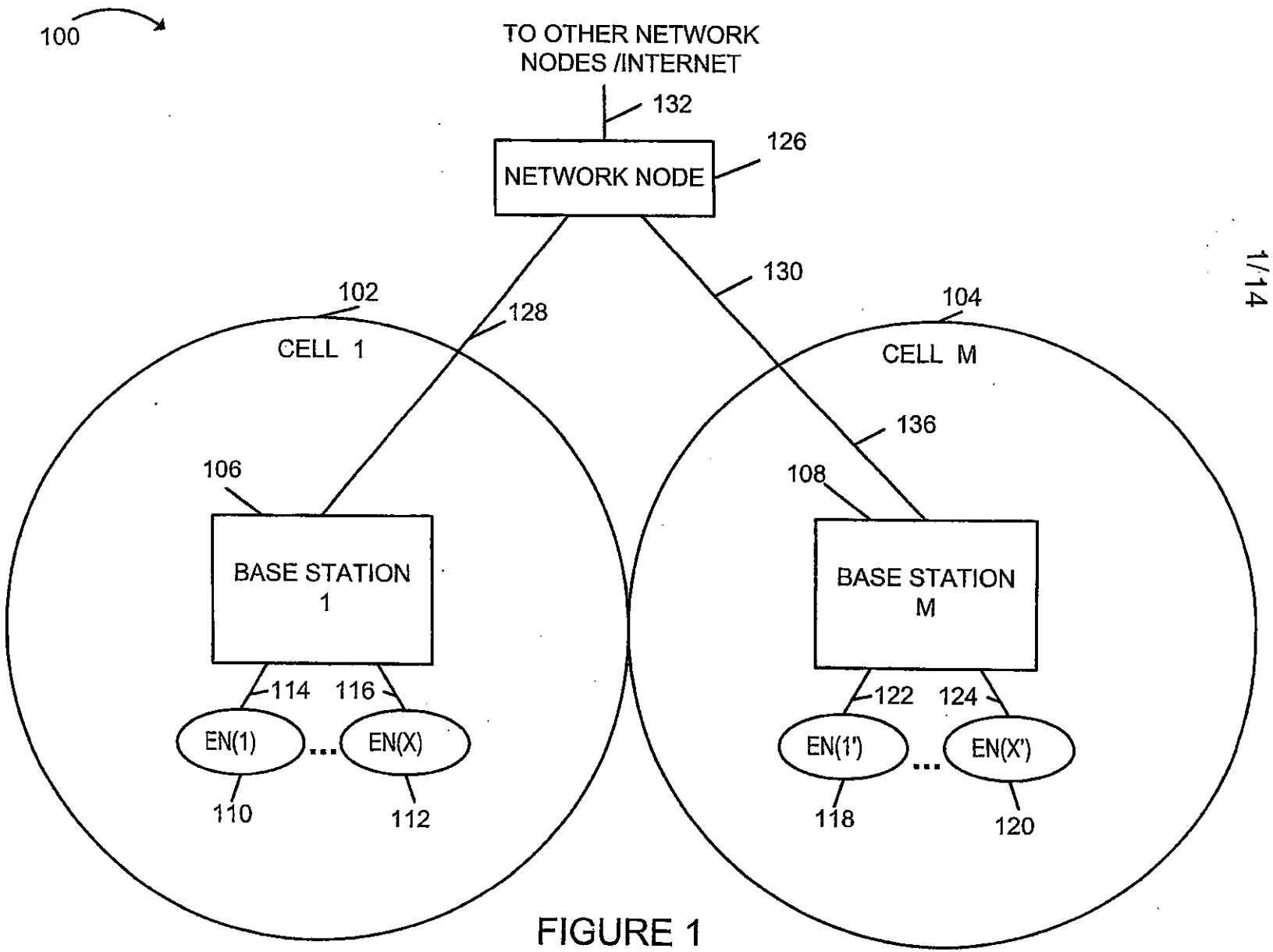

100
TO OTHER NETWORK NODES /INTERNET
132
NETWORK NODE
126
130
128
102
CELL 1
104
CELL M
136
106
BASE STATION 1
108
BASE STATION M
114
116
122
124
EN(1)
EN(X)
EN(1')
EN(X')
110
112
118
120

