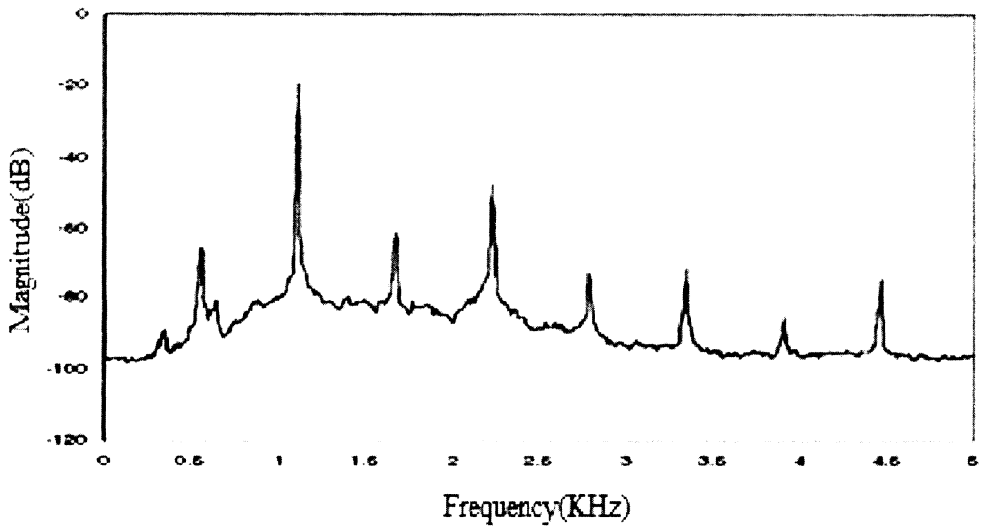


FIGURE 2. Typical Propeller Cavitation Spectrum

rotation of ship propellers. The author has not come across use of HOS for this kind of application in the literature. HOS methods enable the visualisation of the transfer of energy from one frequency to another, a hallmark of non-linear phenomenon that is not visible using traditional spectral methods.

In medical application i.e., in physiotherapy, removal of kidney stones etc, maintaining precise cavitation level is important in order to avoid tissue damage/injury entailing the necessity of accurate monitoring and quantification technique of cavitation. Lack of suitable measurement sensors for determining cavitation is highlighted in [1].

## 2. Theory

The operational basis of the new technique using HOS (HOS details will be discussed in section III) lies in the measurement of broad band acoustic signals produced during cavitation as a function of time/speed of propeller rotation. Here we must understand that there are two types of bubbles — one undergoing non-inertial (stable) cavitation or inertial (transient) cavitation [2]. Inertial cavitation is the violent collapse of short-lived cavities or bubbles that provide the conditions responsible for the range of observed effects. To explain this phenomenon that it is highly non-linear