Auto Cal

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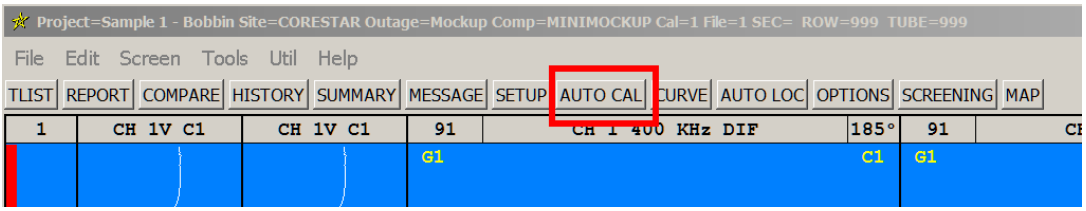
Purpose

This note explains new Auto Cal features used to automatically set the voltage scale and rotation of all signals at once.

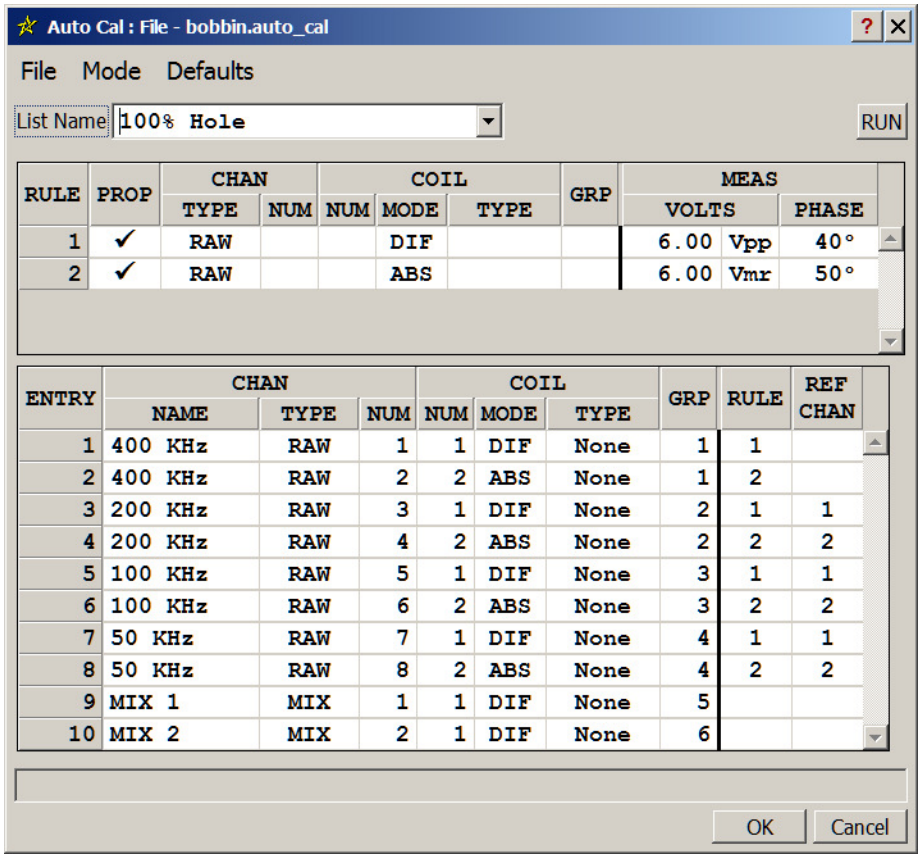
Procedure

I) Introduction

To access the Auto Cal dialog, left-click on **AUTO CAL** in the title button area:

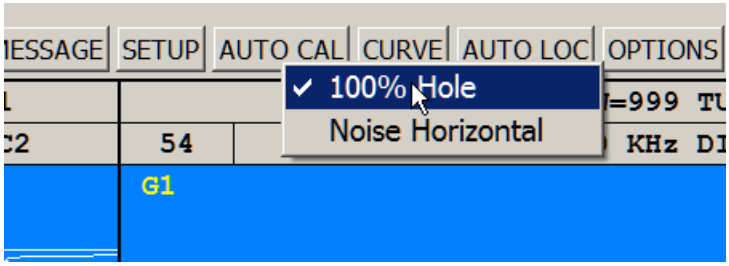


This will bring up the Auto Cal dialog that lets you see the current rules:



Use the **File –> Open** menu to open a different set of rules. The set listed above is just an example and will be explained further below.

