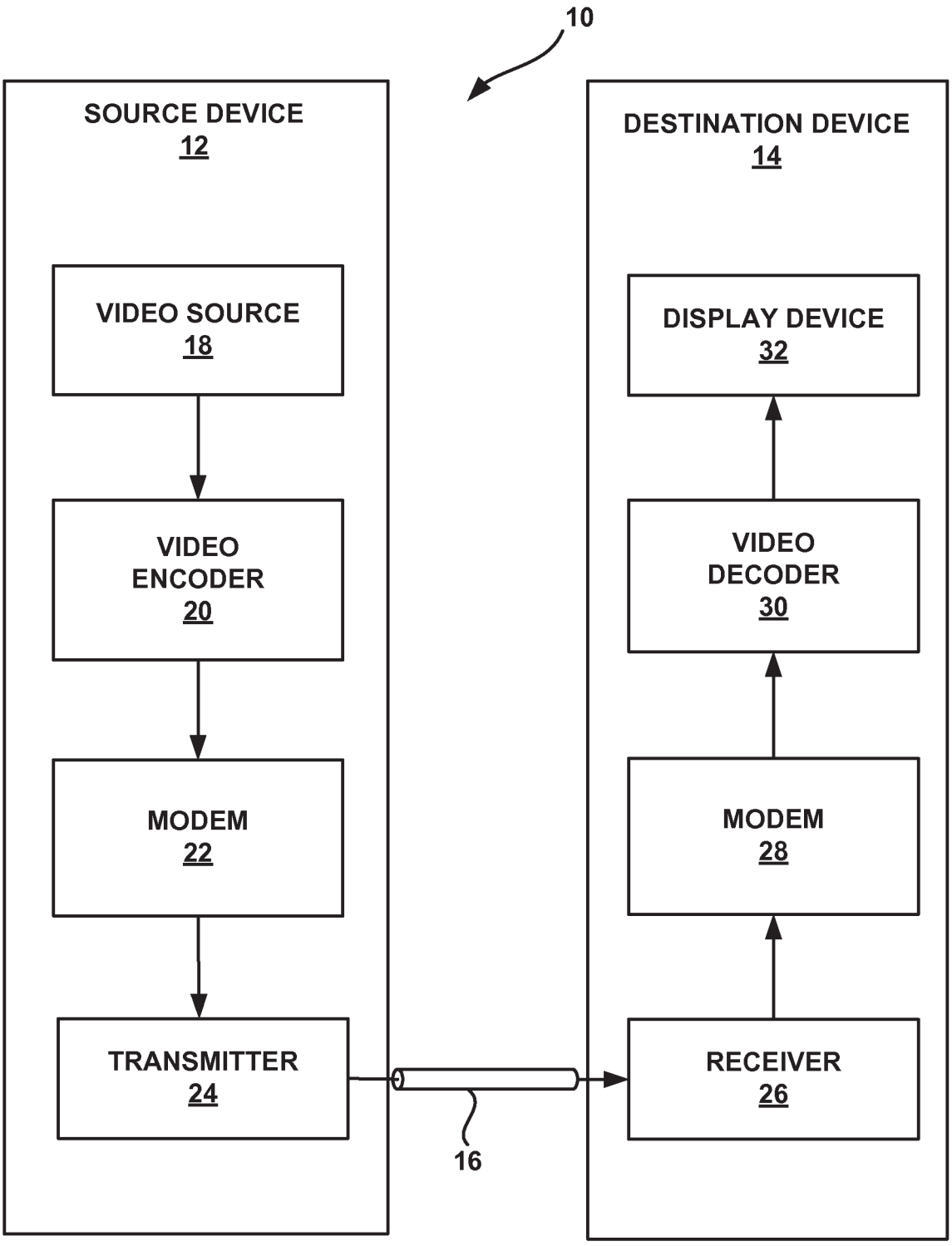
10
SOURCE DEVICE
12
VIDEO SOURCE
18
VIDEO
ENCODER
20
MODEM
22
TRANSMITTER
24
16
DESTINATION DEVICE
14
DISPLAY DEVICE
32
VIDEO
DECODER
30
MODEM
28
RECEIVER
26

FIG. 1

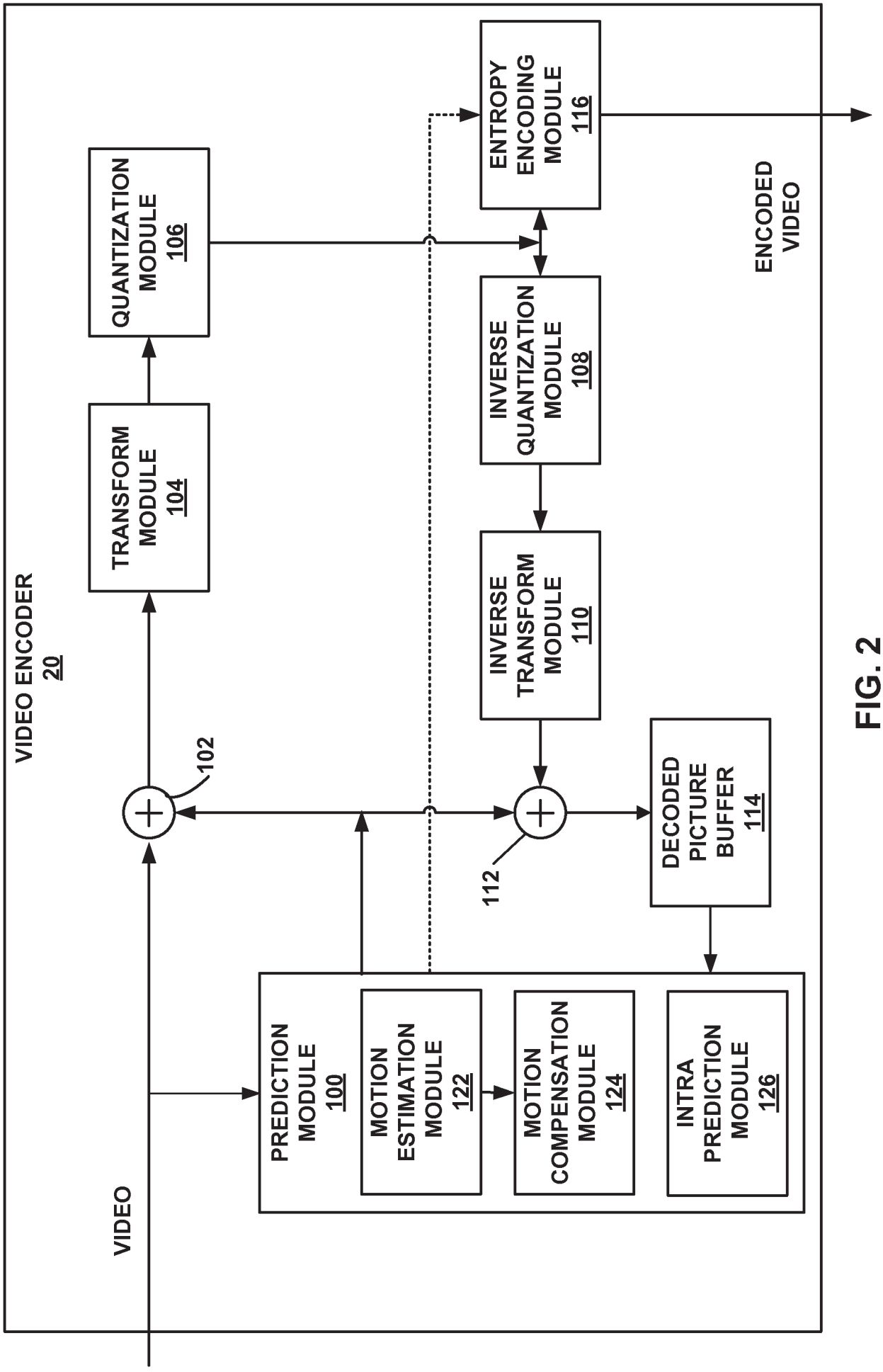
VIDEO ENCODER
