CCA – Equipment Overview

Cobham Semiconductor Solutions
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Presenters:

Commercial in Confidence
Component Prep

**Lead Forming Equipment:**
- Fancort Flex Lead Forming System
- Fancort Universal Lead Forming System
- Fancort Pneumatic Presses
- GPD Presses
- Numerous Dedicated Die Sets
- Streckfuss & Manix Transistor Formers
- Hepco DIP Straightener
- EPA Hand & Pneumatic Formers

**Lead Inspection Equipment:**
- Optical Comparator
- Toolmaker’s Microscope

**Measurables:**
- Attributable Defects
ACE KSPCA-1 Hand Solder Dip

**Equipment Features:**

- Dynamic Solder Pot
  - Nitrogen Inerted
  - 2” x 2” Max Component Size
- Digital Pump Controller
- 3ºC Temperature Accuracy
- 30 lb. Solder Pot Capacity

**Measurables:**

- Attributable Defects
- Monthly Solder Purity Verification
RPS Anthem Semi-Automatic Solder Dip

Equipment Features:
- Static Solder Pot
  - 6” x 10” Max Component Size
- Dynamic Solder Pot
  - Nitrogen Inerted
  - 2” x 3.5” Max Component Size
- 0.002” Motion Control Accuracy
- 2ºC Temperature Accuracy

Measurables:
- Attributable Defects
- Monthly Solder Purity Verification
MPM Momentum Screen Printer

**Equipment Features:**
- Fully Automatic In-Line Capability
- Automatic Support Tooling
- Closed-Loop Print Head
- 2D Board & Stencil Inspection
- SPC Reporting Capability
- Wet & Dry Stencil Wipe
- Metal (Nickel) Squeegee Blades

**Stencil Characteristics:**
- Typical 6 mil Thickness
- Step-Up or Step-Down Available
- Stainless Steel
- 29" x 29" Maximum

**Paste Characteristics:**
- Indium and Alpha Metals Approved
- Sn63Pb37 with RMA Flux
- Mesh Size: 325-500 (25-45 micron)
- Metal Load: 90% by Weight
MPM UltraPrint 500 Screen Printer

**Equipment Features:**
- Fully Automatic In-Line Capability
- Automatic Support Tooling
- Closed-Loop Print Head
- 2D Board & Stencil Inspection
- SPC Reporting Capability
- Wet & Dry Stencil Wipe
- Automatic Paste Dispense

**Stencil Characteristics:**
- Typical 6 mil Thickness
- Stainless Steel
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- Mesh Size: 325-500 (25-45 micron)
- Metal Load: 90% by Weight
Parmi SigmaX Solder Paste Inspection System

Equipment Features:
- Fully Automatic In-Line Capability
- 100% Pad Measurement
  - Height
  - Volume
  - Area
- All Measurements 100% Reportable
- Max Inspection Area: 22” x 20”
- 15 Sq In/Second Scan Speed
- 2 Micron Accuracy
- Automatic PWB Warp Compensation
- SPC and Defect Analysis
- Offline Programming
MyData MY100 Pick and Place Machine

Equipment Features:

- High Mix Low Volume
- Fast Change-Over
- Standard 20,000 Devices per Hour
- Tape & Reel Feeders
- Vibratory Feeders
- Tray Wagon
- Automatic Board Height Detection
- Automatic Component Height Detection
- Mechanical Test of All Components
- Electrical Verification of
  - Resistors
  - Capacitors
  - Diodes
  - SOT's
- Max Board Dimension 20" x 22"
- Max Component Size 2.2" sq
- Min Component Size 0.02" x 0.01"
- Remote Programming Using UniCam
MyData MY19 Pick and Place Machine

**Equipment Features:**
- High Mix Low Volume
- Fast Change-Over
- Standard 6500 Devices per Hour
- Tape & Reel Feeders
- Vibratory Feeders
- Tray Wagon
- Automatic Board Height Detection
- Automatic Component Height Detection
- Mechanical Test of All Components
- Electrical Verification of
  - Resistors
  - Capacitors
  - Diodes
  - SOT's
- Max Board Dimension 16" x 22"
- Max Component Size 2.2" sq
- Min Component Size 0.02" x 0.01"
- Remote Programming Using UniCam
Vitronics XPM2 Reflow Oven

