

### What does it take to upgrade?

Typical System Upgrade kit consists of:

- S&A 250B Network Analyzer
- S&A 2451 Switch Controller
- S&A PCI TTL I/O Card
- Minimum 500 MHz Pentium III with:
  - \* One full PCI slot
  - \* +3.3V and +5V power
  - \* *Windows 98*®
- Printer



### Why upgrade?

- 1 Measurement speed is about 4 times faster
- 2 Extensive graphing, grouping, QC, and printout capabilities
- 3 User-friendly *Windows*® system software
- 4 DLD can be measured and graphed as a function of temperature
- 5 Crystals in each vertical test wheel column are measured before incrementing the wheel, reducing the number of wheel rotations by 50%
- 6 Uses existing crystal test wheels and measurement test head
- 7 All data is published in *Microsoft Access*™ compatible data base in real time
- 8 Data can be automatically exported to *Microsoft Excel*™ for custom data analysis
- 9 Continuous software support and development

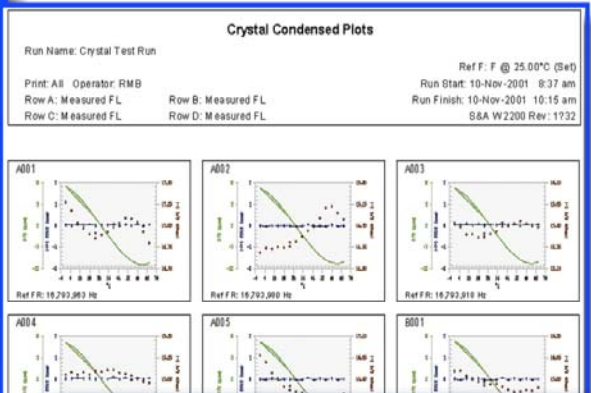
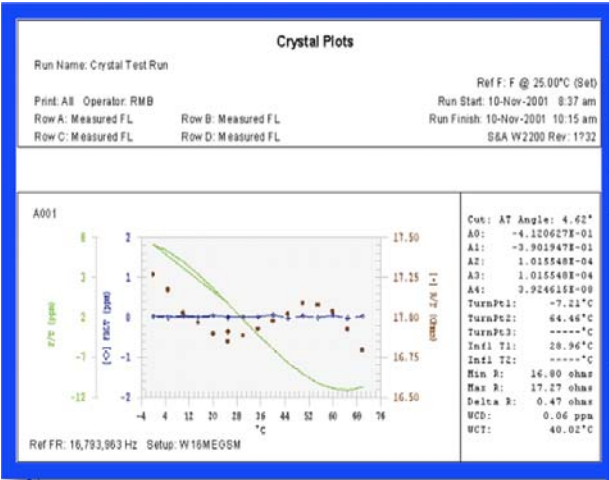
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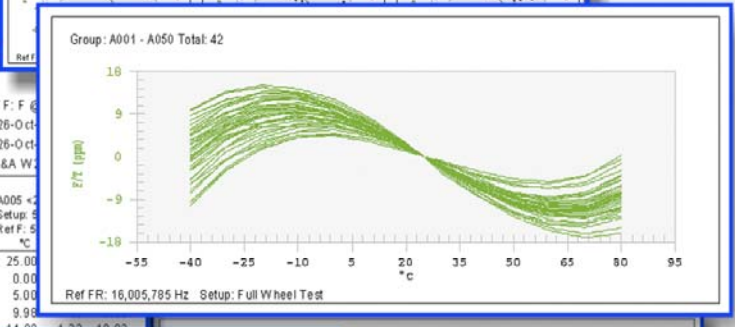
# SAMPLE REPORTS



### Crystal Tabular

Run Name: Example Run  
 Ref F: F @ 25.00°C (Set)  
 Print: All Operator:  
 Run Start: 26-Oct-2001 4:51 pm  
 Row A: Measured FL  
 Row B: Measured FL  
 Row C: Measured FL  
 Row D: Measured FL  
 Run Finish: 26-Oct-2001 6:34 pm  
 S&A W2200 Rev: 1725

