

**Table 1: Exhibit 1003
US Pat. No. 6,363,345**

Claims of the '345 Patent
1. An apparatus for canceling noise, comprising:
1a) an input for inputting an audio signal which includes a noise signal;
1b) a frequency spectrum generator for generating the frequency spectrum of said audio signal thereby generating frequency bins of said audio signal; and
1c) a threshold detector for setting a threshold for each frequency bin using a noise estimation process and for detecting for each frequency bin whether the magnitude of the frequency bin is less than the corresponding threshold, thereby detecting the position of noise elements for each frequency bin.
2. The apparatus according to claim 1, wherein said threshold detector detects the position of a plurality of non-speech data points for said frequency bins.
3. The apparatus according to claim 2, wherein said threshold detector detects the

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position of said plurality of non-speech data points for said frequency bins within a continuous speech segment of said audio signal.

12. The apparatus according to claim 1, further comprising an averaging unit for determining a level of said noise within said respective frequency bin, wherein said threshold detector detects the position of said noise elements where said level of said noise determined by said averaging unit is less than the corresponding threshold.

13. The apparatus according to claim 1, further comprising a subtractor for subtracting said noise elements estimated at said positions determined by said threshold detector from said audio signal to derive said audio signal substantially without said noise.

14. The apparatus according to claim 13, wherein said subtractor performs subtraction using a filter multiplication which multiplies said audio signal by a filter function.

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17. The apparatus according to claim 13, further comprising a residual noise processor for reducing residual noise remaining after said subtractor subtracts said noise elements at said positions determined by said threshold detector from said audio signal.

21. The apparatus according to claim 1, further comprising an estimator for estimating a magnitude of each frequency bin.

23. The apparatus according to claim 21, further comprising a smoothing unit which smoothes the estimate of each frequency bin.

25. The apparatus according to claim 1, further comprising an adaptive array comprising a plurality of microphones for receiving said audio signal.

38. A method for driving a computer processor for generating a noise canceling signal for canceling noise from an audio signal representing audible sound including a

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noise signal representing audible noise, said method comprising the steps of:

38a) inputting said audio signal which includes said noise signal;

38b) generating the frequency spectrum of said audio signal thereby generating frequency bins of said audio signal;

38c) setting a threshold for each frequency bin using a noise estimation process;

38d) detecting for each frequency bin whether the magnitude of the frequency bin is less than the corresponding threshold, thereby detecting the position of noise elements for each frequency bin; and

38e) subtracting said noise elements detected in said step of detecting from said audio signal to produce an audio signal representing said audible sound substantially without said audible noise.

47. The method according to claim 38, further comprising the step of reducing the residual noise remaining after said step of

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subtracting subtracts said noise elements at
said positions determined by said step of
detecting from said audio signal