

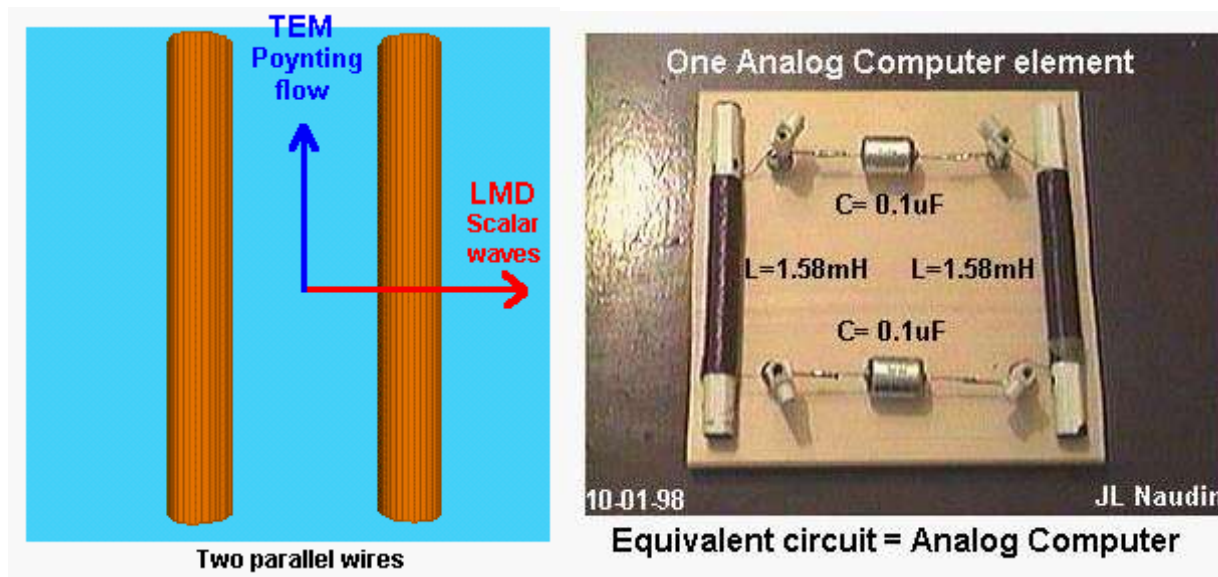
Longitudinal Waves and Transverse Waves tests

by Jean-Louis Naudin

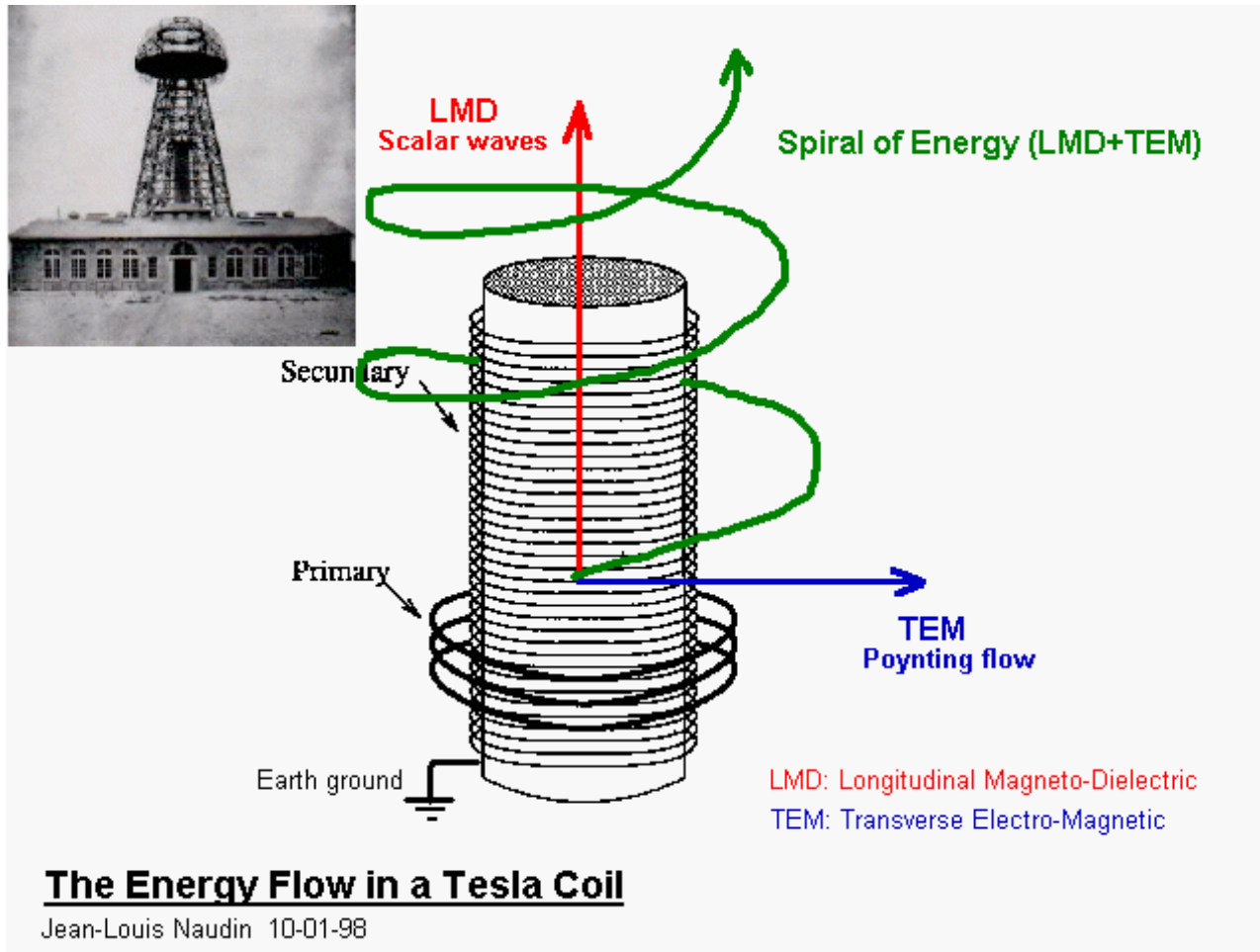
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The following is an electric wave experiment to demonstrate the inverse relationship between the coil, or magnetic inductor and the capacitor, or electrical inductor, and their usage in propagation of the electromagnetic field components.

