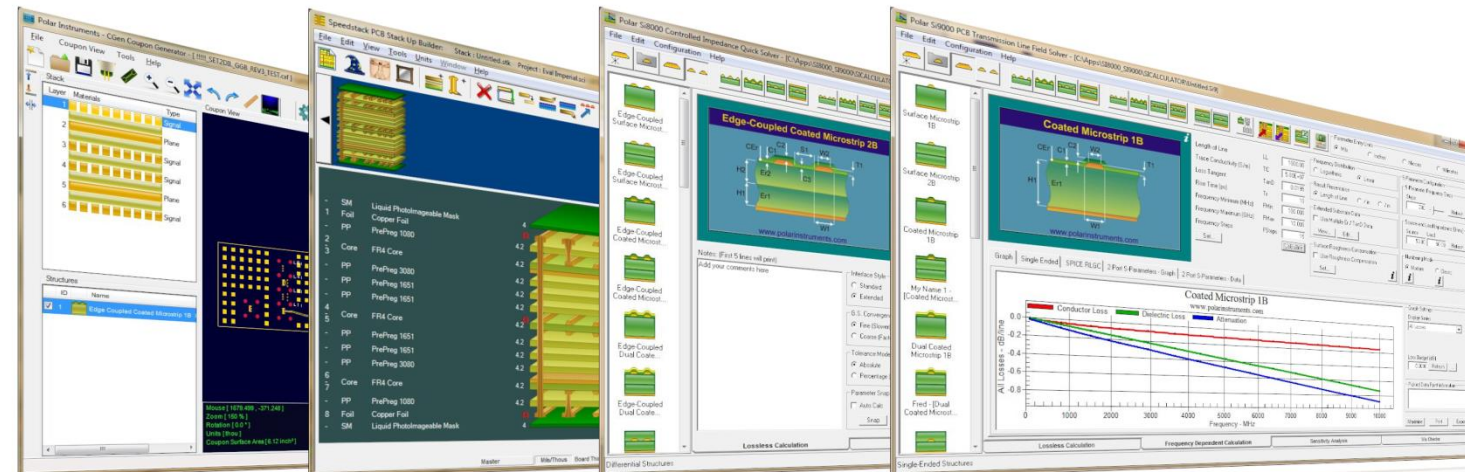
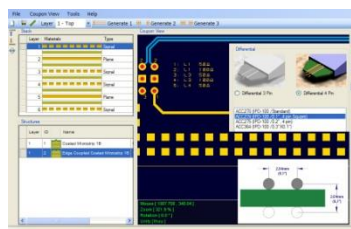
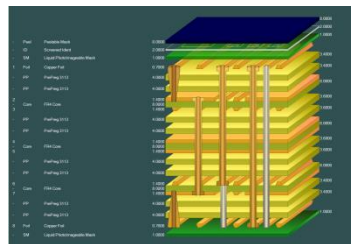
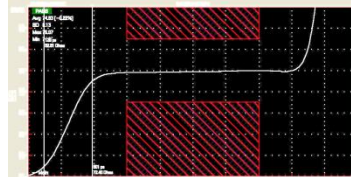
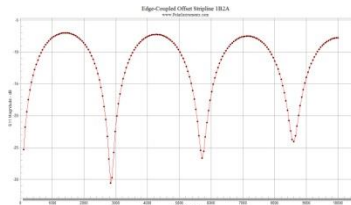
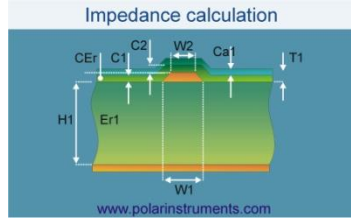




Si8000m / Si9000e – Import Impedance Measurement Data Preview

Richard Attrill – June 2017 (Rev 1)

