Comparison of BRAINMASTER DISCOVERY amplifier to NeuroPulse NPQ amplifier

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Platform naming:

Abbreviation	Amp used	Recording software	Import or SaveAs (Coll Hdwr – Coll Ref)
NPQNG	NeuroPulse NPQ	Neuroguide	n/a
DiscNG	BMr Discovery	Neuroguide	n/a
DiscDisc	BMr Discovery	BMr Discovery	Imported via EDF option (Discovery – LE)

Subject Information:

Subject is a 46 yr old male, normal functioning adult with no mental health diagnosis & no known head injury. This subject has had several previous QEEGs and has fairly known patterns. Rarely, if ever, are there any coherence issues in eyes closed; however in eyes open, frequently a moderate amount front/back hypercoherence will be seen. The Q data from the Neuropulse NPQ platform showed what would be expected for this subject. However, there is a slight elevation in slow waves at T4 which is new for this subject. Checking with the Atlantis z-score training sofware (twice) confirms this elevation mostly in eyes closed in the alpha band. And again, the Neuropulse NPQ platform Q data matches accurately with what was found in the z-score data from the Atlantis z-score training platform. Therefore, in this analysis the NPQNG files are looked at as being a correct and stable data set to compare to – in other words, it would be expected that the DiscNG & DiscDisc files would be very similar to the NPQNG files.
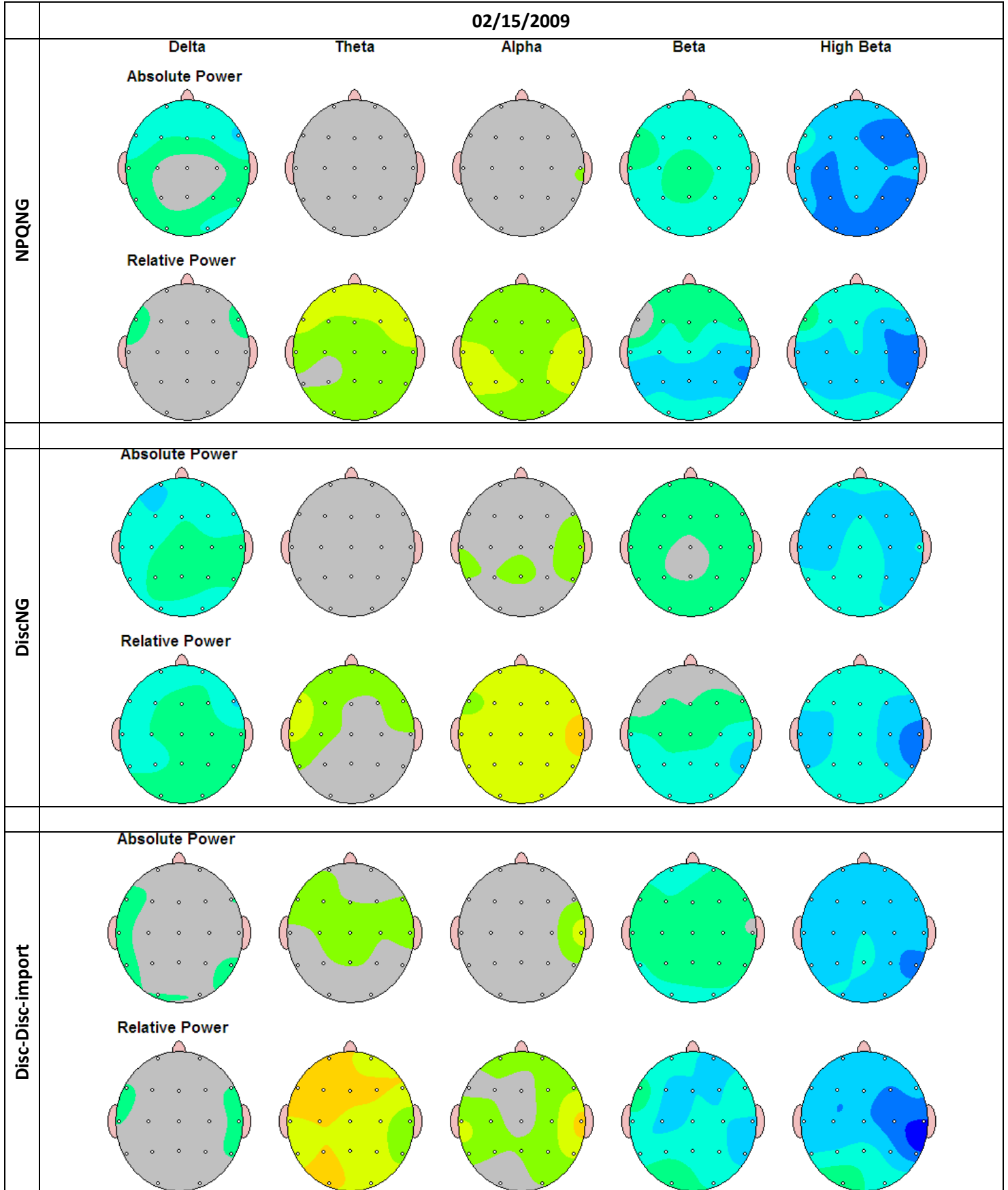
Recording information:

Data from both eyes closed and eyes open conditions were collected to provide as much comparison data as possible. The Electro-Cap with tin electrodes & tin earclips were used. For the recordings using the Discovery amp the ears were physically linked with a jumper between the ear-drops and the ear-leads in the cap. For all recordings, impedence was manually measured from each site to linked ears; and all values = 5kohm or less. The DC-offsets were all in a range from 5 to 23 millivolts. 3-minute recordings each were taken of eyes closed data in the following order: NPQNG, DiscNG, DiscDisc and then 3-minute recordings each were taken of eyes open data in the following order: NPQNG, DiscNG, DiscDisc. The subject was given a small 1-2 minute break in between recording sets. The default sampling rates of 128sps was used for the Neuropulse amp; and 256sps for the Discovery amp.

Impressions:

The Discovery amplifier clearly appears to provide QEEG data consitent with the known platform of the NeuroPulse NPQ. The most across-the-board consistent comparisons appear to be in the Laplacian Power data. However the Linked-Ears data, including coherence & phase is very similar & consistent as well; with the DiscNG & DiscDisc data being the most consistent, which would be expected. It does seem that it's possible that the Neuroguide acquisition software may be slightly more sensitive to Coherence measures than the Discovery acquisition software. And it appears that the Discovery acquisition software may be slightly more sensitive to Phase measures than the Neuroguide acquisition software. But more comparison testing would be necessary to confirm if such is the case.
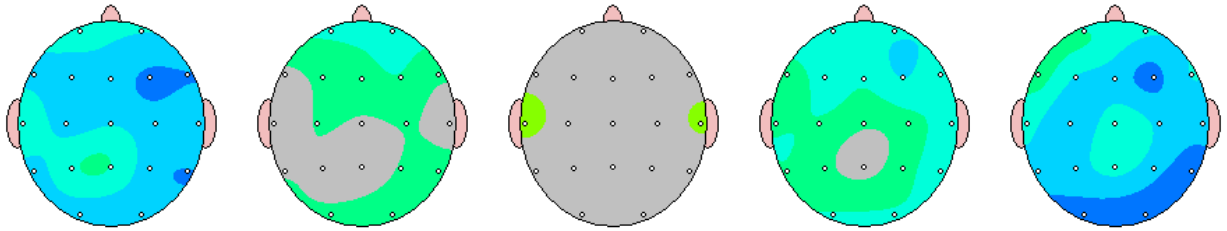
Eyes CLOSED – LINKED Ears – Power

