

P A T E N T C L A I M S

1. A method of processing a signal in a hearing aid, comprising the steps of:

- picking up an acoustical signal,
- 5 - deriving an input signal from the acoustical signal,
- deriving a control signal from the input signal,
- processing the input signal in a signal processing device in accordance with the control signal so as to provide an output signal by multiplying the input signal with a number derived from said control signal, where the process of deriving said control signal comprises:
 - estimating a signal level for the input signal hereby providing an input signal level estimate,
 - executing a standard processing, including determining a standard processed control signal component for the input signal ~~a standard compressor gain control output~~ in accordance with a standard compression characteristic, using the input signal level estimate as input to the a standard compressor, ~~hereby providing a standard control signal component~~,
 - executing an individualized processing, including determining an individualized processed control signal component for the input signal ~~an individualized compressor gain control output~~ in accordance with an individualized compression characteristic, using the input signal level estimate as input to the an individualized compressor ~~and the adaptive processing means~~, hereby providing an individualized control signal component,
 - executing an adaptive processing of the input signal level estimate using said standard processed control signal component ~~compressor gain control output~~ so as to provide an adaptive processed control signal component, and
 - 30 - multiplying the standard, individualized and adaptive processed control signal components to form the control signal,

wherein the standard, individualized and adaptive processings are carried out in the same frequency band.

2. The method according to claim 1, comprising the step of: set-

ting the individualized compression characteristic to mimic the hearing loss of the intended hearing aid user.

3. The method according to claim 1 or 2, comprising the step of: -multiplying ~~the~~an individualized compressor gain control output by an acclimatization parameter that is variable as a function of time, here-
5 by providing the individualized processed control signal component.

4. The method according to claim 3, comprising the step of: decreasing the acclimatization parameter after the lapse of a predetermined acclimatization time span.

10 5. The method according to claim 1 or 2, comprising the step of selecting an individualized compression characteristic among a number of predetermined individualized compression characteristics in response to the lapse of a predetermined acclimatization time span.

6. The method according to any one of the preceding claims,
15 comprising the step of determining the lapse of acclimatization time based on the status of a hearing aid usage log.

7. The method according to any one of the preceding claims, comprising the steps of:

- exchanging, between a first and a second hearing aid in a bin-
20 aural hearing aid system, a first and a second parameter representing the lapse of acclimatization time in the first and the second hearing aid respectively,

- comparing, said parameters in the first and the second hearing aid respectively,

25 - selecting a common stage of acclimatization, in the binaural hearing aid system, based on this comparison.

8. The method according to claim 7, comprising the step of selecting the most advanced stage of acclimatization.

9. The method according to any one of the preceding claims,
30 comprising the step of selecting an individualized compression characteristic among a number of predetermined individualized compression characteristics in response to a user interaction.

10. The method according to any one of the preceding claims, comprising the steps of: producing a given sequence of Dual-Tone-Multi-

Frequency tones (DTMF), having the hearing aid recognize said tones and changing the stage of acclimatization dependent on the recognized tones.

11. The method according to claim ~~10~~, wherein the adaptive
5 processing comprises optimisation of a speech intelligibility index.

12. The method according to claim ~~11~~ or 11, wherein the individualized compressor characteristic is set according to the individual preferences of the intended user.

13. The method according to claim 1, comprising the step of:
10 adjusting the individualized compression characteristic using a number of predetermined adjustment points distributed over a range of compressor input levels.

14. The method according to claim 13, where the compressor input is an estimate of the sound pressure level, and the spacing of the
15 adjustment points is selected within the range of 2 dB - 20 dB, and preferably 5 dB - 10 dB.

15. The method according to claim 13, where the compressor input is an estimate of the sound pressure level, and the spacing of the adjustment points is selected using an exponential function with a base
20 of 2 and an exponent that is selected from the natural numbers.

16. The method according to claim 15, where the spacing of the adjustment points is selected to be 8 dB.

17. The method according to any one of the claims 13 - 16, wherein the standard compression characteristic is adjustable using a
25 number of predetermined adjustment points distributed over a range of compressor input levels, and wherein the individualized compression characteristic has more adjustment points than said standard compression characteristic.

18. The method according to claim 1 or any one of the claims
30 ~~1011~~ - 17, comprising the steps of:

- determining a plurality of individualized compression characteristics corresponding to a plurality of sound environments, and
- selecting an individualized compressor gain control output in accordance with an individualized compression characteristic correspond-

ing to a current sound environment.

19. A hearing aid comprising: means for picking up an acoustical signal; means for deriving an input signal from the acoustical signal; means for deriving a control signal from the input signal; means for amplifying the input signal in accordance with the control signal hereby providing an output signal; and means for converting the output signal into an acoustical signal, wherein the means for deriving the control signal includes: a standard compressor having a standard compressor characteristic adapted for providing a standard processed control signal component, an individualized compressor having an individualized compressor characteristic adapted for providing an individualized processed control signal component, adaptive processing means adapted for providing an adaptive processed control signal component, using the standard processed control signal component, a signal level estimator for providing the input for the standard and individualized compressor and the adaptive processing means, and multiplication means for multiplying together the standard processed control signal component, the individualized processed control signal component and the adaptive processed control signal component to form the control signal, wherein the standard, individualized and adaptive processings are carried out in the same frequency band.

20. The hearing aid according to claim 19-21, wherein the adaptive processing means are adapted for optimising a speech intelligibility index.