Claims

1. Decoder supporting, and being switchable between, at least two modes so as to decode an information signal, wherein the decoder is configured to, responsive to a switching instance, perform temporal smoothing and/or blending at a transition between a first temporal portion (60) of the information signal, preceding the switching instance, and a second temporal portion (62) of the information signal, succeeding the switching instance, in a manner confined to a high-frequency spectral band (66),

wherein the decoder is responsive to a switching of one or more of from a full-bandwidth audio coding mode to a BWE audio coding mode, and from a BWE audio coding mode to a full-bandwidth audio coding mode,

wherein the high-frequency spectral band (66) overlaps with the effective coded bandwidth of both coding modes between which the switching at the switching instance takes place, and the high-frequency spectral band (66) overlaps with a spectral BWE extension portion of the BWE audio coding mode and a transform spectrum portion or linear-predictively coded spectral portion of the full-bandwidth coding mode,

wherein the decoder is configured to perform the temporal smoothing and/or blending at the transition by, within a temporary portion (80; 108) directly following the transition, crossing the transition or preceding the transition, decreasing an information signal's energy during the temporary portion (80) where the information signal is coded using the full-bandwidth audio coding mode and/or increasing the information signal's energy during the temporary portion (80) where the information signal is coded using the BWE audio coding mode so as to compensate for an increased energy preserving property of the full-bandwidth audio coding mode relative to the BWE audio coding mode.

2. Decoder according to claim 1, wherein the decoder is configured to perform the temporal smoothing and/or blending additionally depending on an analysis (194) of the information signal in an analysis spectral band (190) arranged spectrally below the high-frequency spectral band (66).

3. Decoder supporting, and being switchable between, at least two modes so as to decode an information signal, wherein the decoder is configured to, responsive to a switching instance, perform temporal smoothing and/or blending at a transition between a first temporal portion (60) of the information signal, preceding the switching instance, and a second temporal portion (62) of the information signal, succeeding the switching instance, in a manner confined to a high-frequency spectral band (66),

wherein the decoder is configured to perform the temporal smoothing and/or blending additionally depending on an analysis (194) of the information signal in an analysis spectral band (190) arranged spectrally below the high-frequency spectral band (66),

wherein the decoder is configured to determine a measure for an information signal's energy fluctuation in the analysis spectral band (190) and set a degree of the temporal smoothing and/or blending dependent on the measure.

4. Decoder according to claim 3, wherein the decoder is configured to compute the measure as the maximum of a first absolute difference between information signal's energies in the analysis spectral band (190) between temporal portions lying at opposite temporal sides of the transition (204) and a second absolute difference between information signal's energies in the analysis spectral band (190) between consecutive temporal portions, both succeeding the transition (204).

5. Decoder according to any of claims 3 and 4, wherein the analysis spectral band (190) abuts the high-frequency spectral band (66) at a lower spectral side of the high-frequency spectral band (66).

6. Decoder according to any of claims 1 to 5, wherein the decoder is configured to scale the information signals energy in the high-frequency spectral band (66) in the second temporal portion (62) with a scaling factor which varies between 1 and $\frac{\text{the information signal's energy in the high-frequency spectral band (66) in the first temporal portion (60)}}{\text{the information signal's energy in the high-frequency spectral band (66) in the second temporal portion (62)}}$ according to the measure.

7. The decoder according to any of claims 1 to 6, wherein the decoder is configured to perform the switching and/or blending by applying blind BWE onto one of the first and second temporal portions, decoded using a first coding mode having an effective coded bandwidth smaller than an effective coded bandwidth of the second coding mode using which the other one of the first and second temporal portions is decoded, so as to spectrally extend the effective coded bandwidth of the one of the first and second temporal portions into the high-frequency spectral band (66) and temporally shape the information signal's energy in the high-frequency spectral band in the one of the first and second temporal portions, as spectrally extended, according to a fade-in/out scaling function decreasing from the transition towards farther away from the transition till 0.