An analog computer is used to study the space distribution of the electromagnetic field component of transverse and longitudinal waves along a transmission line in two different configurations (LMD/TEM).



This is the electricity Tesla was propagating from his [Magnifying Transmitter](#). In the [Tesla's Magnifying Transmitter](#), the energy is continuously bounced back and forth between the earth and the reflecting capacitance at a rate timed to a natural rate of the earth.....

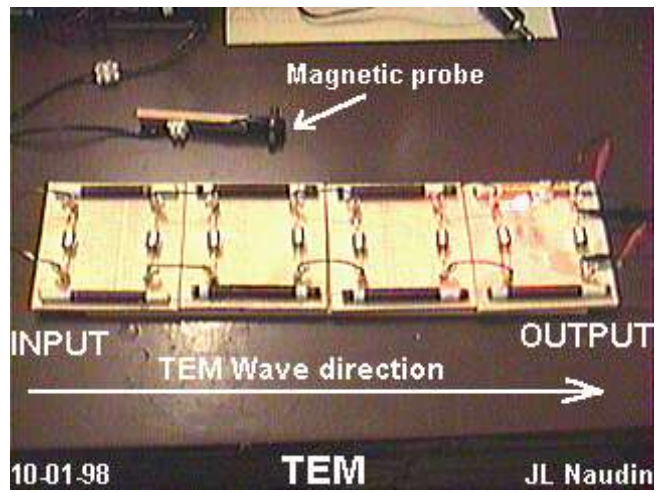


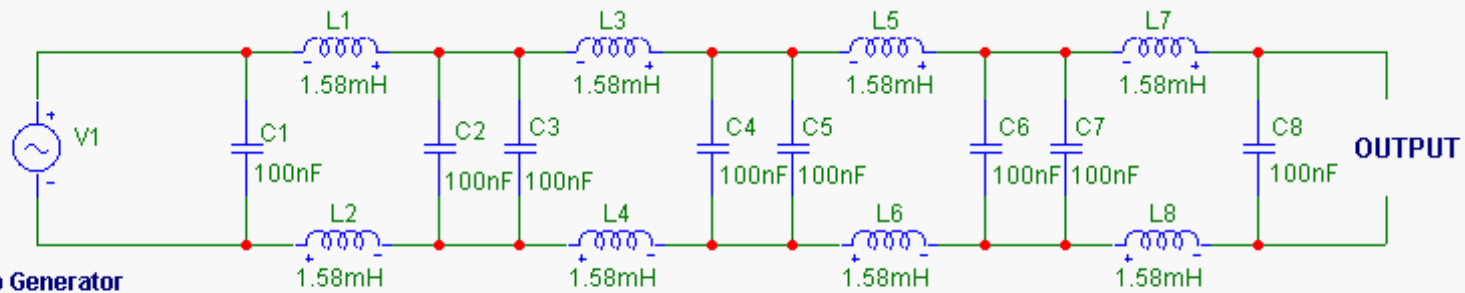
References

1. Borderland Labs; Transverse & Longitudinal Electricity [video], BSRF, Bayside, California, 1988.
2. Borderland Labs; Tesla's Longitudinal Electricity [video], BSRF, Bayside, California, 1988.

TEST N°1) The TEM Transmission Line:

The TEM (Transverse ElectroMagnetic) line is the analog simulation of transverse EM waves propagation in space coming from two parallel wires, this is the *conventional flow* of EM radiation.

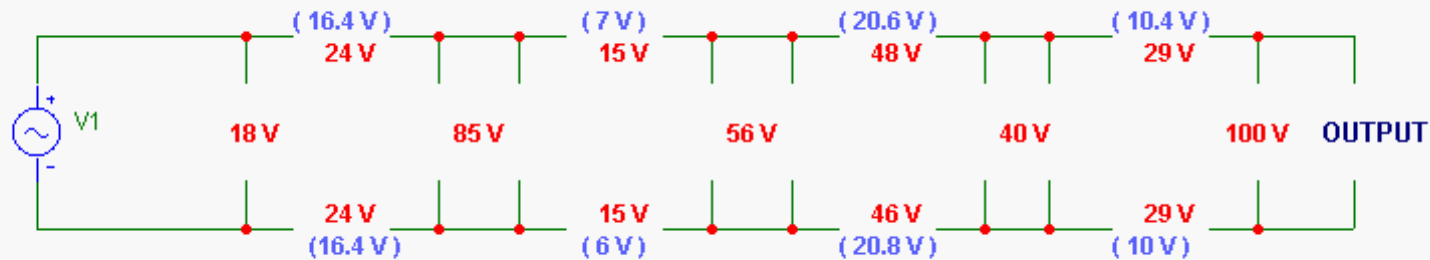




Audio Generator
 with a 200W Power BF Amplifier
 DC power supply 12V at 2.80A (power consumption)