**Equipment Features:**
- Fully Programmable
- Fast Change-Over Time
- Eight Heating Zones
- Two Cooling Zones
- Air or N2 Atmosphere
- Max Board Width - 24"

**Measurables:**
- Attributable Defects
- Profile Attributes (DataPaq)
- Daily Monitor of Golden Profile
Equipment Features:

- Fully Programmable
- Fast Change-Over Time
- Five Heating Zones
- One Cooling Zone
- Air or N2 Atmosphere
- Max Board Width – 17”

Measurables:

- Attributable Defects
- Profile Attributes (DataPaq)
- Daily Monitor of Golden Profile
Teradyne GRX-1525 Real-Time X-Ray

Equipment Features:
- Live Mode Viewing
- High Resolution, High Power
- Large Field of View
- 30 to 130kV X-Ray Source
- Advanced Image Processor
- 360 Degree Rotating Platform
- Image Enhancement
- BGA and Void Analysis
- Measurement Reporting

Measurables:
- Opens and/or Shorts
ErsaScope Inspection System

**Equipment Features:**

- Live Video Image
- Right Angle or Vertical Cameras
- 0.002" Min Gap
- 350X Max Magnification
- Distance, Radius, Angle Measurements
AirVac DRS22 & 25 SMT Rework Station

**Equipment Features**
- 10” x 12” Bottomside Heat Diffuser
- Air or Nitrogen Atmosphere
- Max Board Size: 16” x 20”
- Automatic Process Control Software
- Electronically Regulated Gas Flow
- Max Temperature: 420°C
- LTP Beam-Splitter Vision System
  - Placement Accuracy: 0.001”
- Digital Closed Loop Temp Control
- Built in Theta Rotational Adjustment
- Large On-Hand Nozzle Selection

**Measurables:**
- Attributable Defects
- Profile Attributes (DataPaq)
Electrovert Electra Wave Solder Machine

**Equipment Features:**
- Wave Fluxer Module (RMA Flux)
- Three Stage Convection Pre-Heat
- Lambda Wave with Omega Feature
- 2” to 20” Conveyor Width
- 5° to 7° Conveyor Incline
- L-Shaped Fingers
- Color LCD Interface

**Pallet Characteristics:**
- Duropol Composite Material
- 15” x 15” Standard
- ½” Height Stand-Off
- Rotating Insert for Variable Angles

**Measurables:**
- Attributable Defects
- Profile Attributes (DataPaq)
- Daily Monitor of Golden Profile
- Wave Contact Length
- Monthly Solder Purity Verification
ACE KISS103 Selective Solder Machine

**Equipment Features:**
- Fully Programmable
- Integrated Topside Heater with Closed-Loop Feedback
- Lead Screw Positional Accuracy of ± 0.002”
- Nitrogen Purged Solder Pot and Fountain
- 18” x 24” Max Board Size

**Measurables:**
- Attributable Defects
- Profile Attributes (DataPaq)
- Daily Monitor of Golden Profile
- Monthly Solder Purity Verification
Detrex LE20A In-Line Cleaner

**Equipment Features:**
- Heated Spray Under Immersion in Clean Stage
- Three Hot DI Water Cascading Rinse Zones
- Paxton Blower and Air Knives for Water Removal
- IR Heaters for Additional Drying
- 18" x 24" Max Board Dimension
- 2" Max Component Height

**Chemistry:**
- Kyzen Ionox I3330
  - H2O Soluble Solvent
  - Low Surface Tension
  - High Flash Point
- DI Water
  - ~18 Mega Ohm

**Measurables:**
- Ionic Contamination (Daily Monitor)
- Visual Contamination (Daily Monitor)
Austin American Mega II Cleaner

Equipment Features:
- Heated Circulating Immersion Wash
- Heated DI Immersion Rinse
- Heated N2 Dry

Chemistry:
- Kyzex Ionox I3330
  - H2O Soluble Solvent
  - Low Surface Tension
  - High Flash Point
- DI Water
  - ~18 Mega Ohm