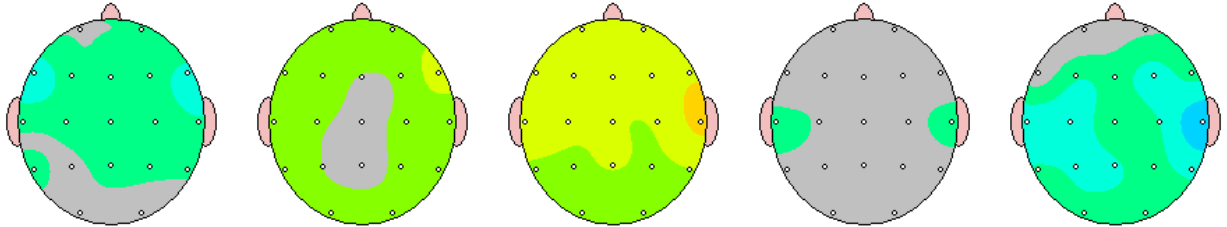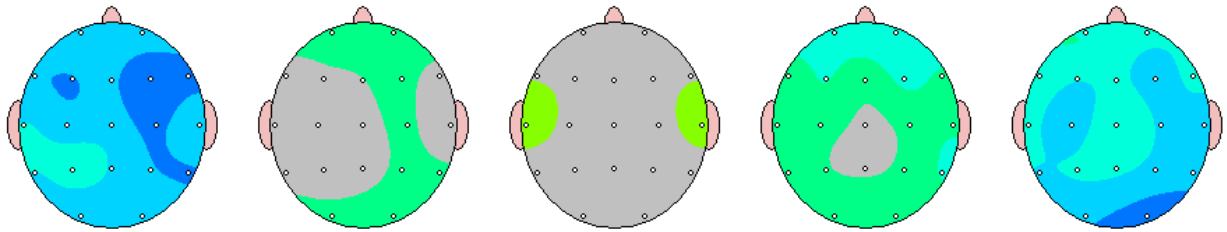|	02/15/2009				
	Delta	Theta	Alpha	Beta	High Beta