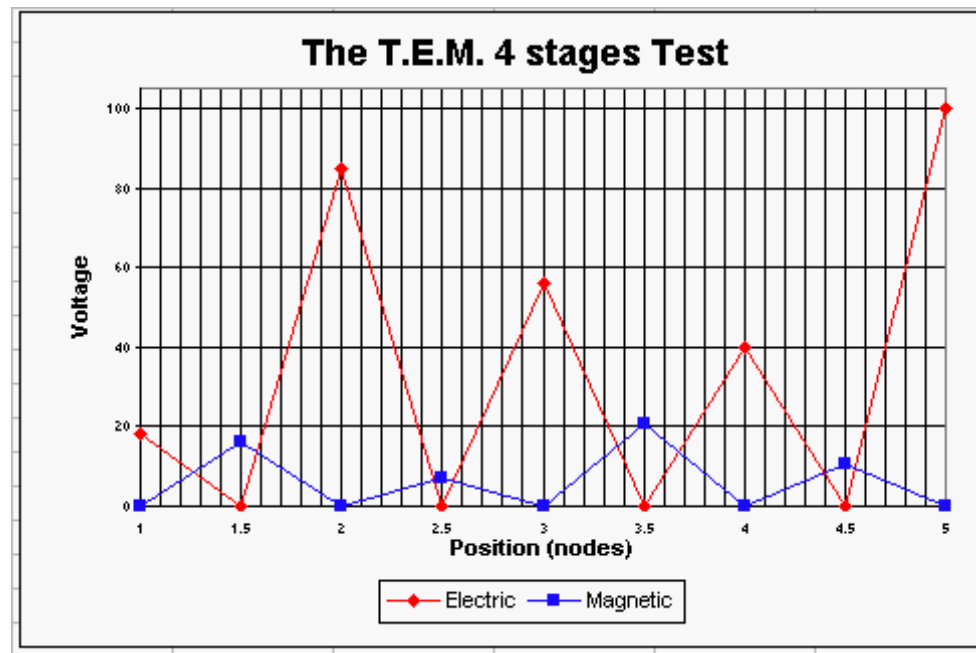
The T.E.M. transmission structure (4 stages)
 by JL Naudin 10-01-98 Email: JNaudin509@aol.com

