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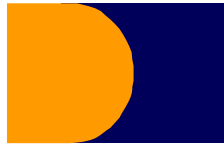
# Quantitative EEG and Tinnitus

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# Quantitative EEG and Tinnitus

Employment of noise generator & tinnitus-specific EEG signals

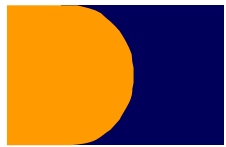
Presentation in Prag 2005

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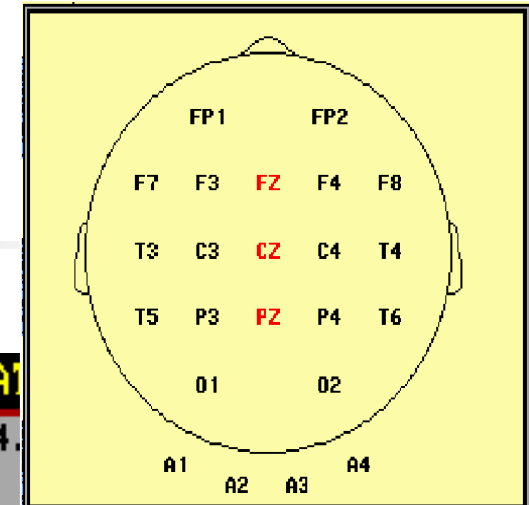
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Illustration: Raw – EEG 4 msec

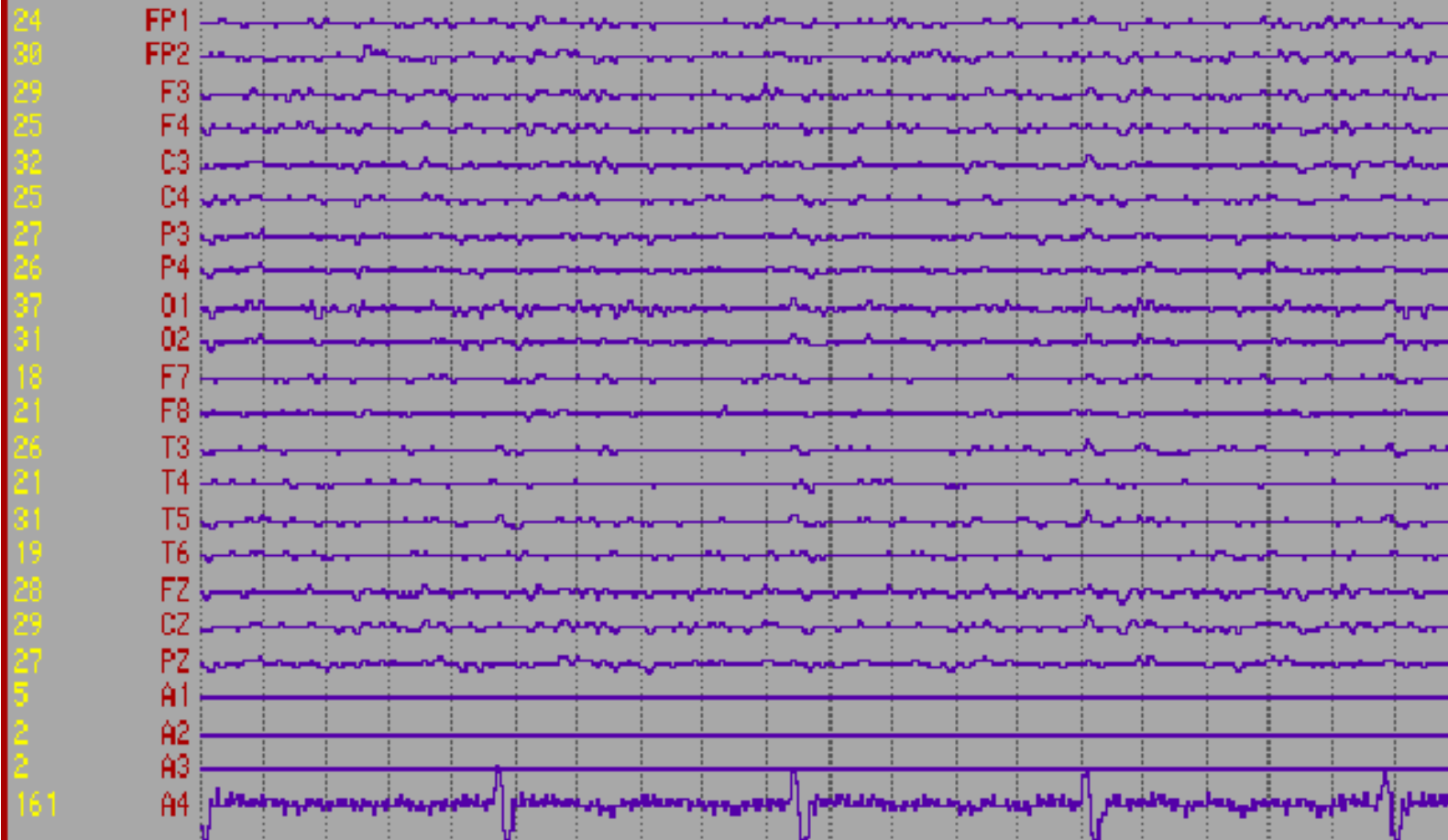
Eyes open

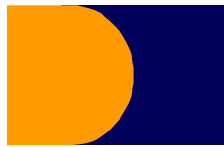


c:\vog2eo EPOCH: 3-4 / 60 GAIN:32K SR:128 STA

MONTAGE: ref\_aux SEC: 4.

