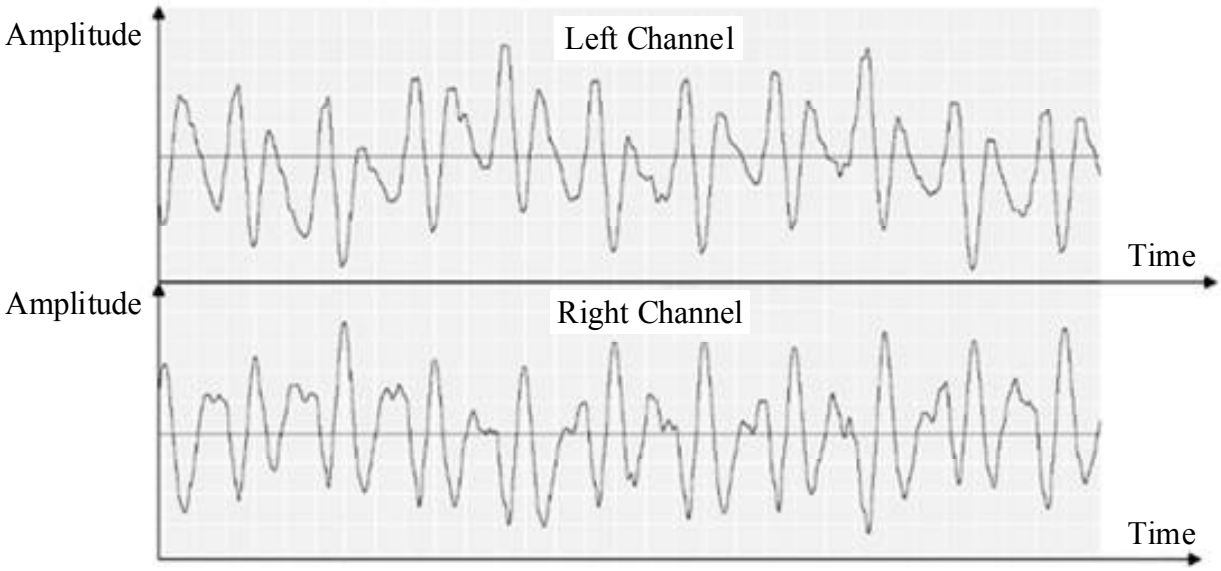

Amplitude
Left Channel
Time
Amplitude
Right Channel
Time

FIG. 1

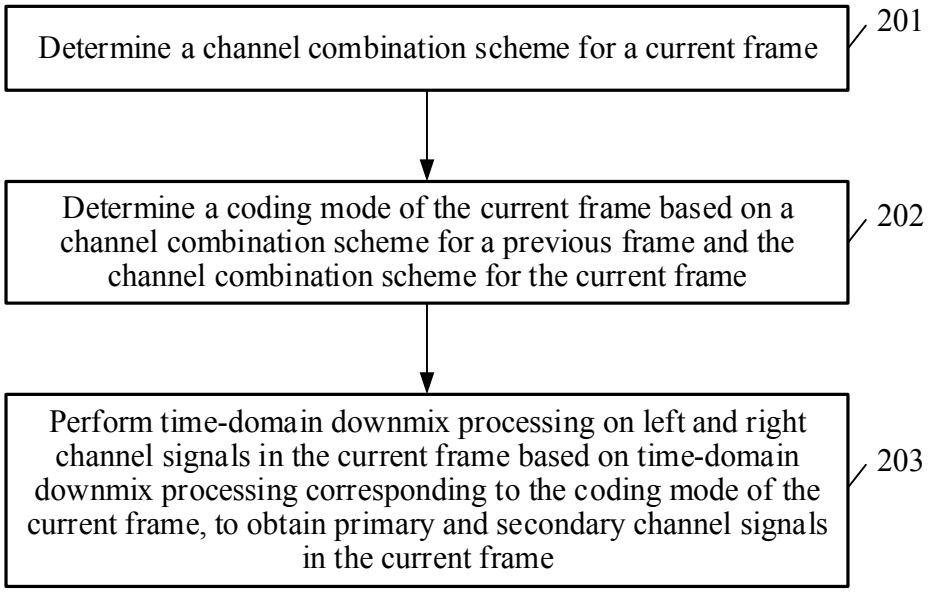

Determine a channel combination scheme for a current frame
201
Determine a coding mode of the current frame based on a channel combination scheme for a previous frame and the channel combination scheme for the current frame
202
Perform time-domain downmix processing on left and right channel signals in the current frame based on time-domain downmix processing corresponding to the coding mode of the current frame, to obtain primary and secondary channel signals in the current frame
203

