AEGIS NEWSLETTER November 2003

It must be about six months since we sent out our last newsletter and we have been busy in a number of areas although probably much will not be published until the New Year.

RESEARCH STUDIES

Wideband Measurements

Aegis has recently completed a study for the British National Space Centre (BNSC) concerned with the characterisation of the satellite-indoor radio channel. A high-resolution (10 ns) channel sounder was constructed, the receiver of which used the 'sliding correlator' approach. The sounding transmitter, operating at 2.4 GHz, was suspended from a tethered helium balloon, allowing the experimenters to explore a wide range of elevation angles. Power delay profiles were gathered for a range of locations in both office and domestic buildings. It is intended that the results of this study will be published in an appropriate journal.

Location Variability of Radio Signals

For the Radiocommunications Agency (soon to become OFCOM) we are currently undertaking a research project aimed at giving a fuller understanding of the statistics of radio signal variation over small areas (a few hundred metres), and of the mechanisms behind these statistics. This study will involve a measurement campaign examining the behaviour of signals in urban, suburban, industrial and rural areas, at three frequencies between 100 MHz and 5 GHz. The measurements will be made using both standard narrowband methods, and using a wideband (6–20 MHz) channel sounder.

SPECTRUM REGULATION

Economic Study to Review Spectrum Pricing in the UK

As we mentioned in our previous newsletter Aegis Systems Ltd. and Warwick Business School have been assisting Indepen Consulting Ltd in this study, which should be completed about Christmas. The work has involved advising whether the existing methodology for calculating Administered Incentive Pricing (AIP) generates the optimal incentives for licensees to use spectrum efficiently. Illustrative charges under the proposed AIP methodology have been developed and a sensitivity analysis undertaken on key variables used to estimate charges. Also a methodology has been developed to monitor and test the effectiveness of the pricing approach.

Spectrum Metrics and Measurements for Spectrum Trading

We have been considering what parameters would need to be defined to clearly qualify the use of a block of spectrum in a way that would facilitate spectrum trading. The unambiguous definition of a block of spectrum in all its relevant dimensions is an essential part of a spectrum trading regime especially when the introduction of such a regime is accompanied by liberalisation that allows the change of use. In determining the parameters we have also considered how and whether such parameters should be measured. Spectrum trading and liberalisation are currently the subject of a consultation process in the UK. A summary of the consultation can be found at www.ofcom.org.uk/consultations/current/spectrum_trading/summary.htm and the full consultation document at www.ofcom.org.uk/consultations/current/spectrum_trading/condoc.pdf

Analysis of Costs and Benefits of International Harmonisation of Radio Standards and Frequency Allocations
For the Radiocommunications Agency (soon to become OFCOM) we are currently undertaking a study with Indepen Consulting Ltd. which follows the response from the Government to the Independent Spectrum Review which stated (para 2.6) that

"further studies are necessary to define the economic trade-off between the benefits of harmonisation and the advantages that might accrue from greater national flexibility"

To illustrate the issues involved in making these trade-offs the Indepen/Aegis study is focussing on a number of key frequency bands and services. These case studies are purely hypothetical involving the comparison of outcomes (costs and benefits) under a known situation with a hypothetical alternative and have been chosen to illustrate the issues raised by standardisation and harmonisation. This Study is due to be completed early next year.

BROADCASTING

Study on Spectrum management in the field of Broadcasting
We are currently undertaking this Study into Broadcasting Spectrum Management for the European Commission (DG Information Society) with IDATE and Indepen Consulting Ltd. The objective of the Study is to examine new methods and tools for efficient spectrum planning and management, and to advise on their utility within the CEPT and EU structures. Also to give advice on how spectrum planning, traditionally a long-term, deterministic activity, can be reconciled with increasingly dynamic and unpredictable market and technology developments. To achieve these objectives a number of areas need to be addressed including the transition to digital broadcasting and the convergence of broadcasting and telecommunications.

TECHNICAL

Sharing between UWB and FS and FSS in 3 – 10 GHz
We have just started work on a sharing study for the UK Radiocommunications Agency that is to examine the implications of UWB transmissions on both FS point-to-point and FSS systems operating in the bands below 10 GHz. It is intended that the results from this work will be submitted to CEPT Project Team SE24 and ITU-R Task Group 1/8.