NPQNG

Absolute Power

Relative Power

DiscNG

Absolute Power

Relative Power

Disc-Disc-import

Absolute Power

Relative Power

Eyes OPEN – LINKED Ears – Power

	02/15/2009

NPQNG

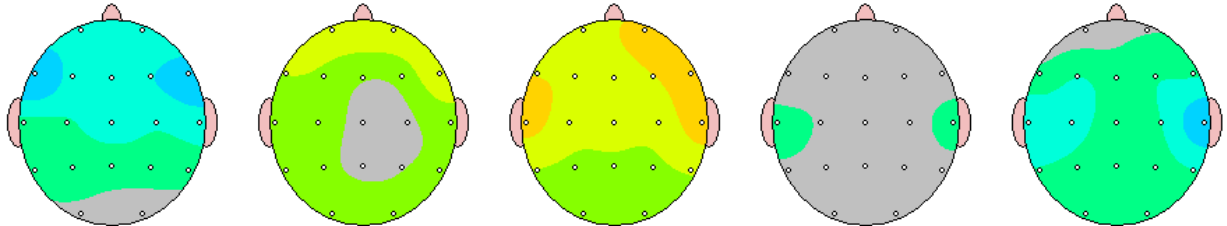Absolute Power

Relative Power
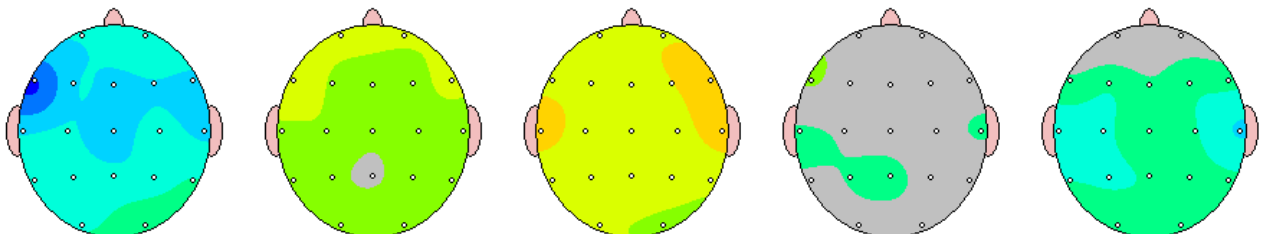
DiscNG

Absolute Power

Relative Power

Disc-Disc-import

Absolute Power
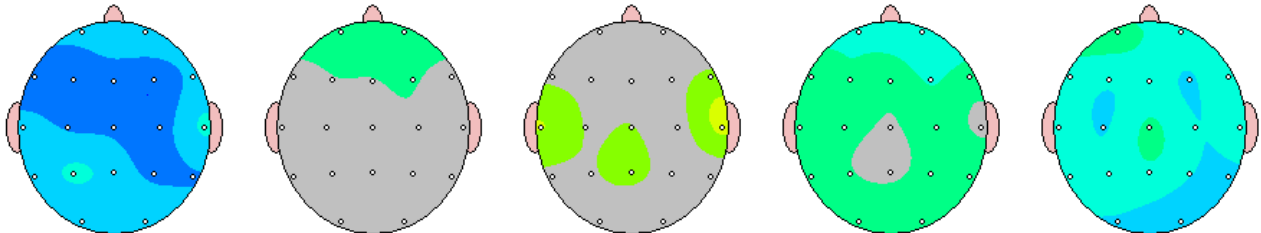
Relative Power

Eyes CLOSED – LINKED Ears – Coherence

	02/15/2009

NPQNG

Delta (1.0 - 4.0 Hz) Theta (4.0 - 8.0 Hz) Alpha (8.0 - 12.0 Hz) Beta (12.0 - 25.0 Hz)

High Beta (25.0 - 30.0 Hz) Beta 1 (12.0 - 15.0 Hz) Beta 2 (15.0 - 18.0 Hz) Beta 3 (18.0 - 25.0 Hz)

DiscNG

Delta (1.0 - 4.0 Hz) Theta (4.0 - 8.0 Hz) Alpha (8.0 - 12.0 Hz) Beta (12.0 - 25.0 Hz)

High Beta (25.0 - 30.0 Hz) Beta 1 (12.0 - 15.0 Hz) Beta 2 (15.0 - 18.0 Hz) Beta 3 (18.0 - 25.0 Hz)

Disc-Disc-import
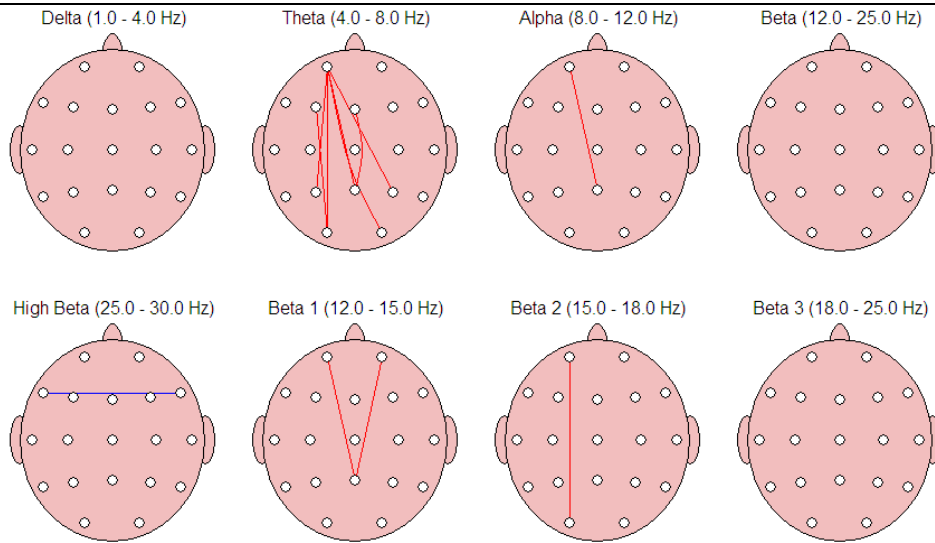
Delta (1.0 - 4.0 Hz) Theta (4.0 - 8.0 Hz) Alpha (8.0 - 12.0 Hz) Beta (12.0 - 25.0 Hz)

High Beta (25.0 - 30.0 Hz) Beta 1 (12.0 - 15.0 Hz) Beta 2 (15.0 - 18.0 Hz) Beta 3 (18.0 - 25.0 Hz)

Eyes OPEN – LINKED Ears – Coherence

	02/15/2009

NPQNG

Delta (1.0 - 4.0 Hz) Theta (4.0 - 8.0 Hz) Alpha (8.0 - 12.0 Hz) Beta (12.0 - 25.0 Hz)

