## **Coherent Sampling Calculator (CSC)**

Mathematically, coherent sampling is expressed as:

fin NWINDOW NRECORD

where:  $N_{WINDOW}$  is the integer number of cycles within the sampling window (This value must be an odd or prime number)

The CSC includes a macro that allows the user to view the detailed intermediate steps of the calculation process. By default, the spreadsheet is set to hide these detailed calculations, however by clicking the "Show\_Detailed\_Calculations" button the user can get additional information such as the size of the coherent sampling window ( $t_{\text{CWINDOW}}$ ) and the number of input cycles in the coherent sampling window ( $N_{\text{CWINDOW}}$ ).

An Excel spreadsheet titled "Coherent Sampling Calculator" is available for download to simplify the process.

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LEGEND   Symbol   Description   FDSAMPLE   Desired sampling frequency   FDSAMPLE   Desired input frequency   NRECORD   Number of data points used in your FFT record   SIGFIG   Signal generator resolution in decimal places after MHz   FDSAMPLE   Calculated, coherent sampling frequency   Calculated, coherent input frequency   Calculated, coherent input frequency   Calculated, coherent input frequency   SIGFIG   SIGFIG   CALCULATED   FDSAMPLE   FDSAMPLE   FDSAMPLE   FDSAMPLE   FDSAM		C Show_Detailed_Calculation						
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Symbol   Description   FDSAMPLE   Desired sampling frequency   FDN   Desired sampling frequency   NRECORD   Number of data points used in your FFT record   SIGFIG   Signal generator resolution in decimal places after MHz   FCSAMPLE   Calculated, coherent sampling frequency   Calculated, coherent input frequency   Calculated, coherent input frequency   Calculated, coherent input frequency   Calculated, coherent input frequency   Calculated   CALCULATED   FCIN (MHz):   SIGFIG:   SIGFIG:   CALCULATED   FCIN (MHz):   CASE 1   65   32.1   8192   4   64.7168   32.1135   CASE 2   65   32.1   8192   5   64.96256   32.10857   CASE 3   65   32.1   8192   6   65.003520   32.112945   CASE 4   65   32.1   8192   7   65.0002432   32.113262   CASE 5   65   32.1   8192   8   64.99999744   32.11120479   CASE 6   65   32.1   1024   8   64.99999744   32.1120479   CASE 7   65   32.1   2048   8   64.99999744   32.15087764   CASE 8   65   32.1   8192   8   64.99999744   32.15087764   CASE 9   65   32.1   8192   8   64.99999744   32.1120479   CASE 10   65   32.1   16384   8   65.00007936   32.10727797   CASE 11   65   32.1   32768   8   64.99991552   32.10124612   CASE 11   CASE		Hide_Detailed_Calculations						
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