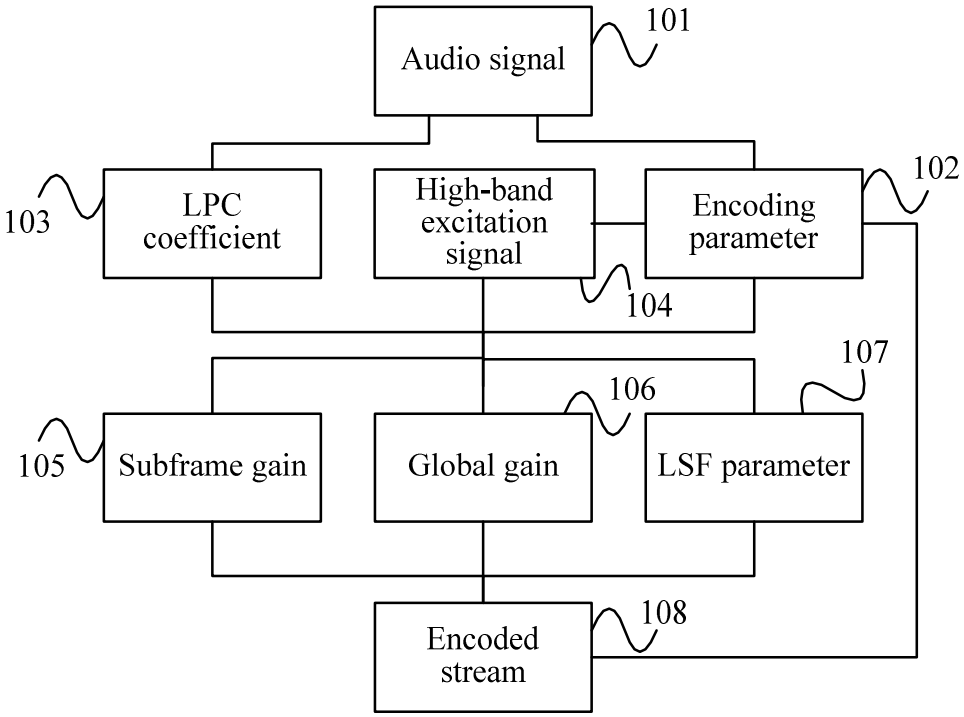
Audio signal
101
LPC coefficient
103
High-band excitation signal
Encoding parameter
102
104
107
106
Subframe gain
105
Global gain
LSF parameter
Encoded stream
108

FIG. 1

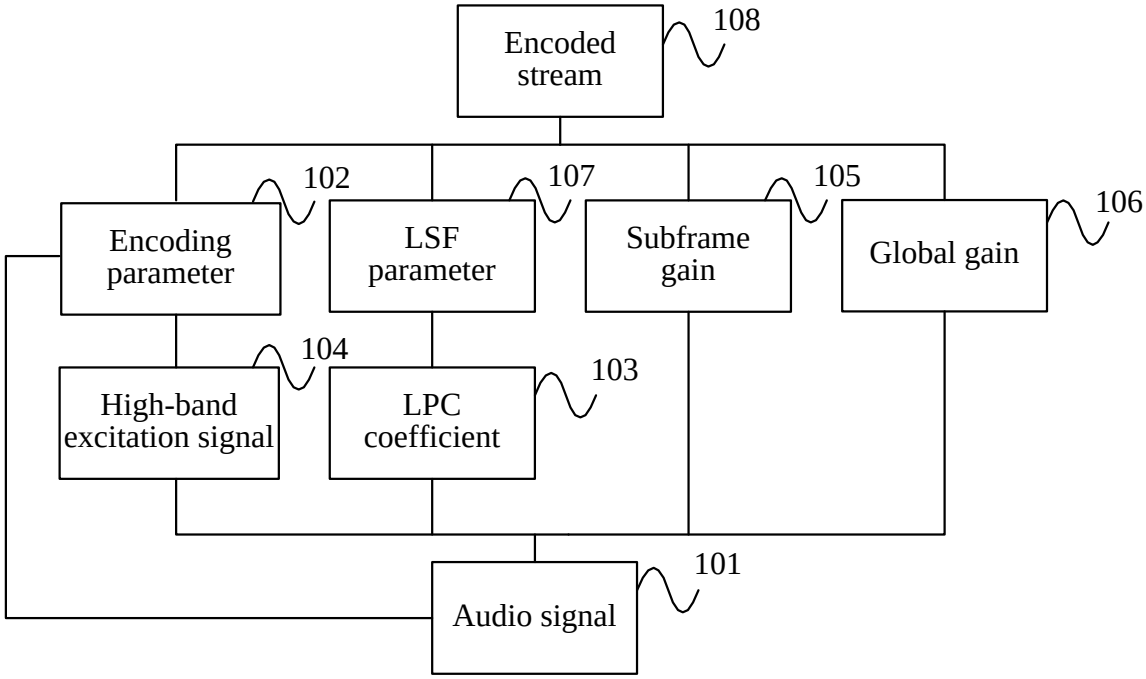
Encoded stream
108
102
107
105
106
Encoding parameter
LSF parameter
Subframe gain
Global gain
104
103
High-band excitation signal
LPC coefficient
101
Audio signal

