

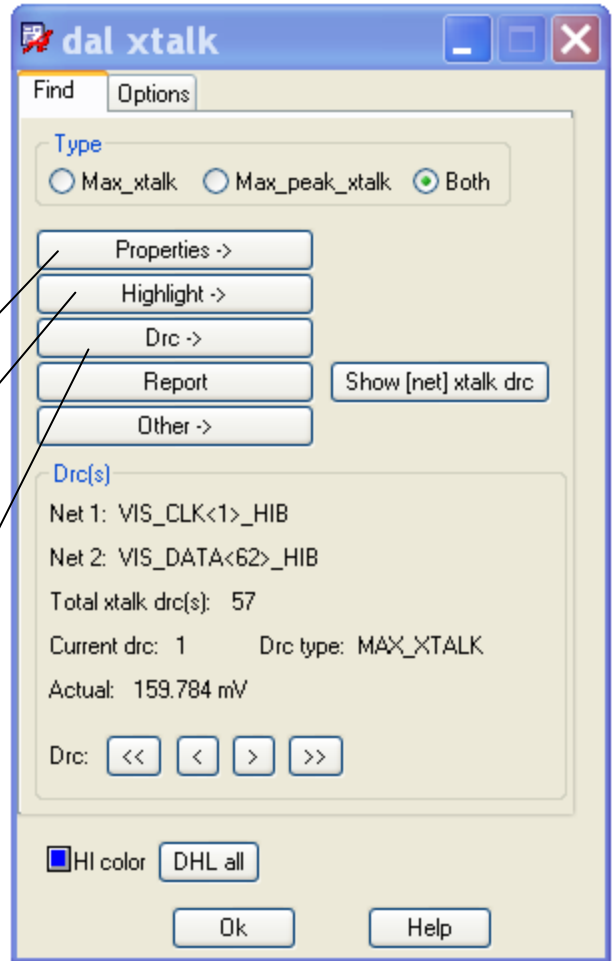
Xtalk

Sets xtalk property values and highlights problem areas for quick and easy resolution of xtalk coupling between signals.

Features:

- ❑ Set and change property values quickly.
- ❑ Highlight and find coupled drc line segments.

- Add to all nets
- Add to selected
- Add to highlighted
- Remove all xtalk properties
- HL All nets with xtalk property
- HL all diff pair
- HL non critical
- HL voltage
- HL all xtalk drc segments
- HL all xtalk drc nets
- DHL all segments
- HL Xtalk drc marker(s)
- DHL net(s)/marker(s) all
- Mode on
- Mode off
- Update
- Drc selected
- Drc hl nets
- Waive all xtalk drc
- Restore waived xtalk drc
- Query/Drc net



Video demonstration available at:

www.dalTools.com

Example

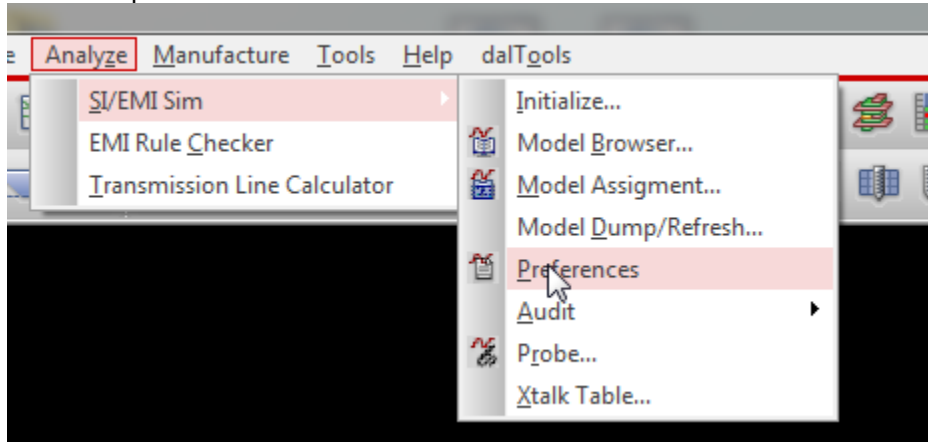
```
Report Window
File Close Help
dalTools - xtalk report
Total drc(s) = 184
Total [filtered] xtalk drc(s) = 57
1      159.78 (1745.0 264.0) [VIS_CLK<1>_HIB / VIS_DATA<62>_HIB] Maximum Crosstalk 50.00 mv:50.00 mv
2      158.14 (1795.0 471.0) [VIS_DATA<14>_HIB / VIS_FRM<0>_HIB] Maximum Crosstalk 50.00 mv:50.00 mv
3      155.91 (1745.0 471.0) [VIS_FRM<0>_HIB / VIS_DATA<14>_HIB] Maximum Crosstalk 50.00 mv:50.00 mv
4      153.93 (1795.0 264.0) [VIS_DATA<62>_HIB / VIS_CLK<1>_HIB] Maximum Crosstalk 50.00 mv:50.00 mv
5      151.78 (1795.0 471.0) [VIS_DATA<14>_HIB / VIS_FRM<0>_HIB] Maximum Peak Crosstalk 50.00 mv:50.00 mv
6      151.13 (1745.0 471.0) [VIS_FRM<0>_HIB / VIS_DATA<14>_HIB] Maximum Peak Crosstalk 50.00 mv:50.00 mv
7      145.79 (1395.0 471.0) [VIS_CLK<0>_HIB / VIS_DATA<0>_HIB] Maximum Crosstalk 50.00 mv:50.00 mv
8      127.11 (1695.0 264.0) [VIS_CLK<1>_HIB / VIS_DATA<60>_HIB] Maximum Crosstalk 50.00 mv:50.00 mv
9      122.71 (1795.0 769.0) [VIS_DATA<0>_HIB / VIS_CLK<0>_HIB] Maximum Crosstalk 50.00 mv:50.00 mv
10     118.08 (1795.0 769.0) [VIS_DATA<0>_HIB / VIS_CLK<0>_HIB] Maximum Peak Crosstalk 50.00 mv:50.00 mv
11     117.98 (1395.0 471.0) [VIS_CLK<0>_HIB / VIS_DATA<0>_HIB] Maximum Peak Crosstalk 50.00 mv:50.00 mv
12     116.53 (1795.0 264.0) [VIS_DATA<62>_HIB / VIS_CLK<1>_HIB] Maximum Peak Crosstalk 50.00 mv:50.00 mv
13     116.02 (4701.12 357.5) [CSR_RDVAL_F / PM_TRG_IN] Maximum Crosstalk 50.00 mv:50.00 mv
14     114.84 (1745.0 264.0) [VIS_CLK<1>_HIB / VIS_DATA<62>_HIB] Maximum Peak Crosstalk 50.00 mv:50.00 mv
15     98.39 (4697.31 341.0) [CSR_RDVAL_F / CFG_CSR_AD<3>] Maximum Crosstalk 50.00 mv:50.00 mv
16     98.33 (1695.0 264.0) [VIS_CLK<1>_HIB / VIS_DATA<60>_HIB] Maximum Peak Crosstalk 50.00 mv:50.00 mv
17     91.65 (4623.58 393.0) [CSR_RSVD / CFG_CSR_AD<7>] Maximum Crosstalk 50.00 mv:50.00 mv