Primary resonance $F_0 = 5.882$ kHz

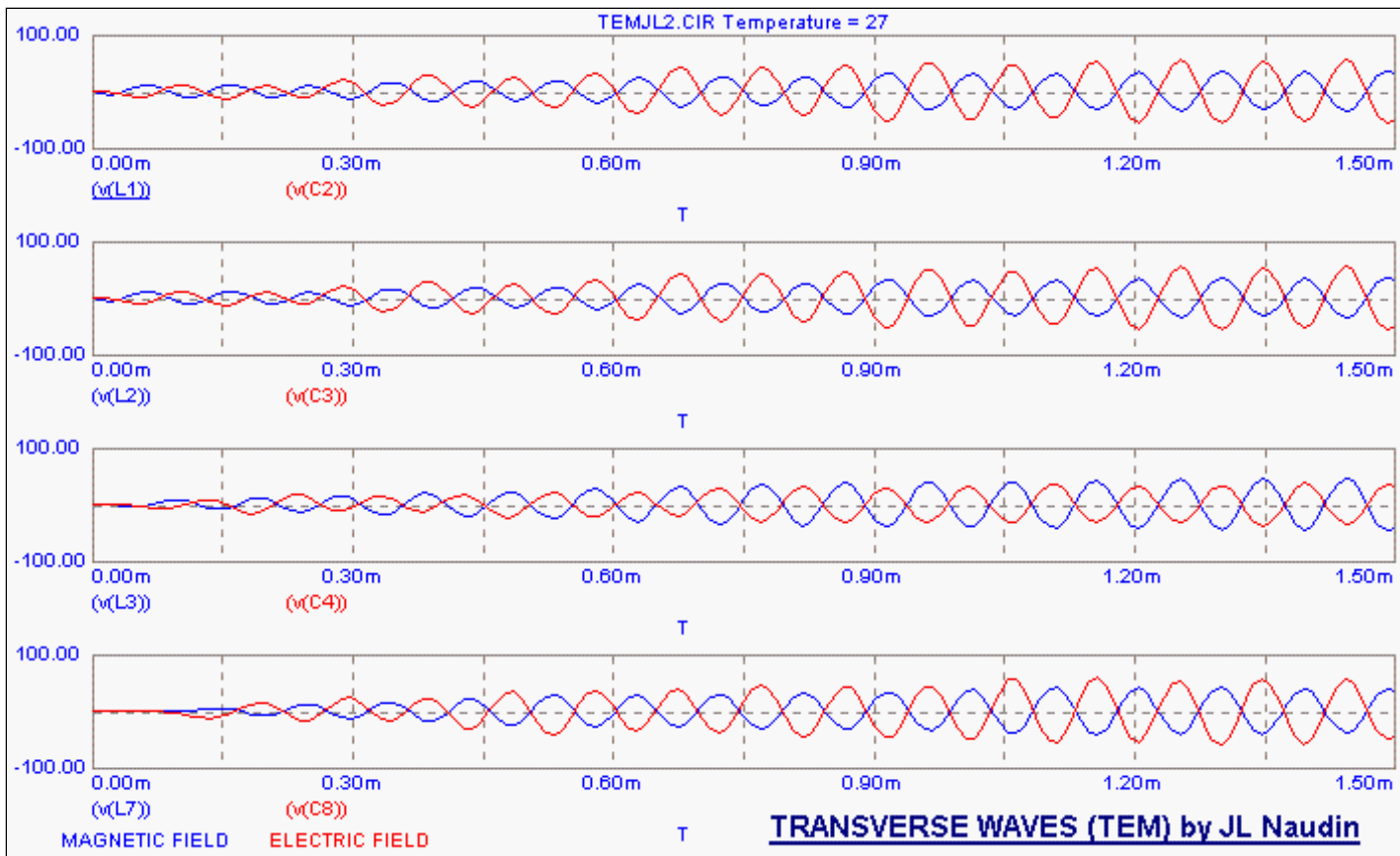


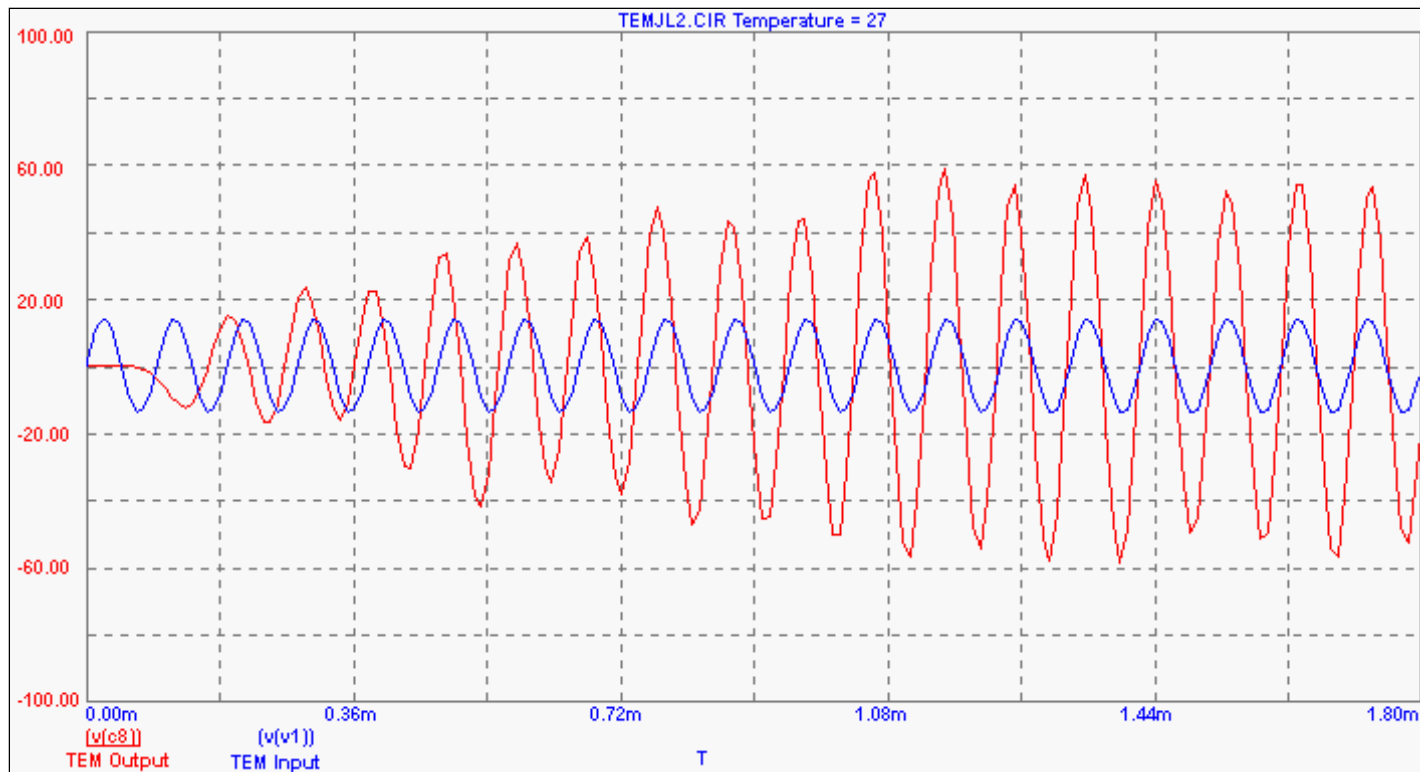
The measurement has been conducted at $F_0 = 5.882$ kHz
 Voltage values indicated are 0-peak

Red value = Voltage measured across the component
 Blue value = Voltage induced across an external coil probe



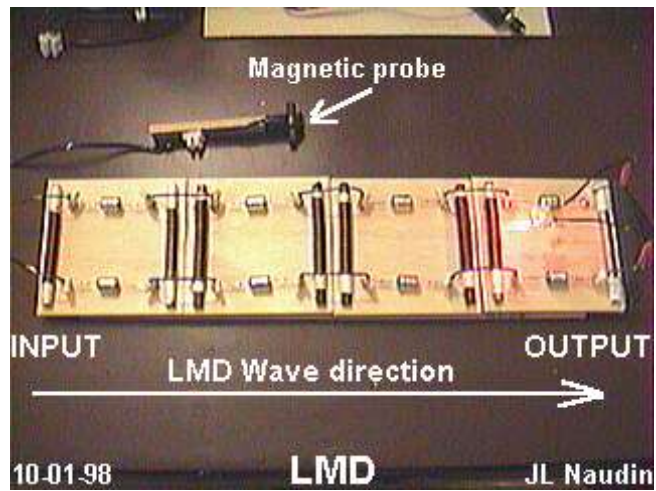
You may notice that the Magnetic energy is in Space OPPOSITION with the Dielectric energy

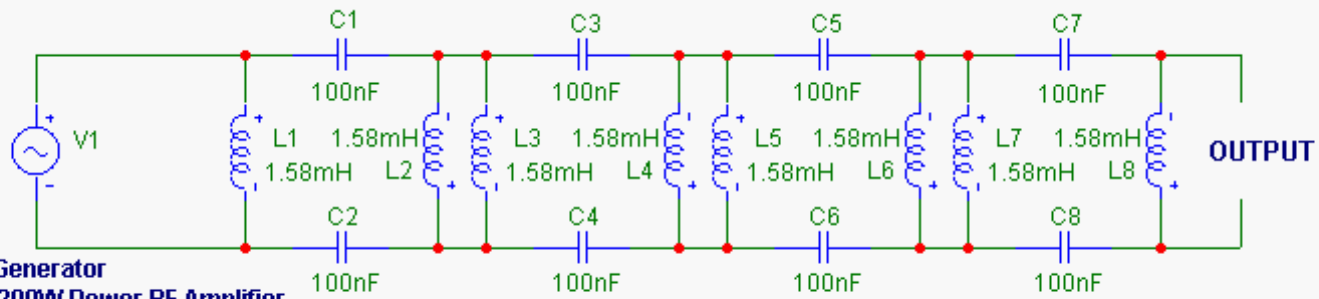




TEST N°2) LMD Transmission Line:

The LMD (Longitudinal Magneto-Dielectric) line is the analog simulation of longitudinal EM waves propagation in space coming from two parallel wires, this is the *unconventional flow* of the EM radiation.

