Claims

1) A method for merging a first (201, 512) and a second (202, 522) source set of spectral band replication parameters, in the following referred to as SBR parameters, to a target set (206, 532) of SBR parameters, wherein
   - the first (201, 512) and second (202, 522) source set comprise a first (513, 514) and second (523, 524, 525) frequency band partitioning, respectively, which are different from one another;
   - the first source set (201, 512) comprises a first set of energy related values (515, 516, 517) associated with frequency bands (511) of the first frequency band partitioning (513, 514);
   - the second source set (202, 522) comprises a second set of energy related values (526, 527, 528, 529) associated with frequency bands of the second frequency band partitioning (523, 524, 525); and
   - the target set (206, 532) comprises a target energy related value (533) associated with an elementary frequency band (543);

   the method comprising:
   - breaking up the first (513, 514) and the second (523, 524, 525) frequency band partitioning into a joint grid (541, 542) comprising the elementary frequency band (543);
   - assigning a first value (517) of the first set of energy related values (515, 516, 517) to the elementary frequency band (543);
   - assigning a second value (529) of the second set of energy related values (526, 527, 528, 529) to the elementary frequency band (543); and

– combining the first (517) and second (529) value to yield the target energy related value (533) for the elementary frequency band (543).

2) The method of claim 1 wherein

– the first value (517) corresponds to the energy related value associated with a frequency band (511) of the first frequency band partitioning (513, 514) which comprises the elementary frequency band (543); and

– the second value (529) corresponds to the energy related value associated with a frequency band of the second frequency band partitioning (523, 524, 525) which comprises the elementary frequency band (543).

3) The method of any previous claim, wherein

– the joint grid (541, 542) is associated with a quadrature mirror filter bank, referred to as QMF filter bank, used to determine the SBR parameters; and

– the elementary frequency band (543) is a QMF subband.

4) The method of any previous claim, further comprising:

– normalizing the target energy related value (533) by the number of contributing source sets.

5) The method of any previous claim, wherein the target set (206, 532) comprises a set of target energy related values (533); and wherein the method further comprises:

– repeating the assigning steps and the combining step for all elementary frequency bands (543) of the joint grid (541, 542), thereby yielding the set of target energy related values (533).

6) The method of claim 5, wherein the target set (206, 532) comprises a target frequency band partitioning with a predefined target frequency band; and wherein the method further comprises:
   - averaging the set of target energy related values (533) associated with the elementary frequency bands (543) comprised within the target frequency band; and
   - assigning the averaged value as the target energy related value of the target frequency band.

7) The method of any previous claim, wherein
   - the energy related values are scale factor energies and the frequency bands are scale factor bands; and/or
   - the energy related values are noise floor scale factor energies and the frequency bands are noise floor scale factor bands.

8) The method of any previous claim, wherein
   - the first source set (201, 512) is associated with a first low band signal of a first source channel;
   - the second source set (202, 522) is associated with a second low band signal of a second source channel; and
   - the target set (206, 532) is associated with a target low band signal of a target channel obtained from time-domain downmixing of the first and second low band signal.

9) The method of claim 8, wherein
   - the target energy related value (533) is associated with a target time interval of the target low band signal;
   - the first set of energy related values (515, 516, 517) is associated with a first time interval of the first low band signal, wherein the first time interval overlaps the target time interval; and

– the combining step comprises: scaling the first value (517) in accordance to a ratio given by the length of the overlap of the first time interval and the target time interval, and the length of the target time interval; and combining the scaled first value (517) and the second value (529).

10) The method of claim 9, wherein

– the first source set (201, 512) comprises a third frequency band partitioning;
– the first source set (201, 512) comprises a third set of energy related values associated with frequency bands of the third frequency band partitioning;
– the third set of energy related values is associated with a third time interval of the first low band signal, wherein the third time interval overlaps the target time interval;

the method further comprising:

– breaking up the third frequency band partitioning into the joint grid (541, 542) comprising the elementary frequency band (543);
– assigning a third value of the third set of energy related values to the elementary frequency band (543); and

wherein the combining step comprises:

– scaling the third value in accordance to a ratio given by the length of the overlap of the third time interval and the target time interval, and the length of the target time interval; and
– combining the scaled first value (517), the second value (529) and the scaled third value.