18     90.55 (4973.38 143.0) [PERST_PPC_F / HIB_CFG_RW_F] Maximum Crosstalk 50.00 mv:50.00 mv
19     88.18 (4697.31 341.0) [CFG_CSR_AD<3> / CSR_RDVAL_F] Maximum Crosstalk 50.00 mv:50.00 mv
20     87.05 (4974.44 178.0) [HIB_CFG_CCLK / HIB_CFG_PROG_F] Maximum Crosstalk 50.00 mv:50.00 mv
21     86.79 (1920.06 345.44) [HIB_PD_F / HIB_CPLD_SPARE<0>] Maximum Crosstalk 50.00 mv:50.00 mv
22     86.77 (4701.12 357.5) [CSR_RDVAL_F / PM_TRG_IN] Maximum Peak Crosstalk 50.00 mv:50.00 mv
23     84.13 (5747.25 243.25) [CFG_CSR_AD<0> / HIB_CFG_BUSY] Maximum Crosstalk 50.00 mv:50.00 mv
24     81.86 (4623.58 393.0) [CFG_CSR_AD<7> / CSR_RSVD] Maximum Crosstalk 50.00 mv:50.00 mv
25     79.00 (3360.13 551.9) [VIS_DATA<46>_HIB / VIS_FRM<1>_HIB] Maximum Crosstalk 50.00 mv:50.00 mv
26     74.33 (5358.1 210.6) [HIB_CFG_INIT_F / HIB_CFG_DONE] Maximum Crosstalk 50.00 mv:50.00 mv
27     74.21 (5358.1 210.6) [HIB_CFG_INIT_F / HIB_CFG_DONE] Maximum Peak Crosstalk 50.00 mv:50.00 mv
28     73.25 (4973.38 143.0) [PERST_PPC_F / HIB_CFG_RW_F] Maximum Peak Crosstalk 50.00 mv:50.00 mv
29     70.90 (4974.44 178.0) [HIB_CFG_CCLK / HIB_CFG_PROG_F] Maximum Peak Crosstalk 50.00 mv:50.00 mv
30     69.58 (5747.25 243.25) [CFG_CSR_AD<0> / HIB_CFG_BUSY] Maximum Peak Crosstalk 50.00 mv:50.00 mv
31     69.54 (1920.06 345.44) [HIB_CPLD_SPARE<0> / HIB_PD_F] Maximum Crosstalk 50.00 mv:50.00 mv
32     68.98 (4623.58 393.0) [CSR_RSVD / CFG_CSR_AD<7>] Maximum Peak Crosstalk 50.00 mv:50.00 mv
33     68.91 (4623.58 393.0) [CFG_CSR_AD<7> / CSR_RSVD] Maximum Peak Crosstalk 50.00 mv:50.00 mv
34     68.88 (4697.31 341.0) [CFG_CSR_AD<3> / CSR_RDVAL_F] Maximum Peak Crosstalk 50.00 mv:50.00 mv
35     67.99 (4697.31 341.0) [CSR_RDVAL_F / CFG_CSR_AD<3>] Maximum Peak Crosstalk 50.00 mv:50.00 mv
36     66.88 (5901.54 830.26) [CSR_AD_PAR / CFG_CSR_AD<4>] Maximum Crosstalk 50.00 mv:50.00 mv
37     66.64 (5901.54 830.26) [CFG_CSR_AD<4> / CSR_AD_PAR] Maximum Crosstalk 50.00 mv:50.00 mv
```

