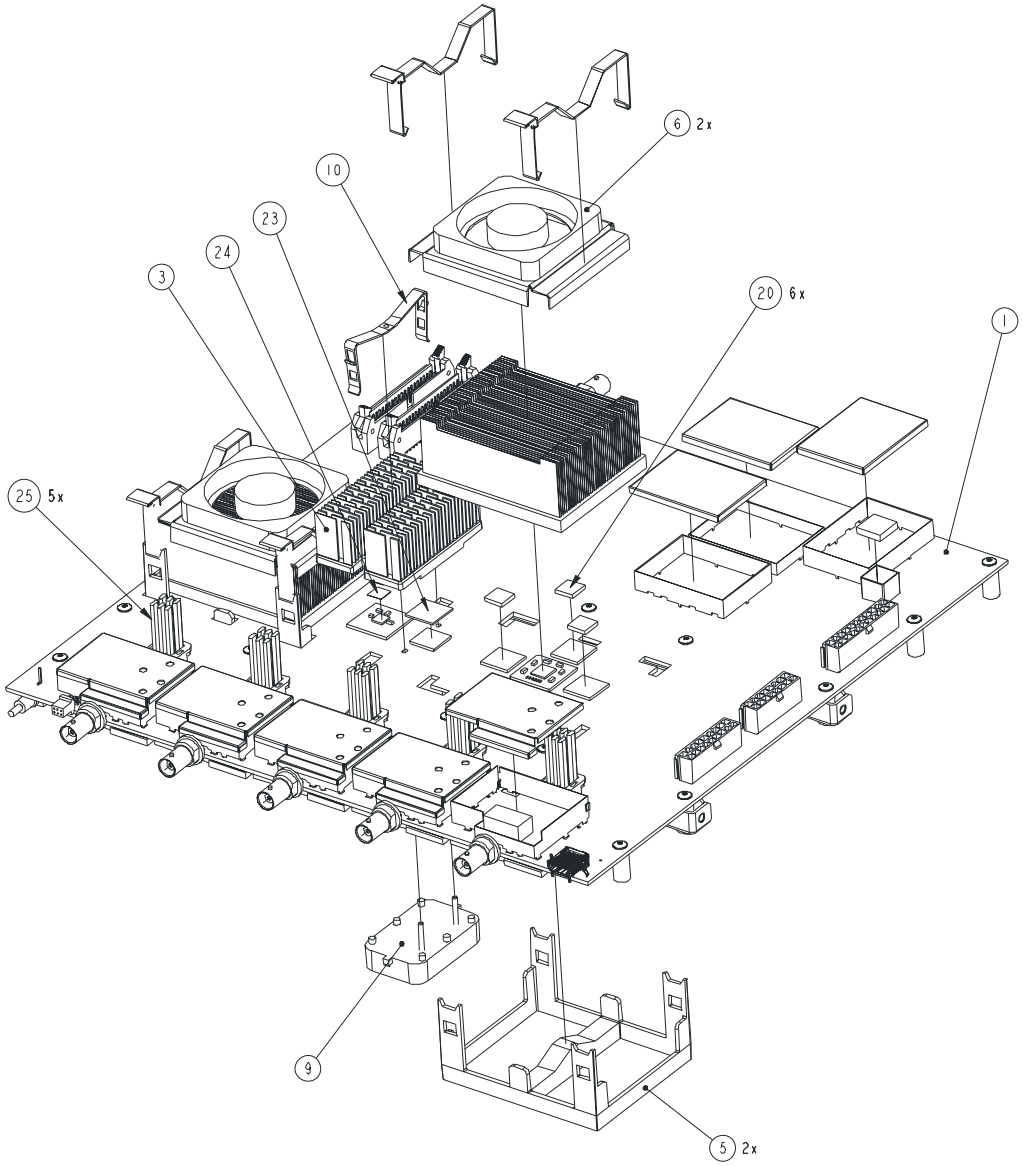


Figure 8-5 Acquisition Board Assembly (Top Side)

Item	LeCroy Part Number	Qty	Description
1		1	Printer Circuit Assembly
3	901336-00	1	Heatsink WAVERUNNER MST/MTB
5	901437-00	1	Heatsink Base - HAD
6	902530-00	1	Integrated Chip Cooler
9	901440-00	1	Heatsink Base mst/mtb
10	901441-00	1	Heatsink clip mst-mtb
20	902528-00	3	Thermal Gap Pad Die-Cut
23	901693-00	1	Gap pad MST die cut
24	901694-00	1	Gap pad HTB die cut
25	901709-00	3	Malico 30mm heat sink assy

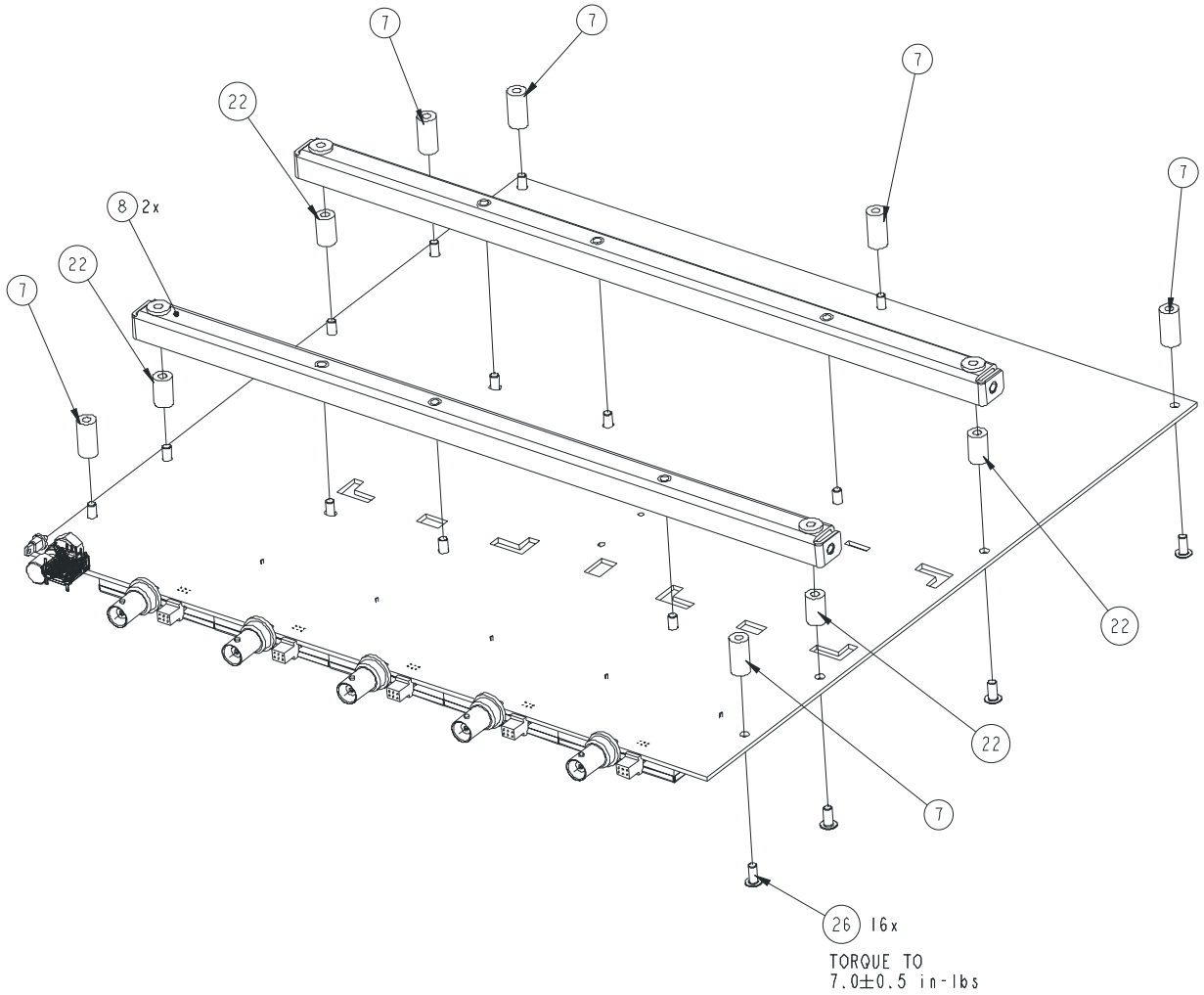


Figure 8-6 Acquisition Board Assembly (Bottom Side)

Item	LeCroy Part Number	Qty	Description
7	522632120	6	Standoff Hex 6-32X5/8 F/F
8	902463-00	2	WAVERUNNER Backbone
22	524632015	4	Standoff Hex 6-32 X 1/2 FF
26	561632405	16	Screw TX Pan #6-32UNC 5/16" S1

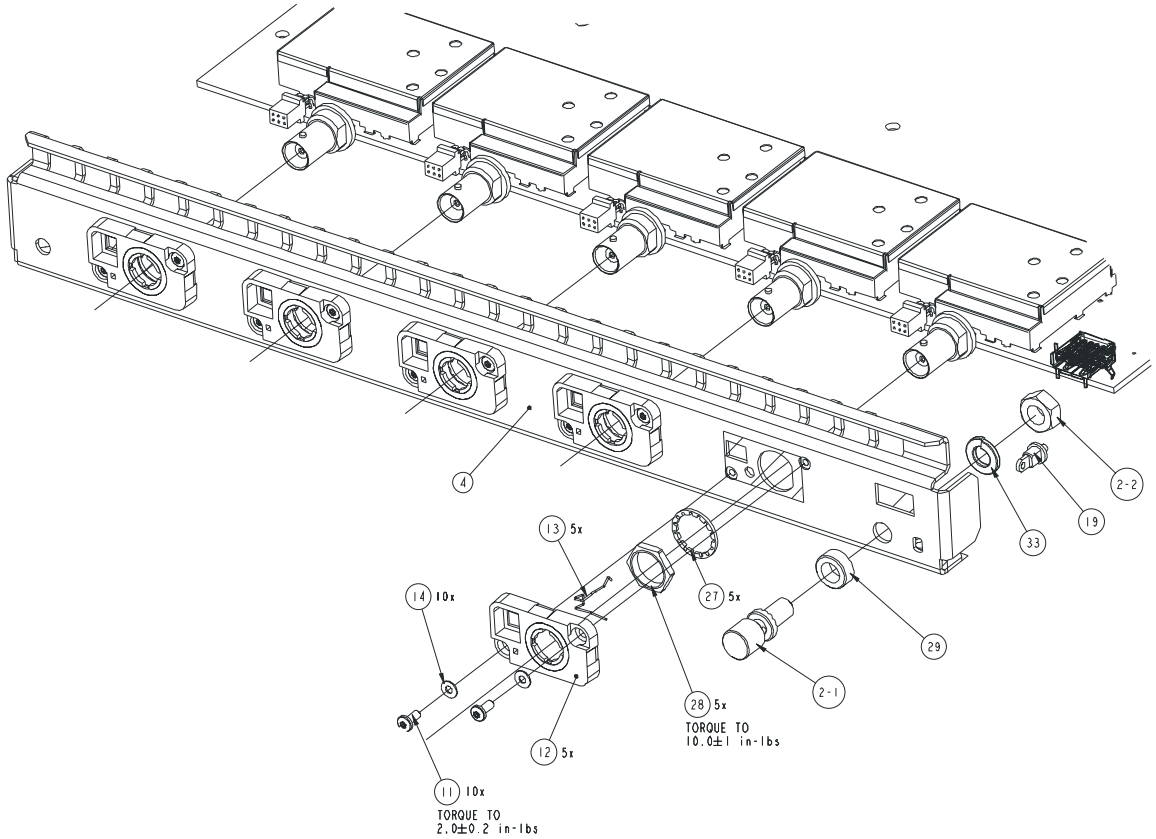


Figure 8-7 Acquisition Board Front Panel Assembly

Item	LeCroy Part Number	Qty	Description
2	469040002	1	Metal Banana Jack/Binding Post
4	901436-00	1	WAVERUNNER Front Card Panel Assy Upda
11	550011106	6	Screw Pan HD M2X6 Blk W/Nylock
12	7093XXP41	3	Probe Holder
13	7093XXP91	3	Probe Ring Contact
14	551620100	6	#2 Flat Washer S.steel/Black O
19	335970001	1	Probe Hook
27	709614301	3	BNC Lock Washer
28	709614302	3	BNC Nut
29	901807-00	1	ALUM. SPACER
33	555465002	1	Washer Lock Split 1/4

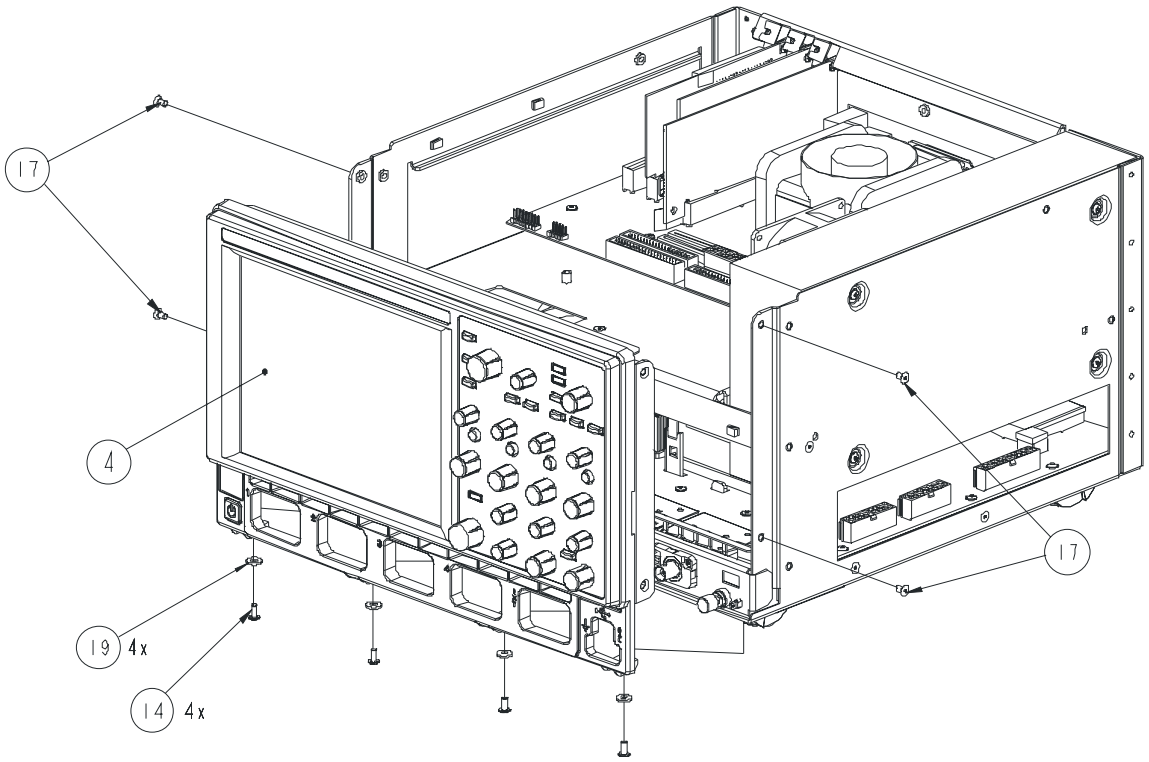


Figure 8-8 Front Frame Installation

Item	LeCroy Part Number	Qty	Description
4	See Fig 8-8 – 8-12	1	2 Channel Front Frame
4	See Fig 8-8 – 8-12	1	4 Channel Front Frame
14	561632405	4	Screw TX Pan #6-32UNC 5/16" S1
17	561632403	4	Screw TX Flat UCUT #6-32 3/16"
19	575610002	4	Washer Flat Reg OD Size 6

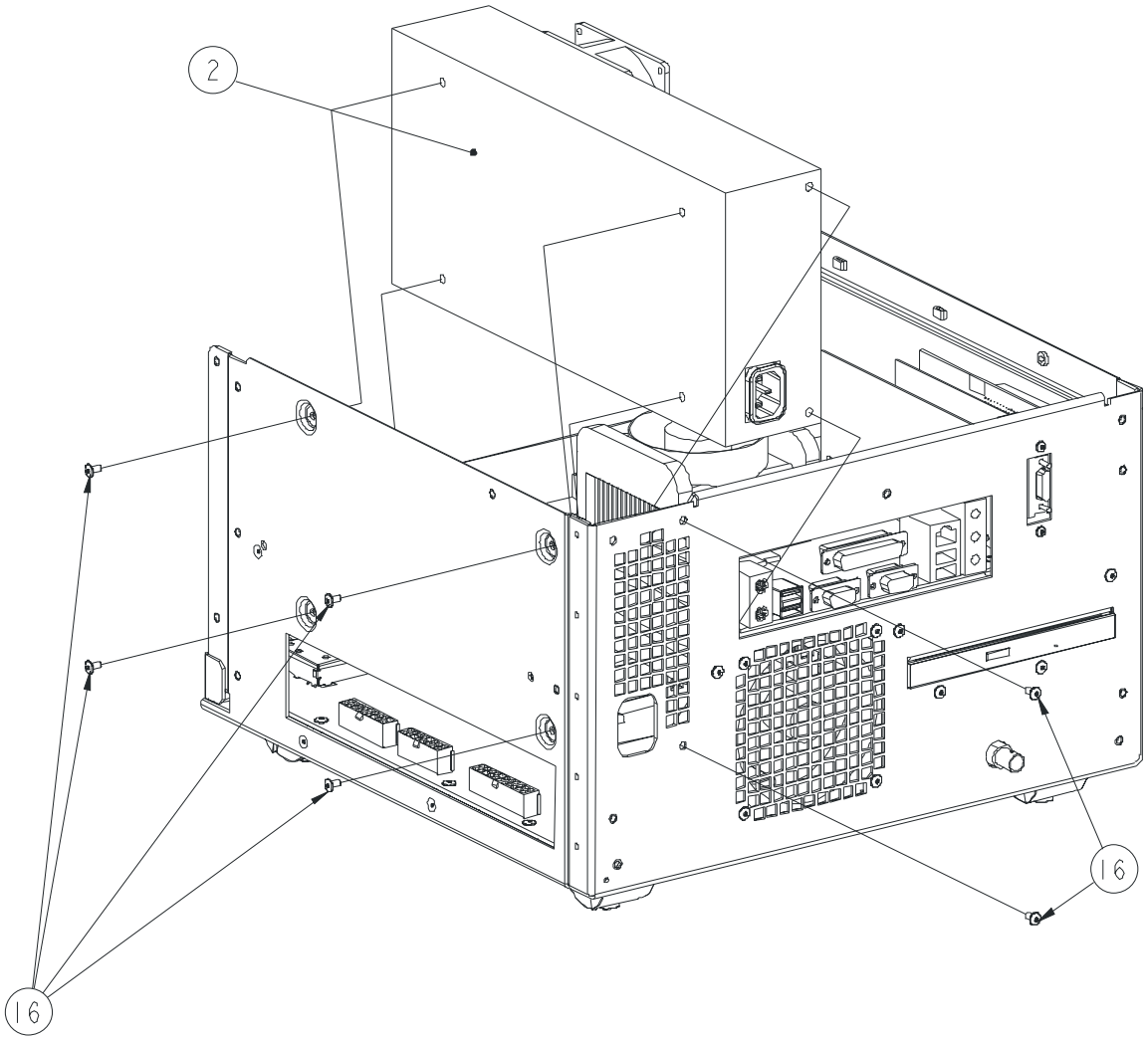


Figure 8-9 Power Supply Installation

Item	LeCroy Part Number	Qty	Description
2	900893-00	1	Waverunner Power Supply Module
16	561632604	6	Screw TX Pan #6-32 UNC 1/4" S3

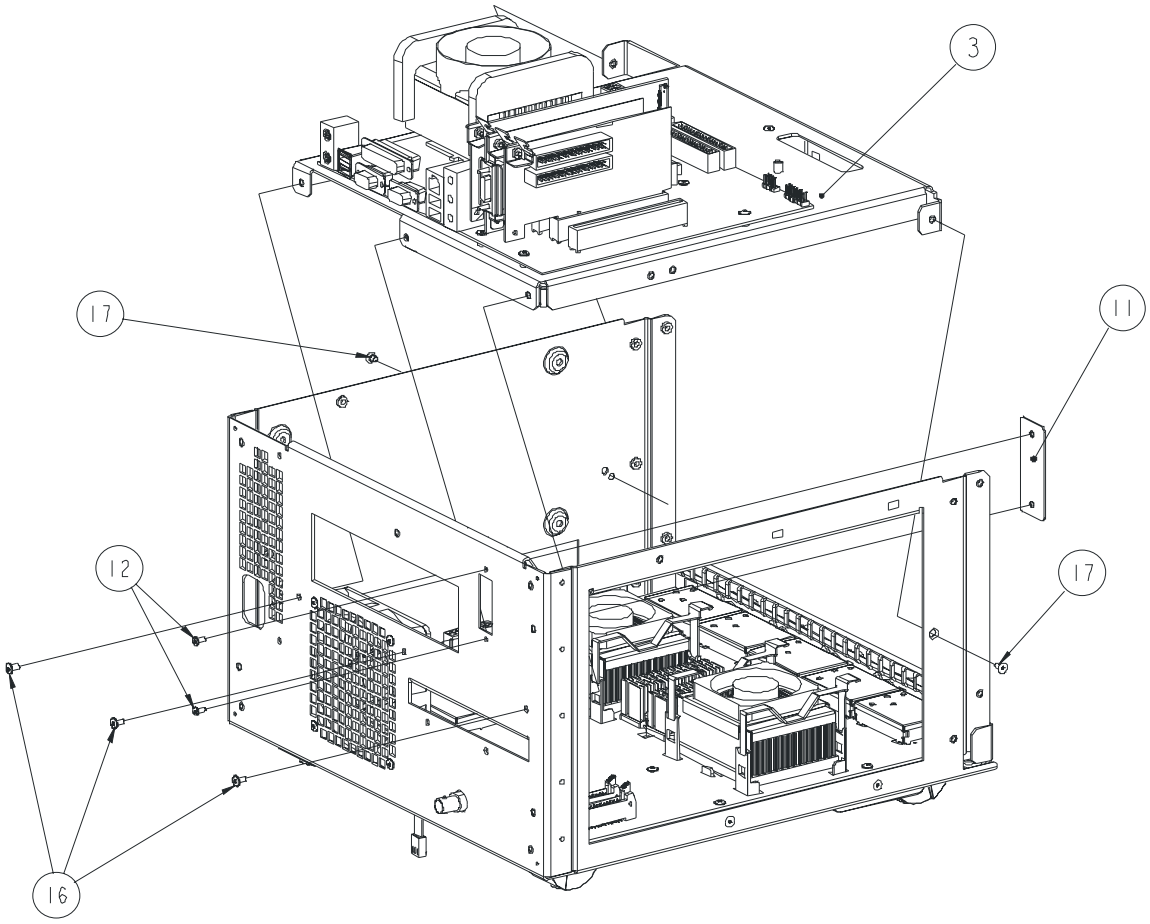


Figure 8-10 Processor Assembly Installation

Item	LeCroy Part Number	Qty	Description
3	See Fig 8-8	1	Complete Computer System Tray Assy
11	901880-00	1	GPIB Blanking Plate
12	561440040	2	Screw TX PAN 4# -40UNF 1/4IN
16	561632604	3	Screw TX Pan #6-32 UNC 1/4" S3
17	562632403	2	Screw TX Flat UCUT #6-32 3/16"

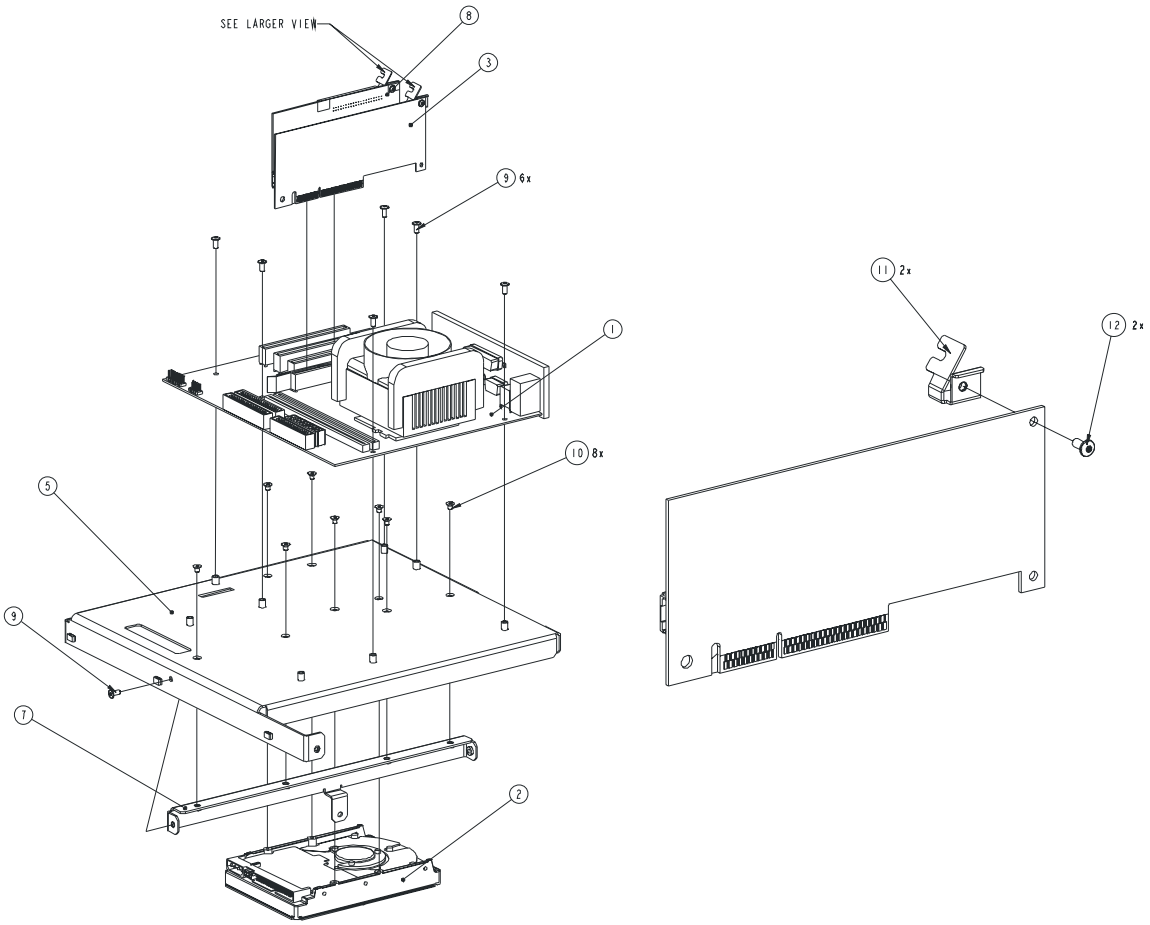


Figure 8-11 Processor Tray Assembly

Item	LeCroy Part Number	Qty	Description
1	334600003	1	Motherboard P4 uATX (shipped in units S/N LCRY0603Pxxxxx & LCRY0604Pxxxxx
	334600002	1	Motherboard P4 uATX (shipped in units S/N LCRY0601Pxxxxx & LCRY0602Pxxxxx
2	330000005	1	40Gb 7200 RPM Hard Drive
3	901949-00	1	AGP/DVO Interface
3*	902572-00	1	AGP/DVO Interface
5	901278-00	1	Motherboard Support Tray
7	901647-00	1	Stiffener Rib
8	900890-00	1	PCI Interface
9	561632405	7	Screw TX Pan #6-32UNC 5/16" S1
10	562632403	8	Screw TX Flat UCUT #6-32 3/16"
	227500017	1	Celeron 1.7GHz for MotherBoard 334600002
	227500020	1	Celeron 2.0GHz for MotherBoard 334600003
	902530-00	1	Integrated Cooler
	334740001	1	256MB
	334740002	1	512MB

*used in WaveRunner 6000 A series

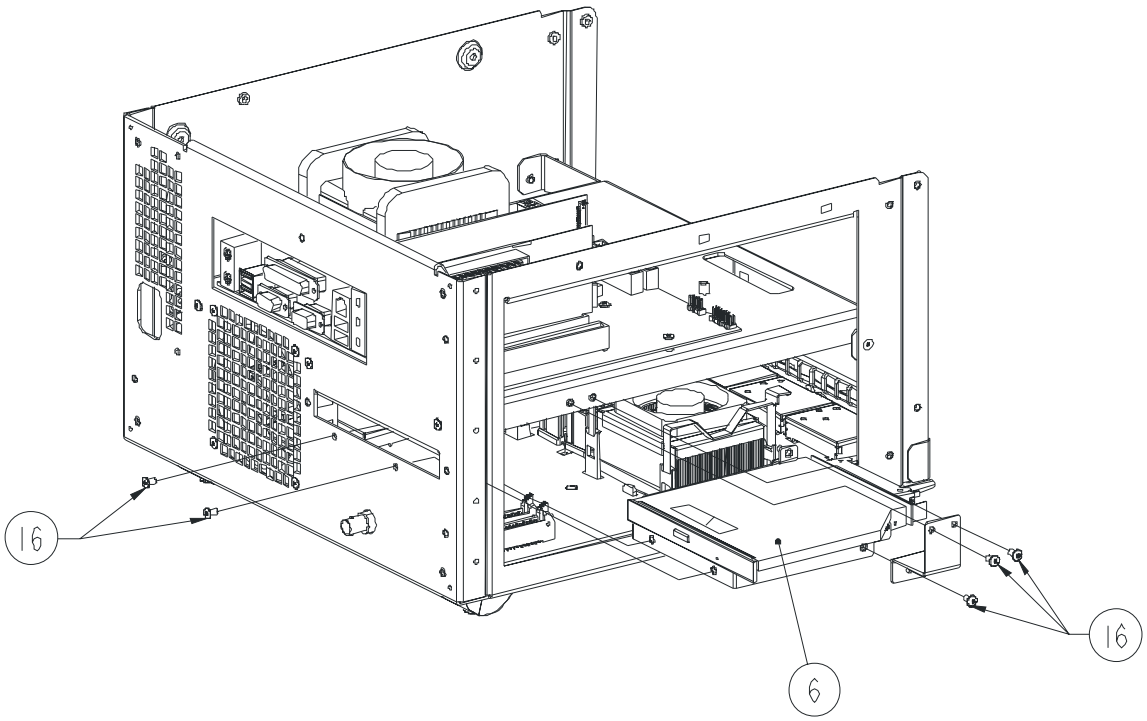


Figure 8-12 CD ROM Drive Assembly Installation

Item	LeCroy Part Number	Qty	Description
6	See Fig 8-10	1	CD Reader Assy
6	See Fig 8-10	1	CD R/W Option
16	561632604	5	Screw TX Pan #6-32 UNC 1/4" S3

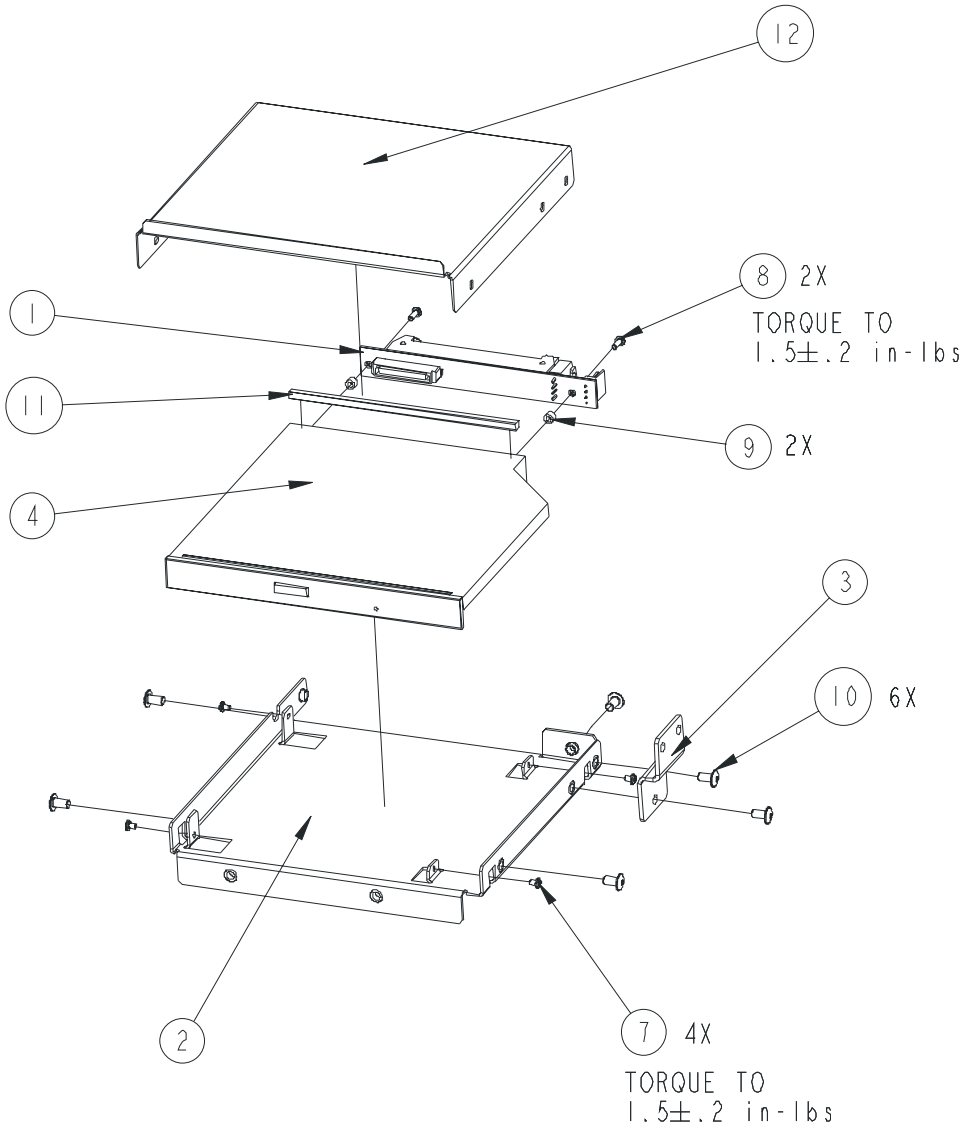


Figure 8-13 CD ROM Assembly

Item	LeCroy Part Number	Qty	Description
1	901504-00	1	CDROM Adapter PCA
2	901856-00	1	CD-ROM BRACKET
3	901858-00	1	CD-ROM Mounting Bracket
4	330000033	1	CD-R Drive
4	335830015	1	CD-R/W Drive 24x Speed Half-Ht
7	563420003	4	SCREW TX PAN M2-0.4 X 3MM S1
8	563460006	2	SCREW TX PAN M2X0.4-6MM S1
9	900517-00	2	Retaining Spacer M2 2.85mm lon
10	561632604	6	Screw TX Pan #6-32 UNC 1/4" S3
11	350480007	1	Gasket, EMI Fabric 3X3MMX3.9IN
12	901857-00	1	CD-ROM EMI COVER

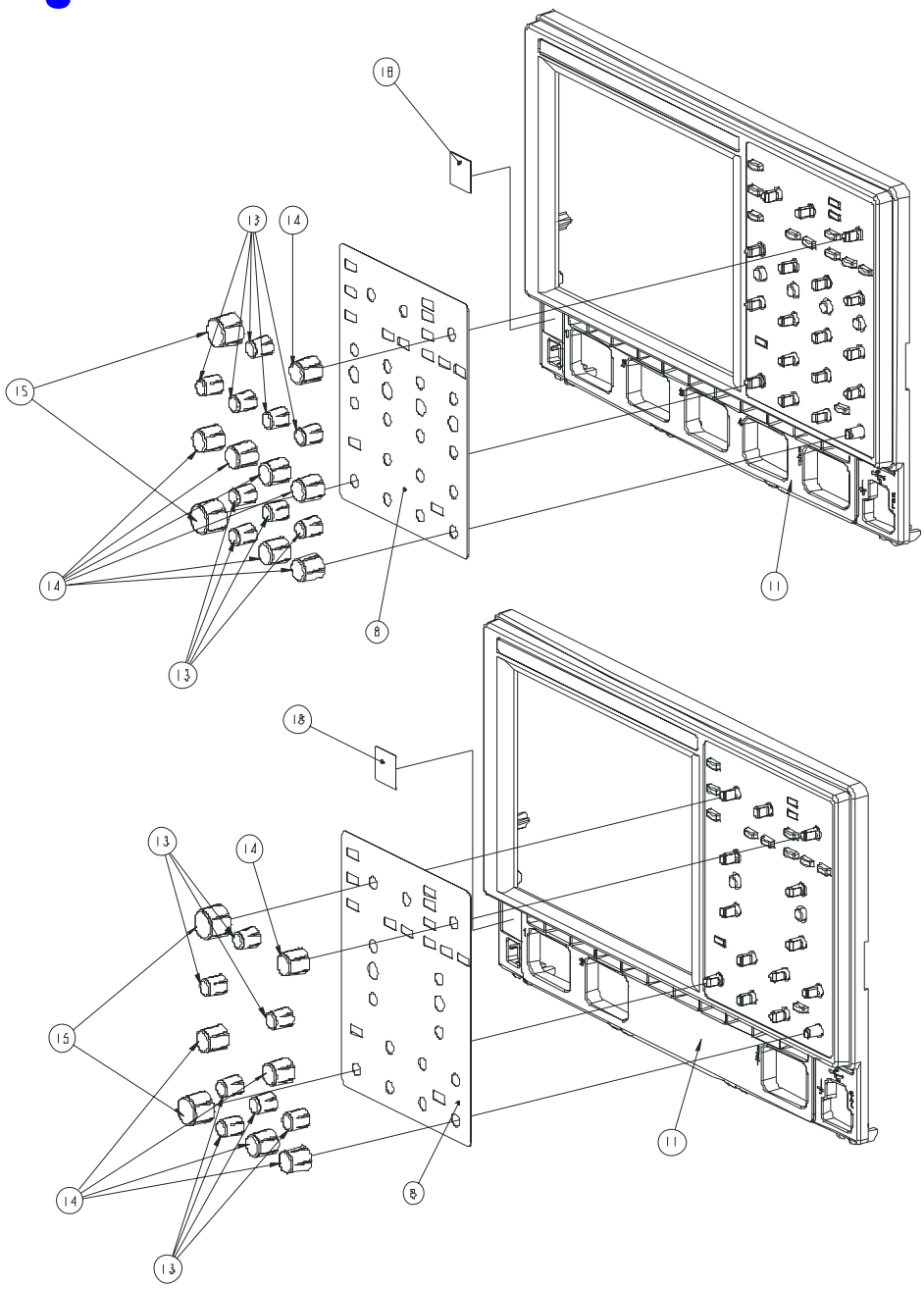


Figure 8-14 Two and Four Channel Front Panel Assembly

Item	LeCroy Part Number	Qty	Description
8	901489-00	1	WaveRunner 4 channel Front Panel Overlay
9	901756-00	1	WaveRunner 2 channel Bezel
10	901757-00	1	WaveRunner 2 channel Front Panel Overlay
11	901444-00	1	WaveRunner 4 channel Bezel
13	901582-00	7	Knob small
14	901583-00	5	Knob medium
15	901584-00	2	Knob large
18	901700-00	1	WaveRunner Input Overlay

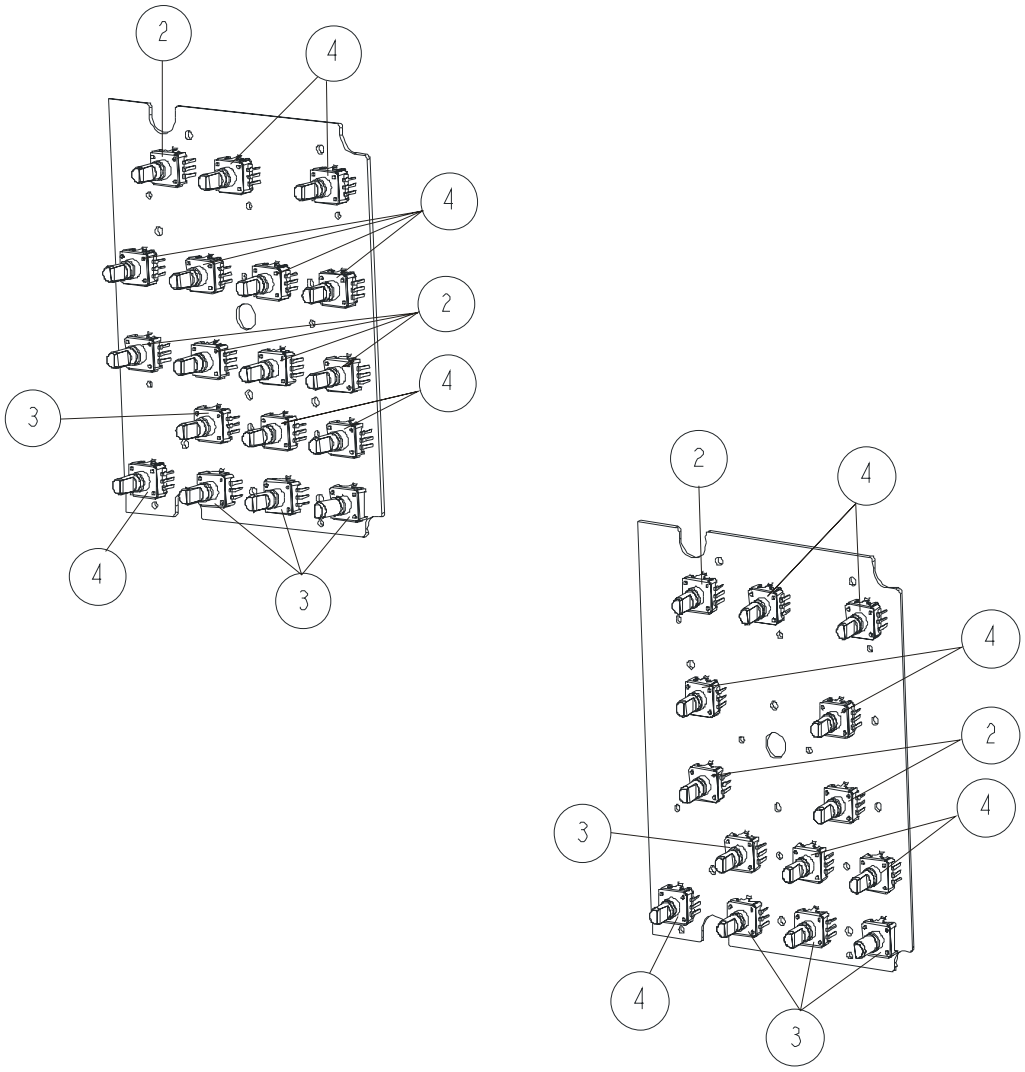


Figure 8-15 Two and Four Channel Front Panel Encoders

Item	LeCroy Part Number	Qty	Description
2	425100007	8	Encoder 20mm Detent
3	425100009	8	Encoder 20mm Detent Jog
4	425100010	16	Encoder 20mm Detent Jog Push Button