8. Decoder according to any of claims 1 to 7, wherein the switching switches from a first coding mode to a second coding mode with the first coding mode having an effective coded bandwidth greater than an effective coded bandwidth of the second coding mode, wherein the decoder is configured to spectrally extend, using blind BWE, the effective coded bandwidth of the second temporal portion into the high-frequency spectral band (66) and temporally shape the information signal's energy in the high-frequency spectral band in the second temporal portion, as spectrally extended using the blind BWE, according to a fade-out scaling function decreasing from the transition towards farther away from the transition till 0.

9. Decoder according to any of claims 1 to 8, wherein the switching switches from a first coding mode to a second coding mode wherein an effective coded bandwidth of the first coding mode is smaller than an effective coded bandwidth of the second coding mode, wherein the decoder is configured to temporally shape an information signal's energy in the high-frequency spectral band (66) in the second temporal portion according to a fade-in scaling function increasing from the transition towards farther away from the transition till 1.

10. Decoder according to any of claims 1 to 9, wherein the decoder is configured to perform the temporal smoothing and/or blending at the switching instance by applying a fade-in or fade-out scaling function and to, if a subsequent switching instance occurs during the fade-in or fade-out scaling function, apply, again, a fade-in or fade-out scaling function to a high-frequency spectral band (66) so as to perform temporal smoothing and/or blending at the subsequent switching instance,

with setting a starting point of applying the fade-in or fade-out scaling function from the subsequent switching instance on such that the fade-in or fade-out scaling function applied at the subsequent switching instance is, at the starting point, a function value nearest to a function value assumed by the fade-in or fade-out scaling function when being applied at the switching instance, at the time of occurrance of the subsequent switching instance.

11. Method for decoding supporting, and being switchable between, at least two modes so as to decode an information signal, wherein the method comprises, responsive to a switching instance, performing temporal smoothing and/or blending at a transition between a first temporal portion (60) of the information signal, preceding the switching instance, and a second temporal portion (62) of the information signal, succeeding the switching instance, in a manner confined to a high-frequency spectral band (66).,

wherein the decoding is performed responsive to a switching of one or more of from a full-bandwidth audio coding mode to a BWE audio coding mode, and from a BWE audio coding mode to a full-bandwidth audio coding mode,

wherein the high-frequency spectral band (66) overlaps with the effective coded bandwidth of both coding modes between which the switching at the switching instance takes place, and the high-frequency spectral band (66) overlaps with a spectral BWE extension portion of the BWE audio coding mode and a transform spectrum portion or linear-predictively coded spectral portion of the full-bandwidth coding mode,

wherein the temporal smoothing and/or blending at the transition is performed by, within a temporary portion (80; 108) directly following the transition, crossing the transition or preceding the transition, decreasing an information signal's energy during the temporary portion (80) where the information signal is coded using the full-bandwidth audio coding mode and/or increasing the information signal's energy during the temporary portion (80) where the information signal is coded using the BWE audio coding mode so as to compensate for an increased energy preserving property of the full-bandwidth audio coding mode relative to the BWE audio coding mode.

12. Computer program having a program code for performing, when running on a computer, a method according to claim 11.

13. Encoder supporting, and being switchable between, at least two modes of varying signal-conservation property in a high-frequency spectral band, so as to encode an information signal, wherein the encoder is configured to, responsive to a switching instance, encode the information signal temporally smoothened and/or blended at a transition between a first temporal portion (60) of the information signal, preceding the switching instance, and a second temporal portion (62) of the information signal, succeeding the switching instance, in a manner confined to a high-frequency spectral band (66).

14. Encoder according to claim 13, wherein the encoder is configured to, responsive to a switching instance from a first coding mode having a first signal-conservation property in the high-frequency spectral band to a second coding mode having a second signal-conservation property in the high-frequency spectral band, temporary encode a modified version of the information signal which is modified compared to the information signal in that an information signal's energy in the high-frequency spectral band in a temporal portion succeeding the switching instance is temporally shaped according to a fade-in scaling function monotonically increasing from the transition towards farther away from the transition till 1.

15. Method for encoder supporting, and being switchable between, at least two modes of varying signal-conservation property in a high-frequency spectral band, so as to encode an information signal, wherein the method comprises, responsive to a switching instance, encoding the information signal temporally smoothened and/or blended at a transition between a first temporal portion (60) of the information signal, preceding the switching instance, and a second temporal portion (62) of the information signal, succeeding the switching instance, in a manner confined to a high-frequency spectral band (66).

