

WIRELESS TECHNOLOGY APPLIED TO SPORTS EQUIPMENT

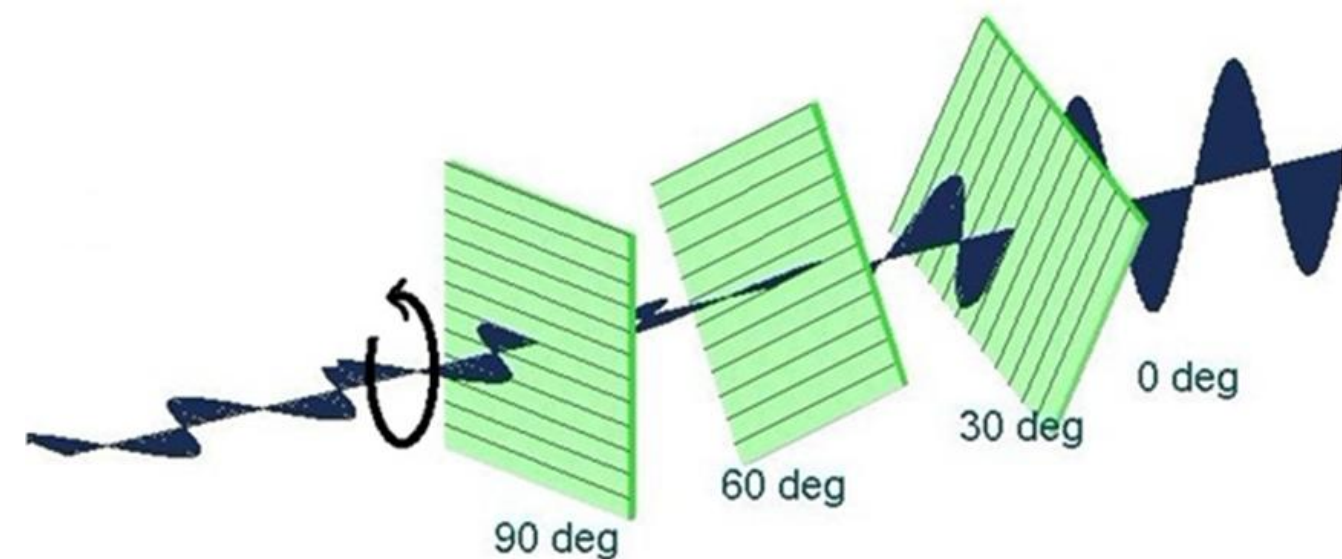
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BACKGROUND

The connotative concepts behind the fundamental principle of antenna polarisations. They are:

- The linear polarisation
- Polarization loss factor (PLF) and efficiency

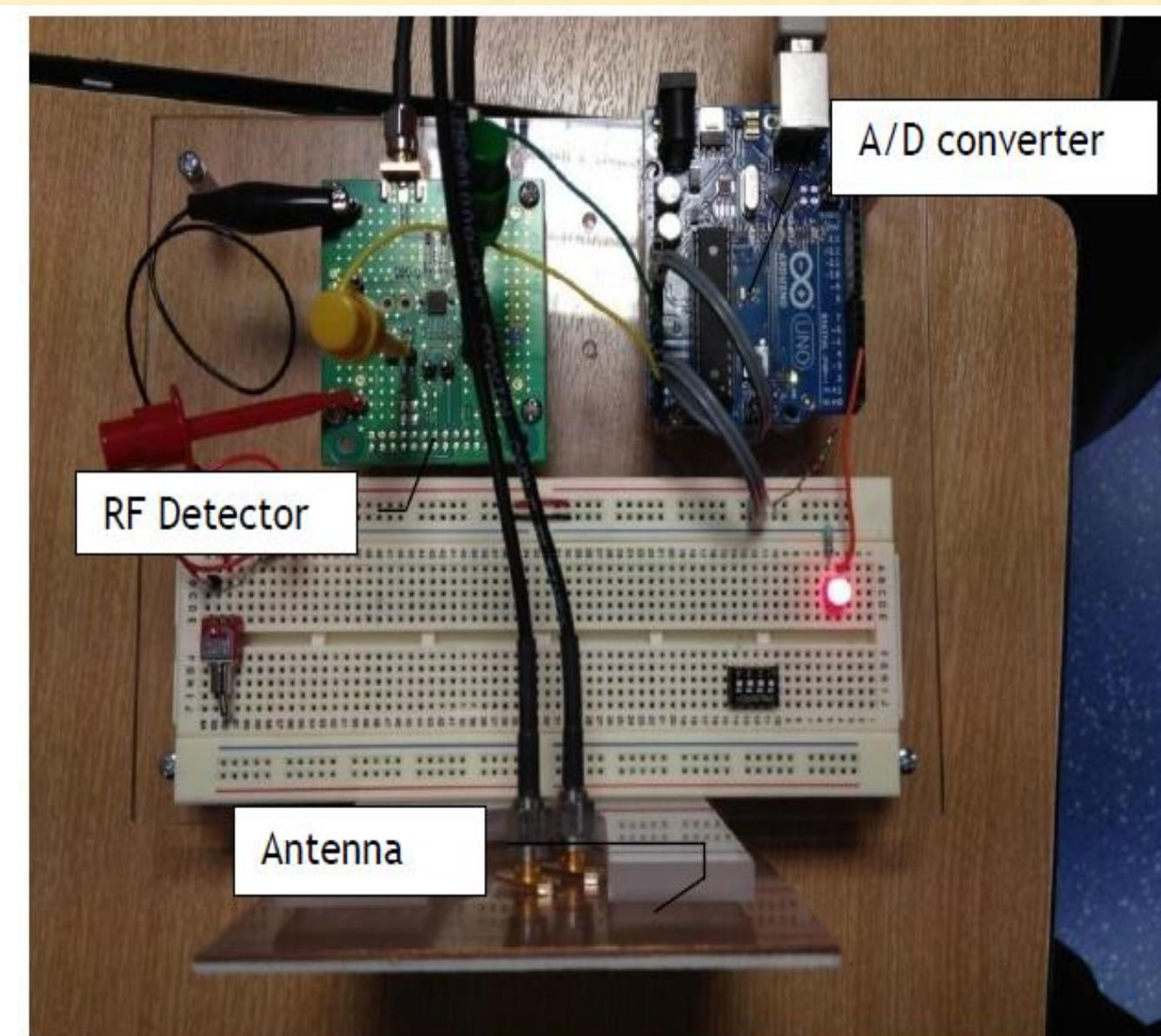
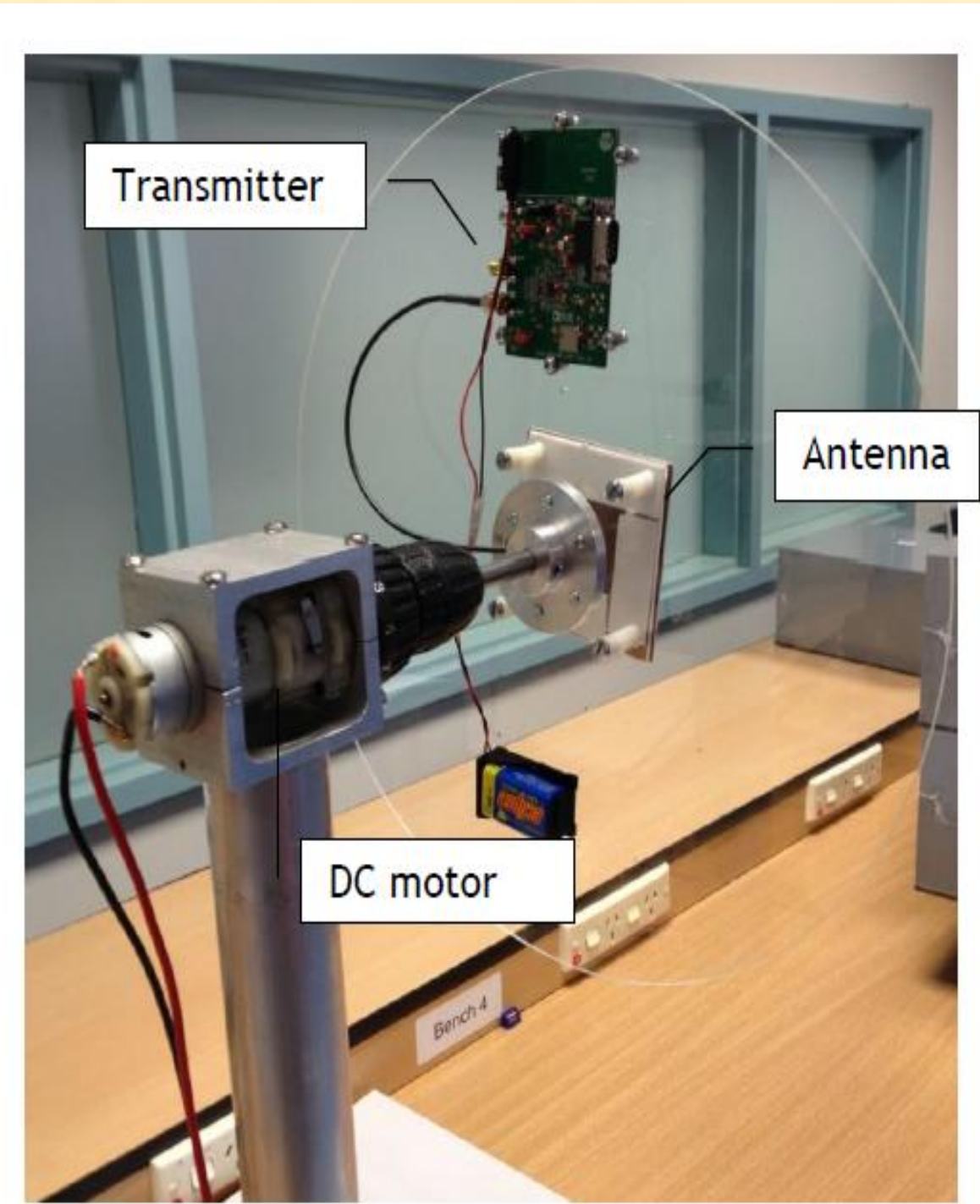