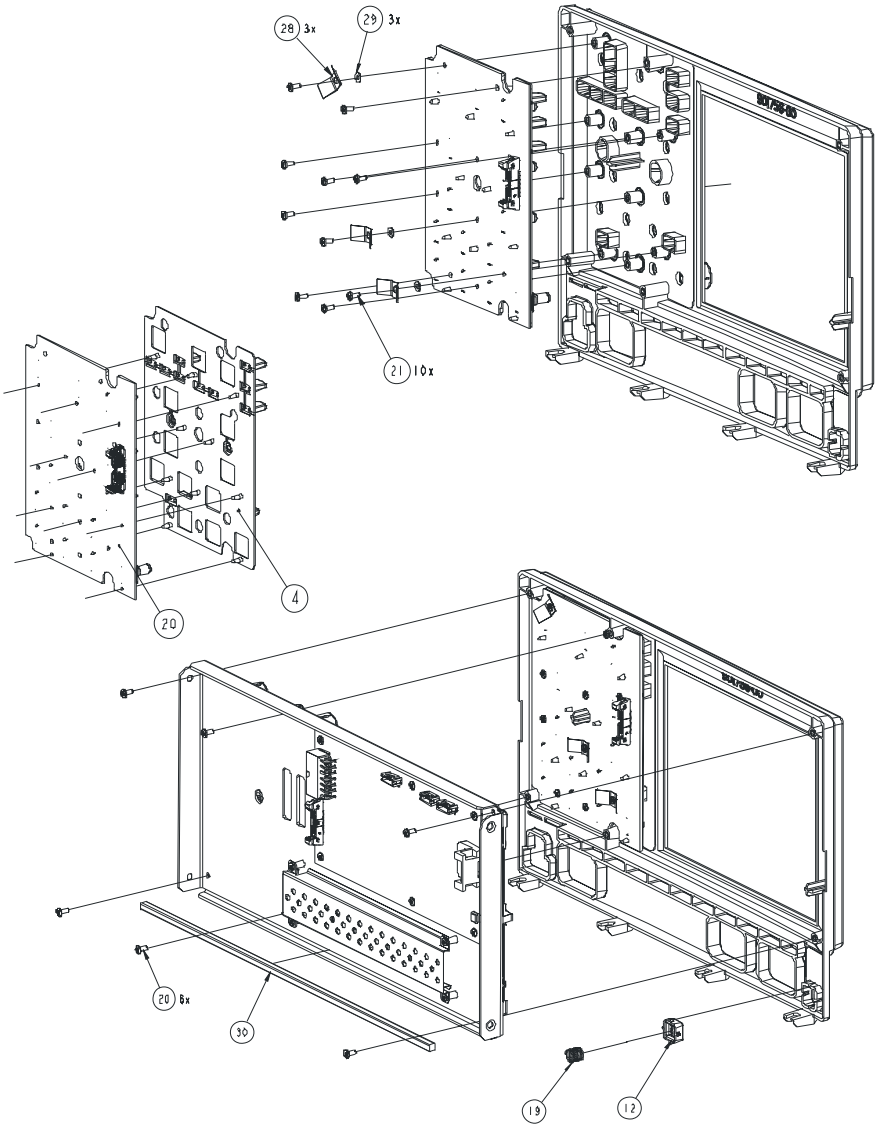


Figure 8-16 Two Channel Keypad Installation (Non “A”) version

Item	LeCroy Part Number	Qty	Description
3	901740-00	1	Front Panel Assembly
4	See Figure 8-16	1	Front chassis panel assembly
5	901722-00	1	Elastomeric Keymat for 2 Channel Front Panel
11	901756-00	1	2 Channel Bezel
12	901445-00	1	Power button
19	544220007	1	Spring Compression 0.34L
20	561440404	8	Screw TX Pan #4-40 UNC 1/4 in
21	563425006	9	Screw TX Pan M2.5X0.4-6MM S1
28	530009005	3	Shield (RFI/EMI) Finger Stock
29	575100004	3	Washer Flat M2.5 6mmOD .5mmS
30	350187001	1	Gasket Ultra Soft Knit 13 in

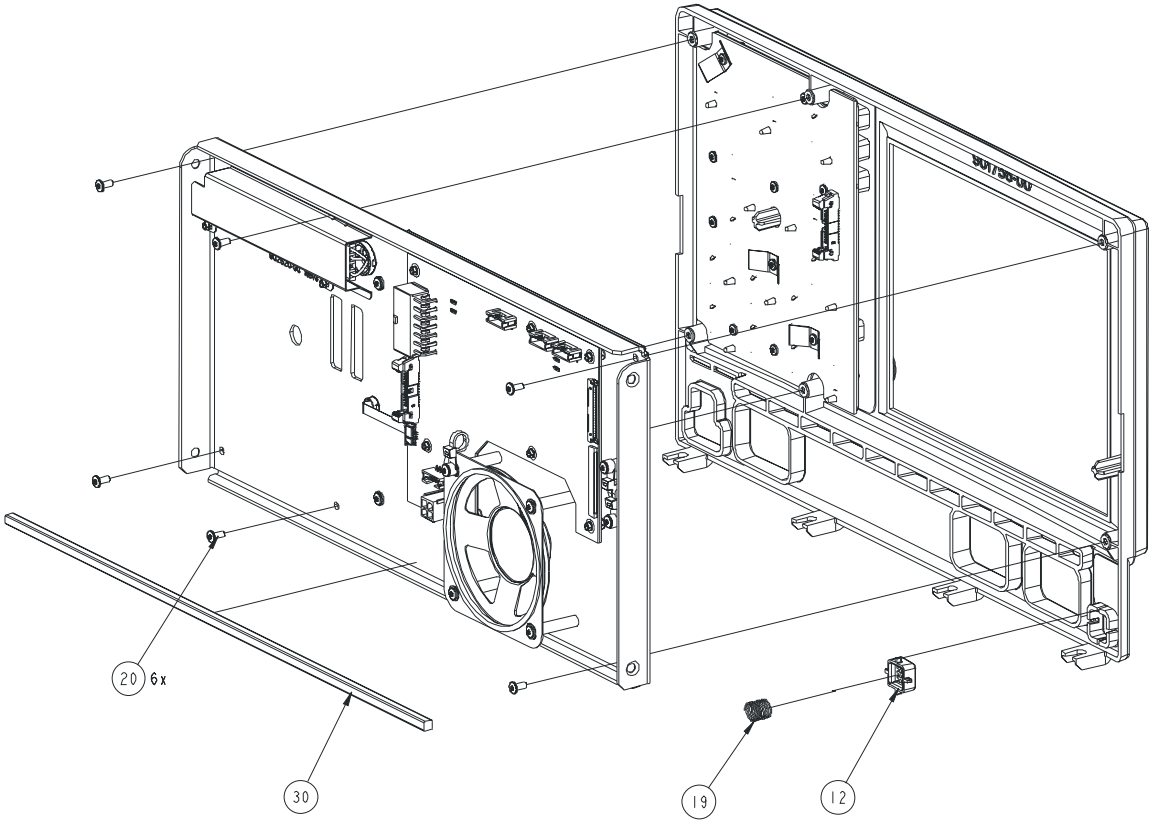


Figure 8-17 Two Channel Keypad Installation (“A”) version

Item	LeCroy Part Number	Qty	Description
12	901445-00	1	WaveRunner 6000 power button
19	544220007	1	Spring Compression 0.34L
20	561440404	6	Screw TX Pan #4-40 UNC 1/4 in
30	350187001	1	Gasket Ultra Soft Knit 13 in

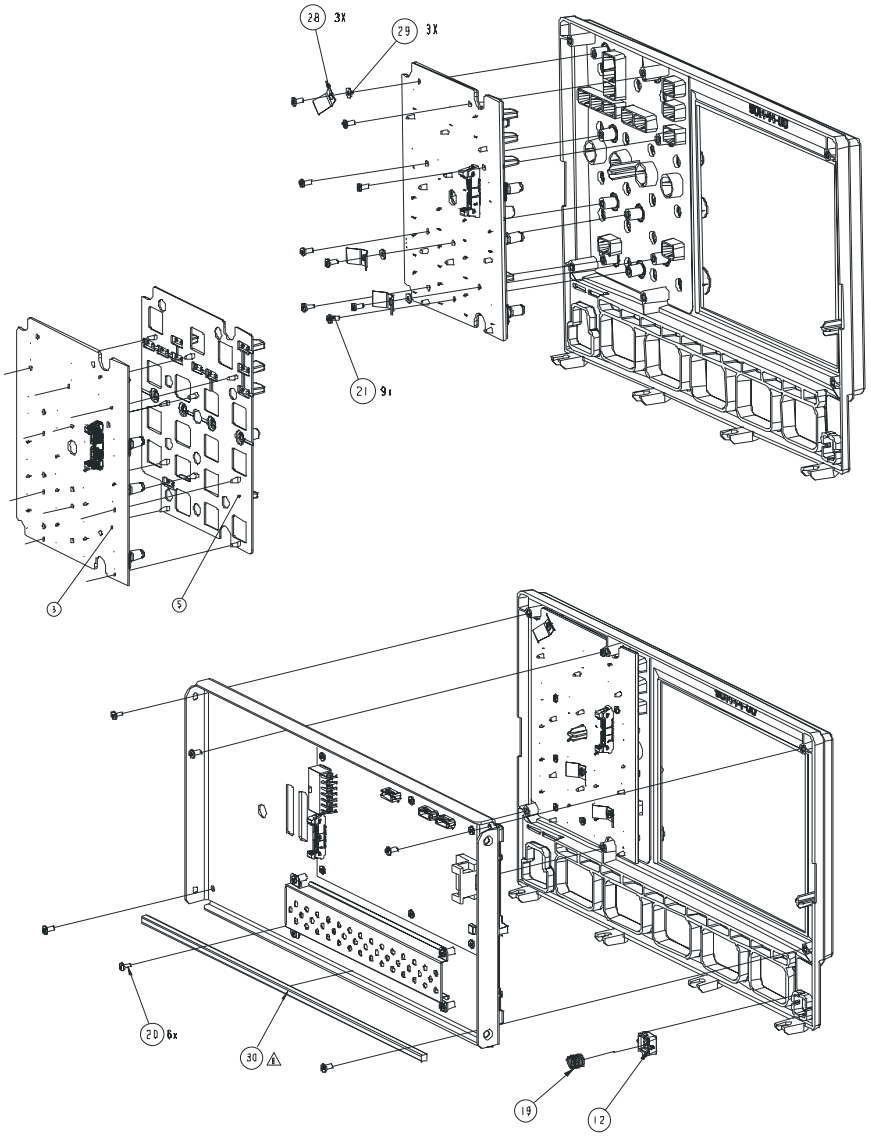


Figure 8-18 Four Channel Keypad Installation (Non “A” Version)

Item	LeCroy Part Number	Qty	Description
3	900896-00	1	Front Panel Assembly
4	See Figure 8-16	1	Front chassis panel assembly
5	901433-00	1	Elastomeric Keymat for Front Panel
11	901444-00	1	4 Channel Bezel
12	901445-00	1	Power button
19	544220007	1	Spring Compression 0.34L
20	561440404	8	Screw TX Pan #4-40 UNC 1/4 in
21	563425006	9	Screw TX Pan M2.5X0.4-6MM S1
28	530009005	3	Shield (RFI/EMI) Finger Stock
29	575100004	3	Washer Flat M2.5 6mmOD .5mmS
30	350187001	1	Gasket Ultra Soft Knit 13 in

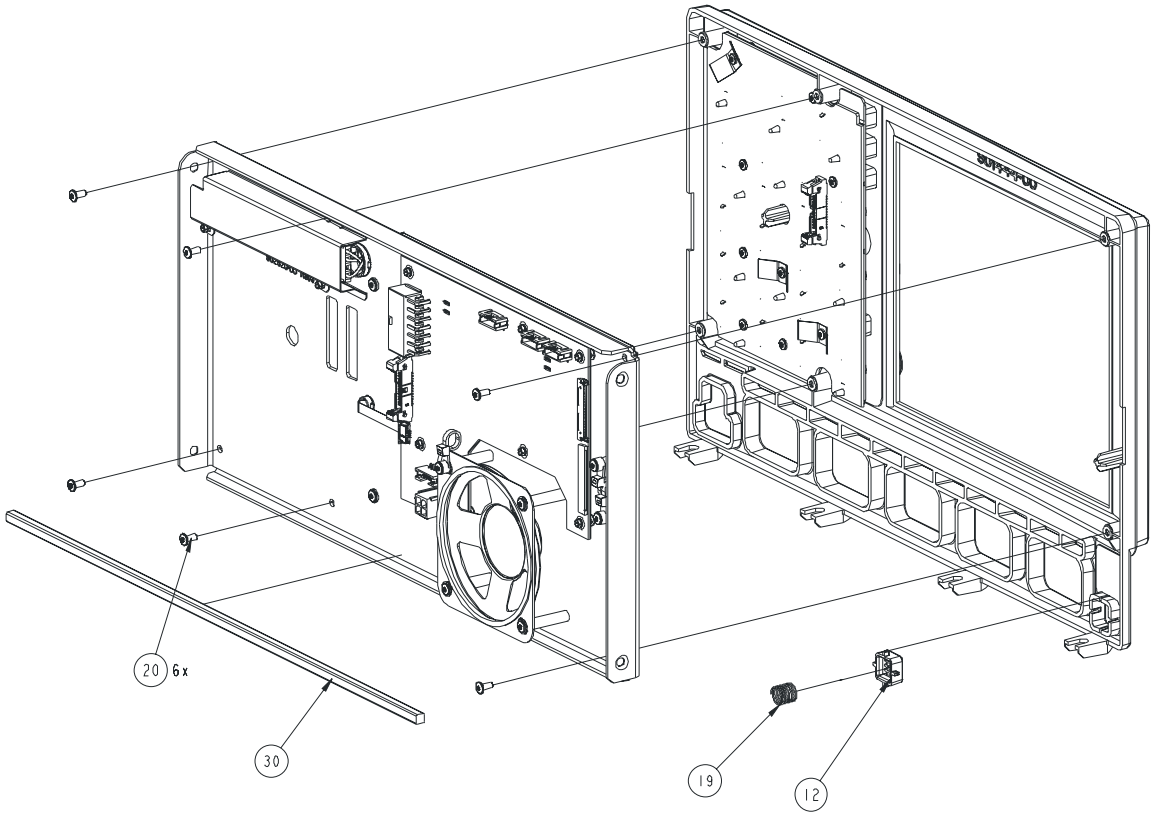


Figure 8-19 Four Channel Keypad Installation (“A” Version)

Item	LeCroy Part Number	Qty	Description
12	901445-00	1	WaveRunner 6000 power button
19	544220007	1	Spring Compression 0.34L
20	561440404	6	Screw TX Pan #4-40 UNC 1/4 in
30	350187001	1	Gasket Ultra Soft Knit 13 in

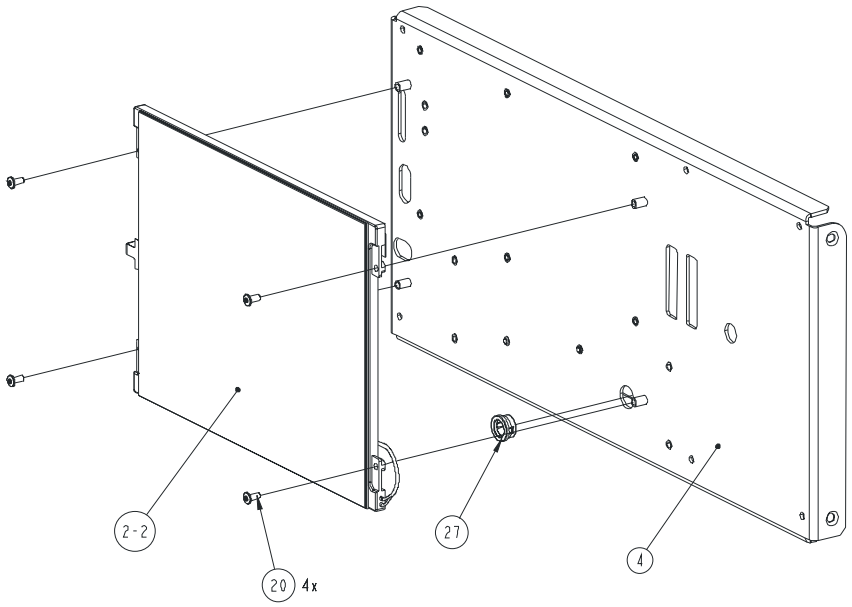


Figure 8-20 TFT Installation (Non “A” Version)

Item	LeCroy Part Number	Qty	Description
2	258000008	1	TFT & Touchscreen Assembly
4	901279-00	1	Front Chassis Panel Assembly
20	561440404	4	Screw TX PAN 4# -40UNF 1/4IN
27	519260001	1	Shorty Bushing ID .312 OD 7/16

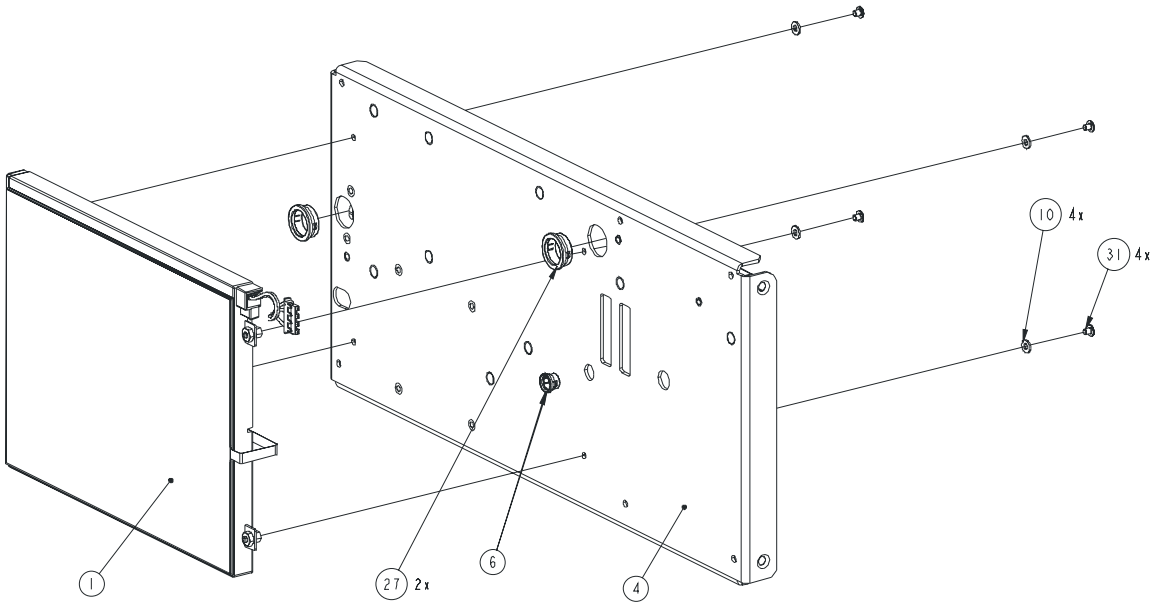


Figure 8-21 TFT Installation (“A” Version)

Item	LeCroy Part Number	Qty	Description
2	902448-00	1	TFT & Touchscreen Assembly (“A” Version)
4	902520-00	1	Front Chassis Panel Assembly
6	519260004	1	Shorty Bushing ID .250
20	561440404	4	Screw TX PAN 4# -40UNF 1/4IN
27	519260003	2	Shorty Bushing ID .500

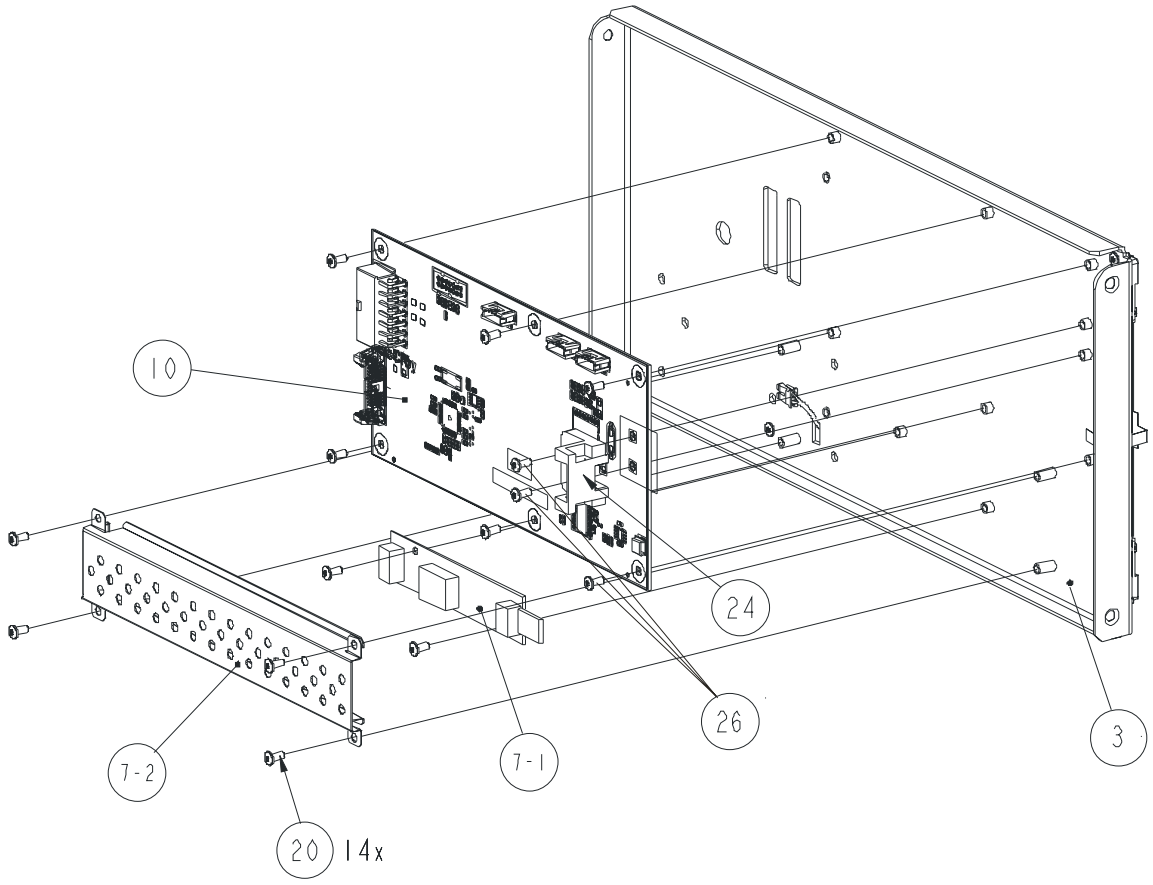


Figure 8-22 USB Hub and TFT Inverter Installation (Non “A” Version)

Item	LeCroy Part Number	Qty	Description
3	900896-00	1	Front Chassis Panel Assembly
7-1	258000007	1	Backlight Inverter
7-2	901459-00	1	Shield – Backlight Inverter
10	901851-00	1	USB Hub Board
16	901524-00	1	Cable Assy BL Power
17	901570-00	1	Cable Assy LCD Display
20	561440404	11	SCREW TX PAN 4# -40UNF 1/4IN
22	594120004	1	Cable Tie With Screw Base
24	594120010	1	Cable Tie R/A Mount 1/8" Dia
26	561440406	3	Screw TX Pan #4-40 UNF 3/8" S1

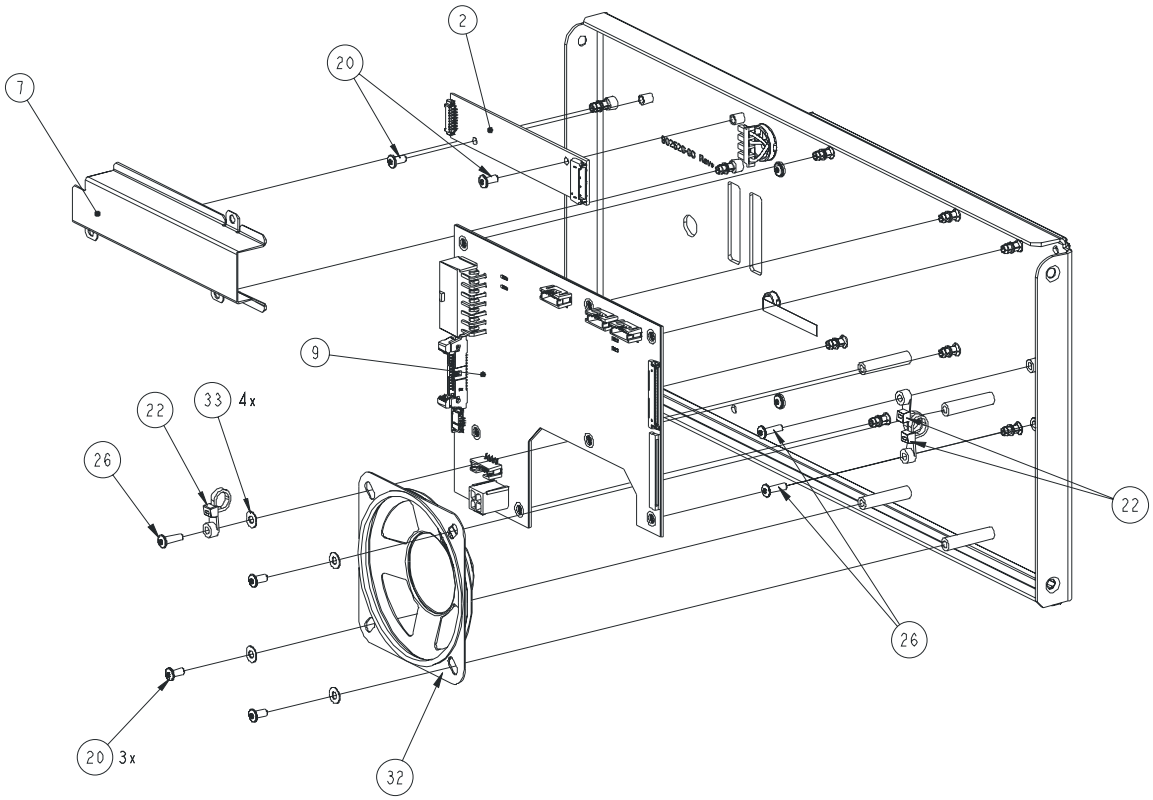


Figure 8-23 USB Hub and TFT Inverter Installation (“A” Version)

Item	LeCroy Part Number	Qty	Description
2	258000010	1	LCD Backlight DC - AC Inverter
7	902206-00	1	Shield Backlight Inverter
9	902579-00	1	S65 LVDS TTL Hub with Audio
20	561440404	5	Screw TX Pan #4-40 UNC 1/4 in
22	594120004	3	Cable Tie With Screw Base
26	561440406	3	Screw TX Pan #4-40 UNF 3/8" S1
32	902485-00	1	Speaker Assembly

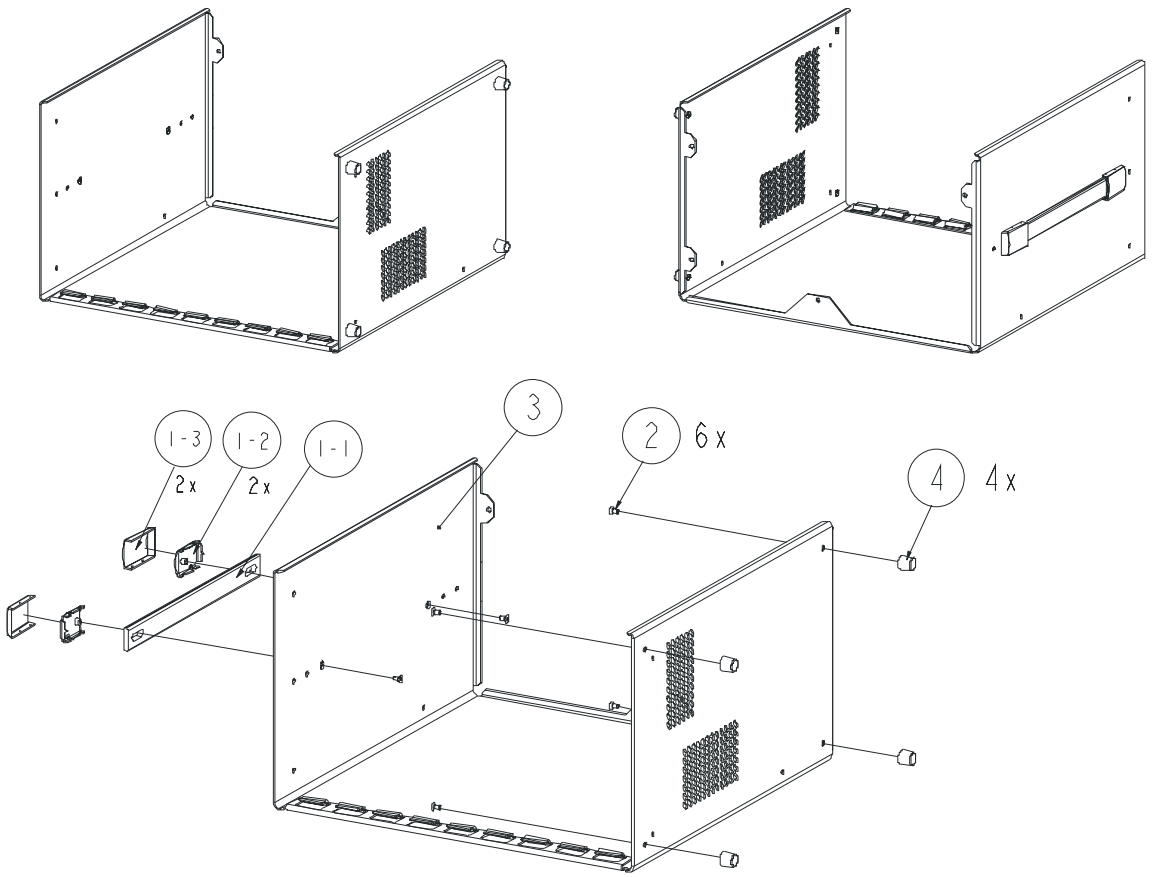


Figure 8-24 Top Cover Assembly

Item	LeCroy Part Number	Qty	Description
1	530301022	1	Handle Assembly 9" 184F
2	562632404	6	Screw TX Flat #6-32UNC 1/4" S1
3	901280-00	1	WaveRunner Chassis Top
4	901487-00	4	WaveRunner Side Foot

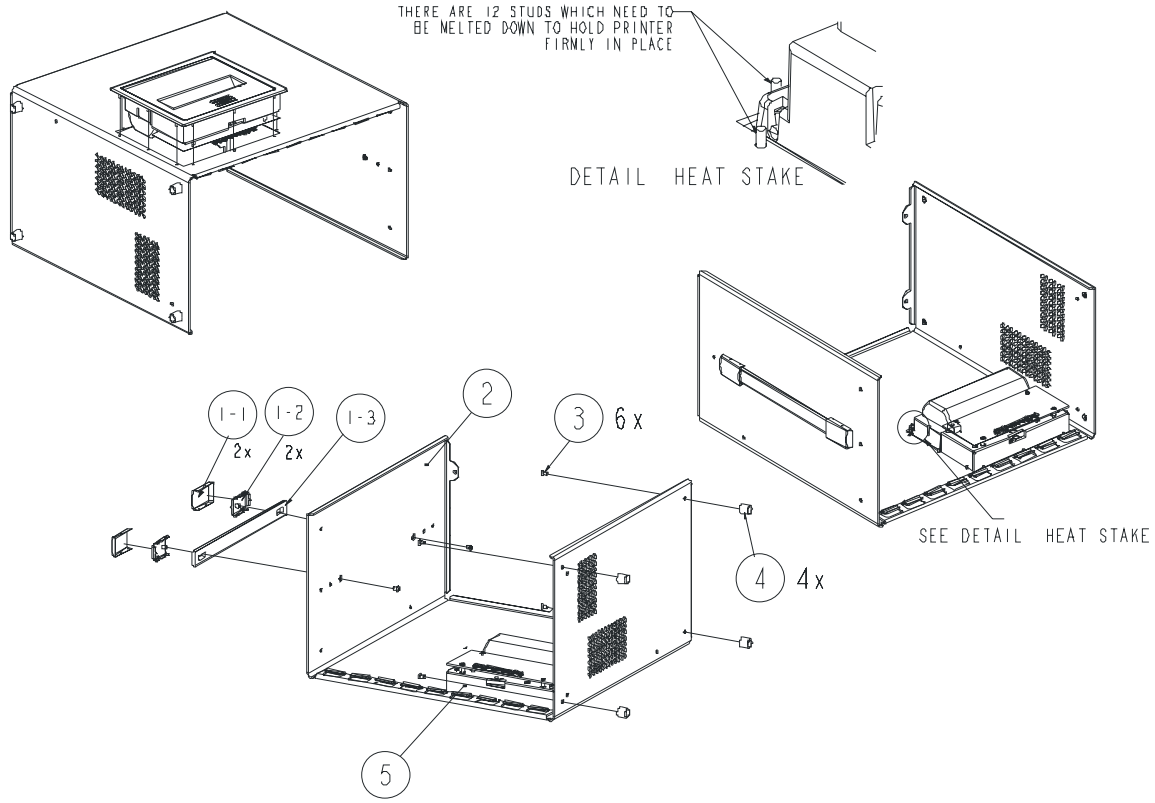


Figure 8-25 Graphics Printer Cover Assembly

Item	LeCroy Part Number	Qty	Description
1	530301022	1	Handle Assembly 9" 184F
2	901695-00	1	WaveRunner Top Cover for Printer
3	562632404	6	Screw TX Flat #6-32UNC 1/4" S1
4	901487-00	4	WaveRunner Side Foot
5	901642-00	1	WaveRunner Printer Assembly

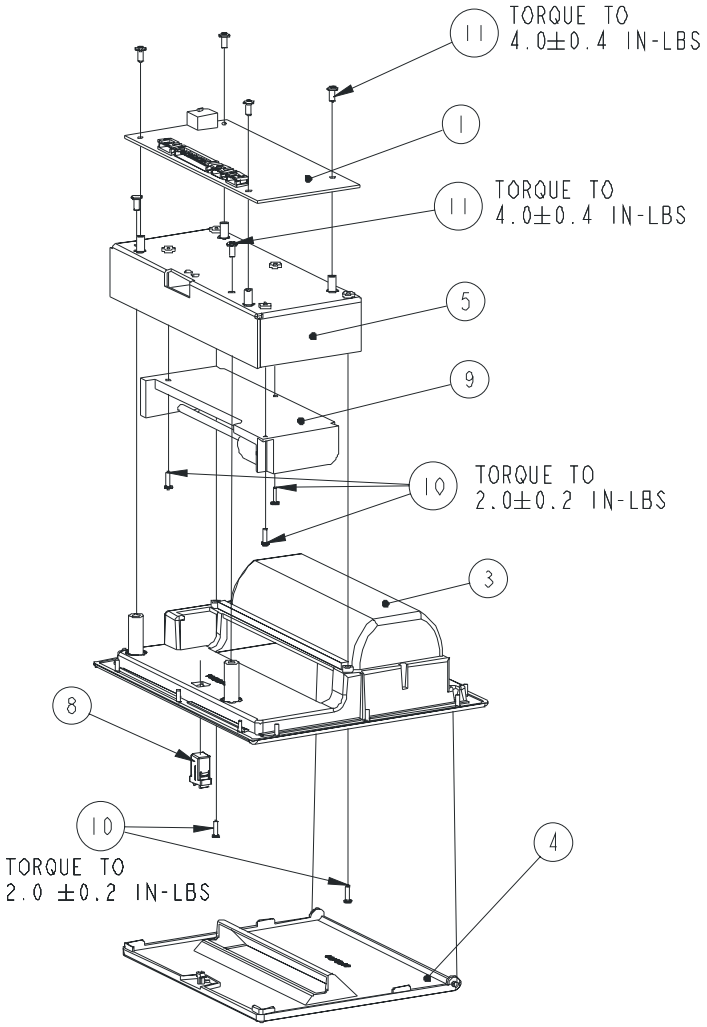


Figure 8-26 Graphics Printer Assembly

Item	LeCroy Part Number	Qty	Description
1	902259-00	1	WaveRunner6K Printer Controller PCA
2	901528-00	1	Cable Assy Printer
3	901702-00	1	WaveRunner6K PRINTER HOUSING
4	901703-00	1	WaveRunner6K PRINTER COVER
5	901704-00	1	WaveRunner6K PRINTER SUPPORT
6	350480006	1	Gasket, EMI Fab 4x4mmx5.12inch
7	350480005	8	Gasket, EMI Fab 1x3mmx2.36inch
8	530408001	1	Latch TL-304-1
9	325030001	1	Thermal Printer Mech 24V Drive
10	563620008	5	Screw TX Pan M2x0.4-8mm S3
11	561440404	6	Screw TX Pan #4-40 UNC 1/4 in
12	334000402	1	Thermal Paper For Seiko Printe
13	589200001	1	Thermal Head Cable, Printer
14	594120006	2	Tiewrap