To run one of the current auto cal rule sets, scroll the desired signal into the lissajous and right-click in the **AUTO CAL** button and select the rule set:

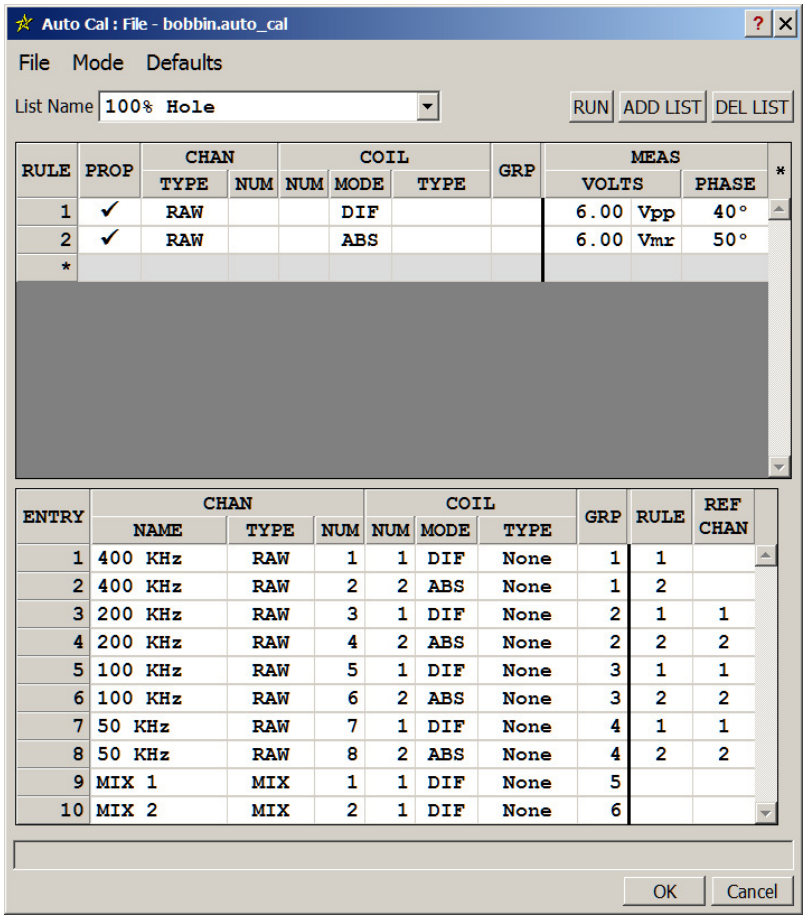


To run the last used rule set, middle-click in the **AUTO CAL** button. If **Auto Cal Hotkey** is enabled in the **OPTIONS** dialog under **Miscellaneous**, you can also run the current rules by hitting the **A** key.

The name of the rule set will be displayed in the message box at the bottom of the screen:

II) Creating and Editing Rules

To create new rules or edit existing ones, click on **Mode –> Edit Mode** menu in the Auto Cal dialog. It will add the editing features shown below:

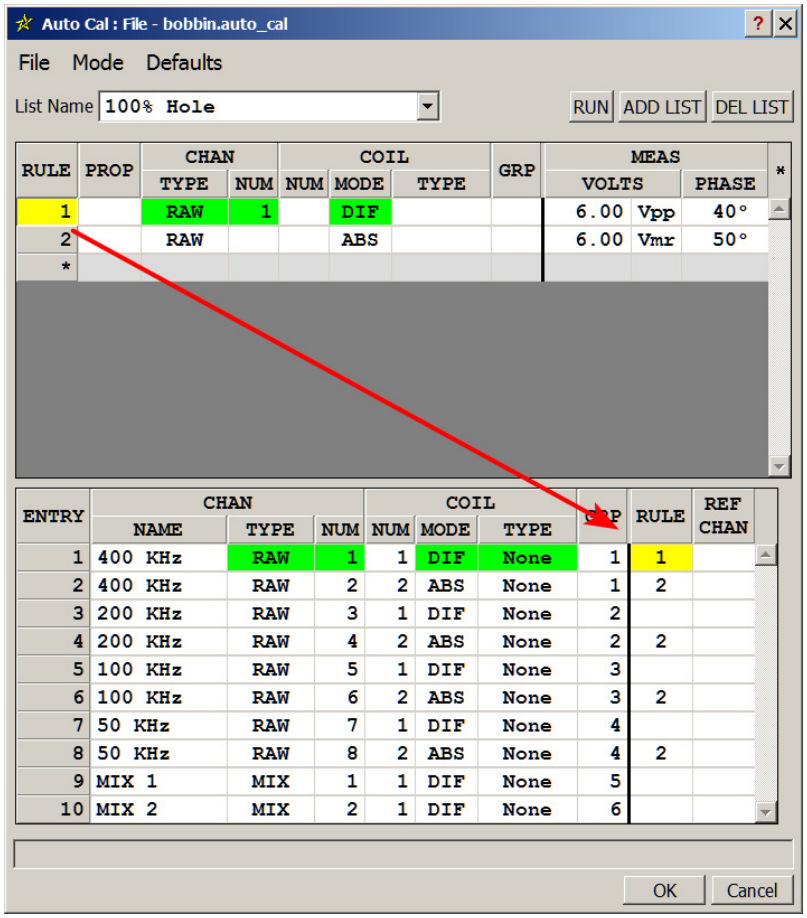


RULE	PROP	CHAN TYPE	CHAN NUM	COIL NUM	COIL MODE	COIL TYPE	GRP	MEAS VOLTS		MEAS PHASE	*
1	✓	RAW			DIF			6.00	Vpp	40°	
2	✓	RAW			ABS			6.00	Vmr	50°	
*											

ENTRY	CHAN NAME	CHAN TYPE	CHAN NUM	COIL NUM	COIL MODE	COIL TYPE	GRP	RULE	REF CHAN
1	400 KHz	RAW	1	1	DIF	None	1	1	
2	400 KHz	RAW	2	2	ABS	None	1	2	
3	200 KHz	RAW	3	1	DIF	None	2	1	1
4	200 KHz	RAW	4	2	ABS	None	2	2	2
5	100 KHz	RAW	5	1	DIF	None	3	1	1
6	100 KHz	RAW	6	2	ABS	None	3	2	2
7	50 KHz	RAW	7	1	DIF	None	4	1	1
8	50 KHz	RAW	8	2	ABS	None	4	2	2
9	MIX 1	MIX	1	1	DIF	None	5		
10	MIX 2	MIX	2	1	DIF	None	6		

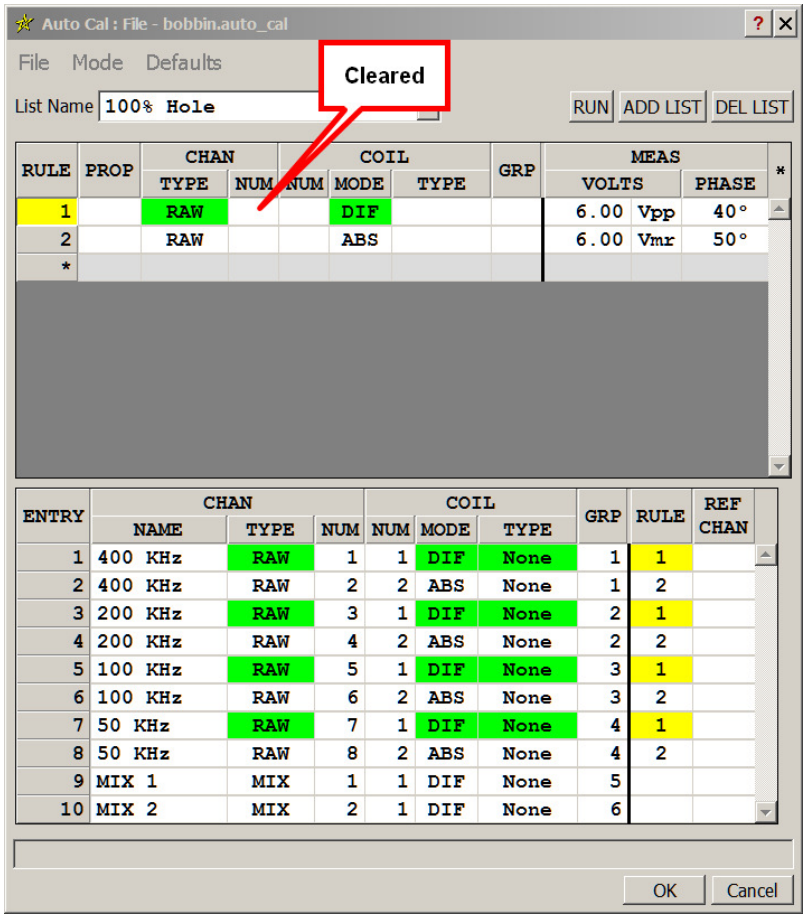
This will enable the editing buttons. The table lists which channels a given rule will affect.