FIG. 2

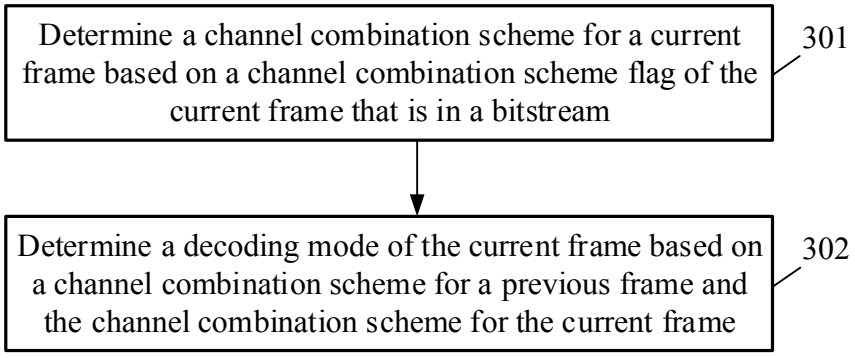


FIG. 3

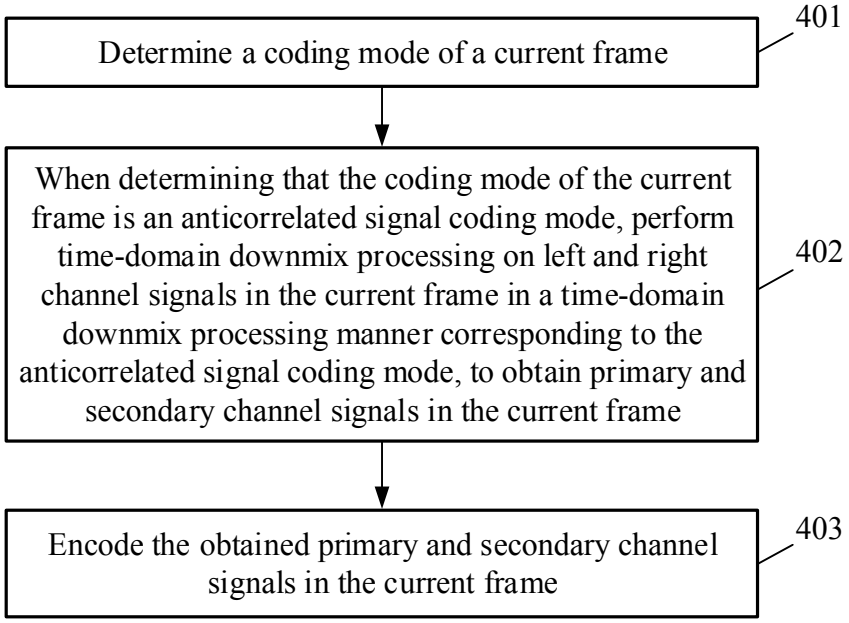


FIG. 4

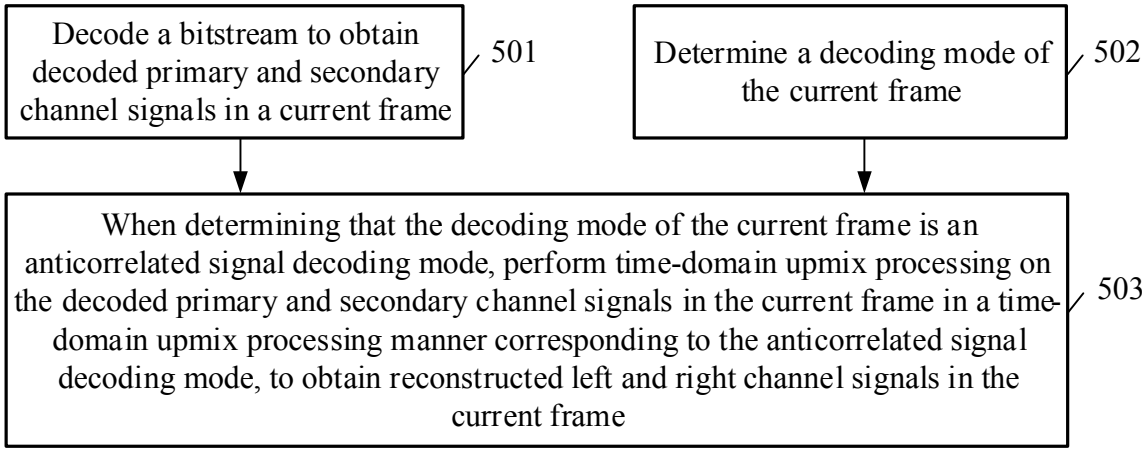


FIG. 5

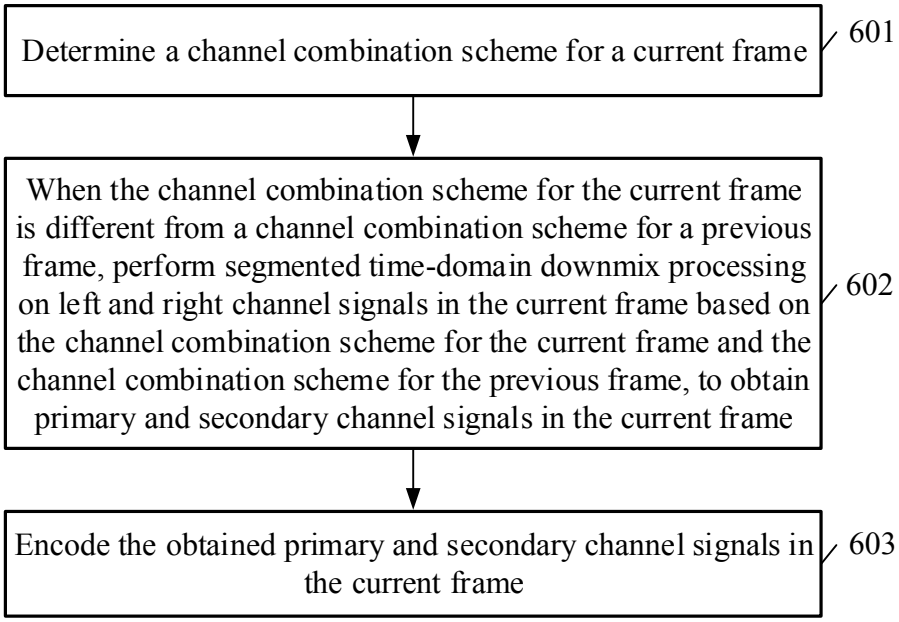

Determine a channel combination scheme for a current frame
601
When the channel combination scheme for the current frame is different from a channel combination scheme for a previous frame, perform segmented time-domain downmix processing on left and right channel signals in the current frame based on the channel combination scheme for the current frame and the channel combination scheme for the previous frame, to obtain primary and secondary channel signals in the current frame
602
Encode the obtained primary and secondary channel signals in the current frame
603

FIG. 6

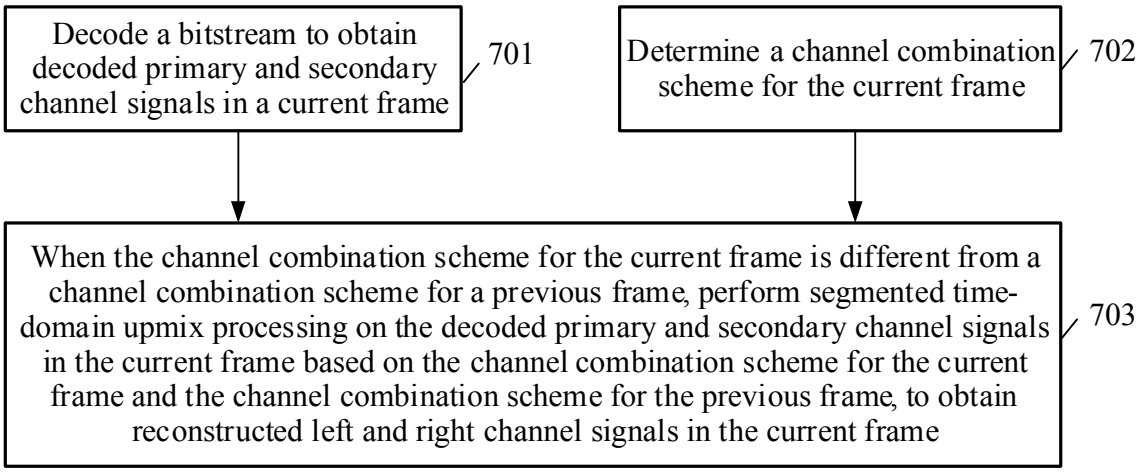

Decode a bitstream to obtain decoded primary and secondary channel signals in a current frame
701
