

Necessary Bandwidth Description

There are two separate systems described in this application: (1) an HSUPA demonstration system using a prototype fixed mobile system transmitting to a commercial Motorola base station, and (2) a UMTS/HSDPA demonstration system using a commercial Motorola AXPT (High Speed Access Point) transmitting to and receiving from several commercial UMTS/HSDPA subscriber devices (laptop PCMCIA cards).

The HSUPA system only requires one 5MHz band for uplink, while the UMTS/HSDPA system requires two 5MHz bands (one for downlink and one for uplink).

For the HSUPA system, the requested bandwidth is 5MHz centered at 1932.6MHz (uplink only).

For the UMTS/HSDPA system, the requested bandwidth is 5MHz centered at 2112.6MHz (for the downlink), and 5MHz centered at 1922.6MHz (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.