FIG. 2

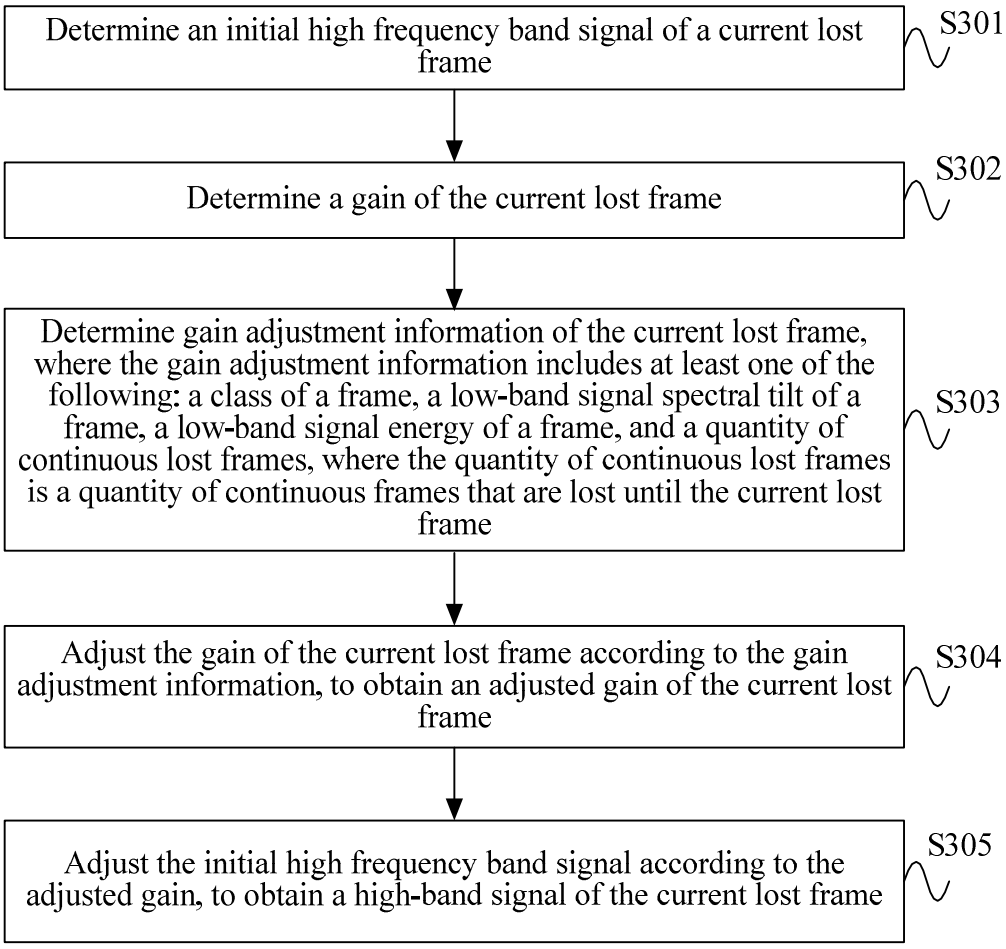
Determine an initial high frequency band signal of a current lost frame
S301
Determine a gain of the current lost frame
S302
Determine gain adjustment information of the current lost frame, where the gain adjustment information includes at least one of the following: a class of a frame, a low-band signal spectral tilt of a frame, a low-band signal energy of a frame, and a quantity of continuous lost frames, where the quantity of continuous lost frames is a quantity of continuous frames that are lost until the current lost frame
S303
Adjust the gain of the current lost frame according to the gain adjustment information, to obtain an adjusted gain of the current lost frame
S304
Adjust the initial high frequency band signal according to the adjusted gain, to obtain a high-band signal of the current lost frame
S305