11) The method of claim 8, further comprising:

– scaling the first set of energy related values (515, 516, 517) by a first downmix coefficient; and

– scaling the second set of energy related values (526, 527, 528, 529) by a second downmix coefficient;

wherein the first and second downmix coefficient are associated with the first and second source channel, respectively.

12) The method of claim 11, wherein prior to the scaling steps the method comprises:

– weighting the first and second downmix coefficient by an energy compensation factor; wherein the energy compensation factor is associated with the interaction of the first and second low band signal during time-domain downmixing.

13) The method of claim 12, wherein

– the energy compensation factor is associated with the ratio of the energy of the target low band signal and the combined energy of the first and second low band signal.

14) The method of claim 13, wherein

– N source channels are merged, with N ≥2, to obtain M target channels, with M<N and M≥1;

– the energy compensation factor f_{comp} is given by:

$$f_{comp} = \sqrt{\frac{\sum_{chout=0}^{M-1} \sum_{n} x_{dmx}^2[chout][n]}{\sum_{chin=0}^{N-1} \sum_{n} (c_{chin} \cdot x_{in}[chin][n])^2}}$$

– $x_{in}[chin][n]$ is a low band time domain signal in the source channel $chin$, c_{chin} is a downmix coefficient for the source channel $chin$, $x_{dmx}[chout][n]$ is a low band time domain signal of the target channel $chout$, and n is a sample index of a set of signal samples

within a frame of the signals in the time domain.

15) The method of any previous claim, wherein

- the first source set (201, 512) comprises a first start frequency (551);
- the second source set (202, 522) comprises a second start frequency (552);
- the first (551) and second (552) start frequency are different and are associated with lower bounds of the first (513, 514) and second (523, 524, 525) band partitioning, respectively; and

wherein the method comprises further:

- comparing the first (551) and second (552) start frequencies;
- selecting the higher or lower of the first (551) and the second (552) start frequency as a start frequency (553) of the target set.

16) The method of claim 15, wherein

- the first source set (201, 512) comprises a first SBR element header comprising the first start frequency (551);
- the second source set (202, 522) comprises a second SBR element header comprising the second start frequency (552);

wherein the method comprises further:

- selecting a SBR element header of the target set (206, 532) on the basis of the first or the second SBR element header in accordance to the selected start frequency (553) of the target set (206, 532).

17) The method of claim 16, wherein

- if the target set (206, 532) is a channel pair element and the source sets (201, 512, 202, 522) comprise at least one channel pair element, then the SBR element header of the target set (206, 532) is selected from one of the source sets (201, 512, 202, 522) that comprises a channel pair element;

- if the target set (206, 532) is a channel pair element and none of the source sets (201, 512, 202, 522) is a channel pair element, then the SBR element header of the source set comprising the highest or lowest start frequency is selected as a basis for the SBR element header of the target set (206, 532);
- if the target set (206, 532) is a single channel element and at least one of the source sets (201, 512, 202, 522) is a single channel element, then the SBR element header of the target set (206, 532) is selected as the SBR element header from one of the source sets that comprises a single channel element; and/or
- if the target set (206, 532) is a single channel element and all of the source sets (201, 512, 202, 522) are channel pair elements, the SBR element header of the source set comprising the highest or lowest start frequency is used as a basis for the SBR element of the target set (206, 532).

18) The method of any previous claim, wherein

- the first source set (201) comprises a first transient envelope index; wherein the first transient envelope index identifies a first transient envelope (414) with a first start time border (417);
- the second source set (202) comprises a second transient envelope index; wherein the second transient envelope index identifies a second transient envelope (423) with a second start time border (426);
- the target set (206) comprises a plurality of target envelopes, each target envelope having a start time border;
- the first transient envelope (414), the second transient envelope (423) and the plurality of target envelopes are associated with one or more time intervals of a first source signal, second source signal and target signal, respectively;

the method comprising further:

- selecting the earlier one (426) of the first (417) and second (426) start time borders;
- determining as a target transient envelope the envelope of the plurality of target envelopes for which the start border time is closest to the earlier one (426) of the first (417) and second (426) start time borders; and
- setting a target transient envelope index to identify the target transient envelope.