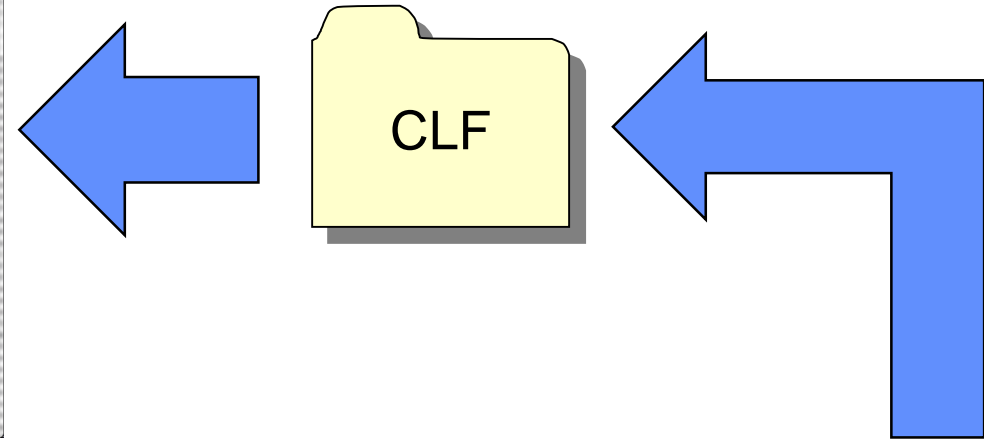
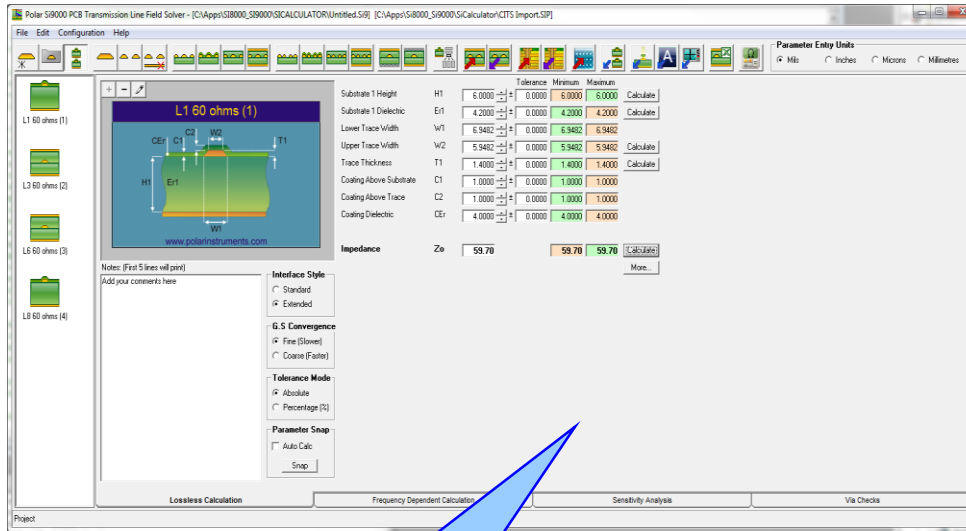


Introduction

Whilst working with controlled impedance designs it is often desirable to compare the reality of the measurement data against the modelled structure.

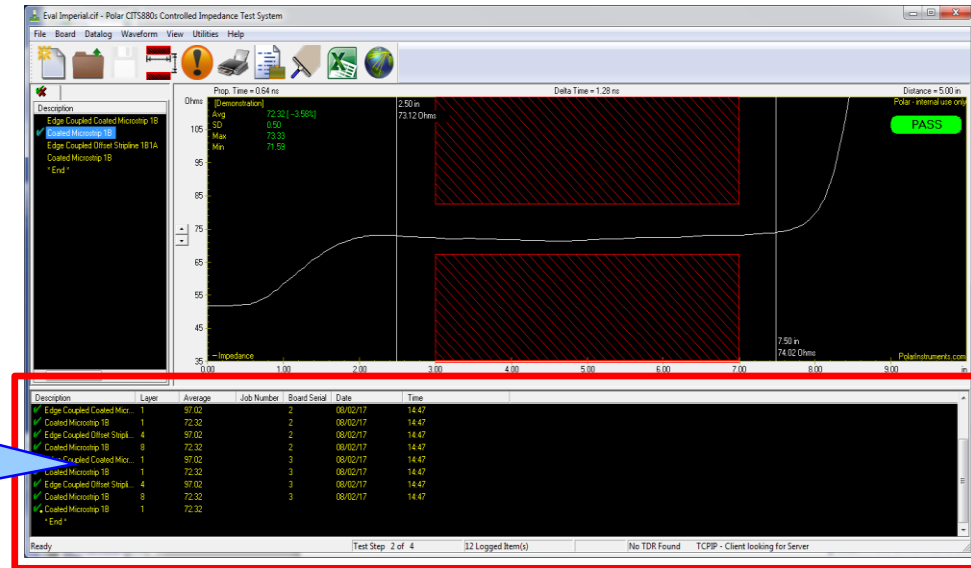
‘Closing the loop’ between the predicted and actual measured results has a number of benefits for both the design and fabrication environments. It allows for fine tuning of the structure parameters in future manufacturing batches, statistical analysis and improved overall process control.

This new capability will be introduced into Polar’s Si8000m / Si9000e field solver products allowing the user to quickly import measurement data directly from the industry-standard Controlled Impedance Test System (CITS).