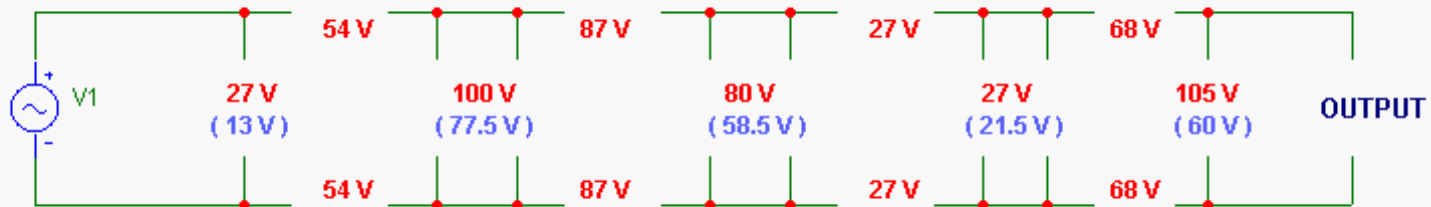




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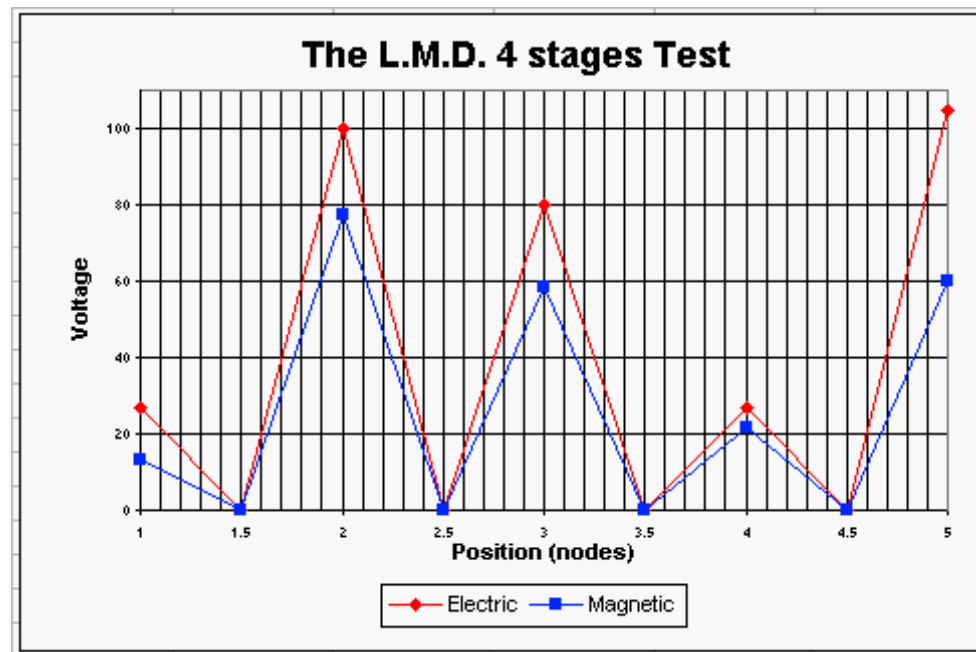
The L.M.D. transmission structure (4 stages)
 by JL Naudin 10-01-98 Email: JNaudin509@aol.com