Report

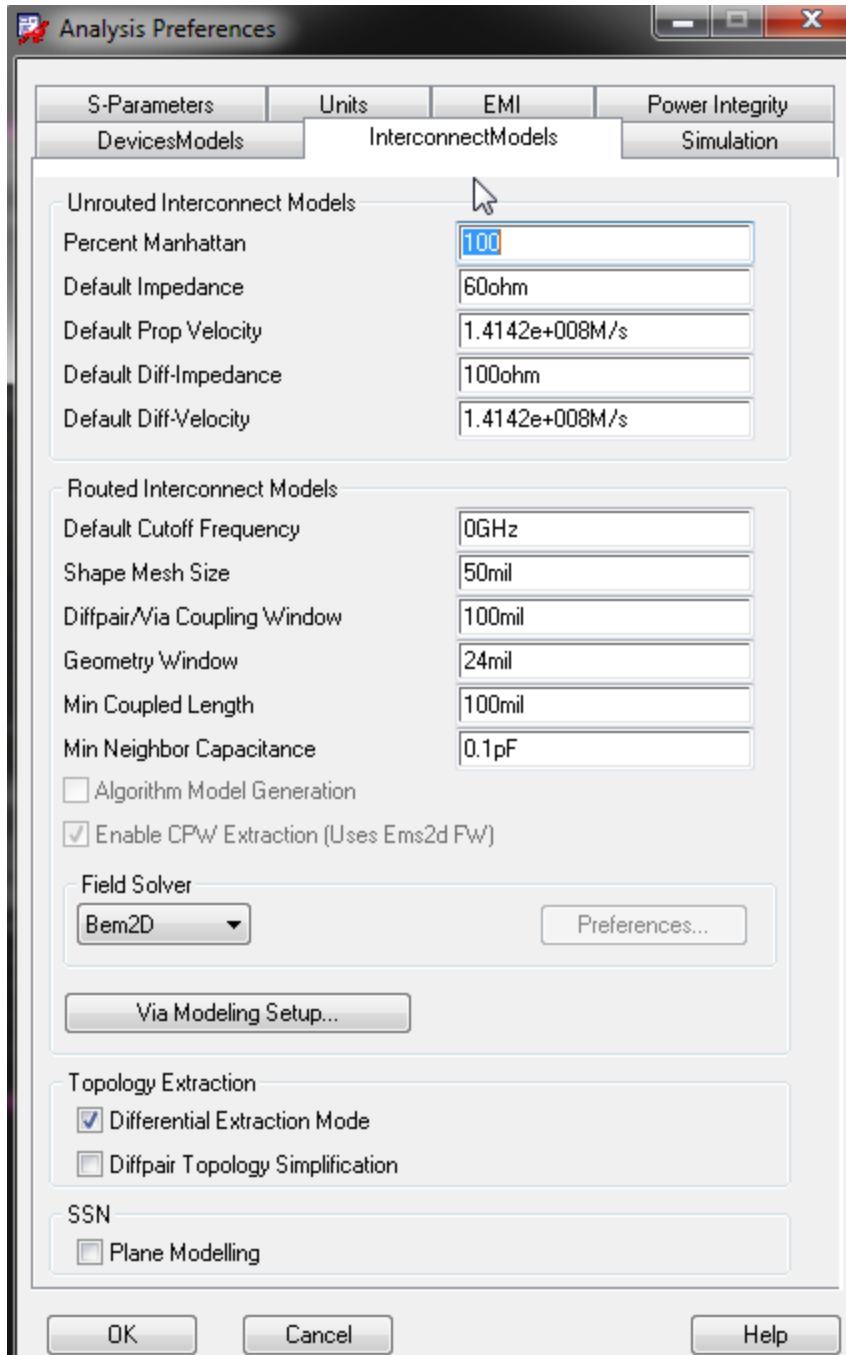
Hints

In order to utilize this tool for reducing xtalk on the signals in your PCB design, please do the following:

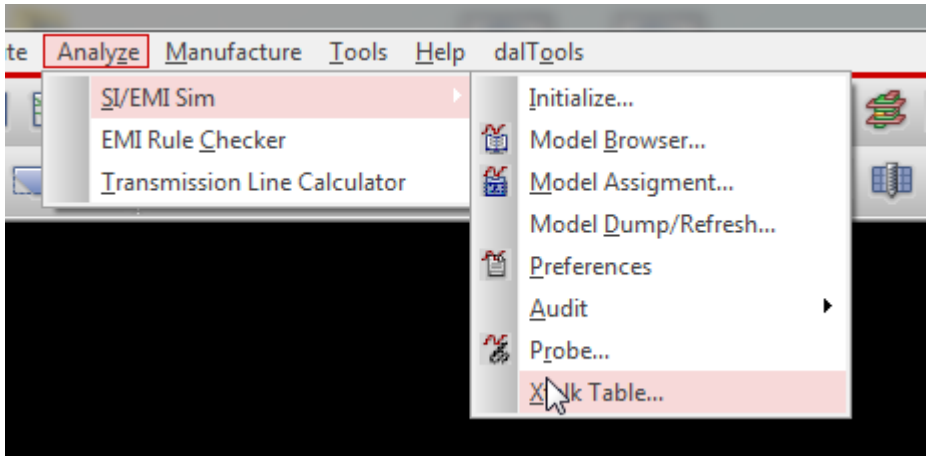
1. Set the SI preferences:

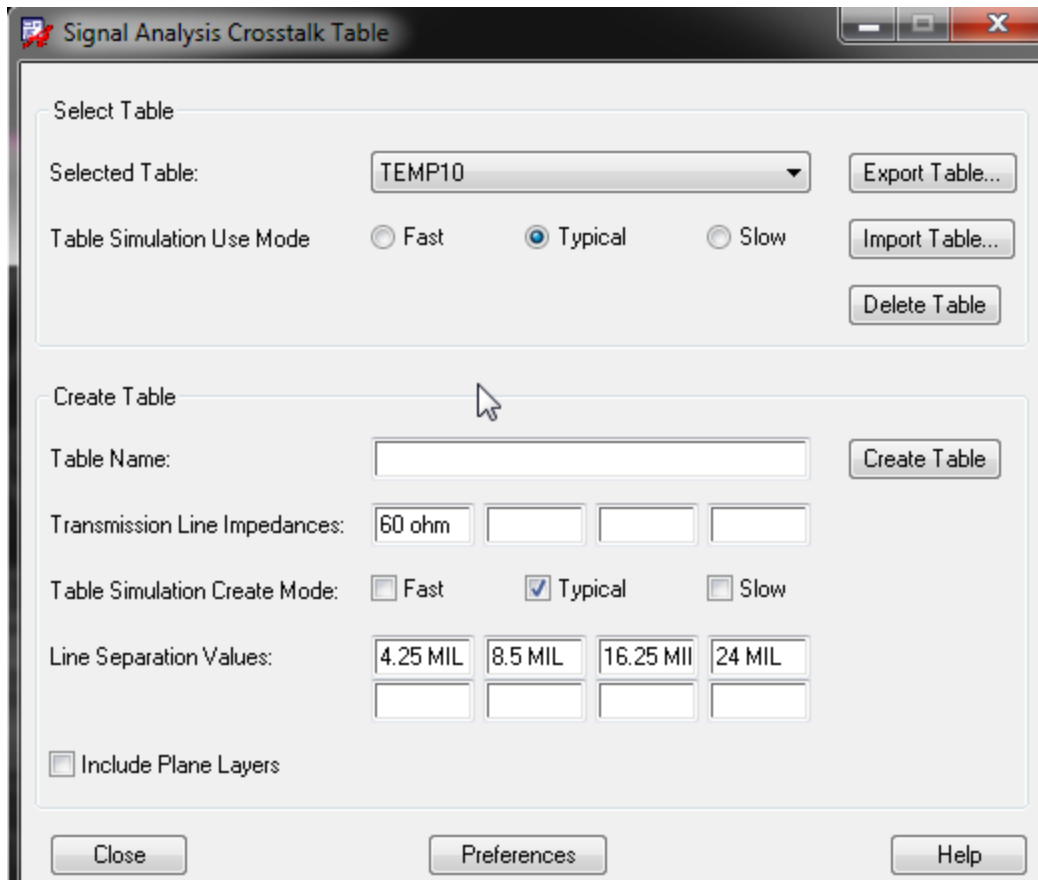


Suggestion: Enter 2 times the signal spacing for the geometry window. For example if your signal spacing is 12 mils apart enter 24.
Enter the Min Coupled length of 100 mil.



2. Generate the xtalk table. This will require a Cadence SI license. This table is what is used to calculate the data for xtalk values based on SI models and the stackup. Models are not required if you only want to check for parallelism between routes.