FIGURE 1

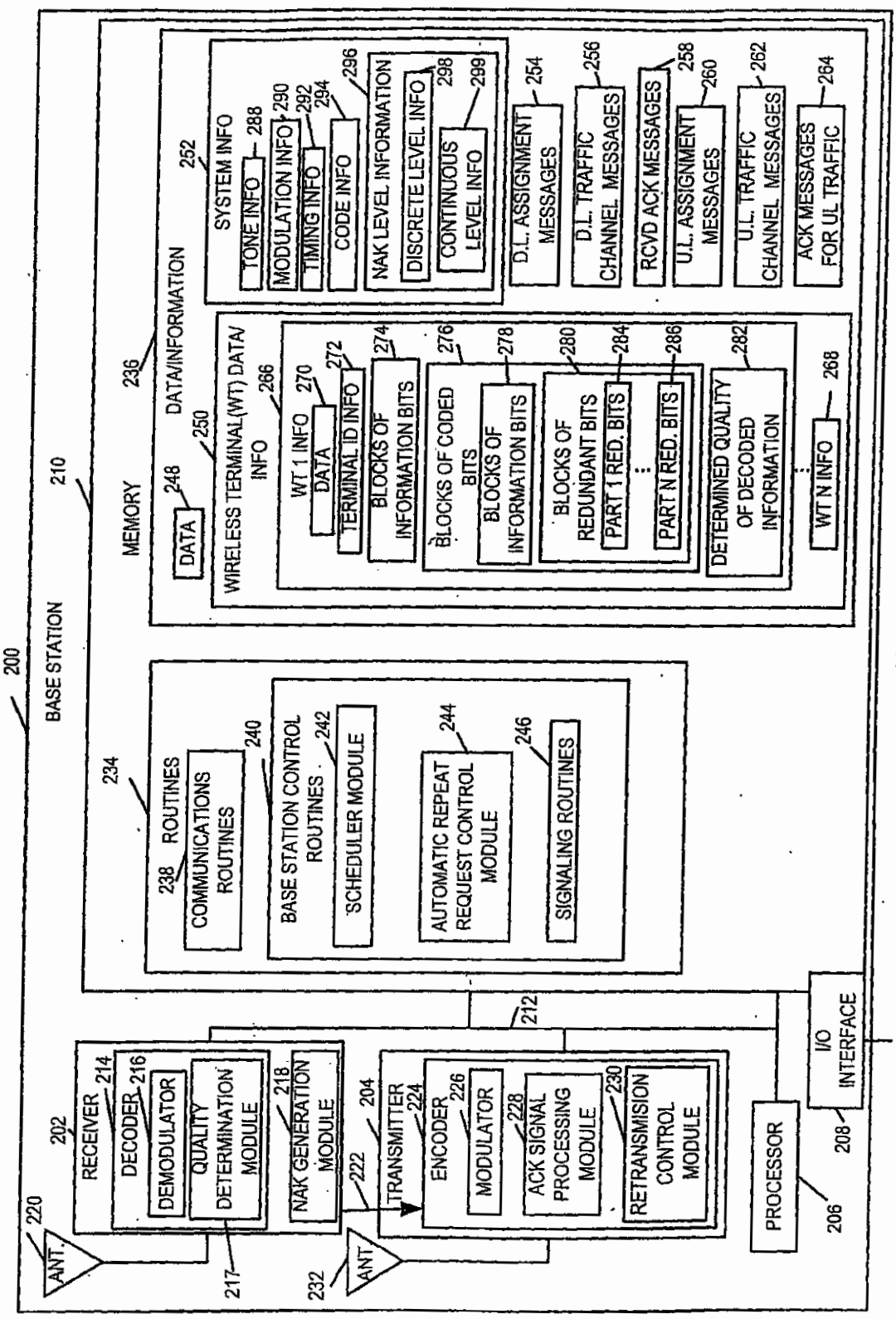

200
BASE STATION
210
MEMORY
236
DATA/INFORMATION
DATA
248
WIRELESS TERMINAL(WT) DATA/ INFO
250
266
WT 1 INFO
270
DATA
TERMINAL ID INFO
272
BLOCKS OF INFORMATION BITS
274
BLOCKS OF CODED BITS
276
BLOCKS OF INFORMATION BITS
278
BLOCKS OF REDUNDANT BITS
280
PART 1 RED. BITS
284
PART N RED. BITS
286
DETERMINED QUALITY OF DECODED INFORMATION
282
WT N INFO
268
SYSTEM INFO
252
TONE INFO
288
MODULATION INFO
290
TIMING INFO
292
CODE INFO
294
NAK LEVEL INFORMATION
296
DISCRETE LEVEL INFO
298
CONTINUOUS LEVEL INFO
299
D.L. ASSIGNMENT MESSAGES
254
D.L. TRAFFIC CHANNEL MESSAGES
256
RCVD ACK MESSAGES
258
U.L. ASSIGNMENT MESSAGES
260
U.L. TRAFFIC CHANNEL MESSAGES
262
ACK MESSAGES FOR UL TRAFFIC
264
234
ROUTINES
238
COMMUNICATIONS ROUTINES
240
BASE STATION CONTROL ROUTINES
242
SCHEDULER MODULE
AUTOMATIC REPEAT REQUEST CONTROL MODULE
244
SIGNALING ROUTINES
246
212
RECEIVER
202
DECODER
214
DEMODULATOR
216
QUALITY DETERMINATION MODULE
218
NAK GENERATION MODULE
222
TRANSMITTER
204
ENCODER
224
MODULATOR
226
ACK SIGNAL PROCESSING MODULE
228
RETRANSMISION CONTROL MODULE
230
ANT.
220
ANT
232
217
PROCESSOR
206
I/O INTERFACE
208
TO INTERNET

