

Inverse D squared v/s Inverse D sixth power ?

Source: <http://sci.tech-archive.net/Archive/sci.electronics.design/2005-09/msg03309.html>

- *From:* "Graeme Zimmer" <gzimmer_NOSPAM_@xxxxxxxxxxxxxxxxxx>
 - *Date:* Sun, 18 Sep 2005 13:59:24 -0700
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Hi, (I posted this in sci.physics.electromag but didn't get a squeak).

For Electromagnetic Radiation, most text books show the power density (in watts per square meter) of a wavefront is inversely proportional to the square of the distance from the source.

e.g. $1/r^2$

However recent discussions of Near Field Communications (NFC) indicate a $1/r^6$ relationship (inverse Sixth power).

see http://www.radio-electronics.com/info/wireless/nfc/nfc_overview.php
and http://www.auracomm.com/site/content/roll_off.asp

Now I understand that this is in the special case where only a magnetic field is present (the electric field having been suppressed with shielded antenna) (or vice versa).

The title suggests that this $1/r^6$ relationship only occurs in the Near Field, but I also understand that if you have just an alternating magnetic field, then the electric field is promptly re-created (and vice versa) (in the Far Field ?).

So can anyone elaborate on just where and when this Inverse Sixth Power relationship applies please?

Thanks Graeme Zimmer

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