20
VIDEO
PREDICTION MODULE
100
MOTION ESTIMATION MODULE
122
MOTION COMPENSATION MODULE
124
INTRA PREDICTION MODULE
126
102
TRANSFORM MODULE
104
QUANTIZATION MODULE
106
INVERSE QUANTIZATION MODULE
108
INVERSE TRANSFORM MODULE
110
112
DECODED PICTURE BUFFER
114
ENTROPY ENCODING MODULE
116
ENCODED VIDEO

FIG. 2

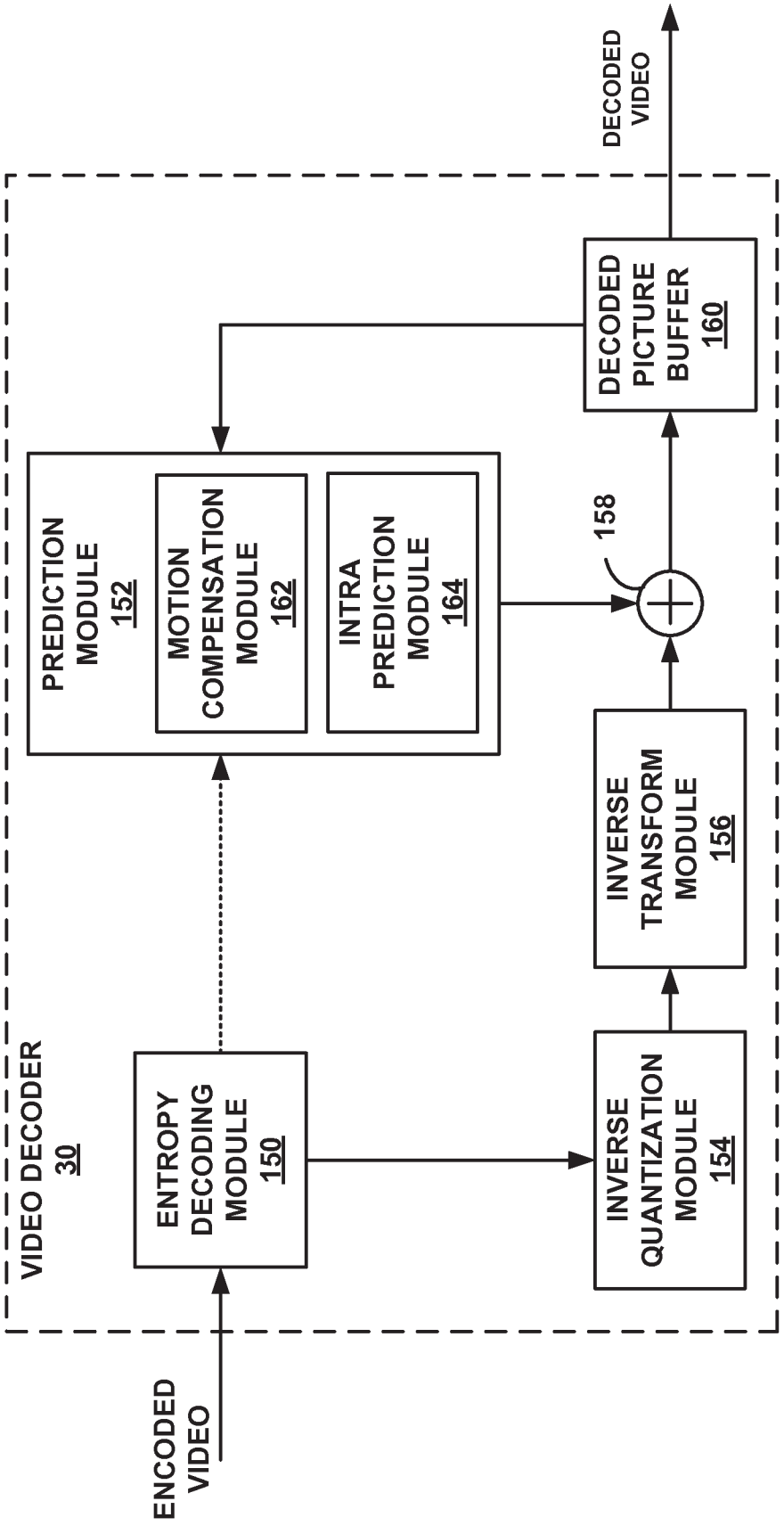
ENCODED VIDEO
VIDEO DECODER 30
ENTROPY DECODING MODULE 150
PREDICTION MODULE 152
MOTION COMPENSATION MODULE 162
INTRA PREDICTION MODULE 164