FIGURE 2

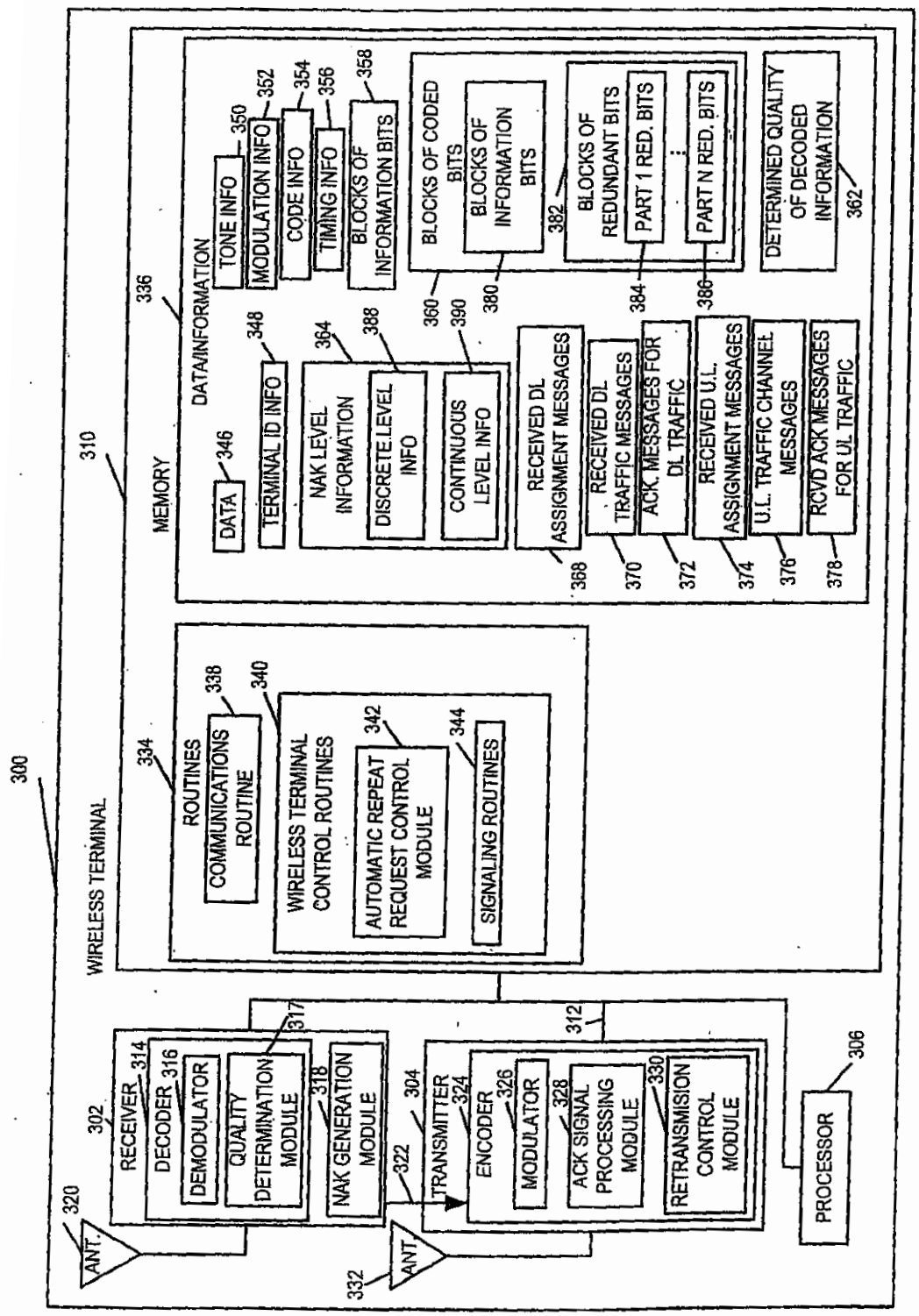

300
WIRELESS TERMINAL
310
MEMORY
336
DATA/INFORMATION
DATA 346
TERMINAL ID INFO 348
NAK LEVEL INFORMATION 364
DISCRETE LEVEL INFO 388
CONTINUOUS LEVEL INFO 390
TONE INFO 350
MODULATION INFO 352
CODE INFO 354
TIMING INFO 356
BLOCKS OF INFORMATION BITS 358
BLOCKS OF CODED BITS 360
BLOCKS OF INFORMATION BITS 380
BLOCKS OF REDUNDANT BITS 382
PART 1 RED. BITS 384
PART N RED. BITS 386
RECEIVED DL ASSIGNMENT MESSAGES 368
RECEIVED DL TRAFFIC MESSAGES 370
ACK. MESSAGES FOR DL TRAFFIC 372
RECEIVED U.L. ASSIGNMENT MESSAGES 374
U.L. TRAFFIC CHANNEL MESSAGES 376
RCVD ACK MESSAGES FOR UL TRAFFIC 378
DETERMINED QUALITY OF DECODED INFORMATION 362
ROUTINES 334
COMMUNICATIONS ROUTINE 338
WIRELESS TERMINAL CONTROL ROUTINES 340
AUTOMATIC REPEAT REQUEST CONTROL MODULE 342
SIGNALING ROUTINES 344
RECEIVER 302
DECODER 314
DEMODULATOR 316
QUALITY DETERMINATION MODULE 317
NAK GENERATION MODULE 318
ANT. 320
TRANSMITTER 304
ENCODER 324
MODULATOR 326
ACK SIGNAL PROCESSING MODULE 328
RETRANSMISION CONTROL MODULE 330
ANT. 332
312
PROCESSOR 306

FIGURE 3

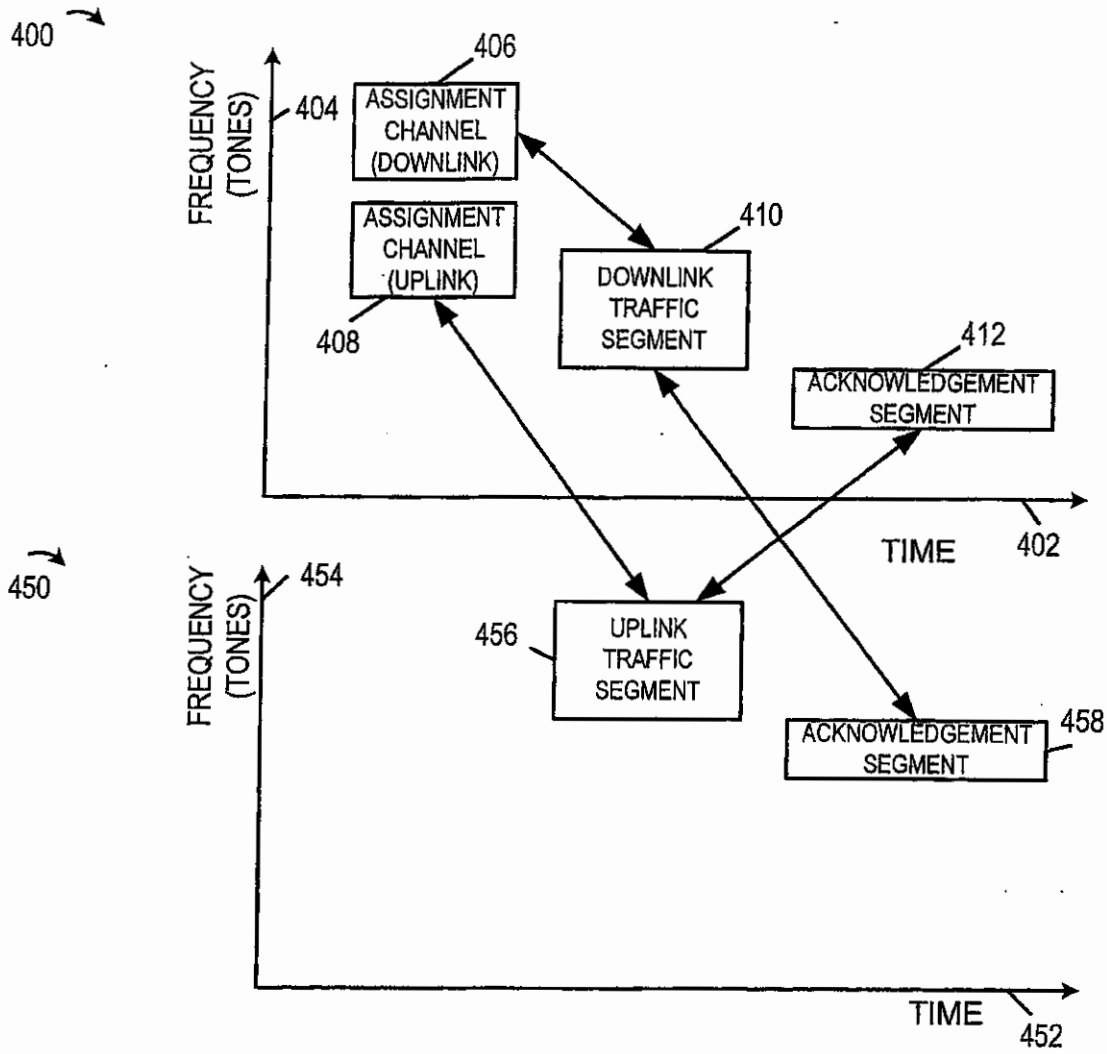

400
406
FREQUENCY (TONES)
404
ASSIGNMENT CHANNEL (DOWNLINK)
ASSIGNMENT CHANNEL (UPLINK)
408
410
DOWNLINK TRAFFIC SEGMENT
412
ACKNOWLEDGEMENT SEGMENT
TIME
402
450
454
FREQUENCY (TONES)
456
UPLINK TRAFFIC SEGMENT
458
ACKNOWLEDGEMENT SEGMENT
TIME
452