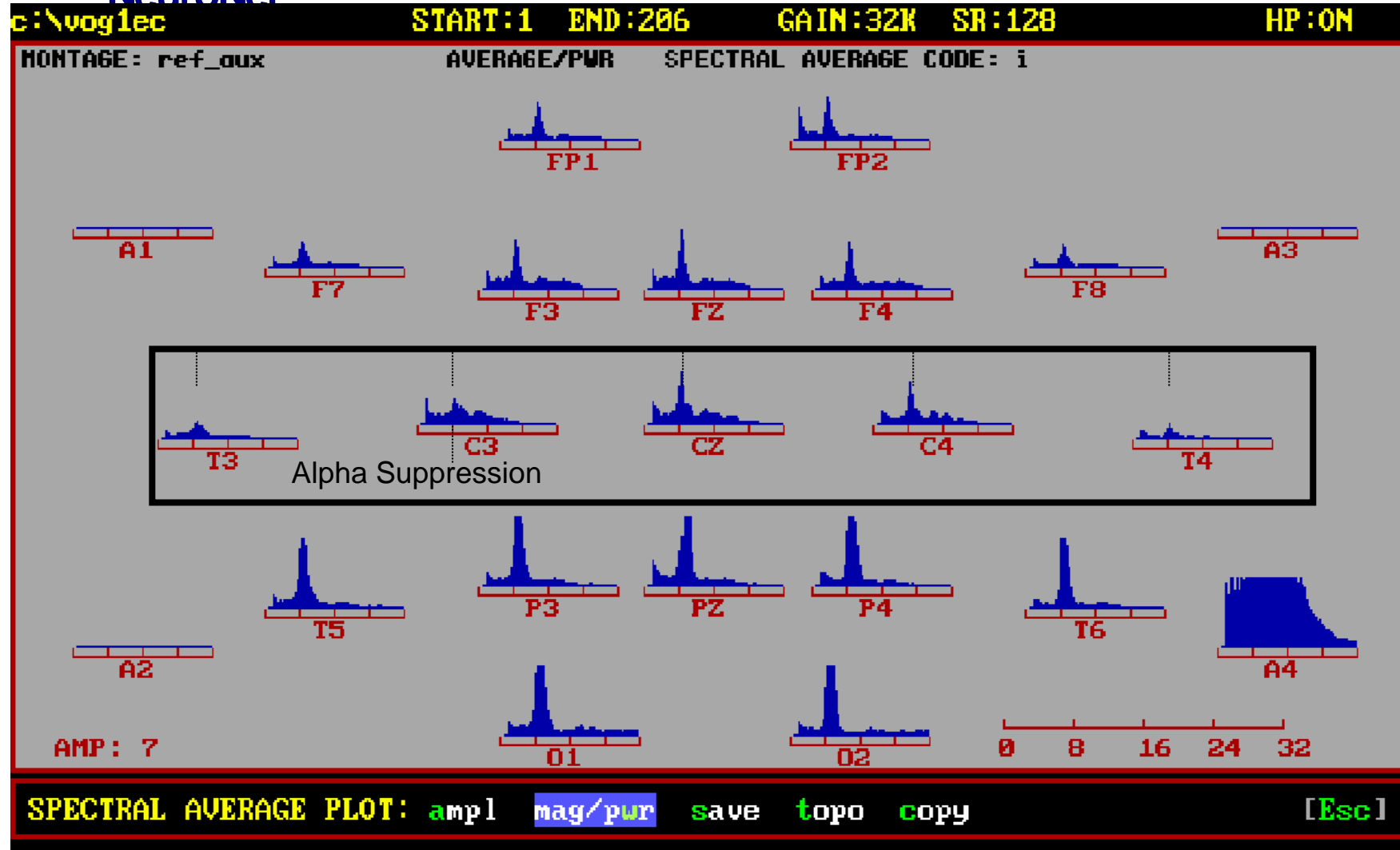
MAXUV

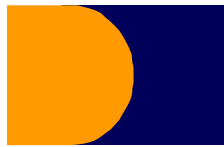




# Illustration: Powerspektrum