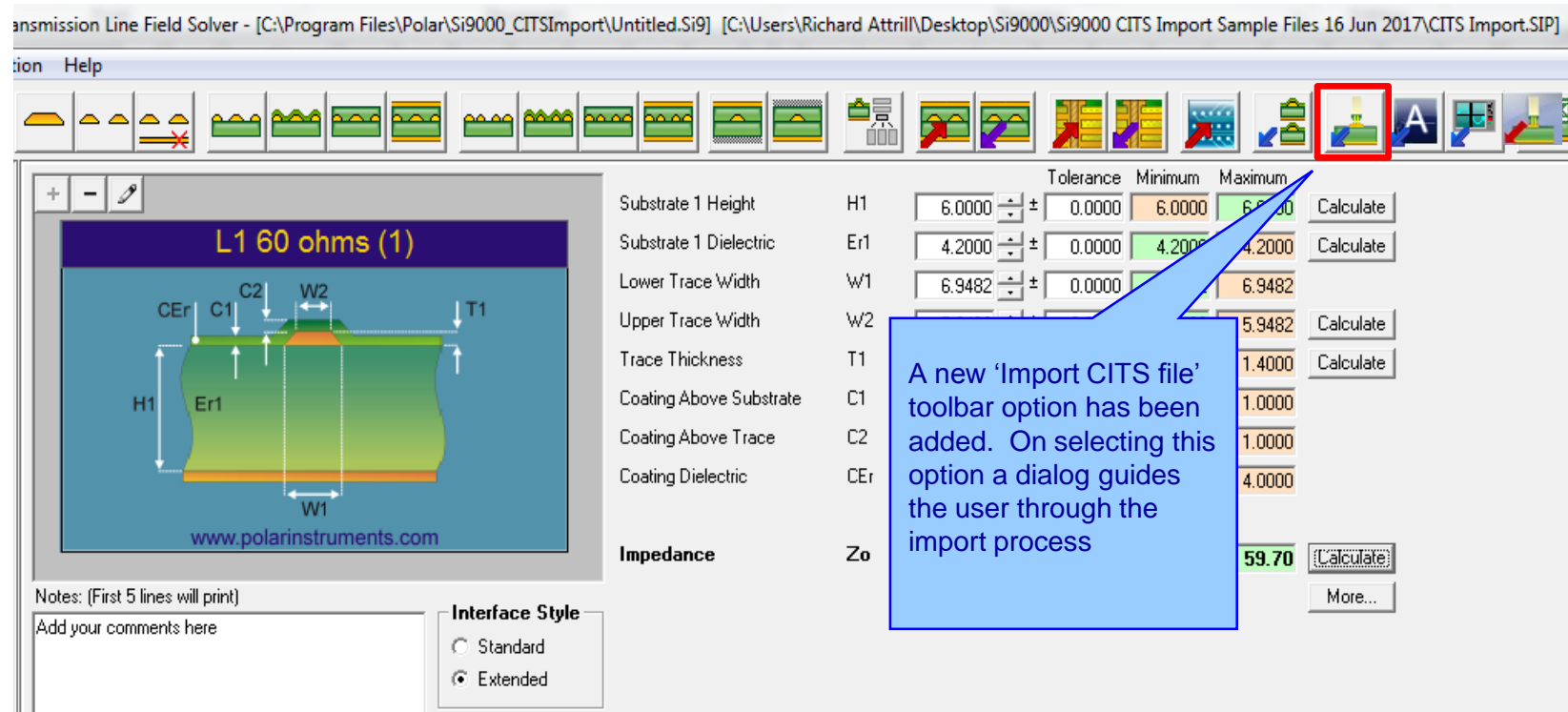
Overview
 The Polar Si8000m / Si9000e field solver products now have the capability to read a CITS Data Log File (.CLF). This file contains comprehensive impedance measurement data and, along with existing modelled structure information, offers graphing capabilities and statistical analysis where the modelled and measured data can be presented together.

The Data Log of the CITS software is stored in a CLF file



Transmission Line Field Solver - [C:\Program Files\Polar\Si9000_CITSImport\Untitled.Si9] [C:\Users\Richard Attrill\Desktop\Si9000\Si9000 CITS Import Sample Files 16 Jun 2017\CITS Import.SIP]

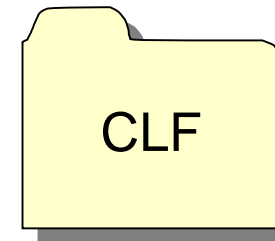
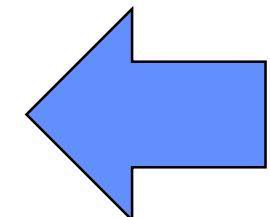
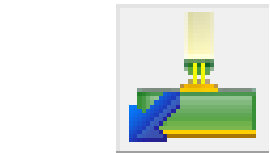
tion Help



		Tolerance	Minimum	Maximum	
Substrate 1 Height	H1	6.0000 ± 0.0000	6.0000	6.0000	Calculate
Substrate 1 Dielectric	Er1	4.2000 ± 0.0000	4.2000	4.2000	Calculate
Lower Trace Width	W1	6.9482 ± 0.0000		6.9482	
Upper Trace Width	W2			5.9482	Calculate
Trace Thickness	T1			1.4000	Calculate
Coating Above Substrate	C1			1.0000	
Coating Above Trace	C2			1.0000	
Coating Dielectric	CEr			4.0000	
Impedance	Zo			59.70	Calculate More...