Determine a channel combination scheme for the current frame
702
When the channel combination scheme for the current frame is different from a channel combination scheme for a previous frame, perform segmented time-domain upmix processing on the decoded primary and secondary channel signals in the current frame based on the channel combination scheme for the current frame and the channel combination scheme for the previous frame, to obtain reconstructed left and right channel signals in the current frame
703

FIG. 7

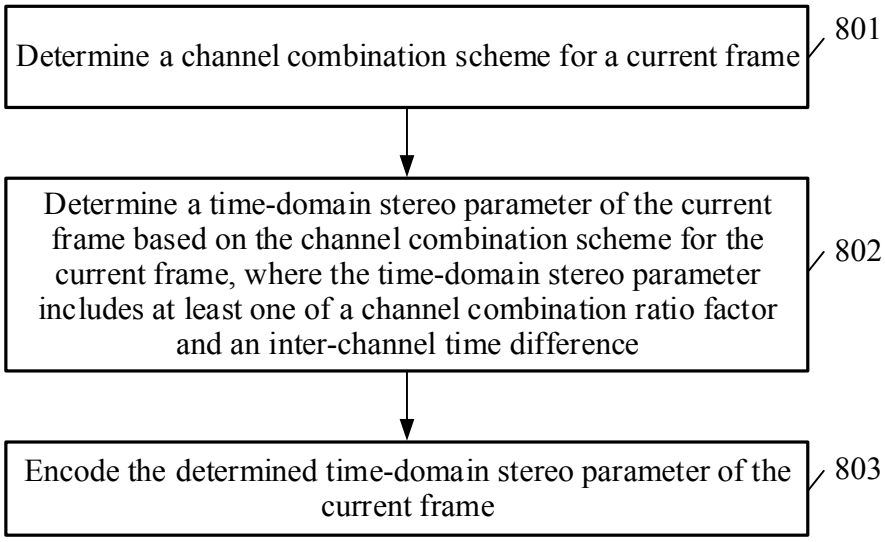

Determine a channel combination scheme for a current frame
801
Determine a time-domain stereo parameter of the current frame based on the channel combination scheme for the current frame, where the time-domain stereo parameter includes at least one of a channel combination ratio factor and an inter-channel time difference
802
Encode the determined time-domain stereo parameter of the current frame
803