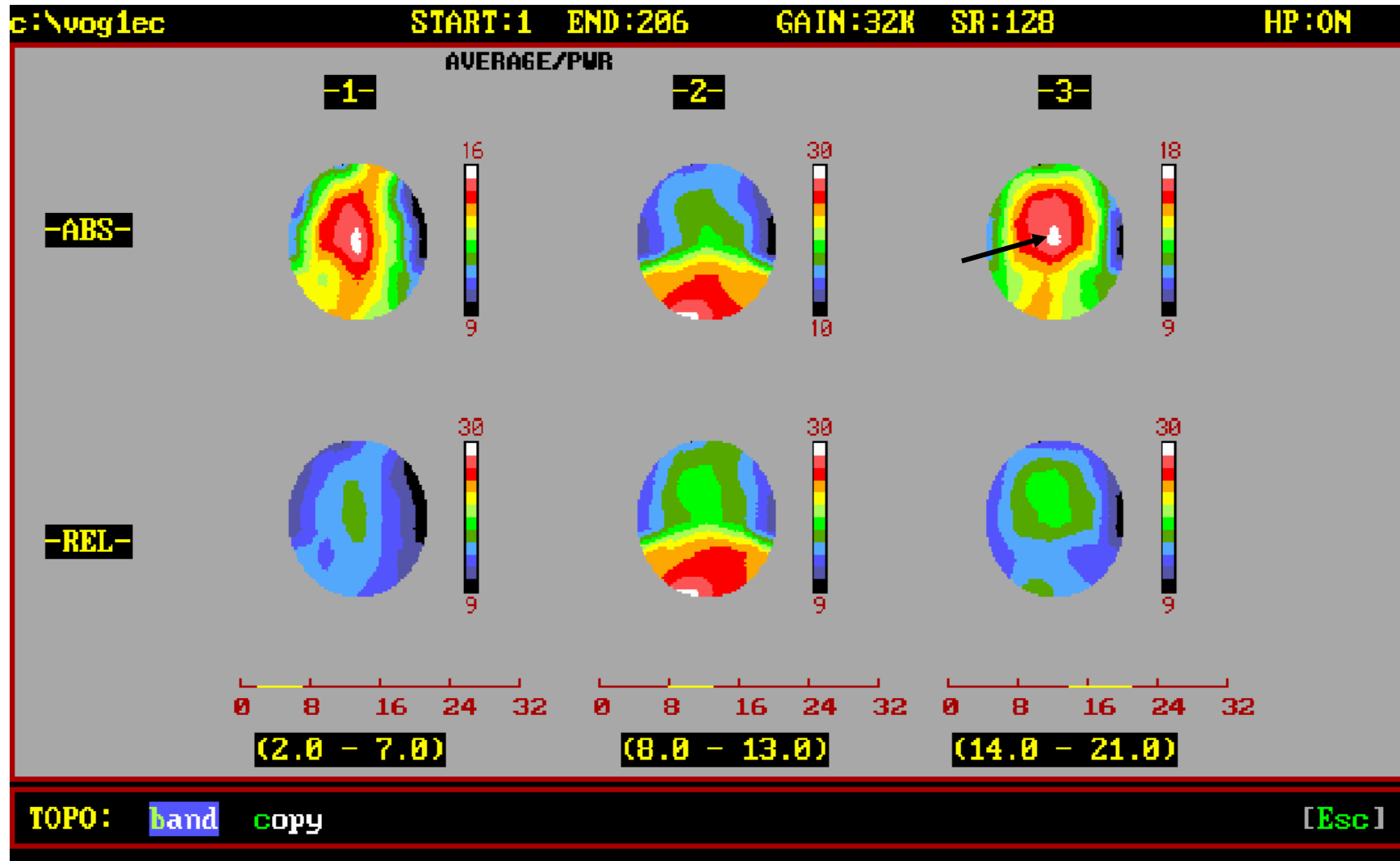
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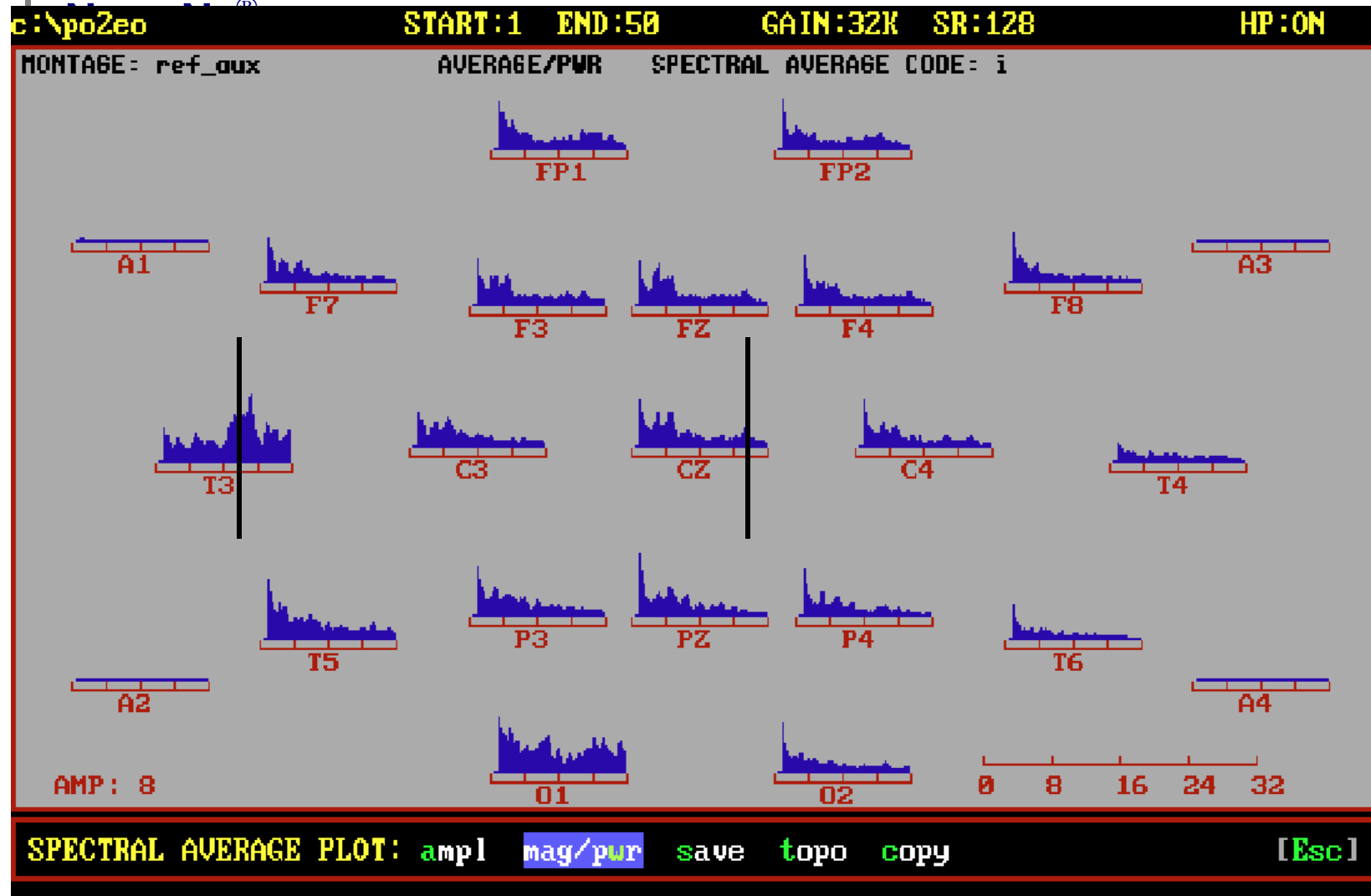