16. Computer program having a program code for performing, when running on a computer, a method according to claim 15.

Claims

1. Decoder supporting, and being switchable between, at least two modes so as to decode an information signal, wherein the decoder is configured to, responsive to a switching instance, perform temporal smoothing and/or blending at a transition between a first temporal portion of the information signal, preceding the switching instance, and a second temporal portion of the information signal, succeeding the switching instance, in a manner confined to a high-frequency spectral band,

wherein the decoder is responsive to a switching of one or more of from a full-bandwidth audio coding mode to a BWE audio coding mode, and from a BWE audio coding mode to a full-bandwidth audio coding mode,

wherein the high-frequency spectral band overlaps with the effective coded bandwidth of both coding modes between which the switching at the switching instance takes place, and the high-frequency spectral band overlaps with a spectral BWE extension portion of the BWE audio coding mode and a transform spectrum portion or linear-predictively coded spectral portion of the full-bandwidth coding mode,

wherein the decoder is configured to perform the temporal smoothing and/or blending at the transition by, within a temporary portion directly following the transition, crossing the transition or preceding the transition, decreasing an information signal's energy during the temporary portion where the information signal is coded using the full-bandwidth audio coding mode and/or increasing the information signal's energy during the temporary portion where the information signal is coded using the BWE audio coding mode so as to compensate for an increased energy preserving property of the full-bandwidth audio coding mode relative to the BWE audio coding mode.

2. Decoder according to claim 1, wherein the decoder is configured to perform the temporal smoothing and/or blending additionally depending on an analysis of the information signal in an analysis spectral band arranged spectrally below the high-frequency spectral band.

3. Decoder supporting, and being switchable between, at least two modes so as to decode an information signal, wherein the decoder is configured to, responsive to a switching instance, perform temporal smoothing and/or blending at a transition between a first temporal portion of the information signal, preceding the switching instance, and a second temporal portion of the information signal, succeeding the switching instance, in a manner confined to a high-frequency spectral band,

wherein the decoder is configured to perform the temporal smoothing and/or blending additionally depending on an analysis of the information signal in an analysis spectral band arranged spectrally below the high-frequency spectral band,

wherein the decoder is configured to determine a measure for an information signal's energy fluctuation in the analysis spectral band and set a degree of the temporal smoothing and/or blending dependent on the measure.

4. Decoder according to claim 3, wherein the decoder is configured to compute the measure as the maximum of a first absolute difference between information signal's energies in the analysis spectral band between temporal portions lying at opposite temporal sides of the transition and a second absolute difference between information signal's energies in the analysis spectral band between consecutive temporal portions, both succeeding the transition.

5. Decoder according to any of claims 3 and 4, wherein the analysis spectral band abuts the high-frequency spectral band at a lower spectral side of the high-frequency spectral band.

6. Decoder according to any of claims 1 to 5, wherein the decoder is configured to scale the information signals energy in the high-frequency spectral band in the second temporal portion with a scaling factor which varies between 1 and

$$\frac{\text{the information signal's energy in the high-frequency spectral band in the first temporal portion}}{\text{the information signal's energy in the high-frequency spectral band in the second temporal portion}}$$

according to the measure.

7. The decoder according to any of claims 1 to 6, wherein the decoder is configured to perform the switching and/or blending by applying blind BWE onto one of the first and second temporal portions, decoded using a first coding mode having an effective coded bandwidth smaller than an effective coded bandwidth of the second coding mode using which the other one of the first and second temporal portions is decoded, so as to spectrally extend the effective coded bandwidth of the one of the first and second temporal portions into the high-frequency spectral band and temporally shape the information signal's energy in the high-frequency spectral band in the one of the first and second temporal portions, as spectrally extended, according to a fade-in/out scaling function decreasing from the transition towards farther away from the transition till 0.

8. Decoder according to any of claims 1 to 7, wherein the switching switches from a first coding mode to a second coding mode with the first coding mode having an effective coded bandwidth greater than an effective coded bandwidth of the second coding mode, wherein the decoder is configured to spectrally extend, using blind BWE, the effective coded bandwidth of the second temporal portion into the high-frequency spectral band and temporally shape the information signal's energy in the high-frequency spectral band in the second temporal portion, as spectrally extended using the blind BWE, according to a fade-out scaling function decreasing from the transition towards farther away from the transition till 0.

