

## EQUIPMENT LIST

### Wafer and Device Testing

#### I. Tester

1	Teradyne microFLEX	<p>Digital: HSD200: 240 Channels 50MHz (max. 200MHz) / Testhead with 12 Slots</p> <p>DSP: 8 Channels SRP-Generator(sine-ramp-pulse) 2.5MHz, 8 Chan. Digitizer 5.5MHz / 50MS/s</p> <p>Sources: 80 Channels VI-Source +/-30V/200mA 8/16 Chan. VI-Source -90V..+180V/10A 8 Channels Ultra-Precision-Voltage-Source 15.3uV Resolution</p> <p>Special: POOL2: Octal Opamp Servo Loop with Auto-Compensation 8 Channels High-Accuracy-Differential-Multimeter 313nV/488fA Resolution, 8 Time-Meas-Channels 500MHz/225ps accuracy 8 HSDP-Channels (High Speed Pulse Driver) 2.500V/us / 20Vpp</p>
2	Teradyne FLEX	<p>Digital: HSD200: 240 Channels 50MHz (max. 200MHz) / Testhead with 24 Slots</p> <p>DSP: 8 Channels SRP-Generator(sine-ramp-pulse) 2.5MHz, 8 Chan. Digitizer 5.5MHz / 50MS/s</p> <p>Sources: 80 Channels VI-Source +/-30V/200mA 16/32 Chan. VI-Source -90V..+180V/10A 8 Channels Ultra-Precision-Voltage-Source 15.3uV Resolution</p> <p>Special: POOL2: Octal Opamp Servo Loop with Auto-Compensation 8 Channels High-Accuracy-Differential-Multimeter 313nV/488fA Resolution, 8 Time-Meas-Channels 500MHz/225ps accuracy 8 HSDP-Channels (High Speed Pulse Driver) 2.500V/us / 20Vpp</p>
3	Advantest V93000 SmartScale SoC	<p>Digital: PS1600: 512 Channels 50 - 800MHz (100 - 1.600MBit/s) / Class C Testhead</p> <p>DSP: per digital Pin of PS1600: AWG 0-5V / 90-200kS/s, Digitizer 50-250kS/s</p> <p>Sources: DPS128-HC/HV: 64 Channels High Current 7V / 0.5-1.0A per Channel 64 Channels High Voltage 15V / 0.2A per Channel MS-DPS (emulated by a DPS64): 8/16 Channels +/-7V / 4-8A per Channel</p> <p>Special: 128 Utility lines - Large Interface</p>
4	LTXCredence Diamond D10	<p>Digital: 96 - 288 Channels 100MHz</p> <p>DSP: High-Resolution: AWG 4 Channels 24Bit / 768kS/s Digitizer 4 Channels 24Bit / 2.5MS/s High-Speed: AWG 4 Channels 16Bit / 250MS/s Digitizer 4 Channels 16Bit / 130MS/s</p> <p>Sources: DPS: 16 Channels 6V/2A per channel, gangable VIS16: 16 Channels VI-Source 60V/100-300mA</p> <p>Special: Time measurement (per VIS16-channel): 100ns resolution</p>
5	Advantest SZ M3650	<p>Digital: DPIN8: 48 Channels 50-200MHz</p> <p>DSP: HRSG (High Resolution Signal Generator) 2 Channels 20Bit, 100kHz, 350kS/s HRSD (High Resolution Signal Digitizer) 2 Channels 18Bit, 140kS/s MSSG (Medium Speed Signal Generator) 2 Channels 16Bit, 20MHz, 50MS/s MSSD (Medium Speed Signal Digitizer) 2 Channels 16Bit, 20MHz, 50MS/s</p> <p>Sources: VIS2 VI-Source 5 Channels +/-100V/200mA VI VI-Source 6 Channels +/-52V/200mA (0.5A pulsed 200ms) VIS54 VI-Source 2 Channels -10/+100V/2.5A (5A pulsed)</p> <p>Special: ATMU Time Measurement Unit 4 Channels 32Bit, 50ps resolution, BW 400MHz Differential Programmable Gain Amplifier for voltage measurement +/-320V 200kHz Crosspoint Matrices SCM (4x32), MPCM (6x12 Kelvin) DDS PLL Clocksource 200MHz High Precision DMM 24Bit (3458A)</p>
6	Advantest	<p>Digital: DPIN8: 64-96 Channels 50-200MHz</p>