In terms of PLF, the PLF of the system is unity when the electric field of the transmitting antenna and the electric field of the receiving antenna are matched, while the PLF of the system is zero when the electric field of the transmitting antenna and the electric field of the receiving antenna are 90 degree apart.

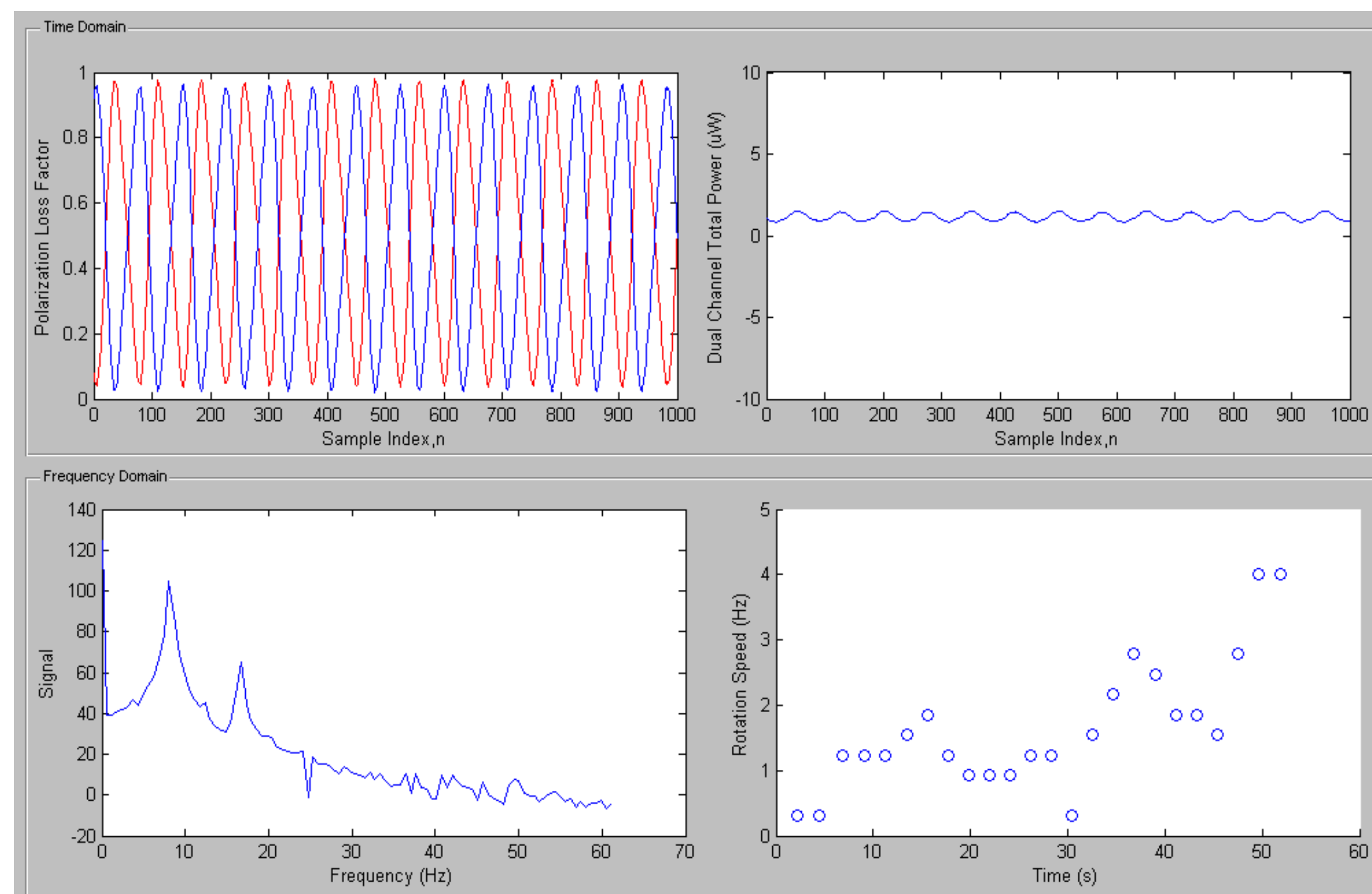
SIGNIFICANCE

Wireless technology was little more than just a distant idea for the majority of ordinary consumers last century. However, as entering the age of wireless communications pervading our everyday lives and an unquenchable thirst for information, the dream of small unobtrusive monitoring devices that can quantify every aspect of an athlete's performance in real time is putting into reality.

Wireless technology is valuable in a wide range of sports applications such as player and objects tracking and sports training monitoring.



