

# FFT\_Plugin



**Release 3.2 - Single user only !**  
**Please send us suggestions or bug reports !!**

Created Aug 2000 by Didier Cugy Last edit : 25 Feb 2007

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FFT\_Plugin Applies to RealBasic 2.1 or more recent running on Mac PPC, Mac OSX and Win platforms

FFT\_Plugin allow calculation of 1D and 2D FFT (Fast Fourier Transform), SDE (Spectral Density of Energy, 1D only) and TFF (Inverse FFT).

FFT\_Plugin include six Windowing function :

- Rectangular
- Hamming
- Hanning
- Triangular
- Blackman
- Welch

FFT\_Plugin allow calculation of 8bit or 16 bits data\_blocks from 8 to 16384 samples.

## **FFT Plugin Property :**

<b>Name</b>	<b>type</b>	<b>Description</b>
RegistrationCode	string	theRegistration code. When registered disable the "register" dialog box.
DataSize	integer	the Size in samples of FFT (must be a power of two from 8 to 32768)
RawCount	integer	the RawCount of FFT2D (must be a power of two from 8 to 32768)
TruncType	integer	TheWindowTruncType 1 Rectangular 4 Triangular 2 Hamming 5 Blackman 3 Hanning 6 Welch
SampleRate	integer	(actually not used)
SampleSize	integer	theSize (in byte) of the Sample theSize (in byte) of the Sample 1 8 bit sample 2 16 bit sample 3 32 bit sample
dseMax	double	the dse Max value
RawDataMemoryBlock	MemoryBlock	Address of the RawData memory block

## FFT\_Plugin Method :

Name	Parameters	Description
FFT		FFT Calculation input : RawData array output : reel, imag and dse arrays
TFF		TFF (Inverse FFT) Calculation input : reel, imag arrays output : RawData array
reel	index as integer	the Complex part. Index must be in the range 0 to DataSize-1
imag	index as integer	he Imag part. Index must be in the range 0 to DataSize-1
dse	index as integer	the Energy. Index must be in the range 0 to DataSize-1
RawData	index as integer	Get or Set the RaData with the size defined by the SampleSize property  <b>WARNING FFT_Plugin does not test coherency of address when use of an external MemoryBlock</b>
FFT2D		FFT Calculation input : RawData array output : reel, imag and dse arrays
TFF2D		TFF (Inverse FFT) Calculation input : reel, imag arrays output : RawData array
Reel2D	row as integer, col as integer	the Real part. row must be in the range 0 to Rawcount-1, col must be in the range 0 to DataSize-1
Imag2D	row as integer col as integer	he Imag part. row must be in the range 0 to Rawcount-1, col must be in the range 0 to DataSize-1

Sample :

```
dim myFFT as FFTClass
dim i as integer
dim dse(128) as double

myFFT = new FFTClass
myFFT.RegistrationCode = "myCode"
myFFT.DataSize = 256      // 256 samples
myFFT.SampleSize = 1     // 8 bit sample
myFFT.TruncType = 1      // Rectangular

// Now build a test sample
for i = 0 to myFFT.DataSize - 1
    myFFT.RawData(i) = 128*(sin(i*6.28/255))
next

//      Calculation of the FFT
myFFT.FFT()

//      Get result : e.g. DSE
for i=0 to (myFFT.DataSize/2) - 1
    dse(i) = myFFT.dse(i)
next

MsgBox "The plugin seems to be working fine."
```

## **History**

25 Feb 2007 : 3.2

Compiled as Universal Binary

18 Feb 2006 : 3.1.1

correct a bug for 32bits data size during RawData Acces

10 Feb 2006 : 3.1.0

add 32 bit sample feature

3 Nov 2005: 3.0.0

Introduction of FFT2D calculation

29 Aug 2004 : 2.2.0

Compiled for RB 5.5 Mac-O compatible

25 Jul 2003 : 2.1.1

Correct a bug associated with DataSIze Property set to 32768

12 Jun 2003 : 2.1

DataSIze Property up to 32768

5 Aug 2001 : 2.0

Remove RawDataPtr property and add RawDataMemoryBlock  
rebuild with the latest Toolkit and CW 6.3

17 Jul 2001 : 1.7

Bug correction in memory release when RawDataPtr is set

4 Apr 2001 : 1.6

Add the RegistrationCode propertie.

4 Apr 2001 : 1.5

Rebuild with CW6

24 Nov 2000 : 1.5b1

RawDataPtr now could be set to an external buffer

Type of data is 8 or 16 bits. Defined in SampleSize property  
Size of buffer is specified in DataSize property

16 Nov 2000 : 1.4

Rebuild with the latest REALbasic Plugins SDK 2.1.1a5

7 Sep 2000 : 1.3

OSX features available (Not tested)

3 Sep 2000 : 1.2

68k features available  
reel and imag setup method available

17 Aug 2000 : 1.1

Three new window Trunc functions : Triangular, Welch and Blackman  
improvement in calculation of TFF

11 Aug 2000 : 1.0

First release

8 Aug 2000 : 1.0a7

Allow calculation of the Inverse FFT. New Method TFF.

