Design Outline

Host TX:

Host will send formatted command across the UART interface to the host module. The host module will decode the internally formatted command. If the command is target for a slave device the command will be encrypted to protect the data in flight. After encryption the packet will be encoded into a format that is acceptable by the bluetooth module. Finally, the packet will be sent to the bluetooth module via the bluetooth interface.

Slave RX:

The slave module will wait for a message to come across the bluetooth interface. After receiving a message the command will be decoded. The data must then be decrypted. Following decryption the original command can be decoded and the proper interactions can happen with the IMU to get the requested information.

Slave TX:

After gathering the IMU information the slave will encode that information in an appropriate command response packet. The command response will then be encrypted and encoded in a bluetooth command. The response can then be sent over the bluetooth interface.

Host RX:

The host will wait for a command response from the bluetooth interface. After receiving the response the bluetooth packet will be decoded and then decrypted. Once decrypted we can decode the command and ensure nothing else needs to be done on the host module. The response can then be sent back to the host via the UART interface.