When the propagate field **PROP** is not checked, the rule will be applied to all channels satisfying all the criteria. For example, below a specific channel number is specified, and there is only one **RAW** channel **1 DIF**.

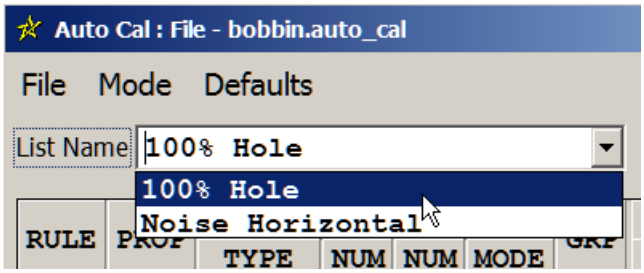


The rule number is highlighted in yellow and the fields that match in green.

If we clear the channel number (click MB), now all RAW and DIF will match rule 1:



More than one rule set can be active. In this case there are two:



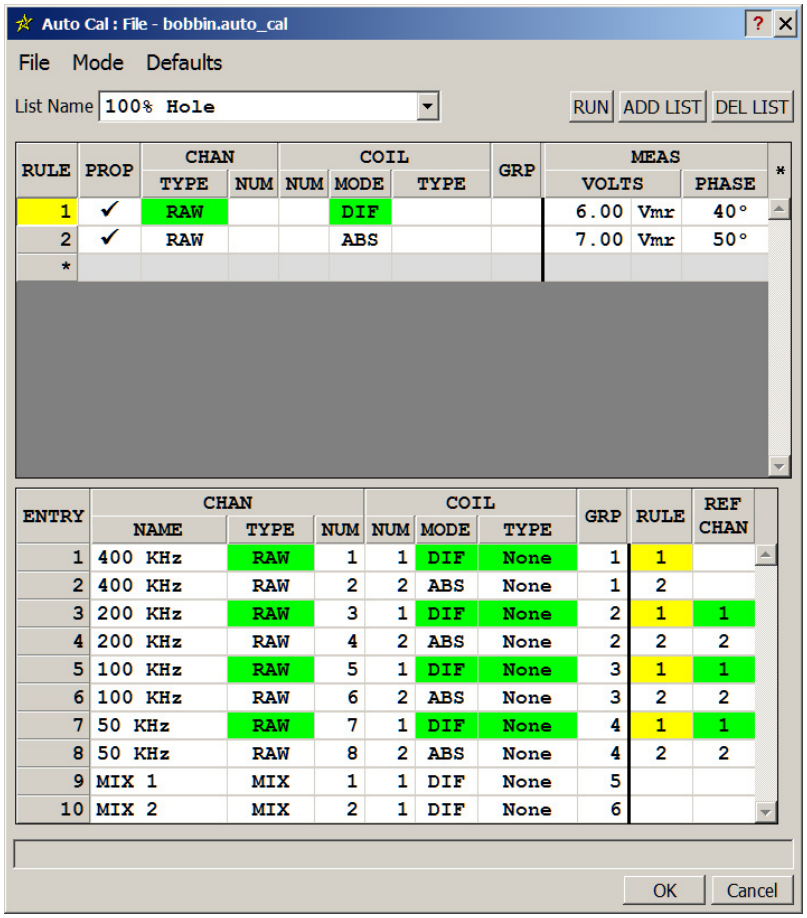
To add a rule set click **ADD LIST**. To remove the current one, click **DEL LIST**. To change the name of the current rule set, just type in the drop down box.

To add a rule to the current set, click in the * symbol. It will initially have defaults based on the last rule.

TIP : Enable help by clicking the ? in the caption area. Then move the cursor to the * to see the various options to copy and paste rules. This is true of many CoreStar tables.

III) Effect of a Rule

The **MEAS** field controls the effect a rule will have on each channel to which it applies. The following are not typical and are just for demonstration purposes.