High Beta (25.0 - 30.0 Hz) Beta 1 (12.0 - 15.0 Hz) Beta 2 (15.0 - 18.0 Hz) Beta 3 (18.0 - 25.0 Hz)

DiscNG

Delta (1.0 - 4.0 Hz) Theta (4.0 - 8.0 Hz) Alpha (8.0 - 12.0 Hz) Beta (12.0 - 25.0 Hz)

High Beta (25.0 - 30.0 Hz) Beta 1 (12.0 - 15.0 Hz) Beta 2 (15.0 - 18.0 Hz) Beta 3 (18.0 - 25.0 Hz)

Disc-Disc-import

Delta (1.0 - 4.0 Hz) Theta (4.0 - 8.0 Hz) Alpha (8.0 - 12.0 Hz) Beta (12.0 - 25.0 Hz)

High Beta (25.0 - 30.0 Hz) Beta 1 (12.0 - 15.0 Hz) Beta 2 (15.0 - 18.0 Hz) Beta 3 (18.0 - 25.0 Hz)
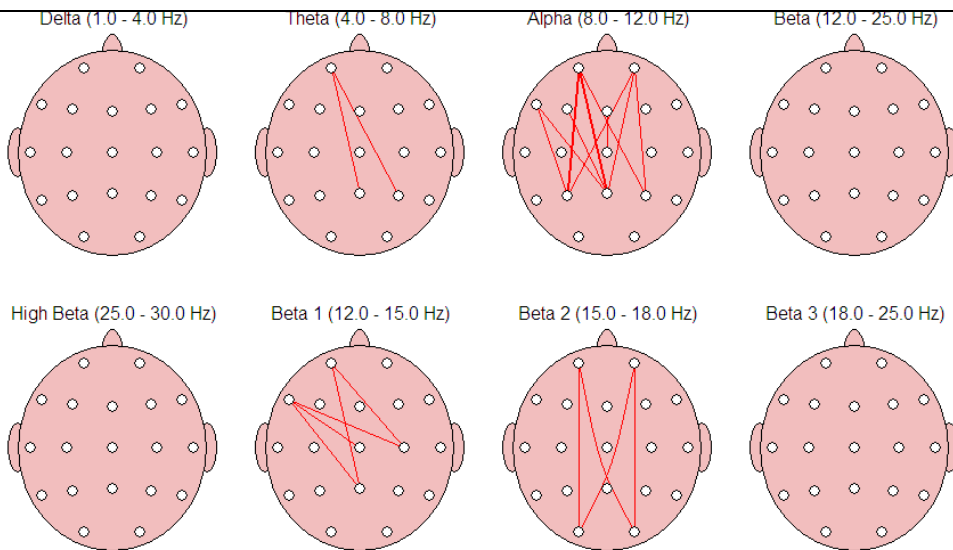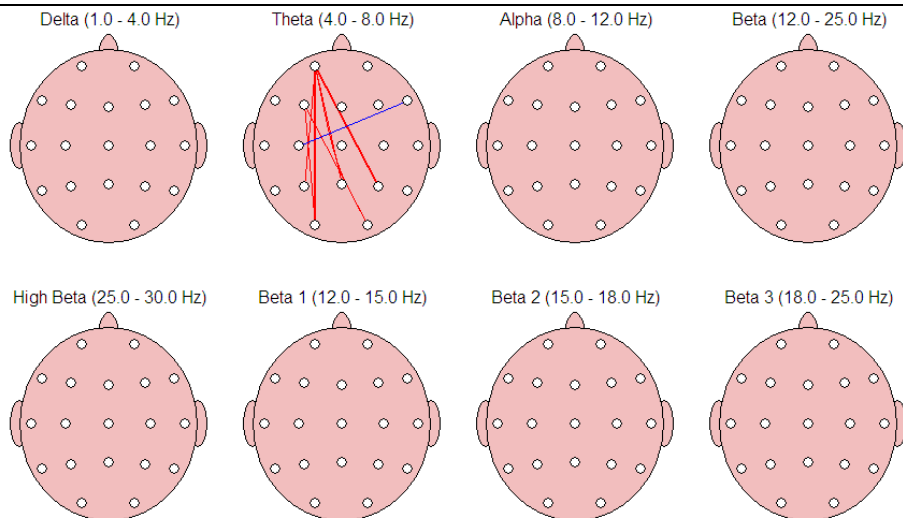
Eyes CLOSED – LINKED Ears – Phase
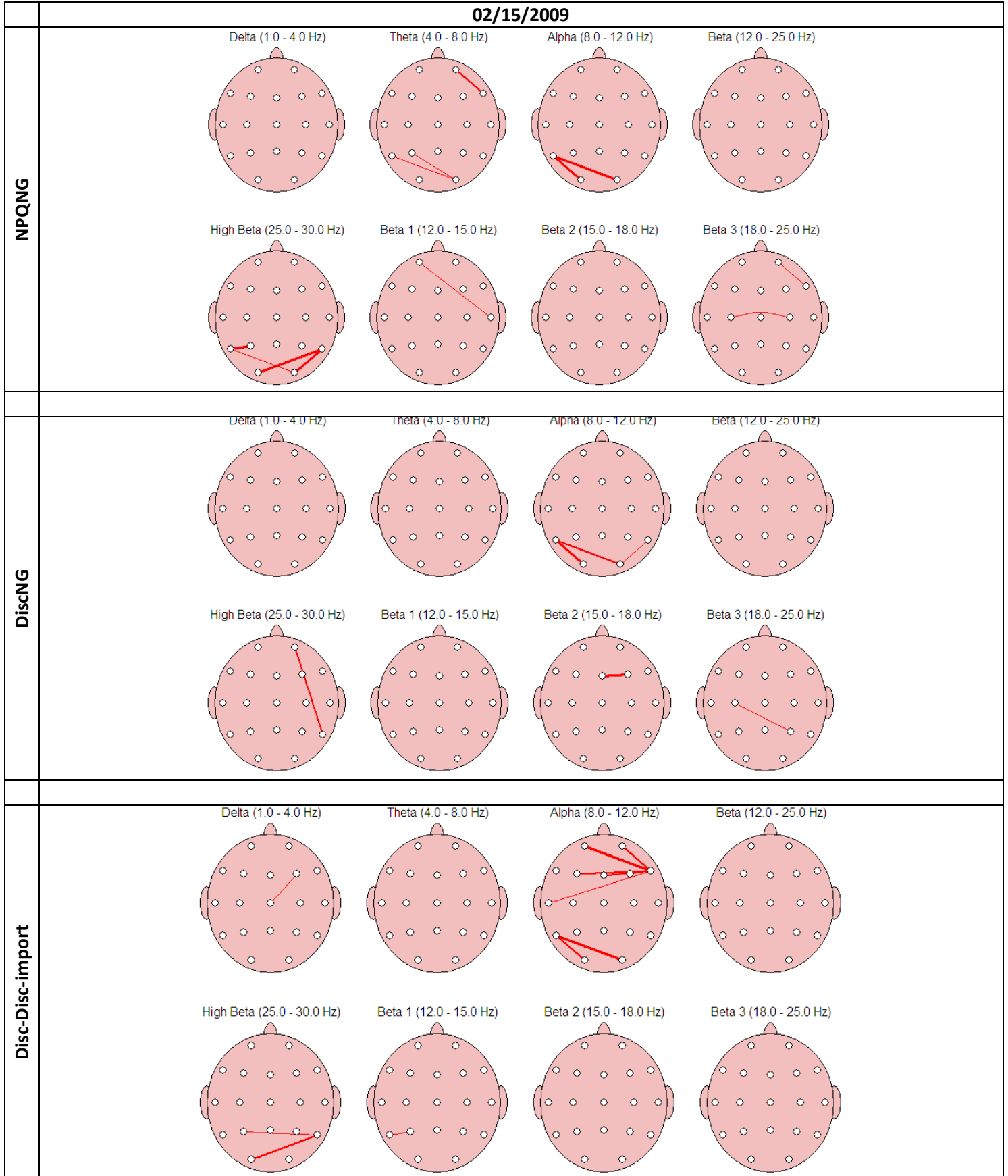
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NPQNG

Delta (1.0 - 4.0 Hz)	Theta (4.0 - 8.0 Hz)	Alpha (8.0 - 12.0 Hz)	Beta (12.0 - 25.0 Hz)