FIG. 8

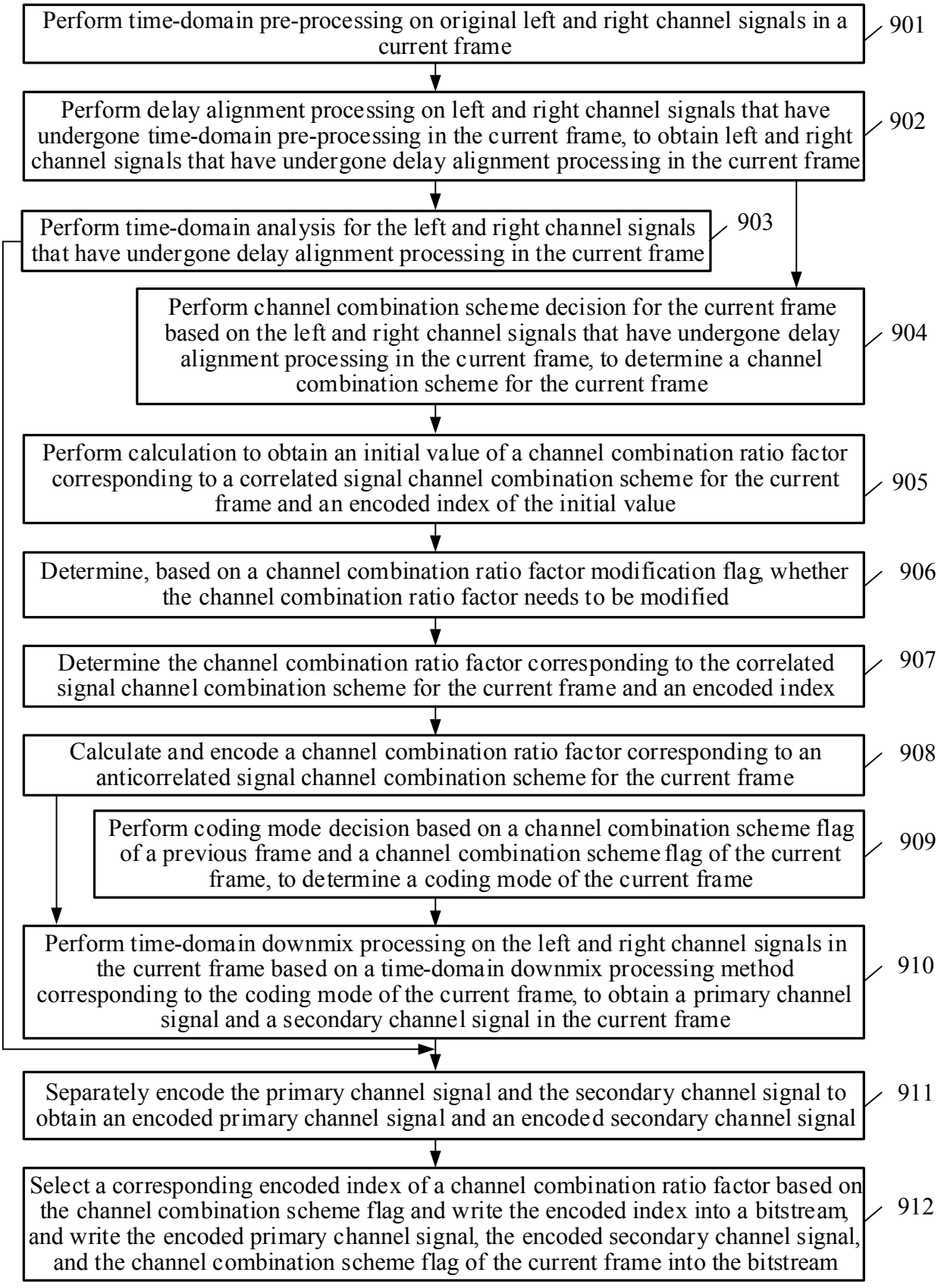

Perform time-domain pre-processing on original left and right channel signals in a current frame
901
Perform delay alignment processing on left and right channel signals that have undergone time-domain pre-processing in the current frame, to obtain left and right channel signals that have undergone delay alignment processing in the current frame
902
Perform time-domain analysis for the left and right channel signals that have undergone delay alignment processing in the current frame
903
Perform channel combination scheme decision for the current frame based on the left and right channel signals that have undergone delay alignment processing in the current frame, to determine a channel combination scheme for the current frame
904
Perform calculation to obtain an initial value of a channel combination ratio factor corresponding to a correlated signal channel combination scheme for the current frame and an encoded index of the initial value
905
Determine, based on a channel combination ratio factor modification flag, whether the channel combination ratio factor needs to be modified
906
Determine the channel combination ratio factor corresponding to the correlated signal channel combination scheme for the current frame and an encoded index
907
Calculate and encode a channel combination ratio factor corresponding to an anticorrelated signal channel combination scheme for the current frame
908
Perform coding mode decision based on a channel combination scheme flag of a previous frame and a channel combination scheme flag of the current frame, to determine a coding mode of the current frame
909