19) A method for merging a first (201, 512) and a second (202, 522) source set of SBR parameters to a target set (206, 532) of SBR parameters, wherein

- the first source set (201, 512) comprises a first start frequency (551);
- the second source set (202, 522) comprises a second start frequency (552);
- the first (551) and second (552) start frequency are different and are associated with lower frequency bounds of a first and second high band signal associated with the first (201, 512) and second (202, 522) source sets of SBR parameters, respectively; and

wherein the method comprises:

- comparing the first (551) and second (552) start frequencies;
- selecting the higher or lower of the first (551) and the second (552) start frequencies as a start frequency (553) of the target set (206, 532).

20) The method of claim 19, wherein

- the first source set (201, 512) comprises a first SBR element header comprising the first start frequency (551);
- the second source set (202, 522) comprises a second SBR element header comprising the second start frequency (552);

wherein the method comprises further:

- selecting a SBR element header of the target set (206, 532) on the basis of the first or the second SBR element header in accordance to the selected start frequency (553) of the target set (206, 532).

21) A method for merging a first (201, 512) and a second (202, 522) source set of SBR parameters to a target set (206, 532) of SBR parameters, wherein

- the first source set (201, 512) is associated with a first low band signal of a first source channel and comprises a first set of scale factor energies (515, 516, 517);
- the second source set (202, 522) is associated with a second low band signal of a second source channel and comprises a second set of scale factor energies (526, 527, 528, 529);
- the target set (206, 532) is associated with a target low band signal of a target channel obtained from time-domain downmixing of the first and second low band signal; and
- the target set (206, 532) comprises a target set of scale factor energies (533);

the method comprising:

- weighting a first and a second downmix coefficient by an energy compensation factor; wherein the first downmix coefficient is associated with the first source channel; wherein the second downmix coefficient is associated with the second source channel; wherein the energy compensation factor is associated with the interaction of the first and second low band signal during time-domain downmixing;
- scaling the first set of scale factor energies (515, 516, 517) by the first weighted downmix coefficient;
- scaling the second set of scale factor energies (526, 527, 528, 529) by the second weighted downmix coefficient; and
- determining the target set of scale factor energies (533) from the scaled first set of scale factor energies (515, 516, 517) and the

scaled second set of scale factor energies (526, 527, 528, 529).

22) The method of claim 21, wherein the energy compensation factor is associated with the ratio of the energy of the target low band signal and the combined energy of the first and second low band signal.

23) A method for merging a first (201) and a second (202) source set of SBR parameters to a target set (206) of SBR parameters, wherein

- the first source set (201) comprises a first transient envelope index; wherein the first transient envelope index identifies a first transient envelope (414) with a first start time border (417);
- the second source set (202) comprises a second transient envelope index; wherein the second transient envelope index identifies a second transient envelope (423) with a second start time border (426);
- the target set comprises a plurality of target envelopes, each target envelope having a start time border;
- the first transient envelope (414), the second transient envelope (423) and the plurality of target envelopes are associated with one or more time intervals of a first source signal, second source signal and target signal, respectively;

the method comprising:

- selecting the earlier one of the first (417) and second (426) start time borders;
- determining as a target transient envelope the envelope of the plurality of target envelopes for which the start time border is closest to the earlier one (426) of the first (417) and second (426) start time borders; and
- setting a target transient envelope index to identify the target transient envelope.

24) The method of claim 23, wherein the determining step comprises determining as a target transient envelope the envelope of the plurality of target envelopes for which the start time border (426) is closest to the earlier one of the first (417) and second (426) start time borders but not later than the earlier one of the first and second start time borders.

25) The method of any previous claim, wherein each source set of SBR parameters corresponds to SBR parameters associated with a channel of an HE-AAC bitstream.

26) A method for merging N source sets (201, 202, 203, 204, 205) of SBR parameters to M target sets (208, 209) of SBR parameters, wherein

- N is greater than 2;
- M is smaller than N;

the method comprising:

- merging a pair of source sets (201, 202) to yield an intermediate set (206); and
- merging the intermediate set (206) with a source set (204) or another intermediate set to yield a target set (208).

27) The method of claim 26, wherein the merging steps are performed according to the method of any of claims 1 to 25.

28) The method of claims 26 or 27, wherein source sets (201, 202) corresponding to source channels of higher acoustic relevance are merged less often than source sets corresponding to source channels of lower acoustic relevance.

29) A software program adapted for execution on a processor and for performing the method steps of any of claims 1 to 28 when carried out on a computing device.

30) A storage medium comprising a software program adapted for execution on a processor and for performing the method steps of any of claims 1 to 28 when carried out on a computing device.