FIGURE 4

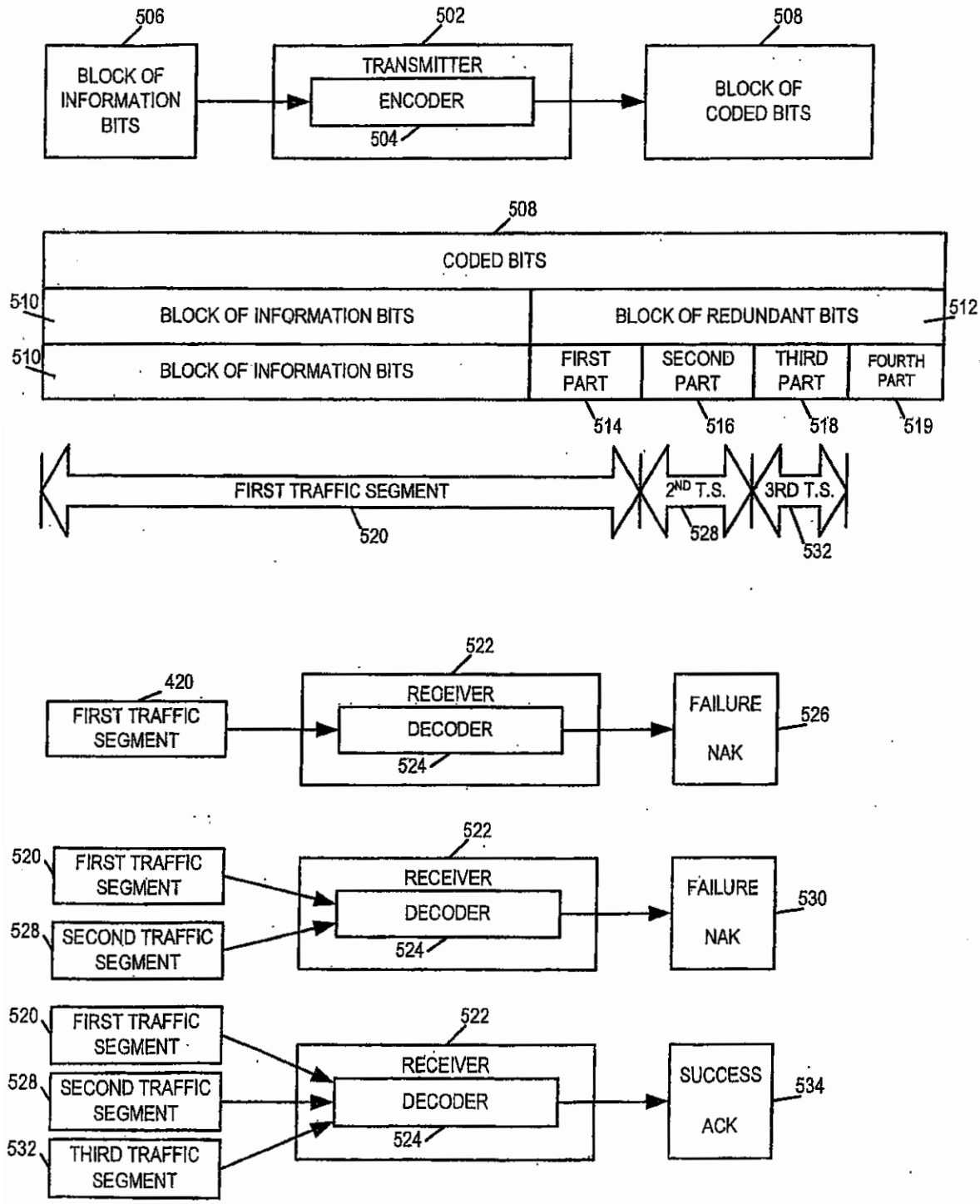

506
BLOCK OF INFORMATION BITS
502
TRANSMITTER
ENCODER
504
508
BLOCK OF CODED BITS
508
CODED BITS
510
BLOCK OF INFORMATION BITS
BLOCK OF REDUNDANT BITS
512
510
BLOCK OF INFORMATION BITS
FIRST PART
SECOND PART
THIRD PART
FOURTH PART
514
516
518
519
FIRST TRAFFIC SEGMENT
520
2ND T.S.
528
3RD T.S.
532
420
FIRST TRAFFIC SEGMENT
522
RECEIVER
DECODER
524
FAILURE
NAK
526
520
FIRST TRAFFIC SEGMENT
528
SECOND TRAFFIC SEGMENT
522
RECEIVER
DECODER
524
FAILURE
NAK
530
520
FIRST TRAFFIC SEGMENT
528
SECOND TRAFFIC SEGMENT
532
THIRD TRAFFIC SEGMENT
522
RECEIVER
DECODER
524
SUCCESS
ACK
534

FIGURE 5

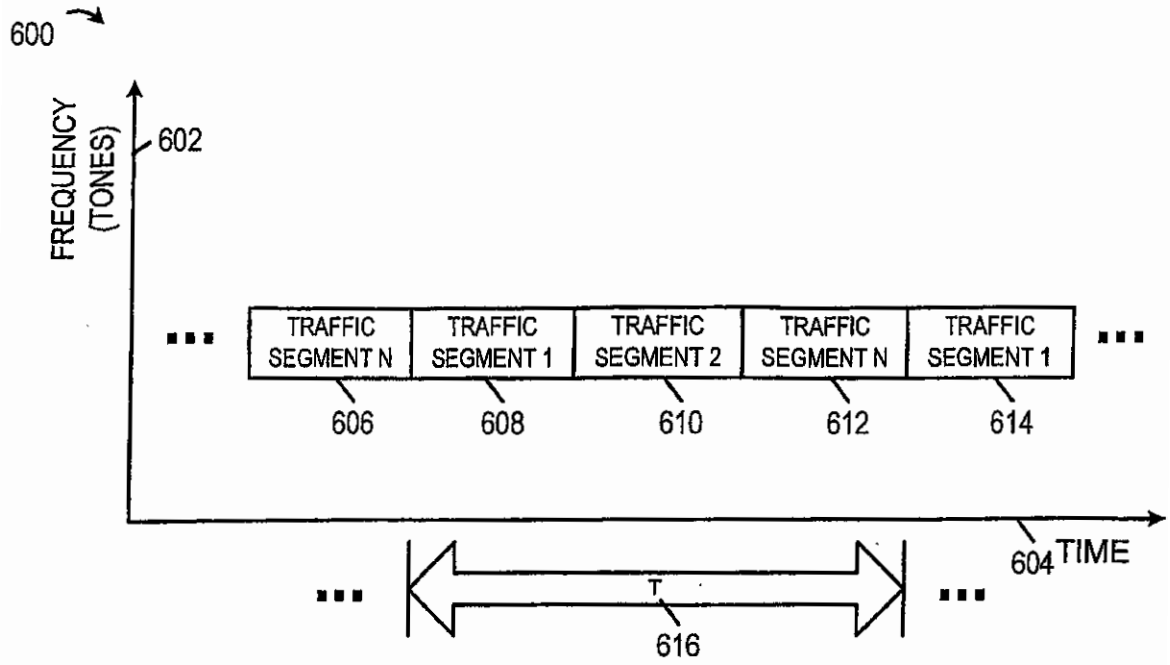

600
FREQUENCY (TONES)
602
TRAFFIC SEGMENT N
TRAFFIC SEGMENT 1
TRAFFIC SEGMENT 2
TRAFFIC SEGMENT N
TRAFFIC SEGMENT 1
606
608
610
612
614
604 TIME
T
616