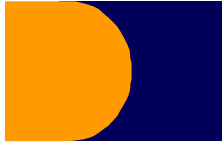


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# Illustration: Brain Map

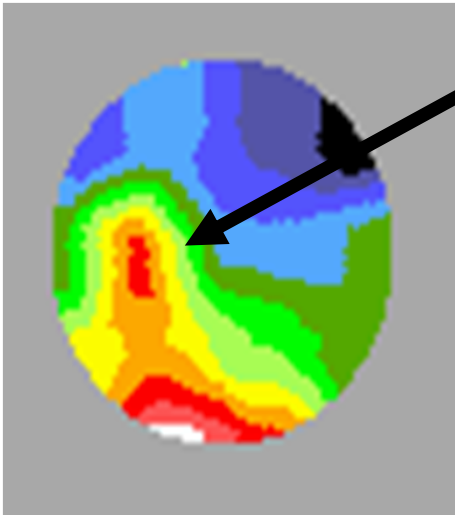
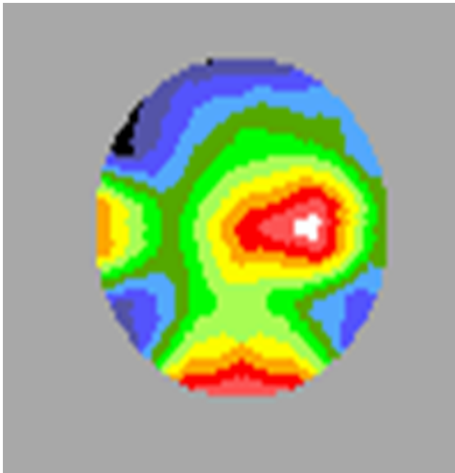






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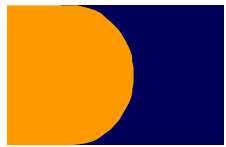
## Onesided tinnitus



In the presence of an one-sided tinnitus a **Beta – Focus** is demonstrable at central sites.

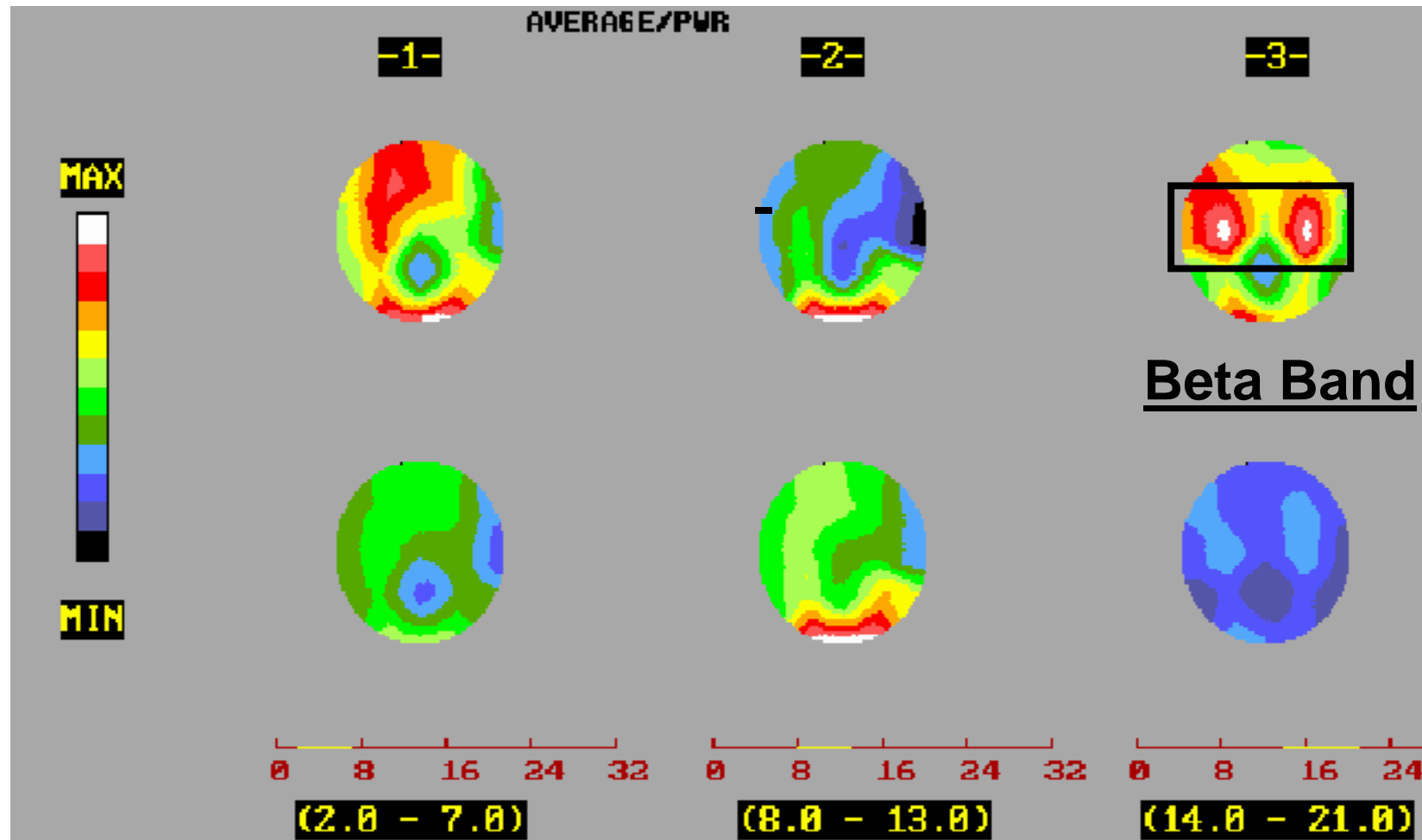
Medical history:

Cervical joint dysfunction

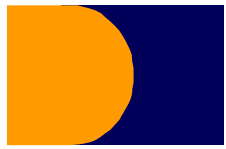


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## Bothsided Tinnitus

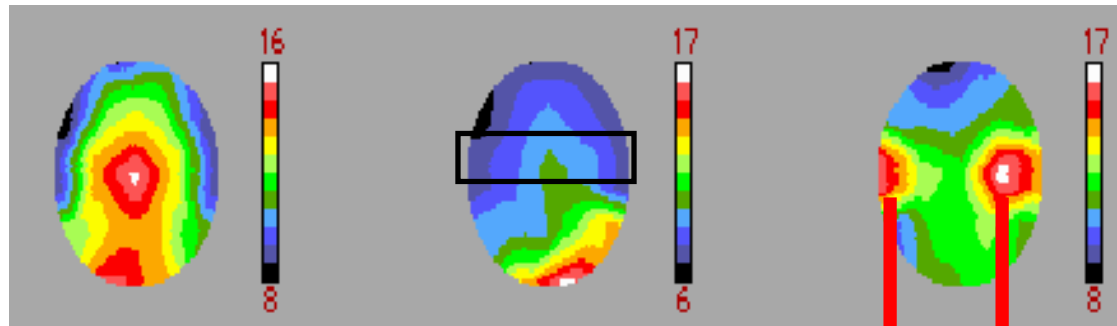






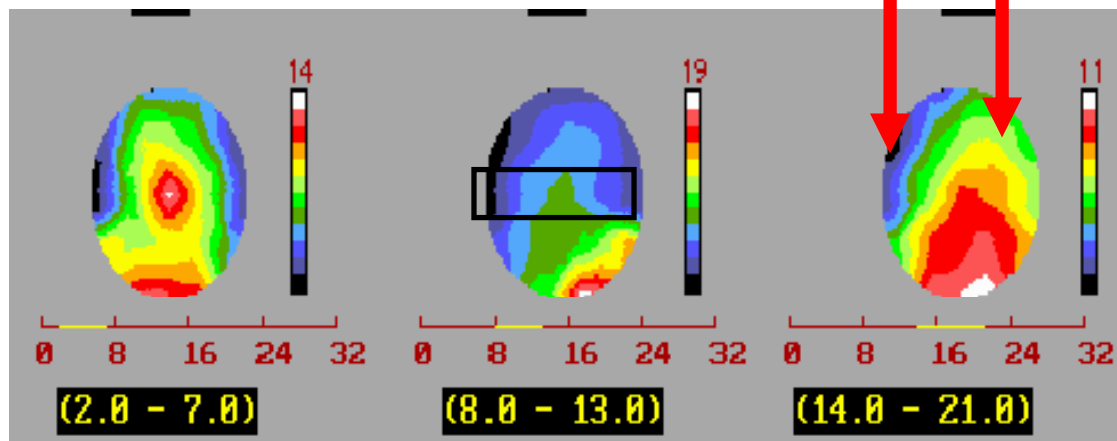
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# Brainmap : Tinnitus



Extremely loud  
tinnitus

Beta Foci



No tinnitus

Delta-Theta

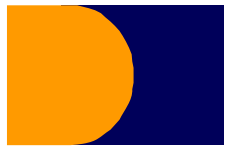
Alpha

Beta

(2.0 - 7.0)

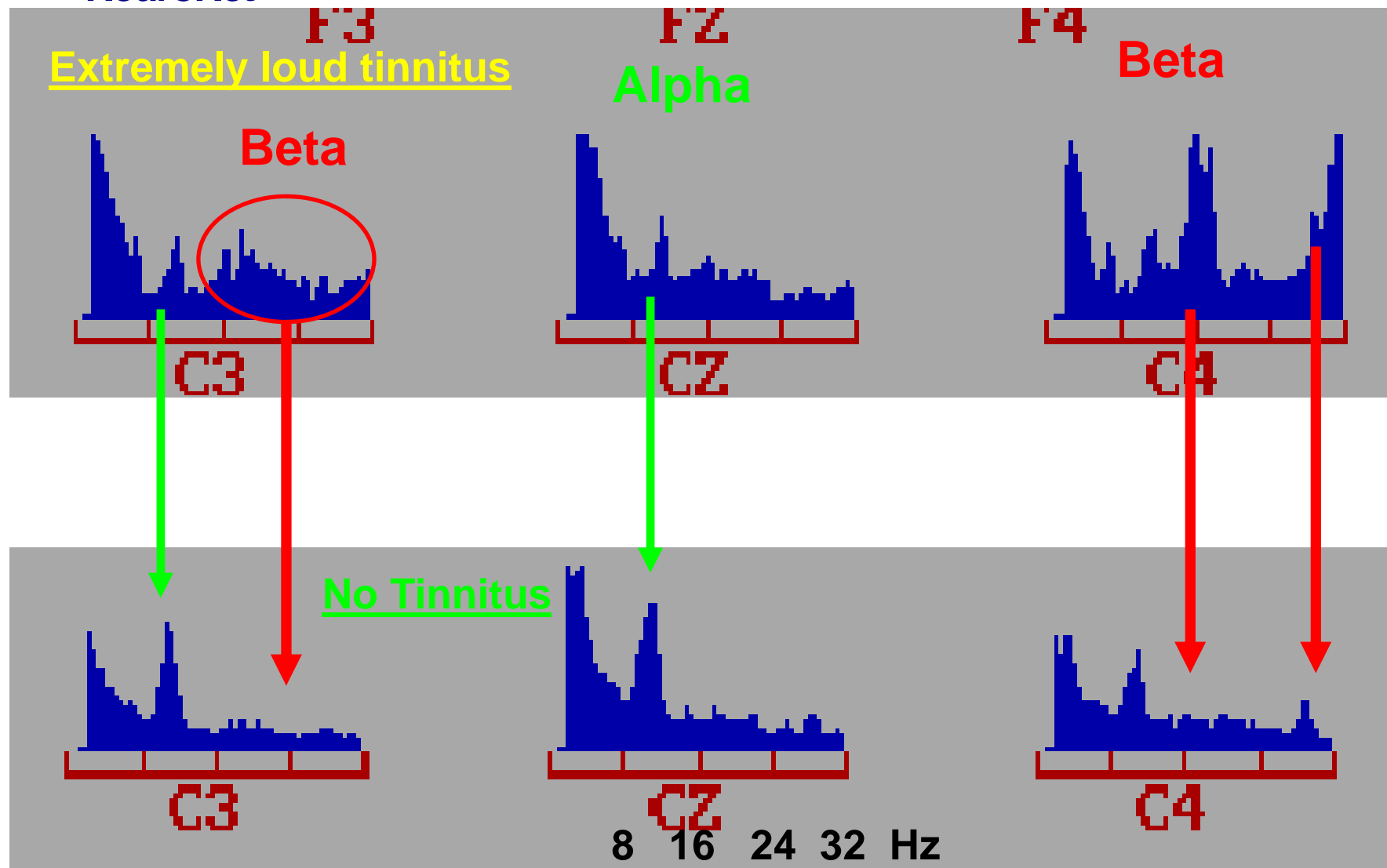
(8.0 - 13.0)