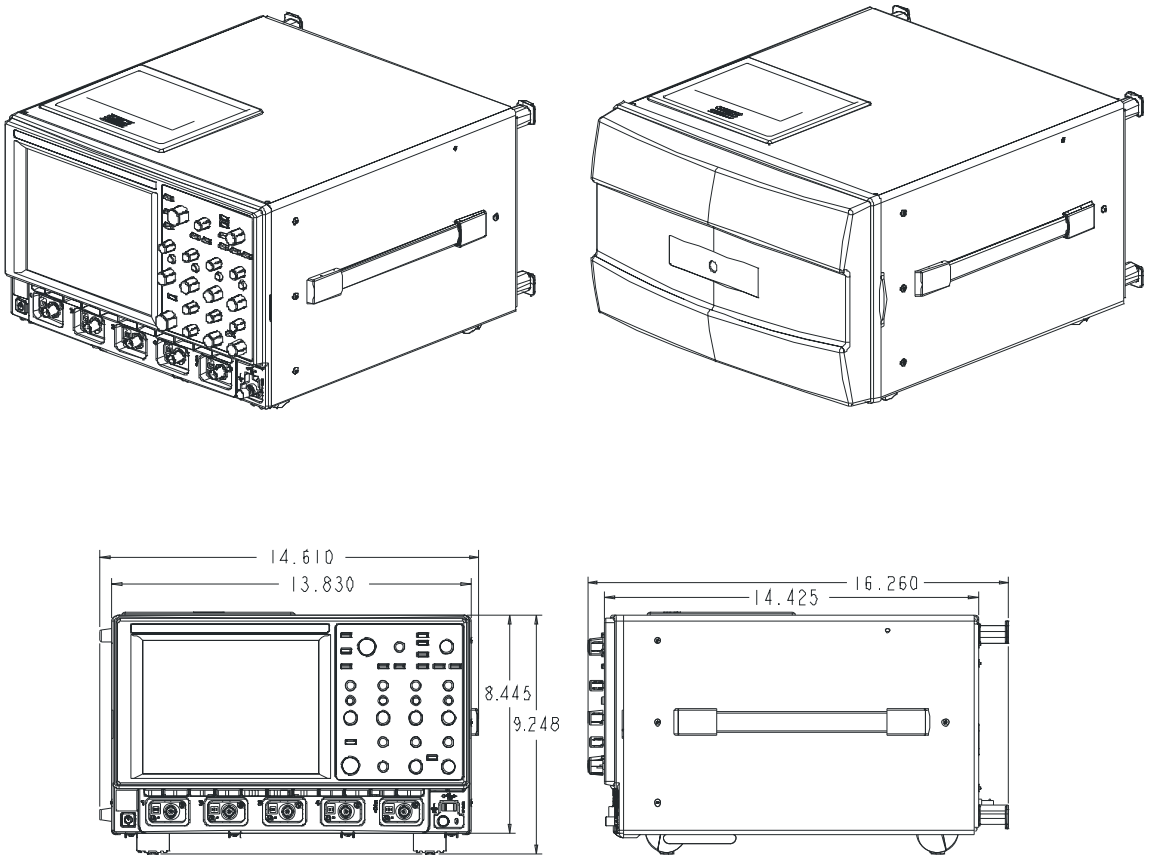


Figure 8-27 Dimensions

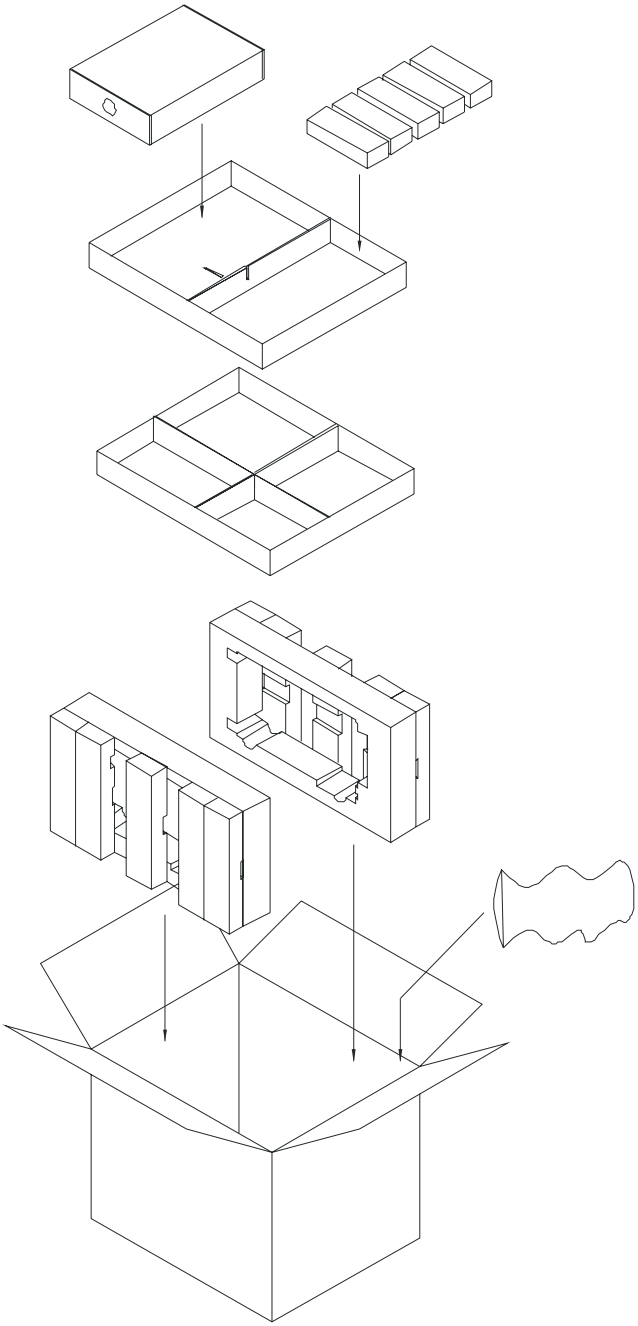
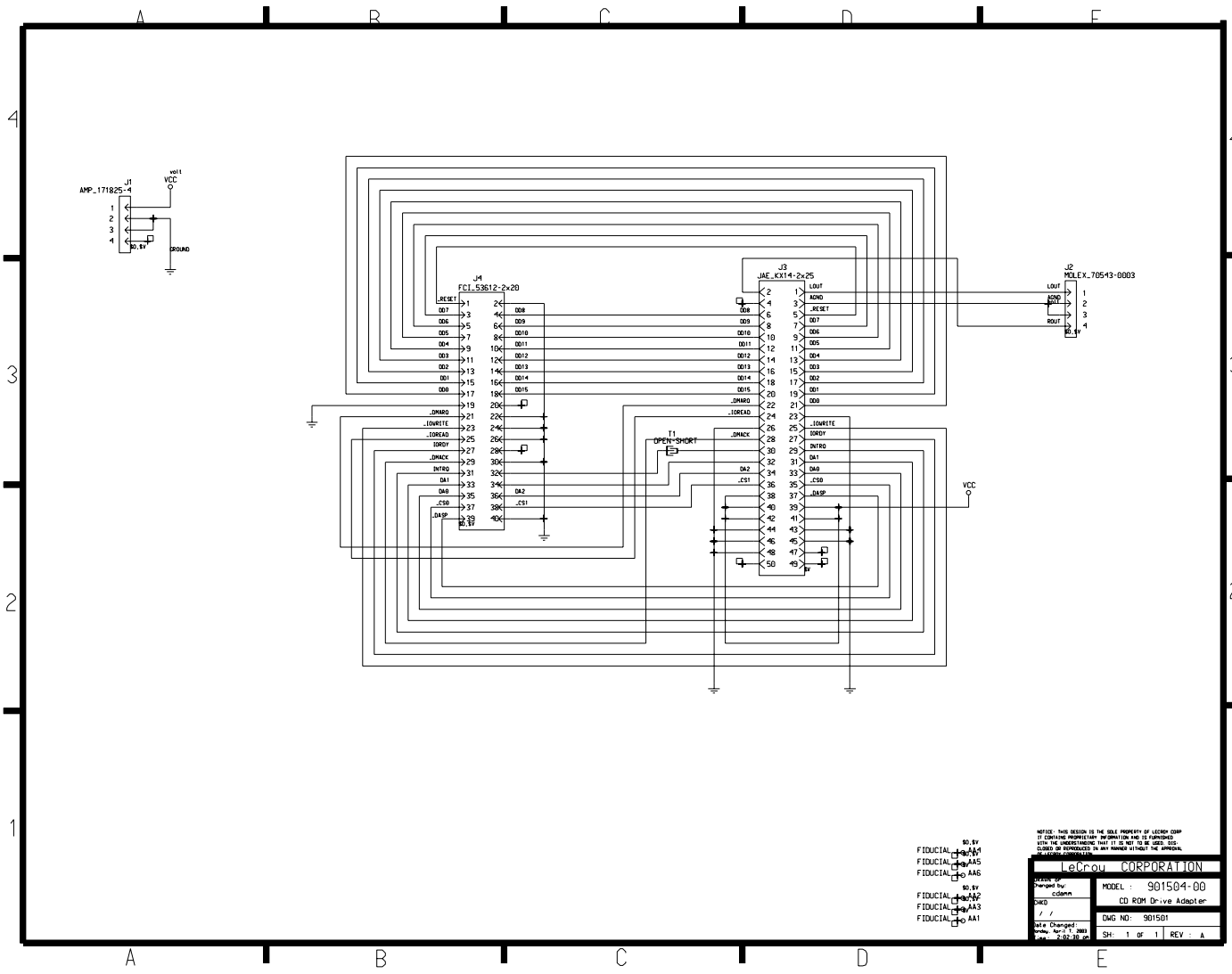
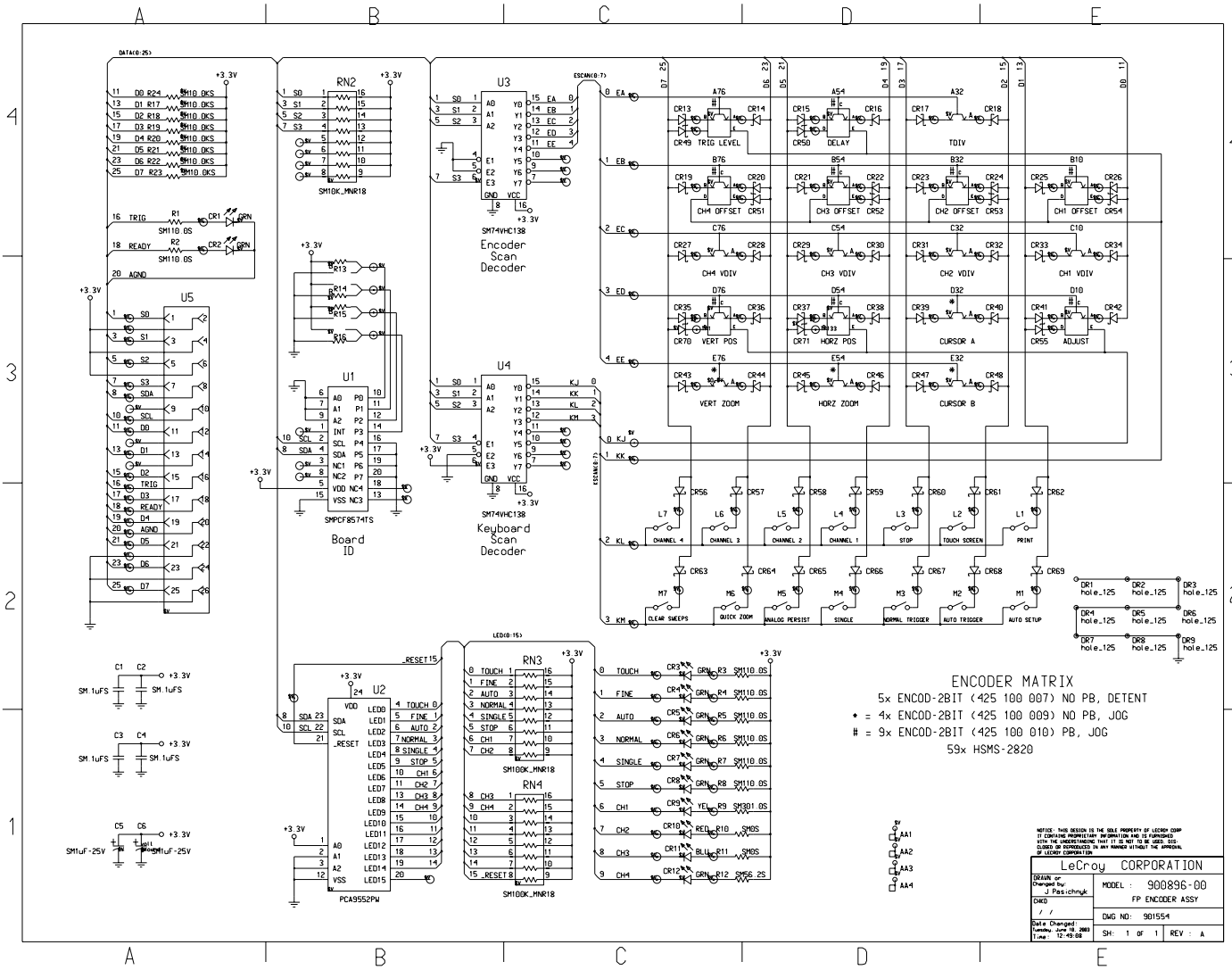
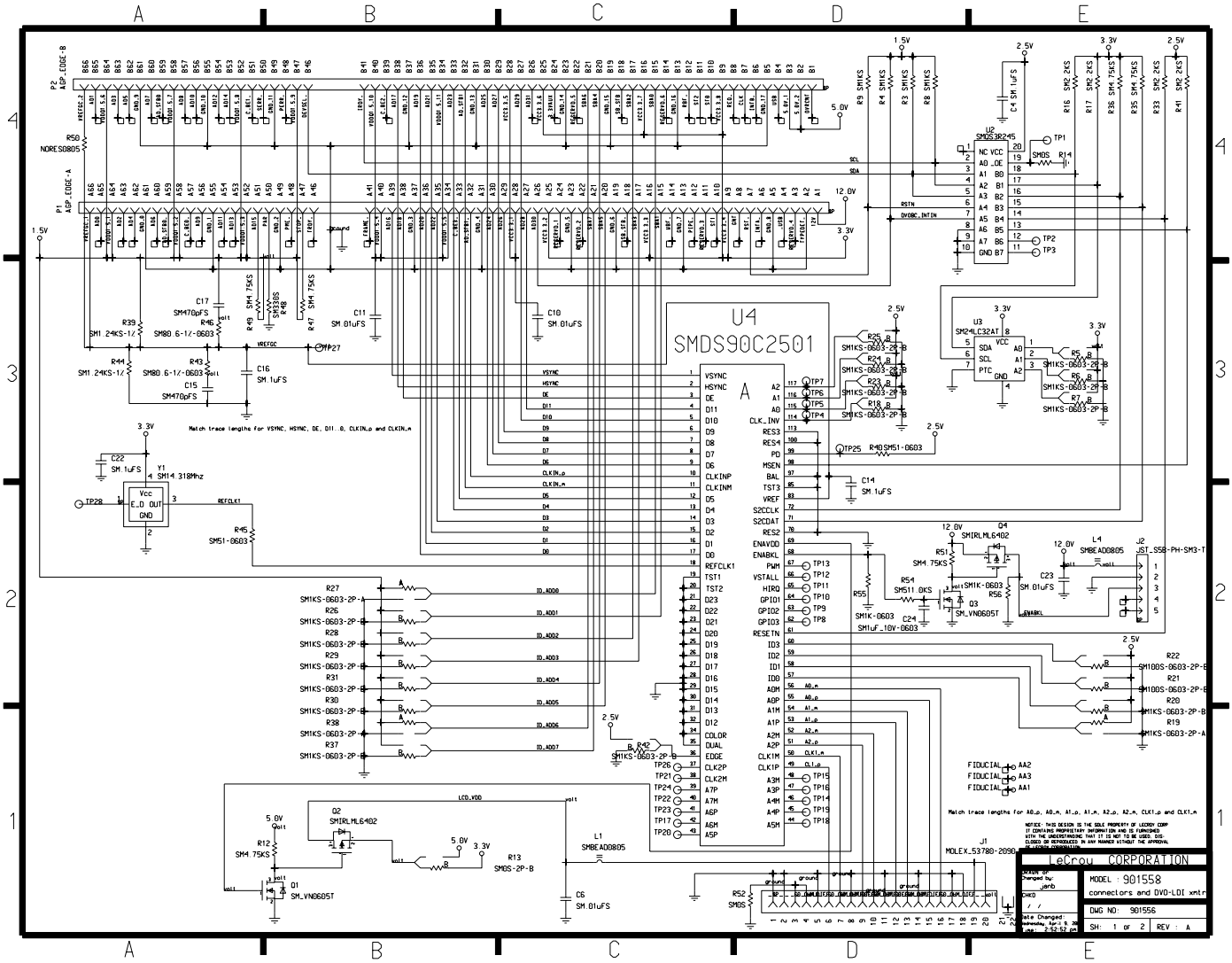


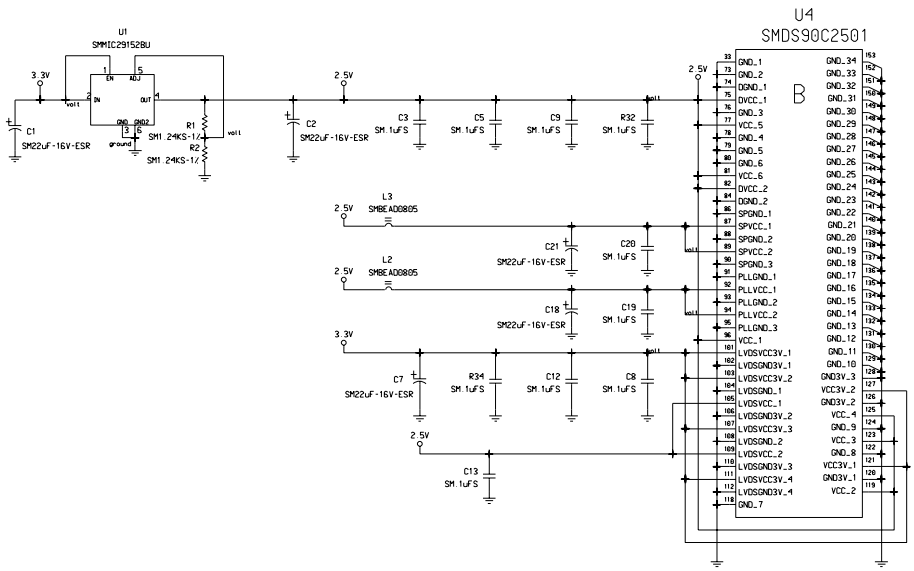
Figure 8-28 Packing

LeCroy Part Number	Description
901878-00	Shipping Package Assy


J1
AMP_171825-4
volt
VCC
GROUND
J4
FCI_53612-2x20
J3
JAE_KX14-2x25
J2
MOLEX_70543-0003
T1
OPEN-SHORT
VCC
FIDUCIAL
AA4
AA5
AA6
AA2
AA3
AA1
LeCroy CORPORATION
MODEL : 901504-00
CD ROM Drive Adapter
DWG NO: 901501
SH: 1 OF 1
REV : A


U5
U1
U2
U3
U4
RN2
RN3
RN4
Encoder Scan Decoder
Keyboard Scan Decoder
Board ID
ENCODER MATRIX
5x ENCOD-2BIT (425 100 007) NO PB, DETENT
* = 4x ENCOD-2BIT (425 100 009) NO PB, JOG
# = 9x ENCOD-2BIT (425 100 010) PB, JOG
59x HSMS-2820
LeCroy CORPORATION
MODEL : 900896-00
FP ENCODER ASSY
DWG NO: 901554
SH: 1 OF 1
REV : A


U4
SMDS90C2501
P2
AGP-EDGE-B
P1
AGP-EDGE-A
U2
SM2405R245
U3
SM24LC32AT_8
Q1
SM_VN0605T
Q2
SMIRLML6402
Q3
SM_VN0605T
Q4
SMIRLML6402
Y1
SM14.318Mhz
J1
MOLEX_53780-2090
J2
JST_S5B-PH-SM3-T
L1
SMBEAD0805
L4
SMBEAD0805
Match trace lengths for VSYNC, HSYNC, DE, D11..0, CLKIN_p and CLKIN_n
Match trace lengths for A0_p, A0_n, A1_p, A1_n, A2_p, A2_n, CLK1_p and CLK1_n
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OF LECROY CORPORATION
LeCroy CORPORATION
MODEL : 901558
connectors and DVO-LDI xmtr
DWG NO: 901556
SH: 1 OF 2
REV : A



Place all capacitors, resistors and inductors very close to the pins.

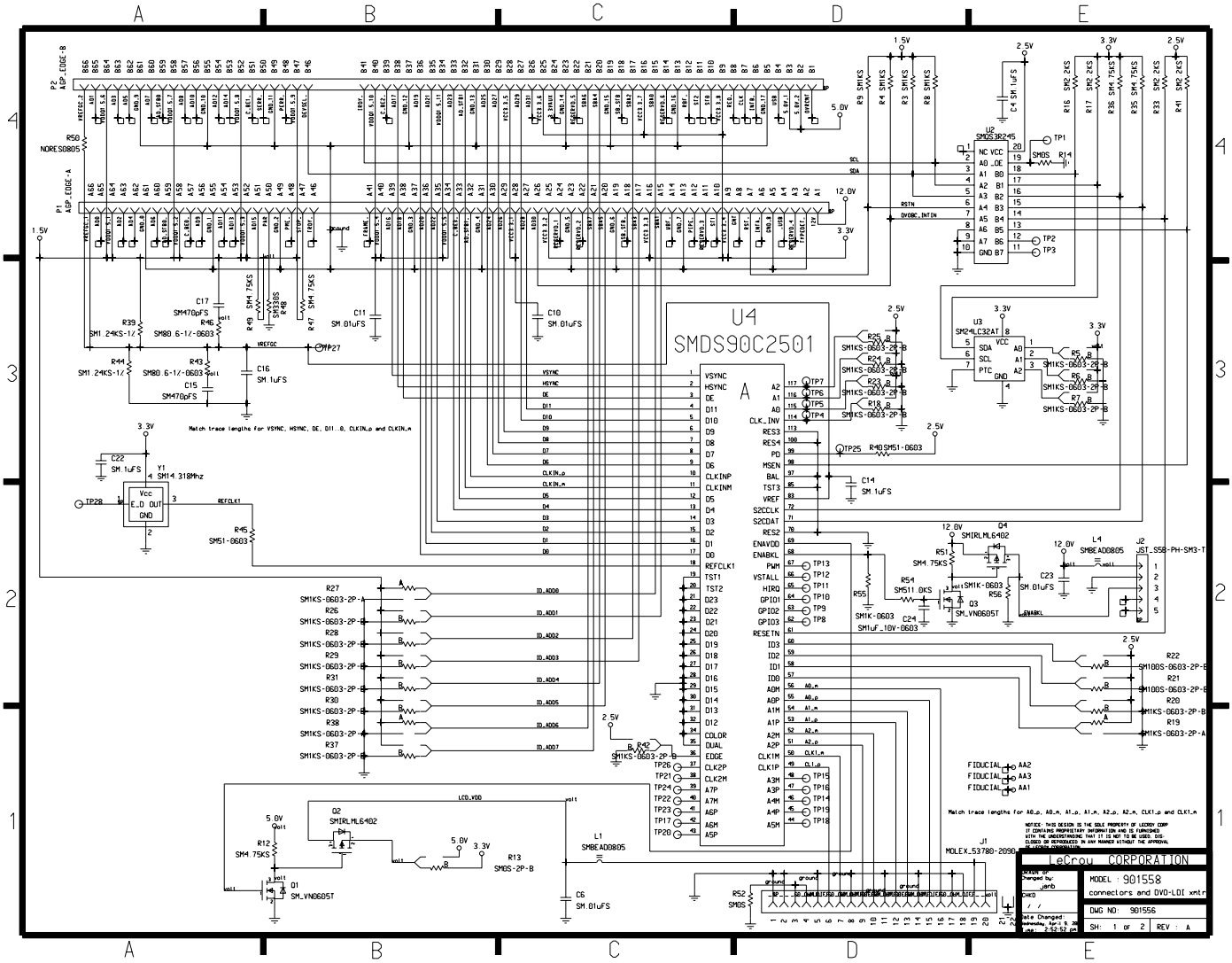
Place capacitors across pins 87, 89 and 86, 88, 90 with the Ferrite Bead close to them.

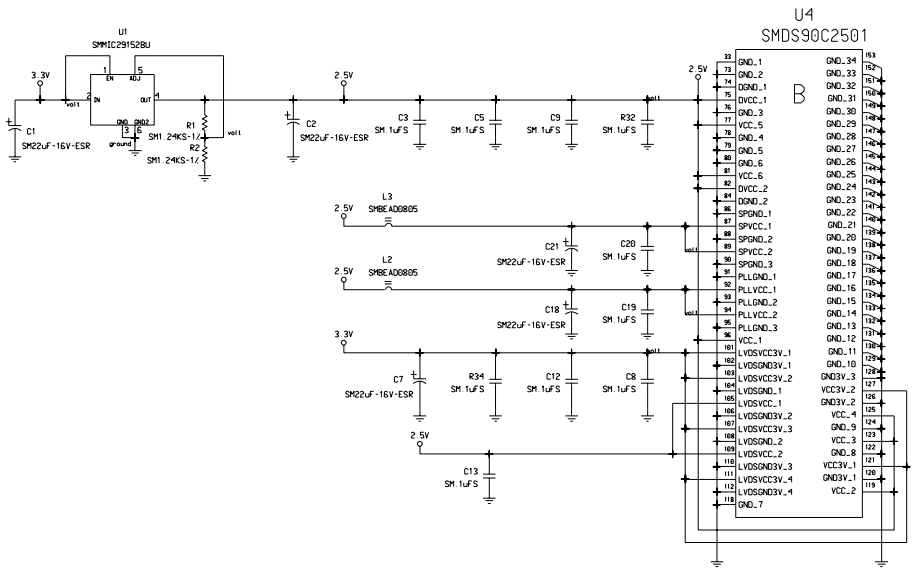
Place capacitors across pins 92, 94 and 91, 93, 95 with the Ferrite Bead close to them.

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LeCroy CORPORATION

APPVD BY: Changed by: jerb	MODEL : 901558 power and decoupling
CHKD / /	DWG NO: 901556
Date Changed: Wednesday, April 5, 20 time: 2:52:52 pm	SH: 2 OF 2 REV : A


U4
SMDS90C2501
P2
AGP-EDGE-B
P1
AGP-EDGE-A
U2
SM2405R245
U3
SM24LC32AT_8
Q1
SM_VN0605T
Q2
SMIRLML6402
Q3
SM_VN0605T
Q4
SMIRLML6402
Y1
SM14.318Mhz
J1
MOLEX_53780-2090
J2
JST_S5B-PH-SM3-T
L1
SMBEAD0805
L4
SMBEAD0805
Match trace lengths for VSYNC, HSYNC, DE, D11..0, CLKIN_p and CLKIN_n
Match trace lengths for A0_p, A0_n, A1_p, A1_n, A2_p, A2_n, CLK1_p and CLK1_n
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LeCroy CORPORATION
MODEL : 901558
connectors and DVO-LDI xmtr
DWG NO: 901556
SH: 1 OF 2
REV : A



Place all capacitors, resistors and inductors very close to the pins.

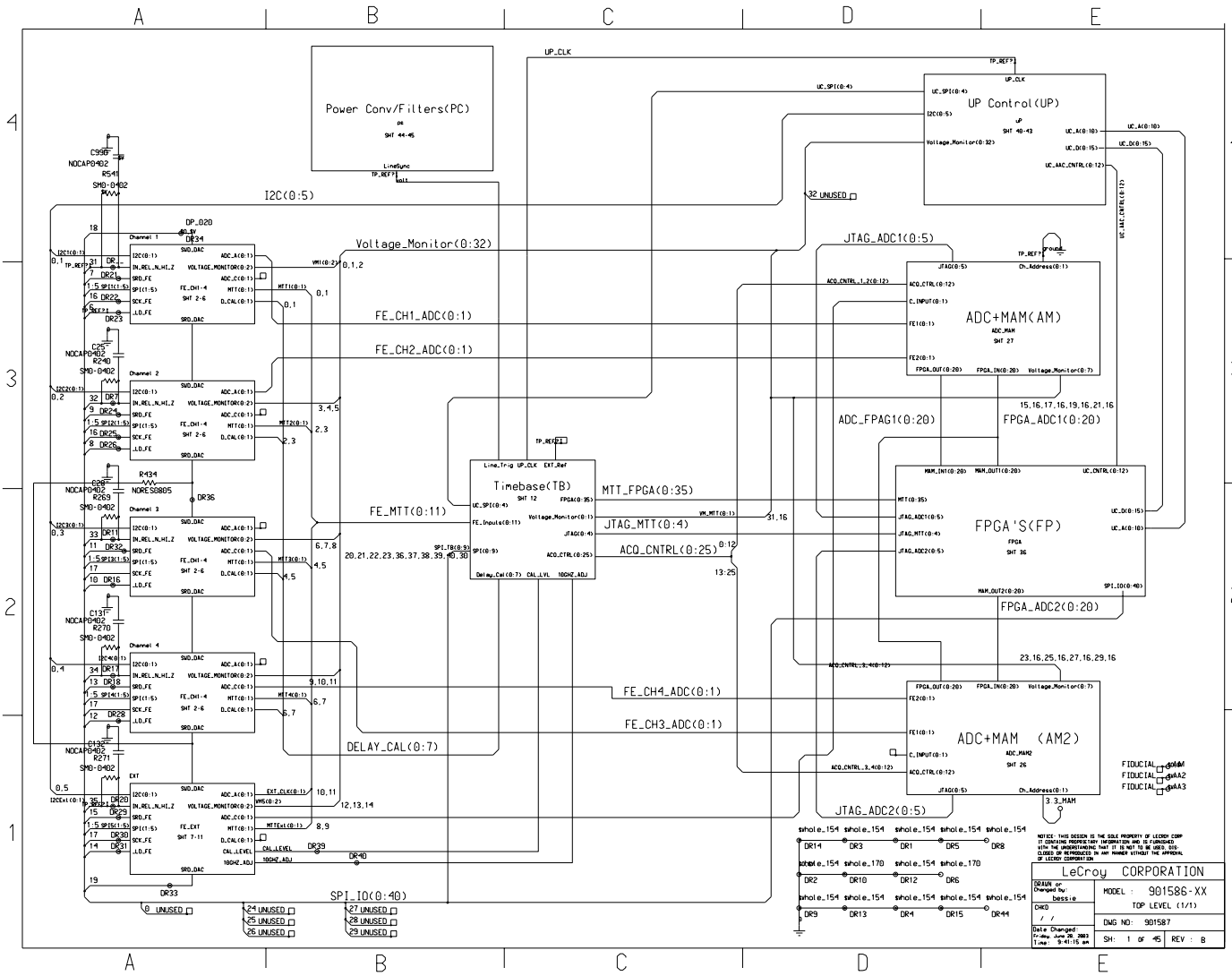
Place capacitors across pins 87, 89 and 86, 88, 90 with the Ferrite Bead close to them.

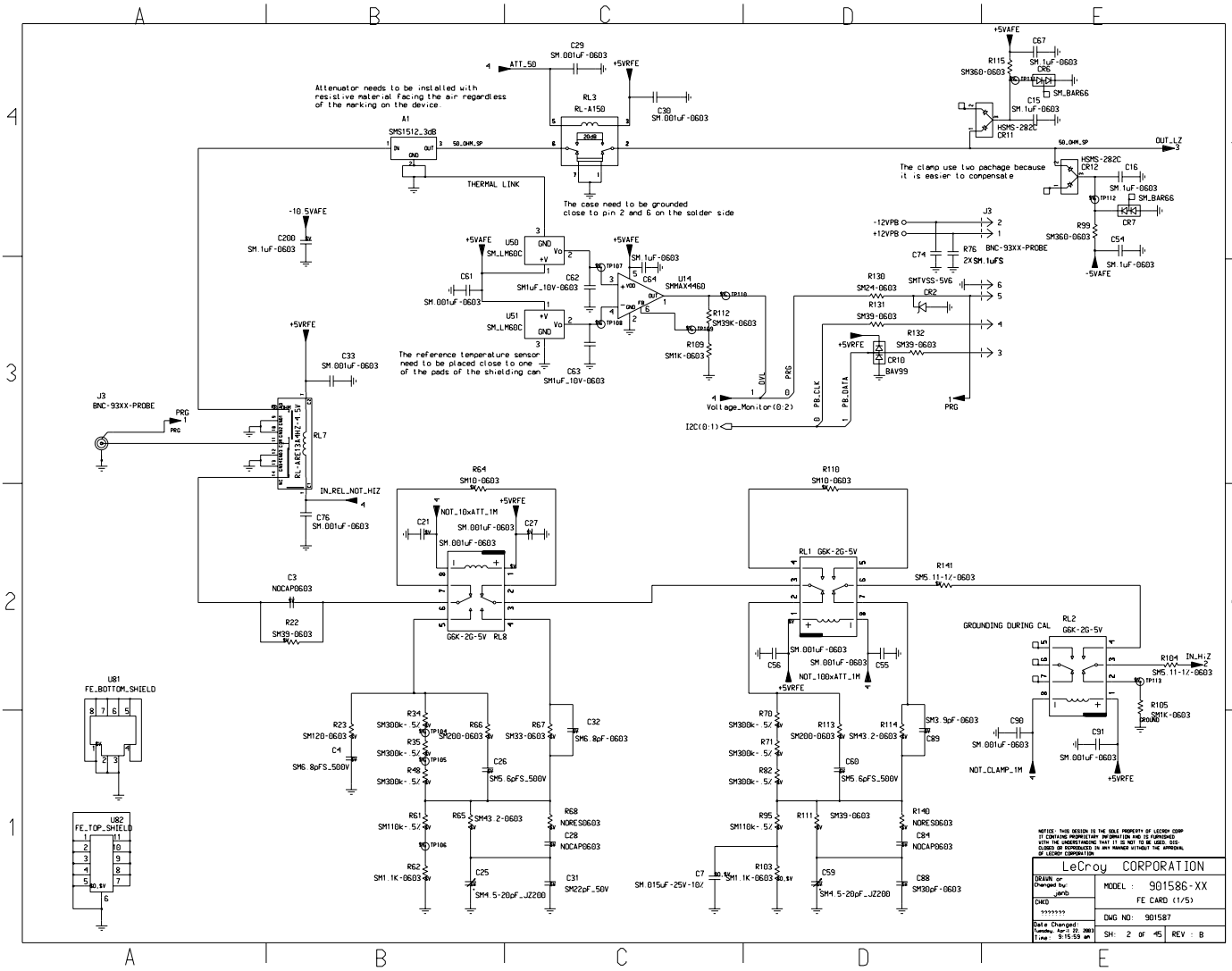
Place capacitors across pins 92, 94 and 91, 93, 95 with the Ferrite Bead close to them.

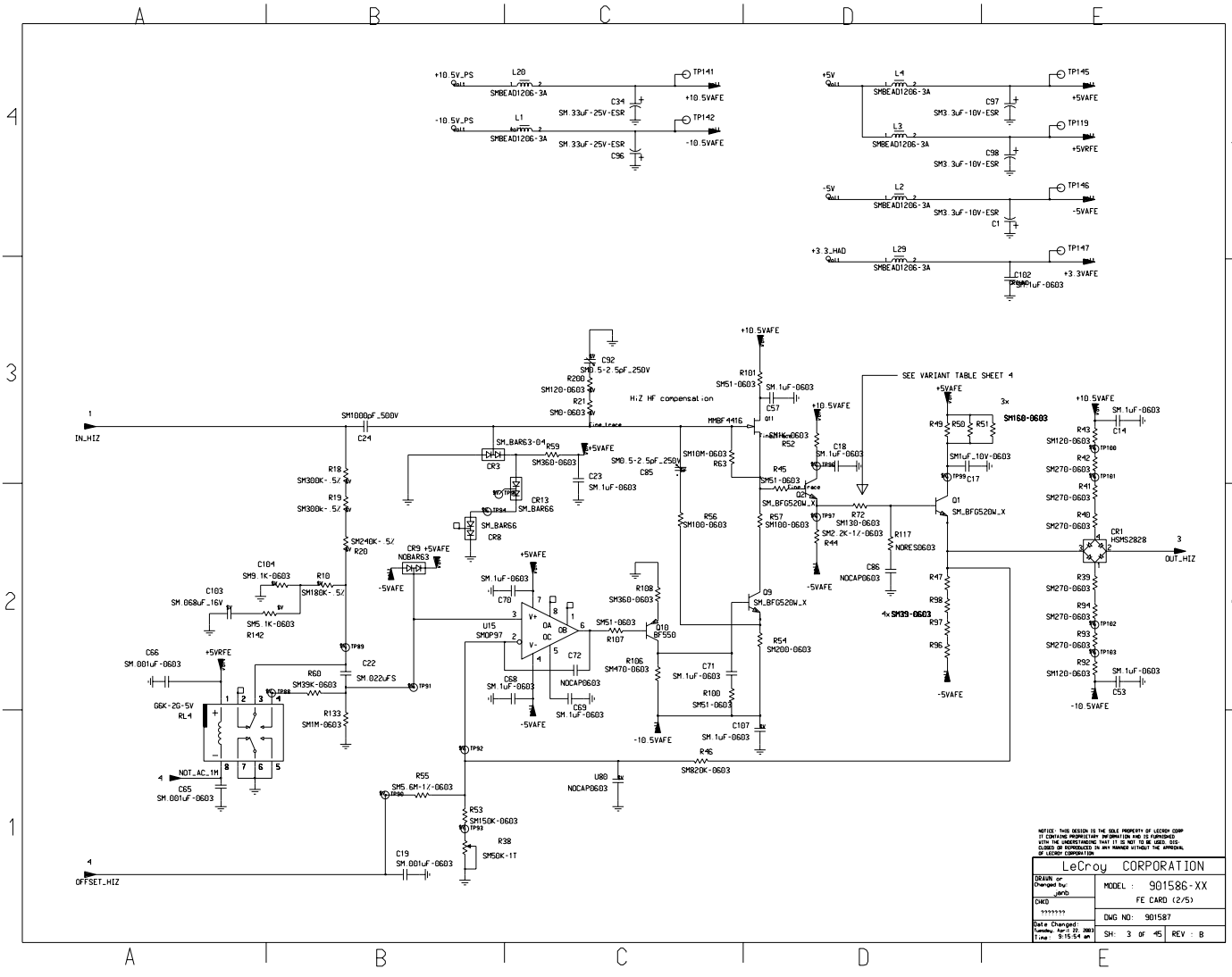
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LeCroy CORPORATION

APPVD BY: Changed by: jerb	MODEL : 901558 power and decoupling
CHKD / /	DWG NO: 901556
Date Changed: Wednesday, April 5, 20 time: 2:52:52 pm	SH: 2 OF 2 REV : A

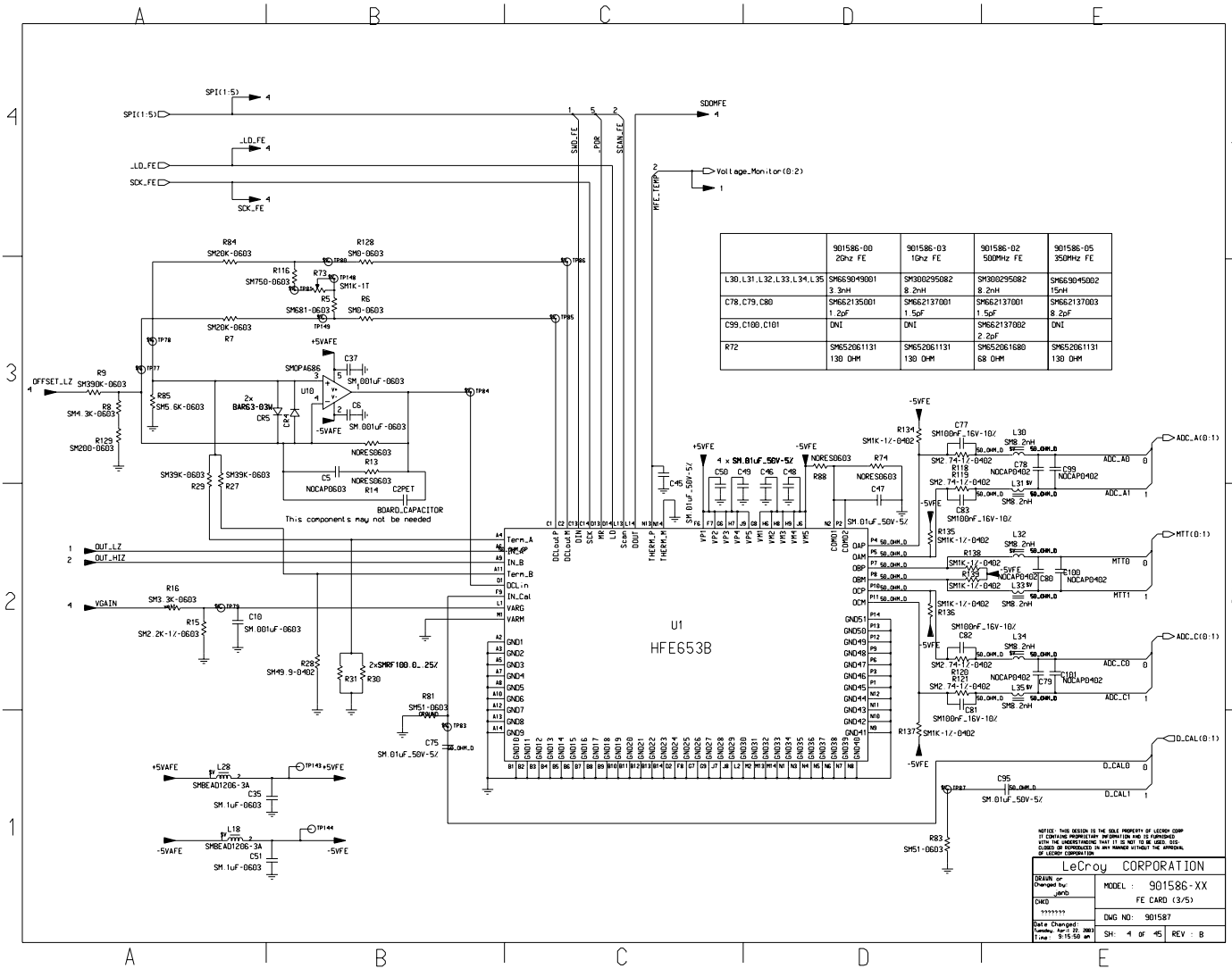

Power Conv/Filters(PC)
UP_CLK
UP Control(UP)
I2C(0:5)
Voltage_Monitor(0:32)
32 UNUSED
JTAG_ADC1(0:5)
ADC+MAM(AM)
FE_CH1_ADC(0:1)
FE_CH2_ADC(0:1)
ADC_FPAG1(0:20)
FPGA_ADC1(0:20)
Timebase(TB)
MTT_FPGA(0:35)
JTAG_MTT(0:4)
ACQ_CNTRL(0:25)
FPGA'S(FP)
FE_MTT(0:11)
FPGA_ADC2(0:20)
FE_CH4_ADC(0:1)
FE_CH3_ADC(0:1)
ADC+MAM (AM2)
DELAY_CAL(0:7)
JTAG_ADC2(0:5)
SPI_IO(0:40)
0 UNUSED
24 UNUSED
25 UNUSED
26 UNUSED
27 UNUSED
28 UNUSED
29 UNUSED
FIDUCIAL
LeCroy CORPORATION
MODEL : 901586-XX
TOP LEVEL (1/1)
DWG NO: 901587
SH: 1 OF 45 REV : B


Attenuator needs to be installed with resistive material facing the air regardless of the marking on the device
THERMAL LINK
The case need to be grounded close to pin 2 and 6 on the solder side
The clamp use two pachage because it is easier to compensate
The reference temperature sensor need to be placed close to one of the pads of the shielding can
BNC-93XX-PROBE
Voltage_Monitor(0:2)
I2C(0:1)
GROUNDING DURING CAL
LeCroy CORPORATION
MODEL : 901586-XX
FE CARD (1/5)
DWG NO: 901587
SH: 2 OF 45
REV : B



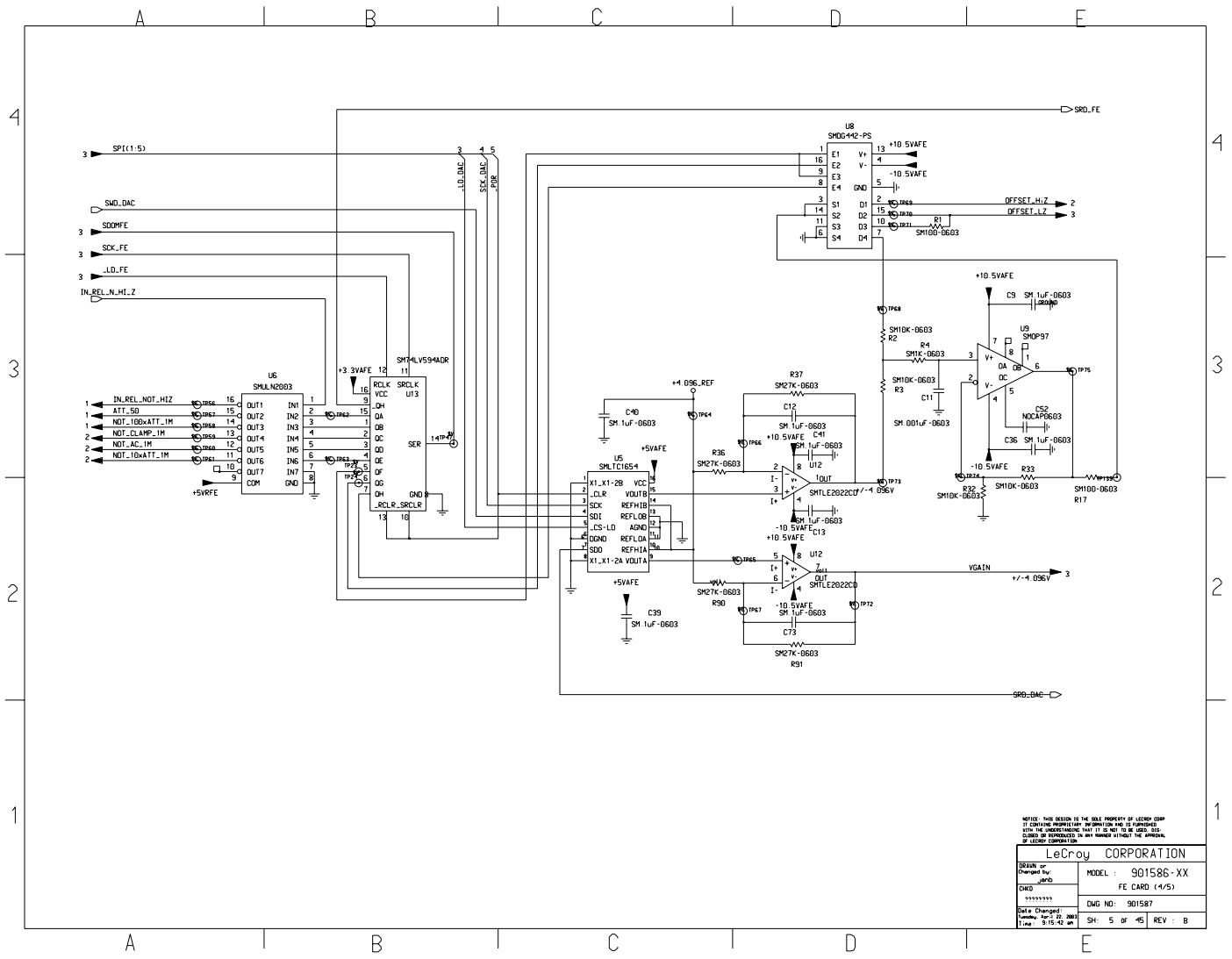
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LeCroy CORPORATION	
DRAWN or Changed by: JWD	MODEL : 901586-XX
CHKD: ???????	FE CARD (2/5)
Date Changed: Tuesday, April 22, 2003 Time: 9:15:54 am	DWG NO: 901587
	SH: 3 OF 45 REV : B



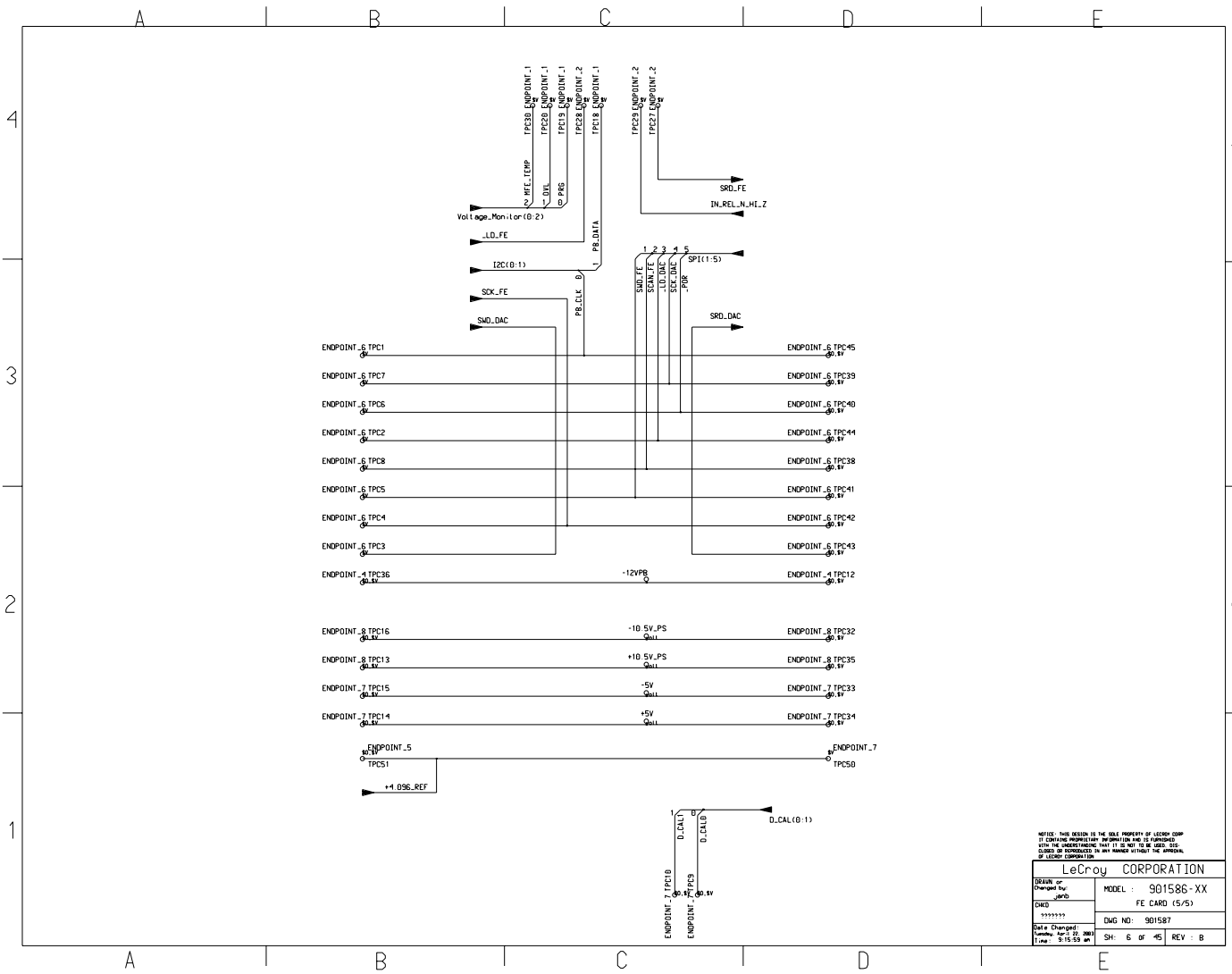
	901586-00 20ghz FE	901586-03 16hz FE	901586-02 500MHz FE	901586-05 350MHz FE
L30,L31,L32,L33,L34,L35	SM669049001 3.3nH	SM380295082 8.2nH	SM380295082 8.2nH	SM669045002 15nH
C78,C79,C80	SM662135001 1.2pF	SM662137001 1.5pF	SM662137001 1.5pF	SM662137003 8.2pF
C99,C100,C101	DNI	DNI	SM662137002 2.2pF	DNI
R72	SM652061131 130 OHM	SM652061131 130 OHM	SM652061680 68 OHM	SM652061131 130 OHM