INVERSE QUANTIZATION MODULE 154
INVERSE TRANSFORM MODULE 156
158
DECODED PICTURE BUFFER 160
DECODED VIDEO

FIG. 3

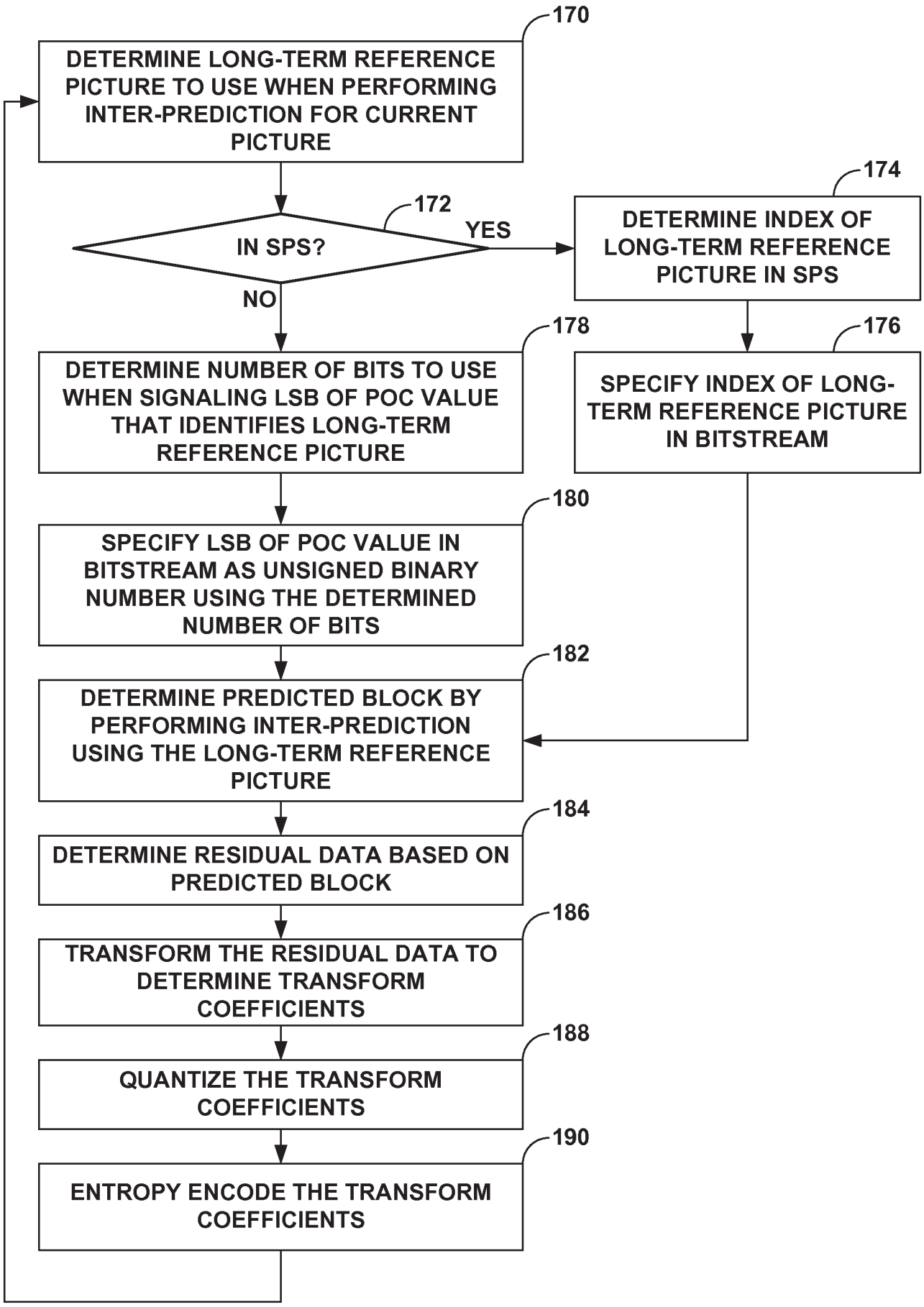
170
DETERMINE LONG-TERM REFERENCE PICTURE TO USE WHEN PERFORMING INTER-PREDICTION FOR CURRENT PICTURE
172
IN SPS?
