



EXECUTIVE SUMMARY

This report, prepared by the Spectrum Aspects Group of the UMTS Forum, studies the minimum spectrum demand per UMTS operator up until the year 2005. In a previous report from the UMTS Forum in 1997 the overall spectrum demand was addressed.

UMTS, the Universal Mobile Telecommunications System, is recognised as the main opportunity to provide broadband mobile multimedia services for the future mass market. UMTS will offer user bit rates up to 2 Mbit/s.


It should be noted that this report focuses on the 15 member states of the European Union (EU15) and many of these assumptions and therefore conclusions may well not be valid for countries outside of Europe.

This investigation into the minimum spectrum demand per UMTS operator relates to public terrestrial UMTS networks in the EU 15 states and is based upon UMTS market and spectrum estimates made previously by the Market Aspects Group and Spectrum Aspects Group of the UMTS Forum.

In this report the main emphasis has been in determining the minimum spectrum with which an operator can build a 'real' UMTS network, this means that there should be sufficient spectrum to facilitate building a network capable of providing all expected UMTS services. The defined scenarios were tested against the traffic forecasts based on market studies and previous UMTS reports.

It should be noted that the conclusions made in this report are dependent upon market data for the years up to the year 2005 and the assumptions made. For example, it is assumed that 90% of the total speech and low speed data traffic will be carried over existing second generation networks within this period, that 60% of the indoor traffic will be carried over licence-exempt networks, and that high (2 Mbit/s) and medium (384 kbit/s) multimedia services are packet services which are tolerant of delay. It is important to note that although the majority of users will continue to use speech most of the capacity is needed for multimedia services. As identified in earlier work by the Spectrum Aspects Group the market is expected to continue to grow strongly after this date and additional spectrum will be required in the future.

The requirements arising from the symmetric and asymmetric nature of the future traffic are uncertain, but within the assumptions made the recommendations allow for the asymmetry forecasted in the market studies until the year 2005 to be handled.



The study looks at eight deployment scenarios for UMTS and examines each of them for their viability in terms of the cell loading and levels of service capabilities for each of the hierarchical layers. Whilst recognising that the situation can vary within the EU15 (the 15 members states of the European Union) the following recommendations are made:

Recommendation 1

Based on the assumptions made, the UMTS Forum recommends 2x15 MHz (paired) + 5 MHz (unpaired) as the preferred minimum spectrum requirement per public UMTS operator in the initial phase. The allocation of unpaired spectrum is foreseen to handle asymmetric traffic in an optimised way. However, depending on country specific situations, other spectrum allocations per operator may be more appropriate.

Recommendation 2

The UMTS Forum recommends to study further the flexible use of TDD and FDD techniques, with the aim of improving the efficient use of spectrum.

Recommendation 3

The UMTS Forum recommends that administrations and other relevant authorities take timely action to make sufficient spectrum available for UMTS in the initial phase to satisfy market demand.