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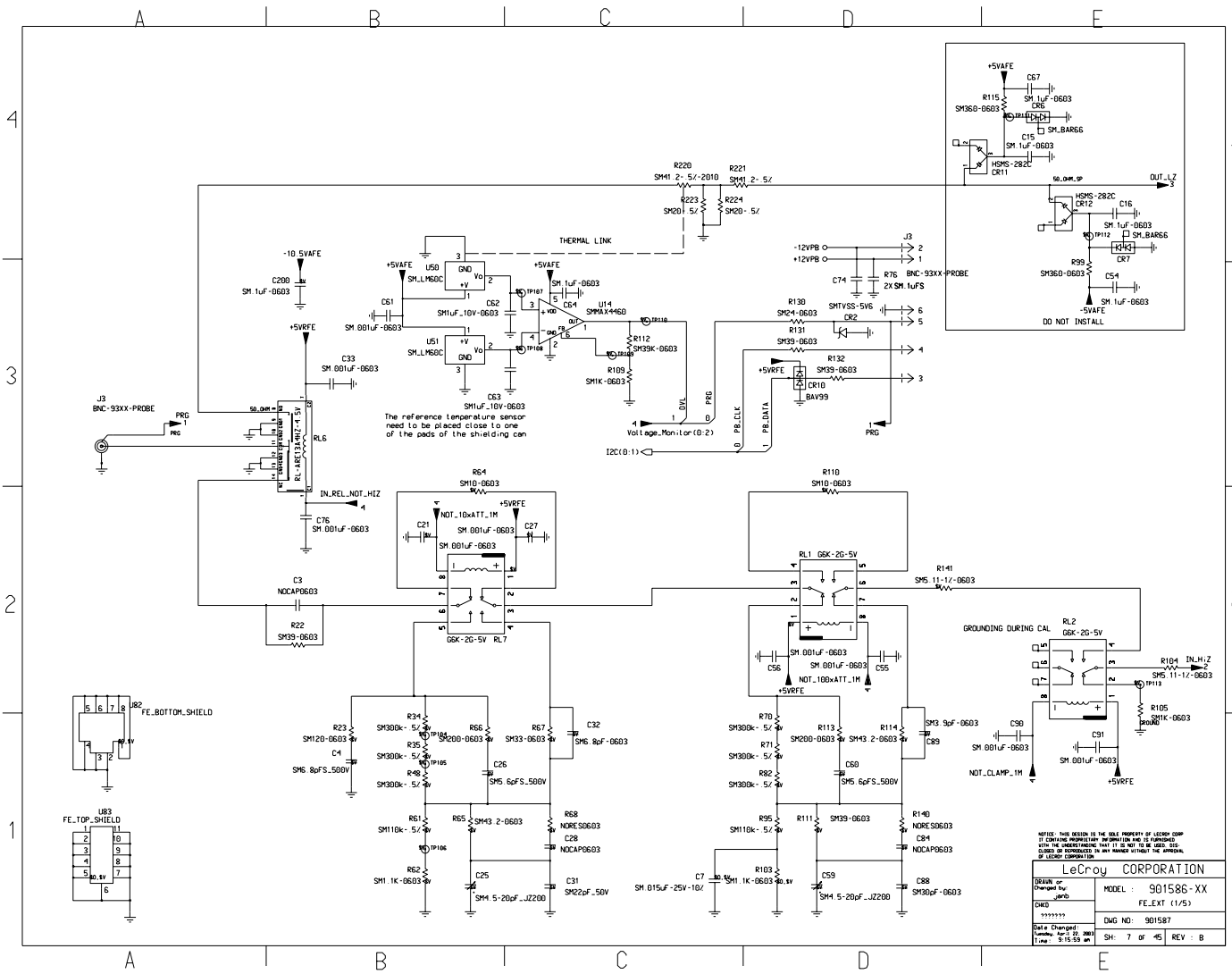
LeCroy CORPORATION	
DRAWN or Changed by: JWHD	MODEL : 901586-XX
CHKD: ????????	FE CARD (4/5)
Date Changed: Tuesday, April 22, 2003 Time : 9:15:42 am	DWG NO: 901587
	SH: 5 OF 45 REV : B

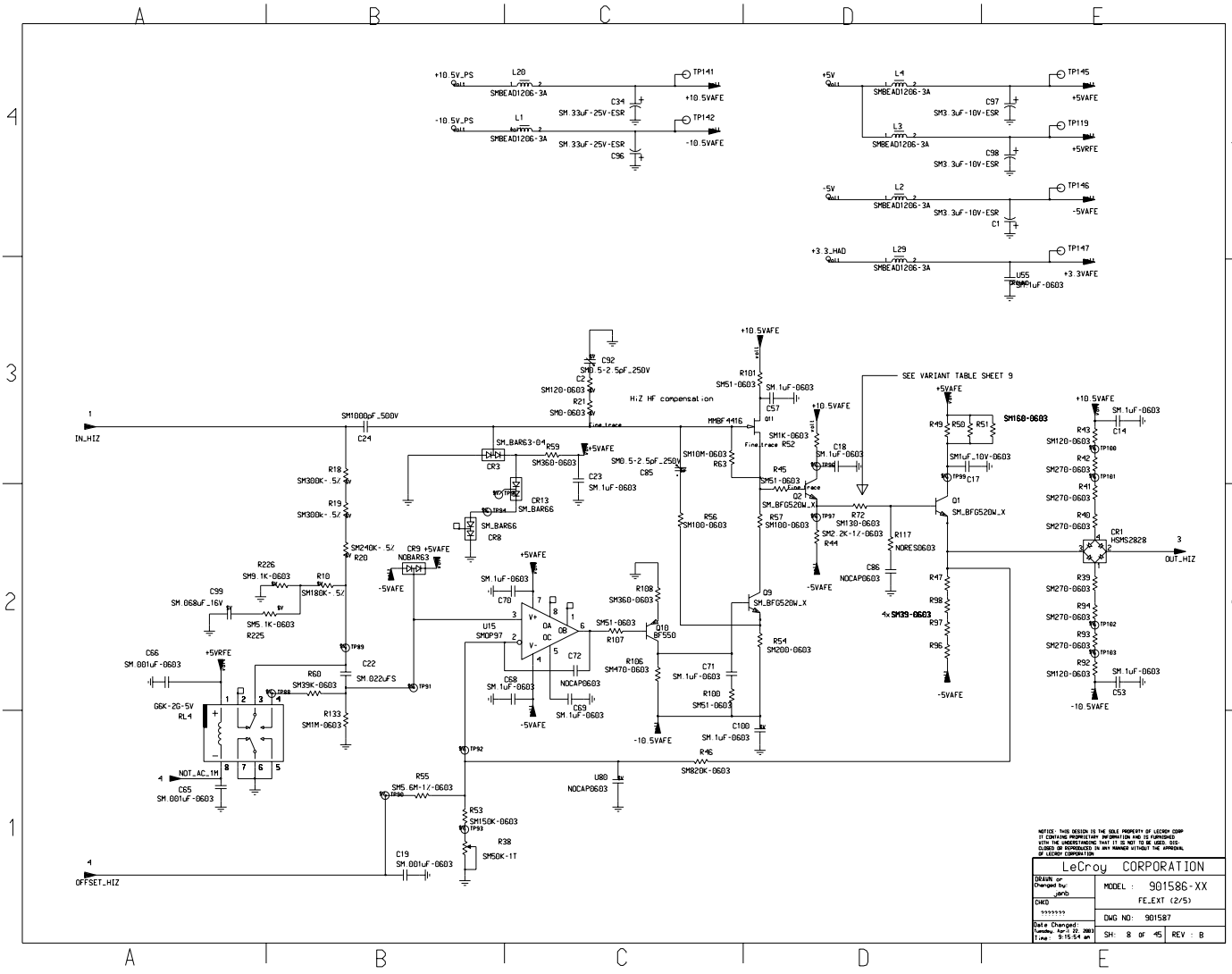


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LeCroy CORPORATION

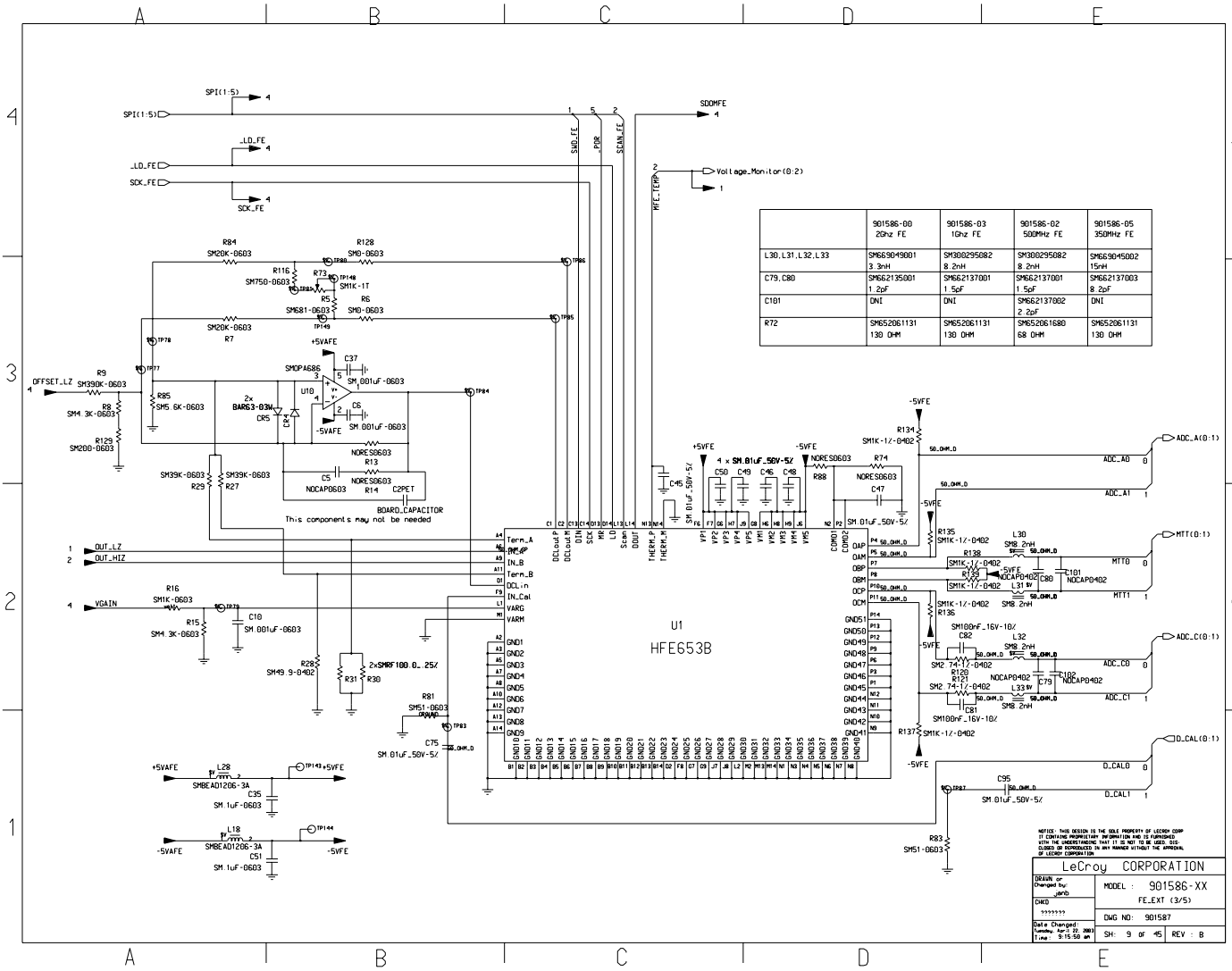
DRAWN or Changed by: JWD	MODEL : 901586-XX
CHKD: ???????	FE CARD (5/5)
Date Changed: Tuesday, April 22, 2003 Time: 9:15:59 am	DWG NO: 901587
	SH: 6 OF 45 REV : B


THERMAL LINK
The reference temperature sensor need to be placed close to one of the pads of the shielding can
DO NOT INSTALL
GROUNDING DURING CAL
NOT_CLAMP_1M
NOT_10xATT_1M
IN_REL_NOT_HIZ
Voltage_Monitor(0:2)
I2C(0:1)
PB_CLK
PB_DATA
PRG
DVL
FE_TOP_SHIELD
FE_BOTTOM_SHIELD
BNC-93XX-PROBE
LeCroy CORPORATION
MODEL : 901586-XX
FE_EXT (1/5)
DWG NO: 901587
SH: 7 OF 45
REV : B



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LeCroy CORPORATION	
DRAWN or Changed by: JWHD	MODEL : 901586-XX
CHKD: ???????	FE_EXT (2/5)
Date Changed: Tuesday, April 22, 2003 Time: 9:15:54 am	DWG NO: 901587
	SH: 8 OF 45 REV : B

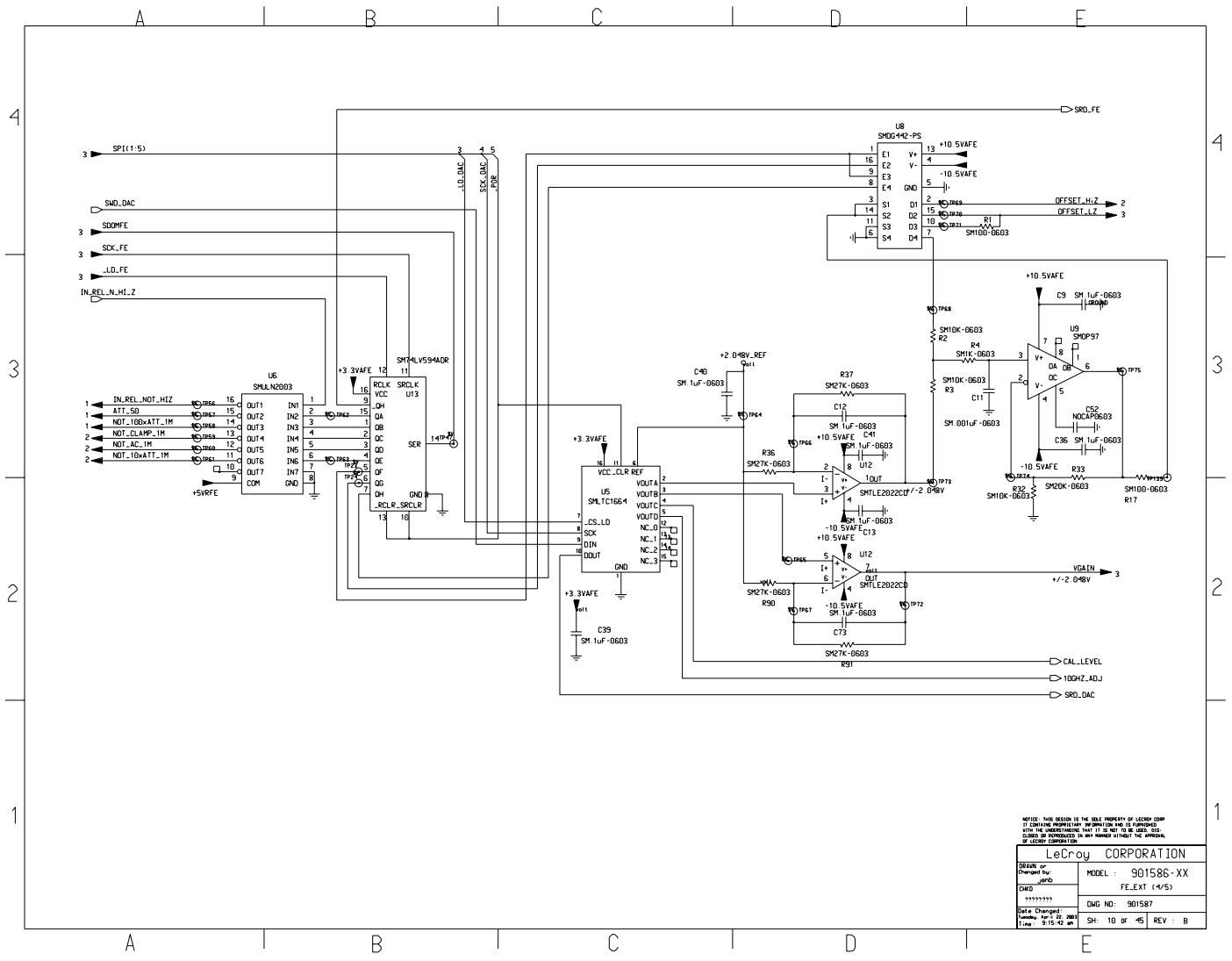


	901586-00 2Ghz FE	901586-03 1Ghz FE	901586-02 500Mhz FE	901586-05 350MHz FE
L30,L31,L32,L33	SM6690490O1 3.3nH	SM3O8295082 8.2nH	SM3O8295082 8.2nH	SM6690450O2 15nH
C79,C80	SM662135001 1.2pF	SM662137001 1.5pF	SM662137001 1.5pF	SM662137003 8.2pF
C101	DNI	DNI	SM662137002 2.2pF	DNI
R72	SM652061131 130 OHM	SM652061131 130 OHM	SM652061680 68 OHM	SM652061131 130 OHM

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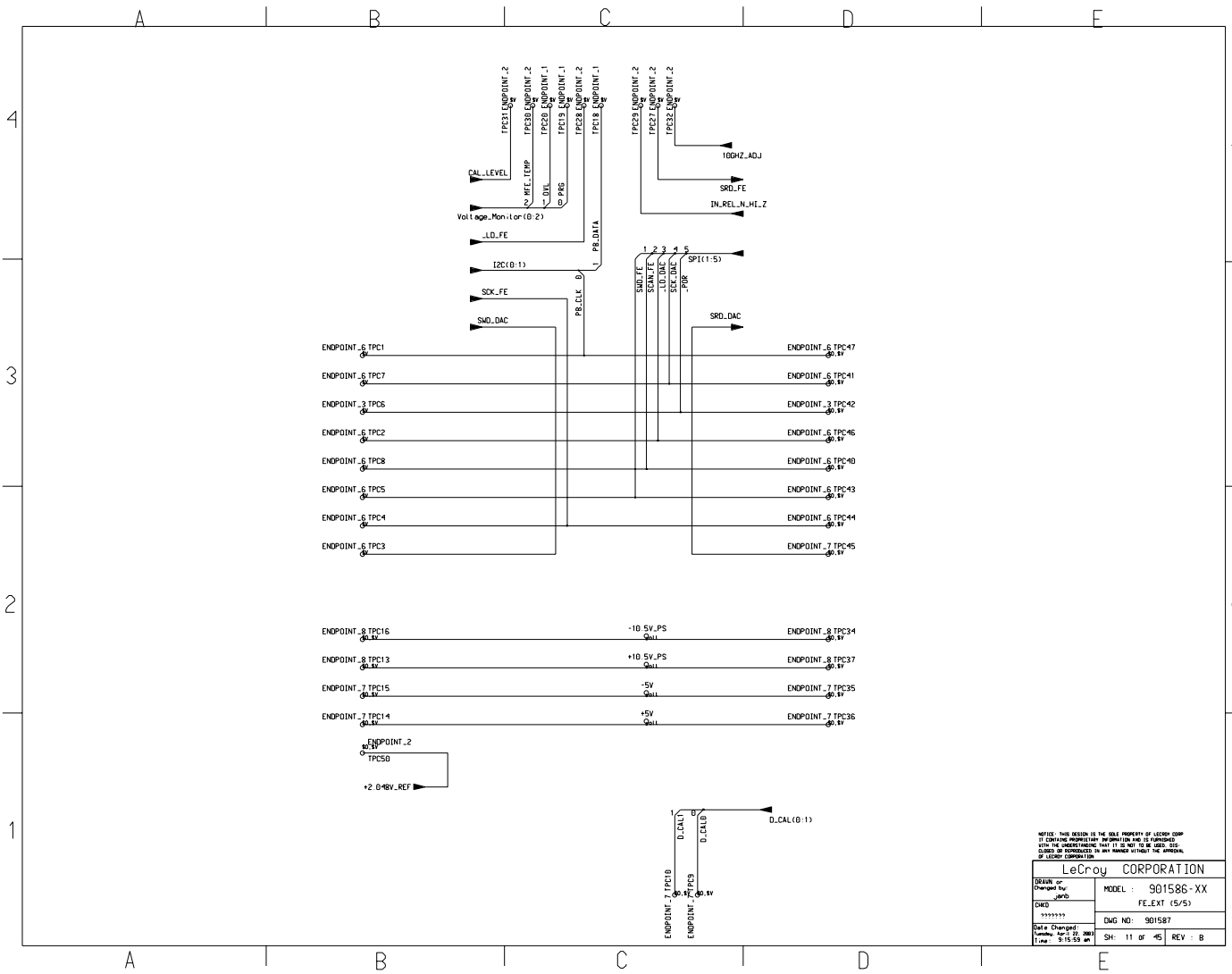
LeCroy CORPORATION

DRAWN or Changed by: JWHD	MODEL : 901586-XX
CHKD: ???????	FE_EXT (3/5)
Date Changed: Tuesday, April 22, 2003 Time : 9:15:50 am	DWG NO: 901587
	SH: 9 OF 45 REV : B



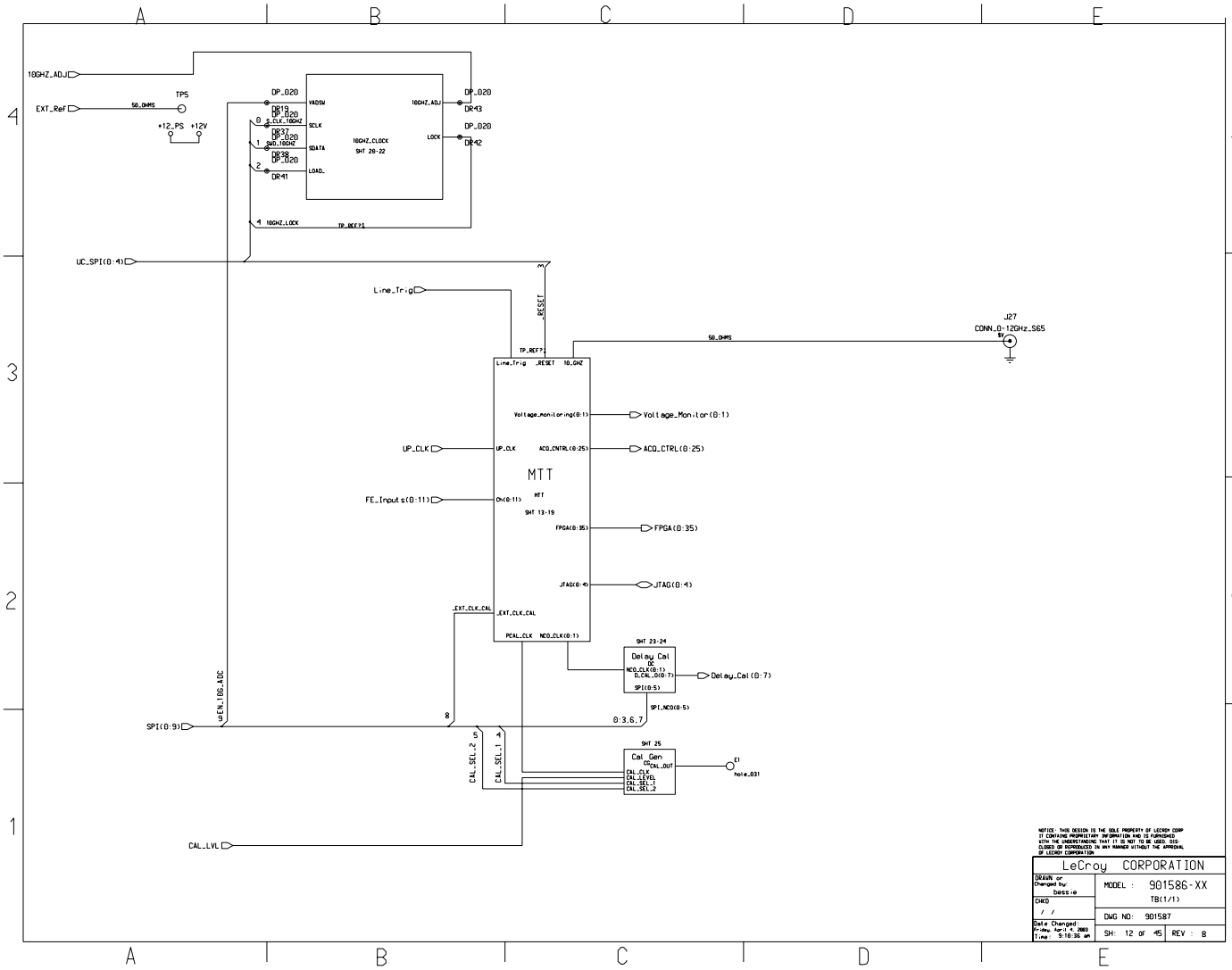
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LeCroy CORPORATION		
DRAWN or Changed by: jarvis	MODEL : 901586-XX FE_EXT (4/5)	
CHKD ????????	DWG NO: 901587	
Date Changed: Tuesday, April 22, 2003 Time: 9:15:42 am	SH: 10 OF 45	REV : B



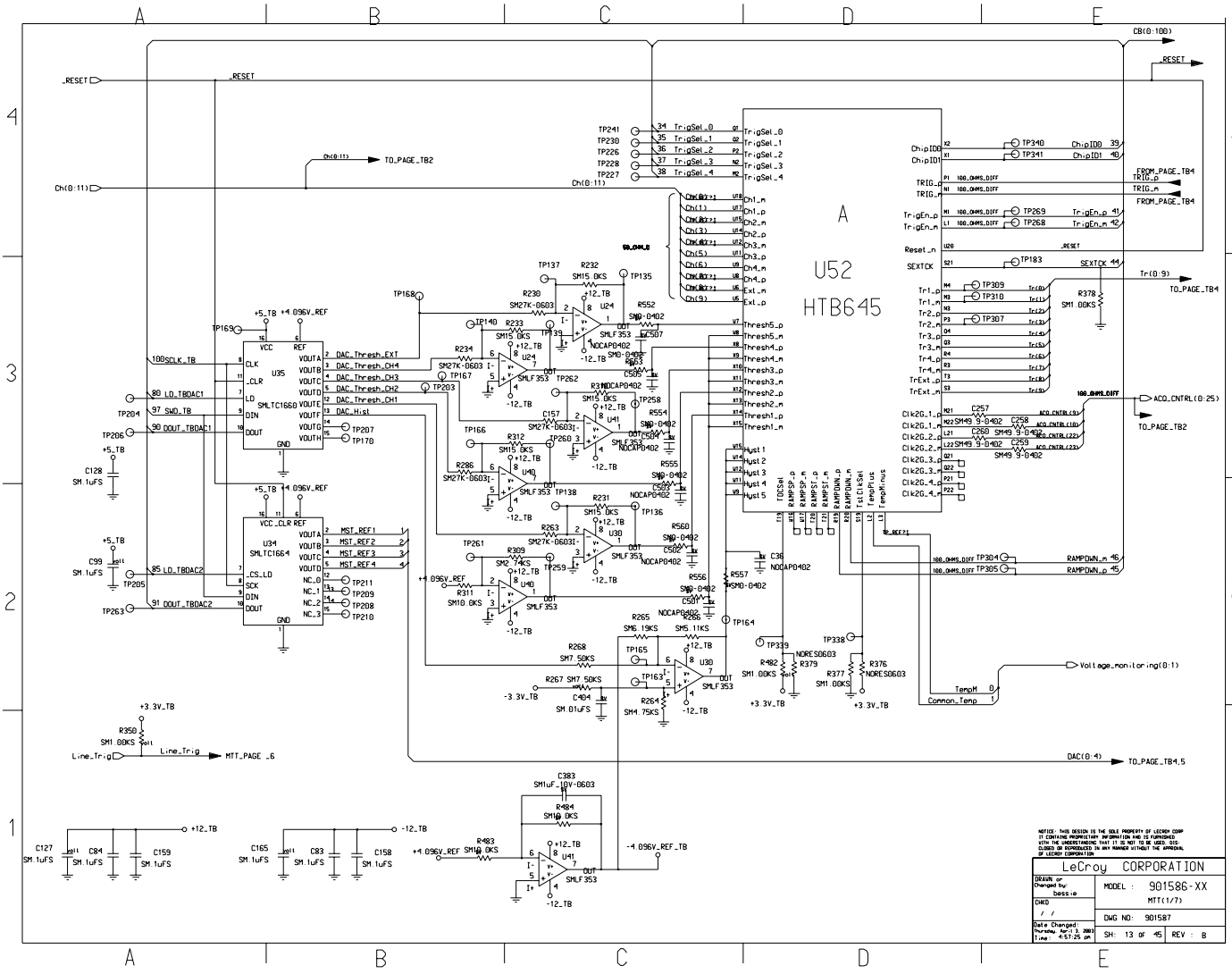
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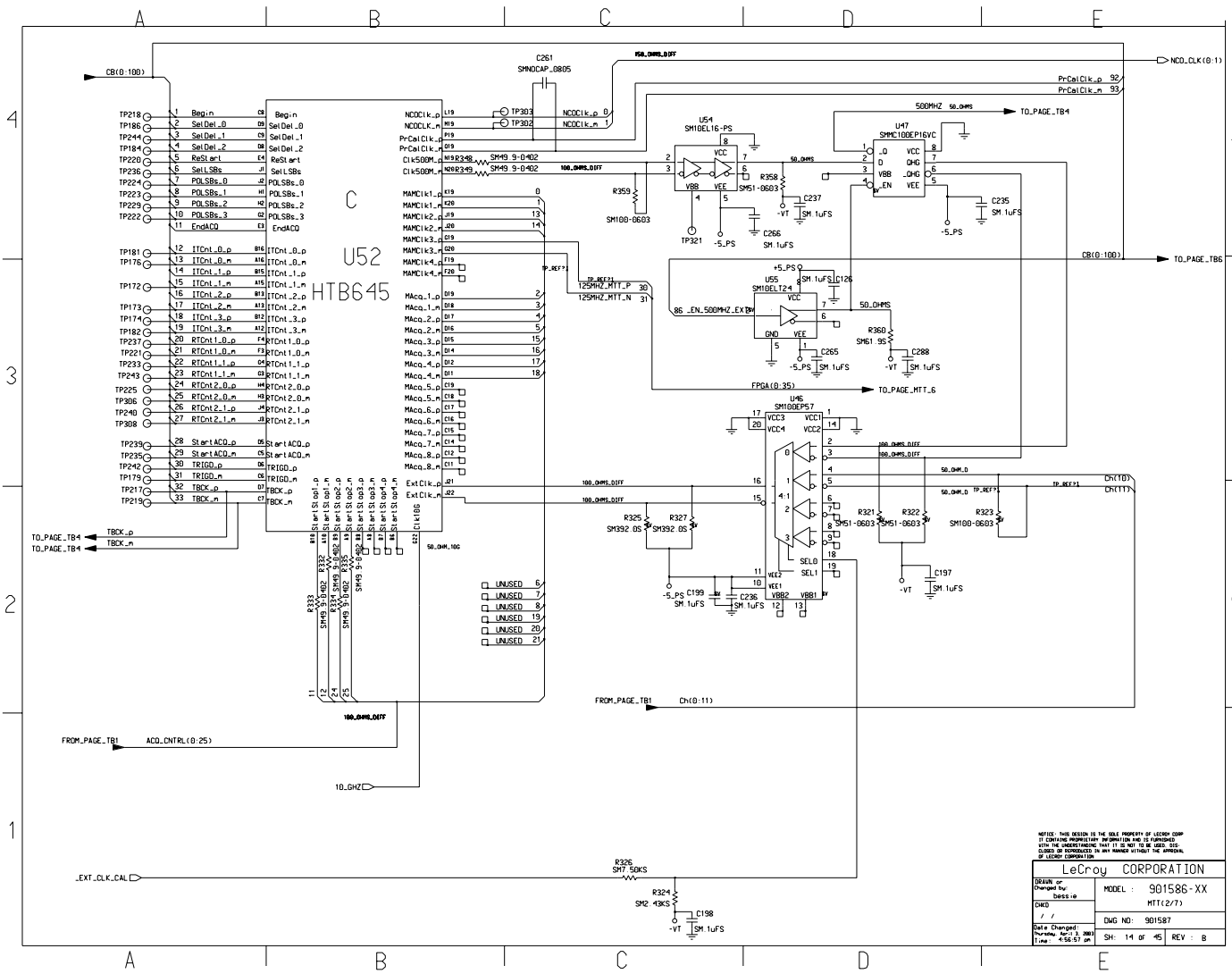
LeCroy CORPORATION	
DRAWN or Changed by: jwd	MODEL : 901586-XX
CHKD: ???????	FE_EXT (5/5)
Date Changed: Tuesday, April 22, 2003 Time: 9:15:59 am	DWG NO: 901587
	SH: 11 OF 45 REV : B

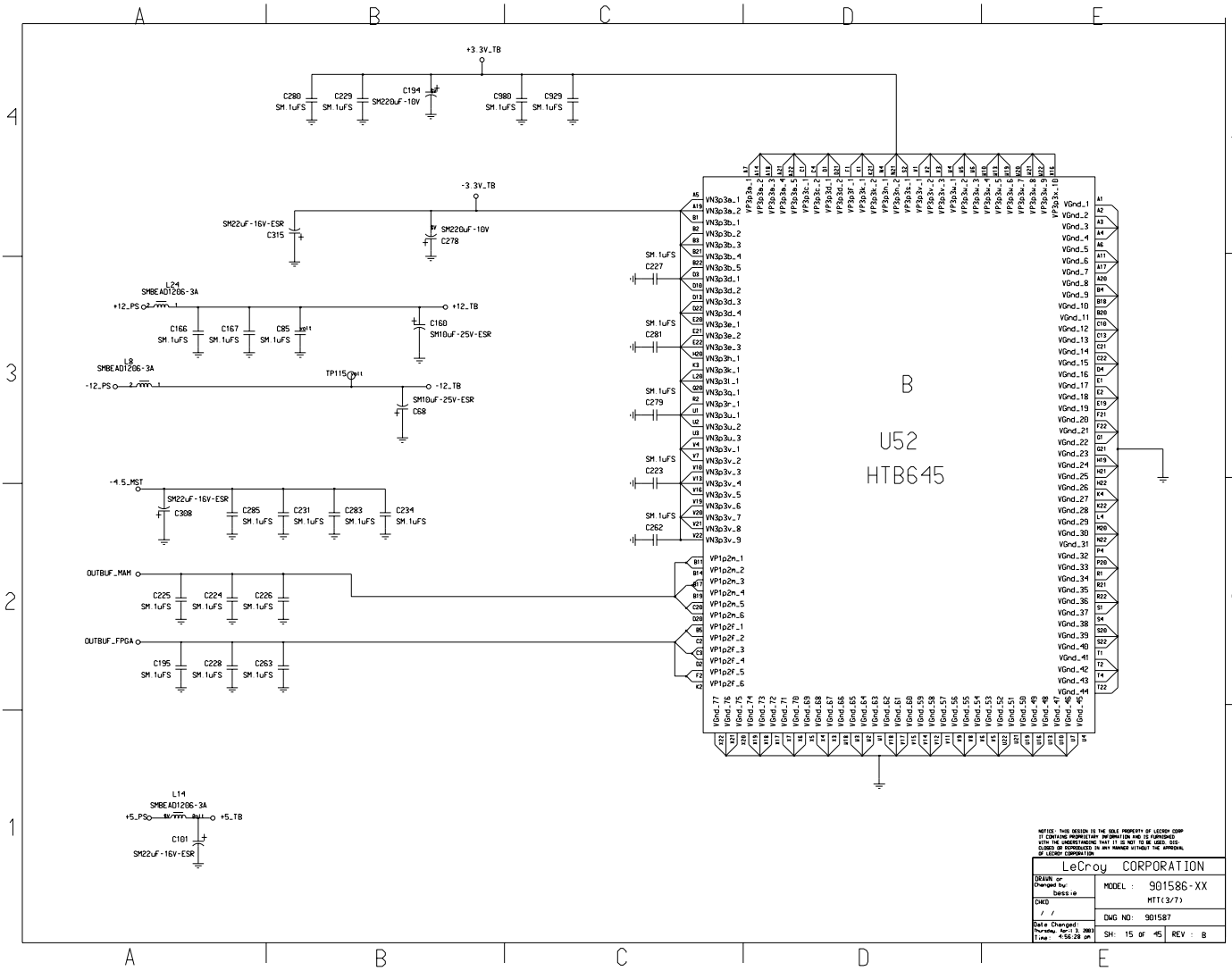


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LeCroy CORPORATION		
DRAWN or Changed by: bess:ie	MODEL : 901586-XX	
CHKD / /	TB(1/1)	
Date Changed: Friday, April 4, 2003 Time: 9:10:35 am	DWG NO: 901587	
	SH: 12 OF 45	REV : B

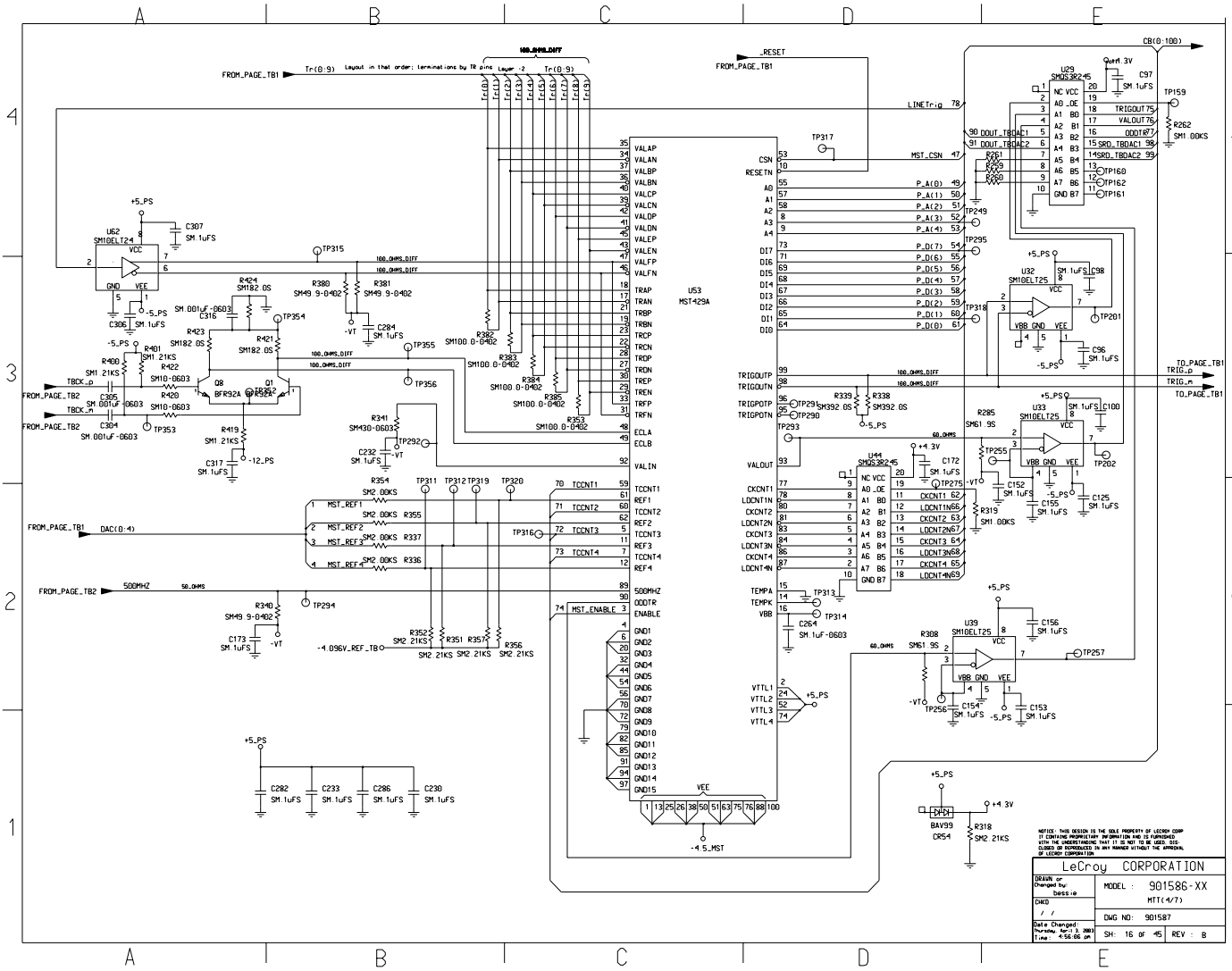

A
U52
HTB645
_RESET
CB(0:10)
Ch(0:11)
TO_PAGE_TB2
TrigSel_0
TrigSel_1
TrigSel_2
TrigSel_3
TrigSel_4
ChipID0
ChipID1
FROM_PAGE_TB4
TRIG_p
TRIG_n
TrigEn_p
TrigEn_n
SEXTCK
Tr(0:9)
TO_PAGE_TB4
ACQ_CNTRL(0:25)
TO_PAGE_TB2
RAMPDOWN_m
RAMPDOWN_p
Voltage_monitoring(0:1)
TempM
Common_Temp
DAC(0:4)
TO_PAGE_TB4,5
Line_Trig
MTT_PAGE _6
+12_TB
-12_TB
+3.3V_TB
-4.096V_REF_TB
+4.096V_REF
+5_TB
U35
SMLTC1668
U34
SMLTC1664
U24
U41
U40
U30
SMLF353
DAC_Thresh_EXT
DAC_Thresh_CH4
DAC_Thresh_CH3
DAC_Thresh_CH2
DAC_Thresh_CH1
DAC_Hist
MST_REF1
MST_REF2
MST_REF3
MST_REF4
100SCLK_TB
80_LD_TBDAC1
97_SWD_TB
90_DOUT_TBDAC1
85_LD_TBDAC2
91_DOUT_TBDAC2
R230 SM27K-0603
R234 SM27K-0603
R286 SM27K-0603
R263 SM27K-0603
R267 SM7.50KS
R268 SM7.50KS
R264 SM4.75KS
R265 SM6.19KS
SM5.11KS
R350 SM1.00KS
R483 SM10.0KS
C383 SM1uF_10V-0603
R484 SM10.0KS
C127 SM.1uFS
C84 SM.1uFS
C159 SM.1uFS
C165 SM.1uFS
C83 SM.1uFS
C158 SM.1uFS
C128 SM.1uFS
C99 SM.1uFS
C404 SM.01uFS
R482 SM1.00KS
R379 NORES0603
R377 SM1.00KS
R376 NORES0603
R378 SM1.00KS
C257 SM49.9-0402
C258 SM49.9-0402
C260 SM49.9-0402
C259 SM49.9-0402
NOCAP0402
SM0-0402
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LeCroy CORPORATION
DRAWN or Changed by: bessie
CHKD
/ /
Date Changed: Thursday, April 3, 2003 Time: 4:57:25 pm
MODEL : 901586-XX
MTT(1/7)
DWG NO: 901587
SH: 13 OF 45
REV : B