For rule 1 above, it says to use Vmr (Volts Max Rate) and set the voltage scale to 6.0 and the phase to 40°. Vmr will use Vpp for the voltage scale and Vmr for the phase. You can also choose Vpp which will be used for the scale and phase.

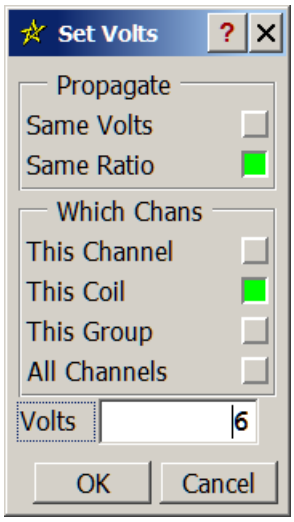
The third option is Vvm (Volts Vert Max) which will use Vvm for the scale, but not affect the rotation. When using Vvm, it is important to set the rotation with a previous rule set.

A final option uses a new measurement called Vvb (Volts Vert Base). It is similar to Vvm but uses the first red line in the expanded chart for the min value. This is useful in array data as described below.

Since the propagate field **PROP** is checked, the voltage scale on channel 1 will be propagated to the remaining channels that match rule 1. For setting scale, this is identical to the results obtained using the **Set Volts** dialog by:

1. Setting a lissajous to channel 1
2. Rotate it as desired,
3. Make a Vmr meas,
4. Click **VOLTS** button in the lissajous,
5. In the **Set Volts** dialog, select **Same Ratio** and **Volts** = 6,

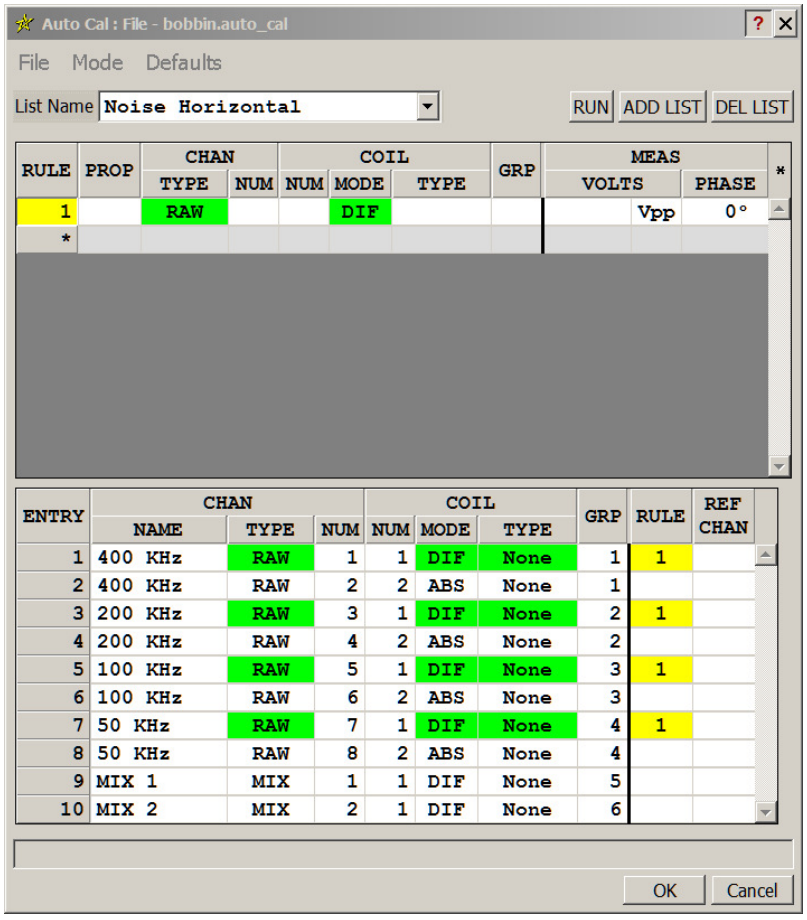
6. Hit **Ok**



The old **Set Volts** dialog, of course, does not rotate the data.

The **Propagate | Same Volts** above is not needed in the **Auto Cal**. Just uncheck the **PROP** field and it will use the same volts instead of same ratio.

