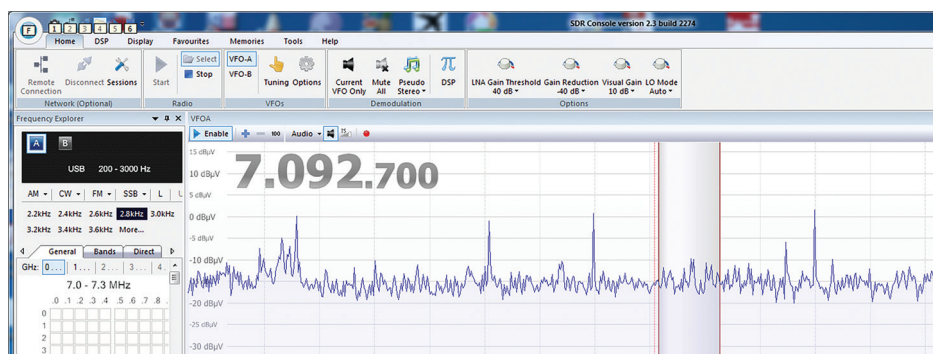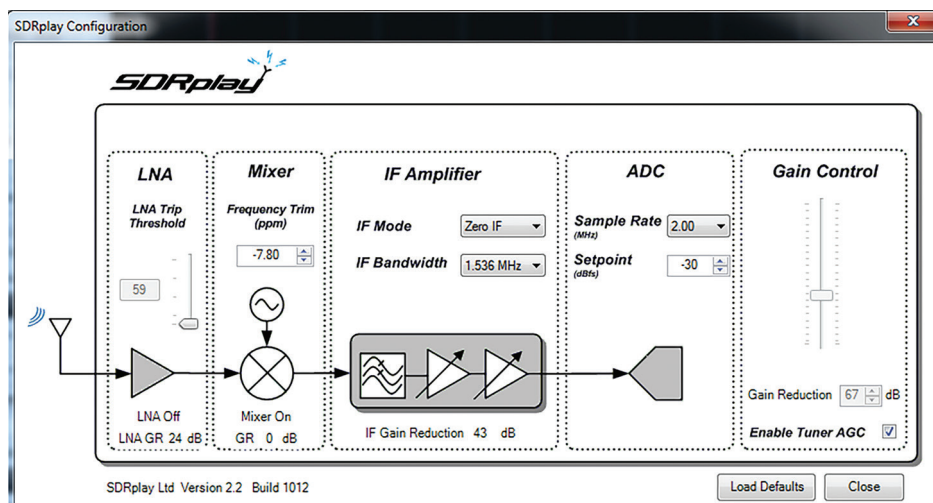FIGURE 2: SDRPlay RSP control panel in *HDSDR*.

FIGURE 3: SDRPlay RSP controls integrated into *SDR-Console*.

FIGURE 4: The SDRPlay RSP controls as they appeared in earlier versions of *SDR Sharp*.

to a maximum of 1.536MHz. Changing to the zero IF opens up the full range of I/Q bandwidths from 200kHz through to 8MHz. The final section, on the right, gave access to the overall gain control for SDRPlay. In its default state, the tuner's AGC is selected and the receiver uses its own AGC algorithm with separate loops for RF and IF gain reduction to obtain the best performance. By removing the tick, I was able to take full manual control of the receiver gain. As I mentioned earlier, this can be a tricky exercise and it's easy for an inexperienced operator to get in a muddle. One particularly helpful feature was the way in which the changeover between AGC and manual was managed. When the receiver was operating normally, I could see the Gain Control slider moving in response to changing signal levels. When I removed the tick to disable the AGC, the gain slider remained in its latest position, as opposed to reverting to a default value. This left the receiver gain at close to the optimal setting so I could then apply minor manual tweaks to get the best from a signal. That technique was much simpler than having to adjust everything from some nominal default value. The *HDSDR* version of the control interface has a couple of useful extras that are not currently available in the other SDR systems. The first was the facility to save receiver configuration settings as Profiles that could be recalled at a later date. Using this system, I could optimise the SDRPlay's settings for a particular band and antenna combination and then recall the same settings with a couple of mouse clicks. The second bonus was the Advanced section that gave me access to the receiver's local oscillator plan and DC offset compensation. Access to the local oscillator plan might seem a bit obscure but it can be useful to manage troublesome image problems. It was by customising the local oscillator frequency plan that the SDRPlay team were able to eliminate the coverage gap that was a characteristic of the early SDRPlay RSP firmware.

Whilst *HDSDR* provides access to the widest range of SDRPlay RSP features, *SDR-Console* and *SDR Sharp* offer a slightly different range of controls. With *SDR-Console* (v2.3 build 2274), control of SDRPlay RSP is fully integrated and the gain and local oscillator plan adjustments are available from the Home tab, see **Figure 3**. At the time of writing, *SDR-Console* did not include a control to trim the DRPlay RSP local oscillator frequency but this is on the to-do list. The LNA threshold and overall gain reduction are similar to the other implementations but there is a new Visual Gain setting that simply alters the displayed level in *SDR-console*. This can be useful for making weaker signals easier to view. The final SDRPlay RSP control was the selection of local oscillator plans as found in the *HDSDR*.

overall performance. It might seem a bit odd at first but it does provide an effective way to manage the AGC.

Starting from the left, the first section contains the LNA trip threshold that sets the amount of overall receiver gain reduction before the LNA is switched out. Next comes the mixer stage where I was able to trim the frequency of the reference oscillator to get the tuning spot-on. For the review model,

I calibrated against the RWM standard frequency transmission on 9.996MHz and that required a very small correction of just -5.80 ppm. The next section was the IF amplifier where I could choose the IF mode and bandwidth. With the IF mode, I had a choice of zero IF or one of four IF presets. Whilst the low IF has the benefit of avoiding the central spike that's common to all zero IF receivers, it also restricts the I/Q bandwidth