YES
NO
174
DETERMINE INDEX OF LONG-TERM REFERENCE PICTURE IN SPS
176
SPECIFY INDEX OF LONG-TERM REFERENCE PICTURE IN BITSTREAM
178
DETERMINE NUMBER OF BITS TO USE WHEN SIGNALING LSB OF POC VALUE THAT IDENTIFIES LONG-TERM REFERENCE PICTURE
180
SPECIFY LSB OF POC VALUE IN BITSTREAM AS UNSIGNED BINARY NUMBER USING THE DETERMINED NUMBER OF BITS
182
DETERMINE PREDICTED BLOCK BY PERFORMING INTER-PREDICTION USING THE LONG-TERM REFERENCE PICTURE
184
DETERMINE RESIDUAL DATA BASED ON PREDICTED BLOCK
186
TRANSFORM THE RESIDUAL DATA TO DETERMINE TRANSFORM COEFFICIENTS
188
QUANTIZE THE TRANSFORM COEFFICIENTS
190
ENTROPY ENCODE THE TRANSFORM COEFFICIENTS

FIG. 4

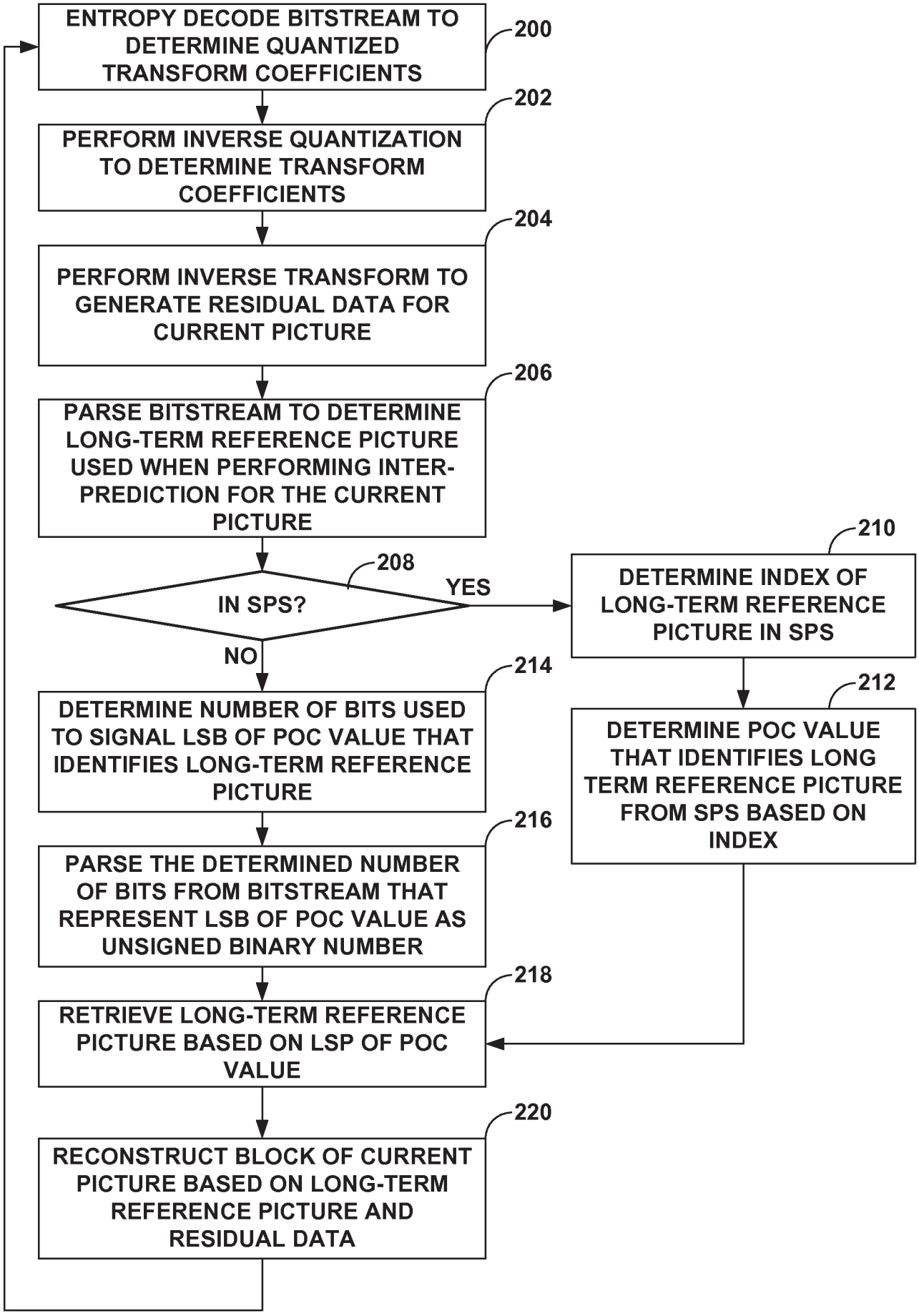
ENTROPY DECODE BITSTREAM TO DETERMINE QUANTIZED TRANSFORM COEFFICIENTS
200
PERFORM INVERSE QUANTIZATION TO DETERMINE TRANSFORM COEFFICIENTS
202
PERFORM INVERSE TRANSFORM TO GENERATE RESIDUAL DATA FOR CURRENT PICTURE
204
PARSE BITSTREAM TO DETERMINE LONG-TERM REFERENCE PICTURE USED WHEN PERFORMING INTER-PREDICTION FOR THE CURRENT PICTURE
206
IN SPS?