Perform time-domain downmix processing on the left and right channel signals in the current frame based on a time-domain downmix processing method corresponding to the coding mode of the current frame, to obtain a primary channel signal and a secondary channel signal in the current frame
910
Separately encode the primary channel signal and the secondary channel signal to obtain an encoded primary channel signal and an encoded secondary channel signal
911
Select a corresponding encoded index of a channel combination ratio factor based on the channel combination scheme flag and write the encoded index into a bitstream, and write the encoded primary channel signal, the encoded secondary channel signal, and the channel combination scheme flag of the current frame into the bitstream
912

FIG. 9-A

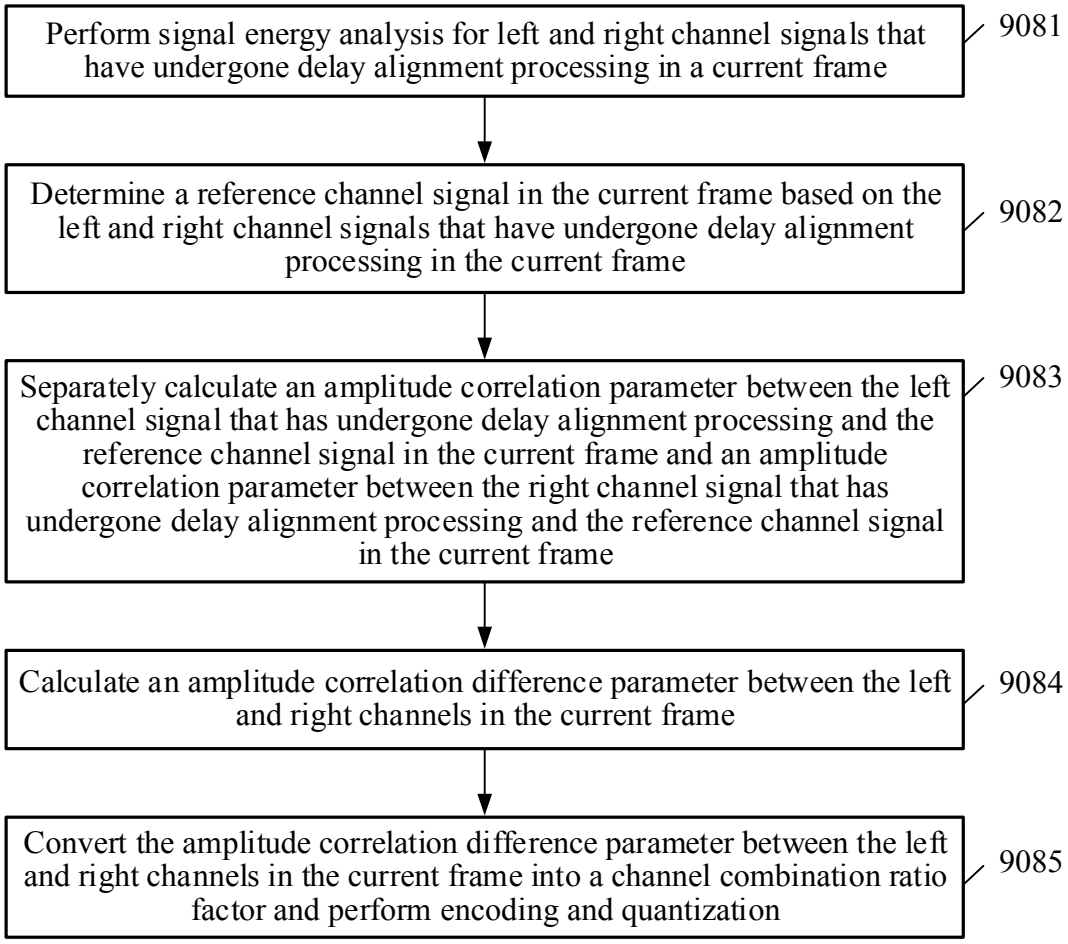

Perform signal energy analysis for left and right channel signals that have undergone delay alignment processing in a current frame
9081
Determine a reference channel signal in the current frame based on the left and right channel signals that have undergone delay alignment processing in the current frame
9082
Separately calculate an amplitude correlation parameter between the left channel signal that has undergone delay alignment processing and the reference channel signal in the current frame and an amplitude correlation parameter between the right channel signal that has undergone delay alignment processing and the reference channel signal in the current frame
9083
Calculate an amplitude correlation difference parameter between the left and right channels in the current frame
9084
Convert the amplitude correlation difference parameter between the left and right channels in the current frame into a channel combination ratio factor and perform encoding and quantization
9085