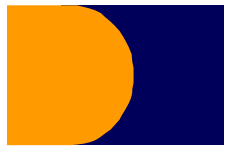
(14.0 - 21.0)



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# Powerspektrum: Tinnitus





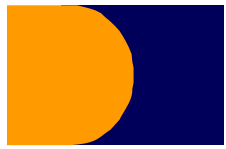
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# Demographics of subjects

Group	Females	Males	TOTAL	Age Females	Age Males
Tinnitus	109	195	<b>304</b>	46 ± 14	49 ± 12
control	61	94	<b>155</b>	41 ± 12	43 ± 14

**Tinnitus duration: Females: 46 Months**

**Tinnitus duration: Males: 63 Months**

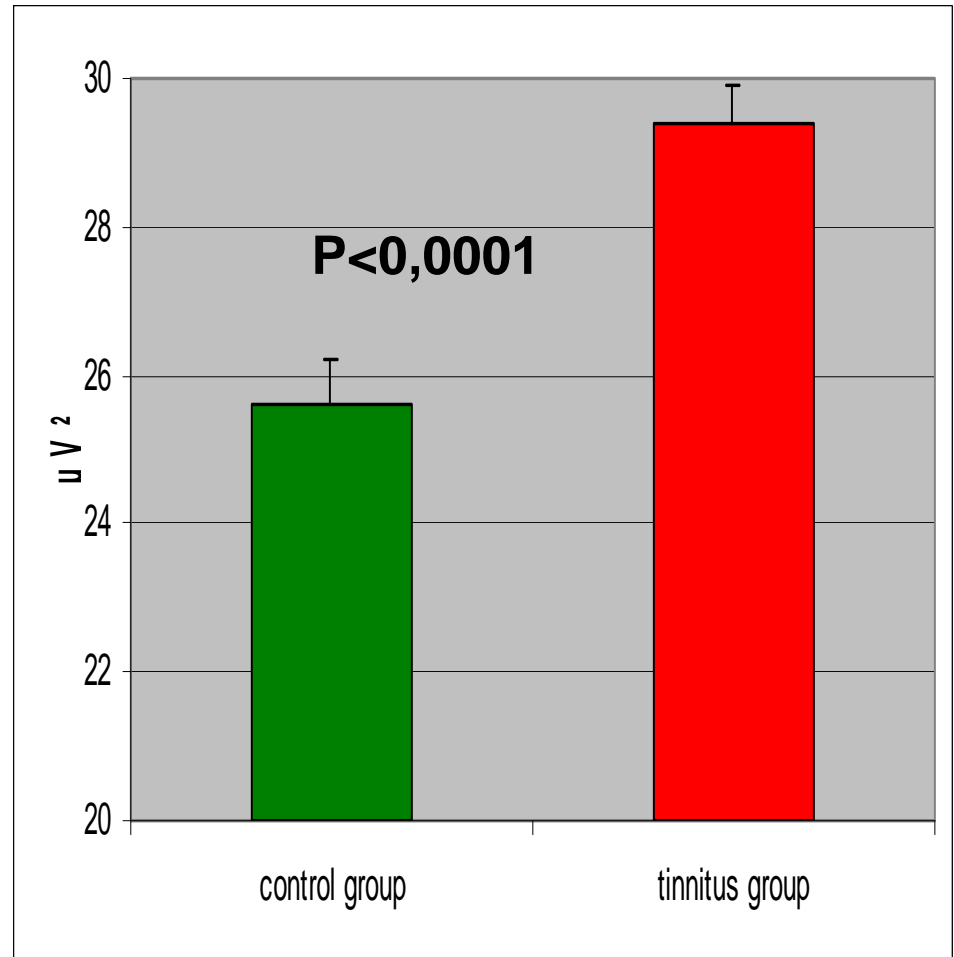
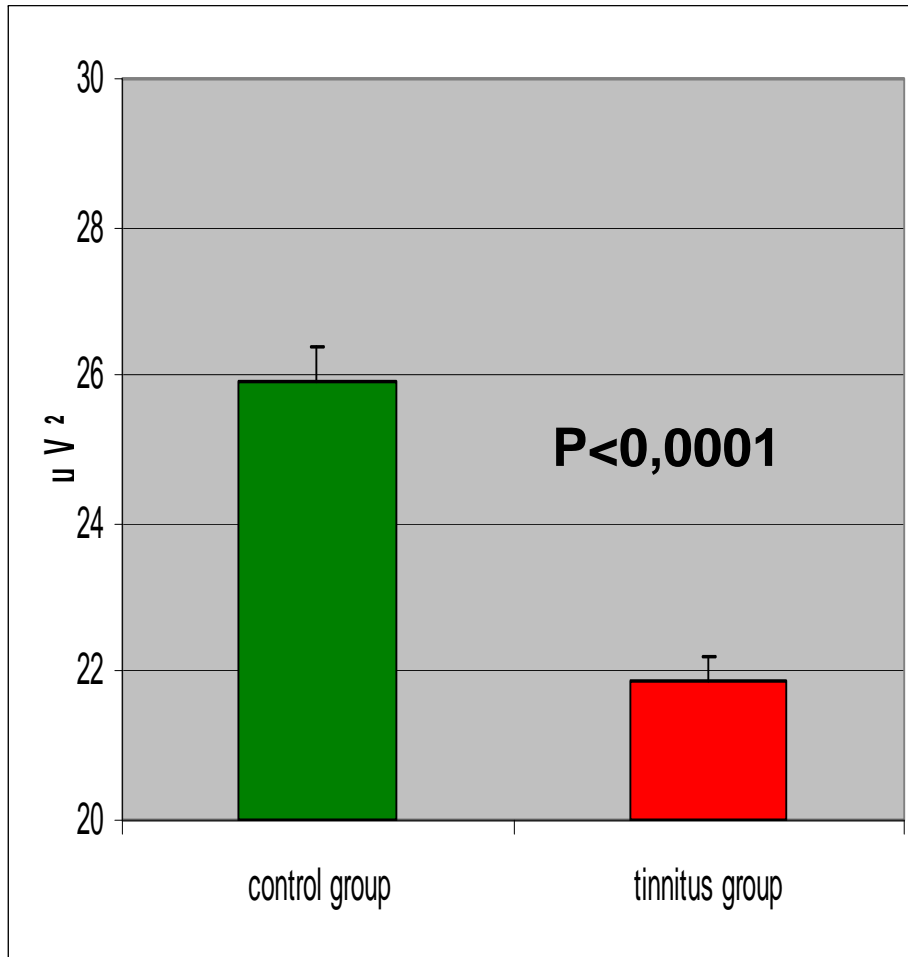