FIG. 3

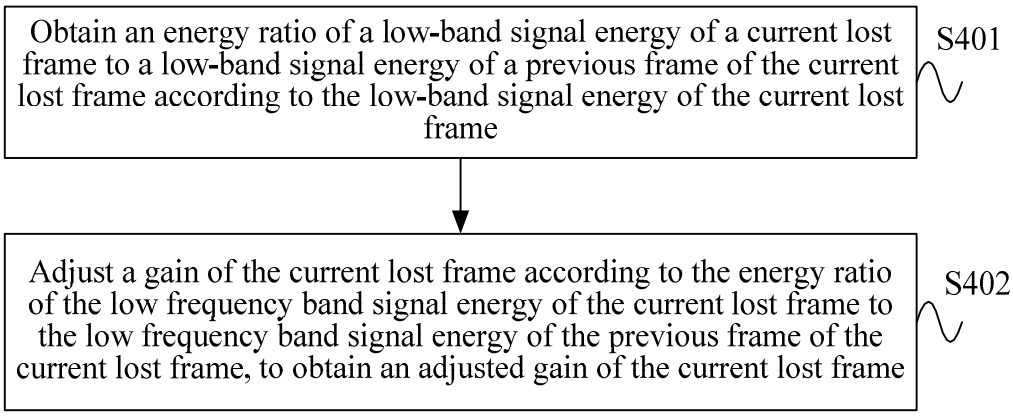
Obtain an energy ratio of a low-band signal energy of a current lost frame to a low-band signal energy of a previous frame of the current lost frame according to the low-band signal energy of the current lost frame
S401
Adjust a gain of the current lost frame according to the energy ratio of the low frequency band signal energy of the current lost frame to the low frequency band signal energy of the previous frame of the current lost frame, to obtain an adjusted gain of the current lost frame
S402

FIG. 4

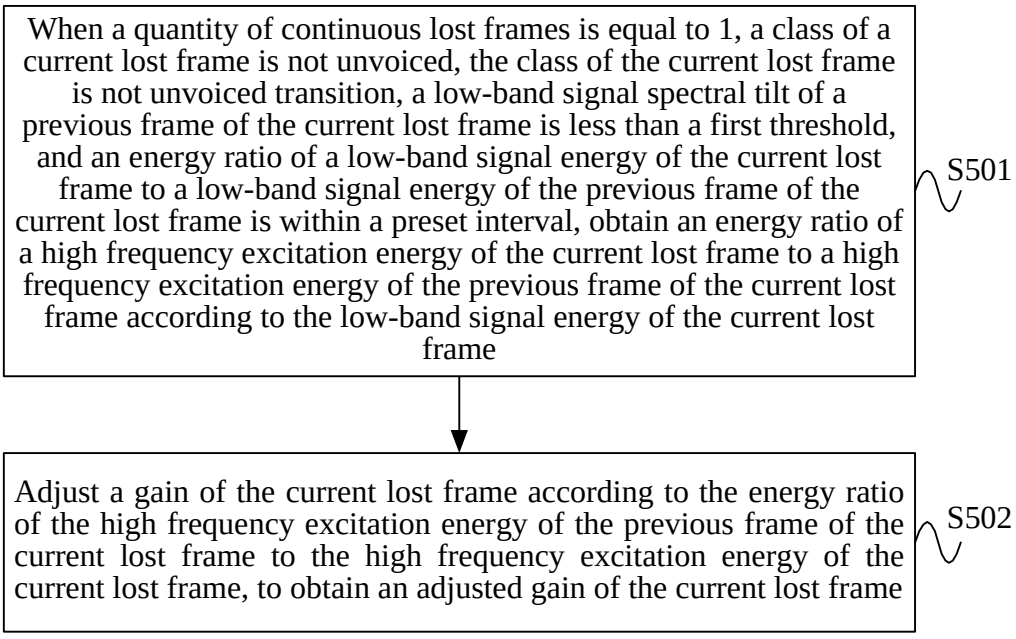
When a quantity of continuous lost frames is equal to 1, a class of a current lost frame is not unvoiced, the class of the current lost frame is not unvoiced transition, a low-band signal spectral tilt of a previous frame of the current lost frame is less than a first threshold, and an energy ratio of a low-band signal energy of the current lost frame to a low-band signal energy of the previous frame of the current lost frame is within a preset interval, obtain an energy ratio of a high frequency excitation energy of the current lost frame to a high frequency excitation energy of the previous frame of the current lost frame according to the low-band signal energy of the current lost frame
S501
Adjust a gain of the current lost frame according to the energy ratio of the high frequency excitation energy of the previous frame of the current lost frame to the high frequency excitation energy of the current lost frame, to obtain an adjusted gain of the current lost frame
S502