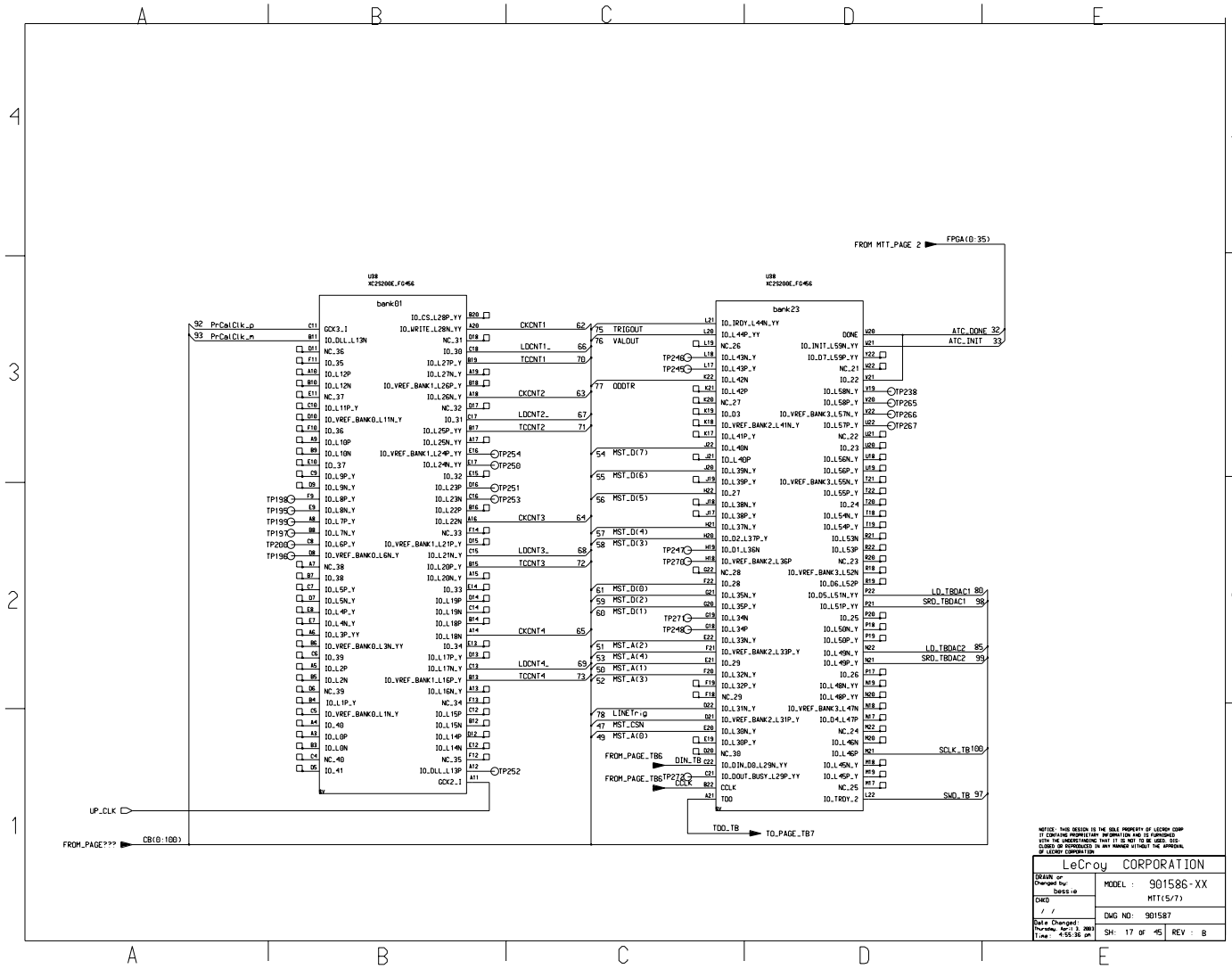

CB(0:100)
C261
SM0CAP_0805
NCO_CLK(0:1)
PrCalClk_p 92
PrCalClk_m 93
500MHZ 50_OHMS
TO_PAGE_TB4
U54
SM10EL16-PS
U47
SMMC10GEP16VC
C
U52
HTB645
TP218
TP186
TP244
TP184
TP226
TP236
TP224
TP223
TP229
TP222
Begin
SelDel_0
SelDel_1
SelDel_2
ReStart
SelLSBs
POLSBs_0
POLSBs_1
POLSBs_2
POLSBs_3
EndACQ
NCOClk_p
NCOClk_m
PrCalClk_p
PrCalClk_m
Clk500M_p
Clk500M_m
TP303
TP302
SM49.9-0402
R359
SM100-0603
R358
SM51-0603
C237
SM.1uFS
C266
SM.1uFS
C235
SM.1uFS
TP321
-5_PS
-VT
TP181
TP176
TP172
TP173
TP174
TP182
TP237
TP221
TP233
TP243
TP225
TP306
TP240
TP308
ITCnt_0_p
ITCnt_0_n
ITCnt_1_p
ITCnt_1_n
ITCnt_2_p
ITCnt_2_n
ITCnt_3_p
ITCnt_3_n
RTCnt1_0_p
RTCnt1_0_n
RTCnt1_1_p
RTCnt1_1_n
RTCnt2_0_p
RTCnt2_0_n
RTCnt2_1_p
RTCnt2_1_n
MAMClk1_p
MAMClk1_n
MAMClk2_p
MAMClk2_n
MAMClk3_p
MAMClk3_n
MAMClk4_p
MAMClk4_n
MAcq_1_p
MAcq_1_n
MAcq_2_p
MAcq_2_n
MAcq_3_p
MAcq_3_n
MAcq_4_p
MAcq_4_n
MAcq_5_p
MAcq_5_n
MAcq_6_p
MAcq_6_n
MAcq_7_p
MAcq_7_n
MAcq_8_p
MAcq_8_n
TP_REF21
125MHZ_MTT_P
125MHZ_MTT_N
86_EN_500MHZ_EXT
U55
SM10ELT24
C126
C265
C288
FPGA(0:35)
TO_PAGE_TB6
U46
SM100EP57
R325
SM392.0S
R327
SM392.0S
R321
R322
R323
SM100-0603
C197
C199
C236
SEL0
SEL1
Ch(10)
Ch(11)
TP239
TP235
TP242
TP179
TP217
TP219
StartACQ_p
StartACQ_m
TRIGD_p
TRIGD_m
TBCK_p
TBCK_m
StartSlot_p
StartSlot_m
StartSlo1_p
StartSlo1_m
StartSlo2_p
StartSlo2_m
StartSlo3_p
StartSlo3_m
StartSlo4_p
StartSlo4_m
Clk186
R332
R331
R335
R333
SM49.9-0402
50_OHM_10G
UNUSED
TO_PAGE_TB4
TBCK_p
TBCK_m
FROM_PAGE_TB1
ACQ_CNTRL(0:25)
Ch(0:11)
10_GHZ
_EXT_CLK_CAL
R326
SM7.50KS
R324
SM2.49KS
C198
SM.1uFS
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LeCroy CORPORATION
DRAWN or Changed by: bessie
CHKD
/ /
Date Changed: Thursday, April 3, 2003 Time: 4:56:57 pm
MODEL : 901586-XX
MTT(2/7)
DWG NO: 901587
SH: 14 OF 45
REV : B

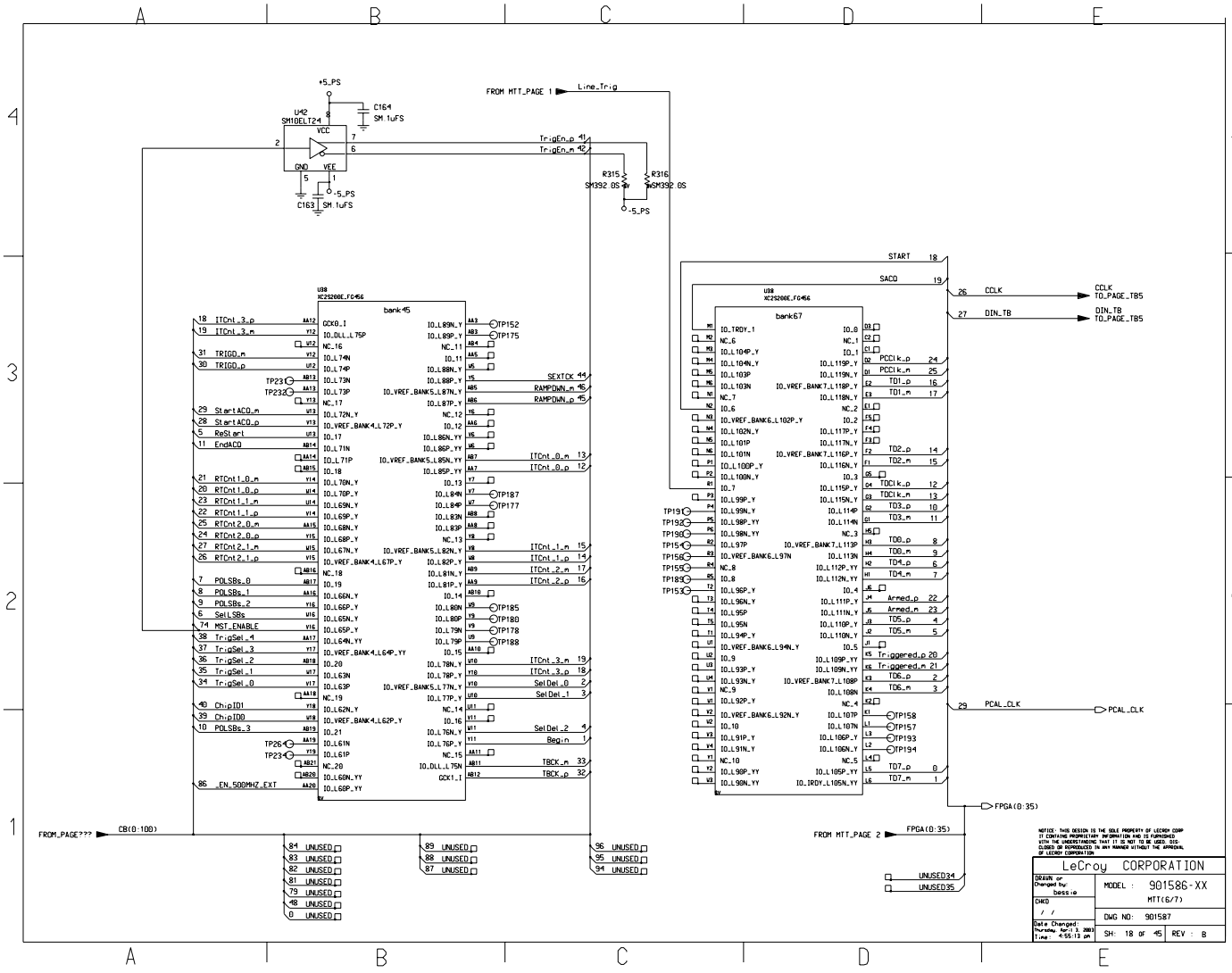


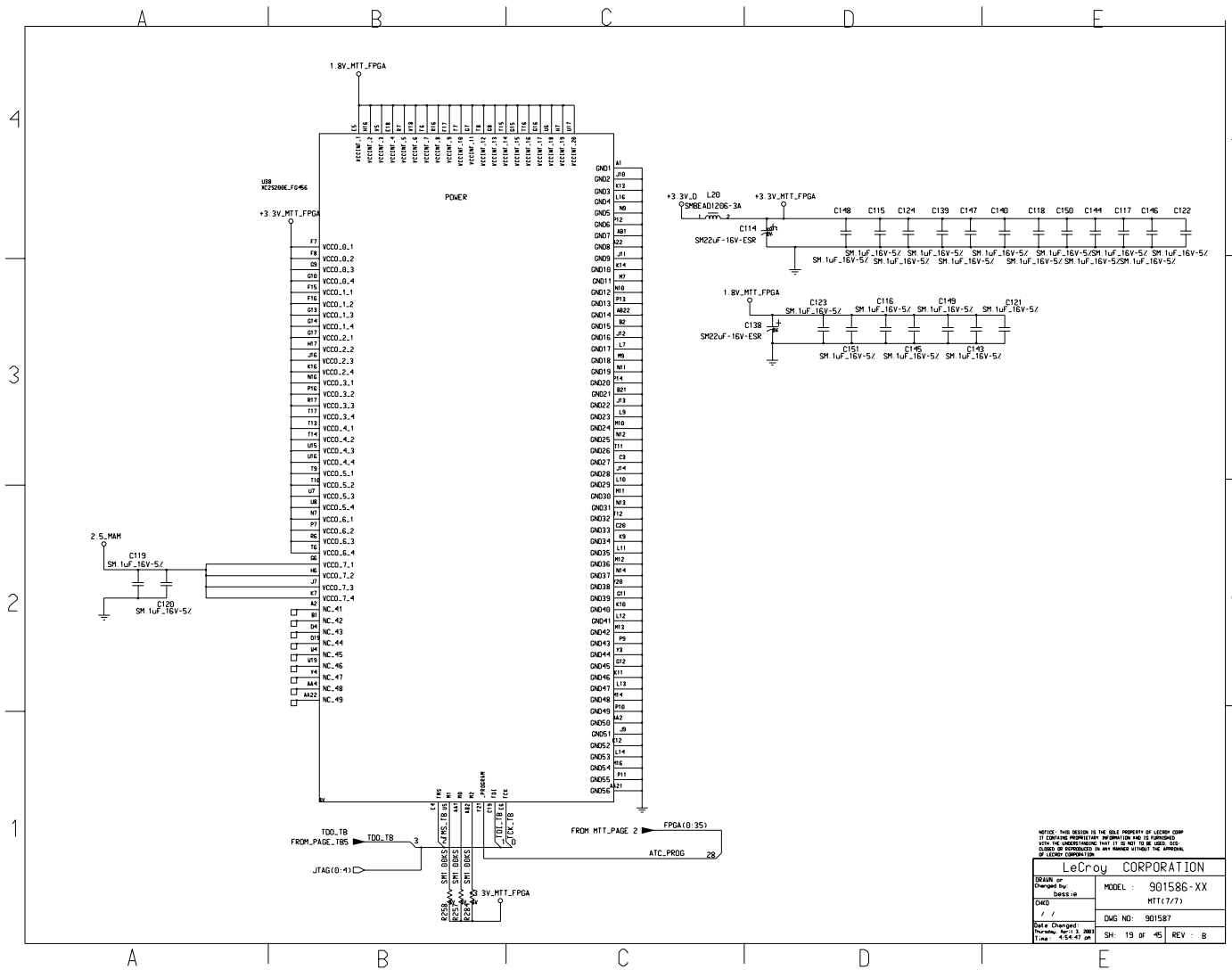
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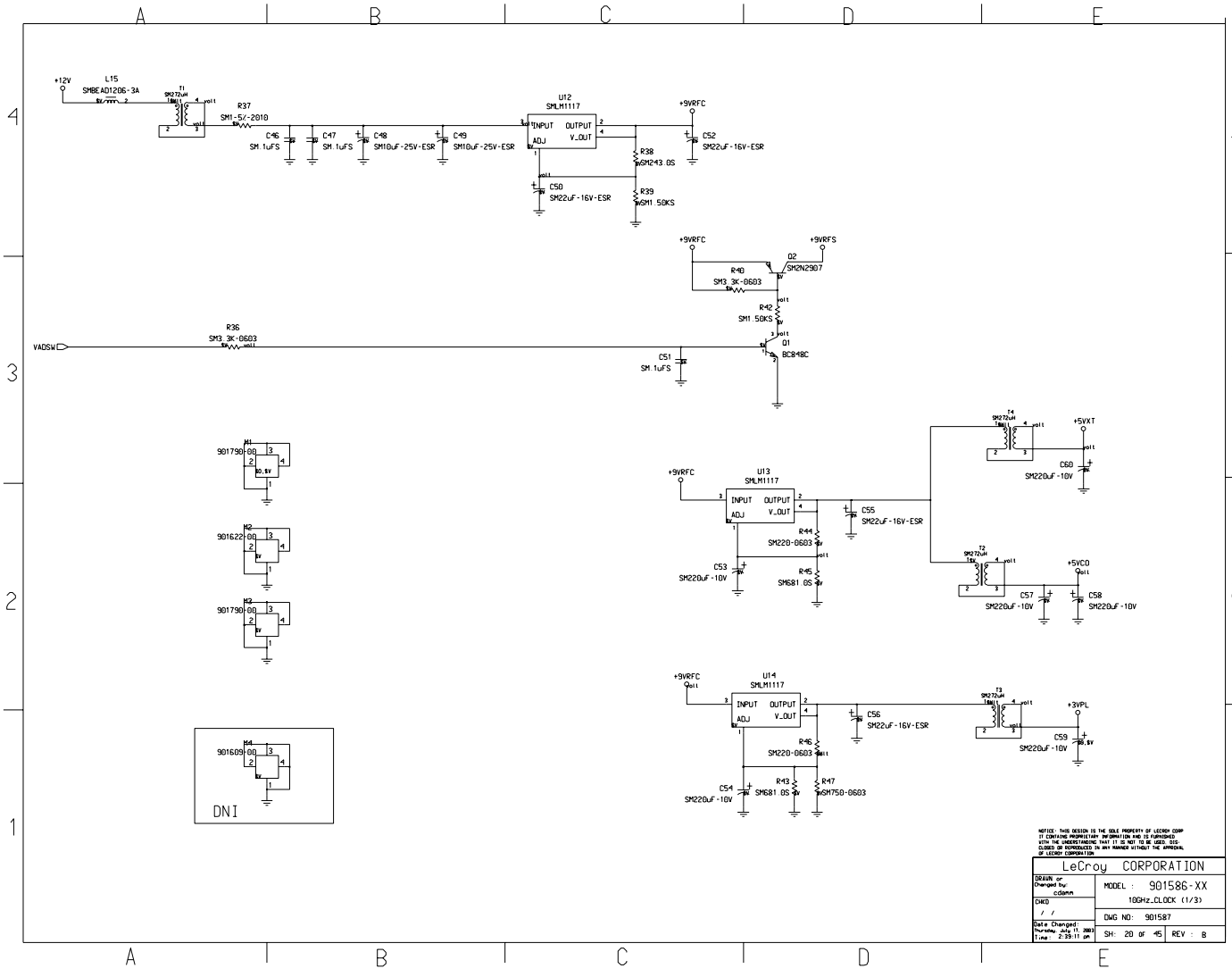
LeCroy CORPORATION	
DRAWN or Changed by: bessie	MODEL : 901586-XX
CHKD / /	MTT(3/7)
Date Changed: Thursday, April 3, 2003 Time : 4:56:28 pm	DWG NO: 901587
	SH: 15 OF 45 REV : B


FROM_PAGE_TB1
Tr(0:9)
Layout in that order; terminations by TR pins
Layer -2
Tr(0:9)
100.0HMS.DIFF
_RESET
FROM_PAGE_TB1
CB(0:100)
LINETrig
MST_CSN
P_A(0)
P_A(1)
P_A(2)
P_A(3)
P_A(4)
P_D(7)
P_D(6)
P_D(5)
P_D(4)
P_D(3)
P_D(2)
P_D(1)
P_D(0)
TRIGOUTP
TRIGOUTN
TRIGPOTP
TRIGPOTN
VALOUT
TO_PAGE_TB1
TRIG_P
TRIG_M
FROM_PAGE_TB2
TBCK_P
TBCK_M
DAC(0:4)
500MHZ
50.0HMS
-4.096V_REF_TB
-4.5_MST
MST_ENABLE
TCCNT1
TCCNT2
TCCNT3
TCCNT4
MST_REF1
MST_REF2
MST_REF3
MST_REF4
U53
MST429A
U62
SM10ELT24
U32
SM10ELT25
U33
SM10ELT25
U39
SM10ELT25
U44
SMDS3245
U29
SMDS3245
Q8
BFR92A
Q1
BFR92A
+5_PS
-5_PS
-12_PS
-VT
+4.3V
GND
VCC
VEE
VBB
NC
TP159
TP160
TP161
TP162
TP201
TP202
TP249
TP253
TP254
TP255
TP256
TP257
TP275
TP290
TP292
TP293
TP294
TP295
TP311
TP312
TP313
TP314
TP315
TP316
TP317
TP318
TP319
TP320
TP339
TP353
TP354
TP355
TP356
R262
SM1.00KS
R285
SM61.9S
R308
SM61.9S
R319
SM1.00KS
R338
SM392.0S
R339
SM392.0S
R354
SM2.00KS
R355
SM2.00KS
R336
SM2.00KS
R337
SM2.00KS
R340
SM49.9-0402
R341
SM430-0603
R352
SM2.21KS
R351
SM2.21KS
R357
SM2.21KS
R356
SM2.21KS
R318
SM2.21KS
R380
SM49.9-0402
R381
SM49.9-0402
R382
SM100.0-0402
R383
SM100.0-0402
R384
SM100.0-0402
R385
SM100.0-0402
R353
SM100.0-0402
R400
SM1.21KS
R401
SM1.21KS
R419
SM1.21KS
R420
SM10-0603
R421
SM182.0S
R422
SM10-0603
R423
SM182.0S
R424
SM182.0S
C282
SM.1uFS
C233
SM.1uFS
C286
SM.1uFS
C230
SM.1uFS
C284
SM.1uFS
C306
SM.1uFS
C307
SM.1uFS
C316
SM.001uF-0603
C304
SM.001uF-0603
C305
SM.001uF-0603
C317
SM.1uFS
C232
SM.1uFS
C173
SM.1uFS
C264
SM.1uF-0603
C172
SM.1uFS
C97
SM.1uFS
C98
SM.1uFS
C96
SM.1uFS
C100
SM.1uFS
C152
SM.1uFS
C155
SM.1uFS
C125
SM.1uFS
C156
SM.1uFS
C154
SM.1uFS
C153
SM.1uFS
BAV99
CR54
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LeCroy CORPORATION
DRAWN or Changed by: bessie
CHKD
/ /
Date Changed: Thursday, April 3, 2003 Time: 4:56:06 pm
MODEL : 901586-XX
MTT(4/7)
DWG NO: 901587
SH: 16 OF 45
REV : B


FROM MTT_PAGE 2
FPGA(0:35)
U28
XC2S200E_FG456
bank01
bank23
ATC_DONE 32
ATC_INIT 33
LD_TBDAC1 86
SRD_TBDAC1 98
LD_TBDAC2 85
SRD_TBDAC2 99
SCLK_TB 100
SWD_TB 97
TP238
TP265
TP266
TP267
TP254
TP250
TP251
TP253
TP252
CKCNT1
CKCNT2
CKCNT3
CKCNT4
LDCNT1_
LDCNT2_
LDCNT3_
LDCNT4_
TCCNT1
TCCNT2
TCCNT3
TCCNT4
TRIGOUT
VALOUT
ODDTR
MST_D(7)
MST_D(6)
MST_D(5)
MST_D(4)
MST_D(3)
MST_D(0)
MST_D(2)
MST_D(1)
MST_A(2)
MST_A(4)
MST_A(1)
MST_A(3)
MST_A(0)
LINETrig
MST_CSN
PrCalClk_p
PrCalClk_m
UP_CLK
FROM_PAGE???
CB(0:100)
FROM_PAGE_TB6
DIN_TB
CCLK
TDO_TB
TO_PAGE_TB7
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WITH THE UNDERSTANDING THAT IT IS NOT TO BE USED, DIS-
CLOSED OR REPRODUCED IN ANY MANNER WITHOUT THE APPROVAL
OF LECROY CORPORATION
LeCroy CORPORATION
DRAWN or Changed by: bess.ie
CHKD
/ /
Date Changed: Thursday, April 3, 2003 Time: 4:55:36 pm
MODEL : 901586-XX
MTT(5/7)
DWG NO: 901587
SH: 17 OF 45
REV : B

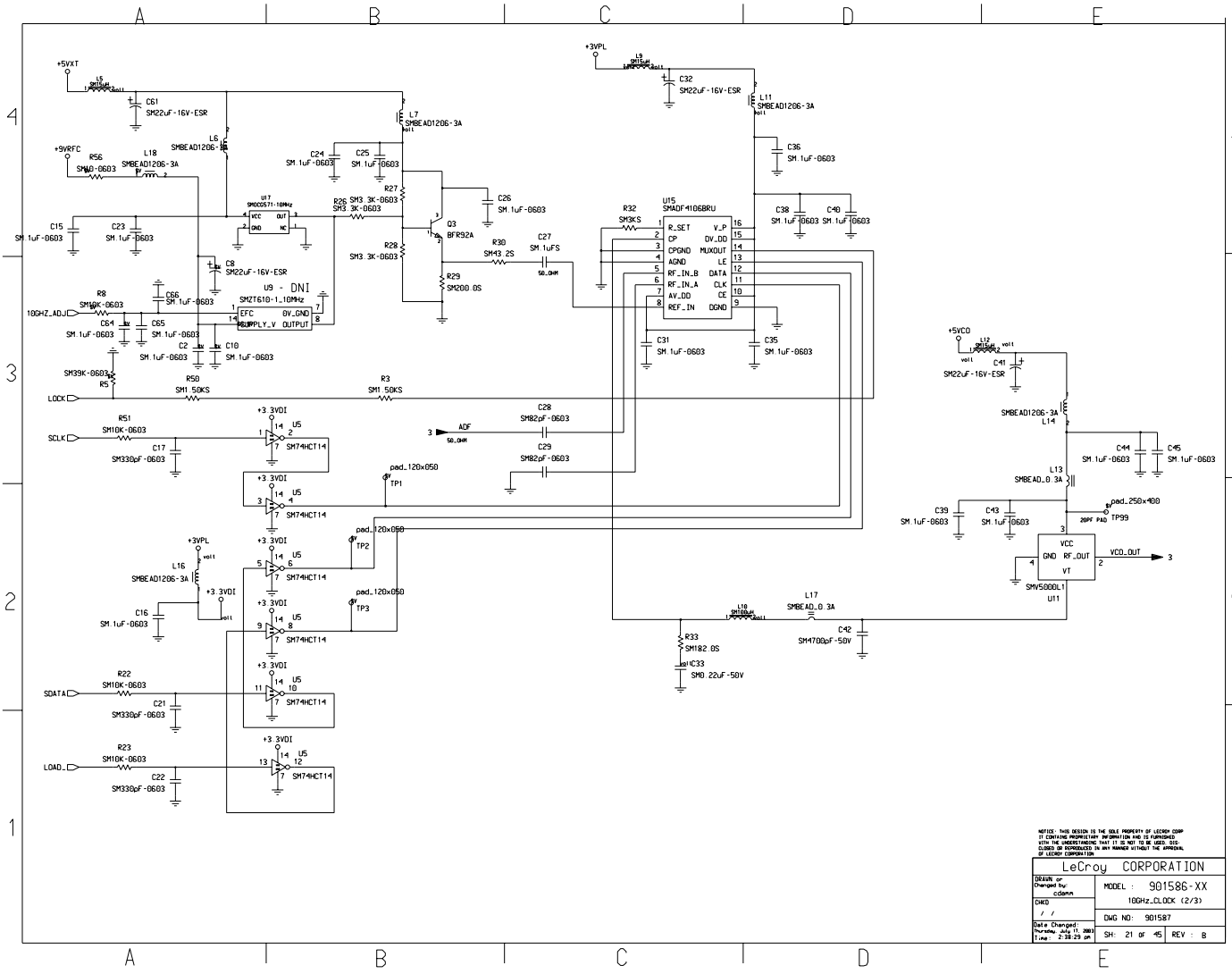

+5_PS
C164
SM.1uFS
U42
SM10ELT24
VCC
GND
VEE
C163
SM.1uFS
-5_PS
FROM MTT_PAGE 1
Line_Trig
Trigen_p 41
Trigen_m 42
R315
SM392.0S
R316
SM392.0S
-5_PS
U38
XC2S200E_FG456
bank45
bank67
START 18
SACO 19
CCLK 26
DIN_TB 27
PCAL_CLK 29
FPGA(0:35)
FROM_PAGE??? CB(0:100)
FROM MTT_PAGE 2 FPGA(0:35)
UNUSED34
UNUSED35
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LeCroy CORPORATION
DRAWN or Changed by: bessie
CHKD
/ /
Date Changed: Thursday, April 3, 2003 Time: 4:55:13 pm
MODEL : 901586-XX
MTT(6/7)
DWG NO: 901587
SH: 18 OF 45
REV : B


1.8V_MTT_FPGA
POWER
U38
XC2S200E_FG456
+3.3V_MTT_FPGA
2.5_MAM
C119
SM.1uF_16V-5%
C120
SM.1uF_16V-5%
+3.3V_D
L20
SMBEAD1206-3A
C114
SM22uF-16V-ESR
C148
C115
C124
C139
C147
C140
C118
C150
C144
C117
C146
C122
SM.1uF_16V-5%
C123
C116
C149
C121
C138
SM22uF-16V-ESR
C151
C145
C143
TDO_TB
FROM_PAGE_TB5
TDO_TB
JTAG(0:4)
FROM MTT_PAGE 2
FPGA(0:35)
ATC_PROG
R258
R259
R260
R261
R262
3.3V_MTT_FPGA
LeCroy CORPORATION
MODEL : 901586-XX
MTT(7/7)
DWG NO: 901587
SH: 19 OF 45
REV : B



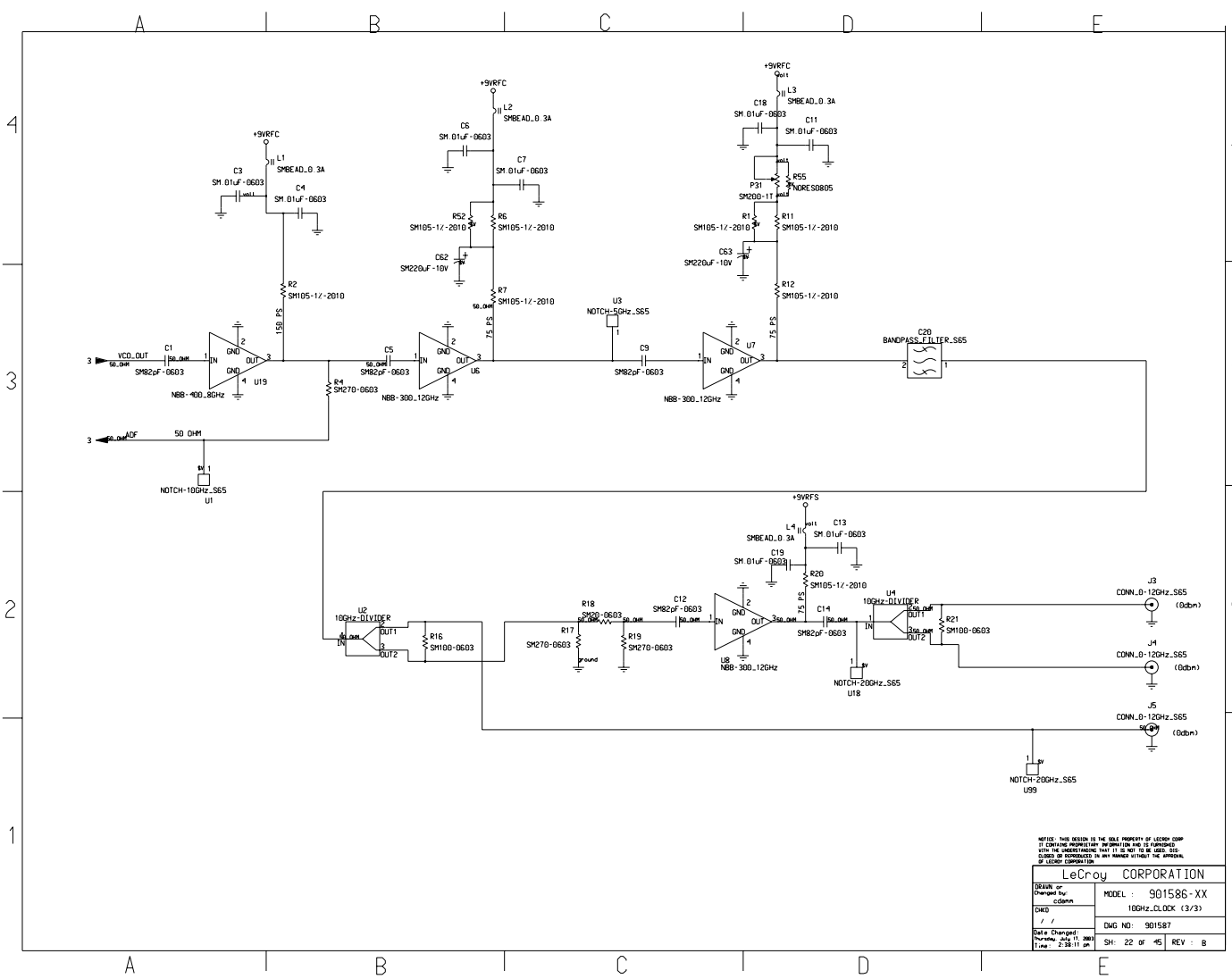
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LeCroy CORPORATION	
DRAWN or Changed by: cdamm	MODEL : 901586-XX
CHKD / /	10GHz_CLOCK (1/3)
Date Changed: Thursday, July 17, 2003 Time: 2:39:11 pm	DWG NO: 901587
	SH: 20 OF 45 REV : B



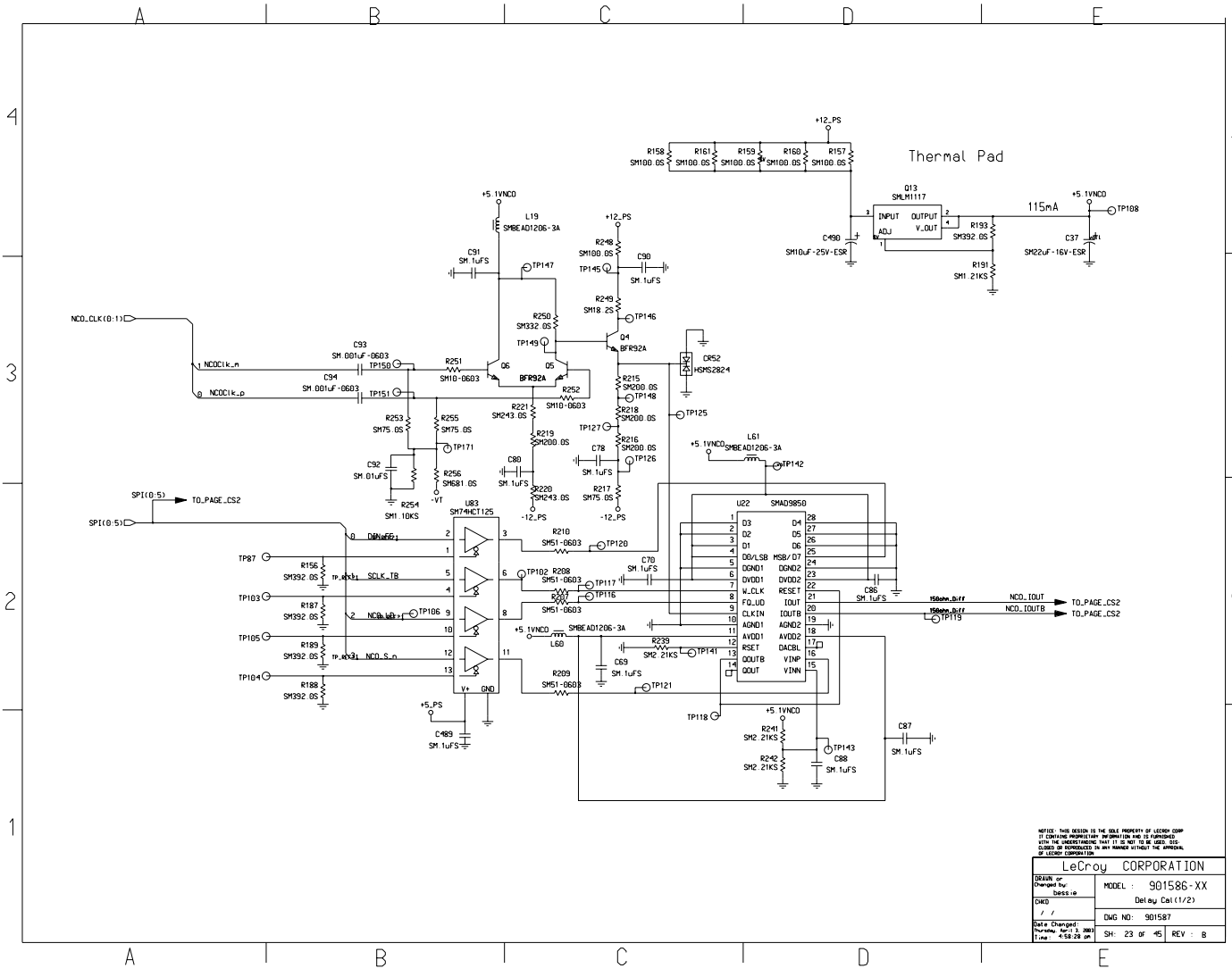
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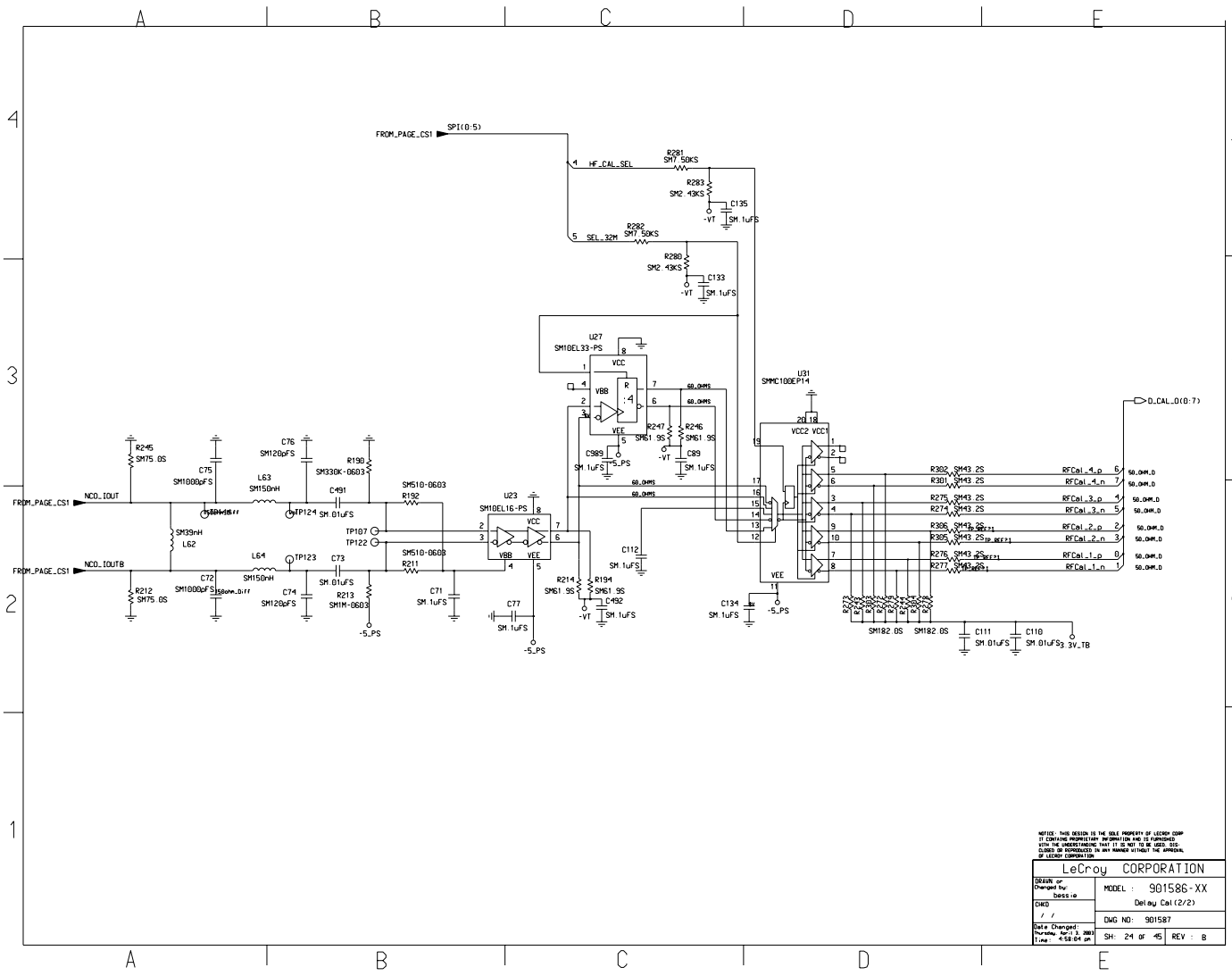
LeCroy CORPORATION	
DRAWN or Changed by: cdamm	MODEL : 901586-XX
CHKD / /	10GHz_CLOCK (2/3)
Date Changed: Thursday, July 17, 2003 Time: 2:38:29 pm	DWG NO: 901587
	SH: 21 OF 45 REV : B



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LeCroy CORPORATION	
DRAWN or Changed by: cdamm	MODEL : 901586-XX
CHKD / /	10GHz_CLOCK (3/3)
Date Changed: Thursday, July 17, 2003 Time: 2:38:11 pm	DWG NO: 901587
	SH: 22 OF 45 REV : B

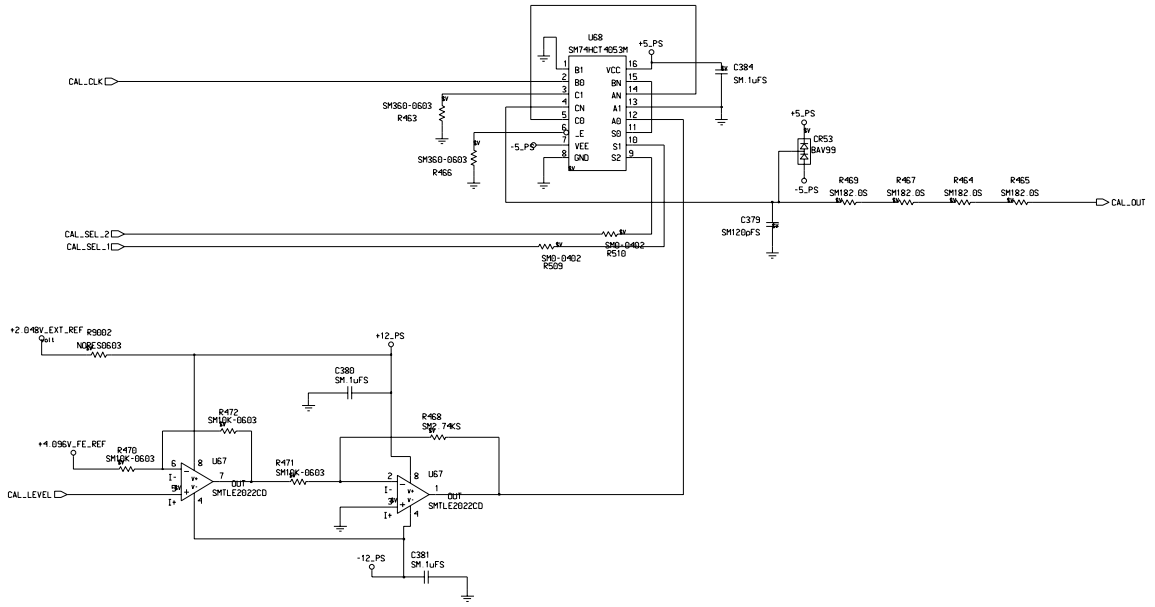

Thermal Pad
+12_PS
+5.1VNCO
+5_PS
-12_PS
-VT
115mA
NCO_CLK(0:1)
NCOClk_n
NCOClk_p
SPI(0:5)
TO_PAGE_CS2
SCLK_TB
NCO_S_n
NCO_IOUT
NCO_IOUTB
Q13
SHLM1117
INPUT
OUTPUT
ADJ
V_OUT
U83
SM74HCT125
U22
SMAD9850
L19
L61
L60
SMBEAD1206-3A
Q4
Q5
Q6
BFR92A
CR52
HSMS2824
C490
SM10uF-25V-ESR
C37
SM22uF-16V-ESR
R191
SM1.21KS
R193
SM392.0S
C91
SM.1uFS
C90
SM.1uFS
C93
SM.001uF-0603
C94
SM.001uF-0603
C92
SM.01uFS
C80
SM.1uFS
C78
SM.1uFS
C79
SM.1uFS
C86
SM.1uFS
C69
SM.1uFS
C87
SM.1uFS
C88
SM.1uFS
C489
SM.1uFS
R158
R161
R159
R160
R157
SM100.0S
R248
SM100.0S
R249
SM18.2S
R250
SM332.0S
R251
SM10-0603
R252
SM10-0603
R253
SM75.0S
R255
SM75.0S
R254
SM1.10KS
R256
SM681.0S
R221
SM243.0S
R219
SM200.0S
R220
SM243.0S
R215
SM200.0S
R218
SM200.0S
R216
SM200.0S
R217
SM75.0S
R210
SM51-0603
R207
SM51-0603
R209
SM51-0603
R239
SM2.21KS
R241
SM2.21KS
R242
SM2.21KS
R156
SM392.0S
R187
SM392.0S
R189
SM392.0S
R188
SM392.0S
TP87
TP103
TP105
TP104
TP106
TP102
TP117
TP116
TP120
TP121
TP118
TP119
TP125
TP126
TP127
TP141
TP142
TP143
TP145
TP146
TP147
TP148
TP149
TP150
TP151
TP171
TP108
LeCroy CORPORATION
MODEL : 901586-XX
Delay Cal(1/2)
DWG NO: 901587
SH: 23 OF 45
REV : B



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LeCroy CORPORATION	
DRAWN or Changed by: Dessie	MODEL : 901586-XX
CHKD / /	Delay Cal(2/2)
Date Changed: Thursday, April 3, 2003 Time: 4:58:04 pm	DWG NO: 901587
	SH: 24 OF 45 REV : B