8 Aug 2000 : 1.0a6

Improvement in calculation of the FFT

7 Aug 2000 : 1.0a5

Correct a mis-initialisation who cause a crash in windows application.

7 Aug 2000 : 1.0a4

Assume RawDataBuffer as a FFT\_plugin property, no long use MemoryBlock.

New Method : RawData(index as integer) as integer, data is set or get as defined by  
the SampleSize property (8 or 16 signed bits)

New Property : RawDataPtr as integer, read only, return the address of the RawData  
buffer

5 Aug 2000 : 1.0a3

Assume Signed data as parameter to FFT method  
Bug correction in the inversion matrix  
r2.1 Demo application

Icon for FFT\_Plugin

Icon for TestFFT application

4 Aug 2000 : 1.0a2

Add the dseMax property to the FFT\_Plugin class  
r2.0 Demo application

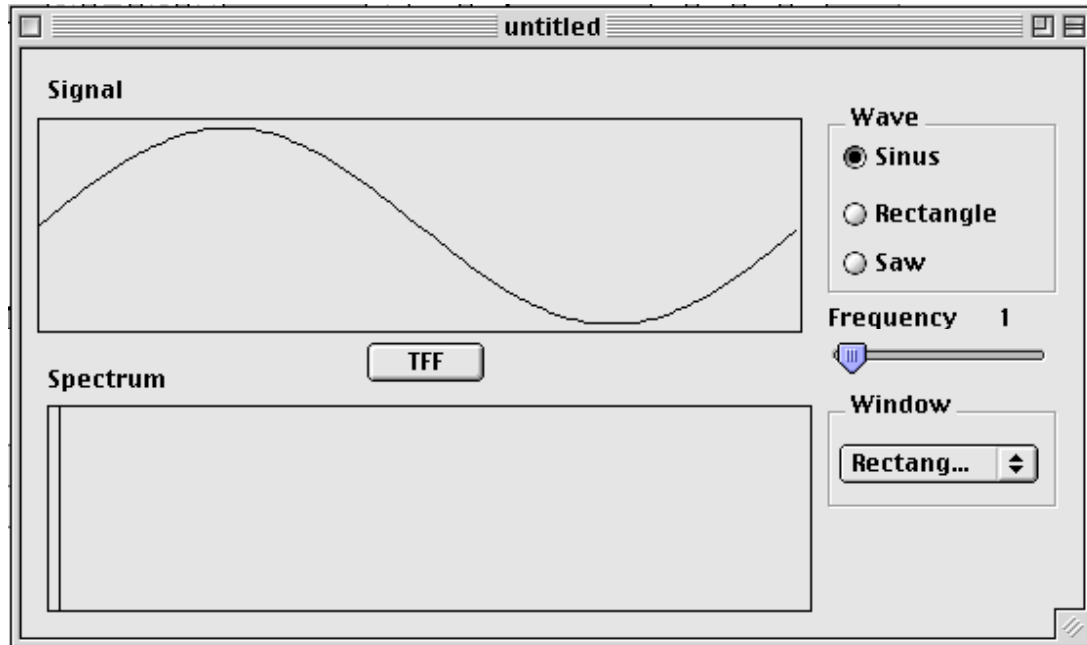
4 Aug 2000 : 1.0a1

First pre-release

# TestFFT-3.0.rbp



TestFFT is a test application for FFT\_plugin. TestFFT source is free.



