CLAIMS

1. A method for mitigating potential frame instability by an electronic device, comprising: obtaining a first frame of a speech signal subsequent in time to an erased frame, wherein the first frame is a correctly received frame; generating a previous frame end line spectral frequency vector with frame erasure concealment; applying a received weighting vector to a first frame end line spectral frequency vector and to the previous frame end line spectral frequency vector to generate a first frame mid line spectral frequency vector, wherein the received weighting vector corresponds to the first frame and is received from an encoder; determining whether the first frame is potentially unstable; applying a substitute weighting value instead of the received weighting vector to the first frame end line spectral frequency vector and to the previous frame end line spectral frequency vector to generate a stable frame parameter in response to determining that the first frame is potentially unstable, wherein the stable frame parameter is a mid line spectral frequency vector between the first frame end line spectral frequency vector and the previous frame end line spectral frequency vector; and synthesizing a decoded speech signal based on the stable frame parameter.

2. The method of claim 1, further comprising interpolating a plurality of subframe line spectral frequency vectors based on the mid line spectral frequency vector.

3. The method of claim 1, further comprising: receiving an encoded excitation signal; and dequantizing the encoded excitation signal to produce an excitation signal, wherein synthesizing the decoded speech signal comprises filtering the excitation signal based on the stable frame parameter.

4. The method of claim 1, wherein the substitute weighting value is between 0 and 1.

5. The method of claim 1, wherein generating the stable frame parameter comprises determining the mid line spectral frequency vector that is equal to a product of the first frame end line spectral frequency vector and the substitute weighting value plus a product of the previous frame end line spectral frequency vector and a difference of one and the substitute weighting value.

6. The method of claim 1, wherein the substitute weighting value is selected based on at least one of a classification of two frames and a line spectral frequency difference between the two frames.

7. The method of claim 1, wherein determining whether the first frame is potentially unstable is based on whether a first frame mid line spectral frequency is ordered in accordance with a rule before any reordering.

8. The method of claim 1, wherein determining whether the first frame is potentially unstable is based on whether the first frame is within a threshold number of frames after the erased frame.

9. The method of claim 1, wherein determining whether the first frame is potentially unstable is based on whether any frame between the first frame and the erased frame utilizes non-predictive quantization.

10. An electronic device for mitigating potential frame instability, comprising: decoder circuitry configured to generate a previous frame end line spectral frequency vector with frame erasure concealment; frame parameter determination circuitry configured to obtain a first frame of a speech signal subsequent in time to an erased frame, wherein the first frame is a correctly received frame, and configured to apply a received weighting vector to a first frame end line spectral frequency vector and to the previous frame end line spectral frequency vector to generate a first frame mid line spectral frequency vector, wherein the received weighting vector corresponds to the first frame and is received from an encoder; stability determination circuitry coupled to the frame parameter determination circuitry, wherein the stability determination circuitry is configured to determine whether the first frame is potentially unstable; weighting value substitution circuitry coupled to the stability determination circuitry, wherein the weighting value substitution circuitry is configured to apply a substitute weighting value instead of the received weighting vector to the first frame end line spectral frequency vector and to the previous frame end line spectral frequency vector to generate a stable frame parameter in response to determining that the first frame is potentially unstable, wherein the stable frame parameter is a mid line spectral frequency vector between the first frame end line spectral frequency vector and the previous frame end line spectral frequency vector; and a synthesis filter configured to synthesize a decoded speech signal based on the stable frame parameter.

11. The electronic device of claim 10, further comprising interpolation circuitry configured to interpolate a plurality of subframe line spectral frequency vectors based on the mid line spectral frequency vector.

12. The electronic device of claim 10, further comprising inverse quantizer circuitry configured to receive and dequantize an encoded excitation signal to produce an excitation signal, wherein the synthesis filter is configured to synthesize the decoded speech signal by filtering the excitation signal based on the stable frame parameter.

13. The electronic device of claim 10, wherein the substitute weighting value is between 0 and 1.

14. The electronic device of claim 10, wherein the weighting value substitution circuitry is configured to determine the mid line spectral frequency vector that is equal to a product of the first frame end line spectral frequency vector and the substitute weighting value plus a product of the previous frame end line spectral frequency vector and a difference of one and the substitute weighting value.

15. The electronic device of claim 10, wherein the weighting value substitution circuitry is configured to select the substitute weighting value based on at least one of a classification of two frames and a line spectral frequency difference between the two frames.

16. The electronic device of claim 10, wherein the stability determination circuitry is configured to determine whether the first frame is potentially unstable based on whether a first frame mid line spectral frequency is ordered in accordance with a rule before any reordering.

17. The electronic device of claim 10, wherein the stability determination circuitry is configured to determine whether the first frame is potentially unstable based on whether the first frame is within a threshold number of frames after the erased frame.

18. The electronic device of claim 10, wherein the stability determination circuitry is configured to determine whether the first frame is potentially unstable based on whether any frame between the first frame and the erased frame utilizes non-predictive quantization.