31) A computer program product comprising executable instructions for performing the method of any of claims 1 to 28 when executed on a computer.

32) An SBR parameter merging unit (112) configured to provide M target sets (208, 209) of SBR parameters from N source sets (201, 202, 203, 204, 205) of SBR parameters, wherein N>M≥1, the SBR parameter merging unit comprising a processor configured to perform the method steps of any of claims 1 to 28.

33) An audio decoder configured to decode an HE-AAC bitstream comprising N audio channels, the audio decoder comprising

- an AAC decoder configured to receive the encoded HE-AAC bitstream and to provide a separate SBR bitstream;
- an SBR decoder configured to provide N source sets of SBR parameters corresponding to the N audio channels from the SBR bitstream; and
- an SBR parameter merging unit (112) according to claim 32 configured to provided M target sets (208, 209) of SBR parameters from the N source sets (201, 202, 203, 204, 205) of SBR parameters, wherein N>M≥1.

34) The audio decoder of claim 33, wherein the AAC decoder is further configured to provide N time domain low band audio signals corresponding to the N audio channels; and wherein the audio decoder comprises further:

- a time domain downmix unit configured to provide M time domain low band audio signals from the N time domain low band audio signals; and
- an SBR unit configured to generate M high band audio signals from the M low band audio signals and the M target sets of SBR parameters;

wherein the audio decoder is configured to provide M audio signals comprising the M low band audio signals and the M high band audio signals, respectively.

35) An audio transcoder configured to provide an HE-AAC bitstream comprising M audio channels from an HE-AAC bitstream comprising N audio channels, wherein N>M≥1, the audio transcoder comprising:

- a SBR parameter merging unit (112) according to claim 32.

36) An electronic device configured to render M audio signals corresponding to M channels from an HE-AAC bitstream comprising N audio channels, wherein N>M≥1, the electronic device comprising:

- audio rendering means configured to perform the acoustic rendering of the M audio signals;
- a receiver configured to receive the encoded HE-AAC bitstream; and
- an audio decoder configured to provide the M audio signals from the HE-AAC bitstream according to any of claims 33 to 34.

Claims

1. A method for merging a first source set (201, 512) and a second source set (202, 522) of spectral band replication parameters (hereinafter referred to as SBR parameters) to a target set (206, 532) of SBR parameters, wherein

- the first source set (201, 512) and the second source set (202, 522) comprise a first frequency band partitioning (513, 514) and second frequency band partitioning (523, 524, 525), respectively, which are different from one another;

- the first source set (201, 512) comprises energy-related values (515, 516, 517) of a first set associated with frequency bands (511) of the first frequency band partitioning (513, 514);

- the second source set (202, 522) comprises energy-related values (526, 527, 528, 529) of a second set associated with frequency bands of the second frequency band partitioning (523, 524, 525); and

- the target set (206, 532) comprises a target energy-related value (533) associated with an elementary frequency band (543);

the method comprising:

- breaking up the first frequency band partitioning (513, 514) and the second frequency band partitioning (523, 524, 525) into a joint grid (541, 542) comprising the elementary frequency band (543);

- assigning a first value (517) of the energy-related values (515, 516, 517) of the first set to the elementary frequency band (543);

- assigning a second value (529) of the energy-related values (526, 527, 528, 529) of the second set to the elementary frequency band (543); and

- combining the first value (517) and second (529) value to calculate the target energy-related value (533) for the elementary frequency band (543).

2. The method of claim 1 wherein

- the first value (517) corresponds to the energy-related value associated with the frequency band (511) of the first frequency band partitioning (513, 514) which comprises the elementary frequency band (543); and

- the second value (529) corresponds to the energy-related value associated with a frequency band of the second frequency band partitioning (523, 524, 525) which comprises the elementary frequency band (543).

3. The method of claim 1 or claim 2, wherein

- the joint grid (541, 542) is associated with a quadrature mirror filter bank

(referred to as QMF filter bank) used to determine the SBR parameters; and

- the elementary frequency band (543) is a QMF subband.

4. The method of one of claims 1 to 3, further comprising:

- normalizing the target energy-related value (533) by the number of contributing source sets.

5. The method of one of claims 1 to 4, wherein the target set (206, 532) comprises target energy-related values (533) of one set; and wherein the method further comprises:

- repeating the assigning steps and the combining step for all elementary frequency bands (543) of the joint grid (541, 542), thereby calculating the set of target energy-related values (533).