FIGURE 6

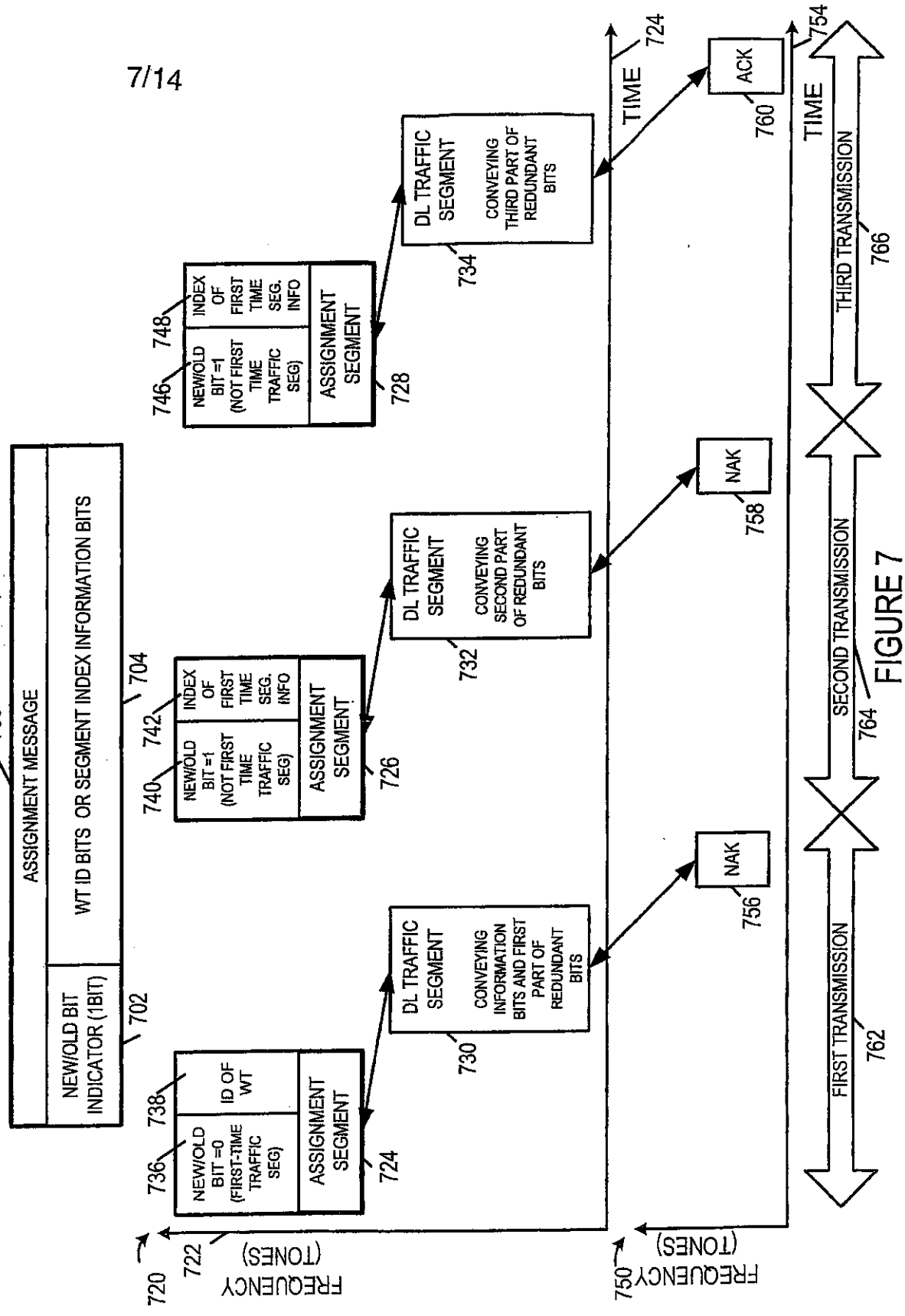

700
ASSIGNMENT MESSAGE
NEW/OLD BIT INDICATOR (1BIT)
WT ID BITS OR SEGMENT INDEX INFORMATION BITS
702
704
NEW/OLD BIT =0 (FIRST-TIME TRAFFIC SEG)
ID OF WT
ASSIGNMENT SEGMENT
736
738
724
NEW/OLD BIT =1 (NOT FIRST TIME TRAFFIC SEG)
INDEX OF FIRST TIME SEG. INFO
ASSIGNMENT SEGMENT
740
742
726
NEW/OLD BIT =1 (NOT FIRST TIME TRAFFIC SEG)
INDEX OF FIRST TIME SEG. INFO
ASSIGNMENT SEGMENT
746
748
728
DL TRAFFIC SEGMENT
CONVEYING INFORMATION BITS AND FIRST PART OF REDUNDANT BITS
730
DL TRAFFIC SEGMENT
CONVEYING SECOND PART OF REDUNDANT BITS
732
DL TRAFFIC SEGMENT
CONVEYING THIRD PART OF REDUNDANT BITS
734
720
722
FREQUENCY (TONES)
TIME
724
750
FREQUENCY (TONES)
TIME
754
NAK
756
NAK
758
ACK
760
FIRST TRANSMISSION
762
SECOND TRANSMISSION
764
THIRD TRANSMISSION
766

