## **Spectravue Configuration**

## For Use with FCD



The FCD must be connected for it to appear in the Spectravue setup.

It is suggested that the program FCHid be running. Enter a frequency of 100MHz and click on the "Defaults" button. FCHid content should appear as shown below. (FCD F/W 18c)



| SoundCard Input Setup                         |            |           |          |                 |  |
|---|------------|-----------|----------|-----------------|--|
| SoundCard                                     | FunCube Do | ngle V0.0 | (        | •               |  |
| Sample Rate                                   | 96000      | SPS       | 1/Q C    | Comp<br>alpha   |  |
| BW Limit                                      | 96000      | Hz        |          | beta            |  |
| Center Freq                                   | 48000      | Hz        |          | ldc<br>0.dc     |  |
| ✓ Stereo (Complex I=R, Q=L) ✓ Invert Spectrum |            |           | Sample O | ffset<br>0 C +1 |  |
| OK Cancel                                     |            |           |          |                 |  |

The "Center Freq" may be set to suit you. As shown it results in the scale seen in the first screenshot i.e. 0KHz - 96KHz. If you prefer to have the scale shown as +/- 48KHz of the FCD's centre frequency then enter 0 in this box.

Remember, a signal at the centre frequency of the FCD as set with the FCD control program is always displayed at the centre of the Spectravue screen.

Out of the box there are two tweaks of immediate interest. Firstly there's the DC offset which you'll find in the middle of the SDR's passband (centre hump), and secondly there's the image rejection. By adjusting these settings, you can null out the DC offset and image signals.

I dc & Q dc adjust the DC offset (centre hump).

alpha & beta adjust the image rejection.

The precise amount of DC offset and image rejection will vary from unit to unit, and is also frequency and gain specific.

See later in document.

| Data Output Selection 🛛 🛛 🔀   |  |  |  |  |
|---|--|--|--|--|
| Wave File Capture Setup         Image: Approximate of the state |  |  |  |  |
| Manual Recording Mode 30 min       10000000 Hz       2011-01-04       22:32:45 UTC         10000000 Hz       2011-01-04       22:32:45 UTC       10000000 Hz       2011-01-04       22:32:45 UTC         10000000 Hz       2011-01-04       22:32:45 UTC       10000000 Hz       2011-01-04       22:32:45 UTC         10000000 Hz       2011-01-04       22:32:45 UTC       10000000 Hz       2011-01-04       22:32:45 UTC  |  |  |  |  |
| <ul> <li>FFT / Continuum File Saving</li> <li>No Output File Saving</li> <li>Screen Capture to File (JPG, PNG or BMP Format) (Timed Or</li> <li>Save Continuum Data to .CSV Excel Format File</li> <li>Save Waterfall FFT Data as 1 byte/pixel BMP Format File</li> <li>Use Screen Resolution</li> <li>Save FFT Data as CSV Excel Format File(Timed Only)</li> <li>Save absolute FFT Data as 2 byte Custom Binary Format File</li> <li>Select Out File</li> </ul>   |  |  |  |  |
| Soundcard/Demod Output Setup<br>Single Channel Demod  Output to SoundCard<br>Output to SoundCard<br>Output to SoundCard<br>Output to SoundCard<br>SoundCard<br>OK<br>Cancel   |  |  |  |  |

"Sound Card" should contain the name of the sound card used on your system to output the demodulated audio.

| General Program Setup  |  |  |  |  |  |
|--|--|--|--|--|--|
| FFT Window Type<br>C Rectangle<br>C Hamming  | Waterfall Rate(0 to 60 Secs/update)  | Assign Display Colors  |  |  |  |
| <ul> <li>Hanning</li> <li>Flat Top</li> </ul>  | Select Waterfall Color Palette File  | Using Default  |  |  |  |
| G Blackman<br>G Blackman-Harris  | Use Comp. 🔽 Select FFT Compensation File   | Using Default  |  |  |  |
| Display Units<br>Hz (Sec)<br>KHz (mSec)<br>MHz (uSec)  | Memory Modes<br>Cursor Mode<br>Cursor Mode<br>Cursor OFF<br>Cursor VF<br>Cursor VF<br>Cursor VF<br>Cursor VF<br>Cursor VF<br>Cursor OFF<br>Cursor OFF<br>Cursor OFF<br>Cursor Vote | 3D xy Pixel Shift (1-100) 4 3<br>1/N 3D Plot Scale(1 to 1/10) 3 N  |  |  |  |
| <ul> <li>GHz (uSec)</li> <li>L/R Button Freq Chan</li> <li>Squelched Display</li> <li>Color 2D Graph</li> <li>Display Speed</li> <li>FFT Overlap</li> <li>Skips N updates</li> <li>O N</li> </ul> Markers <ul> <li>Markers</li> <li>Display Peak Markers</li> <li>Allow Mouse Click Markers</li> <li>Mouse Click Resolution</li> <li>20 KHz</li> <li>500 Hz</li> <li>10 KHz</li> <li>10 Hz</li> <li>9 KHz</li> <li>10 Hz</li> <li>5 KHz</li> <li>1 Hz</li> <li>1 KHz</li> <li>Var</li> </ul> |  | Auto Start<br>Right to Left Continuum<br>Time Stamp Display<br>O Sec (0==AUTO)<br>Pulse Mode Setup<br>se Mode Enable(Pwr vs Time)<br>Chirp Rate<br>MHz/Sec<br>OK<br>Cancel |  |  |  |

That completes the basic configuration.

Clicking "Start-F12" in the main screen should now produce a screen similar to that shown below and noise should be heard from your soundcard.



The DC offset can be clearly seen at the centre of the screen and if you have an antenna attached you may see other signals.

If you wish to adjust the DC offset at this stage open the "SoundCard IN Setup" and whilst watching the height of the centre spike juggle the I dc & Q dc figures to minimize it. The two adjustments interact so an amount of experimentation is required. It is suggested that you make this adjustment without an antenna or with a 50R load connected.

To easily adjust the image rejection a stable signal is required. The procedure is the same as above. Whilst watching the height of the image spike juggle the alpha and beta settings in the "SoundCard IN Setup".

The following two screen shots show the before and after results of making the above adjustments. For illustration purposes the FCD was set to a centre frequency of 100MHz. The input signal is to the right of the display and was set to 100.020MHz. The input level to the FCD was -100dBm. The image is on the left hand side. Following the adjustments it can be seen that the image has disappeared and the DC offset has been significantly reduced.

## Pre Adjustment.



## Post Adjustment.



http://www.funcubedongle.com/

http://funcube.org.uk/