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May 20, 2010

Institute for Biodiagnostics

National Research Council Canada

For: Charlie Deng

IBD-NRC

Technical report 008-VB-002

On 8.22 MHz dual breast coil

Vyacheslav Volotovskyy and Boguslaw Tomanek

This technical report includes:

- description of the coil (page 2)
- schematics of the coil (Fig. 1)
- photos of the coil (Fig. 2-5)

The dual breast coil consists of two decoupled quadrature saddle volume coils of 130 mm inner diameter and 80 mm length which are made of 1/8” copper pipe. These two coils are positioned 155 mm center-to center and may be activated separately or work in a dual mode. Resonator Q is about 130. Coils are permanently matched and tuned to 8.22 MHz. There is a removable soft rubber cover on the top of the coil. A permanent slotted shield on the assembly bottom is designed to reduce a tuning frequency shift in a magnet environment. The coil assembly is 50 cm long, 40 cm wide and 11 cm high (without rubber cover). Removable porous rubber covering is attached to the coil to conveniently accommodate the patient.

There are totally 5 control lines: Bias Bilateral (white wire), Bias Right (blue wire), Bias Left (green wire), Decouple Right (red wire), Decouple Left (orange wire). The states of the control lines are presented in the following table.

Mode	Bias Bilateral	Bias Right	Bias Left	Decouple Right	Decouple Left
Dual	high	low	low	low	low
Right	low	high	low	low	high
Left	low	low	high	high	low



Fig.2. Picture of the breast coil.

