

- 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*<sup>™</sup> data base
- Data can be exported to *Microsoft Excel*<sup>™</sup> for custom data analysis
- Oscillator part number can be used to set complete measurement parameters, QC limits, temperature test points and data printouts

CAN SUPPORT SINGLE, DUAL, OR QUAD SOCKETS FOR 512, 1028, OR 2056 PARTS PER RUN



- Electronic switching
- High speed frequency measurement
- Complete frequency perturbation testing of 512 parts in about 1.5 hours
- Chamber holds eight 64-position measurement boards for a total of 512 sockets
- 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

### 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 <sub>2</sub> Boost)

\* Specific oscillator frequency range depends upon DUT and selected measurement board.

## 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\ata40MHz.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\ata90MHz.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: 80MHz  
 Reference Fr: 8,192,000 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
	ppm
	5.0
	-5.0
	-1.0
1	Pass
2	Pass
3	Pass
4	Pass

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	19.99 -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 19.71
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