



W-2200B SMD DISC PALLET TEMPERATURE TEST SYSTEM

With 250B-1 or 250C Network Analyzer

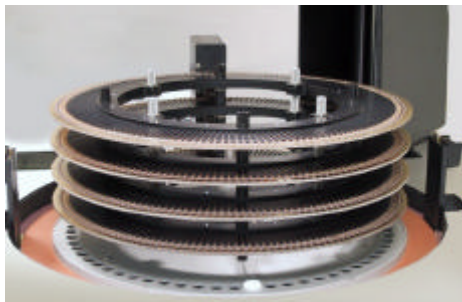
- Automated software based quartz crystal temperature test system
- Up to 4 disc pallets can be stacked
- Standard SMD sizes available include:

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, INC.

2520 E. Rose Garden Lane - Phoenix, Arizona 85050 USA (602) 971-9977 FAX (602) 971-5522
E-Mail sales@saunders-assoc.com - World Wide Web <http://www.saunders-assoc.com>

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: 1.0154488+84
A3: 1.9155488+84
A4: 3.9244158+88
TurnP1: -17.33°C
TurnP2: 44.44°C
TurnP3: -----
Cut: AT Polarity Angle: 2.51°
Thes T1: 0.94°C
Thes T2: -----
Thes T3: -----
Max R: 14.60 ohms
Max I: 17.27 ohms
Delta R: 8.47 ohms
WCT: 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
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
% FR ppm	% FR ppm	% FR ppm	% FR ppm	% FR ppm
25.01	0.00	4.92	25.02	0.00
3.01	0.01	5.13	9.01	0.08
5.02	0.33	4.98	5.00	20.77
8.88	0.44	5.03	10.20	5.24
15.02	0.50	5.03	15.01	10.84
20.50	0.36	5.02	20.00	13.88
25.00	0.09	5.05	25.01	14.88
30.02	-3.12	5.04	30.01	15.33
34.88	-3.39	5.03	35.00	15.33
40.02	-3.55	5.04	40.02	15.33
45.03	-3.52	5.06	45.02	15.33
49.99	-3.20	5.00	49.99	15.33
54.98	0.33	4.98	55.00	15.33
59.99	1.33	5.05	59.99	15.33

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
S&A W200 Rev: 1725

Sample	Setup	Ref F	TurnP	TurnP	TurnP	TurnP	TurnP	TurnP	TurnP
A001	12magw2	12,795,817 Hz	-12.86	44.44	-----	-----	-----	-----	-----
A002	12magw2	12,795,865 Hz	68.86	-----	-----	-----	-----	-----	-----
A003	12magw2	12,795,817 Hz	24.38	-----	-----	-----	-----	-----	-----
A004	12magw2	12,795,842 Hz	-----	-----	-----	-----	-----	-----	-----
A005	12magw2	12,795,817 Hz	-----	-----	-----	-----	-----	-----	-----

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
S&A W200 Rev: 1725

Setup: 12magw2
Reference F: 12,795,800 Hz CL: 8.00 pF Power: 100.00 mW VSW: 12.00 Ohm Resonance: F2/T

STATUS	FR	CO	SE	Q	CL	I	FR	TEMP	F/T
	ppm	pF	ppm	N	dB	uW	uW	°C	ppm
	LS	E	25.0		12.0	10.00			
	LS	E	2.0		12.0	11.00			

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
S&A W200 Rev: 1725

Sample	Setup	Ref F	TurnP	TurnP	TurnP	TurnP	TurnP	TurnP	TurnP
A001	12magw2	12,795,817 Hz	-12.86	44.44	-----	-----	-----	-----	-----
A002	12magw2	12,795,865 Hz	68.86	-----	-----	-----	-----	-----	-----
A003	12magw2	12,795,817 Hz	24.38	-----	-----	-----	-----	-----	-----
A004	12magw2	12,795,842 Hz	-----	-----	-----	-----	-----	-----	-----
A005	12magw2	12,795,817 Hz	-----	-----	-----	-----	-----	-----	-----

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

Sample	Setup	Ref F	TurnP	TurnP	TurnP	TurnP	TurnP	TurnP	TurnP
A001	12magw2	12,795,817 Hz	-12.86	44.44	-----	-----	-----	-----	-----
A002	12magw2	12,795,865 Hz	68.86	-----	-----	-----	-----	-----	-----
A003	12magw2	12,795,817 Hz	24.38	-----	-----	-----	-----	-----	-----
A004	12magw2	12,795,842 Hz	-----	-----	-----	-----	-----	-----	-----
A005	12magw2	12,795,817 Hz	-----	-----	-----	-----	-----	-----	-----

SAUNDERS & ASSOCIATES, INC.