Notes: (First 5 lines will print)
Add your comments here

Interface Style
 Standard
 Extended



L1 60 ohms (1)

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Step 1 : Read CITS Log File

Filename: C:\Users\Richard Attrill\Desktop\Si9000\Si9000 CITS Import Sample Files 16 Jun 2017\1

Instrument Model: CITS880 Instrument Serial No: 17581

Data Log Record Count: 160 Per Board / Coupon: 4 Board / Coupon Count: 40

Step 2 : Select Data Log Record

Data Log Records: Description - L01, Layer - 1, Nominal Impedance - 60.00

Project Structure: L1 60 ohms (1)

Description: L01 Layer: 1

Nominal Impedance: 60.00 Tol+ %: 10.00 Tol- %: 10.00

Graph | Analysis (1) | Analysis (2) | Measurement Data

L1 60 ohms (1)

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Graph Settings

Selected Impedance Options

- Include Nominal Impedance
- Include Minimum / Maximum

Selected Impedance Options

- Include Nominal Impedance
- Include Tolerances (plus / minus)

Selected Data Point Information

Once the CITS CLF data log file has been identified the software reads key information – Instrument Model, Serial Number, Data Log Record Count, Tests per Board / Coupon

A Data Log Records dropdown list built from the data log file, allowing the user to select the appropriate test records they would like to view / plot

The Project Structure dropdown presents a list of structures currently available within the Project. Together with the Data Log Records dropdown it allows the user to quickly match the data log records against the correct structure

It is possible to plot the modelled and measured impedance data in a number of ways. The following slides provide more details

5

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Step 2 : Select Data Log Record

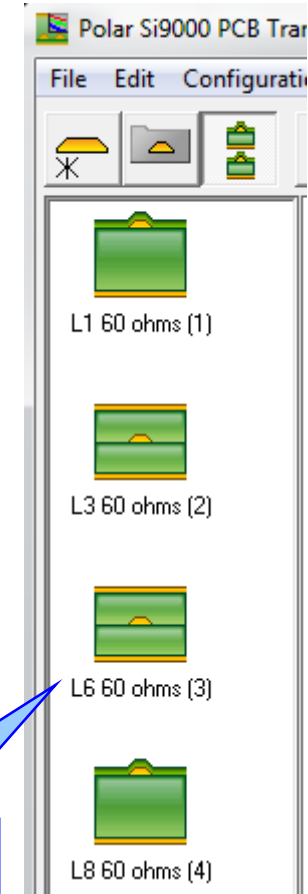
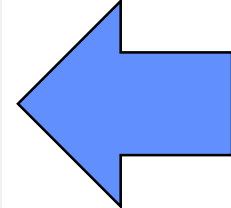
Data Log Records	Description - L01, Layer - 1, Nominal Impedance - 60.00		
Project Structure	Description - L01, Layer - 1, Nominal Impedance - 60.00		
Description	Description - L03, Layer - 3, Nominal Impedance - 60.00		
	Description - L06, Layer - 6, Nominal Impedance - 60.00		
	Description - L08, Layer - 8, Nominal Impedance - 60.00		
Nominal Impedance	60.00	Tol+ % 10.00	Tol- % 10.00

Each test record type found in the data log file is listed in the drop down. In this case there are four tests.

Step 2 : Select Data Log Record

Data Log Records	Description - L01, Layer - 1, Nominal Impedance - 60.00		
Project Structure	L1 60 ohms (1)		
Description	L1 60 ohms (1)		
	L3 60 ohms (2)		
	L6 60 ohms (3)		
	L8 60 ohms (4)		
Nominal Impedance			