Measurables:
- Ionic Contamination (Daily Monitor)
Aqueous Tech AQ-800 Batch Cleaner

**Equipment Features:**
- PLC Computer System
- Rotating High and Low Pressure Spray
- On-Demand Water Heaters
- Convection/Forced Hot Air Drying
- 19" x 19" Max Board Dimension
- Remote Diagnostics

**Chemistry:**
- DI Water
  - ~18 Mega Ohm

**Measurables:**
- Ionic Contamination (Daily Monitor)
Equipment Features:
- Agitated IPA
- Nitrogen Dry

Chemistry:
- Reagent Grade IPA

Measurables:
- Ionic Contamination (Daily Monitor)
Camalot FX-D Automated Dispense

Equipment Features:
- Fully Programmable
- Max Board Size: 20” x 20”
- Total System Accuracy: 0.005”
- Placement Accuracy: 0.003”
- Dispense Rate: 23,000 dots/hr

Measurables:
- Attributable Defects
Camalot 1414 Automated Dispense

**Equipment Features:**
- Fully Programmable
- Max Board Size: 14” x 14”
- Max Z Travel: 2”
- Lead Screw Drives
  - Resolution: 0.0005”
- Placement Accuracy: 0.003”
- Dispense Rate: 13,000 dots/hr

**Measurables:**
- Attributable Defects
Mirtec MVC-7xi Automated Optical Inspection

**Equipment Features:**
- 16” x 18” Max Board Size
- Five (5) Cameras, 5 Megapixels Each
- Laser Z-Height Measurement Tool Measures:
  - Component Height
  - Lead Height
  - Solder Paste Height
- Detects Missing, Wrong or Mis-Oriented Parts
- Detects Solder Bridges and Missing Solder
- Conveyorized for Use in Automated Line

**Measurables:**
- Defects
FARO Prime Portable CMM

Equipment Features:
- 3D Coordinate Measuring Machine (CMM)
- 4 Ft Spherical Working Area
- Part to CAD Measurement Capability
- Touch-Probe and Hard-Probe Measurement
- 0.016 mm Single Point Accuracy
- 0.023 mm Volumetric Accuracy
- Automatic Temperature Compensation
- Automatic Report Generation

Measurables:
- Flatness
Seica Pilot Flying Probe Tester

Equipment Features:
- 4 Active Test Heads
- 10 Movements Per Second Per Head
- 0.2 mil Positioning Accuracy
- 0.007” Min Contact Dimension
- 0.016” Min Test Point Spacing
- 16” x 25” Max Board Size
- Measurement Capability of:
  - Resistance: 0.1 to 100 M ohm
  - Capacitance: 100 pF to 10 F
  - Inductance: 100 nH to 1 H

Measurables:
- Defects
Power Supply Functional Test Station

**Equipment Features:**

- Software Controlled
- 85% Automated Testing
- Universal Interface Pane
  - Supports Multiple Power Supply Types
- Supports Environmental Testing
  - Tenney T10C Chamber
  - CSZ-32 Chamber
    - Humidity Test Capable
  - GN2 Purge
  - -40ºC to +125ºC
  - Over-temp Controls
  - Under-temp Controls
Unit-Level Functional Test Station

Equipment Features:

- Software Controlled
- 100% Automated Testing
- DUT Hardware and Software
  - Safety Precautions in Place
- Supports Environmental Testing
  - Thermotron S-16C
  - Thermotron S-18C
  - GN2 Purge
  - -40°C to +125°C
  - Over-temp Controls
  - Under-temp Controls
Module-Level Functional Test Station

Equipment Features:

- 100% Manual Testing
- Custom-Designed Test Fixtures
Random Vibration

Equipment Features:

- Vertical/Horizontal Driver and Oil Film Slip Table
  - Allows Multi-Axis Testing
- Shaker Face Diameter: 17.25”
  - 29 Attach Points
- Slip Table Area : 36” x 36”
  - 100 Attach Points
  - 29 Match Shaker Pattern
- Rated Performance of 12K lbs Force
  - From 20 Hz to 2K Hz
- System Stroke Length of 1.0” Pk to Pk
- Controller Generates Random, Sine, Shock, Sine on Random and Random on Random Stimulus
Device Programming