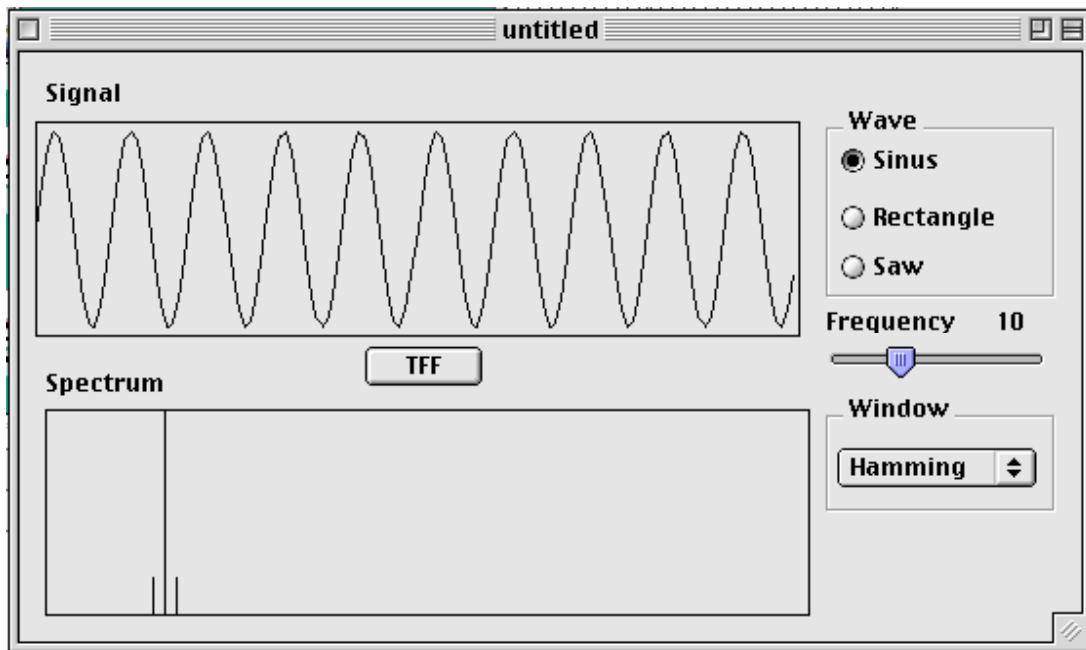
Test FFT main window is segmented into two parts :

- the signal part
- the spectrum part

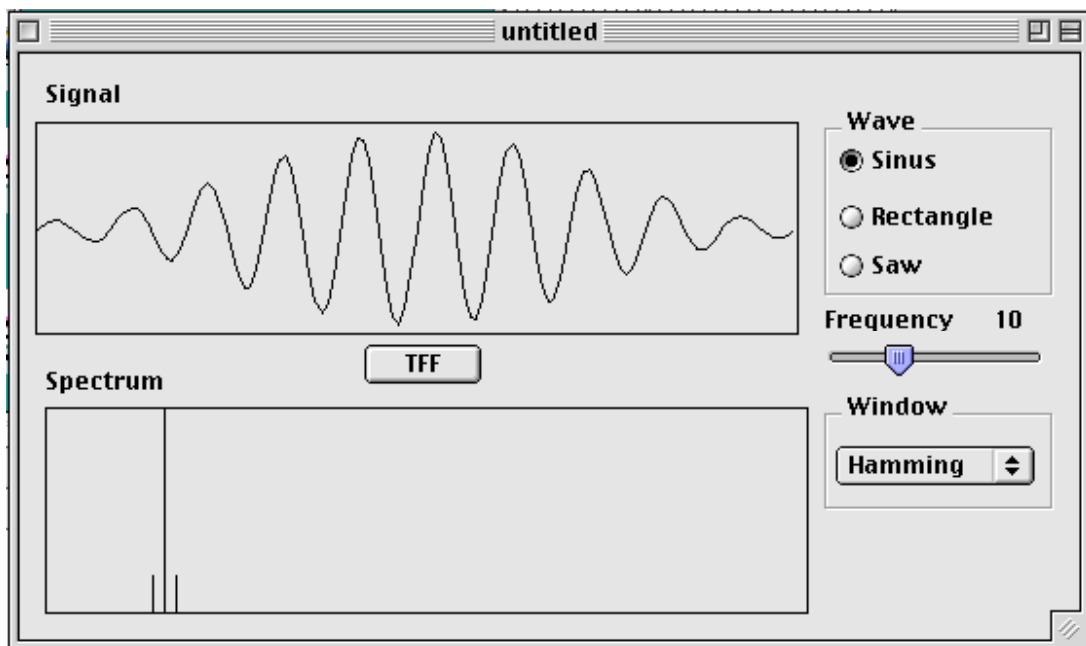
The signal part show the signal defined by the Wave Radio button and the frequency slider.

The spectrum part show the result of the signal part FFT. It is possible to select three types of trunc window : Rectangular, Hammin and Hanning.

**the Reverse FFT** is done by the mean of the **TFF button**. the result is displayed in the Signal window.



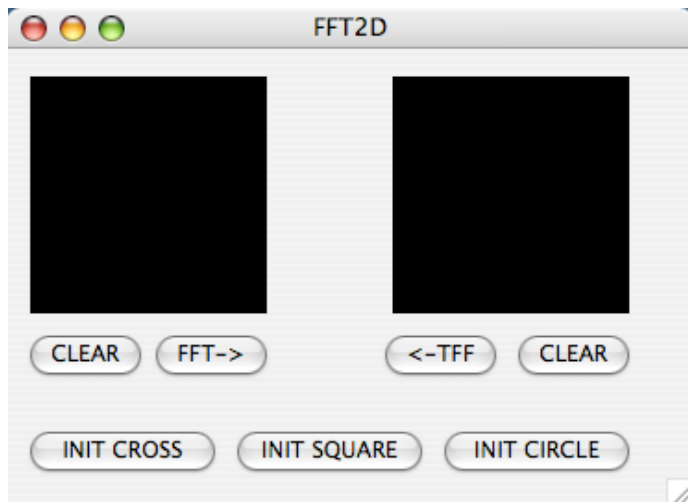
FFT of a sine wave with frequency 10 thru an Hamming window.