High Beta (25.0 - 30.0 Hz)	Beta 1 (12.0 - 15.0 Hz)	Beta 2 (15.0 - 18.0 Hz)	Beta 3 (18.0 - 25.0 Hz)

DiscNG

Delta (1.0 - 4.0 Hz)	Theta (4.0 - 8.0 Hz)	Alpha (8.0 - 12.0 Hz)	Beta (12.0 - 25.0 Hz)

High Beta (25.0 - 30.0 Hz)	Beta 1 (12.0 - 15.0 Hz)	Beta 2 (15.0 - 18.0 Hz)	Beta 3 (18.0 - 25.0 Hz)

Disc-Disc-import

Delta (1.0 - 4.0 Hz)	Theta (4.0 - 8.0 Hz)	Alpha (8.0 - 12.0 Hz)	Beta (12.0 - 25.0 Hz)

High Beta (25.0 - 30.0 Hz)	Beta 1 (12.0 - 15.0 Hz)	Beta 2 (15.0 - 18.0 Hz)	Beta 3 (18.0 - 25.0 Hz)

Eyes OPEN – LINKED Ears – Phase

02/15/2009

NPQNG

Delta (1.0 - 4.0 Hz)	Theta (4.0 - 8.0 Hz)	Alpha (8.0 - 12.0 Hz)	Beta (12.0 - 25.0 Hz)

High Beta (25.0 - 30.0 Hz)	Beta 1 (12.0 - 15.0 Hz)	Beta 2 (15.0 - 18.0 Hz)	Beta 3 (18.0 - 25.0 Hz)

DiscNG

Delta (1.0 - 4.0 Hz)	Theta (4.0 - 8.0 Hz)	Alpha (8.0 - 12.0 Hz)	Beta (12.0 - 25.0 Hz)

High Beta (25.0 - 30.0 Hz)	Beta 1 (12.0 - 15.0 Hz)	Beta 2 (15.0 - 18.0 Hz)	Beta 3 (18.0 - 25.0 Hz)

Disc-Disc-import

Delta (1.0 - 4.0 Hz)	Theta (4.0 - 8.0 Hz)	Alpha (8.0 - 12.0 Hz)	Beta (12.0 - 25.0 Hz)

High Beta (25.0 - 30.0 Hz)	Beta 1 (12.0 - 15.0 Hz)	Beta 2 (15.0 - 18.0 Hz)	Beta 3 (18.0 - 25.0 Hz)