FIG. 9-B

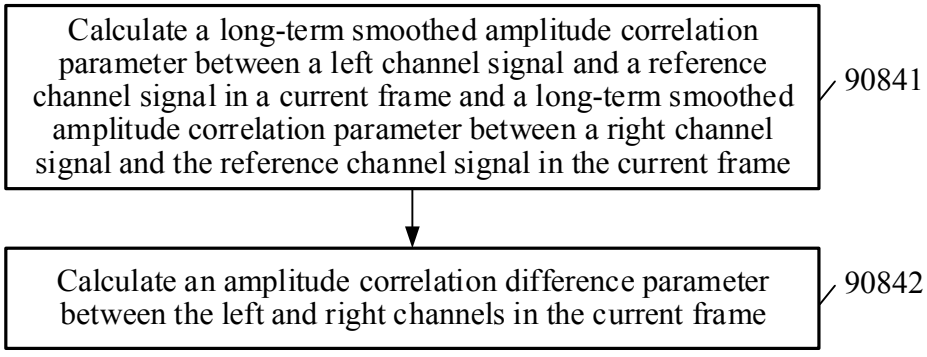

Calculate a long-term smoothed amplitude correlation parameter between a left channel signal and a reference channel signal in a current frame and a long-term smoothed amplitude correlation parameter between a right channel signal and the reference channel signal in the current frame
90841
Calculate an amplitude correlation difference parameter between the left and right channels in the current frame
90842

FIG. 9-C

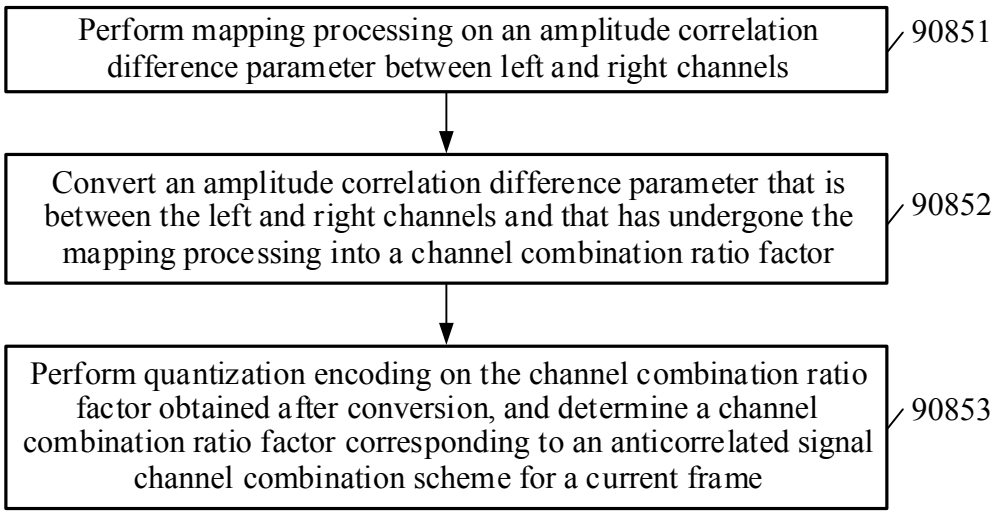

Perform mapping processing on an amplitude correlation difference parameter between left and right channels
90851
Convert an amplitude correlation difference parameter that is between the left and right channels and that has undergone the mapping processing into a channel combination ratio factor
90852
Perform quantization encoding on the channel combination ratio factor obtained after conversion, and determine a channel combination ratio factor corresponding to an anticorrelated signal channel combination scheme for a current frame
90853