FIG. 5

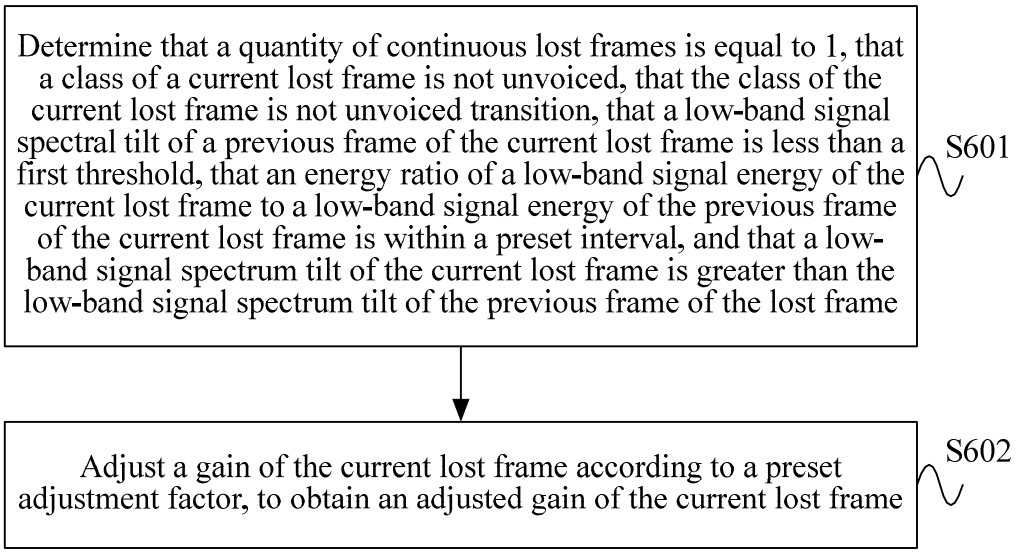
Determine that a quantity of continuous lost frames is equal to 1, that a class of a current lost frame is not unvoiced, that the class of the current lost frame is not unvoiced transition, that a low-band signal spectral tilt of a previous frame of the current lost frame is less than a first threshold, that an energy ratio of a low-band signal energy of the current lost frame to a low-band signal energy of the previous frame of the current lost frame is within a preset interval, and that a low-band signal spectrum tilt of the current lost frame is greater than the low-band signal spectrum tilt of the previous frame of the lost frame
S601
Adjust a gain of the current lost frame according to a preset adjustment factor, to obtain an adjusted gain of the current lost frame
S602