6. The method of claim 5, wherein the target set (206, 532) comprises a target frequency band partitioning with a predefined target frequency band; and wherein the method further comprises:

- averaging the target energy-related values (533) of the set associated with the elementary frequency bands (543) included within the target frequency band; and

- assigning the averaged value as the target energy-related value of the target frequency band.

7. The method of claim 1, wherein

- the energy-related value is a scale factor energy and the frequency band is a scale factor band; and/or

- the energy-related value is a noise floor scale factor energy and the frequency band is a noise floor scale factor band.

8. The method of one of claims 1 to 7, wherein

- the first source set (201, 512) is associated with a first low band signal of a first source channel;

- the second source set (202, 522) is associated with a second low band signal of a second source channel; and

- the target set (206, 532) is associated with a target low band signal of a target channel obtained from time-domain down-mixing of the first and second low band signals.

9. The method of claim 8, wherein

- the target energy-related value (533) is associated with a target time interval of the target low band signal;

- the energy-related values (515, 516, 517) of the first set are associated with a first time interval of the first low band signal, wherein the first time interval overlaps the target time interval; and

- the combining step comprises: scaling the first value (517) according to a ratio given by the overlap length of the first time interval and the target time interval, and the length of the target time interval; and combining the scaled first value (517) and the second value (529).

10. The method of claim 9, wherein

- the first source set (201, 512) comprises a third frequency band partitioning;

- the first source set (201, 512) comprises an energy-related value of a third set associated with a frequency band of the third frequency band partitioning;

- the energy-related value of the third set is associated with a third time interval of the first low band signal, wherein the third time interval overlaps the target time interval;

the method further comprising:

- breaking up the third frequency band partitioning into the joint grid (541, 542) comprising the elementary frequency band (543); and

- assigning a third value of the energy-related value of the third set to the elementary frequency band (543);

wherein the combining step comprises:

- scaling the third value according to a ratio given by the overlap length of the third time interval and the target time interval, and the length of the target time interval; and

- combining the scaled first value (517), the second value (529) and the scaled third value.

11. The method of claim 8, further comprising:

- scaling the energy-related values (515, 516, 517) of the first set by a first down-mix coefficient; and

- scaling the energy-related values (526, 527, 528, 529) of the second set by a second down-mix coefficient;

wherein the first and second down-mix coefficients are associated with the first and second source channels, respectively.

12. The method of claim 11, wherein prior to the scaling steps the method comprises:

- weighting the first and second down-mix coefficients by an energy

compensation factor, wherein the energy compensation factor is associated with an interaction of the first and second low band signals during a time-domain down-mixing.

13. The method of claim 12, wherein

- the energy compensation factor is associated with the ratio of the energy of the target low band signal and the combined energy of the first and second low band signals.

14. The method of claim 13, wherein

- N source channels are merged, with N ≥2, to obtain M target

channels, with M<N and M≥1;

- the energy compensation factor (f_{comp}) is given by:

$$f_{comp} = \sqrt{\frac{\sum_{chout=0}^{M-1}\sum_{n} x_{dmx}^{2}[chout][n]}{\sum_{chin=0}^{N-1}\sum_{n}(c_{chin}\cdot x_{in}[chin][n])^{2}}}$$

$x_{in}[chin][n]$ - is a low band time domain signal in the source channel chin, c_{chin} is a down-mix coefficient for the source channel chin, $x_{dmx}[chout][n]$ is a low band time domain signal of the target channel (chout), and n is a sample index of a set of signal samples within a frame of the signals in the time domain.

15. The method of one of claims 1 to 14, wherein

- the first source set (201, 512) comprises a first start frequency (551);

- the second source set (202, 522) comprises a second start frequency (552);

- the first start frequency (551) and the second start frequency (552) are different and are associated with lower bounds of the first band partitioning (513, 514) and the second (523, 524, 525) band partitioning, respectively; and

wherein the method further comprises:

- comparing the first start frequency (551) and the second start frequency (552);

- selecting the higher or lower of the first start frequency (551) and the second start frequency (552) as a start frequency (553) of the target set.

16. The method of claim 15, wherein

- the first source set (201, 512) comprises a first SBR element header comprising

the first start frequency (551);

- the second source set (202, 522) comprises a second SBR element header comprising the second start frequency (552);

wherein the method further comprises:

- selecting an SBR element header of the target set (206, 532) on the basis of the first or the second SBR element header according to the selected start frequency (553) of the target set (206, 532).