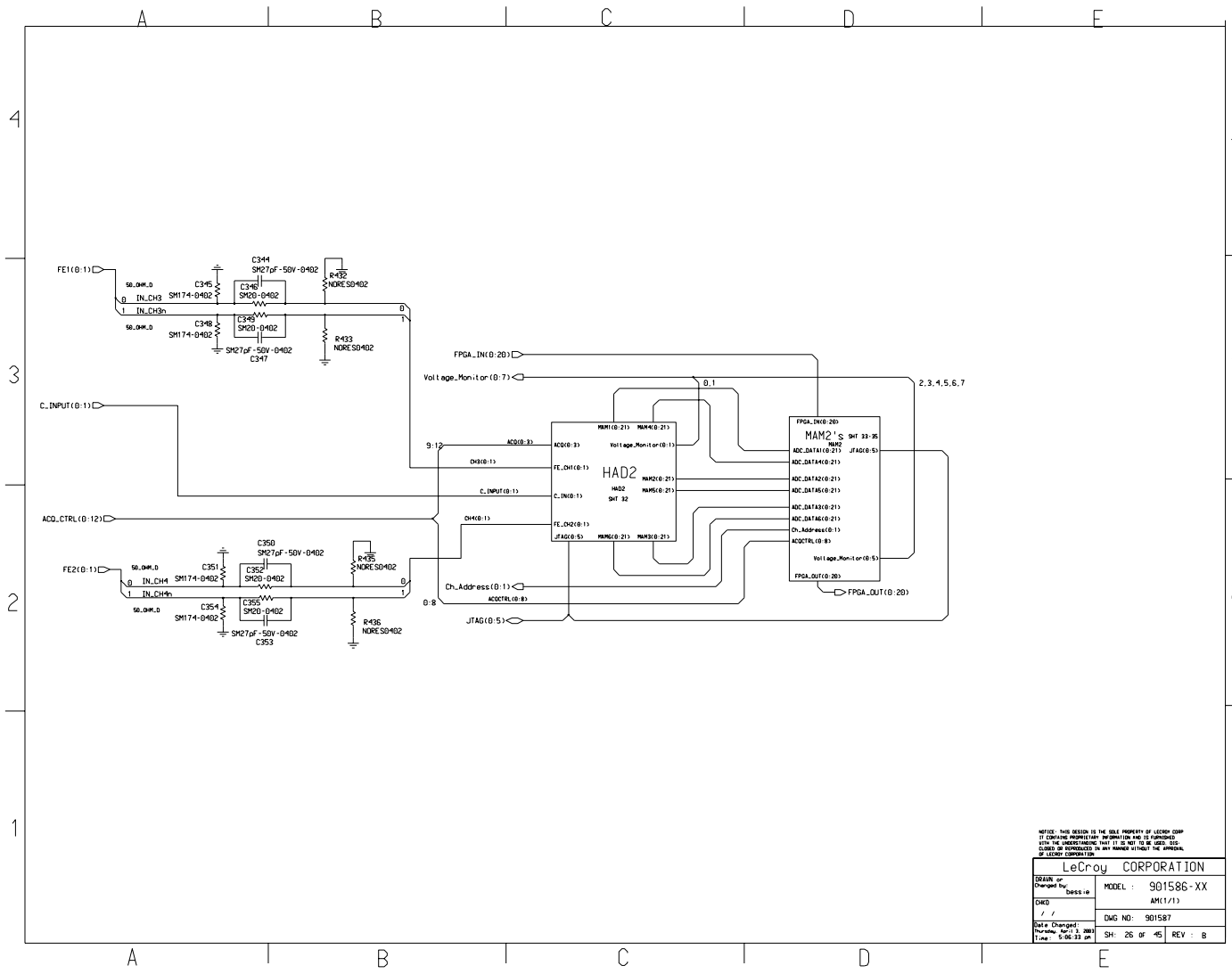
CAL_SEL1	CAL_SEL2	FUNCTION
0	0	CLOCKED & LEVEL
1	0	LEVEL ONLY
X	1	OFF



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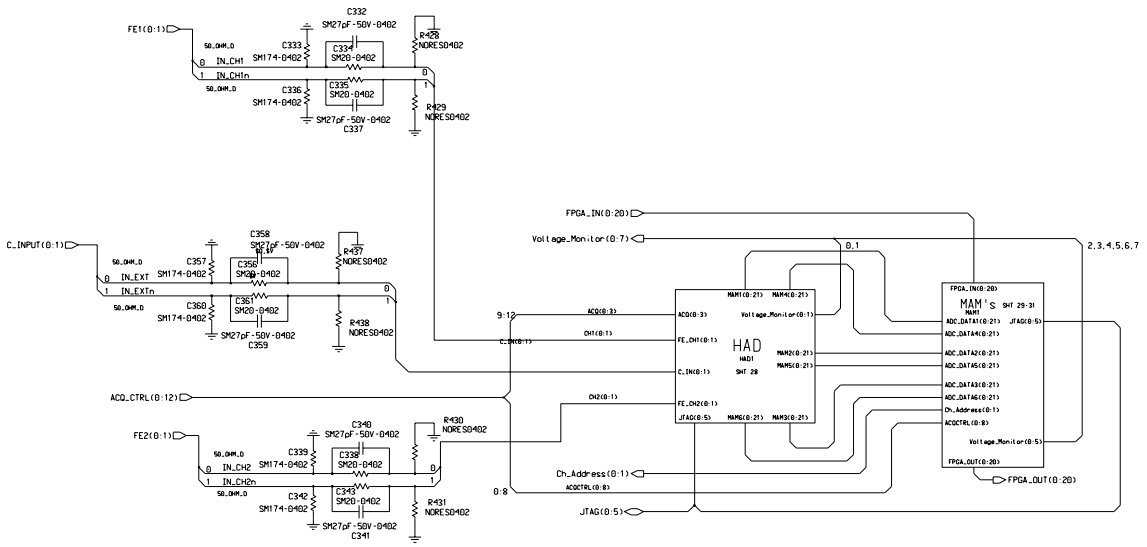
DRAWN or Changed by: Dessie	MODEL : 901586-XX
CHKD / /	CAL_OUT(1/1)
Date Changed: Thursday, April 3, 2003 Time: 4:59:03 pm	DWG NO: 901587
	SH: 25 OF 45 REV : B



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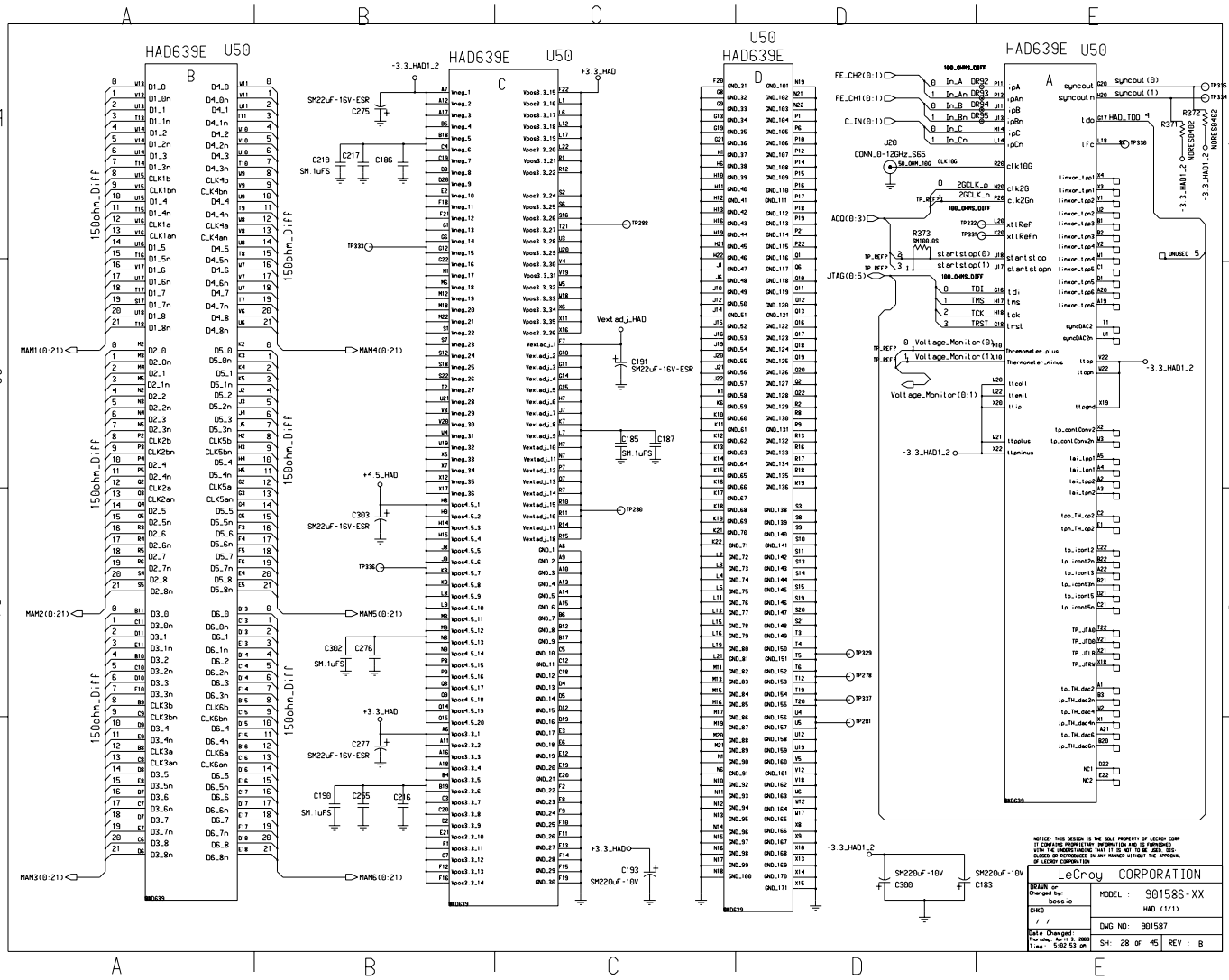
LeCroy CORPORATION

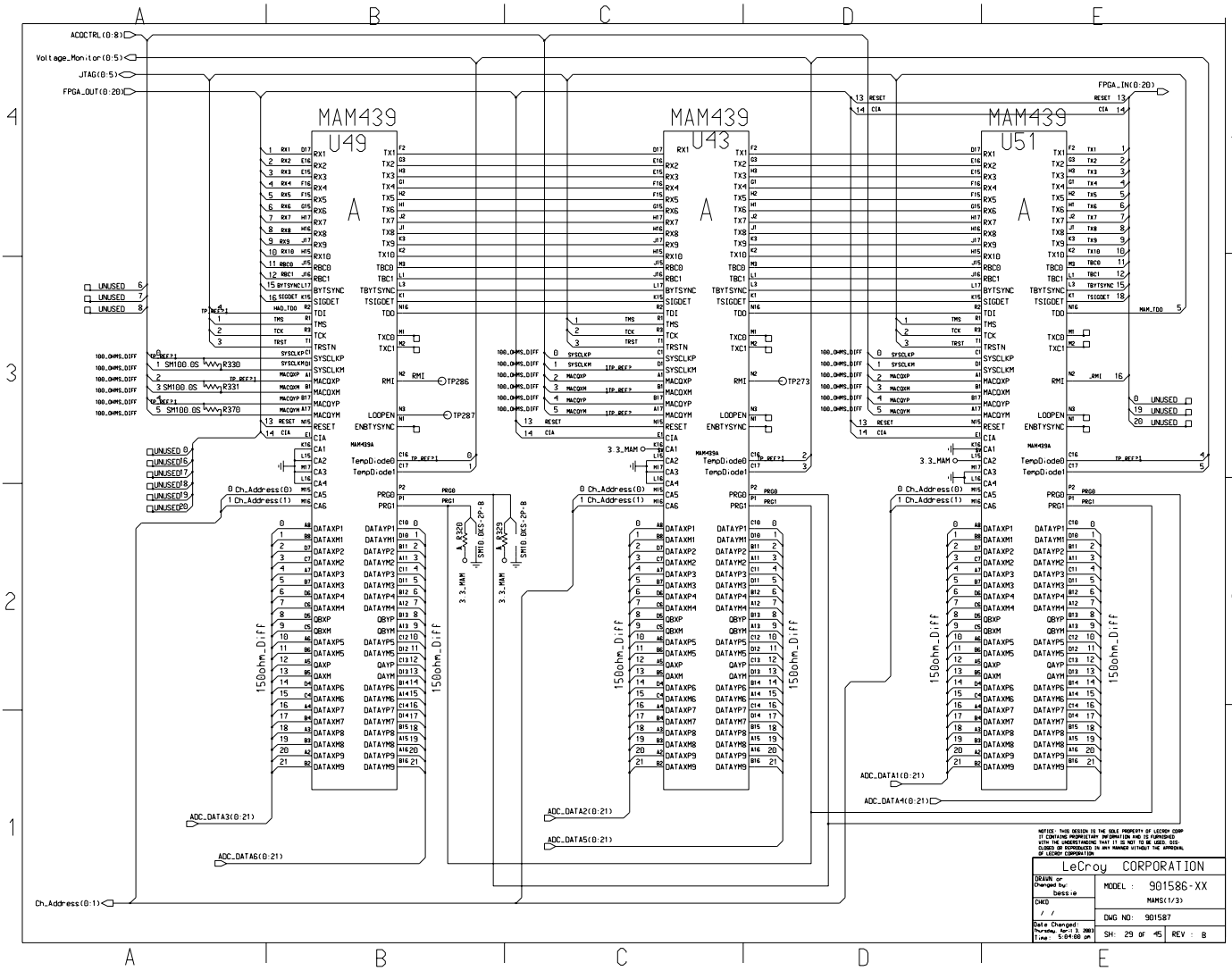
DRAWN or Changed by: bessie	MODEL : 901586-XX
CHKD: / /	AM(1/1)
Date Changed: Thursday, April 3, 2003 Time : 5:06:33 pm	DWG NO: 901587
	SH: 26 OF 45 REV : B

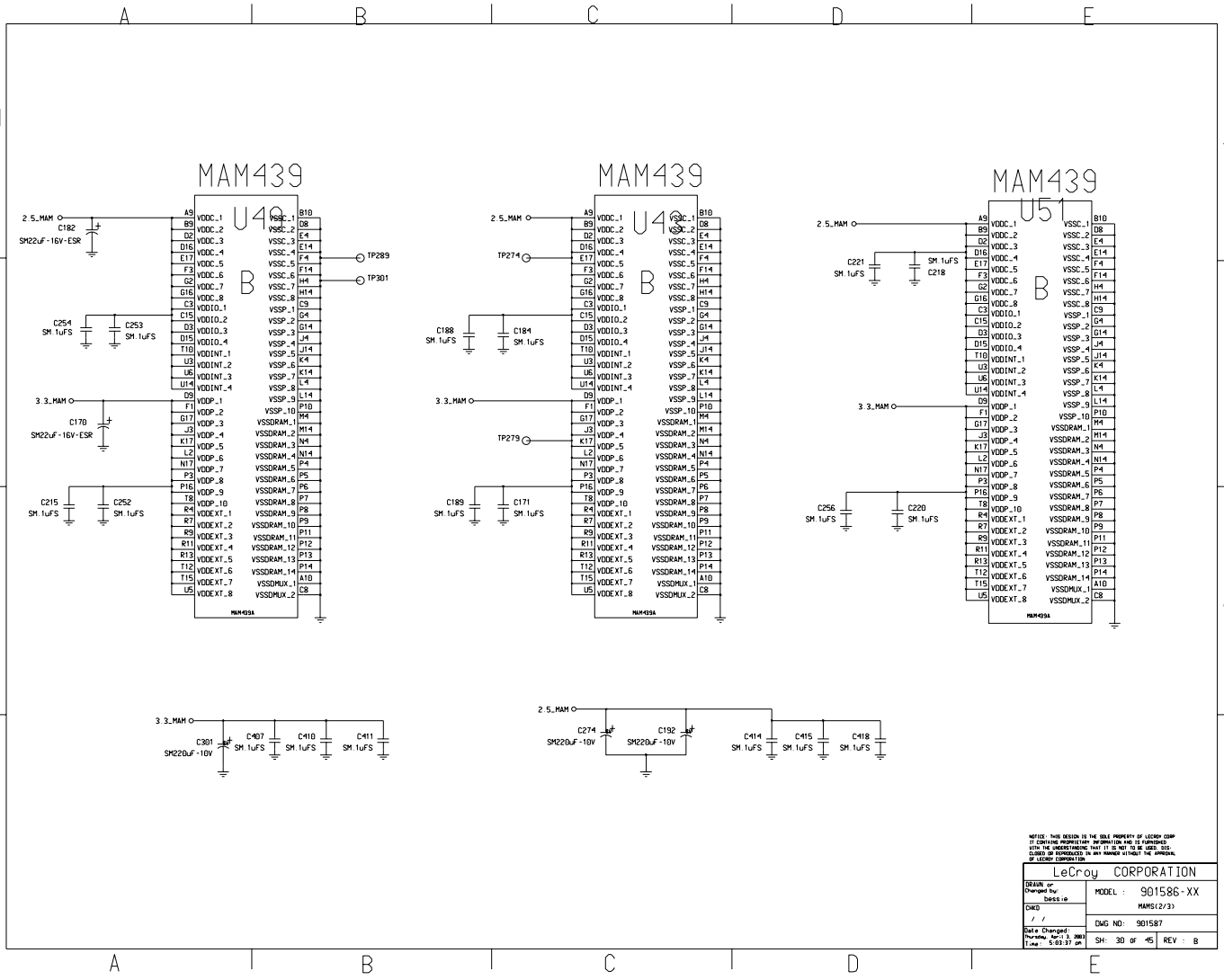


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LeCroy CORPORATION	
DRAWN or Changed by: bessie	MODEL : 901586-XX AM(1/1)
CHKD / /	DWG NO: 901587
Date Changed: Thursday, April 3, 2003 Time: 5:02:22 pm	SH: 27 OF 45 REV : B

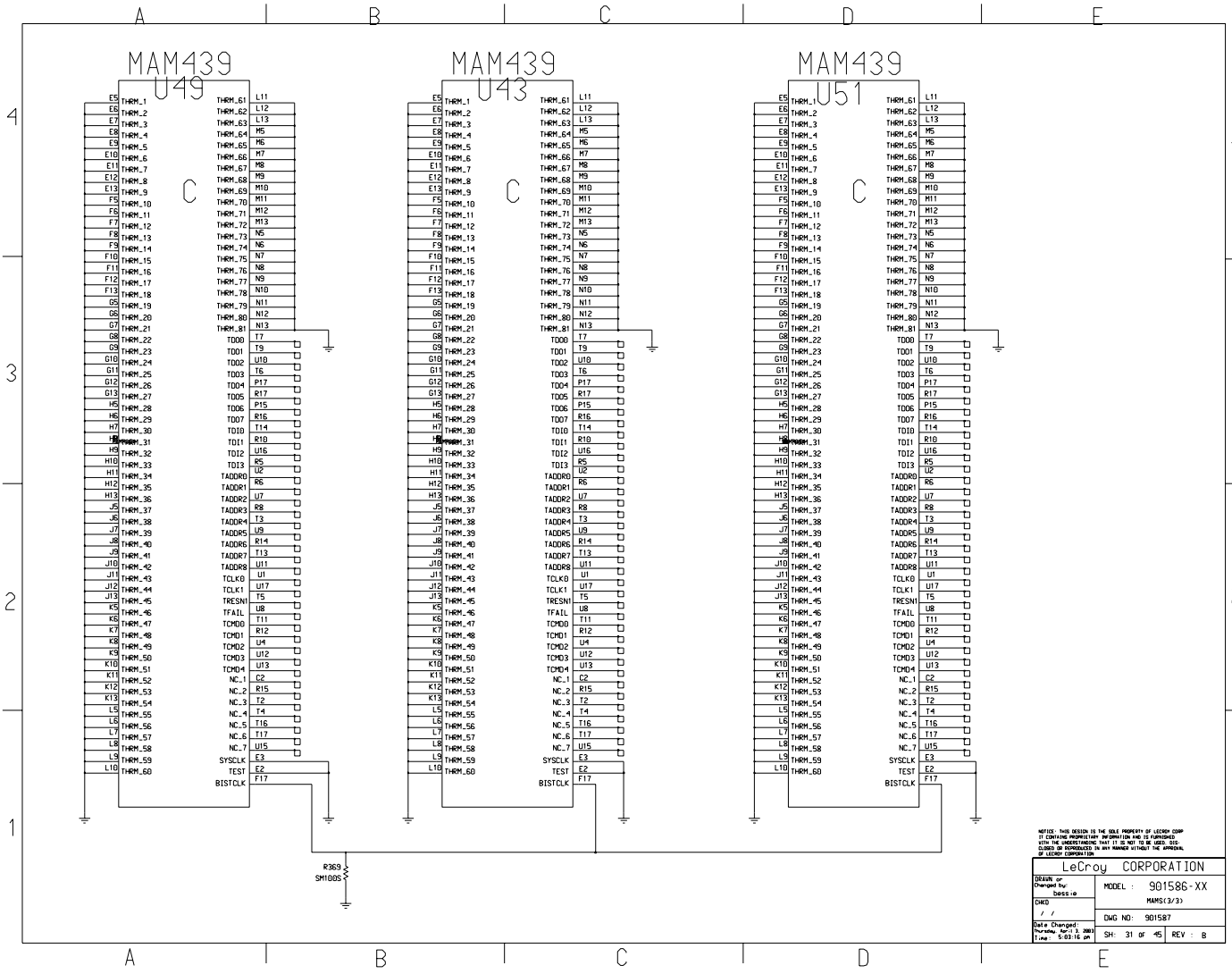

HAD639E U50
B
C
D
A
MAM1(0:21)
MAM2(0:21)
MAM3(0:21)
MAM4(0:21)
MAM5(0:21)
MAM6(0:21)
150ohm_Diff
+3.3_HAD
-3.3_HAD1_2
+4.5_HAD
Vextadj_HAD
SM22uF-16V-ESR
SM.1uFS
SM22uF-10V
C191 SM22uF-16V-ESR
C193 SM220uF-10V
C300 SM220uF-10V
C183 SM220uF-10V
TP288
TP280
TP329
TP278
TP337
TP281
TP335
TP334
TP330
TP333
TP336
FE_CH2(0:1)
FE_CH1(0:1)
C_IN(0:1)
J20
CONN_0-12GHz_SMS
ACQ(0:3)
JTAG(0:5)
R373
R372
R371
NORES0402
Voltage_Monitor(0)
Voltage_Monitor(1)
Voltage_Monitor(0:1)
UNUSED 5
LeCroy CORPORATION
MODEL : 901586-XX
HAD (1/1)
DWG NO: 901587
SH: 28 OF 45
REV : B


MAM439
U49
MAM439
U43
MAM439
U51
ACQCTRL(0:8)
Voltage_Monitor(0:5)
JTAG(0:5)
FPGA_OUT(0:20)
FPGA_IN(0:20)
ADC_DATA3(0:21)
ADC_DATA6(0:21)
ADC_DATA2(0:21)
ADC_DATA5(0:21)
ADC_DATA1(0:21)
ADC_DATA4(0:21)
Ch_Address(0:1)
150ohm_Diff
LeCroy CORPORATION
MODEL : 901586-XX
MAMS(1/3)
DWG NO: 901587
SH: 29 OF 45
REV : B



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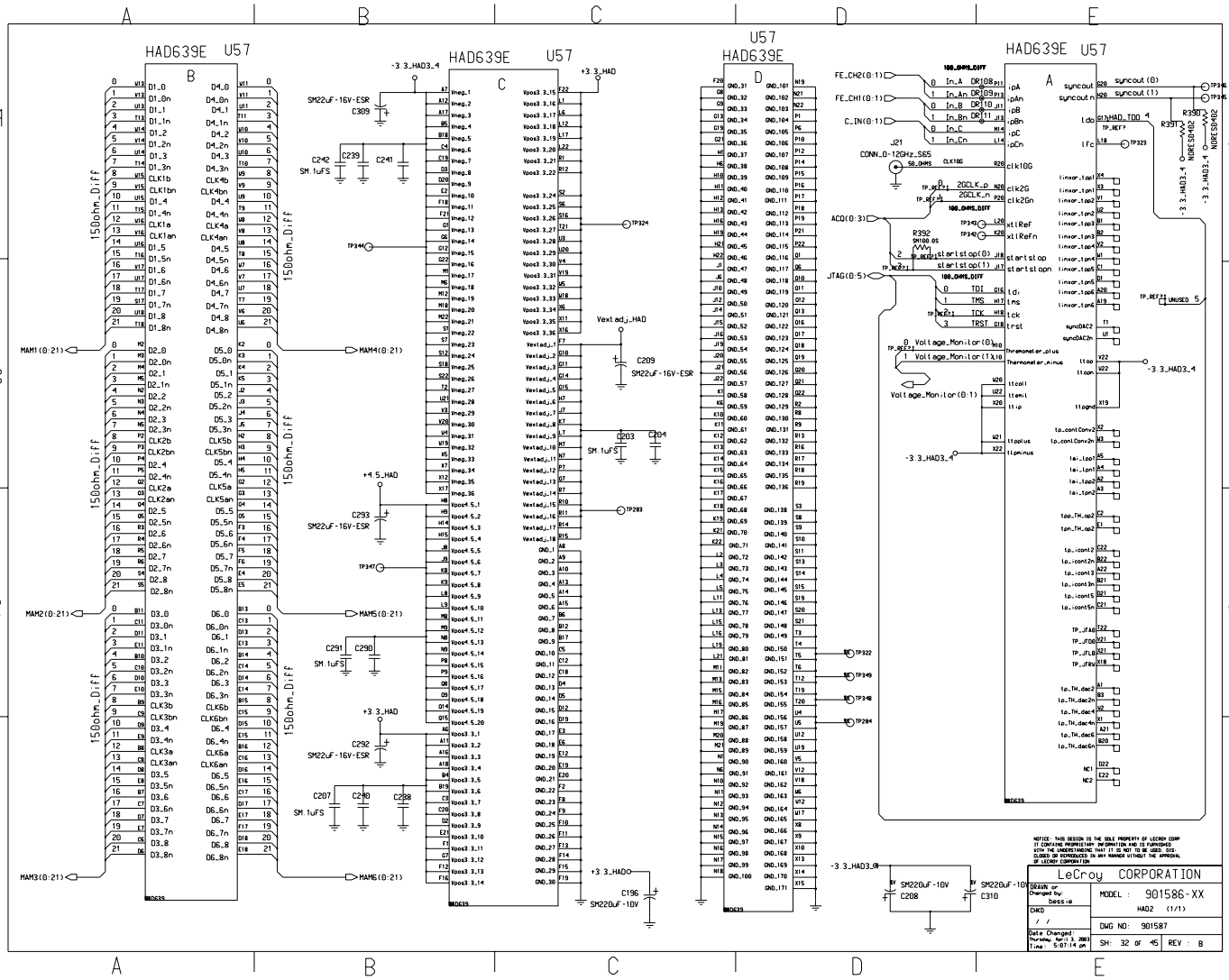
LeCroy CORPORATION	
DRAWN or Changed by: bessie	MODEL : 901586-XX
CHKD / /	MAM5(2/3)
Date Changed: Thursday, April 3, 2003 Time: 5:03:37 pm	DWG NO: 901587
	SH: 30 OF 45 REV : B

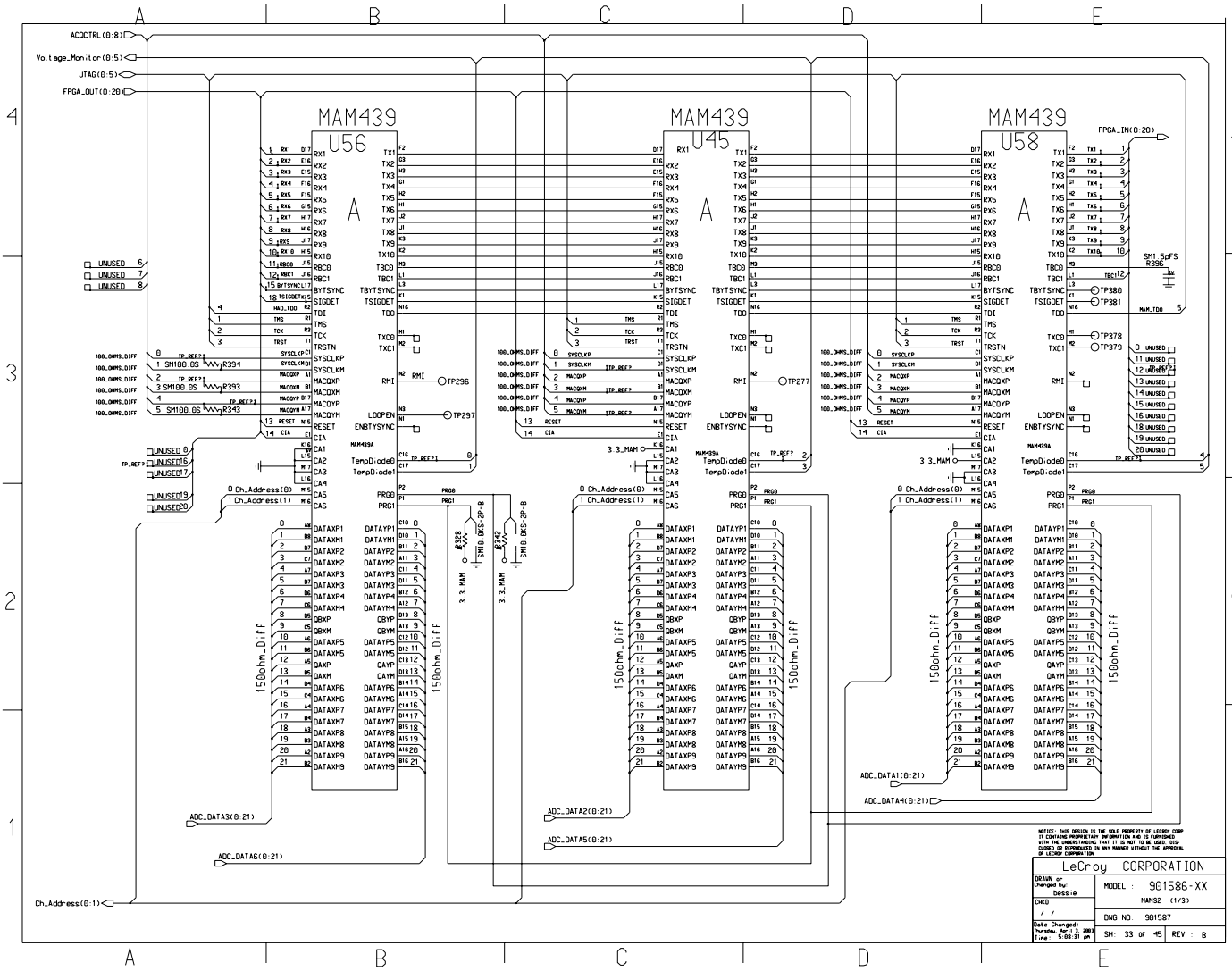


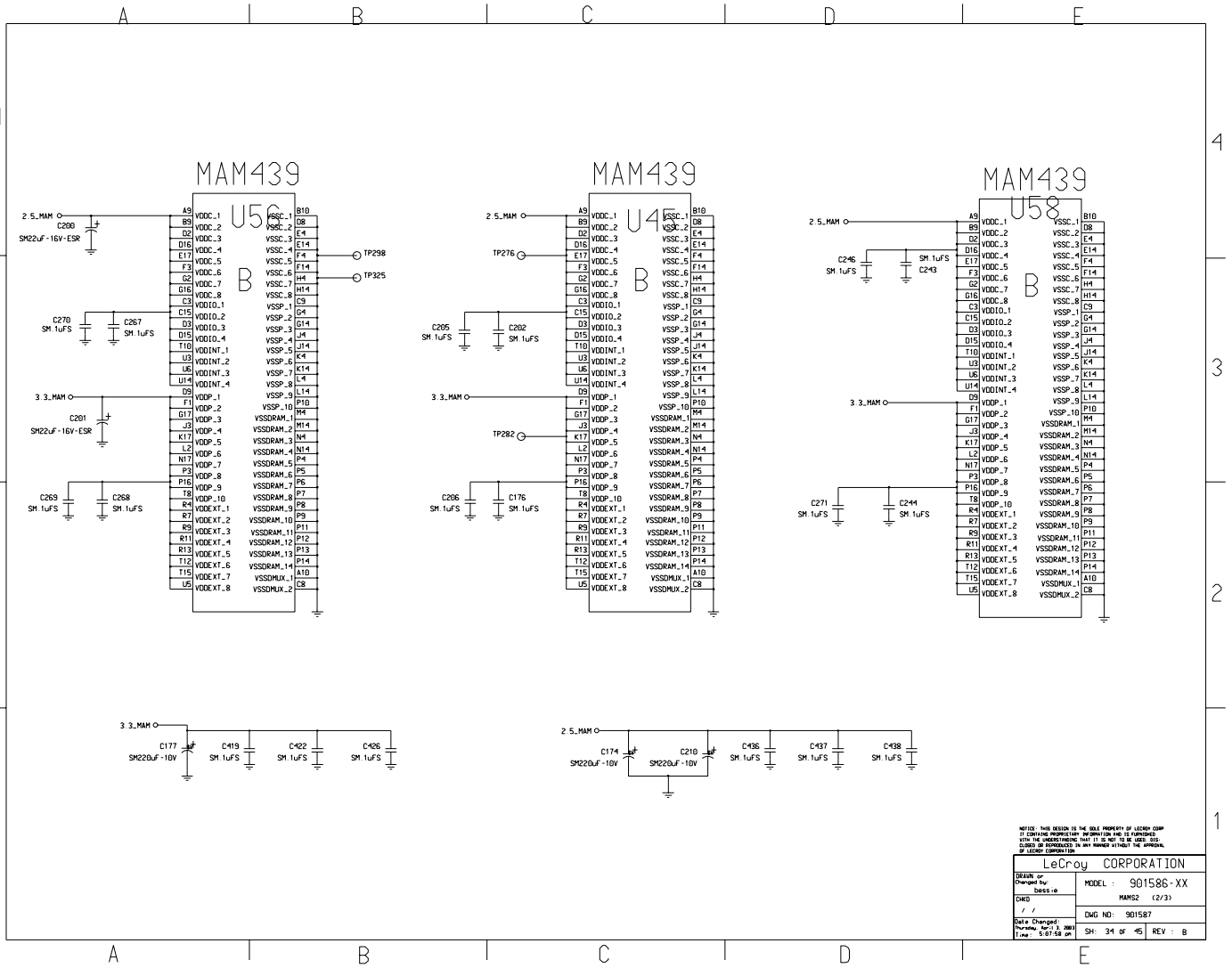
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DRAWN or Changed by: bess:e	MODEL : 901586-XX
CHKD / /	MAM5(3/3)
Date Changed: Thursday, April 3, 2003 Time : 5:03:16 pm	DWG NO: 901587
	SH: 31 OF 45 REV : B


HAD639E U57
B
C
D
A
MAM1(0:21)
MAM2(0:21)
MAM3(0:21)
MAM4(0:21)
MAM5(0:21)
MAM6(0:21)
150ohm_Diff
SM22uF-16V-ESR
SM.1uFS
+3.3_HAD
+4.5_HAD
Vextadj_HAD
SM22uF-16V-ESR
SM220uF-10V
FE_CH2(0:1)
FE_CH1(0:1)
C_IN(0:1)
ACQ(0:3)
JTAG(0:5)
Voltage_Monitor(0:1)
-3.3_HAD3_4
-3.3_HAD3_3
LeCroy CORPORATION
MODEL : 901586-XX
HAD2 (1/1)
DWG NO: 901587
SH: 32 OF 45
REV : B

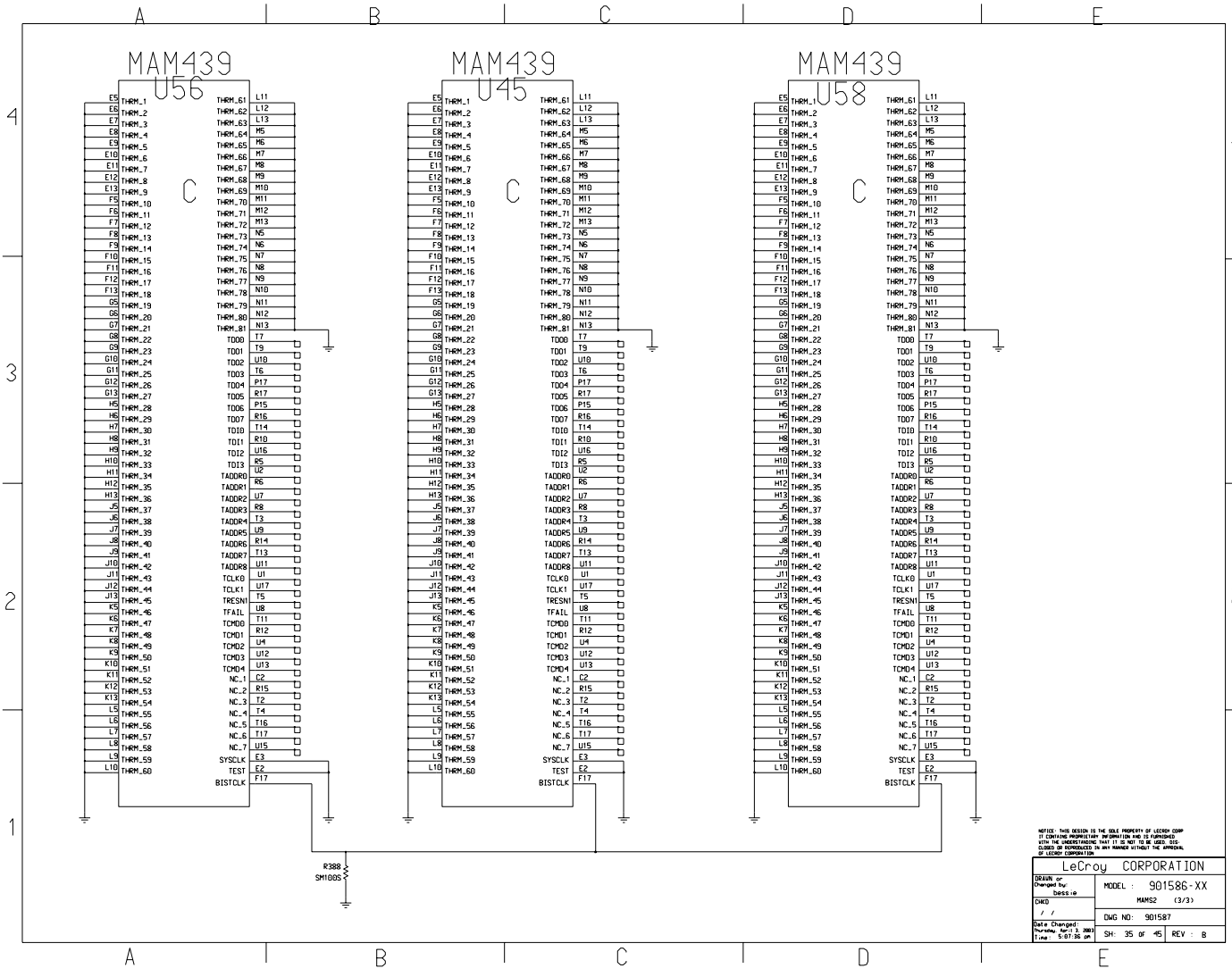

MAM439
U56
MAM439
U45
MAM439
U58
ACQCTRL(0:8)
Voltage_Monitor(0:5)
JTAG(0:5)
FPGA_OUT(0:20)
FPGA_IN(0:20)
ADC_DATA3(0:21)
ADC_DATA6(0:21)
ADC_DATA2(0:21)
ADC_DATA5(0:21)
ADC_DATA1(0:21)
ADC_DATA4(0:21)
Ch_Address(0:1)
150ohm_Diff
3.3_MAM
LeCroy CORPORATION
MODEL : 901586-XX
MAMS2 (1/3)
DWG NO: 901587
SH: 33 OF 45
REV : B