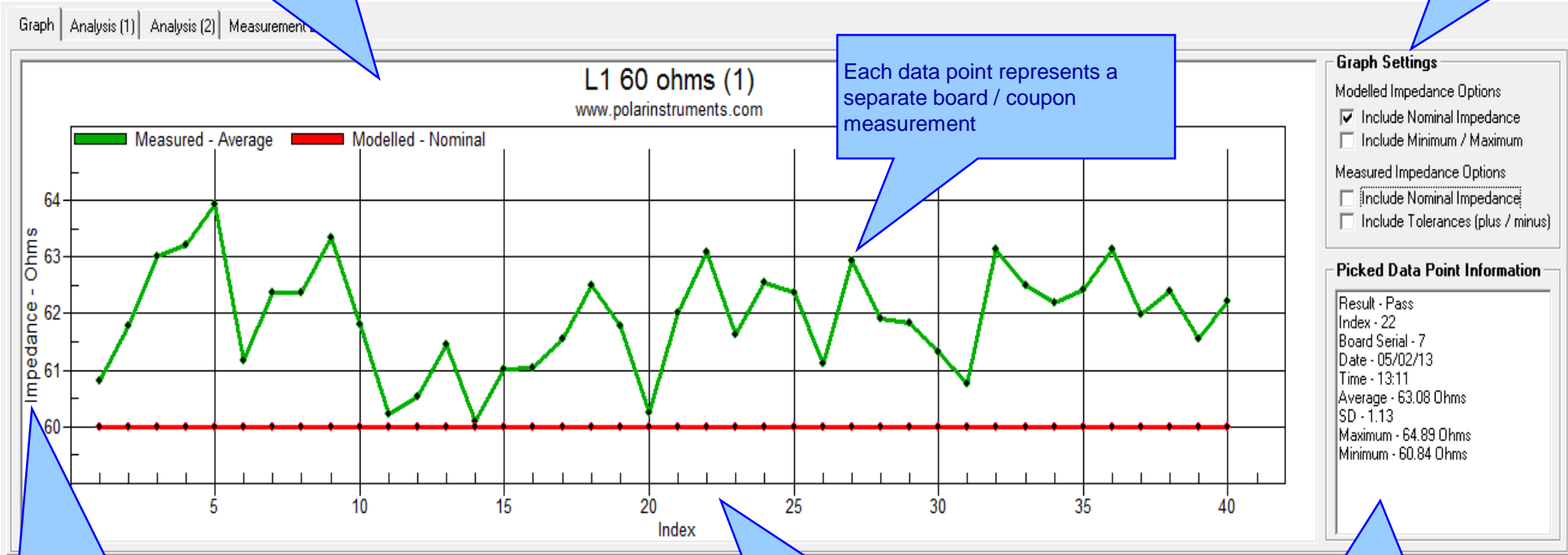
To match a one of the four modelled structures from the Project group against a data log test record simply select the structure from the Project Structure dropdown



Four structures loaded into the Project group

The Graph tab provides a number of plot options. In this case the measured data is shown in Green, the modelled data in Red

Graph Settings allow the selection of modelled / measured data to be plotted



Each data point represents a separate board / coupon measurement

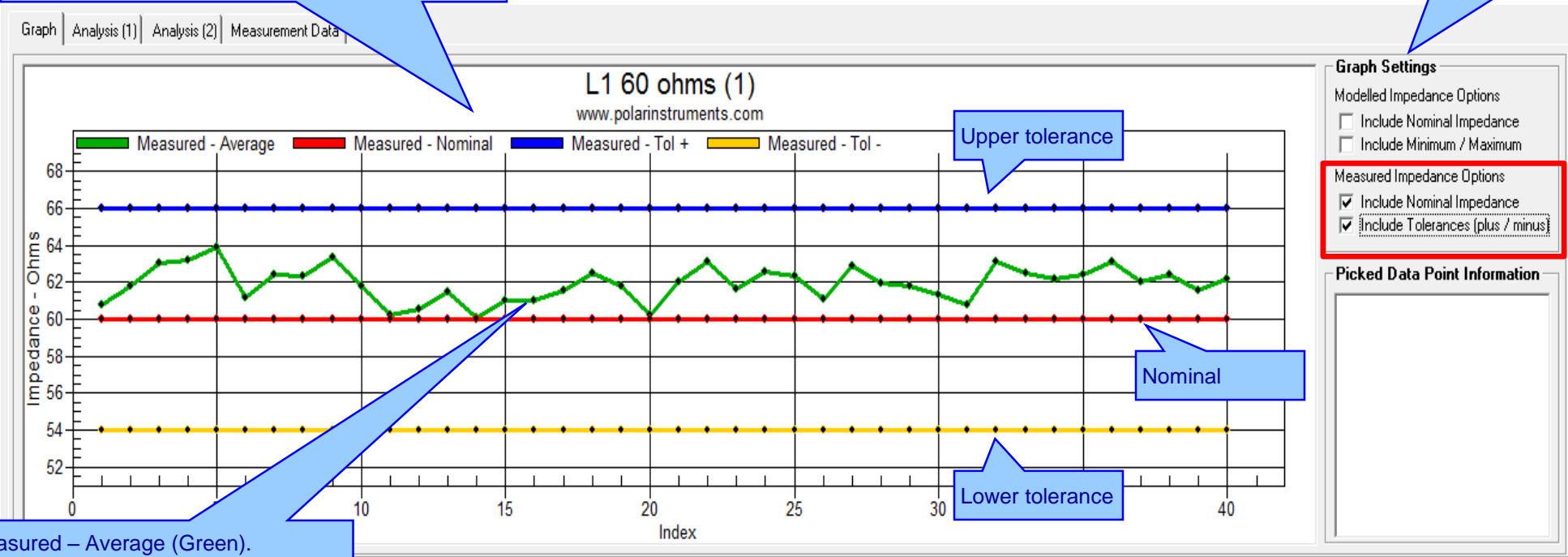
The y-axis is the measured impedance for each board / coupon

The x-axis is the identifying Index of the board / coupon read from the data log file

It is possible to pick a measured data point, key information is displayed here

In this case the Graph contains:
 Measured – (Green)
 Nominal (Red)
 Upper Tolerance (Blue)
 Lower Tolerance (Yellow)