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	<b>SZ M3660</b>	<p>Analog: APIN8: 16 Channels +/-100V 100kHz pattern rate (including VI-Source +/-100V/40mA, AWG + Digitizer 16Bit, 25kS/s, Differential Amplifier +/-100V)</p> <p>DSP: HRSG (High Resolution Signal Generator) 2 Channels 20Bit, 100kHz, 350kS/s HRSD (High Resolution Signal Digitizer) 2 Channels 18Bit, 140kS/s</p> <p>Sources: VIS10 VI-Source 4-8 Channels +/-80V/0.5-2.0A (20A pulsed), floating range +/-50V VI VI-Source 6 Channels +/-52V/200mA (0.5A pulsed 200ms)</p> <p>Special: ATMU Time Measurement Unit 16 Channels 32Bit, 50ps resolution, BW 400MHz Differential Programmable Gain Amplifier for voltage measurement +/-320V 200kHz</p> <p>Crosspoint Matrices SCM (4x32), DC_MX (8x16 Kelvin) DDS PLL Clocksource 200MHz High Precision DMM 24Bit (3458A)</p>
7	<b>SZ M3000</b>	<p>Type: Benchtop Tester</p> <p>Devices: - Opamps, Comparators, Optocouplers, Voltage Regulators, ADCs + DACs up to 12Bit - Diodes, Z-Diodes, Transistors, FETs, IGBTs, Thyristors, Triacs up to 2.000V / 50A</p>
8	<b>aSpect Systems</b>	Type: Module for Image Sensor Test
<b>II. Handling Systems</b>		
1	<b>Multitest 8589</b>	SSOP / SOW temp range -40°C ... +125°C
2	<b>Multitest MT 8704</b>	SO and SSOP temp +25°C
3	<b>Multitest 9308</b>	SO / SSOP temp range -40°C ... +125°C
4	<b>Multitest MT 9320</b>	SO and TSSOP temp +25°C
5	<b>Multitest MT 9510</b>	QFN / QFP / BGA temp range -45°C ... +150°C
6	<b>Multitest MT 9918 + 9928</b>	SO / SSOP / MSOP temp range -40°C ... +125°C
7	<b>Rasco SO2000</b>	SO / QFN temp range -40°C ... +125°C
<b>III. Wafer prober</b>		
1	<b>Electroglas 4090 μ+</b>	Fully automatic probing machine for wafers up to 8 inch Temp. range +25°C...+130°C
2	<b>Accretec UF200A</b>	Fully automatic probing machine for wafers up to 8 inch Temp. range +25°C...+150°C
3	<b>Acceretecc UF 3000Ex-e</b>	Fully automatic probing machine for wafers 8 inch + 12 inch, Mini-Environment, Optical Target Scope, 4 axes driving mechanism (QPU) for Z-axis, TTG (Touch To Go) Temp. range -55°C...+200°C

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<b><i>IV. Tape &amp; Reel Systems</i></b>		
1	ICOS CI-9250	QFN, QFP, BGA, TSOP Visual inspection, mark inspection, integrated device orientation tray to tray; tray to tape
2	ICOS CI-T120	QFN, QFP, BGA, TSOP Visual inspection, crack scanning, mark inspection, integrated device orientation tray to tray; tray to tape; detaping
3	Ismeca NX 16	SOP20 / 300mil, SO8 / 150 mil, SSOP20, QFN 7x7-packages and TSOP14 Visual inspection, mark inspection, integrated device orientation tube to tube / tube to tape
4	Ismeca LTM-TTR	QFN, QFP Visual inspection, crack scanning, integrated device orientation tray to tray or tray to reel
5	Leadstar 850	Gullwing and J-Lead packages (SO, TSOP, QFP) Conditioning System tray to tray, tube to tube
6	Proliner 900	Gullwing packages (QFP, TSOP) Visual inspection Repack from xy-tray to JEDEC-Tray, tray to tray
7	Systemation ST585	Gullwing devices 150mil, 208mil, 300mil (SO) Visual inspection, mark inspection, integrated device orientation tube to tape
<b><i>V. Programmiers</i></b>		
Programming of e.g. Microcontroller, Flash and PLD		
1	BP4600 + 4610	Automated high speed flash programmer with 11 programming stations with 64MB per station  Pick & place handling system, integrated programming, laser marking and serialisation Input / output options with trays or tape
2	BP3800	Automated high speed flash programmer with 16 programming stations with 64MB per station Pick & place handling system, integrated programming, laser marking and serialisation Input / output options with trays or tape
3	BP3800MK2	Automated high speed flash programmer with 16 programming stations with 64MB per station  Pick & place handling system, integrated programming and serialisation Input / output options with trays or tape
4	BP2610	Engineering programmer for BP4600+BP4610
5	BP2800	Engineering programmer for BP3800+BP3800MK2
6	ELNEC BeeProg2	Manual extremely fast universal 48-pindrive programmer Serialisation