FIG. 6

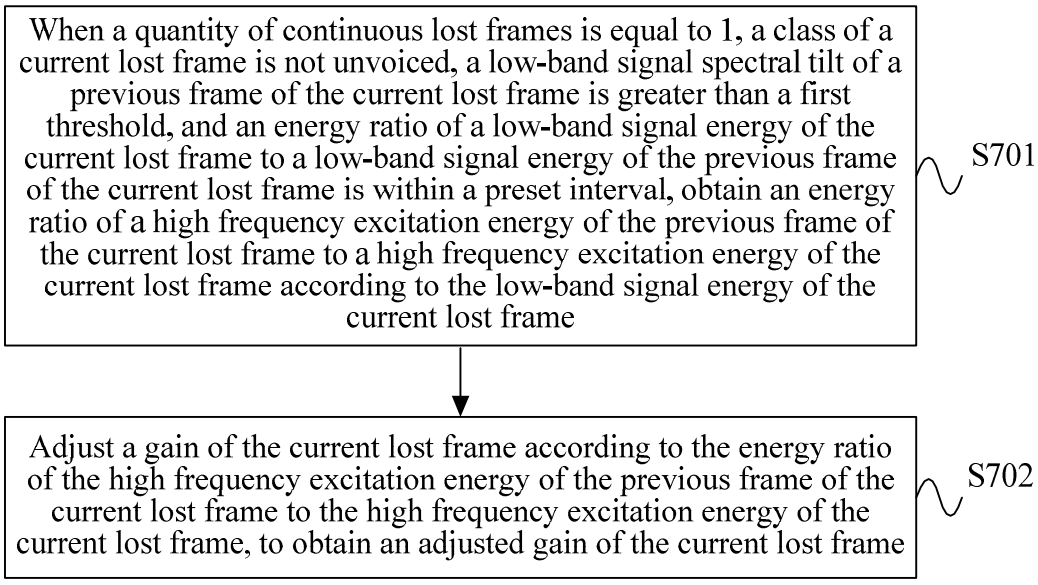
When a quantity of continuous lost frames is equal to 1, a class of a current lost frame is not unvoiced, a low-band signal spectral tilt of a previous frame of the current lost frame is greater than a first threshold, and an energy ratio of a low-band signal energy of the current lost frame to a low-band signal energy of the previous frame of the current lost frame is within a preset interval, obtain an energy ratio of a high frequency excitation energy of the previous frame of the current lost frame to a high frequency excitation energy of the current lost frame according to the low-band signal energy of the current lost frame
S701
Adjust a gain of the current lost frame according to the energy ratio of the high frequency excitation energy of the previous frame of the current lost frame to the high frequency excitation energy of the current lost frame, to obtain an adjusted gain of the current lost frame
S702

FIG. 7

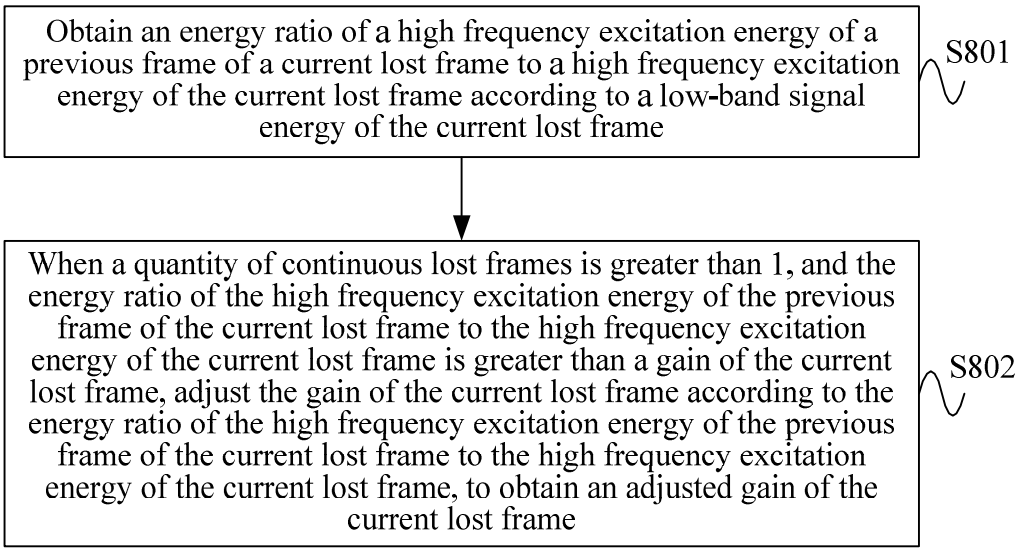
Obtain an energy ratio of a high frequency excitation energy of a previous frame of a current lost frame to a high frequency excitation energy of the current lost frame according to a low-band signal energy of the current lost frame
S801
When a quantity of continuous lost frames is greater than 1, and the energy ratio of the high frequency excitation energy of the previous frame of the current lost frame to the high frequency excitation energy of the current lost frame is greater than a gain of the current lost frame, adjust the gain of the current lost frame according to the energy ratio of the high frequency excitation energy of the previous frame of the current lost frame to the high frequency excitation energy of the current lost frame, to obtain an adjusted gain of the current lost frame
S802

