

EXHIBIT J

Shing-Fong Su

**The
UMTS Air-Interface
in RF Engineering**

**Design & Operation
of UMTS Networks**

The UMTS Air-Interface in RF Engineering: Design and Operation of UMTS Networks

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before decoding the data packet. This method wastes more bandwidth than the incremental redundancy method, since the entire error packet must be retransmitted.

Incremental redundancy correctly selects the transmitted bits from both the original transmission and the retransmission, in order to minimize the need for further repeat requests. This method is used to get maximum performance out of the available bandwidth. In incremental redundancy, the retransmitted block consists of only the correction bits for the original data packet. The additional redundant bits are sent incrementally when the first, second, third, and so forth retransmissions are received with errors.

11.1.5 Code Allocation and Code Multiplexing of Packet Transmissions

HSDPA uses a fixed spreading factor of 16. Within each 2-ms TTI, a maximum of 15 consecutive OVSF codes can be allocated to 15 parallel HS-PDSCH channels for the HS-DSCH. These channels may all be assigned to one user during the TTI, or may be split among several HSDPA users. In other words, it is possible to schedule transmissions to a single UE or to multiple UEs at the same time. It can also transmit to a small number of UEs with good channel quality. In essence, the transmission can be time division multiplexing (single user in one TTI) or code division multiplexing (multiple users in one TTI). Figure 11.3 illustrates an example of the sharing of HS-PDSCHs among users.

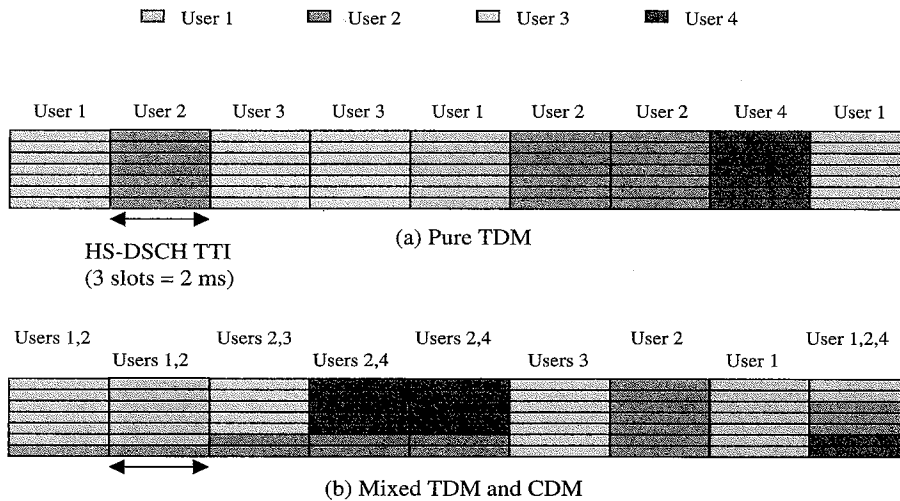


Figure 11.3 Sharing of HS-PDSCHs among users (a) Pure time division multiplexing (b) Mixed time division multiplexing and code division multiplexing.