Sample xtalk text table:

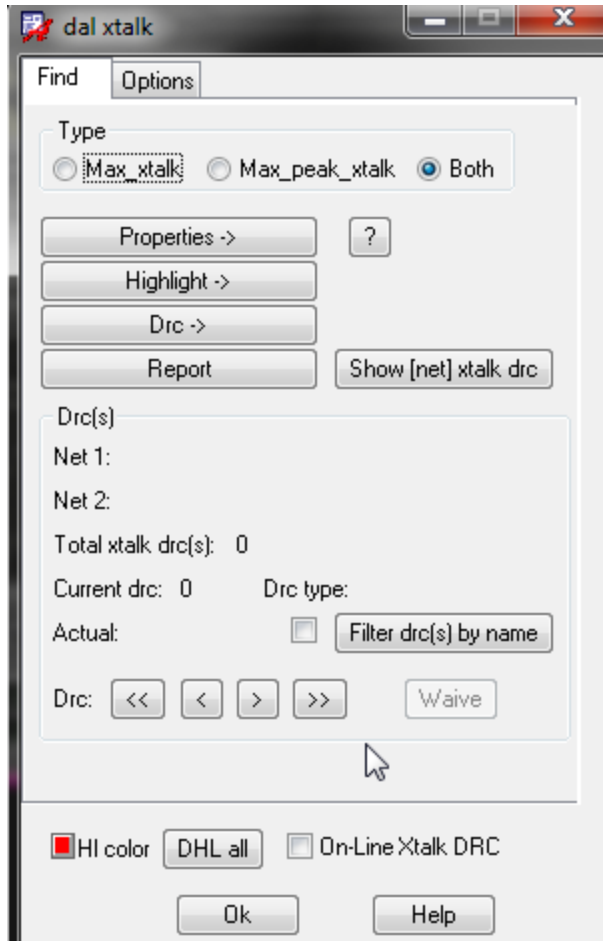
```

Version 1
# table name: TEMP10
# Allegro PCB SI Crosstalk Table for Crosstalk DRCs
# Values are in terms of (V)olts and (m)eters
# Allegro PCB Router layer convention of "0 to n" is used
# Column definitions are as follows:
# Driver | X,Y Spacing (m) | Aggressor Layer | Victim Layer | Sim
Mode
# Line Impedance (ohm) | XtalkPerLength (V/m) | Saturation Length
(m)

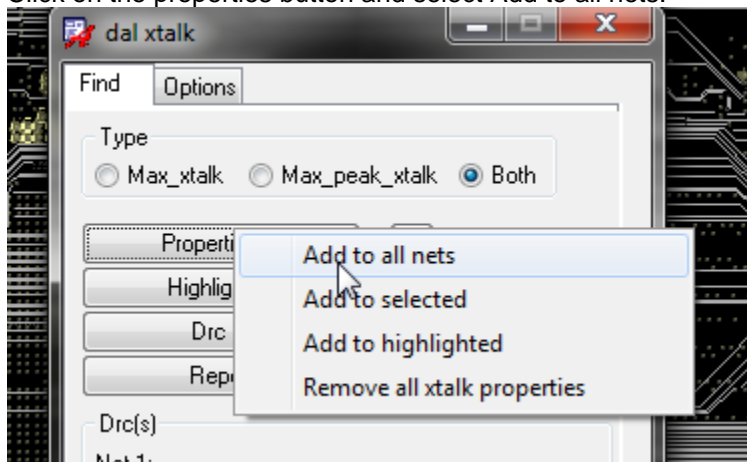
CDSDefaultTristate_2p5v 0.00010795 0 0 Typical 60 5.93538
0.052897
CDSDefaultTristate_2p5v 0.00010795 2 2 Typical 60 1.61389
0.0491844
CDSDefaultTristate_2p5v 0.00010795 4 4 Typical 60 1.61389
0.0491844
CDSDefaultTristate_2p5v 0.00010795 6 6 Typical 60 2.02799
0.0491836
CDSDefaultTristate_2p5v 0.00010795 11 11 Typical 60 2.02731
0.0491666
CDSDefaultTristate_2p5v 0.00010795 13 13 Typical 60 1.61407
0.0491553
CDSDefaultTristate_2p5v 0.00010795 15 15 Typical 60 1.92026
0.0423962
CDSDefaultTristate_2p5v 0.00010795 17 17 Typical 60 6.5471
0.052897
CDSDefaultTristate_2p5v 0.0002159 0 0 Typical 60 2.38808 0.052897
CDSDefaultTristate_2p5v 0.0002159 2 2 Typical 60 0.25031
0.0491844
CDSDefaultTristate_2p5v 0.0002159 4 4 Typical 60 0.25031
0.0491844
CDSDefaultTristate_2p5v 0.0002159 6 6 Typical 60 0.31452
0.0491836
CDSDefaultTristate_2p5v 0.0002159 11 11 Typical 60 0.30919
0.0491666