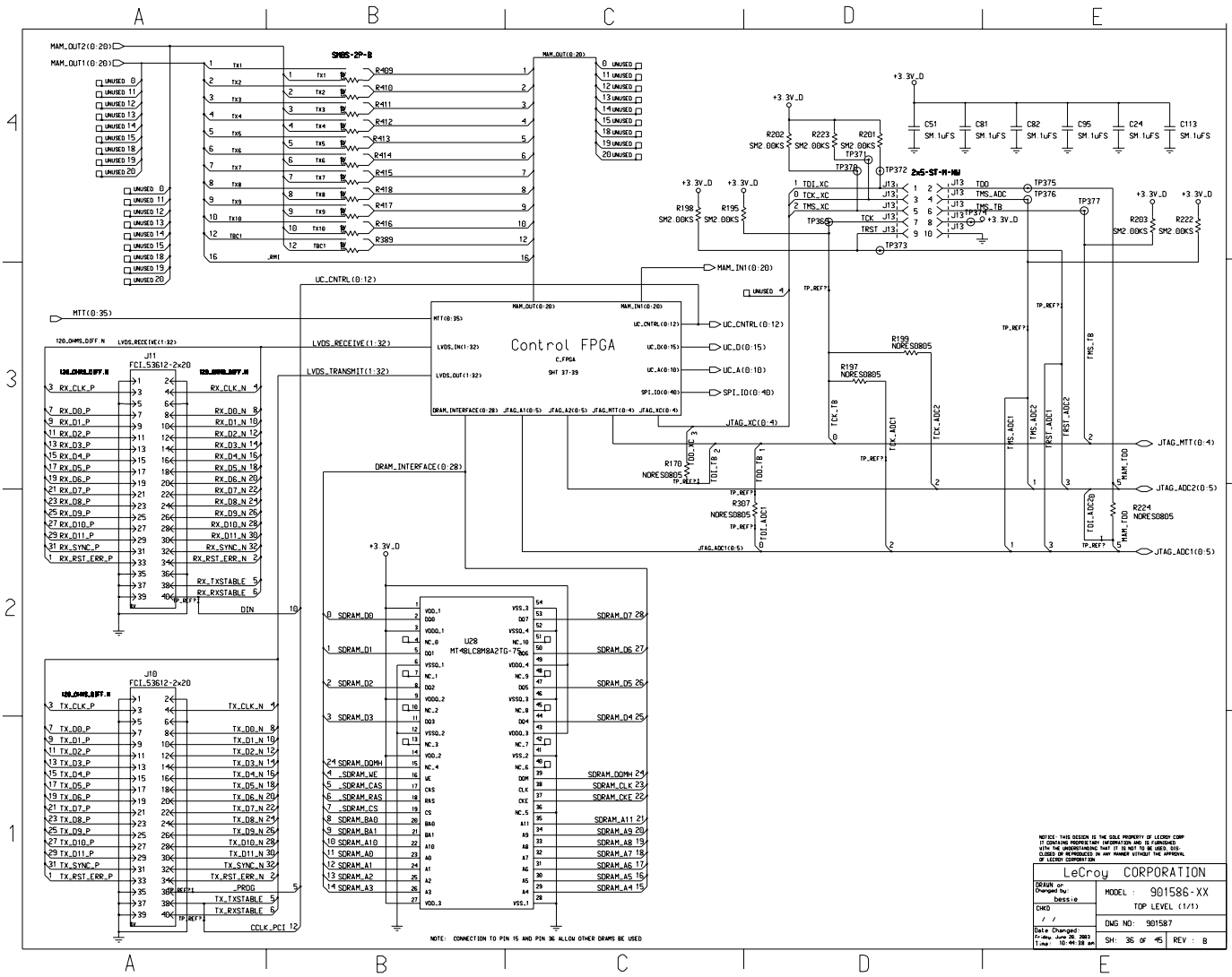


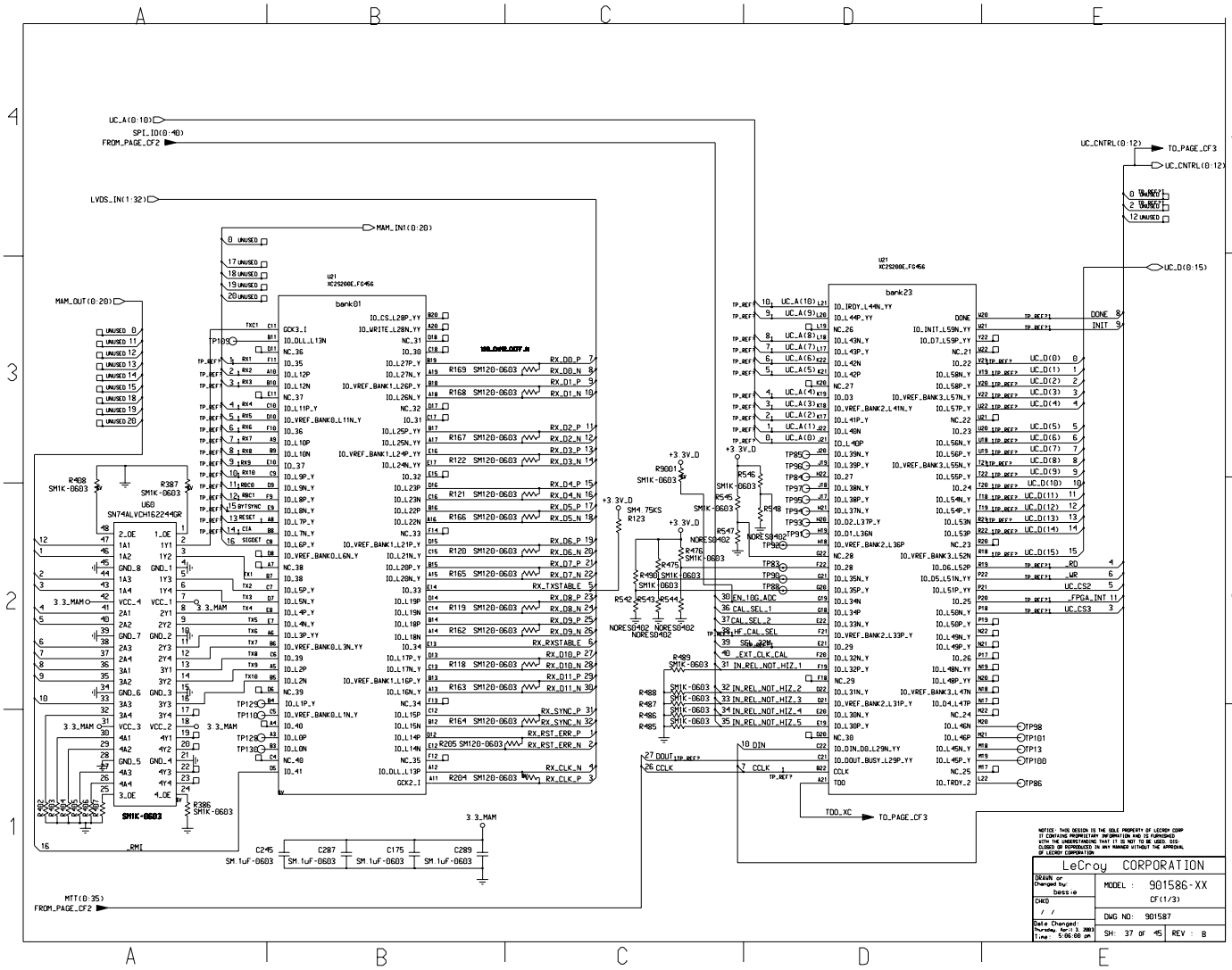
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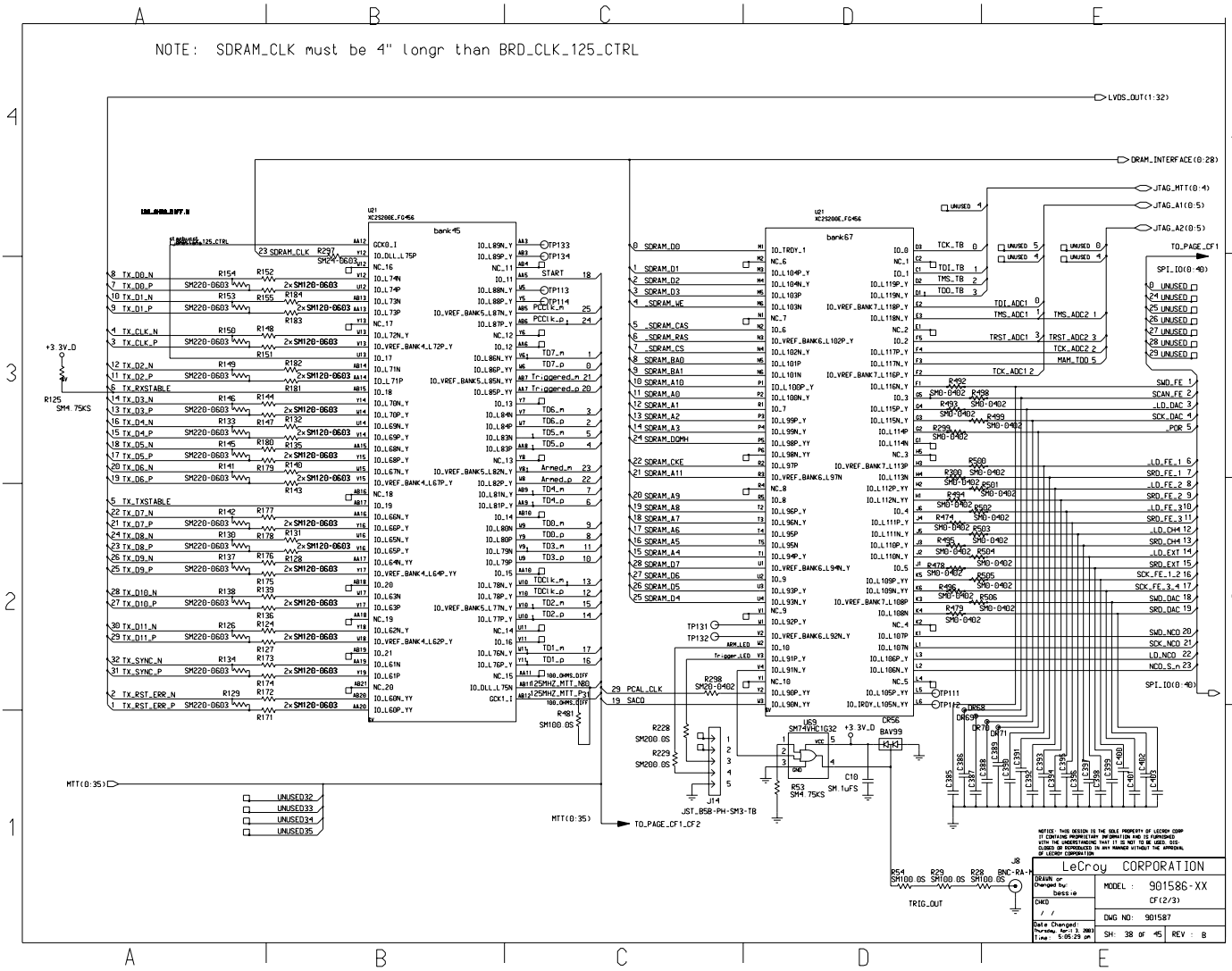
LeCroy CORPORATION

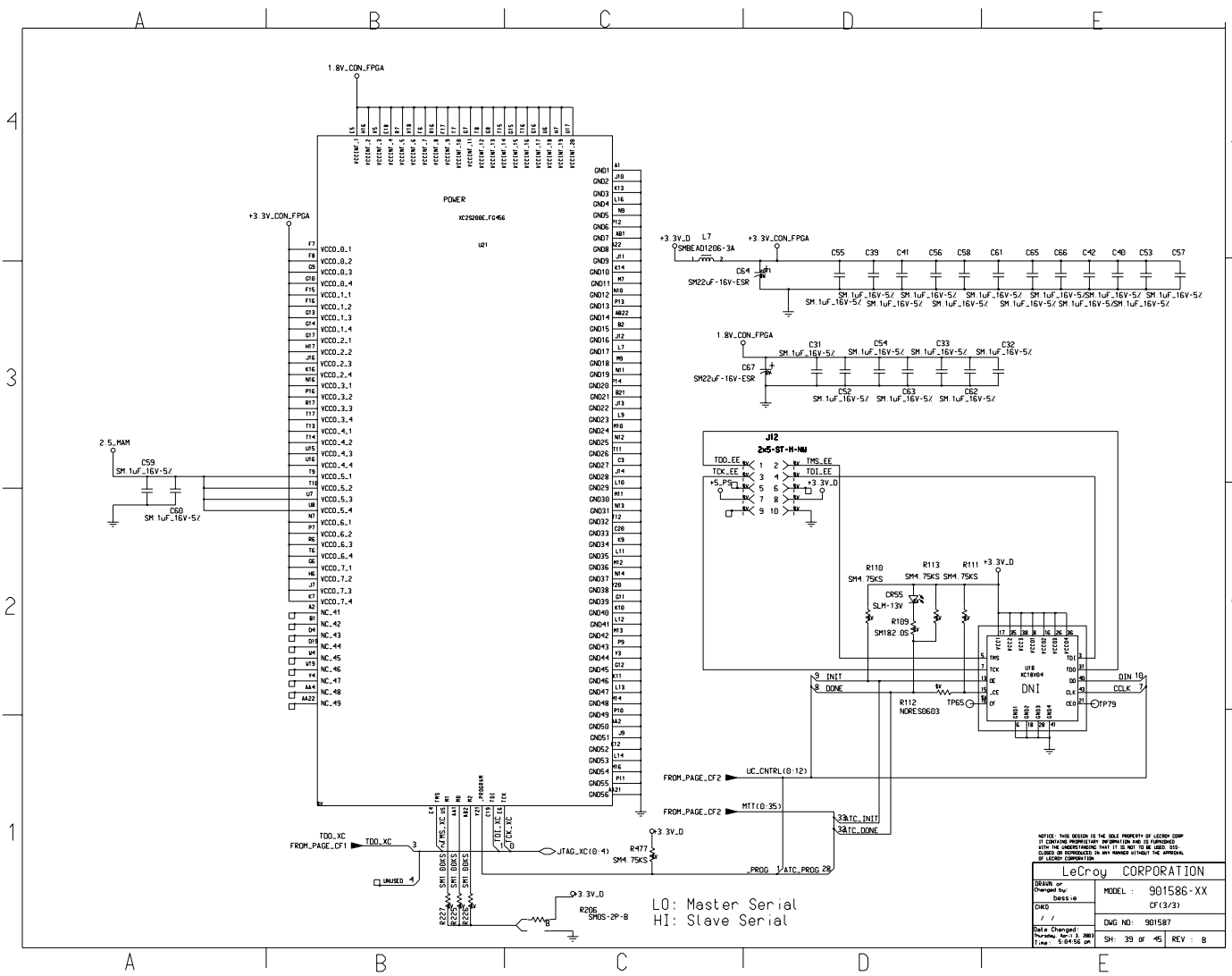
DRAWN or Changed by: bessie	MODEL : 901586-XX
CHKD / /	MAMS2 (2/3)
Date Changed: Thursday, April 3, 2003 Time : 5:07:58 pm	DWG NO: 901587
	SH: 34 OF 45 REV : B

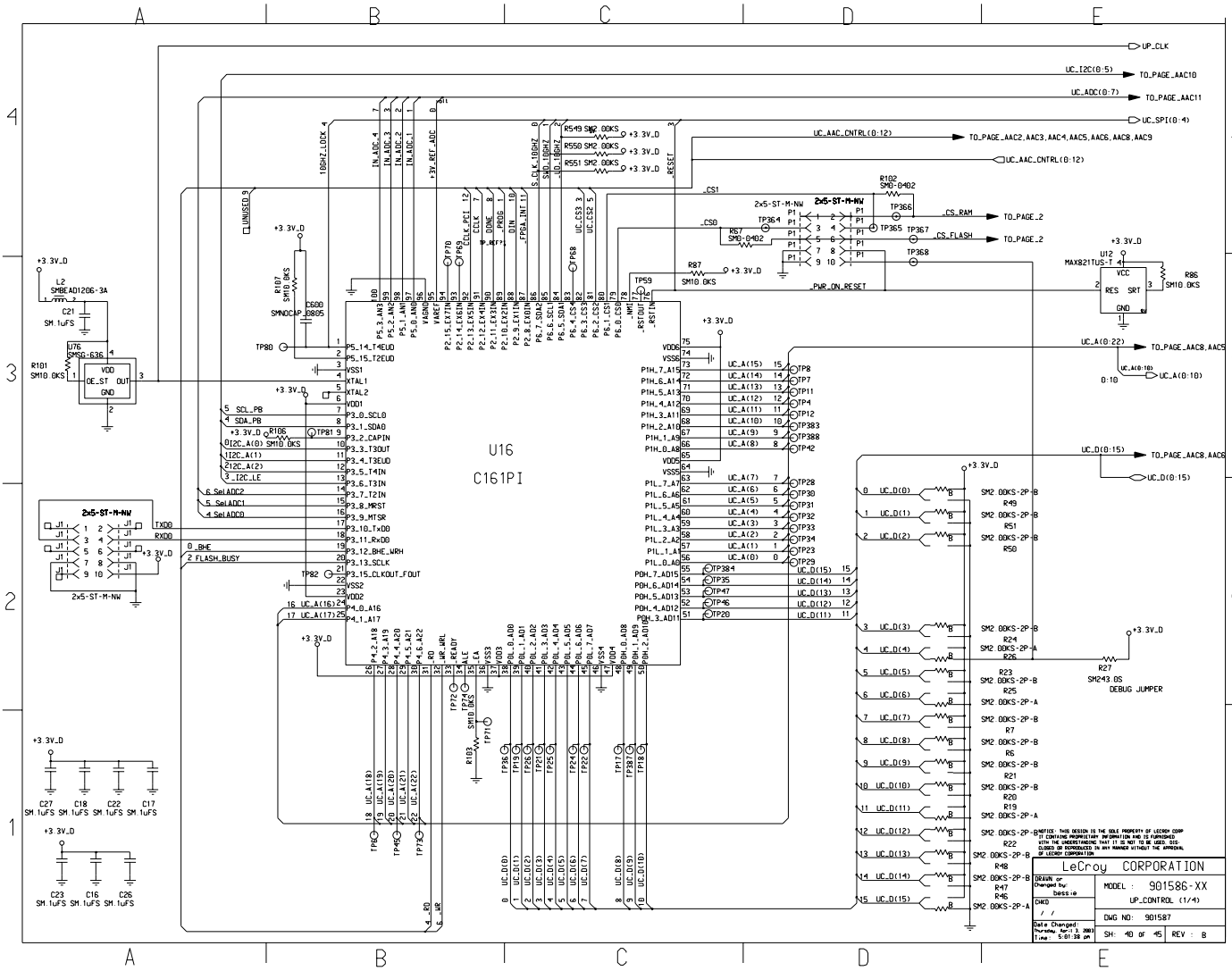

MAM439
U56
MAM439
U45
MAM439
U58
C
R388
SM100S
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LeCroy CORPORATION
DRAWN or Changed by: bessie
CHKD
/ /
Date Changed: Thursday, April 3, 2003 Time: 5:07:35 pm
MODEL : 901586-XX
MAMS2 (3/3)
DWG NO: 901587
SH: 35 OF 45
REV : B

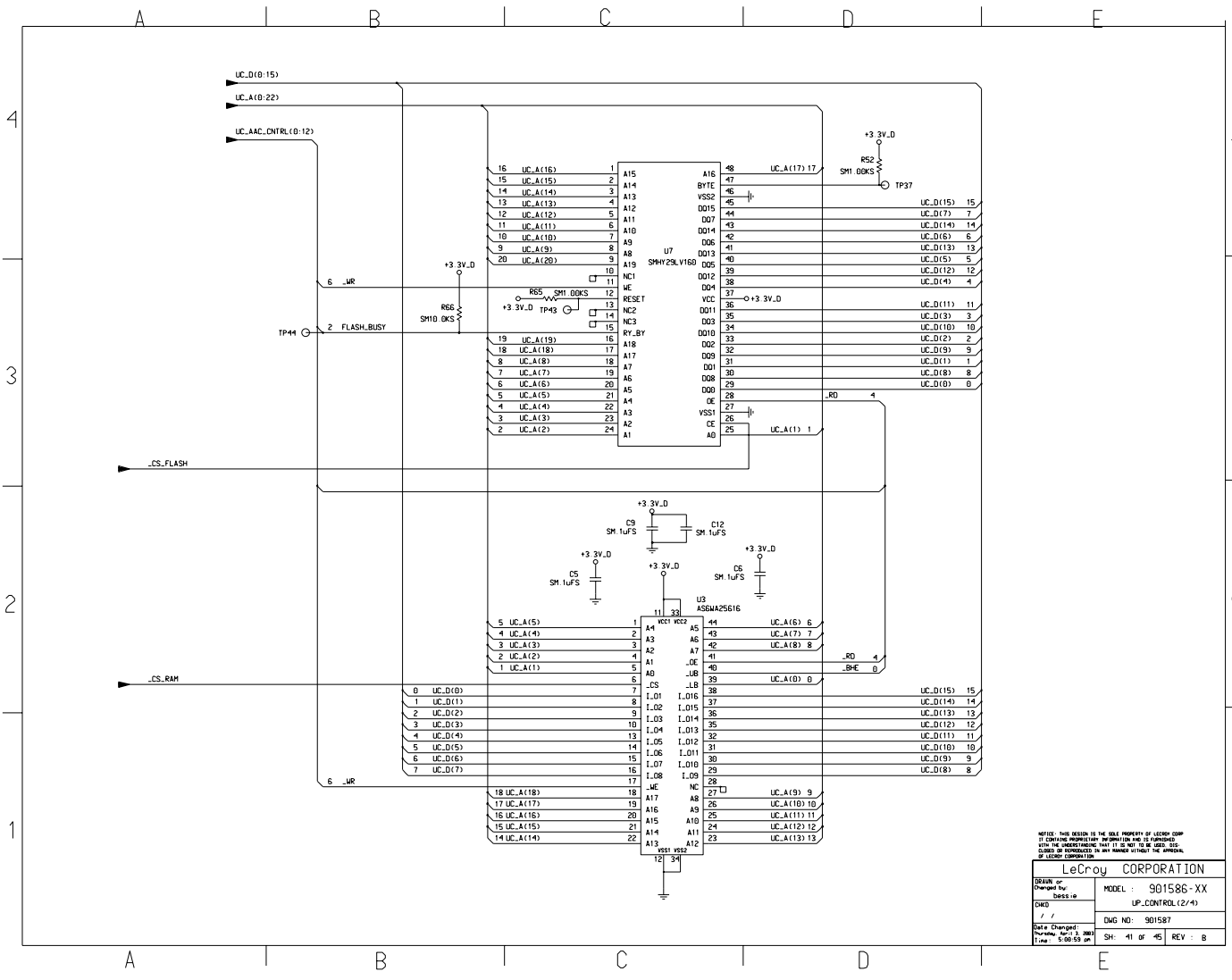

Control FPGA
C_FPGA
SHT 37-39
MAM_OUT2(0:20)
MAM_OUT1(0:20)
SM05-2P-B
MAM_OUT(0:20)
MAM_IN1(0:20)
UC_CNTRL(0:12)
MTT(0:35)
LVDS_RECEIVE(1:32)
LVDS_TRANSMIT(1:32)
DRAM_INTERFACE(0:28)
JTAG_XC(0:4)
JTAG_MTT(0:4)
JTAG_ADC2(0:5)
JTAG_ADC1(0:5)
SPI_IO(0:40)
UC_D(0:15)
UC_A(0:10)
J11
FCI_53612-2x20
J10
FCI_53612-2x20
U28
MT48LC8M8A2TG-75
2x5-ST-M-HW
J13
R409
R410
R411
R412
R413
R414
R415
R418
R417
R416
R389
R202
R223
R201
R198
R195
R199
NORESO805
R197
NORESO805
R170
NORESO805
R307
NORESO805
R203
R222
R224
NORESO805
C51
C81
C82
C95
C24
C113
SM.1uFS
TP371
TP372
TP373
TP375
TP376
TP377
TP365
TP374
TDI_XC
TCK_XC
TMS_XC
TRST_XC
TDO
TMS_ADC
TMS_TB
TCK
TRST
TCK_TB
TCK_ADC1
TCK_ADC2
TMS_ADC1
TMS_ADC2
TRST_ADC1
TRST_ADC2
TDI_TB
TDO_TB
TDI_ADC1
TDO_ADC1
TDI_ADC2
TDO_ADC2
MAM_TDI
MAM_TDO
SDRAM_D0
SDRAM_D1
SDRAM_D2
SDRAM_D3
SDRAM_D4
SDRAM_D5
SDRAM_D6
SDRAM_D7
SDRAM_DQMH
SDRAM_WE
SDRAM_CAS
SDRAM_RAS
SDRAM_CS
SDRAM_BA0
SDRAM_BA1
SDRAM_A10
SDRAM_A0
SDRAM_A1
SDRAM_A2
SDRAM_A3
SDRAM_CLK
SDRAM_CKE
SDRAM_A11
SDRAM_A9
SDRAM_A8
SDRAM_A7
SDRAM_A6
SDRAM_A5
SDRAM_A4
RX_CLK_P
RX_CLK_N
RX_D0_P
RX_D0_N
RX_D1_P
RX_D1_N
RX_D2_P
RX_D2_N
RX_D3_P
RX_D3_N
RX_D4_P
RX_D4_N
RX_D5_P
RX_D5_N
RX_D6_P
RX_D6_N
RX_D7_P
RX_D7_N
RX_D8_P
RX_D8_N
RX_D9_P
RX_D9_N
RX_D10_P
RX_D10_N
RX_D11_P
RX_D11_N
RX_SYNC_P
RX_SYNC_N
RX_RST_ERR_P
RX_RST_ERR_N
RX_TXSTABLE
RX_RXSTABLE
TX_CLK_P
TX_CLK_N
TX_D0_P
TX_D0_N
TX_D1_P
TX_D1_N
TX_D2_P
TX_D2_N
TX_D3_P
TX_D3_N
TX_D4_P
TX_D4_N
TX_D5_P
TX_D5_N
TX_D6_P
TX_D6_N
TX_D7_P
TX_D7_N
TX_D8_P
TX_D8_N
TX_D9_P
TX_D9_N
TX_D10_P
TX_D10_N
TX_D11_P
TX_D11_N
TX_SYNC_P
TX_SYNC_N
TX_RST_ERR_P
TX_RST_ERR_N
_PROG
TX_TXSTABLE
TX_RXSTABLE
CCLK_PCI
DIN
NOTE: CONNECTION TO PIN 15 AND PIN 36 ALLOW OTHER DRAMS BE USED
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LeCroy CORPORATION
DRAWN or Changed by: Dessie
CHKD
Date Changed: Friday, June 20, 2003 Time: 10:44:38 am
MODEL : 901586-XX
TOP LEVEL (1/1)
DWG NO: 901587
SH: 36 OF 45
REV : B

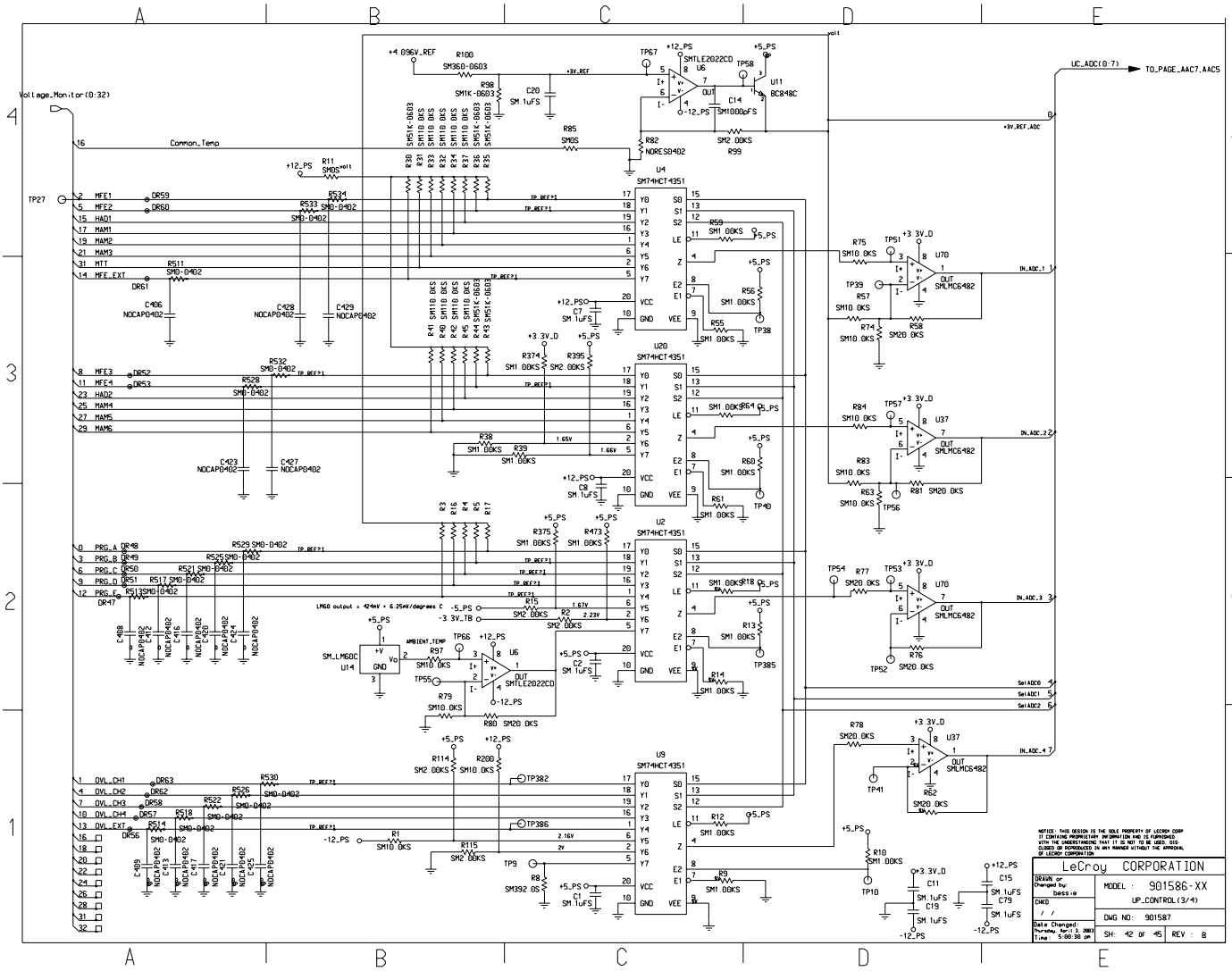

UC_A(0:10)
SPI_IO(0:40)
FROM_PAGE_CF2
LVDS_IN(1:32)
MAM_IN(0:20)
MAM_OUT(0:20)
UC_CNTRL(0:12)
TO_PAGE_CF3
UC_D(0:15)
MTT(0:35)
FROM_PAGE_CF2
TDO_XC
TO_PAGE_CF3
3.3_MAM
_RMI
SN74ALVCH162244GR
XC2S200E_FG456
bank01
bank23
LeCroy CORPORATION
MODEL : 901586-XX
CF(1/3)
DWG NO: 901587
SH: 37 OF 45
REV : B

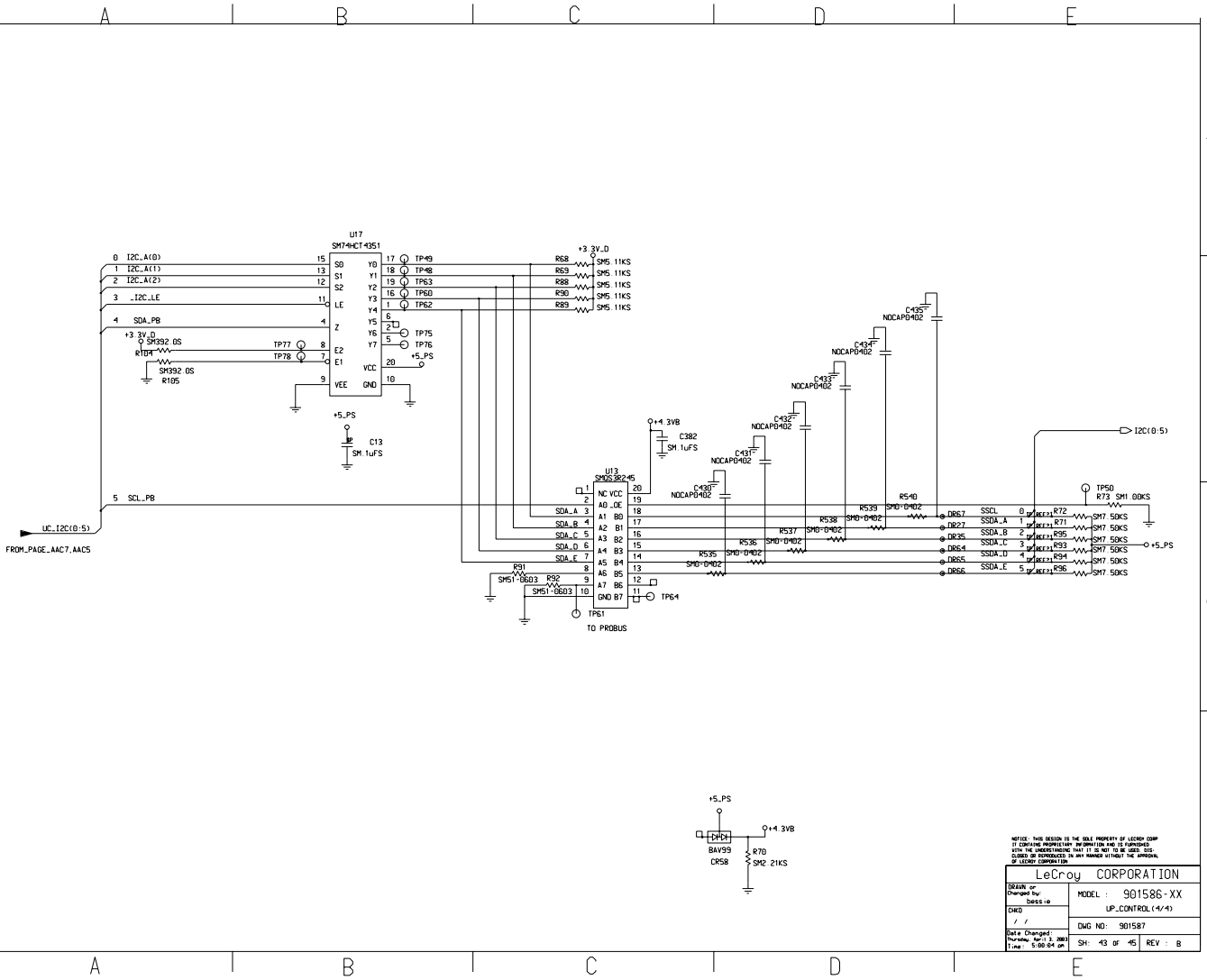

NOTE: SDRAM_CLK must be 4" longr than BRD_CLK_125_CTRL
LVDS_OUT(1:32)
DRAM_INTERFACE(0:28)
JTAG_MTT(0:4)
JTAG_A1(0:5)
JTAG_A2(0:5)
TO_PAGE_CF1
SPI_IO(0:40)
MTT(0:35)
TO_PAGE_CF1_CF2
TRIG_OUT
LeCroy CORPORATION
MODEL : 901586-XX
CF(2/3)
DWG NO: 901587
REV : B


1.8V_CON_FPGA
POWER
XC2S200E_FG456
U21
+3.3V_CON_FPGA
2.5_MAM
C59
SM.1uF_16V-5%
C60
SM.1uF_16V-5%
+3.3V_D
L7
SMBEAD1206-3A
C54
SM22uF-16V-ESR
C55
C39
C41
C56
C58
C61
C65
C66
C42
C40
C53
C57
SM.1uF_16V-5%
C67
C31
C54
C33
C32
C52
C63
C62
J12
2x5-ST-H-NW
TDO_EE
TMS_EE
TCK_EE
TDI_EE
+5_PS
R110
R113
R111
SM4.75KS
CR55
SLM-13V
R109
SM182.0S
U18
XC18V04
DNI
DIN
CCLK
TP79
R112
NORES0603
TP65
INIT
DONE
UC_CNTRL(0:12)
FROM_PAGE_CF2
MTT(0:35)
TC_INIT
TC_DONE
TDO_XC
FROM_PAGE_CF1
JTAG_XC(0:4)
UNUSED
R477
SM4.75KS
_PROG
ATC_PROG
R227
R226
R206
SM05-2P-B
LO: Master Serial
HI: Slave Serial
LeCroy CORPORATION
MODEL : 901586-XX
CF(3/3)
DWG NO: 901587
SH: 39 OF 45
REV : B


U16
C161PI
2x5-ST-M-NW
LeCroy CORPORATION
MODEL : 901586-XX
UP_CONTROL (1/4)
DWG NO: 901587
SH: 40 OF 45
REV : B
DEBUG JUMPER

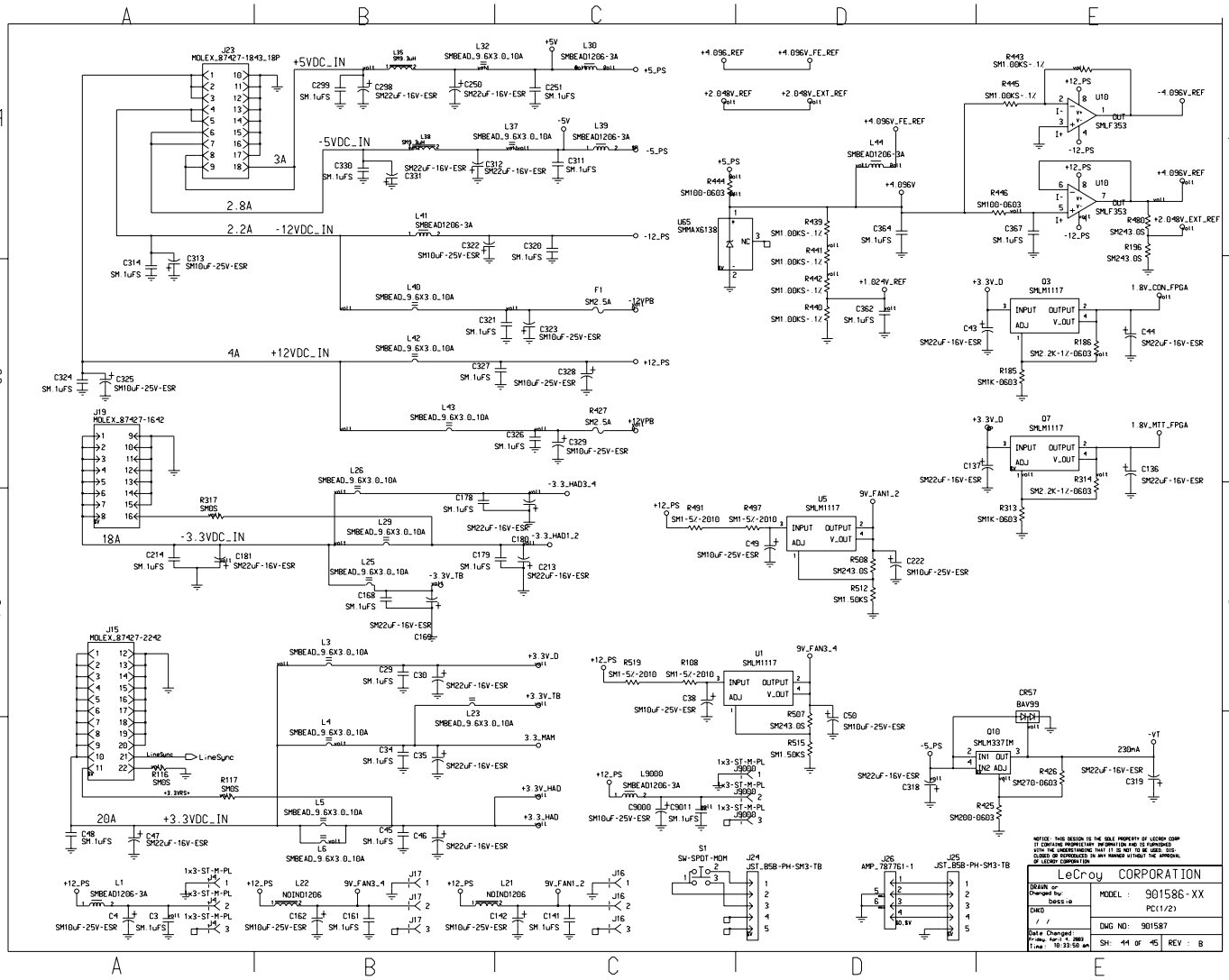

UC_D(0:15)
UC_A(0:22)
UC_AAC_CNTRL(0:12)
U7
SMHY29LV160
U3
AS6WA25616
+3.3V_D
R52
SM1.00KS
TP37
R65
SM1.00KS
TP43
R66
SM10.0KS
TP44
FLASH_BUSY
_WR
_RD
_BHE
_CS_FLASH
_CS_RAM
C9
SM.1uFS
C12
SM.1uFS
C5
SM.1uFS
C6
SM.1uFS
LeCroy CORPORATION
MODEL : 901586-XX
UP_CONTROL(2/4)
DWG NO: 901587
SH: 41 OF 45
REV : B

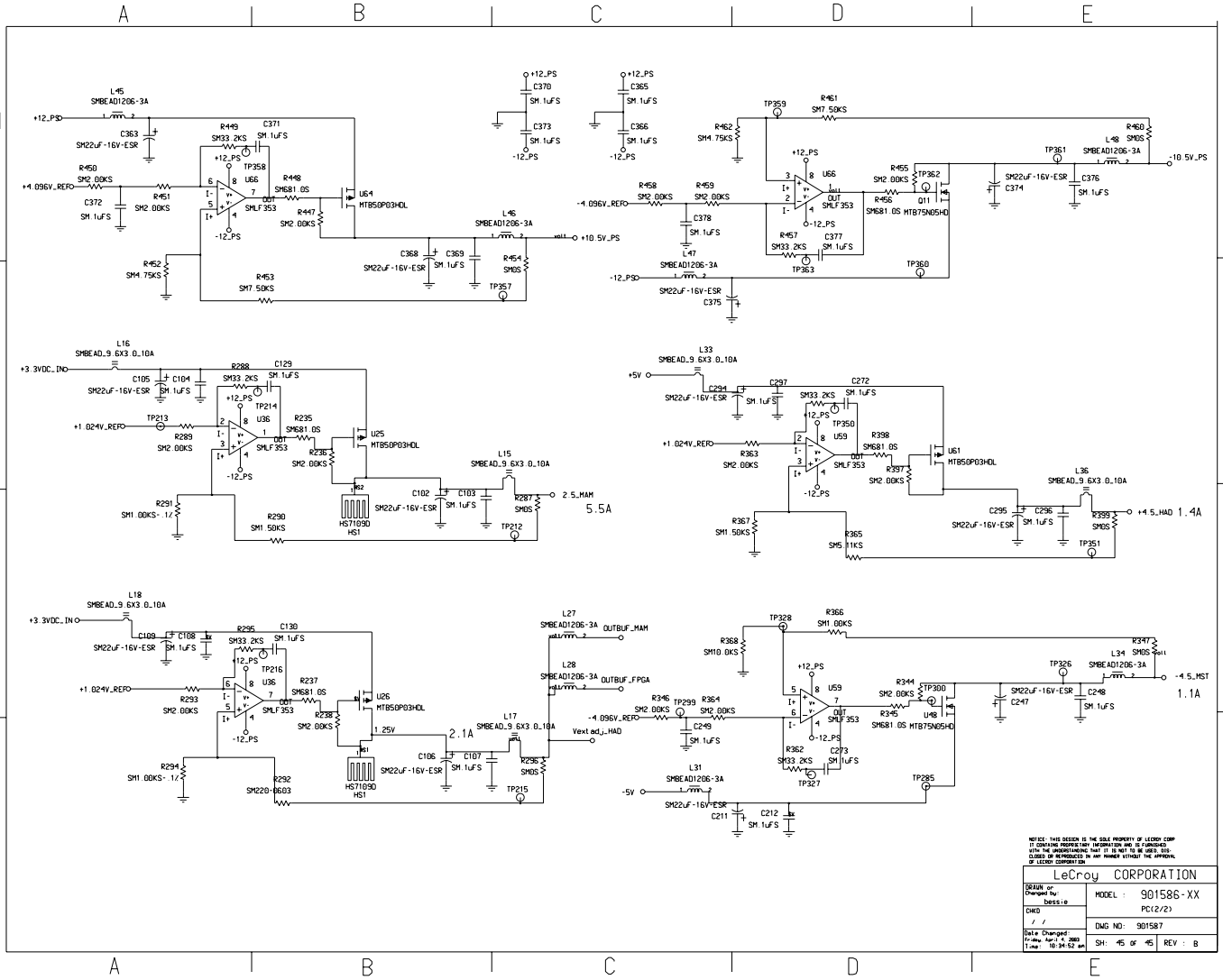

Voltage_Monitor(0:32)
Common_Temp
UC_ADC(0:7)
TO_PAGE_AAC7,AAC5
+4.096V_REF
+3V_REF
+3V_REF_ADC
+12_PS
+5_PS
-12_PS
+3.3V_D
-3.3V_TB
SM74HCT4351
SM1TLE2022CD
SM1LM60C
SML MC6482
BC848C
SM1000FS
NOCAP0402
SMD-0402
IN_ADC_1
IN_ADC_2
IN_ADC_3
IN_ADC_4
SelADC0
SelADC1
SelADC2
LMG0 output = 424mV + 6.25mV/degrees C
AMBIENT_TEMP
OVL_CH1
OVL_CH2
OVL_CH3
OVL_CH4
OVL_EXT
MFE1
MFE2
MFE3
MFE4
MFE_EXT
HAD1
HAD2
MAM1
MAM2
MAM3
MAM4
MAM5
MAM6
MIT
PRG_A
PRG_B
PRG_C
PRG_D
PRG_E
LeCroy CORPORATION
MODEL : 901586-XX
UP_CONTROL(3/4)
DWG NO: 901587
SH: 42 OF 45
REV : B
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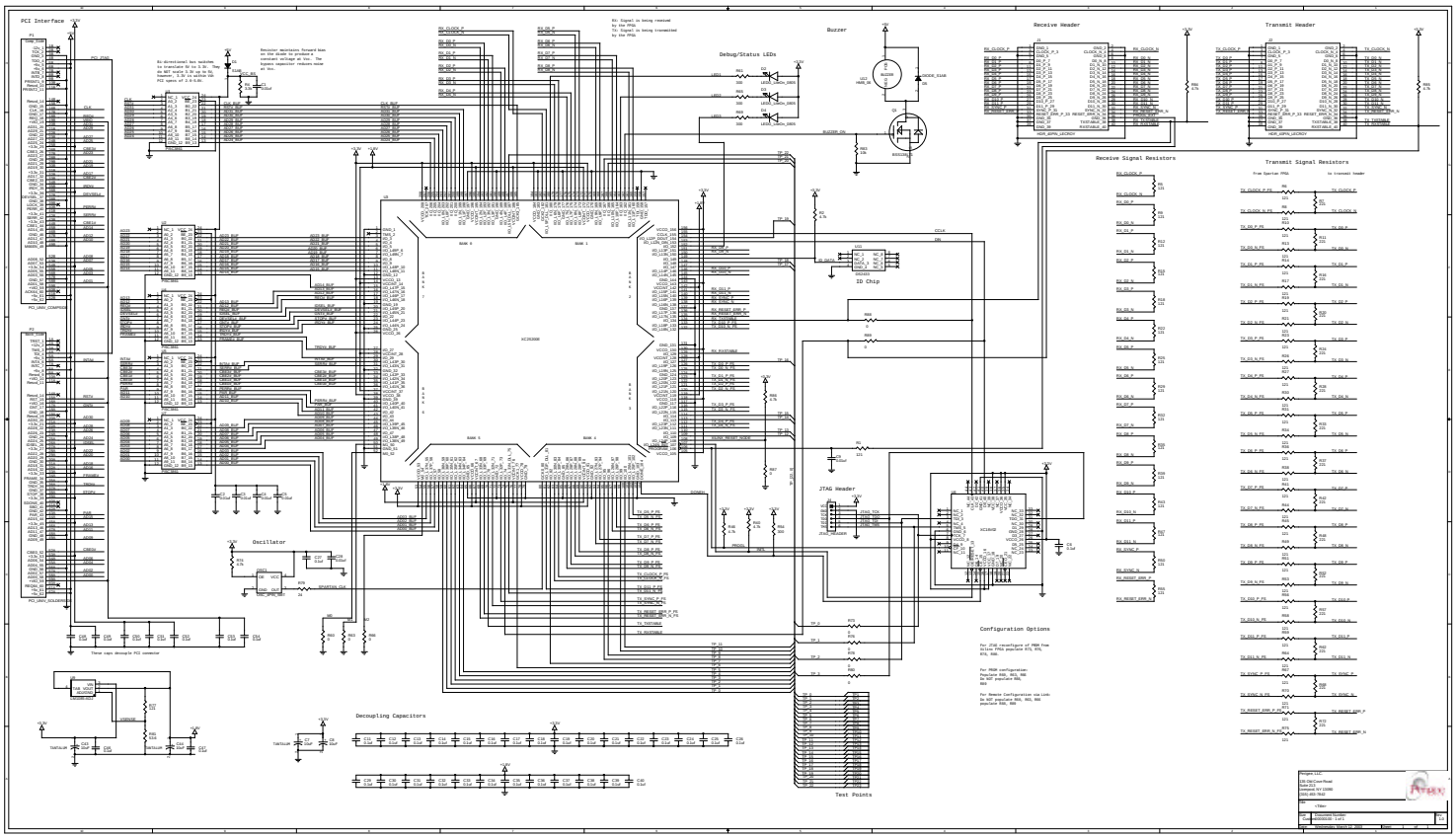