A001 <2a001>	A002 <2a002>	A003 <2a003>	A004 <2a004>	A005 <2a005>										
Setup: 12megw2	Setup: 12megw2	Setup: 12megw2	Setup: 12megw2	Setup: 12megw2										
Ref F: 12,795,174 Hz	Ref F: 12,795,955 Hz	Ref F: 12,795,917 Hz	Ref F: 12,795,942 Hz	Ref F: 12,795,917 Hz										
°C	FR ppm	R	°C	FR ppm	R	°C	FR ppm	R	°C	FR ppm	R	°C	FR ppm	R
25.01	0.00	4.92	25.03	0.00	18.71	25.02	0.00	12.39	25.01	0.00	11.97	25.00	0.00	0.00
0.01	0.01	5.13	0.01	8.08	21.44	0.00	3.28	12.96	-0.01	3.74	12.49	0.00	0.00	0.00
5.02	0.33	4.98	5.00	6.79	20.77	4.98	3.16	12.82	4.99	3.52	12.38	5.00	0.00	0.00
9.98	0.44	5.03	10.00	5.24	20.39	10.00	2.68	12.83	10.00	2.94	12.39	9.98	0.00	0.00
15.02	0.50	5.03	15.01	3.80	10.81	15.00	3.07	13.58	14.00	3.33	13.32	14.00	0.00	0.00
20.00	0.36	5.02	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25.00	0.09	5.05	25.01	-0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30.02	-0.12	5.04	30.01	-2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
34.99	-0.39	5.03	35.00	-3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40.02	-0.55	5.04	40.02	-5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
45.03	-0.52	5.06	45.02	-7.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
49.99	-0.20	5.00	49.99	-8.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
54.99	0.33	4.98	55.00	-9.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
59.99	1.33	5.05	59.99	-9.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00



### Crystal Setup File Parameters

Run Name: Example Run  
 Ref F: F @ 25.00°C (Set)  
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 Run Start: 26-Oct-2001 4:51 pm  
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 Row D: Measured FL  
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 S&A W2200 Rev: 1725

Setup: 12megw2  
 Reference F: 12,795,900 Hz CL: 0.00 pF Power: 100.00 uW into 12.00 Ohms Measure: FR/T

STATUS	FR	CO	DR	Q	CL	L	PWR	TEMP	F/T
	ppm	pF	Ohms	k	fF	nH	uW	°C	ppa
	10.0	3.0	25.0		13.0	13.00			
	-10.0	2.5			12.0	11.00			

### Crystal Curvet Tabular

Run Name: Example Run  
 Ref F: F @ 25.00°C (Set)  
 Print: All Operator:  
 Run Start: 26-Oct-2001 4:51 pm  
 Row A: Measured FL  
 Row B: Measured FL  
 Row C: Measured FL  
 Row D: Measured FL  
 Run Finish: 26-Oct-2001 6:34 pm  
 S&A W2200 Rev: 1725

A002 <2a002>	A003 <2a003>								
Setup: 12megw2	Setup: 12megw2								
Ref F: 12,795,955 Hz	Ref F: 12,795,917 Hz								
°C	FR ppm	Curve	Delta	R	°C	FR ppm	Curve	Delta	R
99	A0: -4.797002E-02	TurnPt 1: 0.12			25.03	0.00	0.00	0.00	12.39
94	A1: -2.089013E-01	TurnPt 2: 57.04			0.01	8.08	8.23	-0.16	21.44
38	A2: -1.032941E-03	TurnPt 3: -			5.00	6.79	6.98	-0.19	20.77
49	A3: 8.540013E-05	Infi T 1: 29.96			15.01	3.80	3.74	-0.14	19.81
44	A4: -9.575956E-08	Infi T 2: -			20.00	1.68	1.91	-0.23	19.29
95	WCD: -0.16 ppm	Min R: 11.77			25.01	-0.23	0.01	-0.24	19.12
49	WCT: 25.02 °C	Delta R: 1.18			35.00	-3.00	-3.69	-0.21	18.70
					40.02	-5.61	-5.38	-0.23	18.62
					45.02	-7.04	-6.86	-0.18	18.66
					49.99	-8.22	-8.09	-0.13	18.50
					54.99	-9.33	-9.27	-0.06	4.98
					59.99	-9.76	-9.56	-0.20	18.30
					60.01	-4.71	-4.85	0.14	11.88
					35	0.13	11.85		
					30	0.17	11.77		

### Crystal Failures Only

Run Name: Example Run  
 Ref F: F @ 25.00°C (Set)  
 Print: All Operator:  
 Run Start: 26-Oct-2001 4:51 pm  
 Row A: Measured FL  
 Row B: Measured FL  
 Row C: Measured FL  
 Row D: Measured FL  
 Run Finish: 26-Oct-2001 6:34 pm  
 S&A W2200 Rev: 1725

Crystal #	Sens #	Setup File Parameters	Crystal Data	Curvet Parameter
A001	<2a001>	Fail FR Low		

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