Resonance frequency $F_0=14.705$ kHz

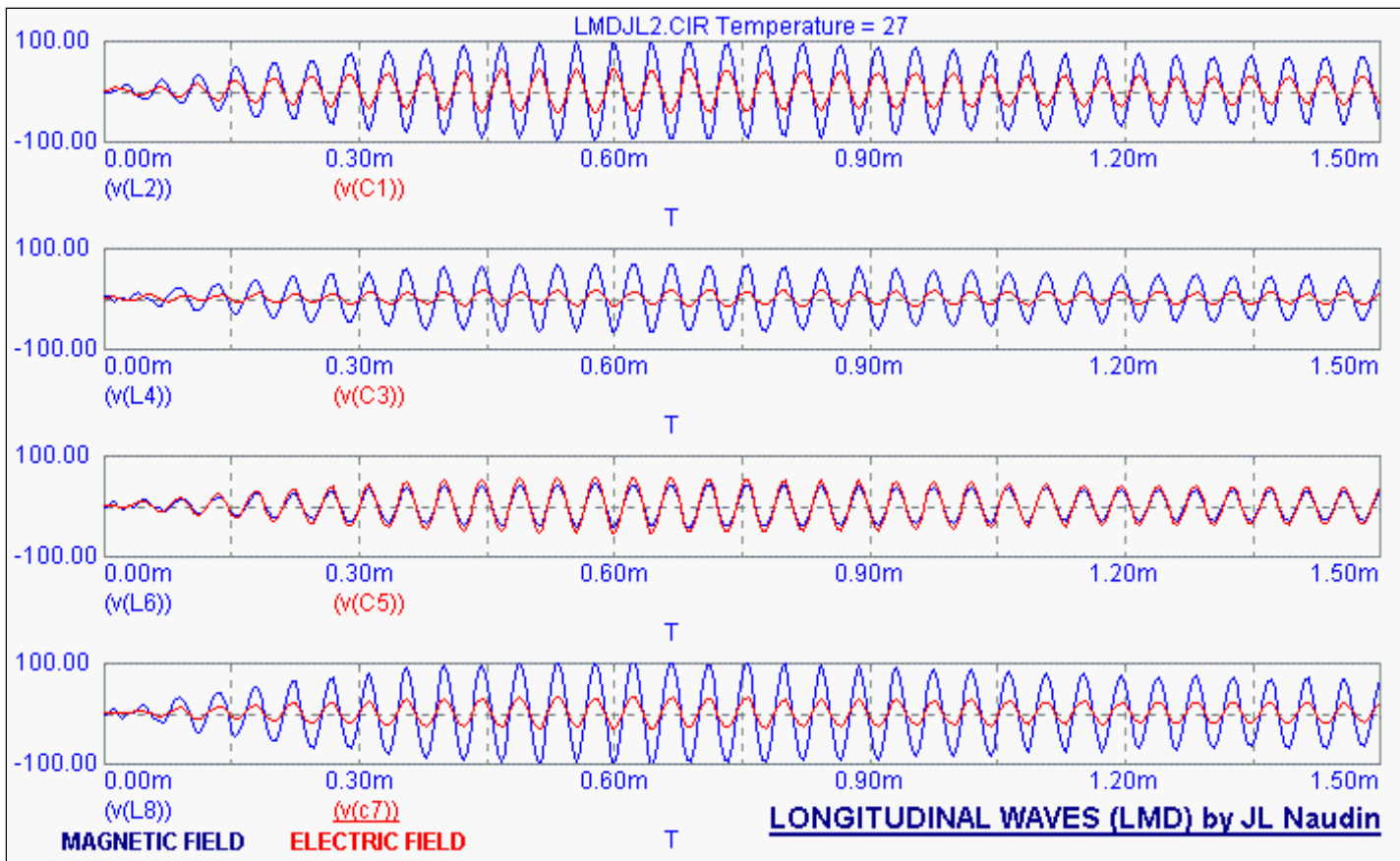


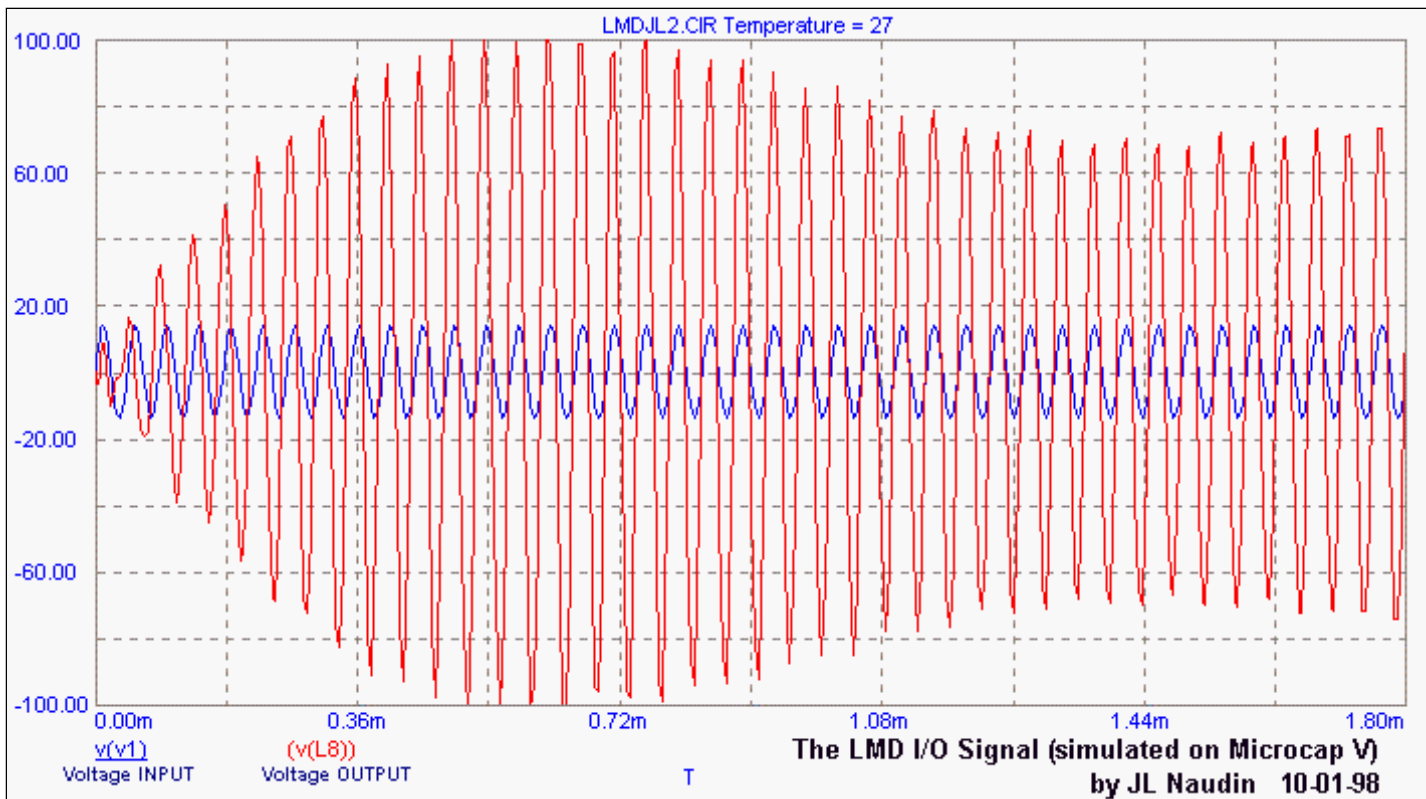
The measurement has been conducted at $F_0= 14.705$ kHz
 Voltage values indicated are 0-peak