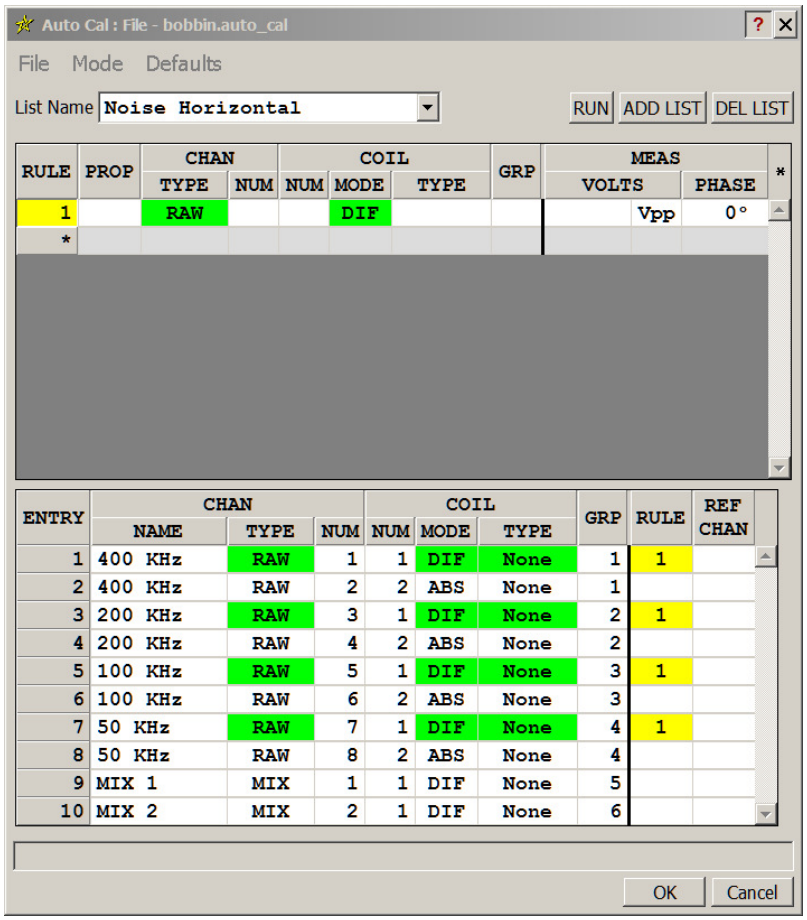
If the **VOLTS** field is blank (as below), the **Auto Cal** rule will rotate but not set scale. This is used by the **Noise Horizontal** rule below:



Conversely, if the **PHASE** field is blank, it will set the voltage scale but not rotate the data. This allows two different signals to be used for rotation and voltage scale.

A channel will be affected by a rule if it matches all its criteria. If a field is blank, the criteria is ignored. If more than one rule matches a channel, the last one wins.

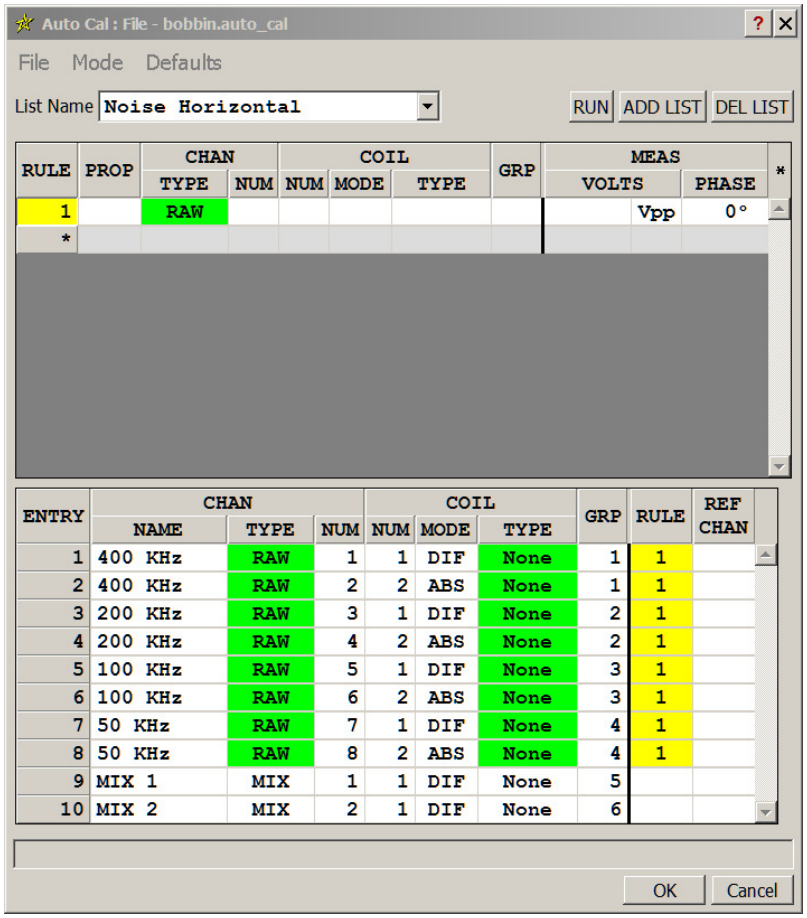
For example, if a rule is set for **CHAN TYPE = RAW** and **COIL MODE = DIF**, only raw differential channels match:



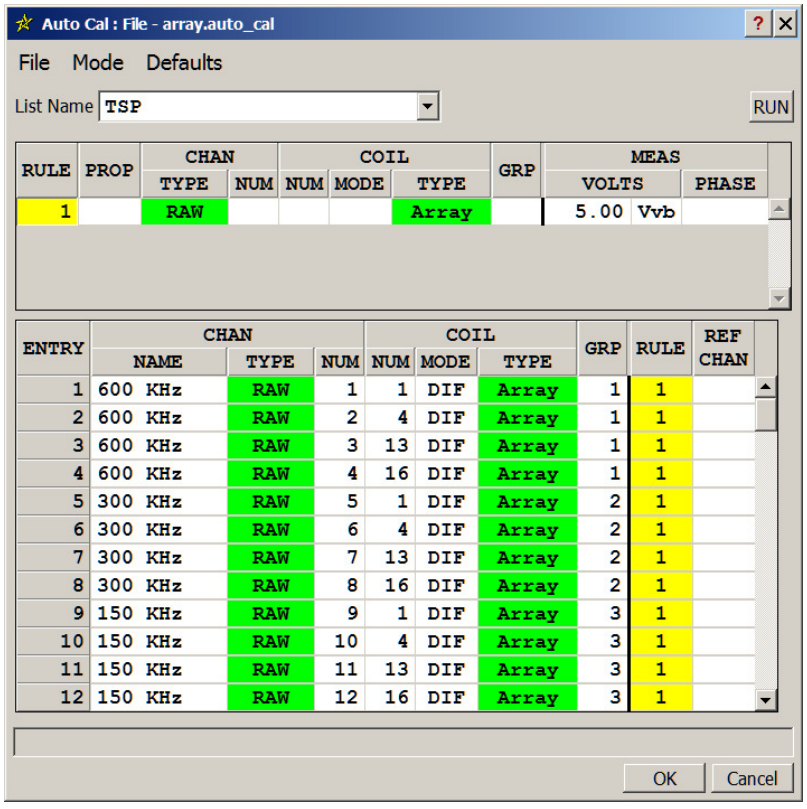
RULE	PROP	CHAN TYPE	CHAN NUM	COIL NUM	COIL MODE	COIL TYPE	GRP	MEAS VOLTS	MEAS PHASE	*
1		RAW			DIF			Vpp	0°	
*										

ENTRY	CHAN NAME	CHAN TYPE	CHAN NUM	COIL NUM	COIL MODE	COIL TYPE	GRP	RULE	REF CHAN
1	400 KHz	RAW	1	1	DIF	None	1	1	
2	400 KHz	RAW	2	2	ABS	None	1		
3	200 KHz	RAW	3	1	DIF	None	2	1	
4	200 KHz	RAW	4	2	ABS	None	2		
5	100 KHz	RAW	5	1	DIF	None	3	1	
6	100 KHz	RAW	6	2	ABS	None	3		
7	50 KHz	RAW	7	1	DIF	None	4	1	
8	50 KHz	RAW	8	2	ABS	None	4		
9	MIX 1	MIX	1	1	DIF	None	5		
10	MIX 2	MIX	2	1	DIF	None	6		

But if you clear the **COIL MODE** (middle-click on it), now all raw channels match because the coil mode is ignored:



The **COIL TYPE** field has options **Bobbin** and **Array**. For example, to set the voltage scale on all raw array channels, but not alter the rotation, you could use:



This will produce results identical to the **Set Volts…** option in the array window popup menu. We plan to remove the menu option in a future rev.