



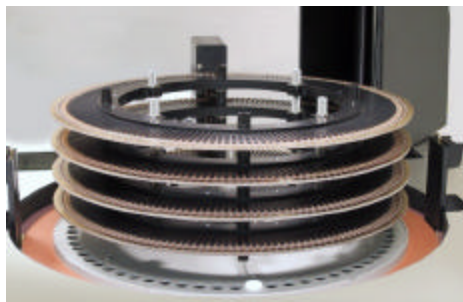
W-2200B SMD DISC PALLET TEMPERATURE TEST SYSTEM

With 250B-1 or 250C Network Analyzer

- Automated software based quartz crystal temperature test system
- Up to 4 disc pallets can be stacked
- Standard SMD sizes available include:

SMD TYPE	DISC CAPACITY	TOTAL CAPACITY/ PER CHAMBER
5 x 7mm	140	560
4.5 x 8mm	140	560
3.5 x 6mm	160	640
3.2 x 5mm	160	640
2.5 x 4mm	160	640
2.5 x 3.2mm	160	640
2.0 x 2.5mm	160	640
HC-49USMD	100	400
Leaded	100	400

- Custom SMD sizes available
- High speed fan mounted inside the chamber cover provides fast temperature soak time
- Disc pallet platform can be easily integrated into dedicated machine for automatic loading / unloading SMD devices



- Measures over 75 different parameters
- Parameter and curve fit characteristics checked against easy to define QC limits
- Crystals of different frequencies tested in a single temperature run
- All data published in a *Microsoft Access*[™] data base and can be exported to *Microsoft Excel*[™] for custom data analysis
- Printouts are generated using *Crystal Reports*[®]

SPECIFICATIONS

250B-1 Frequency Range:	15 KHz to 220 MHz
250C Frequency Range:	15 KHz to 500 MHz
Frequency Correlation:	± 1 ppm* at series (typical)
Crystal Power:	1 nW to 1000 uW (1 MHz to 50 MHz) 1 nW to 500 uW (>50 MHz to 200 MHz)
Temperature Stability:	± 0.1° C

* Proprietary measurement and calibration algorithms provide correlation to industry standard crystal measurement equipment.

SAUNDERS & ASSOCIATES, LLC

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SYSTEM CONFIGURATION

- S&A 250B-1 or 250C Network Analyzer
- S&A 2451 Switch Controller
- S&A 4220 Temperature Test Chamber (LCO₂, LN₂, or Mechanical Refrigeration Cooling)
- IEC-444 Pi-Network Test Head
- **Windows® based System Software**
- **Printer (Optional)**
- **Computer Requirements:**
 Minimum 500 MHz Pentium III
 One full PCI slot with +3.3V & 5V power,
 Windows 98®

SAMPLE REPORTS

Crystal Plots
Run Name: Crystal Test Run
Print All Operator: RMB
Row A: Measured FL
Row B: Measured FL
Row C: Measured FL
Row D: Measured FL
Ref F: F @ 25.00°C (Set)
Run Start: 10-Nov-2001 9:37 am
Run Finish: 10-Nov-2001 10:15 am
S&A W200 Rev: 1722

Cur: AT Angle: +.42°
A0: -4.1294278+92
A1: -9.3929478+82
A2: 1.9154488+84
A3: 1.9154488+84
A4: 3.9244158+88
TurnP1: -17.33°C
TurnP2: 44.44°C
TurnP3: -----
Thresh1: -----
Thresh2: -----
Thresh3: -----
Tol1: 10.94°C
Tol2: 10.94°C
Tol3: -----
Max R: 14.40 ohms
Max I: 17.27 ohms
Delta R: 8.47 ohms
WCD: 8.00 ppm
WCT: 40.02°C

Crystal Condensed Plots
Run Name: Crystal Test Run
Print All Operator: RMB
Row A: Measured FL
Row B: Measured FL
Row C: Measured FL
Row D: Measured FL
Ref F: F @ 25.00°C (Set)
Run Start: 10-Nov-2001 9:37 am
Run Finish: 10-Nov-2001 10:15 am
S&A W200 Rev: 1722

Crystal Tabular
Run Name: Example Run
Print All Operator: -----
Row A: Measured FL
Row B: Measured FL
Row C: Measured FL
Row D: Measured FL
Ref F: F @ 25.00°C (Set)
Run Start: 26-Oct-2001 4:51 pm
Run Finish: 26-Oct-2001 6:34 pm
S&A W200 Rev: 1725

