

Necessary Bandwidth Description

There are two separate systems described in this application: (1) an HSDPA demonstration system using a commercial base station with prototype boards transmitting to a fixed prototype mobile system, and (2) a UMTS demonstration system using a commercial base station transmitting to and receiving from several commercial UMTS mobiles. The HSDPA system only requires one 5MHz band for downlink, while the UMTS system requires two 5MHz bands (one for downlink and one for uplink).

For the HSDPA system, the requested bandwidth is 5MHz centered at 2140.0MHz (downlink only).

For the UMTS system, the requested bandwidth is 5MHz centered at 2112.5MHz (for the downlink), and 5MHz centered at 1922.5MHz (for the uplink).

The chiprate used by both HSDPA and UMTS systems is 3.84Mcps. A root-raised cosine filter with rolloff factor $\alpha = 0.22$ is used for pulse shaping. This results in a required bandwidth of 4.6848MHz. A guardband of 157.6kHz is used on either side of the spectrum in order to utilize a 5MHz channel.