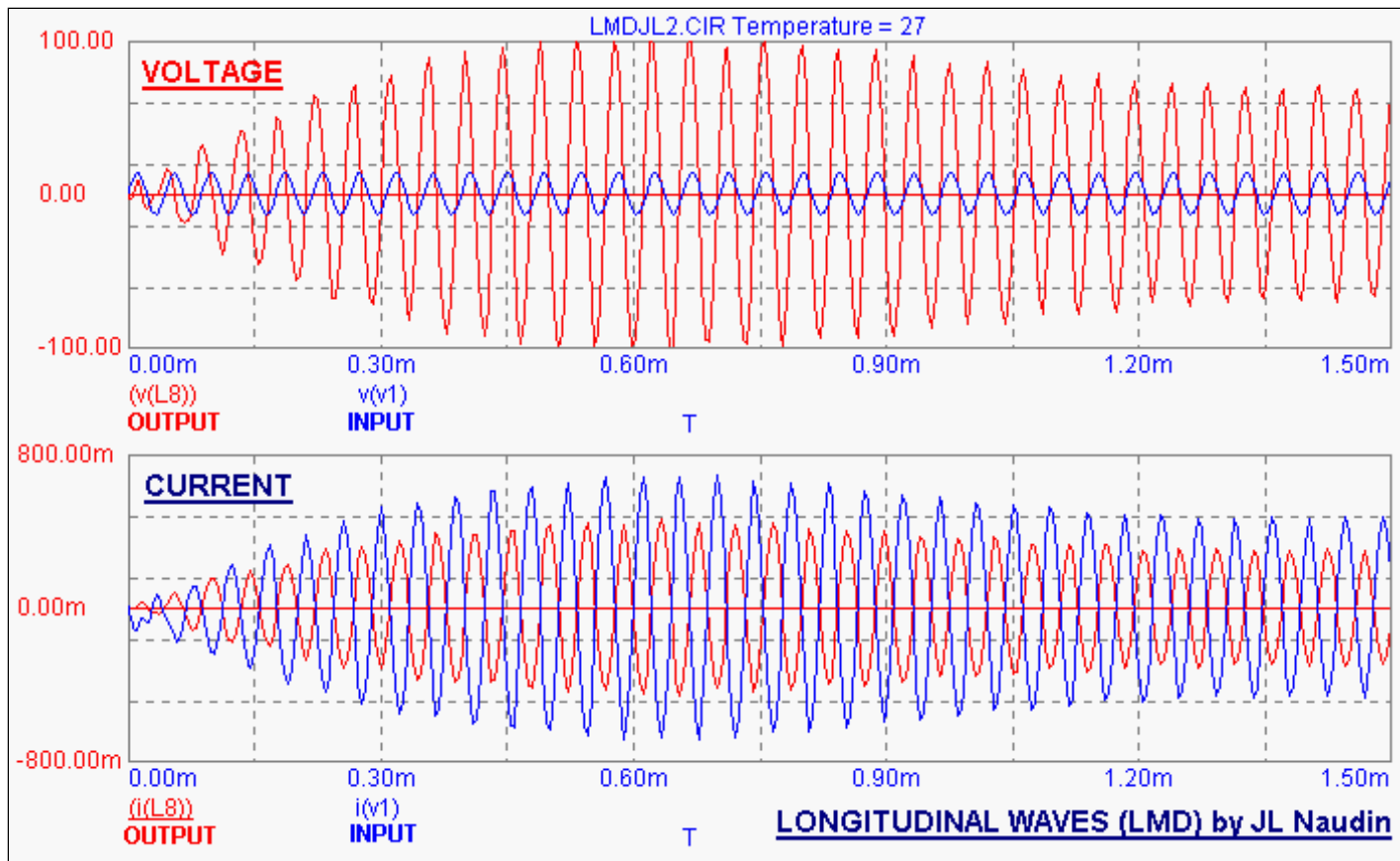
Red value = Voltage measured across the component
 Blue values = Voltage induced across an external coil probe