Reverse FFT (TFF) of the previous spectrum

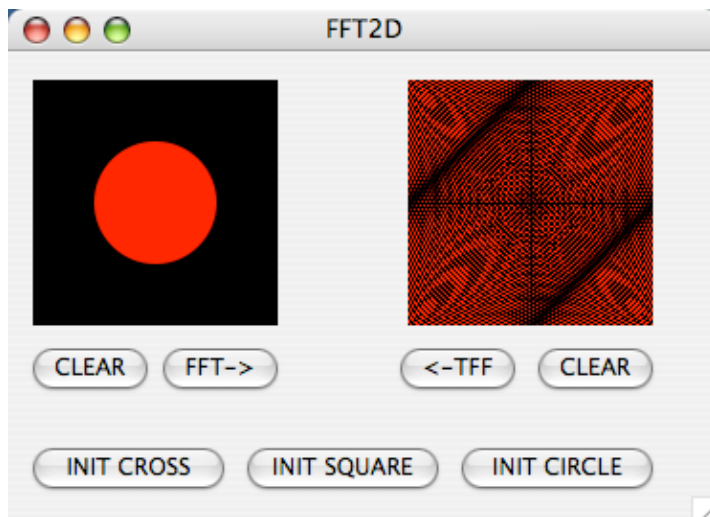


## FFT2D window



FFT2D Window contain two graphics zone. The first (left) receive original picture. Simple pictures can be setup with cross, square or circle buttons. You can also drop a picture in this window.

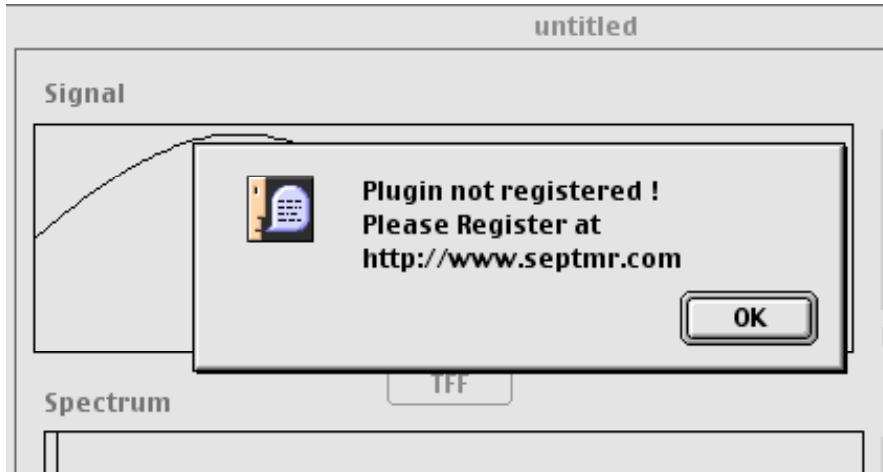
When you press FFT-> button, there is computation of the FFT2D. real part of the result is drawn in the right zone. You can erase each zone with CLEAR buttons. <-TFF button allow inverse computation of FFT2D. result is drawn in the left zone.



example of FFT2D computation of a circle

How to setup Registration Code in your App ?

FFT\_Plugin is now a shareware and it is necessary to register to avoid periodically drawing of the Please Register Alert !



Setup Registration Code in your App is very easy.

First please to our Web Site (<http://www.septmr.com>)  
Press purchase button below FFT\_PLUGIN.



Purchase is done from PayPal.

After checking your payment PayPal will send you an e-mail with the registration code like the following.

Dear customer,

Thank you for purchasing SEPTMR software.

To activate the Registered mode, open the "About ..." window under the Apple menu or the Windows menu and in the field labeled "Activation Key" enter MDBwMqY7Nu-356876964. Please enter the MDBwMqY7Nu-356876964 as shown, because the fields are case sensitive and you will not be able to use the program if they are not entered exactly as shown here. Also, this is your private SECRETE code, so do not give it out to others.

If you have any questions about SEPTMR software please contact [support@septmr.com](mailto:support@septmr.com)

the Activation code is **MDBwMqY7Nu-356876964** in our case.  
to register in your code simply do something like.

```
----  
my_method_to_do_something(param as void) as void  
dim myFFT as FFTClass
```

```
myFFT = new FFTClass  
myFFT.RegistrationCode = "MDBwMqY7Nu-356876964"
```

```
-----
```

then the drawing of the PleaseRegister Window will be disabled.

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