PROBLEM TITLE
Dismount Direction Finding/Geolocation

BACKGROUND
SOCOM has a desire to locate potential GPS RF jamming threats in theater without the use of airborne ISR assets. Using four SDRs and four helmet mounted directional antennas, devise a system that can provide a line of bearing from the individual to the jammer. One potential method would be to use amplitude direction finding with four directional antennas facing fwd, aft, left and right.

CHALLENGE
1) Antenna Design – four directional antennas that can be helmet mounted (maybe affixed to a headband for prototype) that can receive L1 GPS band (1575 MHz) signals. Antennas should be physically small with high directivity (understand these are competing requirements). 3D printed solutions should be explored, and novel designs encouraged.
2) RF Processing – Develop an amplitude DF algorithm using four SDRs and inputs from four directional antennas (90 degree quadrants) to find a line of bearing from an RF source at 1575.42 MHz. Potential calibration techniques for the system should be addressed.

LIMITATIONS
The system should consider low power consumption and reduced weight as key specifications.

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