FIGURE 7

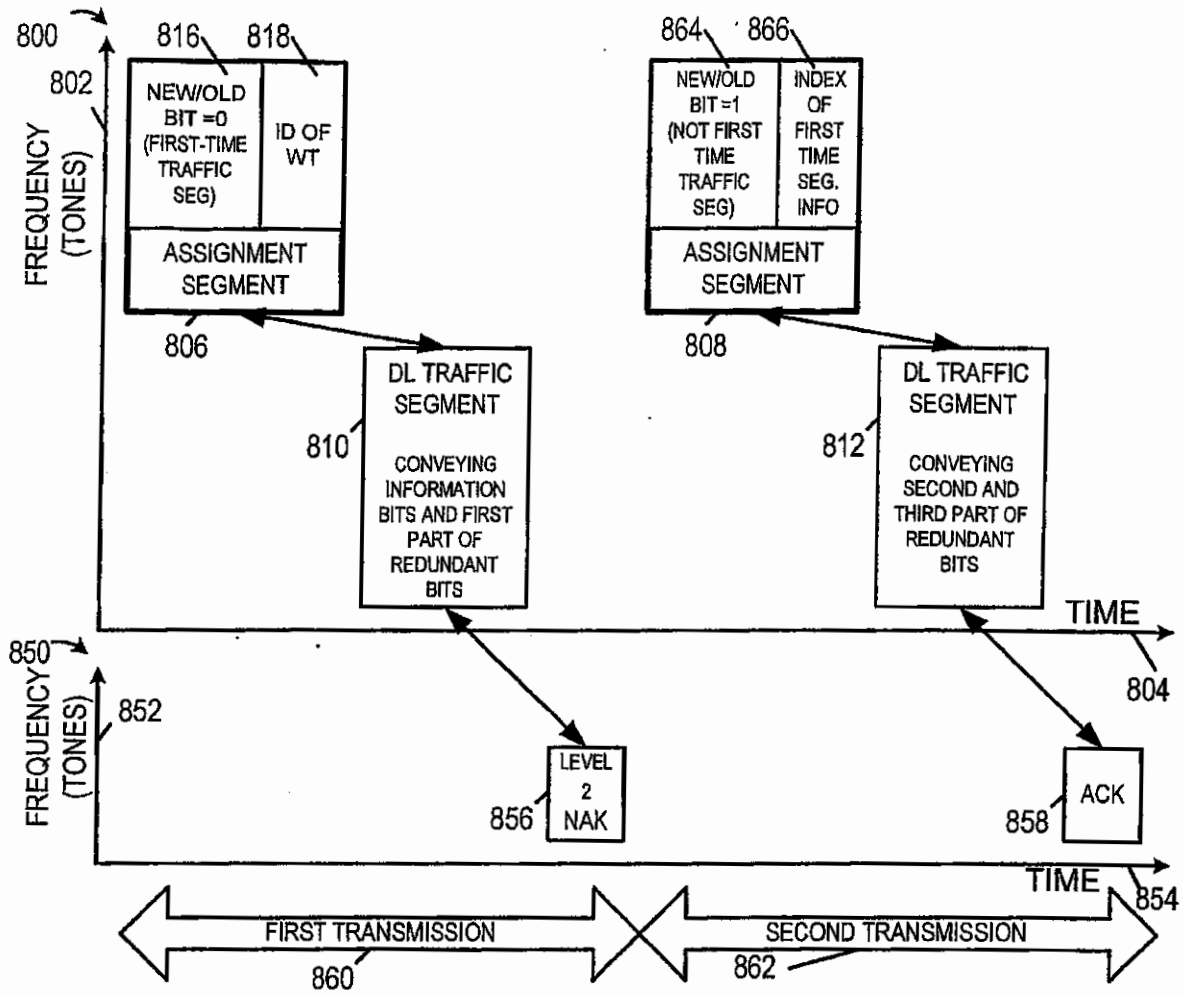



FIGURE 8

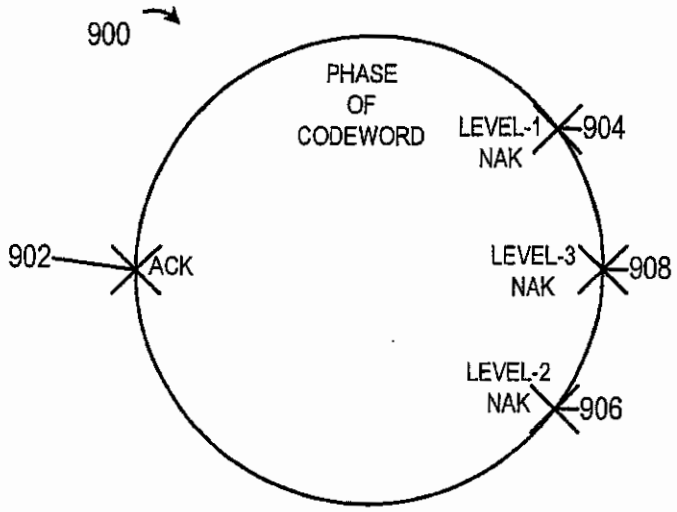



FIGURE 9

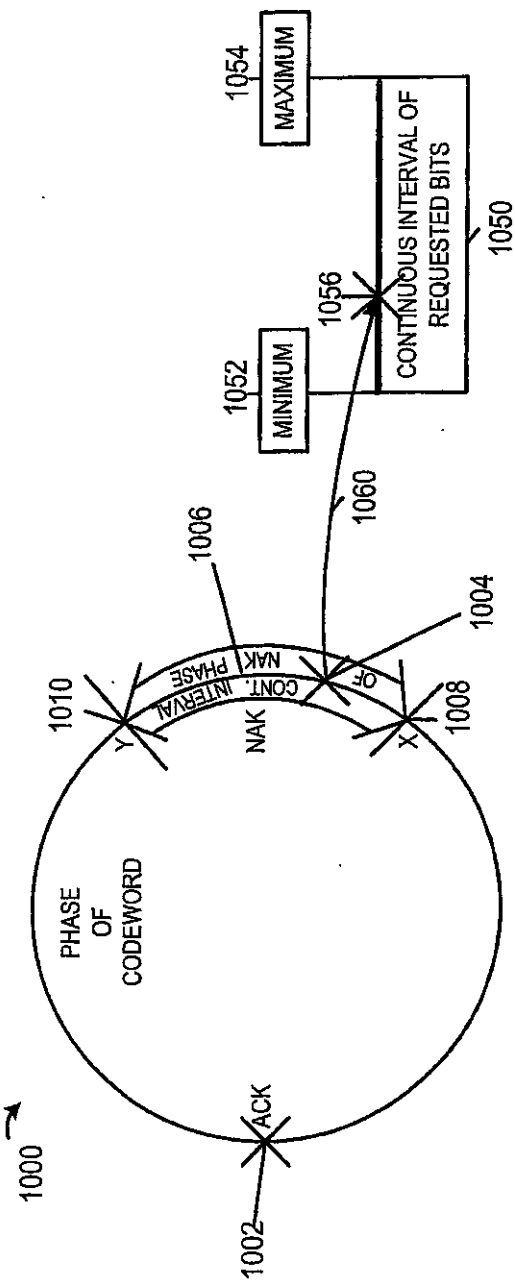

1000
1002
ACK
PHASE OF CODEWORD
NAK
1004
1006
CONT. INTERVAL NAK PHASE
1008
X
1010
Y
1050
CONTINUOUS INTERVAL OF REQUESTED BITS
1052
MINIMUM
1054
MAXIMUM
1056
1060