FIG. 9-D

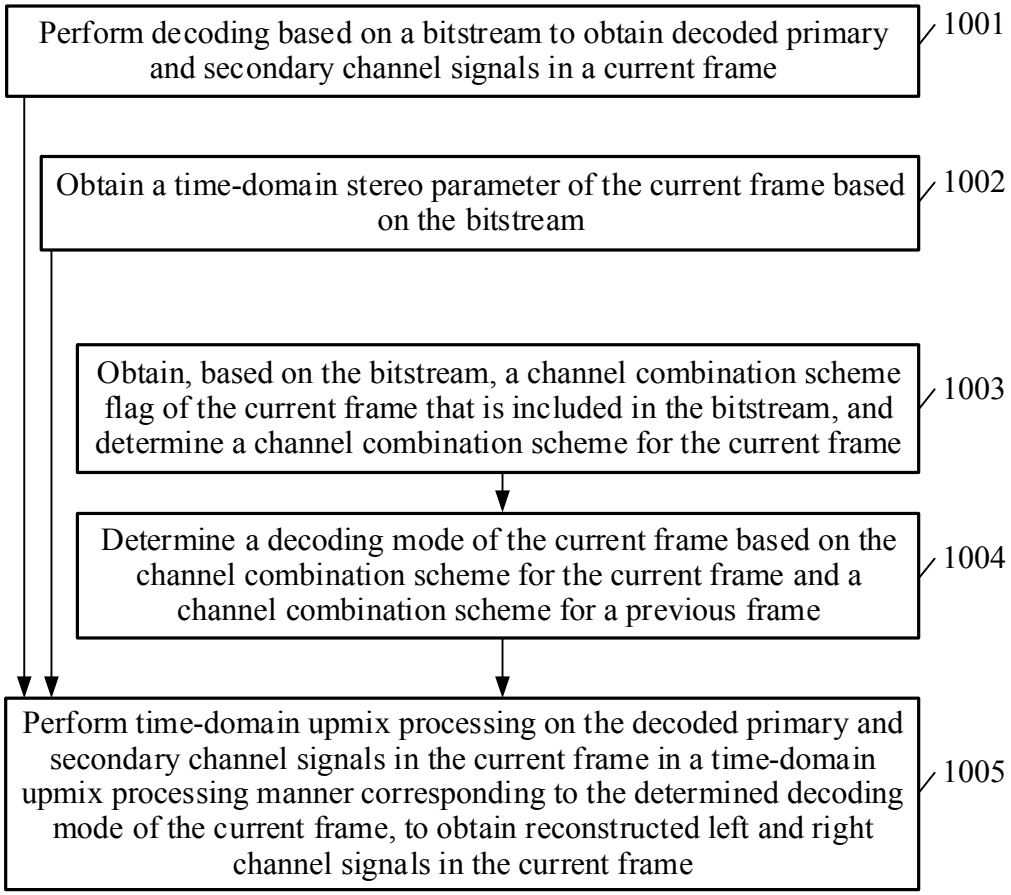

Perform decoding based on a bitstream to obtain decoded primary and secondary channel signals in a current frame
1001
Obtain a time-domain stereo parameter of the current frame based on the bitstream
1002
Obtain, based on the bitstream, a channel combination scheme flag of the current frame that is included in the bitstream, and determine a channel combination scheme for the current frame
1003
Determine a decoding mode of the current frame based on the channel combination scheme for the current frame and a channel combination scheme for a previous frame
1004
Perform time-domain upmix processing on the decoded primary and secondary channel signals in the current frame in a time-domain upmix processing manner corresponding to the determined decoding mode of the current frame, to obtain reconstructed left and right channel signals in the current frame
1005

