New novel fed 2x2 antenna array operating within the 5.8 GHz frequency band for biomedical sensor is presented. The proposed design is optimized for return loss below -16 dB. Antenna is designed to receive chest movements during breath exhaust and inhauls. Antenna array is fed through an antenna and it makes this antenna array shape novel. It meets the requirements by -16 dB return loss and 5dB gain. Our designed antenna is a low cost antenna. FR4 epoxy material which has a 4.25 relative permittivity and 1.5 mm thickness was used as a substrate. Because of this subtract material antenna is so cheap and readily available.