A001 +2a001+		A002 +2a002+		A003 +2a003+		A004 +2a004+		A005 +2a005+				
Setup: 12magw2	Setup: 12magw2	Setup: 12magw2	Setup: 12magw2	Setup: 12magw2	Setup: 12magw2	Setup: 12magw2	Setup: 12magw2	Setup: 12magw2	Setup: 12magw2			
Ref F: 12,795,817 Hz	Ref F: 12,795,865 Hz	Ref F: 12,795,817 Hz	Ref F: 12,795,842 Hz	Ref F: 12,795,817 Hz	Ref F: 12,795,842 Hz	Ref F: 12,795,817 Hz	Ref F: 12,795,842 Hz	Ref F: 12,795,817 Hz	Ref F: 12,795,842 Hz			
% FR	% FR	% FR	% FR	% FR	% FR	% FR	% FR	% FR	% FR			
25.01	0.00	4.92	25.02	0.00	18.71	25.02	0.00	12.39	25.01	0.00	11.97	25.01
8.01	0.01	5.13	9.01	0.00	21.44	8.00	3.28	12.96	-0.01	3.74	12.49	0.00
5.02	0.33	4.90	5.00	0.79	20.77	4.98	3.16	12.92	4.98	3.52	12.30	5.01
8.88	0.44	5.03	10.00	5.24	20.39	10.00	2.88	12.83	10.00	2.94	12.39	8.88
15.02	0.50	5.03	15.01	10.00	19.84	15.00	3.07	13.88	14.99	3.33	13.32	14.99
20.00	0.36	5.02	20.00	15.00	19.84	20.00	3.07	13.88	14.99	3.33	13.32	14.99
25.00	0.09	5.05	25.01	20.00	19.84	25.00	3.07	13.88	14.99	3.33	13.32	14.99
30.02	-3.12	5.04	30.01	25.00	19.84	30.02	3.07	13.88	14.99	3.33	13.32	14.99
34.98	-3.39	5.03	35.00	30.02	19.84	34.98	3.07	13.88	14.99	3.33	13.32	14.99
40.02	-3.55	5.04	40.02	34.98	19.84	40.02	3.07	13.88	14.99	3.33	13.32	14.99
45.03	-3.52	5.06	45.02	40.02	19.84	45.03	3.07	13.88	14.99	3.33	13.32	14.99
49.99	-3.20	5.00	49.99	45.03	19.84	49.99	3.07	13.88	14.99	3.33	13.32	14.99
54.99	0.33	4.98	55.00	49.99	19.84	54.99	3.07	13.88	14.99	3.33	13.32	14.99
59.99	1.33	5.05	59.99	54.99	19.84	59.99	3.07	13.88	14.99	3.33	13.32	14.99

Crystal Curvfit Summary
Run Name: Example Run
Print All Operator: -----
Row A: Measured FL
Row B: Measured FL
Row C: Measured FL
Row D: Measured FL
Ref F: F @ 25.00°C (Set)
Run Start: 26-Oct-2001 4:51 pm
Run Finish: 26-Oct-2001 6:34 pm
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Cur	AT	Angle	TurnP	Thresh	Tol
001	A0	+0.42	-17.33	44.44	10.94
002	A1	-----	-----	-----	-----
003	A2	-----	-----	-----	-----
004	A3	-----	-----	-----	-----
005	A4	-----	-----	-----	-----

Crystal Curvfit Tabular
Run Name: Example Run
Print All Operator: -----
Row A: Measured FL
Row B: Measured FL
Row C: Measured FL
Row D: Measured FL
Ref F: F @ 25.00°C (Set)
Run Start: 26-Oct-2001 4:51 pm
Run Finish: 26-Oct-2001 6:34 pm
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Cur	AT	Angle	TurnP	Thresh	Tol
001	A0	+0.42	-17.33	44.44	10.94
002	A1	-----	-----	-----	-----
003	A2	-----	-----	-----	-----
004	A3	-----	-----	-----	-----
005	A4	-----	-----	-----	-----

Crystal Setup File Parameters
Run Name: Example Run
Print All Operator: -----
Row A: Measured FL
Row B: Measured FL
Row C: Measured FL
Row D: Measured FL
Ref F: F @ 25.00°C (Set)
Run Start: 26-Oct-2001 4:51 pm
Run Finish: 26-Oct-2001 6:34 pm
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STAT	FR	CO	SE	Q	CL	I	FR	TEMP	F/T
15.8	0.0	29.0	12.0	12.00	12.0	12.00	12.0	12.00	12.0
15.8	0.0	29.0	12.0	12.00	12.0	12.00	12.0	12.00	12.0

Crystal Failures Only
Run Name: Example Run
Print All Operator: -----
Row A: Measured FL
Row B: Measured FL
Row C: Measured FL
Row D: Measured FL
Ref F: F @ 25.00°C (Set)
Run Start: 26-Oct-2001 4:51 pm
Run Finish: 26-Oct-2001 6:34 pm
S&A W200 Rev: 1725

Cur	AT	Angle	TurnP	Thresh	Tol
001	A0	+0.42	-17.33	44.44	10.94
002	A1	-----	-----	-----	-----
003	A2	-----	-----	-----	-----
004	A3	-----	-----	-----	-----
005	A4	-----	-----	-----	-----

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