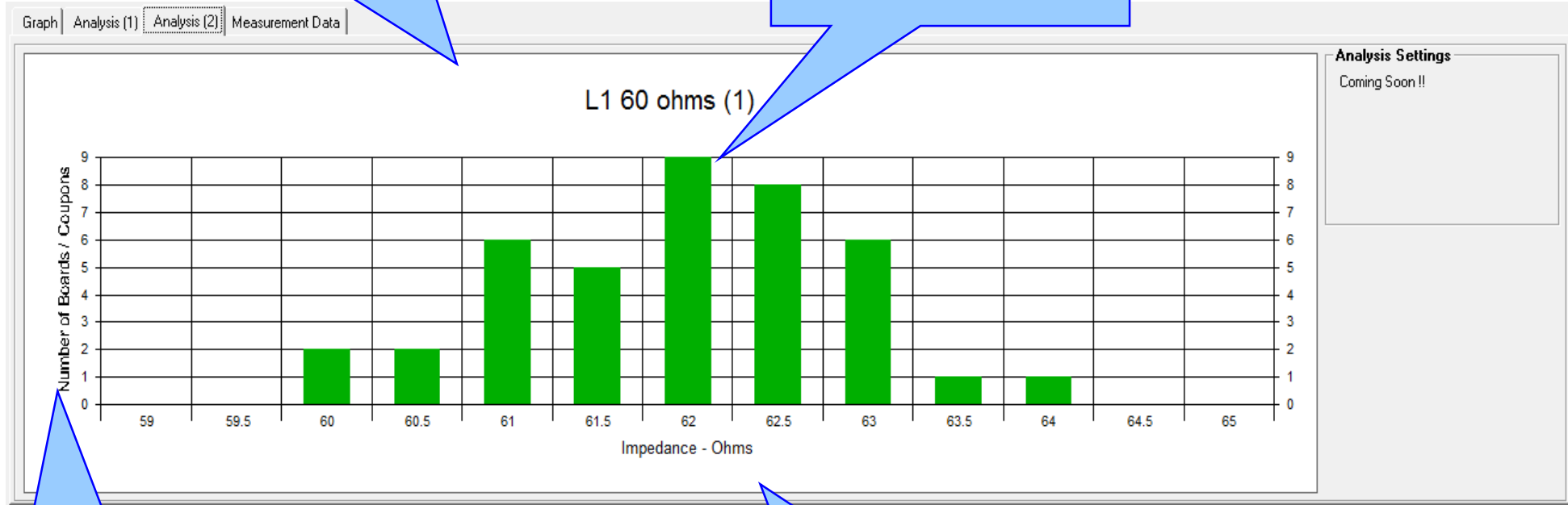
Graph Settings allow the selection of modelled / measured data to be plotted



Measured – Average (Green).
 Whilst reading slightly higher than the Nominal (60 ohms) all measured data points are within the upper and lower tolerance bands

Analysis options:
This bar chart shows the distribution of measurement results over an impedance range

From this batch of 40 board / coupon measurements, 62 +/- 0.25 ohms is the most common result

