UART Baud Bit Rate Calculations

For the sample rate requirements of the project it is important to determine the baud rate for UART transmission to the bluetooth module. To transmit each 10 bit sample, two packets of data will need to be sent over UART per channel. It is important to note that there are three channels for this project. Thus, accounting for start bit, and stop bits, it can be assumed that each packet will be 11 bits. Thus, each 10 bit sample takes up 22 bits for transmitting over bluetooth. Based on this, it is assumed that for a total sample rate of 5000 samples per second (all 3 channels at ~1667 samples per second each) a baud rate of 110 kbps is required. A common baud rate is 115.2 kbps and should be sufficient. Below is a plot showing the baud rate the project will require for different sample rates.