# Group Delay of High Q Antennas

**Author(s) - Institution(s):**
Pevand Bahramzy, AAL
Gert Frølund Pedersen, AAL

**Corresponding author email:** pb@es.aau.dk

**Corresponding WG group:** SWG1.1

**Abstract:**

Group Delay variations versus frequency is an essential factor which can cause distortion and degradation in the signals. Usually this is an issue in wideband communication systems, such as satellite communication systems, which are used for transmitting wideband data. However, group delay can also become an issue, when working with high Q antennas, because of the steep phase shift over the frequency. In this paper, it is measured how large group delay variations can become, when going from a low Q antenna to a high Q antenna. The group delay of a low Q antenna is shown to be around 1.3 ns, whereas a high Q antenna has group delay of around 22 ns. It is due to this huge group delay variation characteristics of high Q antennas, that signal distortion might occur in the radio system with high Q antennas.