FIG. 8

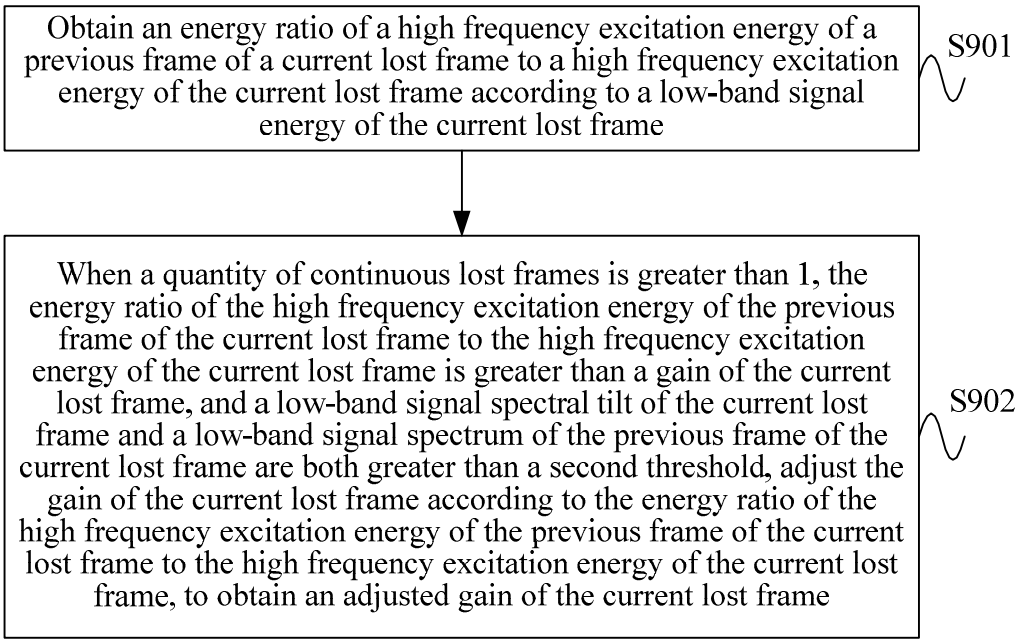
Obtain an energy ratio of a high frequency excitation energy of a previous frame of a current lost frame to a high frequency excitation energy of the current lost frame according to a low-band signal energy of the current lost frame
S901
When a quantity of continuous lost frames is greater than 1, the energy ratio of the high frequency excitation energy of the previous frame of the current lost frame to the high frequency excitation energy of the current lost frame is greater than a gain of the current lost frame, and a low-band signal spectral tilt of the current lost frame and a low-band signal spectrum of the previous frame of the current lost frame are both greater than a second threshold, adjust the gain of the current lost frame according to the energy ratio of the high frequency excitation energy of the previous frame of the current lost frame to the high frequency excitation energy of the current lost frame, to obtain an adjusted gain of the current lost frame
S902