FIG. 10

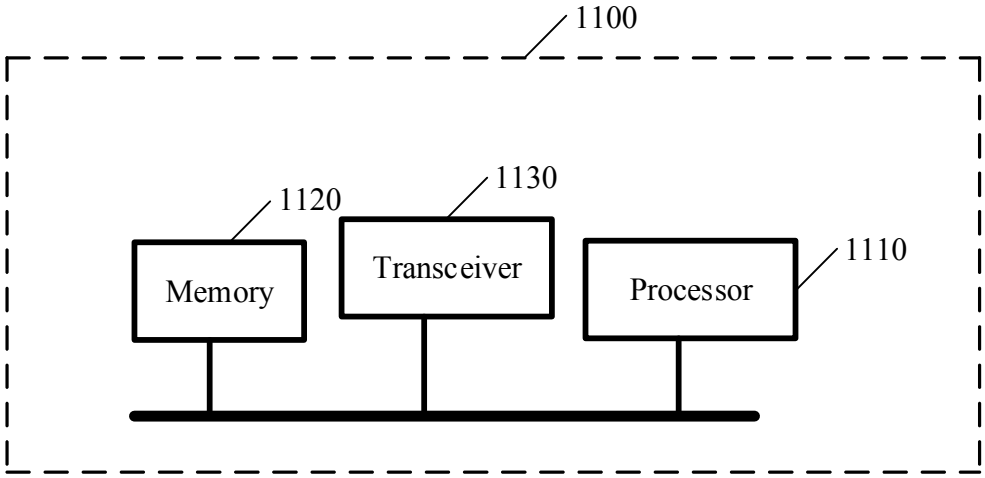


FIG. 11-A

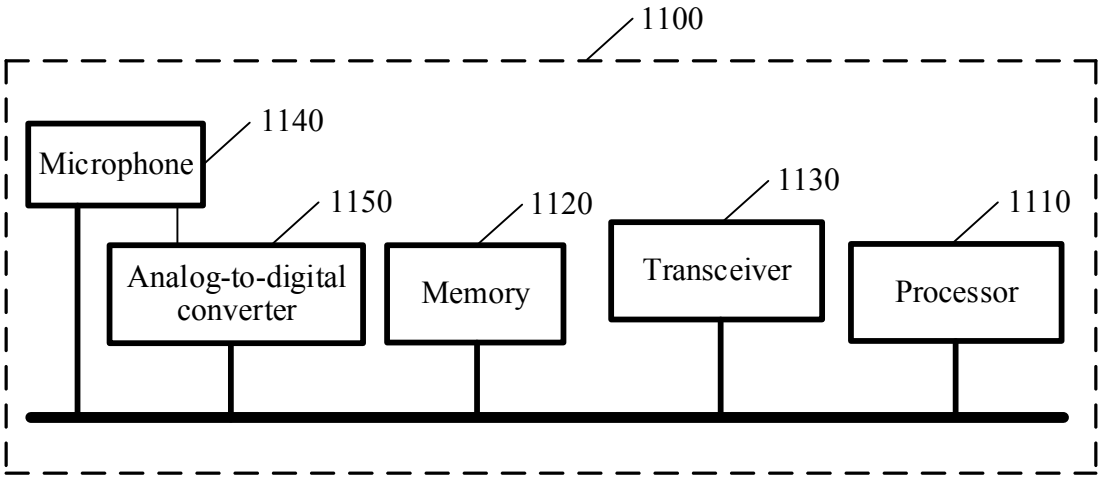


FIG. 11-B

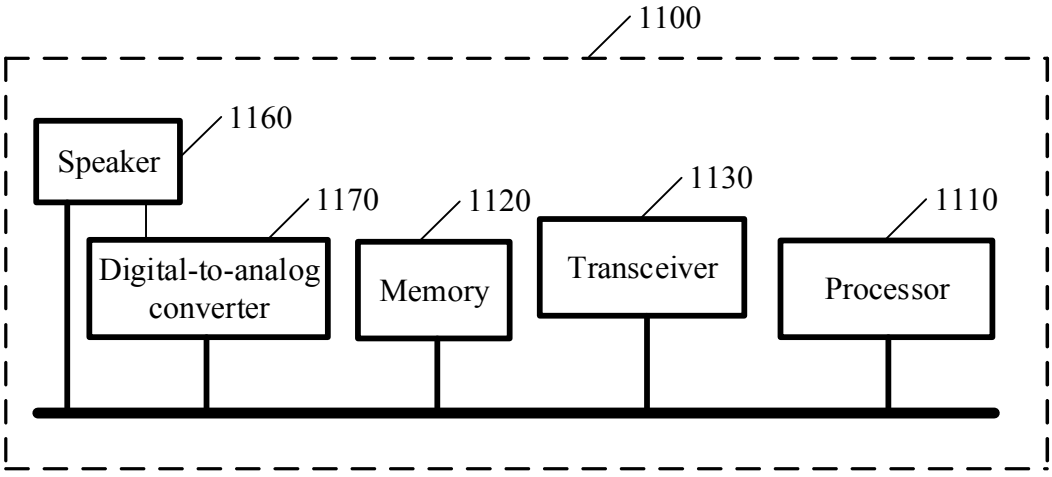


FIG. 11-C

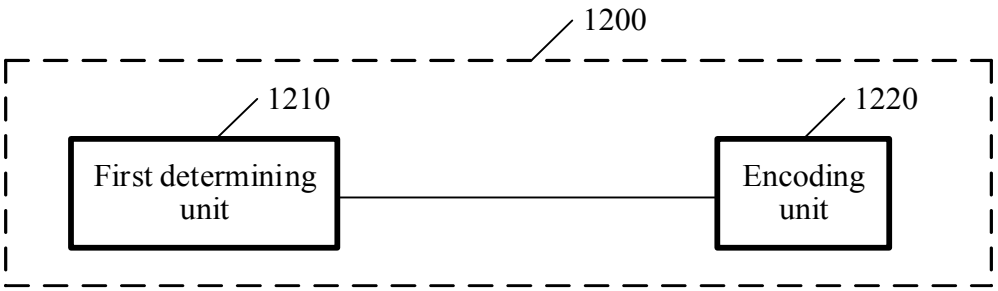


FIG. 12-A

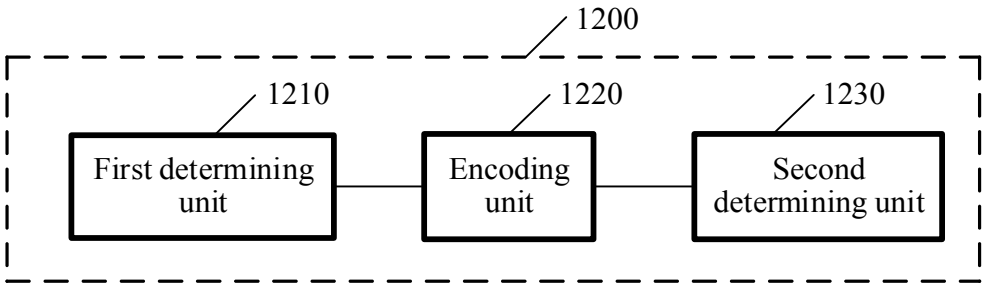


FIG. 12-B

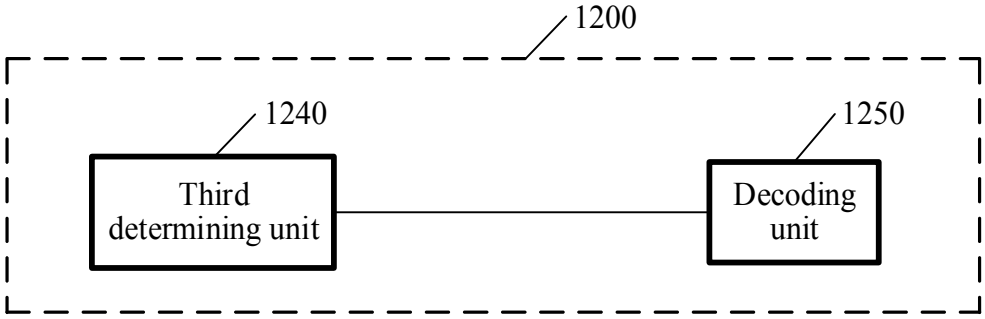


FIG. 12-C