19. A computer-program product for mitigating potential frame instability, comprising a non-transitory tangible computer-readable medium having instructions thereon, the instructions comprising: code for causing an electronic device to obtain a first frame of a speech signal subsequent in time to an erased frame, wherein the first frame is a correctly received frame; code for causing the electronic device to generate an erased previous frame end line spectral frequency vector with frame erasure concealment; code for causing the electronic device to apply a received weighting vector to a first frame end line spectral frequency vector and to the previous frame end line spectral frequency vector to generate a first frame mid line spectral frequency vector, wherein the received weighting vector corresponds to the first frame and is received from an encoder; code for causing the electronic device to determine whether the first frame is potentially unstable; code for causing the electronic device to apply a substitute weighting value instead of the received weighting vector to the first frame end line spectral frequency vector and to the previous frame end line spectral frequency vector to generate a stable frame parameter in response to determining that the first frame is potentially unstable, wherein the stable frame parameter is a mid line spectral frequency vector between the first frame end line spectral frequency vector and the previous frame end line spectral frequency vector; and code for causing the electronic device to synthesize a decoded speech signal based on the stable frame parameter.

20. The computer-program product of claim 19, further comprising code for causing the electronic device to interpolate a plurality of subframe line spectral frequency vectors based on the mid line spectral frequency vector.

21. The computer-program product of claim 19, further comprising: code for causing the electronic device to receive an encoded excitation signal; and code for causing the electronic device to dequantize the encoded excitation signal to produce an excitation signal, wherein the code for causing the electronic device to synthesize the decoded speech signal comprises code for causing the electronic device to filter the excitation signal based on the stable frame parameter.

22. The computer-program product of claim 19, wherein the substitute weighting value is between 0 and 1.

23. The computer-program product of claim 19, wherein generating the stable frame parameter comprises determining the mid line spectral frequency vector that is equal to a product of the first frame end line spectral frequency vector and the substitute weighting value plus a product of the previous frame end line spectral frequency vector and a difference of one and the substitute weighting value.

24. The computer-program product of claim 19, wherein the substitute weighting value is selected based on at least one of a classification of two frames and a line spectral frequency difference between the two frames.

25. The computer-program product of claim 19, wherein determining whether the first frame is potentially unstable is based on whether a first frame mid line spectral frequency is ordered in accordance with a rule before any reordering.

26. The computer-program product of claim 19, wherein determining whether the first frame is potentially unstable is based on whether the first frame is within a threshold number of frames after the erased frame.

27. The computer-program product of claim 19, wherein determining whether the first frame is potentially unstable is based on whether any frame between the first frame and the erased frame utilizes non-predictive quantization.

28. An apparatus for mitigating potential frame instability, comprising: means for obtaining a first frame of a speech signal subsequent in time to an erased frame, wherein the first frame is a correctly received frame; means for generating a previous frame end line spectral frequency vector with frame erasure concealment; means for applying a received weighting vector to a first frame end line spectral frequency vector and to the previous frame end line spectral frequency vector to generate a first frame mid line spectral frequency vector, wherein the received weighting vector corresponds to the first frame and is received from an encoder; means for determining whether the first frame is potentially unstable; means for applying a substitute weighting value instead of the received weighting vector to the first frame end line spectral frequency vector and to the previous frame end line spectral frequency vector to generate a stable frame parameter in response to determining that the first frame is potentially unstable, wherein the stable frame parameter is a mid line spectral frequency vector between the first frame end line spectral frequency vector and the previous frame end line spectral frequency vector; and means for synthesizing a decoded speech signal based on the stable frame parameter.

29. The apparatus of claim 28, further comprising means for interpolating a plurality of subframe line spectral frequency vectors based on the mid line spectral frequency vector.

30. The apparatus of claim 28, further comprising: means for receiving an encoded excitation signal; and means for dequantizing the encoded excitation signal to produce

an excitation signal, wherein the means for synthesizing the decoded speech signal comprises means for filtering the excitation signal based on the stable frame parameter.

31. The apparatus of claim 28, wherein the substitute weighting value is between 0 and 1.

32. The apparatus of claim 28, wherein generating the stable frame parameter comprises determining the mid line spectral frequency vector that is equal to a product of the first frame end line spectral frequency vector and the substitute weighting value plus a product of the previous frame end line spectral frequency vector and a difference of one and the substitute weighting value.

33. The apparatus of claim 28, wherein the substitute weighting value is selected based on at least one of a classification of two frames and a line spectral frequency difference between the two frames.

34. The apparatus of claim 28, wherein determining whether the first frame is potentially unstable is based on whether a first frame mid line spectral frequency is ordered in accordance with a rule before any reordering.

35. The apparatus of claim 28, wherein determining whether the first frame is potentially unstable is based on whether the first frame is within a threshold number of frames after the erased frame.

36. The apparatus of claim 28, wherein determining whether the first frame is potentially unstable is based on whether any frame between the first frame and the erased frame utilizes non-predictive quantization.