## EQUIPMENT LIST

### *Qualification & Reliability*

#### *I. Temperature Test*

1	UT6060	T= +25°C – +200°C
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#### *II. Stress Test Systems*

1	IOL Hora	Δ Tj= 75 – 175°C IDS ≤ 12,5A VDS ≤ 12V 3 Gruppen
2	HTRB/HTGS Hora	T= 50 °C – 200 °C VDS= –1200V – +1200V VGS= -60V - +60V
3	Vötsch VTU60-90	T= 50 °C – 175 °C
4	VMUB02/13/250	T= 85°C- 125°C V= 0-50 V I= 0–100 A 24 Slots
5	Espec TSA-201S-W	T= -40°C- +85°C V= 5-35 V I=0-100 A 18 Slots
6	TSA-201S-W	T= -40°C-+85°C V= 5-35 V I=0-100 A 18 Slots
7	PL-2KPH	T= 85°C RH=85% V= 0-300V I= 0-450 mA
8	Espec PR-4KTH	T= 85°C RH= 85% V= 0-250 V I= 0-6000 mA 18 Gruppen
9	EDA Labline	T=50°C – 150°C 8 Slots
10	EDA DA48HD/H	T=50°C – 150°C 2 x 24 Slots

#### *III. Environmental Test*

1	Espec TSA-101 S-W	T= -70°C –+200°C
2	VFS07/15/2	T= -65°C – +165°C
3	VCS7057	T= -70°C – +180°C RH= +10 – +95 %
4	VCS7027-15	T = -70°C – +180°C RH=+10 – +95 %
5	PL-2KPH	T= -40°C – +180°C
6	VC7020	T = -70°C – +180°C RH=+10 – +95 %
7	HC0020	T = +10 – +90°C RH = +10 – 95%

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8	EHS-221M	T= +85°C – +130°C RH= +85 – +100 %
<b><i>IV. Mechanical Test</i></b>		
1	UL500	Leckrate >2x10-10mbar*l/s
2	9000	G= 0g - +999.999g
3	GL TT1	T= +125°C
4	RMS 3000	5886 N, 2700 Hz, peak to peak 12,5mm
5	EFFBE VP 35	max. bounce time 18ms, max. acceleration 2500g
6	AVCO SM110-MP	max. bounce time 6ms, max. acceleration 1800g
<b><i>V. Electro-optical Measurement</i></b>		
1	Instrument Systems CAS 140B-151	380-780nm
2	Ando AQ-6317	600nm-1700nm
3	HP 8153A series	450-1650nm
4	LMT Pocket Lux 2, B 510	visible range
5	Gigahertz-Optik X1-1	T= -40°C – +180°C
6	ILX Lightwave LDC- 3724B	0 .. 1000 mA
7	Newport 8000	0 .. 3000 mA
8	Ando AQ4320B	tunable C- & L-band
9	Ando AQ4321D	tunable C- & L-band
10	EXFO IQ-203	16-channel C- & L-band
<b><i>VI. Burn-In and Life Test for Laser</i></b>		
1	Newport 8008	48 channels, 1000mA, Si Sensors
2	Newport 9016	64 channels, 1000mA, Si sensors
3	Mindready	384 channels, 50mA, Ge sensors
<b><i>VII. Mobile Measure Equipment for Vehicles</i></b>		
1	Ipetronik	Intelligent measure modules, measuring of power / temperature / impulse; Analogue outputs as f-U-converter / data logger incl. 2 CAN-Bus interfaces
2	AFT Atlas KISS3200	Measure system and data logger for power measuring and frequency measuring Thermo elements / Serial interface, CAN-Bus interface / Online display
3	MobiLOG	Mobile data logging of CAN-Bus information

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<b><i>Failure Analysis</i></b>		
1	<b>Zeiss LEO 1550 Scanning Electron Microscope</b>	High-resolution field emitter SEM with SE/BSE detectors and EDX spectroscope
2	<b>EDAX PV 9830/10E</b>	EDX detector for elemental analysis inside the SEM
3	<b>FEI Strata 205 Focused Ion Beam</b>	High precision single beam FIB for cross sectioning and chip modification, equipped with gas injection systems and precursors for metal/oxide deposition and enhanced etching
4	<b>SAMTEC Evolution II Scanning Acoustic Microscope</b>	SAM with several transducers and front echo, back echo and through scan modes
5	<b>Spectral Dynamics Inc. 4501/4511L PIND Tester</b>	State-of-the-art PIND Tester (Particle Induced Noise Detection), suitable for heavy devices
6	<b>Phoenix X-ray nanomex160 X-ray Microscope</b>	X-ray microscope with nanofocus capabilities, high dynamic detector and computertomography (CT) extension
7	<b>XYZTEC Condor 70 &amp; 100</b>	Bond Pull / Die Shear Test Systems
8	<b>Stannol CM22 Contaminometer</b>	Ionic contamination measurement system in compliance with international standards
9	<b>Zeiss Axio Imager.A2m / AxioCam MRc5</b>	High-end optical microscope with polarizer and dark-field mode