17. The method of claim 16, wherein

- if the target set (206, 532) is a channel pair element and the source sets (201, 512, 202, 522) comprise at least one channel pair element, then the SBR element header of the target set (206, 532) is selected from one of the source sets (201, 512, 202, 522) that comprises a channel pair element;

- if the target set (206, 532) is a channel pair element and none of the source sets (201, 512, 202, 522) is a channel pair element, then the SBR element header of the source set comprising the highest or lowest start frequency is selected as a basis for the SBR element header of the target set (206, 532);

- if the target set (206, 532) is a single channel element and at least one of the source sets (201, 512, 202, 522) is a single channel element, then the SBR element header of the target set (206, 532) is selected as the SBR element header from one of the source sets that comprises a single channel element; and/or

- if the target set (206, 532) is a single channel element and all of the source sets (201, 512, 202, 522) are channel pair elements, the SBR element header of the source set comprising the highest or lowest start frequency is used as a basis for the SBR element of the target set (206, 532).

18. The method of one of claims 1 to 17, wherein

- the first source set (201) comprises a first transient envelope index, wherein the first transient envelope index identifies a first transient envelope (414) with a first start time border (417);

- the second source set (202) comprises a second transient envelope index, wherein the second transient envelope index identifies a second transient envelope (423) with a second start time border (426);

- the target set (206) comprises a plurality of target envelopes, each target envelope having a start time border;

- the first transient envelope (414), the second transient envelope (423) and the plurality of target envelopes are associated with one or more time intervals of a first source signal, second source signal and target signal, respectively;

the method further comprising:

- selecting the earlier one (426) of the first start time border (417) and second start time border (426);

- determining an envelope having the start border time closest to the earlier one (426) of the first start time border (417) and second start time border (426) as a target transient envelope, among the plurality of target envelopes; and

- setting a target transient envelope index to identify the target transient envelope.

19. A method for merging a first source set (201, 512) and a second source set (202, 522) of SBR parameters to a target set (206, 532) of SBR parameters, wherein

- the first source set (201, 512) comprises a first start frequency (551);

- the second source set (202, 522) comprises a second start frequency (552);

- the first start frequency (551) and the second start frequency (552) are different and are associated with lower frequency bounds of first and second high band signals associated with the first source set (201, 512) and the second source set (202, 522) of the SBR parameters, respectively; and

wherein the method comprises:

- comparing the first start frequency (551) with the second start frequency (552);

- selecting the higher or lower of the first start frequency (551) and the second start frequency (552) as a start frequency (553) of the target set (206, 532).

20. The method of claim 19, wherein

- the first source set (201, 512) comprises a first SBR element header comprising the first start frequency (551);

- the second source set (202, 522) comprises a second SBR element header comprising the second start frequency (552);

wherein the method further comprises:

- selecting an SBR element header of the target set (206, 532) on the basis of the first or the second SBR element header in accordance with the selected start frequency (553) of the target set (206, 532).

21. A method for merging a first source set (201, 512) and a second source set (202, 522) of SBR parameters to a target set (206, 532) of SBR parameters, wherein

- the first source set (201, 512) is associated with a first low band signal of a first source channel and comprises scale factor energies (515, 516, 517) of a first set;

- the second source set (202, 522) is associated with a second low band signal of a second source channel and comprises scale factor energies (526, 527, 528, 529) of a second set;

- the target set (206, 532) is associated with a target low band signal of a target channel obtained from a time-domain down-mixing of the first and second low band signals; and

- the target set (206, 532) comprises a target set of scale factor energies (533);

the method comprising:

- weighting first and second down-mix coefficients by an energy compensation factor;

- scaling the scale factor energies (515, 516, 517) of the first set by the first weighted down-mix coefficient;

- scaling the scale factor energies (526, 527, 528, 529) of the second set by the second weighted down-mix coefficient; and

- determining the target set of the scale factor energy (533) from the scaled scale factor energies (515, 516, 517) of the first set and the scaled scale factor energies (526, 527, 528, 529) of the second set.

The method for the first down-mix coefficient is associated with the first source channel, the second down-mix coefficient is associated with the second source channel, and the energy compensation factor is associated with an interaction of the first and second low band signals during a time-domain down-mixing.

