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## **RF Engines studies advanced signal processing techniques for the UK Ministry of Defence (MoD)**

*Issued 28 June 2005*

RF Engines Limited (RFEL) has recently been contracted by the Naval Systems Department of Defence Science and Technology Laboratory (Dstl), an agency of the UK MoD, to carry out a study into advanced FPGA-based signal processing architectures.

The study focused on the application of mixed-radix FFT architectures and their efficient implementation on FPGA devices for various applications including a very wideband receiver system capable of detecting, characterising and direction finding a variety of types of radio signal.

Mixed-radix FFTs adopt non-power-of-two techniques in order to exactly match the number of points required for the application.

In carrying out the study, RFEL made use of its significant expertise in the design of frequency transformation architectures and their efficient implementation in FPGA devices. The company had previously designed and implemented several mixed-radix cores to meet requirements for non-power-of-two length DFTs (discrete Fourier transforms).

The study also investigated the requirements for storage of data, the impact on target hardware, as well as the physical implementation of the cores on COTS hardware platforms. The incorporation of other post-processing blocks into the FPGA also formed part of the study.

John Summers, RFEL's CEO, commented, "We are obviously very pleased to be doing this sort of work for the MoD, and looking forward to this work being pulled through into end product very quickly. The benefits of this approach are the ones that you're always seeking – lower cost equipment for the end customer and also achieving a significant improvement in operational performance -- both in one hit."

Peter Beharrell, EW Fellow at the Defence Science and Technology Laboratory, said, "RFEL conducted a timely and thorough study into our DSP

requirement. The study contributed significantly to a favourable overall concept assessment.”

### **RF Engines**

RF Engines Limited (RFEL) is a UK based designer, providing high specification signal processing cores, system on chip designs, and FPGA based board solutions for applications in the defence, communications and instrumentation markets. These applications include base stations, wireless and wireline broadband communications systems, satellite communications systems, test and measurement instrumentation, as well as defence systems. More specifically, RFEL is a solutions provider for projects requiring complex front end, real time, wide and narrow band, flexible channelisation. RFEL provides a range of standard cores covering multiple FFT and unique PFT techniques, as well as system design services for specialist applications.

For further information, please see the website at [www.rfel.com](http://www.rfel.com) or contact RF Engines at Innovation Centre, St Cross Business Park, Newport, Isle of Wight, PO30 5WB, Great Britain. Tel +44 (0) 1983 550330. E-mail [info@rfel.com](mailto:info@rfel.com)

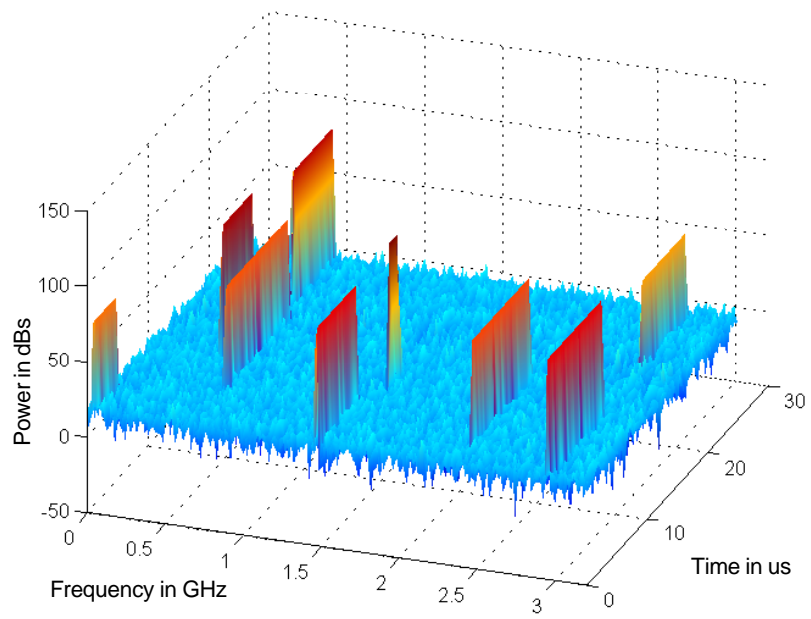
### **Dstl**

Dstl - the Defence Science and Technology Laboratory, is the centre of scientific excellence for the UK Ministry of Defence, housing one of the largest groups of scientists and engineers in public service in the country.

Dstl has the brief to ensure that the UK Armed Forces and Government are supported by world-class scientific advice. Dstl delivers defence research, specialist technical services and the ability to track global technological developments. Its capabilities compare with the best in the world, supporting procurement decisions, defence policy making and operations.

Press information and illustrations can be obtained from Nigel Robson, Vortex PR, Island House, Forest Road, Guernsey, GY8 0AB, Great Britain. Tel +44 (0) 1481 233080. E-mail [nigel@vortexpr.com](mailto:nigel@vortexpr.com)

### **Image**



Spectral analysis using HyperSpeed Mixed Radix FFT