

- Automated, software-based oscillator, VCXO and TCXO temperature test system
- Measures frequency over temperature
- Parameter and curve fit characteristics are checked against easy to define QC limits
- Oscillators of different frequencies can be tested in a single temperature run
- All data is published in a *Microsoft Access™* data base
- Data can be exported to *Microsoft Excel™* for custom data analysis
- Oscillator part number can be used to set complete measurement parameters, QC limits, temperature test points and data printouts



- Chamber holds eight 64-position measurement boards for a total of 512 parts
- Socket PCBs available include 2.0x2.5, 2.5x3.2, 3.2x5, 3.5x6, 5x7, 5x7.5, 9x14, DIP (full & half)
- Measurement boards available for LVDS, PECL, ECL, CMOS, and TTL devices
- Sub PPB measurement
- Electronic switching
- High speed frequency measurement
- Complete frequency perturbation testing of 512 parts in about 1.5 hours

SPECIFICATIONS

Oscillator Frequency Range:	10 KHz to 1 GHz
Temperature Stability:	± 0.1° C
Temperature Uniformity:	± 0.6° C
Temperature Range:	-55° C to 85° C (MR) -65° C to 85° C (MR with LN ₂ Boost)

SAUNDERS & ASSOCIATES, LLC

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SYSTEM CONFIGURATION

- S&A 4350MR Option 1 Temperature Test Chamber
- Eight position card cage and backplane PCB
- Frequency Counter
- DUT Power Supply

- System Controller
- S&A MFC-100 Card
- GPIB Interface
- *Windows*® based System Software

SAMPLE REPORTS

Oscillator Group Summary

Run Name: example run 0 to 80 degrees
 Run Start: 02-May-2003 5:40 pm
 Print: All Operator: Run Finish: 02-May-2003 7:30 pm
 Ref: F @ 25.00°C (Set) S&A W2800 Rev: 0701 Report: 1700

Setup: C:\Program Files\Saunders & Associates\Q90ID\ataW0MHz.qcc
 Reference Fr: 40,950,000 Hz Vcc: 5.000 V Vco: 5.000 V Trigger: CMOS Level: 1.300 V
 Group 0 Default

Setup: C:\Program Files\Saunders & Associates\Q90ID\at#0MHz.qcc
 Reference Fr: 9,192,000.0 Hz Vcc: 5.000 V Vco: 6.000 V Trigger: CMOS Level: 1.300 V
 Group 0 Default
 A001 A002 A003 A004 A005 A006

Oscillator Temperature Test

Ref: F @ 25.00°C (Actual)
 Run Start: 22-May-2002 5:23 pm
 Run Finish: 23-May-2002 12:25 am
 S&A W2200 Rev: 2.21

Oscillator Run File

Run Name: 0 to 80 degrees
 Author:
 Modifier:
 Operator:

Setup: test
 Description: CMOS 50 pf Lead
 Reference Fr: 40,950,283 Hz
 Print: All

Run Date: 17-Dec-2002 5:19 pm
 Vcc: 5.000 Volts Vco: 2.500 Volts
 Trigger: TTL Level: 1.300 Volts
 S&A 280A Rev: 1.00 Report: 1.00

STATUS	FR	FR
	ppm	Hz
	5.0	-5.0
1	Pass	-0.4 40,959,265
2	Pass	-0.3 40,959,216
3	Pass	-0.5 40,959,373
4	Pass	-0.5 40,959,269
5	Pass	-0.2 40,959,269

Configuration
 Wheel Name: 08 Wheel Position: 104 Wheel
 Group: A001 - A005 Setup File: 40MHz
 Reference Fr: 40,950,000 Hz Vcc: 5.00
 Group: A006 - A010 Setup File: 50MHz
 Reference Fr: 9,192,000 Hz Vcc: 5.000

Temperature Table
 Set Temp: 0.00 °C Soak: 20.00 min Mea
 Step Temp: 80.00 °C Step: 5.00 °C Soak:

TCXO Crystal perturbation test

Test Device C

Run Date: 17-Dec-2002 2:44 pm
 Vcc: 5.000 Volts Vco: 2.500 Volts
 Trigger: TTL Level: 1.300 Volts
 S&A 280A Rev: 1.00 Report: 1.00

STATUS	FR	FR
	ppm	Hz
	5.0	-5.0
1	Pass	-1.3
2	Pass	-1.4
3	Pass	-1.4
4	Pass	-1.0

Van Sweep 1
 Van Sweep 1
 Van Sweep 1
 Van Sweep 1

Oscillator Tabular

Run Name: example run 0 to 80 degrees
 Run Start: 02-May-2003 5:40 pm
 Print: All Operator: Run Finish: 02-May-2003 7:30 pm
 Ref: F @ 25.00°C (Set) S&A W2800 Rev: 0701 Report: 1700

A001	A002	A003	A004	A005
Setup: 40MHz	Setup: 40MHz	Setup: 40MHz	Setup: 40MHz	Setup: 40MHz
Ref F: 40,950,000 Hz	Ref F: 40,957,759 Hz	Ref F: 40,957,728 Hz	Ref F: 40,958,151 Hz	Ref F: 40,958,188 Hz
°C	°C	°C	°C	°C
F: ppm	F: ppm	F: ppm	F: ppm	F: ppm
0.00 14.30K	0.01 -1.07	0.00 -0.78	0.00 -2.20	0.00 -0.04
5.01 5.0K	5.01 1.70	5.01 -0.86	5.01 -1.93	5.00 0.12
10.00 577.9	10.00 0.11	9.99 -0.95	9.99 -1.25	9.99 0.31
15.02 25.99	15.02 1.54	15.01 -0.76	15.00 -0.74	14.99 0.28
19.98 -0.85	19.99 1.28	19.98 -0.51	19.98 -0.31	19.98 0.24
25.01 0.00	25.01 0.00	25.01 0.00	25.00 0.00	24.99 0.00
29.97 0.58	29.97 -1.49	29.97 0.96	29.97 0.01	29.98 0.48
35.00 1.10	35.00 -2.80	35.00 1.63	35.00 1.21	34.99 0.38
40.01 1.98	40.01 -3.91	40.00 19.87	39.99 1.87	39.98 0.52
44.98 2.89	44.98 -4.84	44.98 383.5	44.98 3.04	45.00 81.95
50.00 4.84	49.99 -5.20	49.99 129.5	49.98 4.38	49.99 244.8
55.02 8.89	55.02 -5.30	55.02 45.51	55.01 6.98	55.01 17.97
60.01 9.23	60.01 -4.85	60.02 172.5	60.01 8.52	60.00 982.7
65.03 12.41	65.03 -3.18	65.02 84.10	65.01 11.27	64.98 18.71
70.01 16.62	70.00 -1.25	70.01 20.15	70.01 14.84	70.01 10.40
75.02 21.21	75.01 1.46	75.01 14.13	75.01 18.21	75.00 14.20
79.98 26.45	79.99 5.52	79.99 19.98	80.00 24.52	80.00 19.10