OUTPUT WAVEFORMS



TESTING SCHEME & RESULT

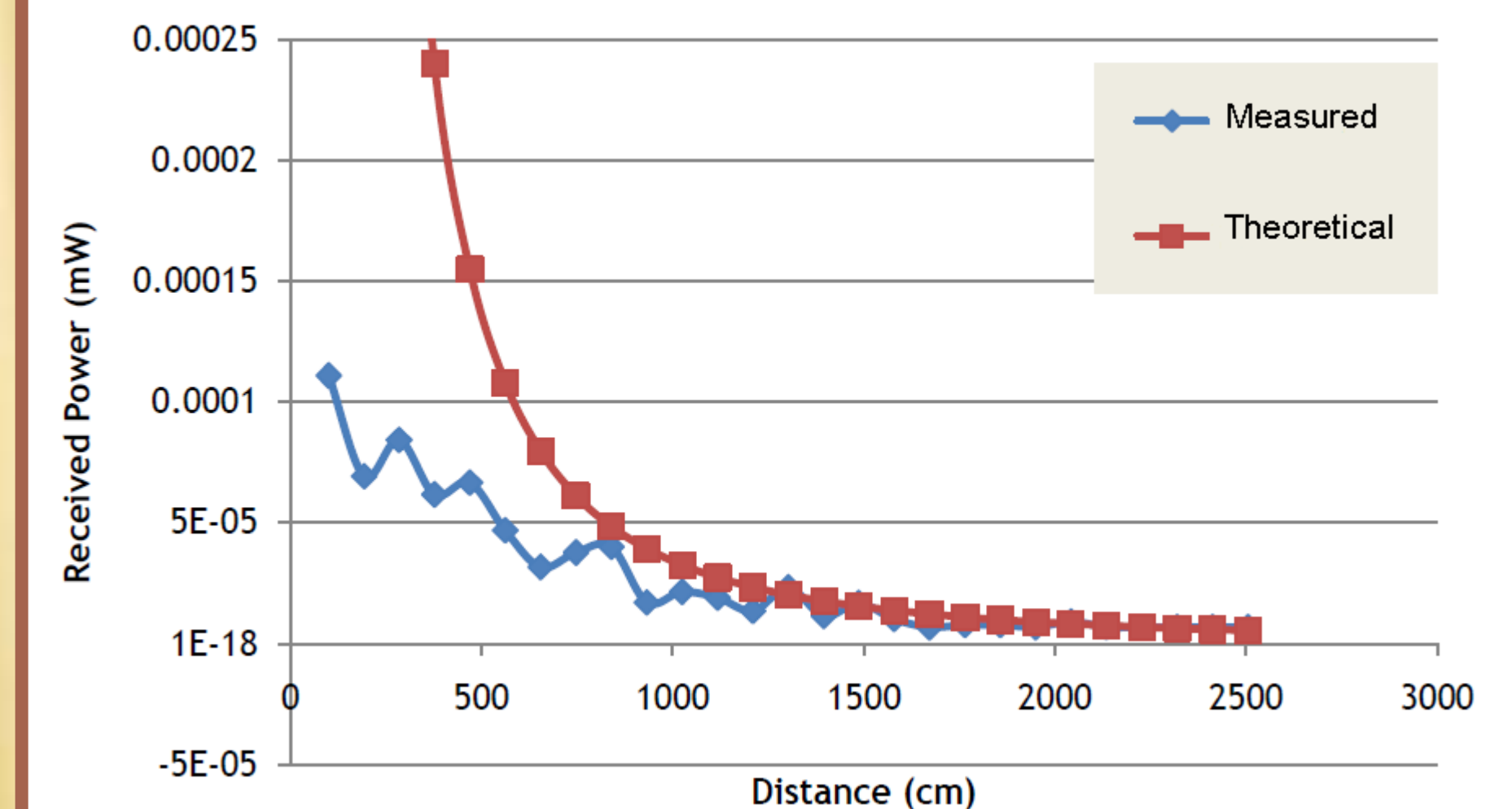
Objectives

- To find the maximum transmitting distance of the system
- To see the relation of distance to received power in the Friis Equation.

Friis Equation is given by:

$$\frac{P_r}{P_t} = G_t G_r \left(\frac{\lambda}{4\pi R} \right)^2$$

Result



REFERENCES

Balanis, CA 1997, *Antenna theory: analysis and design*, 2nd edition, JOHN WILEY&SONS, Canada;

Daniel S 2010 *Dual Polarized Omnidirectional Antenna*, KTH Electrical engineering, Sweden.