Eyes CLOSED – LAPLACIAN – Power

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NPQNG

Absolute Power

Relative Power

DiscNG

Absolute Power

Relative Power

Disc-Disc-import

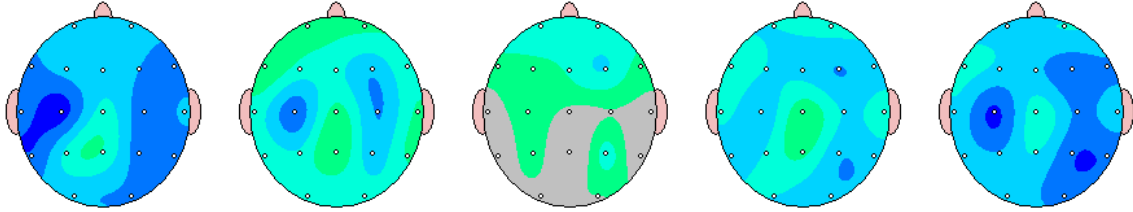Absolute Power

Relative Power

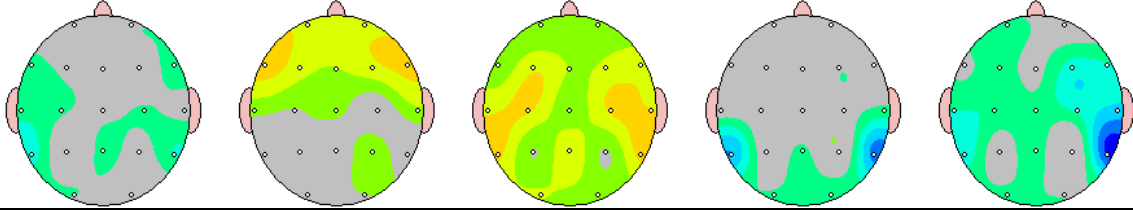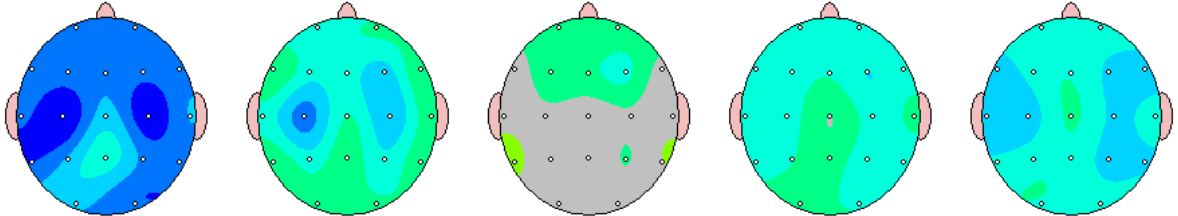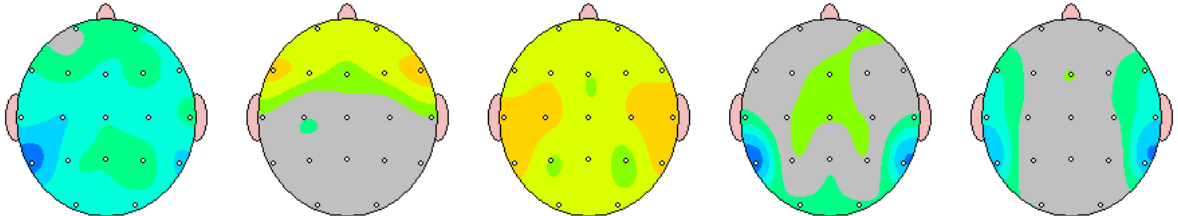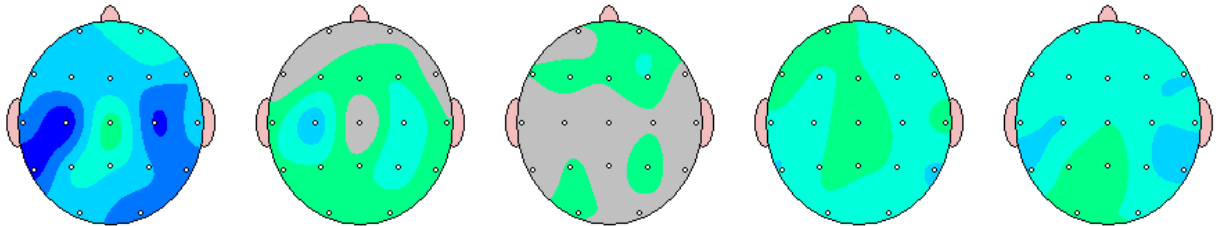# Eyes OPEN – LAPLACIAN – Power

02/15/2009

NPQNG

Absolute Power

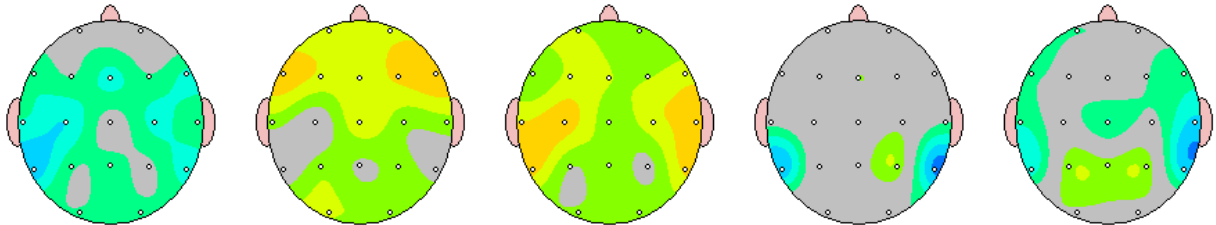

Relative Power

DiscNG

Absolute Power

Relative Power

Disc-Disc-import

Absolute Power

Relative Power