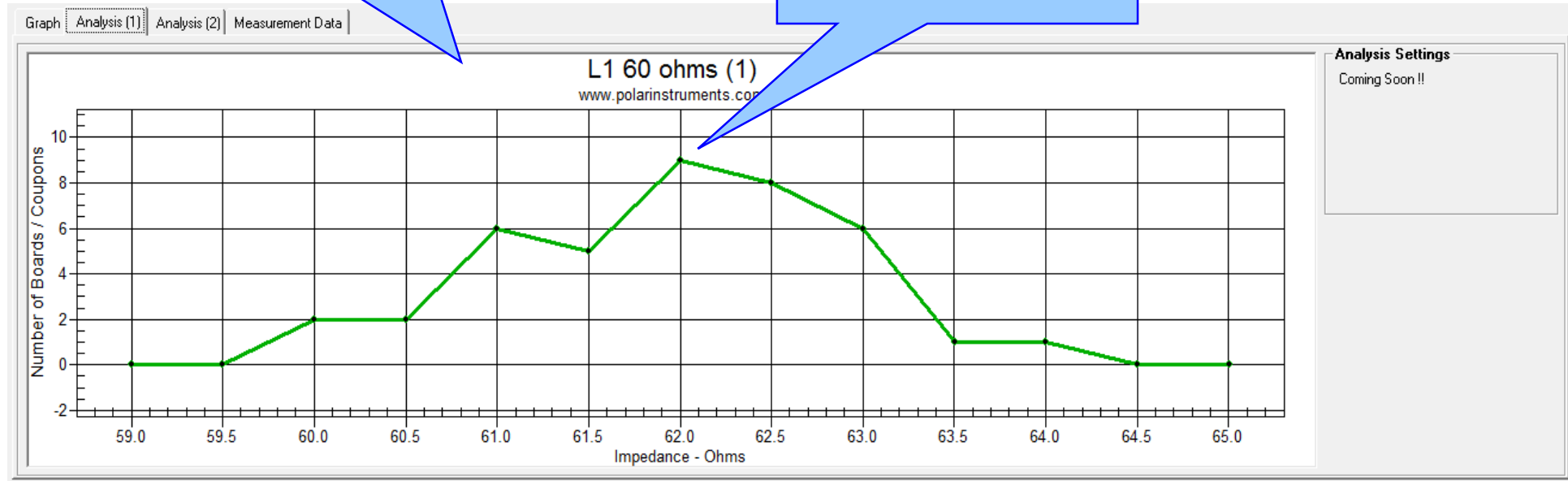


The y-axis is the number of boards / coupons that fall within a given impedance as detailed on the x-axis

The x-axis is the measured impedance in 0.5 ohm increments

Analysis options:
In addition to the bar chart, the distribution of measurement results over an impedance range can also be presented as a line chart

From this batch of 40 board / coupon measurements, 62 +/- 0.25 ohms is the most common result



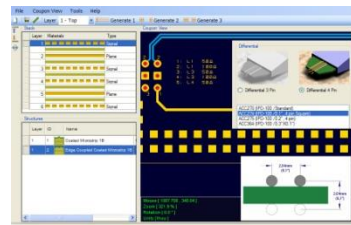
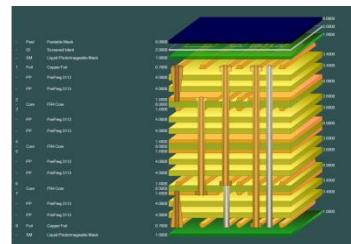
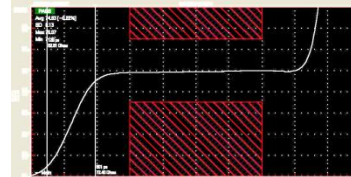
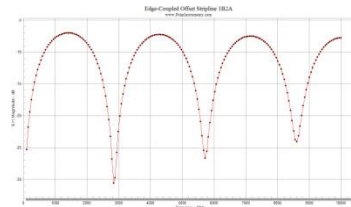
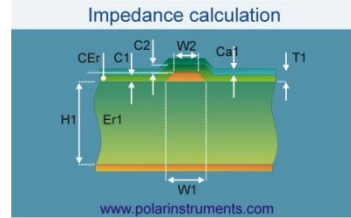
Measurement Data:
The CITS Data Log data may also be viewed in a data grid layout. This is especially useful for viewing the Result data (Pass / Fail)

Result	Index	Board Serial	Date	Time	Average	SD	Maximum	Minimum	Station	Description	Layer	Nominal	Tol+ %	Tol- %	Instrument	Serial No
Pass	1	24	05/02/13	12:48	60.8	0.8	61.9	59.56	_TEST STATION 1_	L01	1	60	10	10	CITS880	17581
Pass	2	29	05/02/13	12:50	61.77	0.95	63.21	59.93	_TEST STATION 1_	L01	1	60	10	10	CITS880	17581
Pass	3	17	05/02/13	12:51	63.01	0.94	64.48	61.68	_TEST STATION 1_	L01	1	60	10	10	CITS880	17581
Pass	4	39	05/02/13	12:52	63.22	1.07	64.62	61.29	_TEST STATION 1_	L01	1	60	10	10	CITS880	17581
Pass	5	8	05/02/13	12:59	63.93	0.95	65.32	62.2	_TEST STATION 1_	L01	1	60	10	10	CITS880	17581
Pass	6	10	05/02/13	13:00	61.17	0.89	62.69	59.63	_TEST STATION 1_	L01	1	60	10	10	CITS880	17581
Pass	7	32	05/02/13	13:01	62.38	0.88	63.58	60.72	_TEST STATION 1_	L01	1	60	10	10	CITS880	17581
Pass	8	21	05/02/13	13:01	62.37	0.82	63.88	60.98	_TEST STATION 1_	L01	1	60	10	10	CITS880	17581
Pass	9	4	05/02/13	13:02	63.35	0.68	64.41	61.75	_TEST STATION 1_	L01	1	60	10	10	CITS880	17581
Pass	10	33	05/02/13	13:03	61.81	0.78	62.95	60.09	_TEST STATION 1_	L01	1	60	10	10	CITS880	17581
Pass	11	18	05/02/13	13:03	60.22	0.62	61.48	59.09	_TEST STATION 1_	L01	1	60	10	10	CITS880	17581
Pass	12	3	05/02/13	13:04	60.54	0.75	62.1	59.19	_TEST STATION 1_	L01	1	60	10	10	CITS880	17581
Pass	13	15	05/02/13	13:05	61.46	0.73	62.83	60.12	_TEST STATION 1_	L01	1	60	10	10	CITS880	17581
Pass	14	2	05/02/13	13:05	60.09	0.67	61.24	58.57	_TEST STATION 1_	L01	1	60	10	10	CITS880	17581
Pass	15	23	05/02/13	13:06	61.01	0.78	62.4	59.69	_TEST STATION 1_	L01	1	60	10	10	CITS880	17581
Pass	16	5	05/02/13	13:07	61.05	0.63	62.14	59.49	_TEST STATION 1_	L01	1	60	10	10	CITS880	17581
Pass	17	6	05/02/13	13:07	61.54	0.8	62.98	60.11	_TEST STATION 1_	L01	1	60	10	10	CITS880	17581
Pass	18	76	05/02/13	13:08	62.49	0.92	63.44	60.32	_TEST STATION 1_	L01	1	60	10	10	CITS880	17581
Pass	19	11	05/02/13	13:09	61.79	0.83	63.08	60.37	_TEST STATION 1_	L01	1	60	10	10	CITS880	17581
Pass	20	31	05/02/13	13:09	60.25	0.65	61.37	58.85	_TEST STATION 1_	L01	1	60	10	10	CITS880	17581

