AT&T (NYS: T) estimates that it will cost $1 billion to $2 billion to integrate Qualcomm's (NAS: QCOM) Lower D and E Block 700 MHz spectrum into its network, according to the filing with the FCC.

AT&T is currently seeking FCC approval of its $1.93 billion purchase of the spectrum, which includes 12 MHz of Lower D and E Block spectrum (which covers more than 70 million POPs in New York, Boston, Philadelphia, Los Angeles and San Francisco) and 6 MHz of Lower D Block spectrum (which covers 230 million POPs across much of the rest of the country).

AT&T has said it plans to use carrier aggregation technology to meld together Qualcomm's unpaired 700 MHz spectrum with AT&T's existing AWS, 1900 MHz or 850 MHz spectrum holdings. AT&T has said doing so will allow it to double the downlink speeds of its LTE network. However, AT&T said that it will need to deploy new chipsets and handsets and upgrade its base stations to take advantage of Qualcomm's spectrum, a process that means AT&T won't be able to offer the resulting faster speeds to customers until late 2014.

"We were asked if we could support this spectrum on existing base stations with a software upgrade. To support this spectrum, we will have to accomplish a site-specific hardware upgrade (including new transmitters and also possibly new antennas), complete with structural engineering studies," AT&T wrote in the Dec. 9 FCC filing. "Finally, we will face costs for unique chipset and device development since we will be the first carrier in the United States to deploy this technology and the only carrier using this new spectrum for LTE. Our best estimate is that our cost to deploy this technology to provide our customers with higher quality LTE services will be between $1 and $2 billion dollars in network costs, which does not include development or device costs."

In the filing, AT&T also took aim at a proposal by several Lower 700 MHz A Block licensees, including Vulcan Wireless. The group is asking the FCC to require all of AT&T's 700 MHz LTE devices to work across all Lower 700 MHz spectrum -- not just the Band Class that AT&T currently is assigned -- within two years. AT&T said such a condition would be costly in terms of changing devices and base stations and would hamper its LTE deployment.

"We explained, as an initial matter, that because we are not purchasing 700 MHz A Block licenses in this transaction, such a demand is not specific to this merger and inappropriate," AT&T wrote in the filing. "We also explained that interoperability is achievable through the use of multi-mode, multi-band chipsets, like those currently being developed by Qualcomm, that will support many frequency bands to accommodate unique carrier needs."