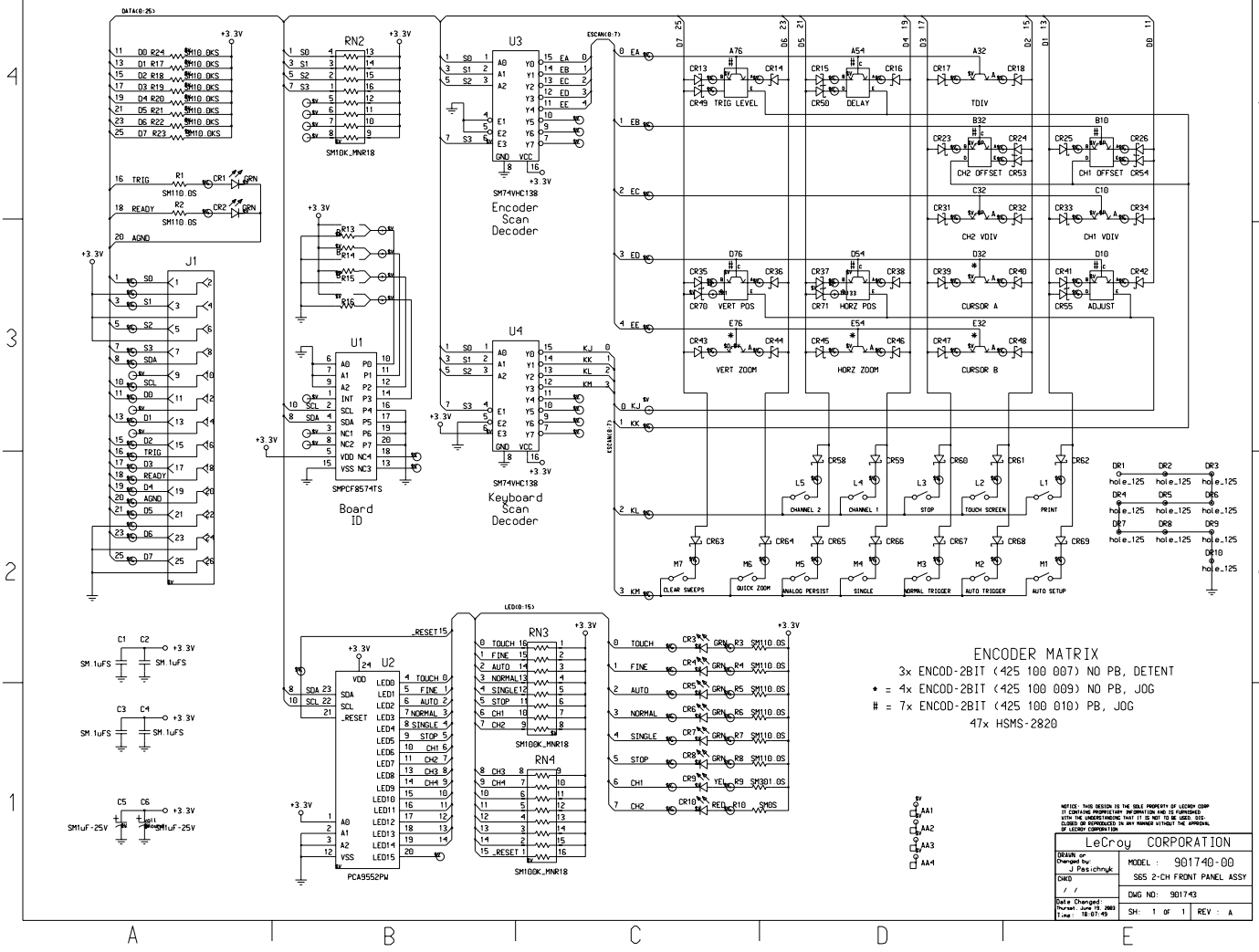
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OF LECROY CORPORATION

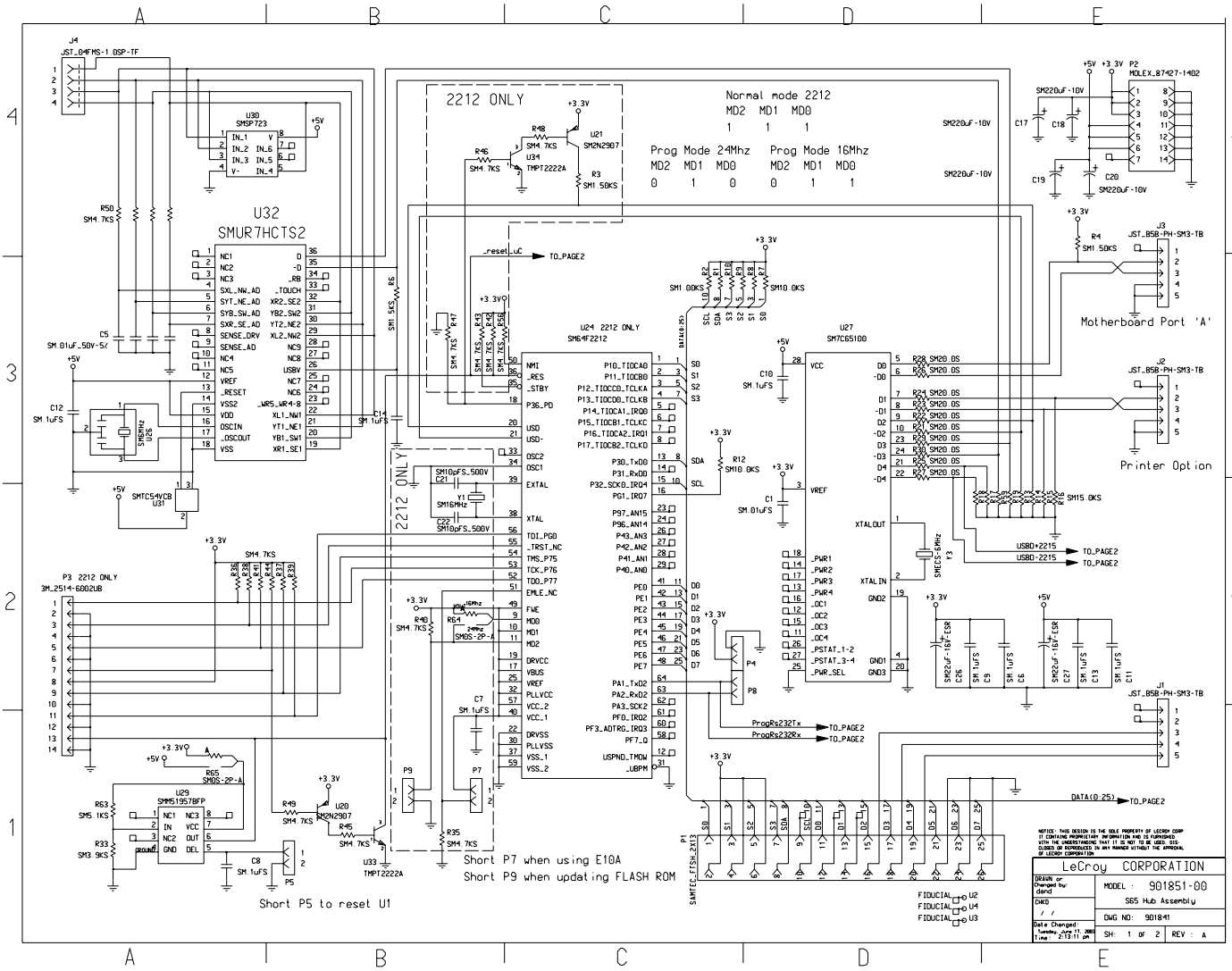
LeCroy CORPORATION	
DRAWN or Changed by: bess:ia	MODEL : 901586-XX
CHKD / /	UP_CONTROL(4/4)
Date Changed: Thursday, April 3, 2003 Time: 5:00:04 pm	DWG NO: 901587
	SH: 43 OF 45 REV : B

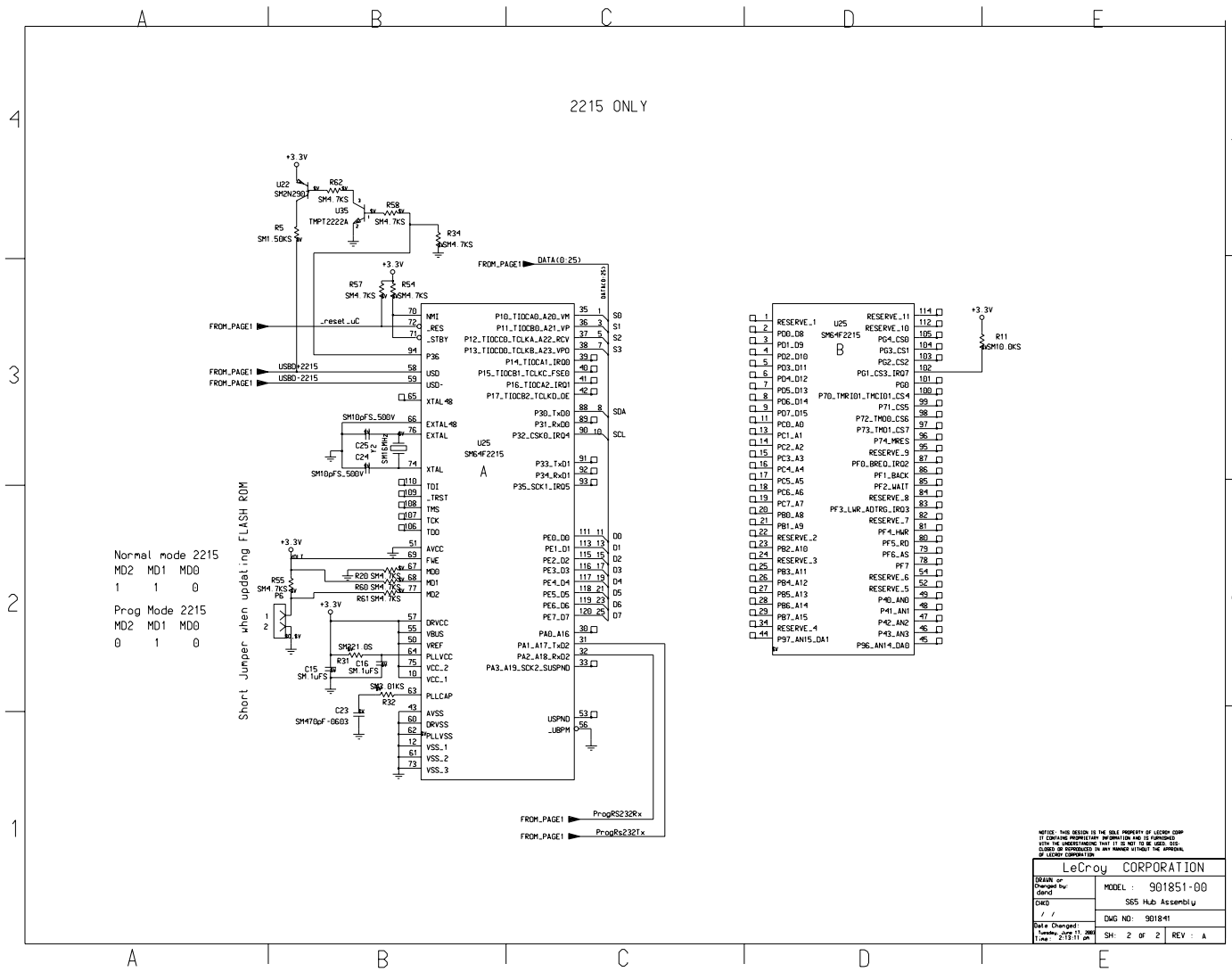

+5VDC_IN
-5VDC_IN
-12VDC_IN
+12VDC_IN
-3.3VDC_IN
+3.3VDC_IN
+5_PS
-5_PS
-12_PS
+12_PS
-3.3_HAD3_4
-3.3_HAD1_2
3.3_MAM
+3.3_HAD
LineSync
+4.096V_REF
+4.096V_FE_REF
+2.048V_REF
+2.048V_EXT_REF
+1.024V_REF
+3.3V_D
1.8V_CON_FPGA
1.8V_MTT_FPGA
9V_FAN1_2
9V_FAN3_4
-VT
LeCroy CORPORATION
MODEL : 901586-XX
PC(1/2)
DWG NO: 901587
SH: 44 OF 45
REV : B


L45
SMBEAD1206-3A
+12_PS
C363
SM22uF-16V-ESR
R449
SM33.2KS
C371
SM.1uFS
TP358
R450
SM2.00KS
+4.096V_REFO
R451
C372
SM.1uFS
SM2.00KS
U66
SMLF353
SM681.0S
R448
U64
MTB50P03HDL
R447
SM2.00KS
-12_PS
L46
SMBEAD1206-3A
+10.5V_PS
R452
SM4.75KS
R453
SM7.50KS
C368
SM22uF-16V-ESR
C369
SM.1uFS
R454
SM0S
TP357
C370
SM.1uFS
C373
SM.1uFS
C365
SM.1uFS
C366
SM.1uFS
TP359
R461
SM7.50KS
R462
SM4.75KS
R460
SM0S
L48
SMBEAD1206-3A
-10.5V_PS
TP361
R455
SM2.00KS
TP362
Q11
MTB75N05HD
R456
SM681.0S
C374
SM22uF-16V-ESR
C376
SM.1uFS
R458
SM2.00KS
R459
SM2.00KS
-4.096V_REFO
C378
SM.1uFS
L47
SMBEAD1206-3A
-12_PS
SM22uF-16V-ESR
C375
R457
SM33.2KS
C377
SM.1uFS
TP363
TP360
L16
SMBEAD_9.6X3.0_10A
+3.3VDC_IN
C105
SM22uF-16V-ESR
C104
SM.1uFS
R288
SM33.2KS
C129
SM.1uFS
TP214
TP213
+1.024V_REFO
R289
SM2.00KS
U36
SMLF353
R235
SM681.0S
U25
MTB50P03HDL
R238
SM2.00KS
HS2
HS7109D
HS1
L15
SMBEAD_9.6X3.0_10A
2.5_MAM
5.5A
C102
SM22uF-16V-ESR
C103
SM.1uFS
R287
SM0S
TP212
R291
SM1.00KS-.1/
R290
SM1.50KS
L33
SMBEAD_9.6X3.0_10A
+5V
C294
SM22uF-16V-ESR
C297
SM.1uFS
C272
SM.1uFS
SM33.2KS
TP350
+1.024V_REFO
R363
SM2.00KS
U59
SMLF353
R398
SM681.0S
U61
MTB50P03HDL
R397
SM2.00KS
L36
SMBEAD_9.6X3.0_10A
+4.5_HAD 1.4A
C295
SM22uF-16V-ESR
C296
SM.1uFS
R399
SM0S
TP351
R367
SM1.50KS
R365
SM5.11KS
L18
SMBEAD_9.6X3.0_10A
+3.3VDC_IN
C109
SM22uF-16V-ESR
C108
SM.1uFS
R295
SM33.2KS
C130
SM.1uFS
TP216
+1.024V_REFO
R293
SM2.00KS
U36
SMLF353
R237
SM681.0S
U26
MTB50P03HDL
R238
SM2.00KS
1.25V
2.1A
HS2
HS7109D
HS1
L27
SMBEAD1206-3A
OUTBUF_MAM
L28
SMBEAD1206-3A
OUTBUF_FPGA
L17
SMBEAD_9.6X3.0_10A
Vext.adj_HAD
C106
SM22uF-16V-ESR
C107
SM.1uFS
R296
SM0S
TP215
R294
SM1.00KS-.1/
R292
SM220-0603
TP328
R366
SM1.00KS
R368
SM10.0KS
R347
SM0S
L34
SMBEAD1206-3A
-4.5_MST
1.1A
TP326
C248
SM.1uFS
C247
SM22uF-16V-ESR
R344
SM2.00KS
TP300
R345
SM681.0S
Q48
MTB75N05HD
TP299
R346
SM2.00KS
R364
SM2.00KS
-4.096V_REFO
C249
SM.1uFS
R362
SM33.2KS
C273
SM.1uFS
TP327
TP285
L31
SMBEAD1206-3A
-5V
SM22uF-16V-ESR
C211
C212
SM.1uFS
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OF LECROY CORPORATION
LeCroy CORPORATION
DRAWN or Changed by: Dessie
CHKD
/ /
Date Changed: Friday, April 4, 2003 Time: 10:34:52 am
MODEL : 901586-XX
PC(2/2)
DWG NO: 901587
SH: 45 of 45
REV : B


PCI Interface
Debug/Status LEDs
Buzzer
Receive Header
Transmit Header
Receive Signal Resistors
Transmit Signal Resistors
ID Chip
JTAG Header
Oscillator
Configuration Options
Decoupling Capacitors
Test Points


ENCODER MATRIX
3x ENCOD-2BIT (425 100 007) NO PB, DETENT
* = 4x ENCOD-2BIT (425 100 009) NO PB, JOG
# = 7x ENCOD-2BIT (425 100 010) PB, JOG
47x HSMS-2820
LeCroy CORPORATION
MODEL : 901740-00
S65 2-CH FRONT PANEL ASSY
DWG NO: 901743
SH: 1 OF 1
REV : A
Encoder Scan Decoder
Keyboard Scan Decoder
Board ID
TRIG LEVEL
DELAY
TDIV
CH2 OFFSET
CH1 OFFSET
CH2 VDIV
CH1 VDIV
VERT POS
HORZ POS
CURSOR A
ADJUST
VERT ZOOM
HORZ ZOOM
CURSOR B
CHANNEL 2
CHANNEL 1
STOP
TOUCH SCREEN
PRINT
CLEAR SWEEPS
QUICK ZOOM
ANALOG PERSIST
SINGLE
NORMAL TRIGGER
AUTO TRIGGER
AUTO SETUP

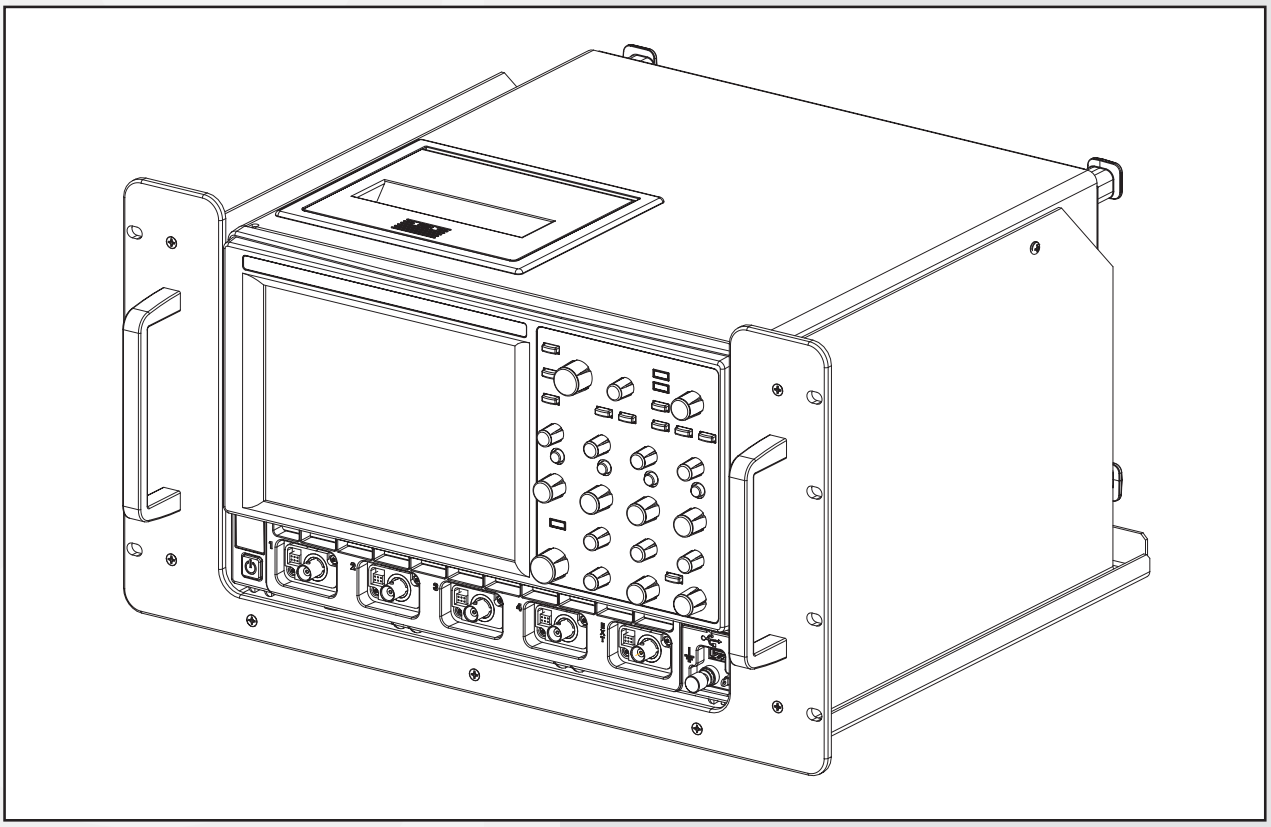

2212 ONLY
Normal mode 2212
MD2 MD1 MD0
1 1 1
Prog Mode 24Mhz
MD2 MD1 MD0
0 1 0
Prog Mode 16Mhz
MD2 MD1 MD0
0 1 1
U32
SMUR7HCTS2
U24 2212 ONLY
SM64F2212
U27
SM7C65100
Motherboard Port 'A'
Printer Option
Short P7 when using E10A
Short P9 when updating FLASH ROM
Short P5 to reset U1
LeCroy CORPORATION
MODEL : 901851-00
SCS Hub Assembly
DWG NO: 901841
SH: 1 OF 2
REV : A



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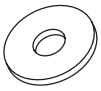
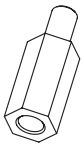
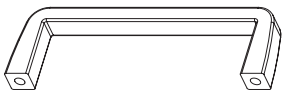
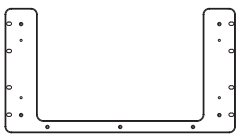
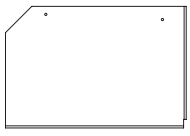
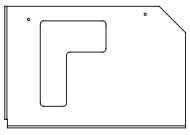
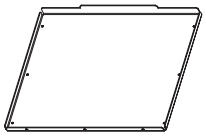
LeCroy CORPORATION		
DRAWN or Changed by: dand	MODEL : 901851-00	
CHKD / /	565 Hub Assembly	
Date Changed: Tuesday, July 17, 2001 Time: 2:13:11 pm	DWG NO: 901841	
	SH: 2 OF 2	REV : A

LeCroy Rackmount Kit



for the waveRunner® 6000 series

LeCroy

	ITEM #	QTY.	DESCRIPTION
	11	1	T15 TORX L-KEY
	10	10	#6-32 x .250" PAN HEAD SCREW
	9	4	NYLON WASHER
	8	4	#6-32 x .500" HEX STANDOFF
	7	7	#6-32 x .375" FLAT HEAD SCREW
	6	4	M5 x 12mm PAN HEAD SCREW
	5	2	HANDLE
	4	1	RACKMOUNT FRONT PLATE
	3	1	RACKMOUNT RIGHT SIDE
	2	1	RACKMOUNT LEFT SIDE
	1	1	RACKMOUNT BASE

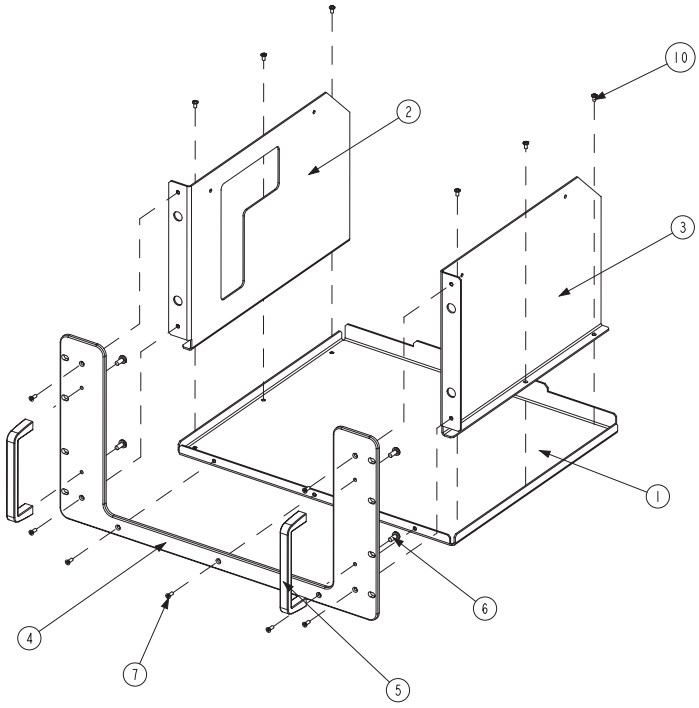
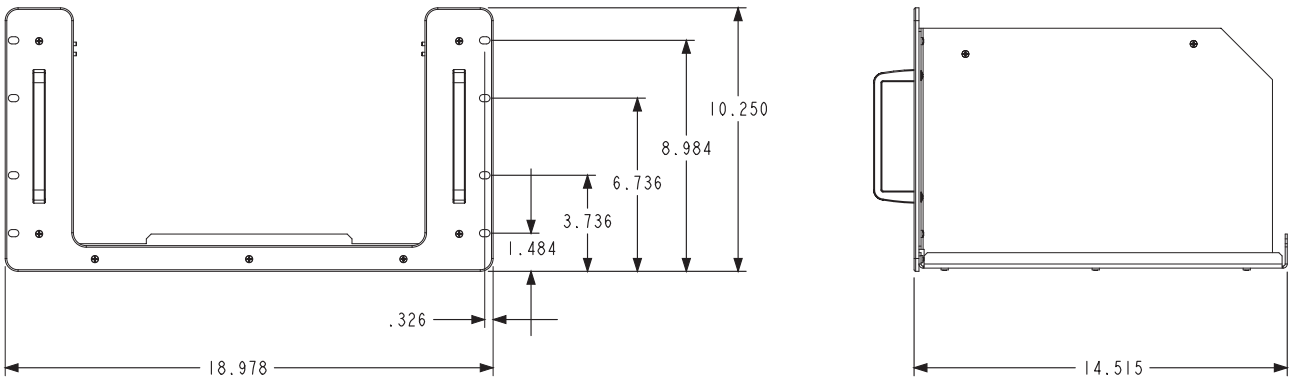


FIGURE 1



Rackmount Kit Assembly Instructions

1. Assemble the handles (Item #5) to the front plate (Item # 4) using four pan head screws (Item #6). **Note:** Place handle on the side with the seven countersink holes.
2. Assemble the rackmount kit by mounting the base plate (Item #1) to the front plate (Item #4) using three flat head screws (Item #7).
3. Attach the left and right side plates (Item #2 and 3) to the front plate (Item #4) using four flat head screws (Item #7).
4. Secure the left and right side plates (Item #2 and 3) to the base plate (Item #1) using six pan head screws (Item #10).

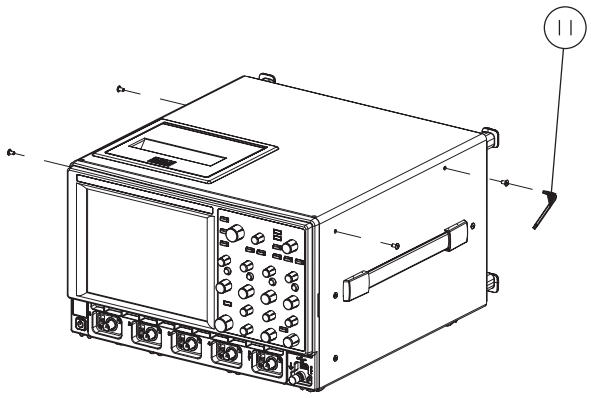


FIGURE 2

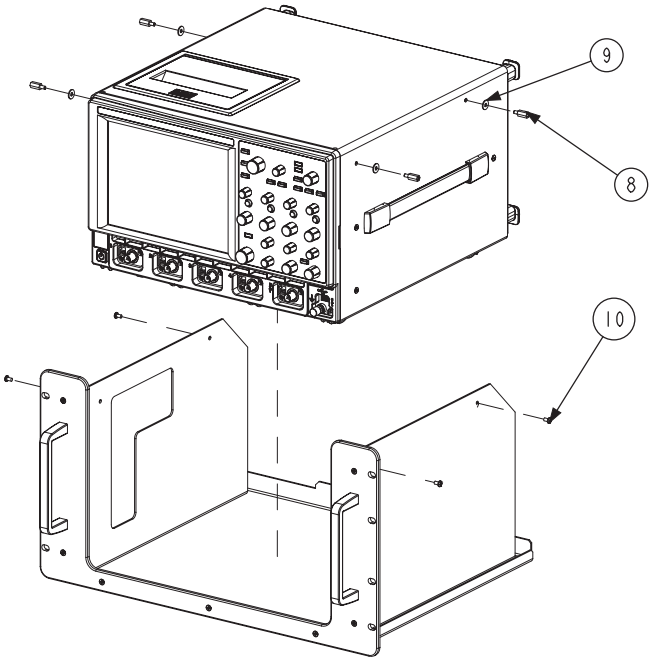


FIGURE 3

Installing the Oscilloscope

Putting the scope in the rackmount

1. Remove the four black screws from the scope's left and right side surfaces with the Torx L-Key (Item #11) as shown in Figure 2.
2. Insert the nylon washer (Item #9) onto the hex standoff thread (Item #8) and screw the standoffs into the four mounting locations where the four black screws were removed as shown in Figure 3.
3. Place the scope on the rackmount base and align the standoffs to the side panel holes. Screw the four pan head screws (Item #10) into the standoffs (Item #8) to lock the scope into place as shown in Figure 3.

Additional Information

Warning: The front panel of the rackmount assembly includes eight holes to secure the assembly to the rack. The front panel must be secured to the rack to prevent potential injury.

Rackmount: The rackmount should only be used with a LeCroy WaveRunner 6000 Series Oscilloscope. LeCroy assumes no responsibility if the rackmount is used with another scope.

Max DSO Dimensions (HxWxD):
8.5" x 13.8" x 14.4" (excluding feet) 216mm x 351mm x 11:366mm

Rackmount Dimensions (HxWxD):
10.250" x 18.98" x 14.52", 260.4mm x 482.1mm x 368.8mm

Ordering Information

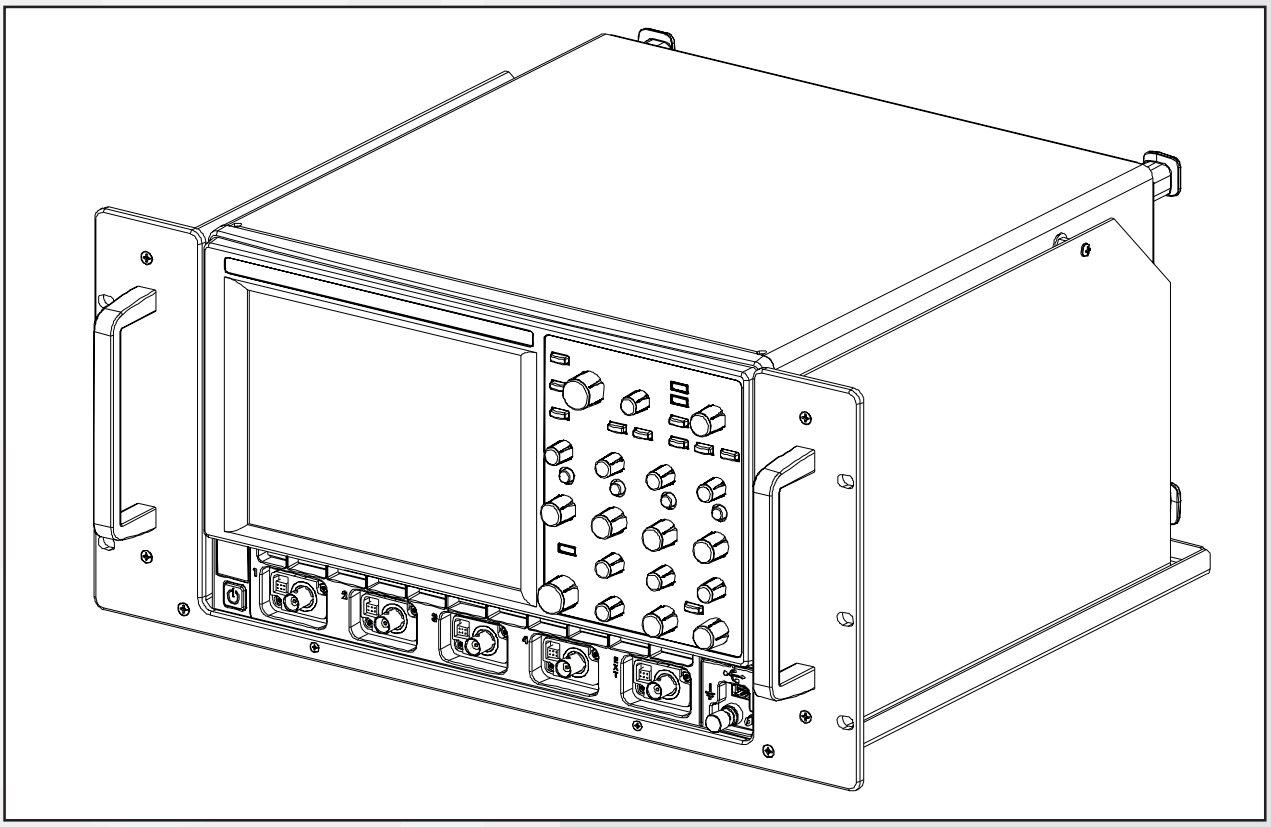
WR6-RACK

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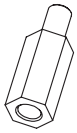
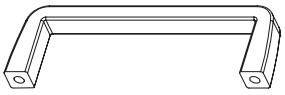
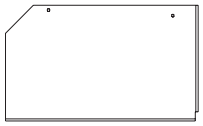
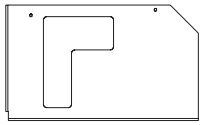
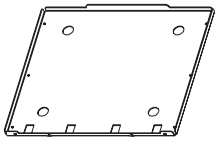
902011-00 Rev.A

LeCroy 5U Rackmount Kit



for the WaveRunner® 6000 series

LeCroy

	ITEM #	QTY.	DESCRIPTION
	13	4	RUBBER BUMPER
	12	2	#4-40 x .312" FLAT HEAD SCREW
	11	1	T15 TORX L-KEY
	10	10	#6-32 x .250" PAN HEAD SCREW
	9	4	NYLON WASHER
	8	4	#6-32 x .500" HEX STANDOFF
	7	6	#6-32 x .375" FLAT HEAD SCREW
	6	4	M5 x 12mm PAN HEAD SCREW
	5	2	HANDLE
	4	1	RACKMOUNT FRONT PLATE
	3	1	RACKMOUNT RIGHT SIDE
	2	1	RACKMOUNT LEFT SIDE
	1	1	RACKMOUNT BASE

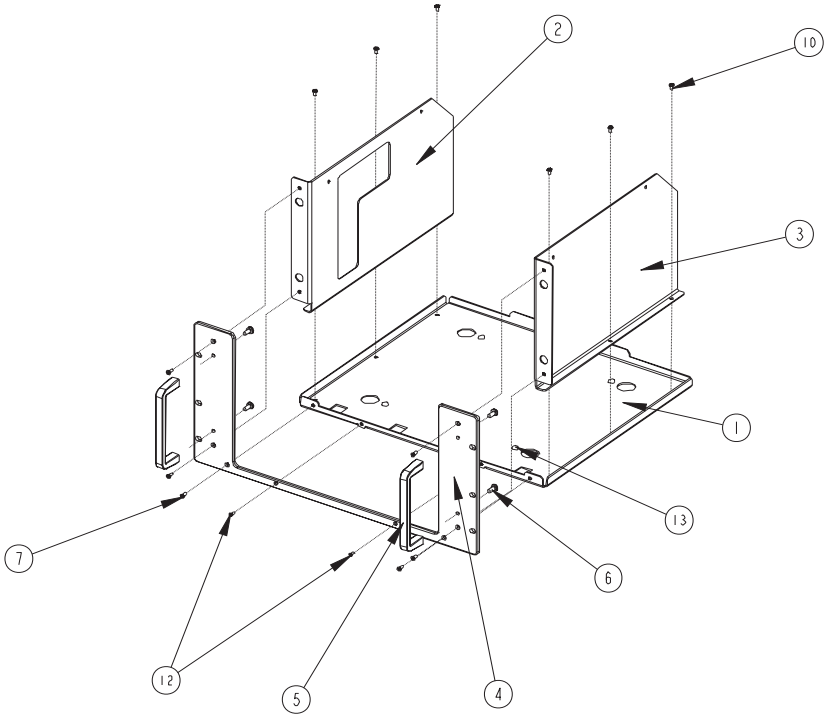
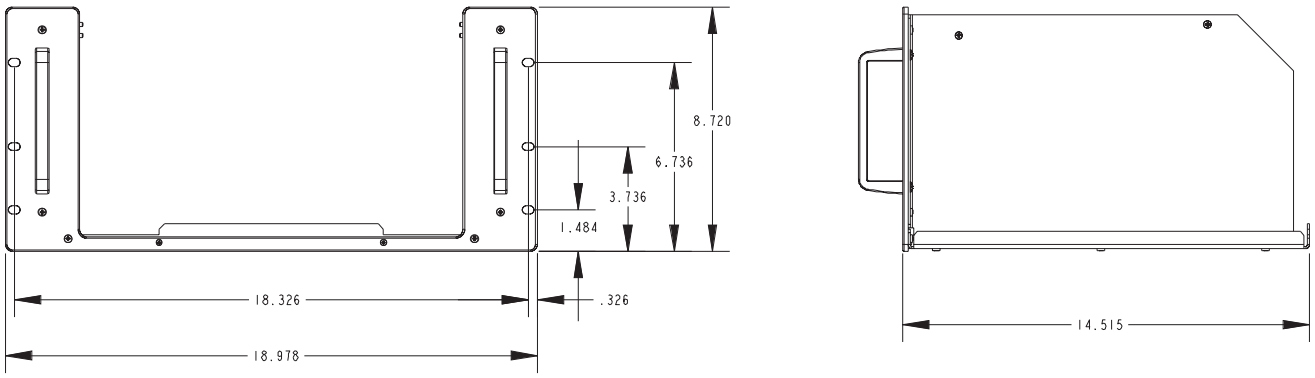


FIGURE 1



Rackmount Kit Assembly Instructions

1. Assemble the handles (Item #5) to the front plate (Item # 4) using four pan head screws (Item #6). **Note:** Place handle on the side with the seven countersink holes.
2. Assemble the rackmount kit by mounting the base plate (Item #1) to the front plate (Item #4) using two #6 flat head screws (Item #7) and two #4 flat head screws (Item #12).
3. Attach the left and right side plates (Item #2 and 3) to the front plate (Item #4) using four flat head screws (Item #7).
4. Secure the left and right side plates (Item #2 and 3) to the base plate (Item #1) using six pan head screws (Item #10).
5. Place the four bumper (Item #13) onto the base plate (Item #1). Locate the bumpers approximately 1" inward from the center of the four large holes on the base plate.

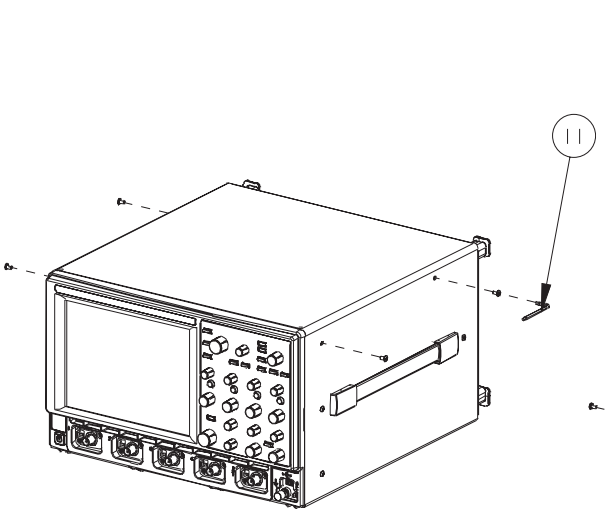


FIGURE 2

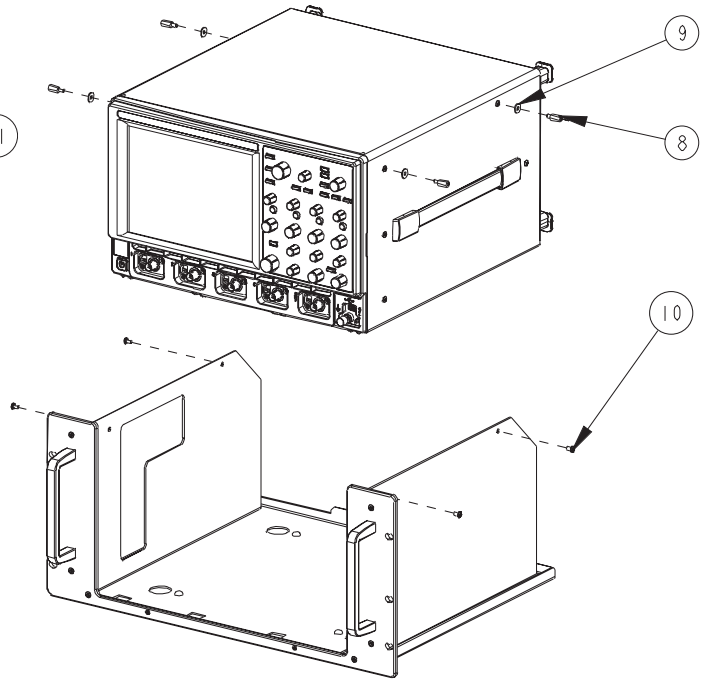


FIGURE 3

Installing the Oscilloscope

Putting the Scope in the Rackmount

1. Remove the four black screws from the scope's left and right side surfaces with the Torx L-Key (Item #11) as shown in Figure 2.
2. Insert the nylon washer (Item #9) onto the hex standoff thread (Item #8) and screw the standoffs into the four mounting locations where the four black screws were removed as shown in Figure 3.
3. Place the scope on the rackmount base and align the standoffs to the side panel holes. Screw the four pan head screws (Item #10) into the standoffs (Item #8) to lock the scope into place as shown in Figure 3.

Additional Information

Warning: The front panel of the rackmount assembly includes eight holes to secure the assembly to the rack. The front panel must be secured to the rack to prevent potential injury.

Rackmount: The rackmount should only be used with a LeCroy WaveRunner 6000 Series Oscilloscope. LeCroy assumes no responsibility if the rackmount is used with another scope.

Max DSO Dimensions (HxWxD):
8.5" x 13.8" x 14.4" (excluding feet) 216mm x 351mm x 366mm

Rackmount Dimensions (HxWxD):
8.72" x 18.98" x 14.52", 221.5mm x 482.1mm x 368.8mm

Ordering Information

WR6-RACK2

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902253-00 Rev.A