22. The method of claim 21, wherein the energy compensation factor is associated with the ratio of the energy of the target low band signal and the combined energy of the first and second low band signals.

23. A method for merging a first source set (201) and a second source set (202) of SBR parameters to a target set (206) of SBR parameters, wherein

- the first source set (201) comprises a first transient envelope index, wherein the first transient envelope index identifies a first transient envelope (414) with a first start time border (417);

- the second source set (202) comprises a second transient envelope index, wherein the second transient envelope index identifies a second transient envelope (423) with a second start time border (426);

- the first transient envelope (414), the second transient envelope (423) and a plurality of target envelopes are associated with one or more time intervals of a first source signal, second source signal and a target signal, respectively;

the method comprising:

- selecting the earlier one of the first start time border (417) and second start time border (426);

- determining an envelope having the start time border which is closest to the earlier one (426) of the first start time border (417) and the second start time border (426) as a target transient envelope, among the plurality of target envelopes; and

- setting a target transient envelope index to identify the target transient envelope.

24. The method of claim 23, wherein the determining step comprises determining an envelope having the start time border (426) which is closest to the earlier one of the first start time border (417) and the second start time border (426) but not later than the earlier one of the first and second start time borders, as a target transient envelope, among the plurality of target envelopes.

25. The method of one of claims 1 to 24, wherein each source set of SBR parameters corresponds to SBR parameters associated with a channel of an HE-AAC (High-Efficiency Advanced Audio Coding) bit-stream.

26. A method for merging N source sets (201, 202, 203, 204, 205) of SBR parameters to M target sets (208, 209) of SBR parameters, wherein

- N is greater than 2;

- M is smaller than N;

the method comprising:

- merging a pair of source sets (201, 202) to yield an intermediate set (206); and

- merging the intermediate set (206) with a source set (204) or another intermediate set to yield a target set (208).

27. The method of claim 26, wherein the merging steps are performed according to the method of any of claims 1 to 25.

28. The method of claim 26 or claim 27, wherein source sets (201, 202) corresponding to source channels of relatively higher acoustic relevance are merged less often than source sets corresponding to source channels of relatively lower acoustic relevance.

29. A storage medium comprising a software program adapted for execution on a processor and for performing the method steps of any of claims 1 to 28 when carried out on a computing device.

30. A computer program product comprising executable instructions for performing the method of any of claims 1 to 28 when executed on a computer.

31. An SBR parameter merging unit (112) configured to provide M target sets (208, 209) of SBR parameters from N source sets (201, 202, 203, 204, 205) of SBR parameters, wherein N>M≥1, the SBR parameter merging unit comprising a processor configured to perform the method steps of any of claims 1 to 28.

32. An audio decoder configured to decode an HE-AAC bit-stream comprising N audio channels, the audio decoder comprising

- an AAC decoder configured to receive the encoded HE-AAC bit-stream and to provide a separate SBR bit-stream;

- an SBR decoder configured to provide N source sets of SBR parameters corresponding to the N audio channels from the SBR bit-stream; and

- an SBR parameter merging unit (112) according to claim 31, configured to provided M target sets (208, 209) of the SBR parameters from the N source sets (201, 202, 203, 204, 205) of the SBR parameters, wherein N>M≥1.

33. The audio decoder of claim 32, wherein the AAC decoder is further configured to provide N time domain low band audio signals corresponding to the N audio channels, and wherein the audio decoder further comprises:

- a time domain down-mix unit configured to provide M time domain low band audio signals from the N time domain low band audio signals; and

- an SBR unit configured to generate M high band audio signals from the M low band audio signals and the M target sets of the SBR parameters;

wherein the audio decoder is configured to provide M audio signals comprising the M low band audio signals and the M high band audio signals, respectively.

34. An audio transcoder configured to provide an HE-AAC bit-stream comprising M audio channels from an HE-AAC bit-stream comprising N audio channels, wherein N>M≥1, the audio transcoder comprising:

- an SBR parameter merging unit (112) according to claim 31.

35. An electronic device configured to render M audio signals corresponding to M channels from an HE-AAC bit-stream comprising N audio channels, wherein N>M≥1, the electronic device comprising:

- audio rendering means configured to perform the acoustic rendering of the M audio signals;

- a receiver configured to receive the encoded HE-AAC bit-stream; and

- an audio decoder configured to provide the M audio signals from the HE-AAC bit-stream according to claim 32.