FIG. 9

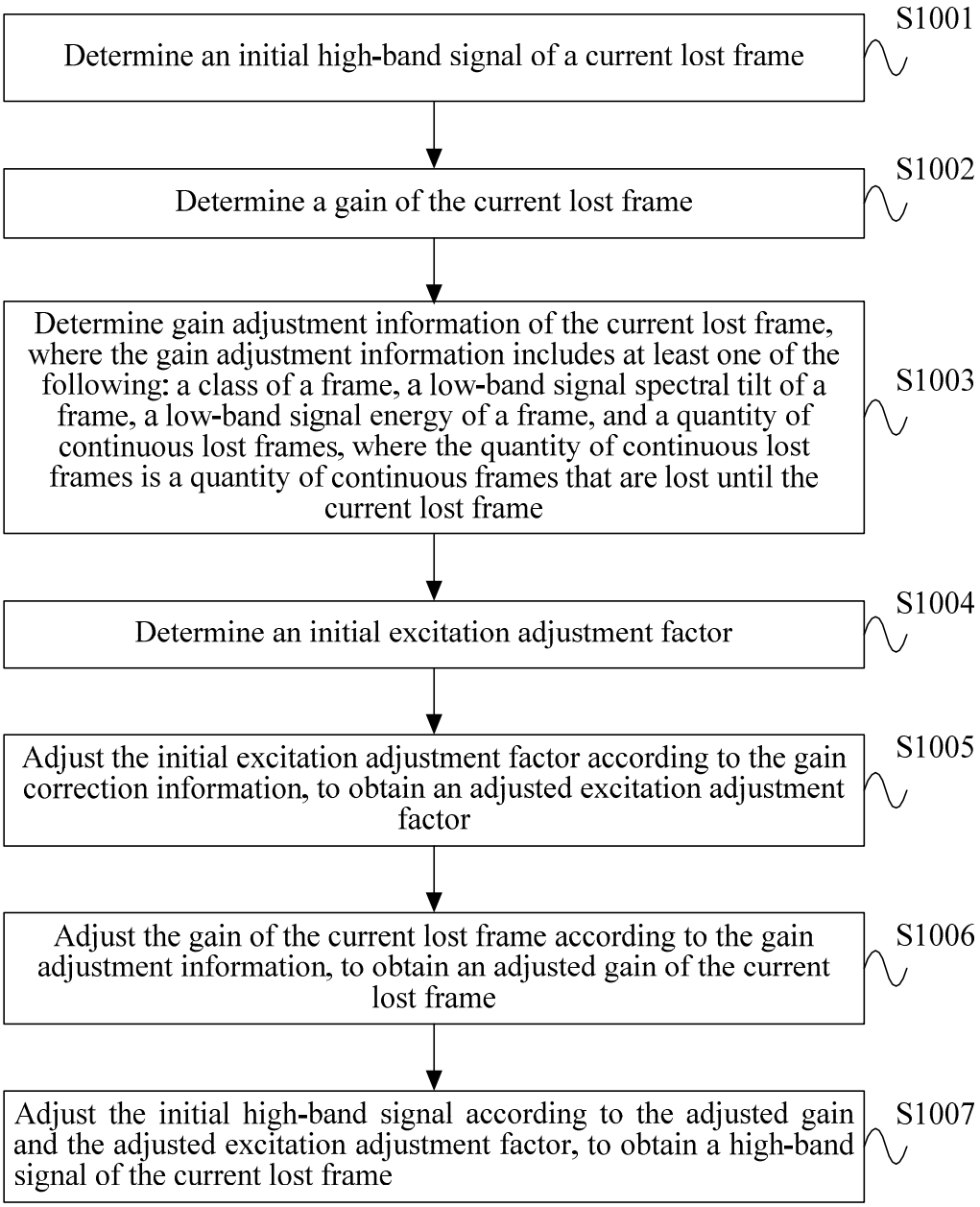
Determine an initial high-band signal of a current lost frame
S1001
Determine a gain of the current lost frame
S1002
Determine gain adjustment information of the current lost frame, where the gain adjustment information includes at least one of the following: a class of a frame, a low-band signal spectral tilt of a frame, a low-band signal energy of a frame, and a quantity of continuous lost frames, where the quantity of continuous lost frames is a quantity of continuous frames that are lost until the current lost frame
S1003
Determine an initial excitation adjustment factor
S1004
Adjust the initial excitation adjustment factor according to the gain correction information, to obtain an adjusted excitation adjustment factor
S1005
Adjust the gain of the current lost frame according to the gain adjustment information, to obtain an adjusted gain of the current lost frame
S1006
Adjust the initial high-band signal according to the adjusted gain and the adjusted excitation adjustment factor, to obtain a high-band signal of the current lost frame
S1007

FIG. 10

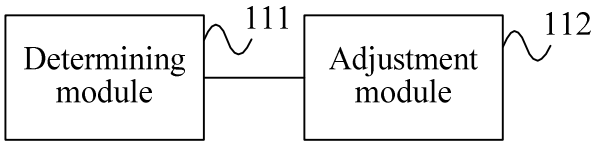
Determining module
111
Adjustment module
112

FIG. 11