9. Decoder according to any of claims 1 to 8, wherein the switching switches from a first coding mode to a second coding mode wherein an effective coded bandwidth of the first coding mode is smaller than an effective coded bandwidth of the second coding mode, wherein the decoder is configured to temporally shape an information signal's energy in the high-frequency spectral band in the second temporal portion according to a fade-in scaling function increasing from the transition towards farther away from the transition till 1.

10. Decoder according to any of claims 1 to 9, wherein the decoder is configured to perform the temporal smoothing and/or blending at the switching instance by applying a fade-in or fade-out scaling function and to, if a subsequent switching instance occurs during the fade-in or fade-out scaling function, apply, again, a fade-in or fade-out scaling function to a high-frequency spectral band so as to perform temporal smoothing and/or blending at the subsequent switching instance,

with setting a starting point of applying the fade-in or fade-out scaling function from the subsequent switching instance on such that the fade-in or fade-out scaling function applied at the subsequent switching instance is, at the starting point, a function value nearest to a function value assumed by the fade-in or fade-out scaling function when being applied at the switching instance, at the time of occurrence of the subsequent switching instance.

11. Method for decoding supporting, and being switchable between, at least two modes so as to decode an information signal, wherein the method comprises, responsive to a switching instance, performing temporal smoothing and/or blending at a transition between a first temporal portion of the information signal, preceding the switching instance, and a second temporal portion of the information signal, succeeding the switching instance, in a manner confined to a high-frequency spectral band,

wherein the decoding is performed responsive to a switching of one or more of from a full-bandwidth audio coding mode to a BWE audio coding mode, and from a BWE audio coding mode to a full-bandwidth audio coding mode,

wherein the high-frequency spectral band overlaps with the effective coded bandwidth of both coding modes between which the switching at the switching instance takes place, and the high-frequency spectral band overlaps with a spectral BWE extension portion of the BWE audio coding mode and a transform spectrum portion or linear-predictively coded spectral portion of the full-bandwidth coding mode,

wherein the temporal smoothing and/or blending at the transition is performed by, within a temporary portion directly following the transition, crossing the transition or preceding the transition, decreasing an information signal's energy during the temporary portion where the information signal is coded using the full-bandwidth audio coding mode and/or increasing the information signal's energy during the temporary portion where the information signal is coded using the BWE audio coding mode so as to compensate for an increased energy preserving property of the full-bandwidth audio coding mode relative to the BWE audio coding mode.

12. Computer program having a program code for performing, when running on a computer, a method according to claim 11.

13. Encoder supporting, and being switchable between, at least two modes of varying signal-conservation property in a high-frequency spectral band, so as to encode an information signal, wherein the encoder is configured to, responsive to a switching instance, encode the information signal temporally smoothened and/or blended at a transition between a first temporal portion of the information signal, preceding the switching instance, and a second temporal portion of the information signal, succeeding the switching instance, in a manner confined to a high-frequency spectral band.

14. Encoder according to claim 13, wherein the encoder is configured to, responsive to a switching instance from a first coding mode having a first signal-conservation property in the high-frequency spectral band to a second coding mode having a second signal-conservation property in the high-frequency spectral band, temporary encode a modified version of the information signal which is modified compared to the information signal in that an information signal's energy in the high-frequency spectral band in a temporal portion succeeding the switching instance is temporally shaped according to a fade-in scaling function monotonically increasing from the transition towards farther away from the transition till 1.

15. Method for encoder supporting, and being switchable between, at least two modes of varying signal-conservation property in a high-frequency spectral band, so as to encode an information signal, wherein the method comprises, responsive to a switching instance, encoding the information signal temporally smoothened and/or blended at a transition between a first temporal portion of the information signal, preceding the switching instance, and a second temporal portion of the information signal, succeeding the switching instance, in a manner confined to a high-frequency spectral band.

16. Computer program having a program code for performing, when running on a computer, a method according to claim 15.