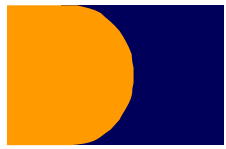
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## Total Average Power (TAP)

### Males

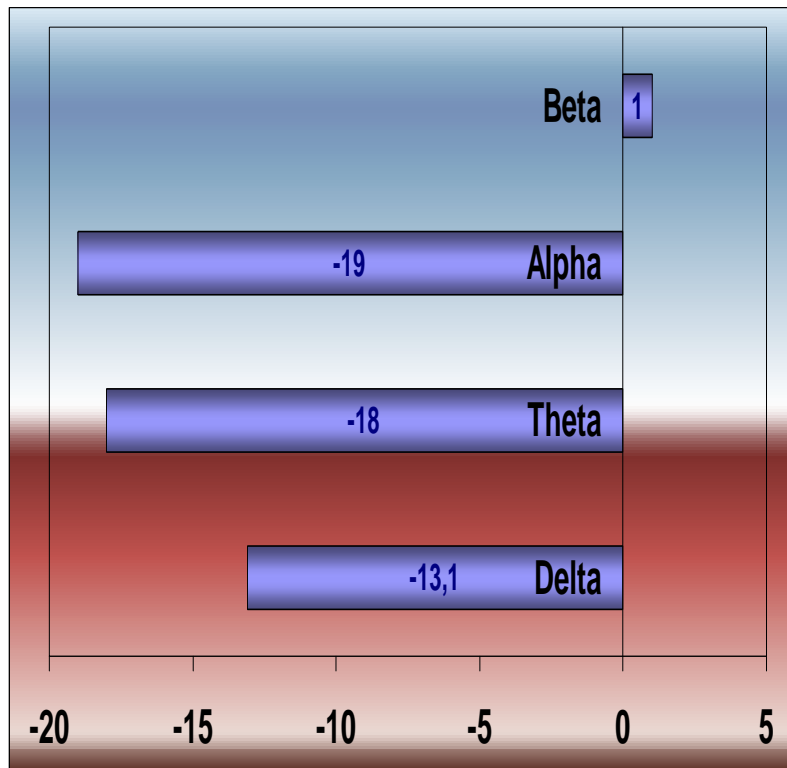
### Females



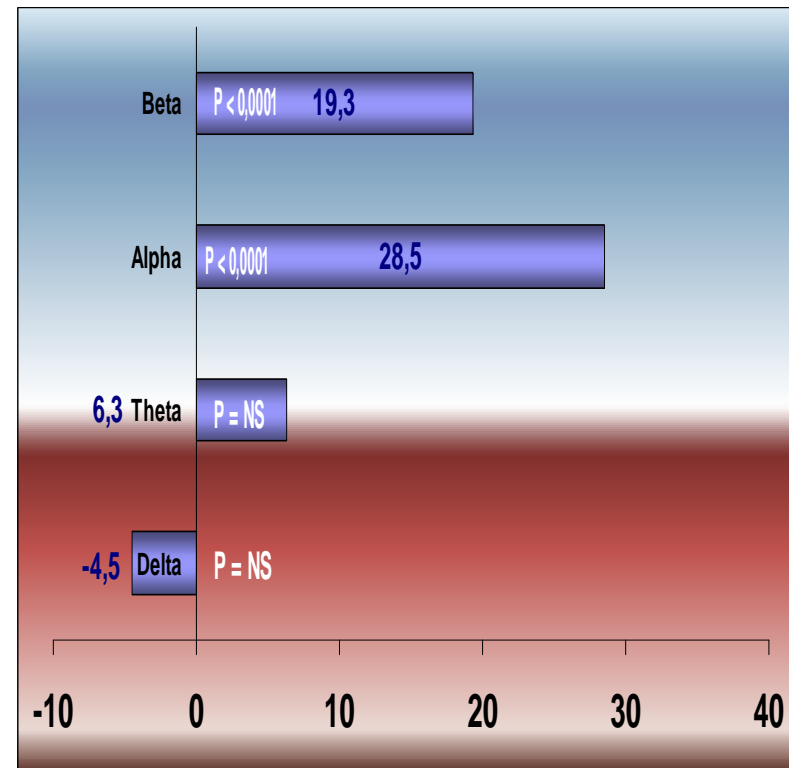


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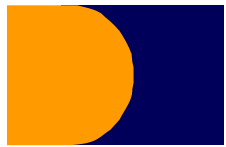
## %-change of power for Beta, Alpha, Theta and Delta: tinnitus group versus control group