FIGURE 10

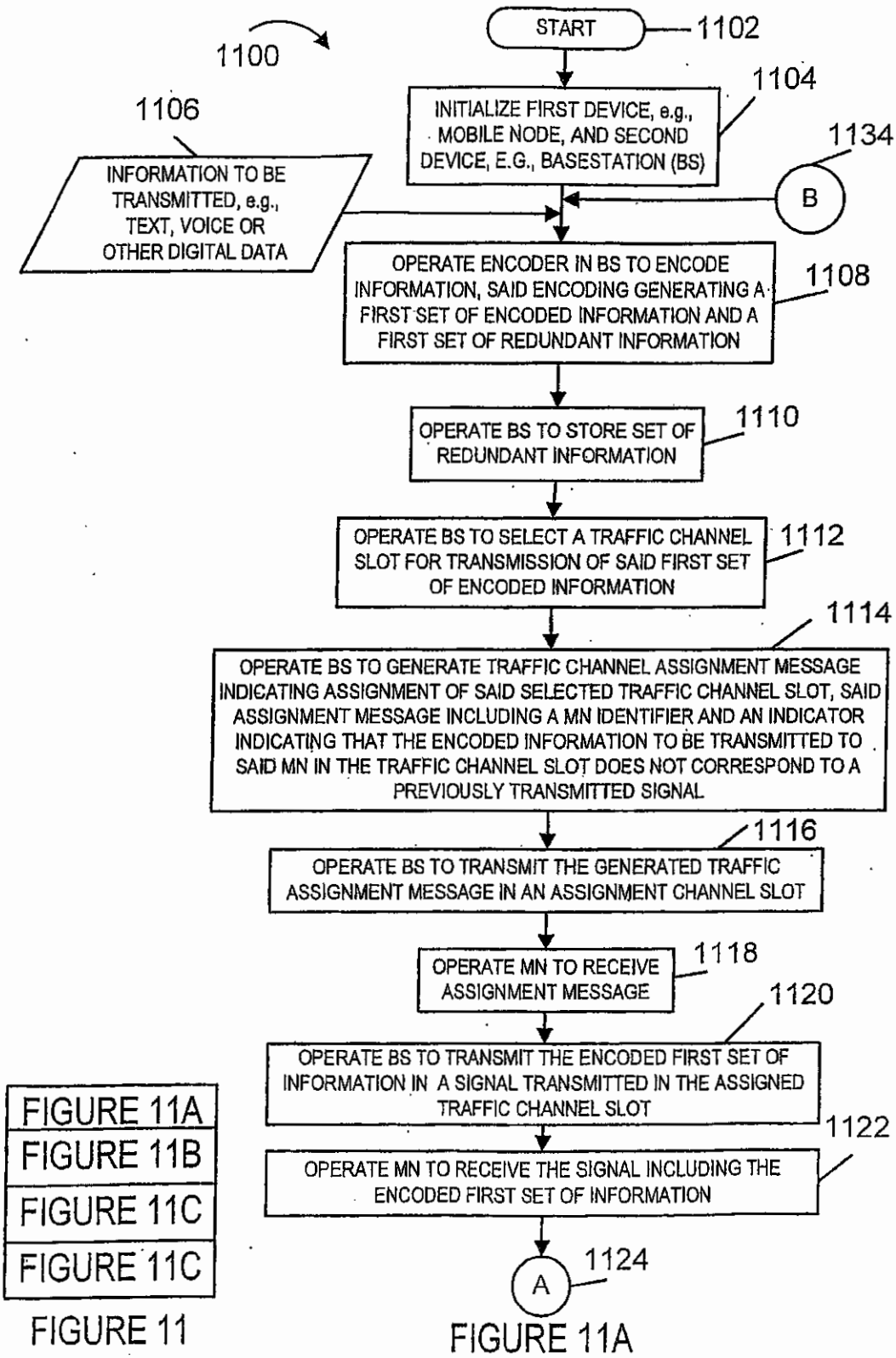



FIGURE 11A

FIGURE 11B

FIGURE 11C

FIGURE 11C

FIGURE 11

FIGURE 11A

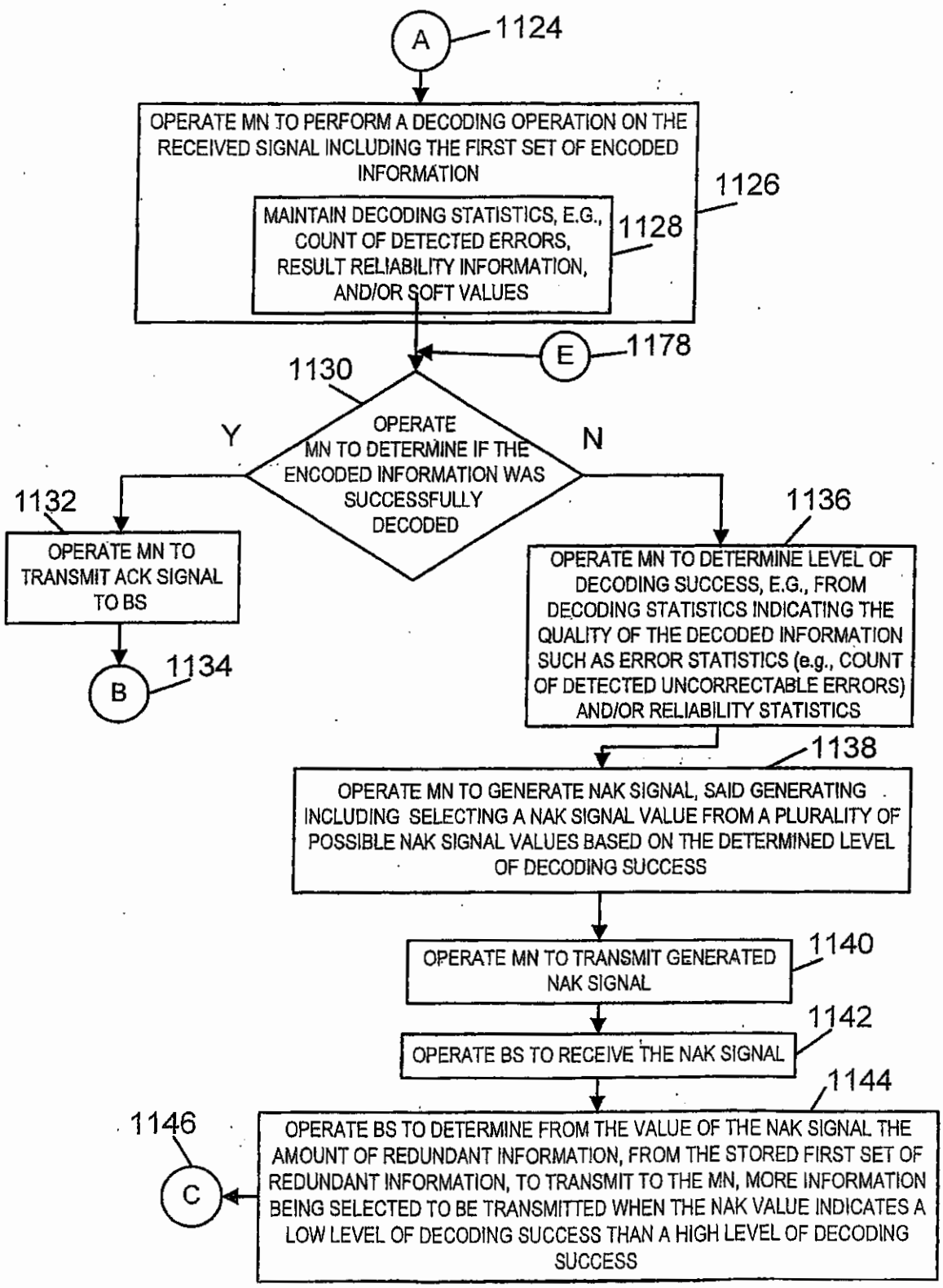

A
1124
OPERATE MN TO PERFORM A DECODING OPERATION ON THE RECEIVED SIGNAL INCLUDING THE FIRST SET OF ENCODED INFORMATION
MAINTAIN DECODING STATISTICS, E.G., COUNT OF DETECTED ERRORS, RESULT RELIABILITY INFORMATION, AND/OR SOFT VALUES
1128
1126
E
1178
1130
OPERATE MN TO DETERMINE IF THE ENCODED INFORMATION WAS SUCCESSFULLY DECODED
Y
N
1132
OPERATE MN TO TRANSMIT ACK SIGNAL TO BS
B
1134
1136
OPERATE MN TO DETERMINE LEVEL OF DECODING SUCCESS, E.G., FROM DECODING STATISTICS INDICATING THE QUALITY OF THE DECODED INFORMATION SUCH AS ERROR STATISTICS (e.g., COUNT OF DETECTED UNCORRECTABLE ERRORS) AND/OR RELIABILITY STATISTICS
1138
OPERATE MN TO GENERATE NAK SIGNAL, SAID GENERATING INCLUDING SELECTING A NAK SIGNAL VALUE FROM A PLURALITY OF POSSIBLE NAK SIGNAL VALUES BASED ON THE DETERMINED LEVEL OF DECODING SUCCESS
OPERATE MN TO TRANSMIT GENERATED NAK SIGNAL
1140
OPERATE BS TO RECEIVE THE NAK SIGNAL
1142
1144
1146
C