208
YES
NO
DETERMINE INDEX OF LONG-TERM REFERENCE PICTURE IN SPS
210
DETERMINE POC VALUE THAT IDENTIFIES LONG TERM REFERENCE PICTURE FROM SPS BASED ON INDEX
212
DETERMINE NUMBER OF BITS USED TO SIGNAL LSB OF POC VALUE THAT IDENTIFIES LONG-TERM REFERENCE PICTURE
214
PARSE THE DETERMINED NUMBER OF BITS FROM BITSTREAM THAT REPRESENT LSB OF POC VALUE AS UNSIGNED BINARY NUMBER
216
RETRIEVE LONG-TERM REFERENCE PICTURE BASED ON LSP OF POC VALUE
218
RECONSTRUCT BLOCK OF CURRENT PICTURE BASED ON LONG-TERM REFERENCE PICTURE AND RESIDUAL DATA
220

FIG. 5

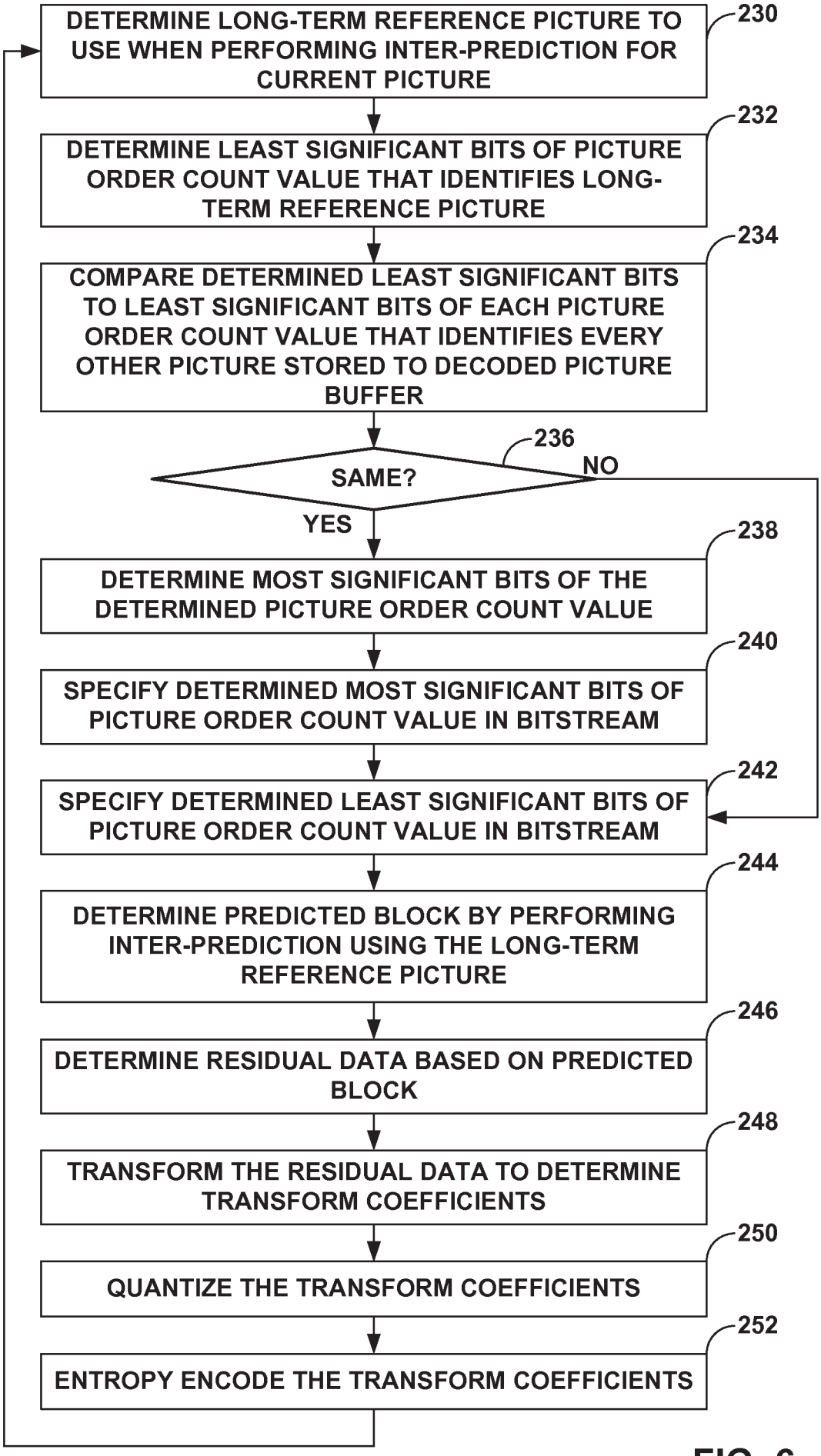
DETERMINE LONG-TERM REFERENCE PICTURE TO USE WHEN PERFORMING INTER-PREDICTION FOR CURRENT PICTURE
230
DETERMINE LEAST SIGNIFICANT BITS OF PICTURE ORDER COUNT VALUE THAT IDENTIFIES LONG-TERM REFERENCE PICTURE
232