Equipment Features:

- Actel Silicon Sculptor 3
  - Supports All Actel Packages
- BP-Micro 1410/240 Universal Programmer
  - 240 Pin Drivers
  - Supports More Than 22,000 Devices
  - Supports Vdd as Low as 2.4V
- Adaptors Available:
  - SM28FLPA
  - SM84P
  - DIP
  - PLCC Universal
  - SM208CQSX-Actel
  - SMAX-352CQ-Actel
  - SM208PQ-Actel-2
  - SM144TQ-Actel
  - SM160PQ-Actel
  - SM329BG-Actel
  - SM68P-Actel
  - SM256FG-Actel
GETech PCB Router

**Equipment Features:**
- Rout Window: 20.0” x 20.0”
- High-Resolution Camera for Programming
- Dry Run Vision-Assisted Test Mode
- 4-Axis Servo Control
- 0.0004” Resolution, < 0.003” Repeatability
- Tall Component Clearance (up to 0.75”)
- Fiducial Recognition
- Integral Ionizer Follows Bit
- Broken Bit Detection
- Bit Wear Compensation
- Design-Specific Fixtures

**Measurables:**
- Attributable Defects
Blue-M Class A Ovens

**Equipment Features:**
- Class-A (Vent Prior to Heat)
- Stainless Steel Construction
- Dual Programmable Controllers
  - Heat Controller
  - Over-Temp Controller
  - Audible Alarm for Over-Temp
- Chart Recorder (7 Year Retention)
- Timer

**Measurables:**
- None
Blue-M & Memmert Vacuum Ovens

**Equipment Features:**
- Digital Controller
- All Steel Construction
- Dual Programmable Controllers  
  - Heat Controller  
  - Over-Temp Controller  
  - Audible Alarm for Over-Temp
- 24” Hg Maximum (High Altitude)
Blue-M Lamination Oven

**Equipment Features:**
- Digital Temperature Control
- Plumbed for Constant Vacuum
- Chart Recorder

**Vacuum Pump Features:**
- Redundant Vacuum Pumps
- External Gage

**Measurables:**
- Attributable Defects
Silicone Material Processing Area

Equipment Set:

- Dedicated Mix Hood
- Dedicated Blue-M Oven
- Dedicated Camalot 1414
- Dedicated Workstations
- Dedicated Procedures
- Dedicated Smocks

Silicone Processing Area

Area Certified Personnel Only

*White Smocks Only
*Silicones To Be Fully Cured Before Exiting
*Orange "SILICONE" Labels To Be Applied Per 65037
Desiccant Cabinets

Equipment Features:

- Conforms to IPC/JEDEC J-Std-033
- Solid Steel Construction
- Maintains RH Level of Less than 1%
- Internal Hygrometer Reports RH Level
OmegaMeter 600SMD

**Equipment Features:**
- Automated ROSE Testing System
- Complies with IPC-TM-650
- Complies with J-Std-001
- Complies with NASA 8739.1
- Submerged Spray for Increased Contamination Detection
- Storage of 99 Test Profiles
- 26” x 26” Max Board Dimensions

**Measurables:**
- Ionic Contamination
Equipment Features:
- Ultra-Sensitive Contamination Tester
  - Resistance of Solvent Extract (ROSE)
- Complies with ANSI/J-STD-001
- Complies with IPC-TM-650
- Complies with NASA 8739.1
- Large Volume Reservoir

Measurables:
- Ionic Contamination
Conformal Coat

Equipment Features:
- Binks Spray Booth
- Fire Suppression System
- DeVilbiss Spray Gun

Materials:
- Arathane 5750
- Conathane CE-1155
- Humiseal 1B-31
- Others Upon Request

Measurables:
- Dry Film Thickness
Production Photo

Process Features:
- Canon EOS 5-D Camera
- 16 MegaPixels
- 8 Photos per Assembly
  - 45° Four Times, Each Side