```

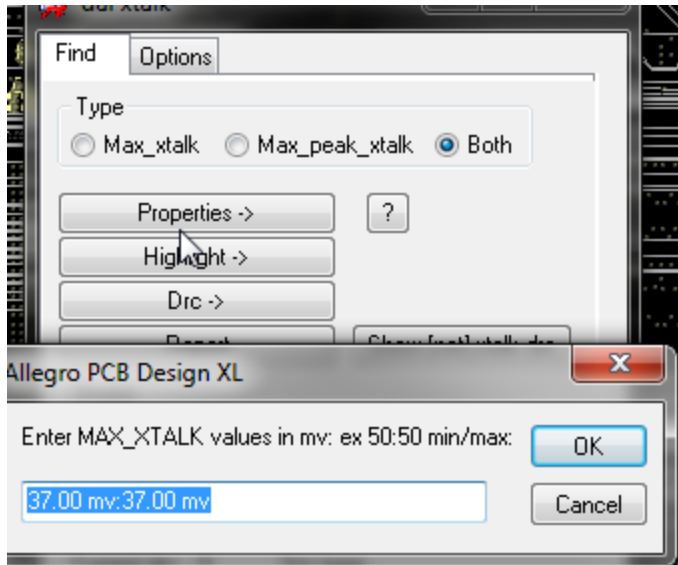
2. Type "dal xtalk" and click on the Properties-> button and then click "Add to all nets":



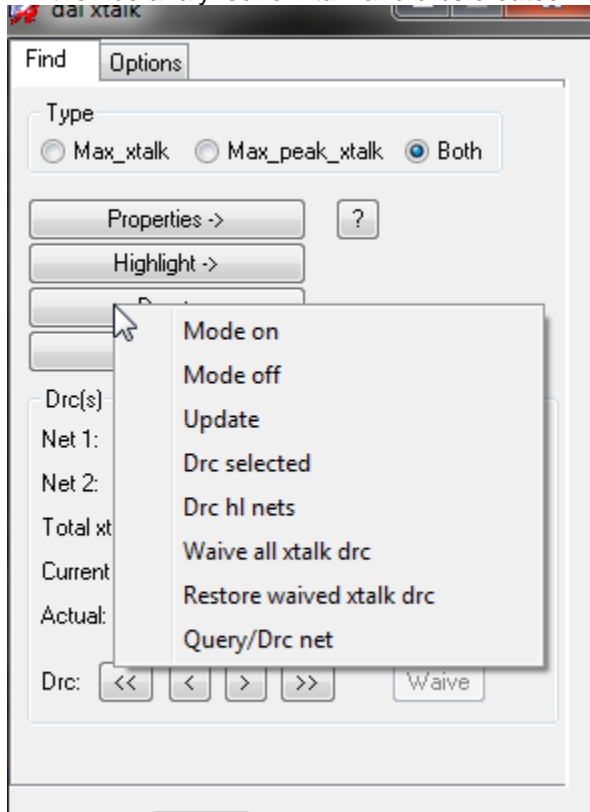
Click on the properties button and select Add to all nets:



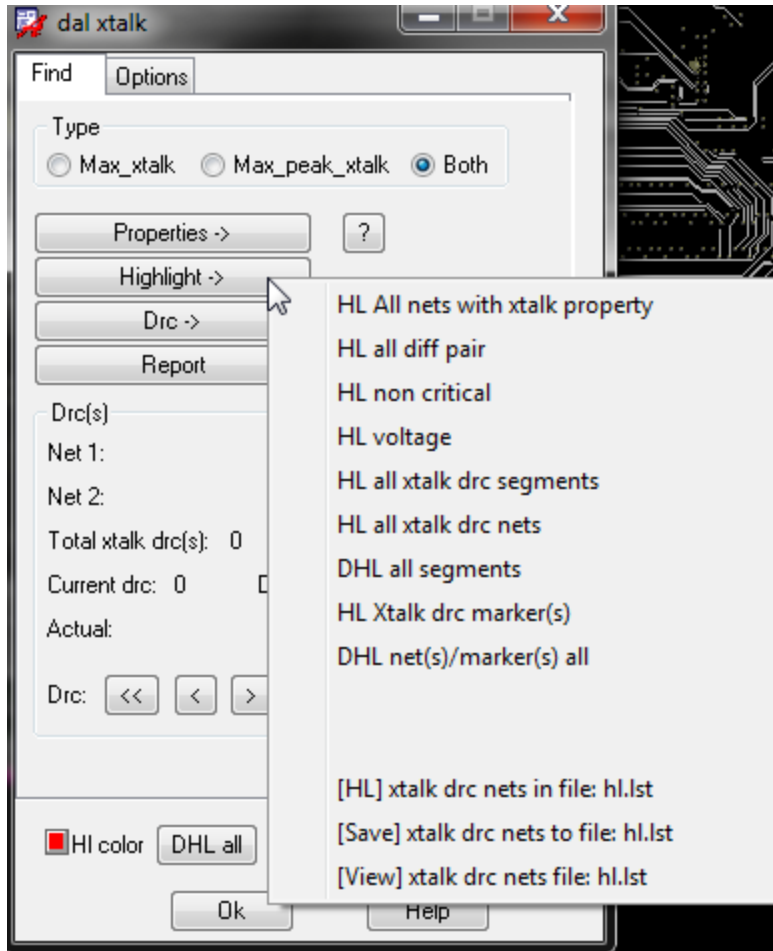
Enter the values for the Max xtalk values for both max and peak values. Suggest 30-50 mv. By default voltage nets and nets with "NON_CRITICAL_NET" properties are ignored.



In the dal xtalk gui click on Drc-> and click Mode On and then click update. The board will then be analyzed for xtalk and drcs created.



There are several functions in dal xtalk that make it much easier to find and correct xtalk drcs. From the option tab utilize the buttons to filter and ignore xtalk between nets in the same bus or nets within the same rpd groups that switch at the same time. There are some very nice highlighting features also to speed up the identification of problem nets and specific cline segments that are routed too close. The report function will give you an overall idea of the xtalk status based on the filter setting in the option tab.



Help

1.0_002 08-29-2011

Help

Command: dal xtalk

Purpose: .See cadence documentation: "Working with Crosstalk
*MAX_PEAK_XTALK - limits the maximum amount of noise in millivolts that can be coupled over from any single aggressor.
*MAX_XTALK - limits the total (as defined by RSS summation of individual aggressor contributions) amount of noise in millivolts that can be coupled over from all aggressors.

See www.daltools.com for details.

Nets with VOLTAGE or NON_CRITICAL_NET property are skipped.

Next

Visit our website: www.daltools.com [More Documentation \(PDF\)](#) [Web Demonstration](#)

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Ok