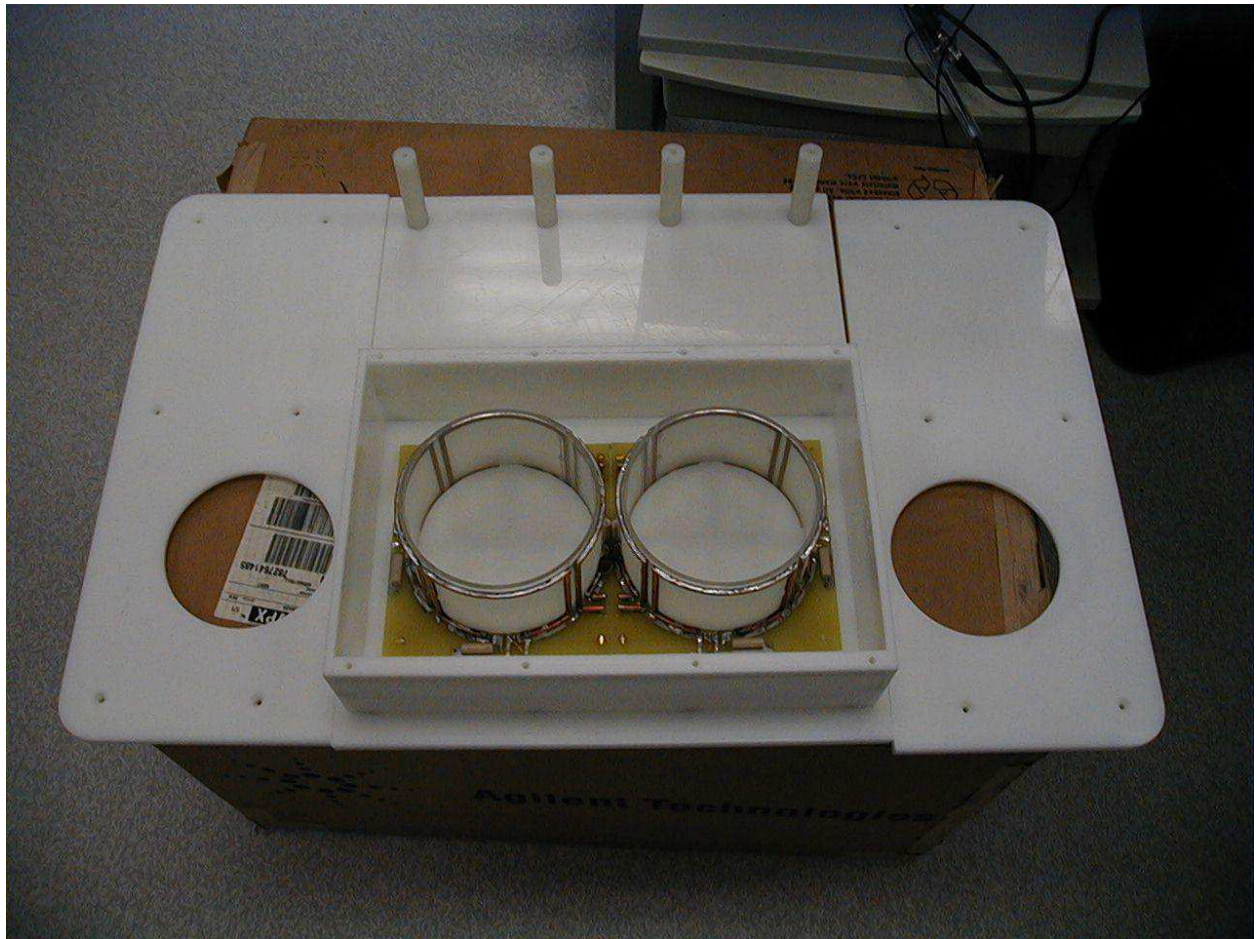


Fig.3. Picture of the two quadrature saddle coils.



Fig.4. Picture of the plastic cover.

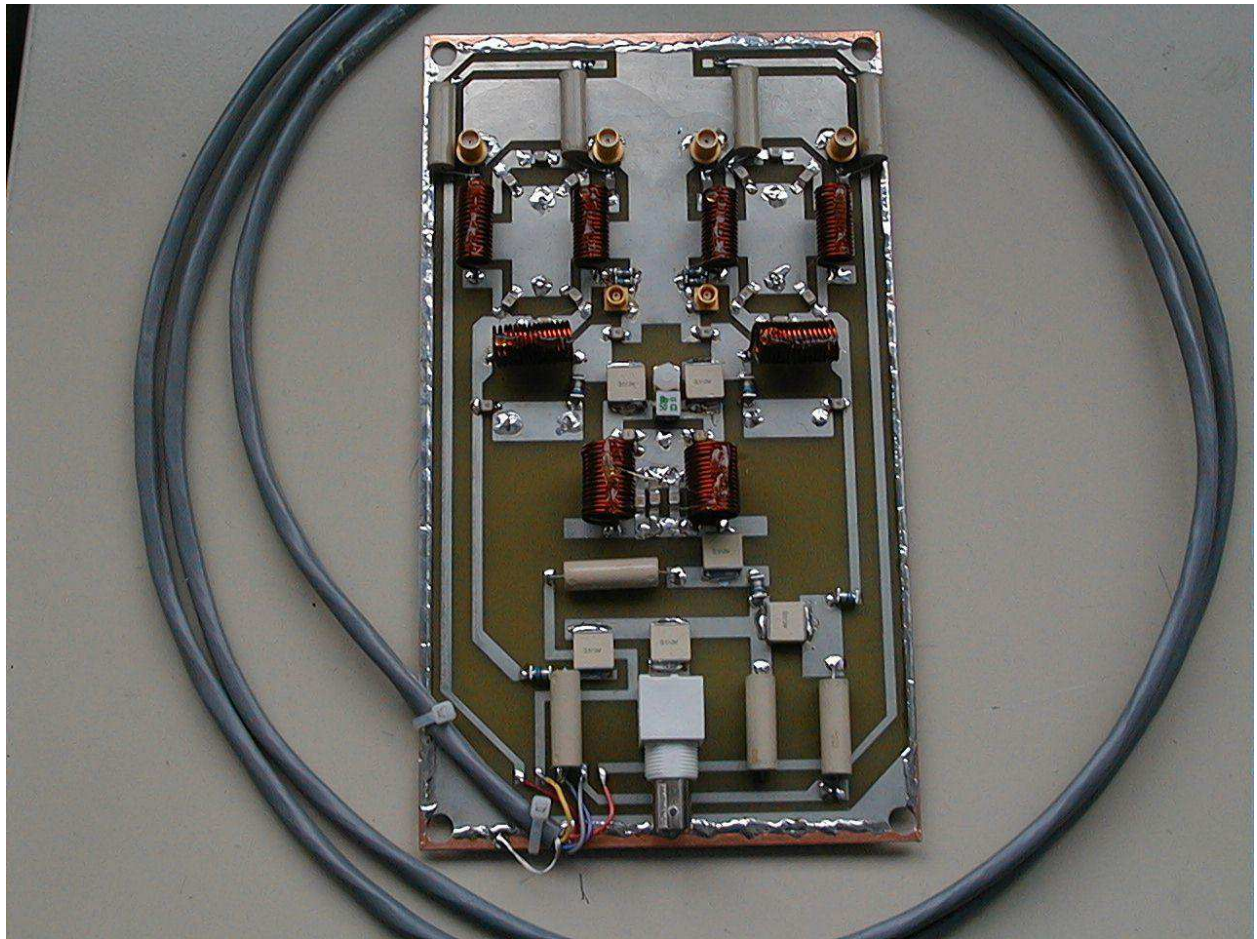


Fig.5. Picture of the coil-console interface PSB.