Males

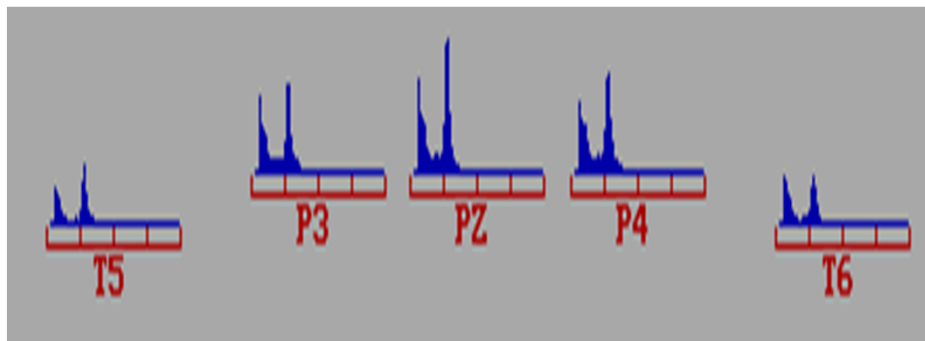


Females

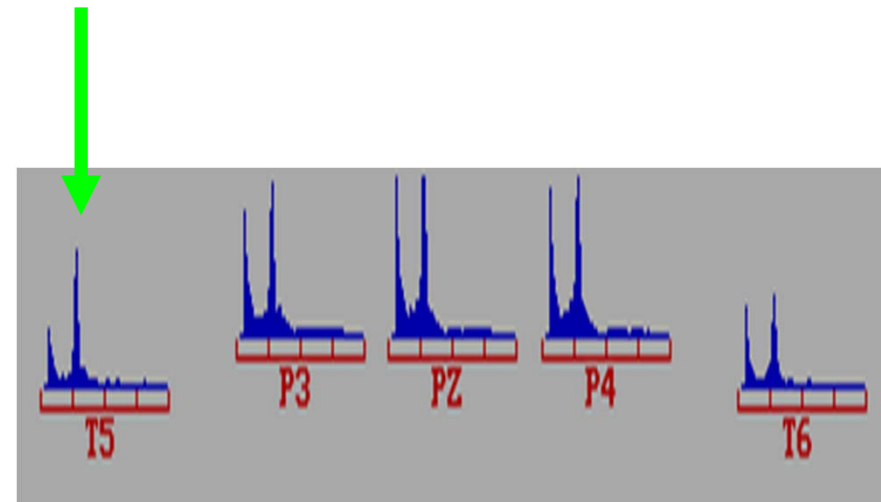


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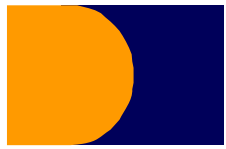
Evaluation: of the efficacy of the noise generator (NG)



Baseline EEG

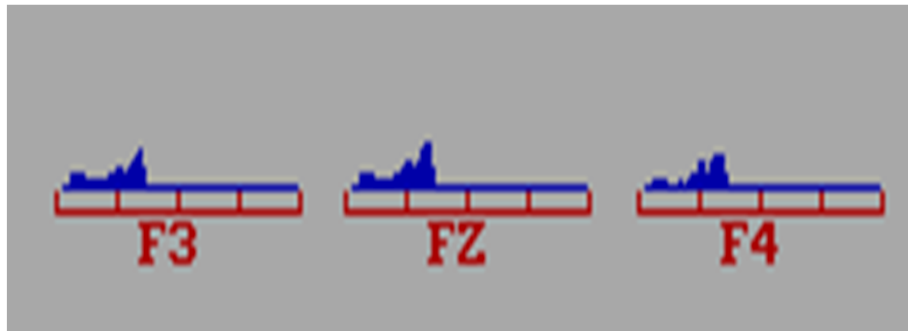


positive NG effect  
Increase of Alpha Power

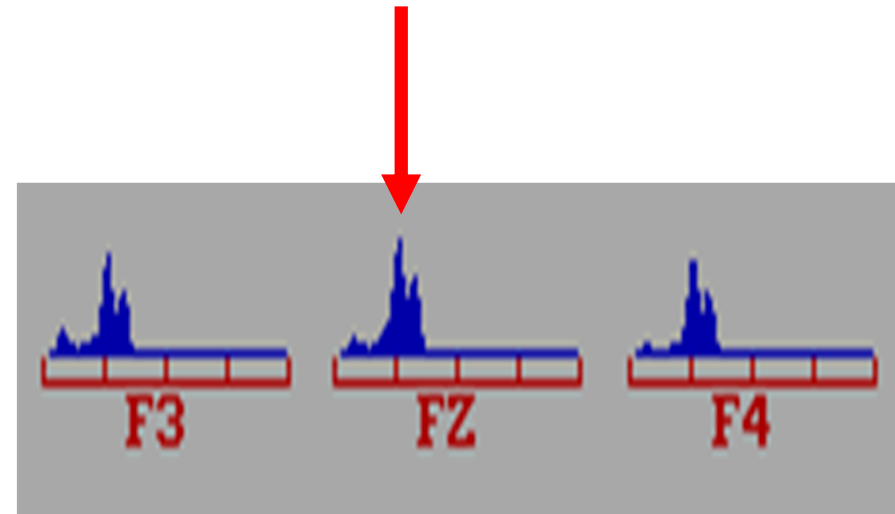


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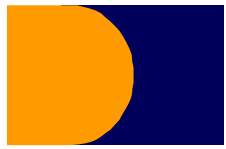
Evaluation: of the efficacy of the noise generator (NG)



Baseline EEG



Negative NG effect  
Leftward shift the EEG



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# Summary

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**QEEG demonstrates tinnitus specific signal changes.**

**Males and females exhibit a differing EEG profiles.**

**QEEG provide the MD with crucial information regarding the efficacy of NG.**

**QEEG **must precede** the EEG guided feedback: neurofeedback.**