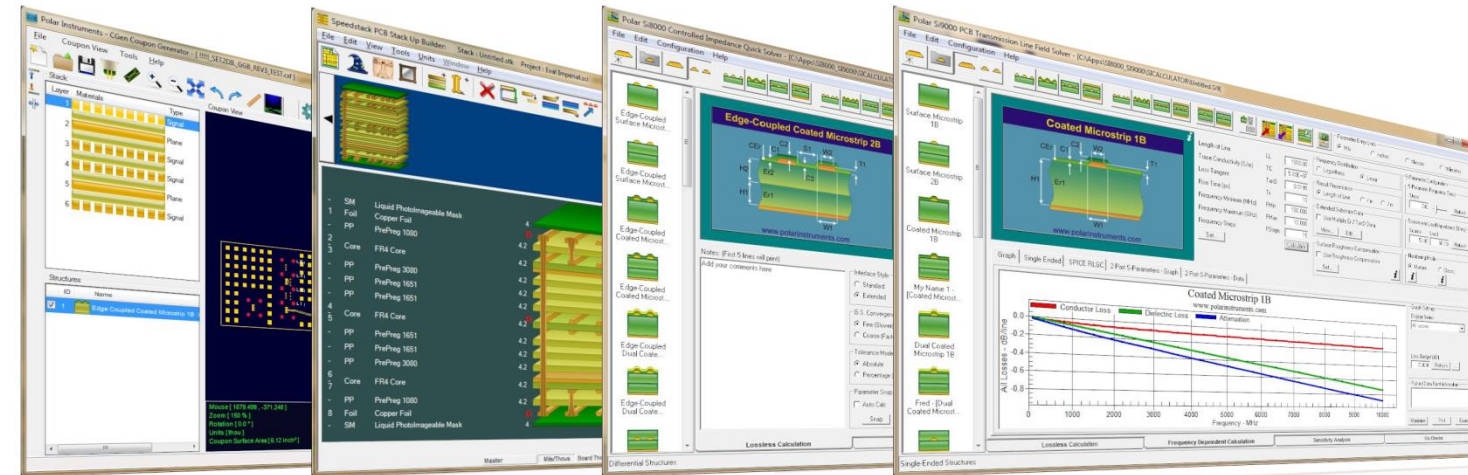
Thank you for viewing this preview presentation.

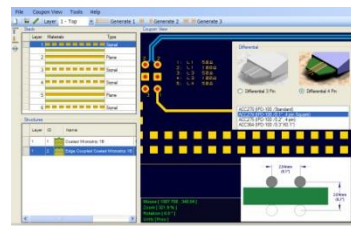
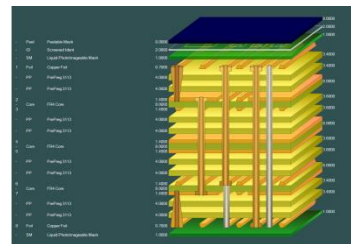
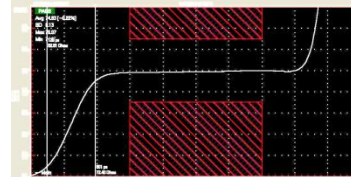
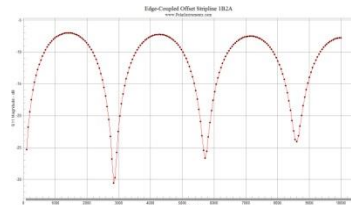
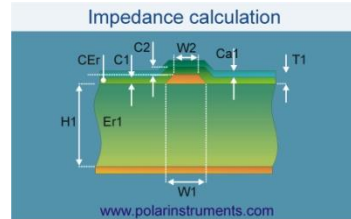
This release is scheduled for early Q3 2017 and will be included as part of a Polarcare maintenance release for existing customers.

If you would like to have a web-based demonstration please contact your local Polar office, details are shown on the last slide of this presentation.



Thank you





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