COMPARE DETERMINED LEAST SIGNIFICANT BITS TO LEAST SIGNIFICANT BITS OF EACH PICTURE ORDER COUNT VALUE THAT IDENTIFIES EVERY OTHER PICTURE STORED TO DECODED PICTURE BUFFER
234
SAME?
236
NO
YES
DETERMINE MOST SIGNIFICANT BITS OF THE DETERMINED PICTURE ORDER COUNT VALUE
238
SPECIFY DETERMINED MOST SIGNIFICANT BITS OF PICTURE ORDER COUNT VALUE IN BITSTREAM
240
SPECIFY DETERMINED LEAST SIGNIFICANT BITS OF PICTURE ORDER COUNT VALUE IN BITSTREAM
242
DETERMINE PREDICTED BLOCK BY PERFORMING INTER-PREDICTION USING THE LONG-TERM REFERENCE PICTURE
244
DETERMINE RESIDUAL DATA BASED ON PREDICTED BLOCK
246
TRANSFORM THE RESIDUAL DATA TO DETERMINE TRANSFORM COEFFICIENTS
248
QUANTIZE THE TRANSFORM COEFFICIENTS
250
ENTROPY ENCODE THE TRANSFORM COEFFICIENTS
252

FIG. 6

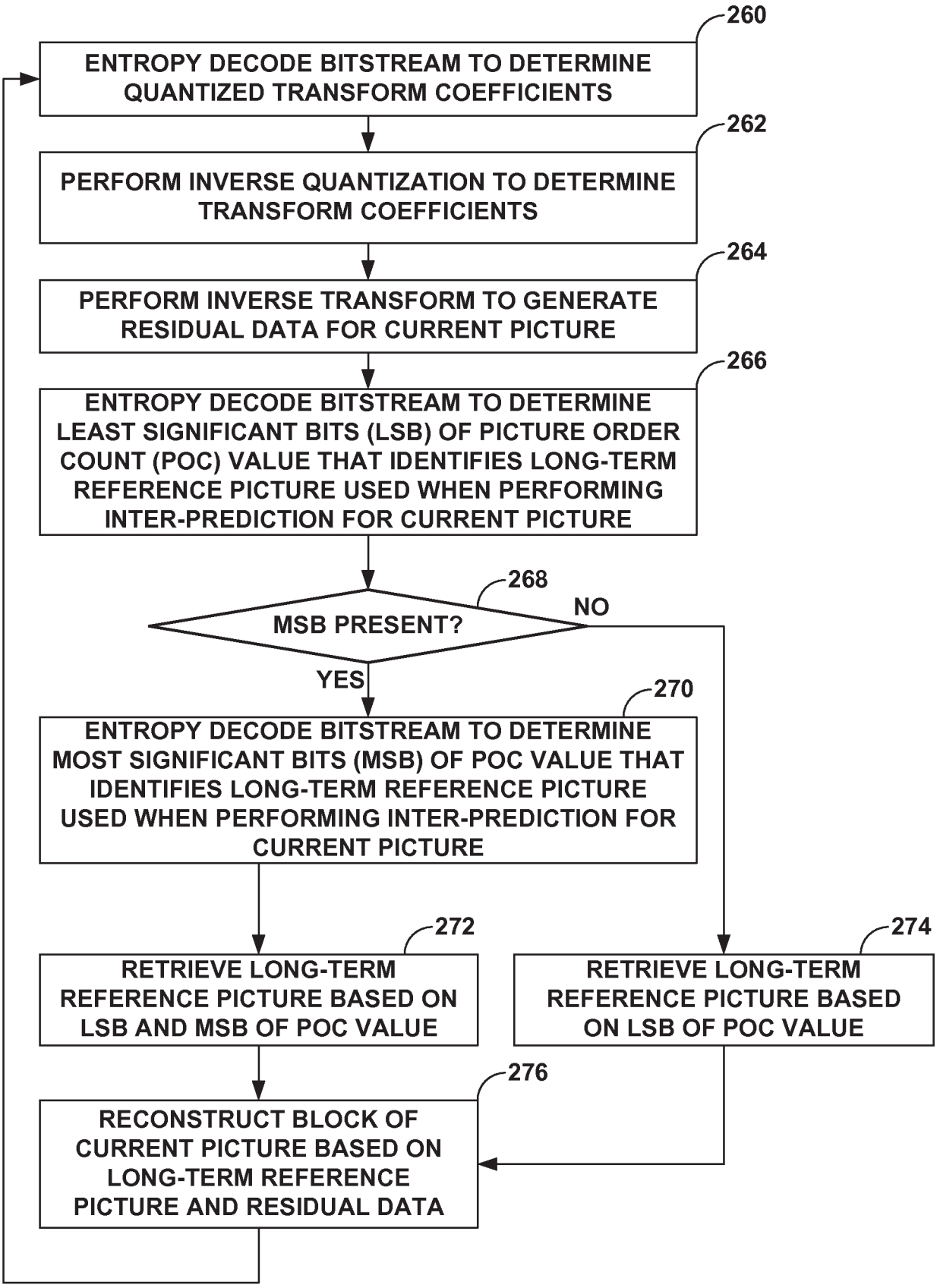
260
ENTROPY DECODE BITSTREAM TO DETERMINE QUANTIZED TRANSFORM COEFFICIENTS