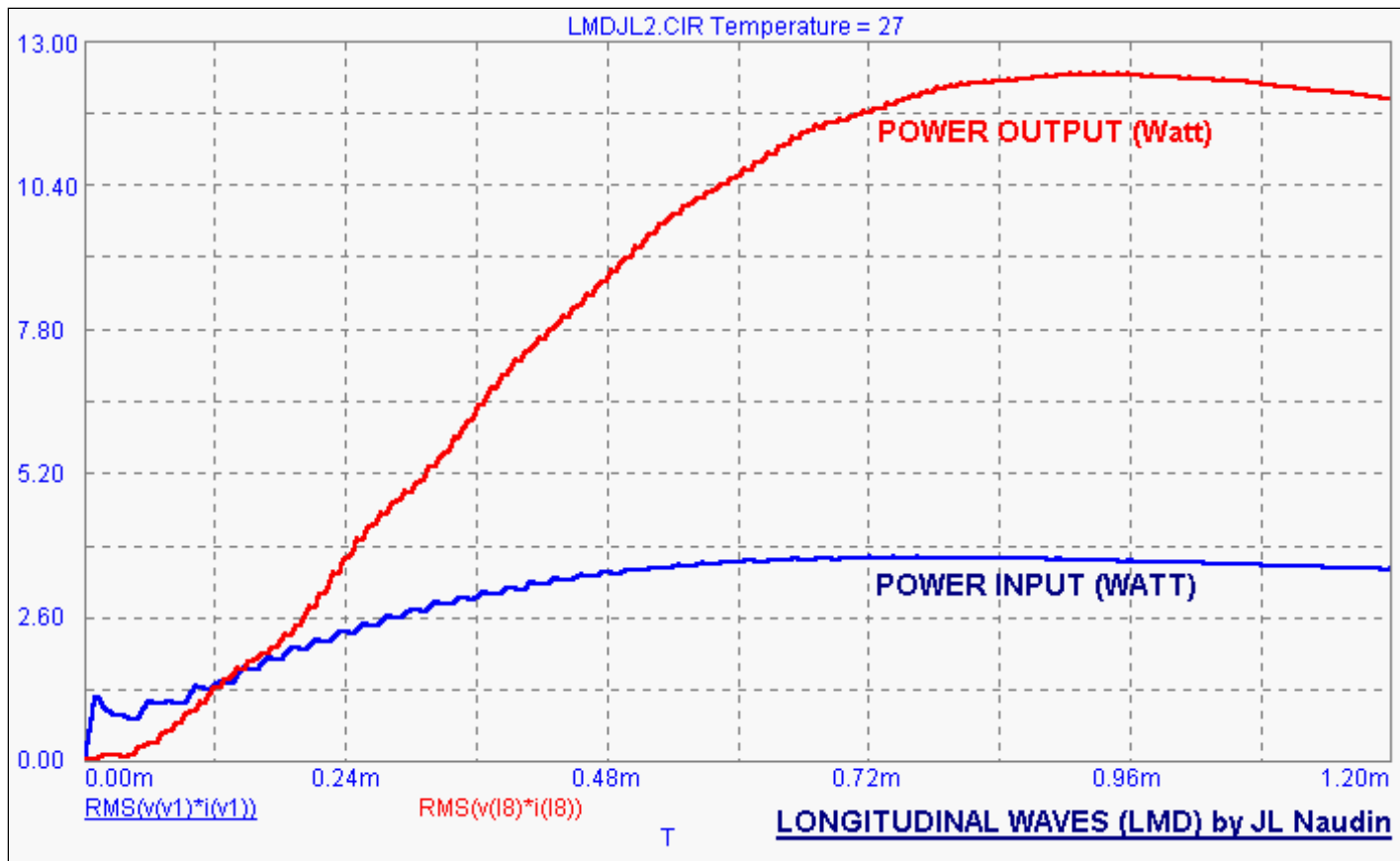


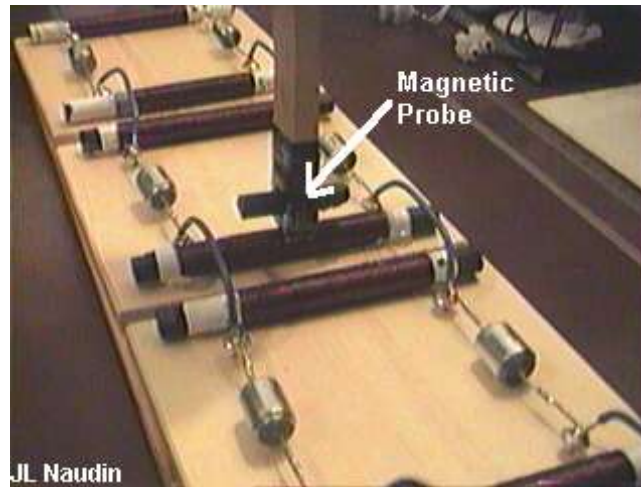
You may notice that the Magnetic energy is in Space CONJUNCTION with the Dielectric energy











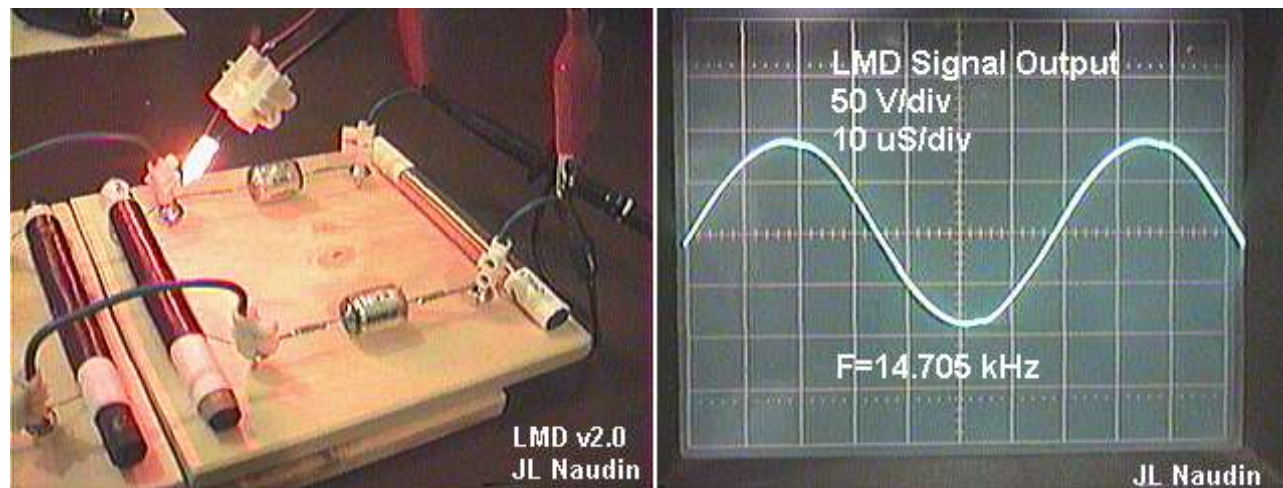
The method used for measuring the magnetic induction

Additional notes :

Each coil has been checked (with an LC oscillator circuit) so as to obtain the same inductance ($L=1.58$ mH).

Coils specs (L1 to L8) : about 150 turns ($l=85$ mm) of 4/10 mm on a ferrite rod ($l=120$ mm, 9 mm diam)

All voltages measurements have been done with an oscilloscope.



Some interesting book references:

1. Introduction to Dielectric & Magnetic Discharges in Electrical Windings, B.S.R.A. No TE-2, 1982
2. Electric Discharges, Waves, and Impulses. Chapter II, by Charles P. Steinmetz, McGraw Hill, N.Y. 1914, 2nd Ed.
3. Symbolic Representation of the Generalized Electric Wave, by Eric Dollard, B.S.R.A. No TE-4, 1985.
4. Symbolic Representation of Alternating Electric Waves, by Eric Dollard, B.S.R.A. No TE-3, 1985.
5. Theory and Calculation of Alternating Current Phenomena, Chpt.V, by C.P. Steinmetz, McGraw Hill N.Y. 1900, Third Edition
6. The Imaginary of Algebra, pages 33-35, by Alex McFarlane, American Association for the Advancement of Science, Vol XLI (1891-1894)
7. The Principles of the Algebra of Physics, A.McFarlane, American Association for the Advancement of Science, Vol XL (1891-1894) page 77.
8. Condensed Intro to Tesla Transformers, by Eric Dollard, B.S.R.A. 1986.
9. Theory of Wireless Power, By Eric Dollard, B.S.R.A. 1986.
10. Electromagnetic Theory, Oliver Heavyside, Chelsea Press.
11. Theory and Calculation of Transient Waves and Electric Oscillations, "Transients in Time & Space." C.P. Steinmetz, McGraw Hill, 1910 Third Edition.
12. Impedance, Angular Velocities & Frequencies of Oscillating Currents, by A.E. Kennelly, Institute of Radio Engineers, Nov. 3, 1913.
13. Vector Power in A.C. Circuits, A.E. Kennelly, Proc. A.I.E.E., June 29, 1910.

 Email : JNaudin509@aol.com

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