262
PERFORM INVERSE QUANTIZATION TO DETERMINE TRANSFORM COEFFICIENTS
264
PERFORM INVERSE TRANSFORM TO GENERATE RESIDUAL DATA FOR CURRENT PICTURE
266
ENTROPY DECODE BITSTREAM TO DETERMINE LEAST SIGNIFICANT BITS (LSB) OF PICTURE ORDER COUNT (POC) VALUE THAT IDENTIFIES LONG-TERM REFERENCE PICTURE USED WHEN PERFORMING INTER-PREDICTION FOR CURRENT PICTURE
268
MSB PRESENT?
NO
YES
270
ENTROPY DECODE BITSTREAM TO DETERMINE MOST SIGNIFICANT BITS (MSB) OF POC VALUE THAT IDENTIFIES LONG-TERM REFERENCE PICTURE USED WHEN PERFORMING INTER-PREDICTION FOR CURRENT PICTURE
272
RETRIEVE LONG-TERM REFERENCE PICTURE BASED ON LSB AND MSB OF POC VALUE
274
RETRIEVE LONG-TERM REFERENCE PICTURE BASED ON LSB OF POC VALUE
276
RECONSTRUCT BLOCK OF CURRENT PICTURE BASED ON LONG-TERM REFERENCE PICTURE AND RESIDUAL DATA

FIG. 7