OPERATE BS TO DETERMINE FROM THE VALUE OF THE NAK SIGNAL THE AMOUNT OF REDUNDANT INFORMATION, FROM THE STORED FIRST SET OF REDUNDANT INFORMATION, TO TRANSMIT TO THE MN, MORE INFORMATION BEING SELECTED TO BE TRANSMITTED WHEN THE NAK VALUE INDICATES A LOW LEVEL OF DECODING SUCCESS THAN A HIGH LEVEL OF DECODING SUCCESS

FIGURE 11B

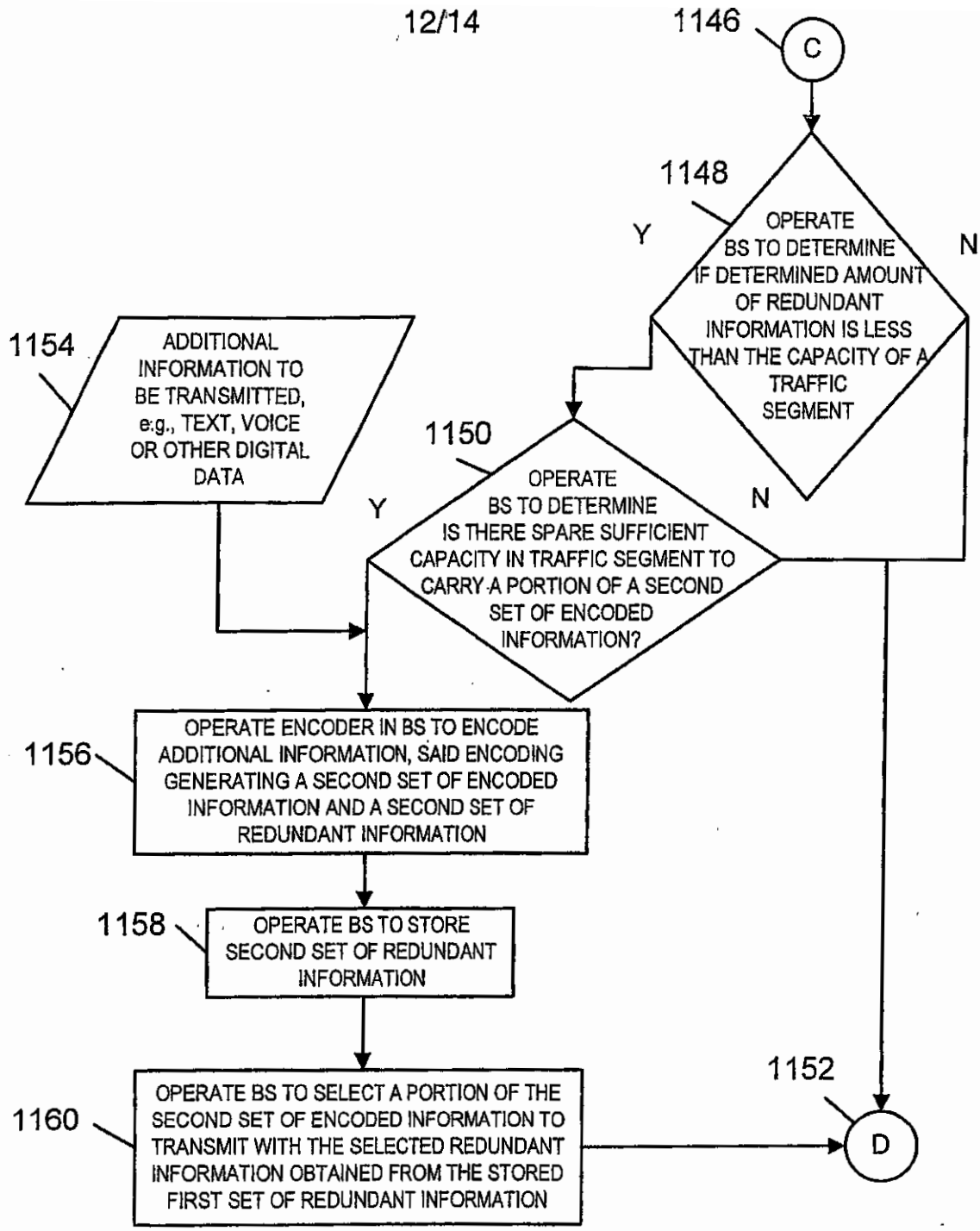

1146
C
1148
OPERATE BS TO DETERMINE IF DETERMINED AMOUNT OF REDUNDANT INFORMATION IS LESS THAN THE CAPACITY OF A TRAFFIC SEGMENT
Y
N
1154
ADDITIONAL INFORMATION TO BE TRANSMITTED, e.g., TEXT, VOICE OR OTHER DIGITAL DATA
1150
OPERATE BS TO DETERMINE IS THERE SPARE SUFFICIENT CAPACITY IN TRAFFIC SEGMENT TO CARRY A PORTION OF A SECOND SET OF ENCODED INFORMATION?
Y
N
1156
OPERATE ENCODER IN BS TO ENCODE ADDITIONAL INFORMATION, SAID ENCODING GENERATING A SECOND SET OF ENCODED INFORMATION AND A SECOND SET OF REDUNDANT INFORMATION
1158
OPERATE BS TO STORE SECOND SET OF REDUNDANT INFORMATION
1160
OPERATE BS TO SELECT A PORTION OF THE SECOND SET OF ENCODED INFORMATION TO TRANSMIT WITH THE SELECTED REDUNDANT INFORMATION OBTAINED FROM THE STORED FIRST SET OF REDUNDANT INFORMATION
1152
D

FIGURE 11C

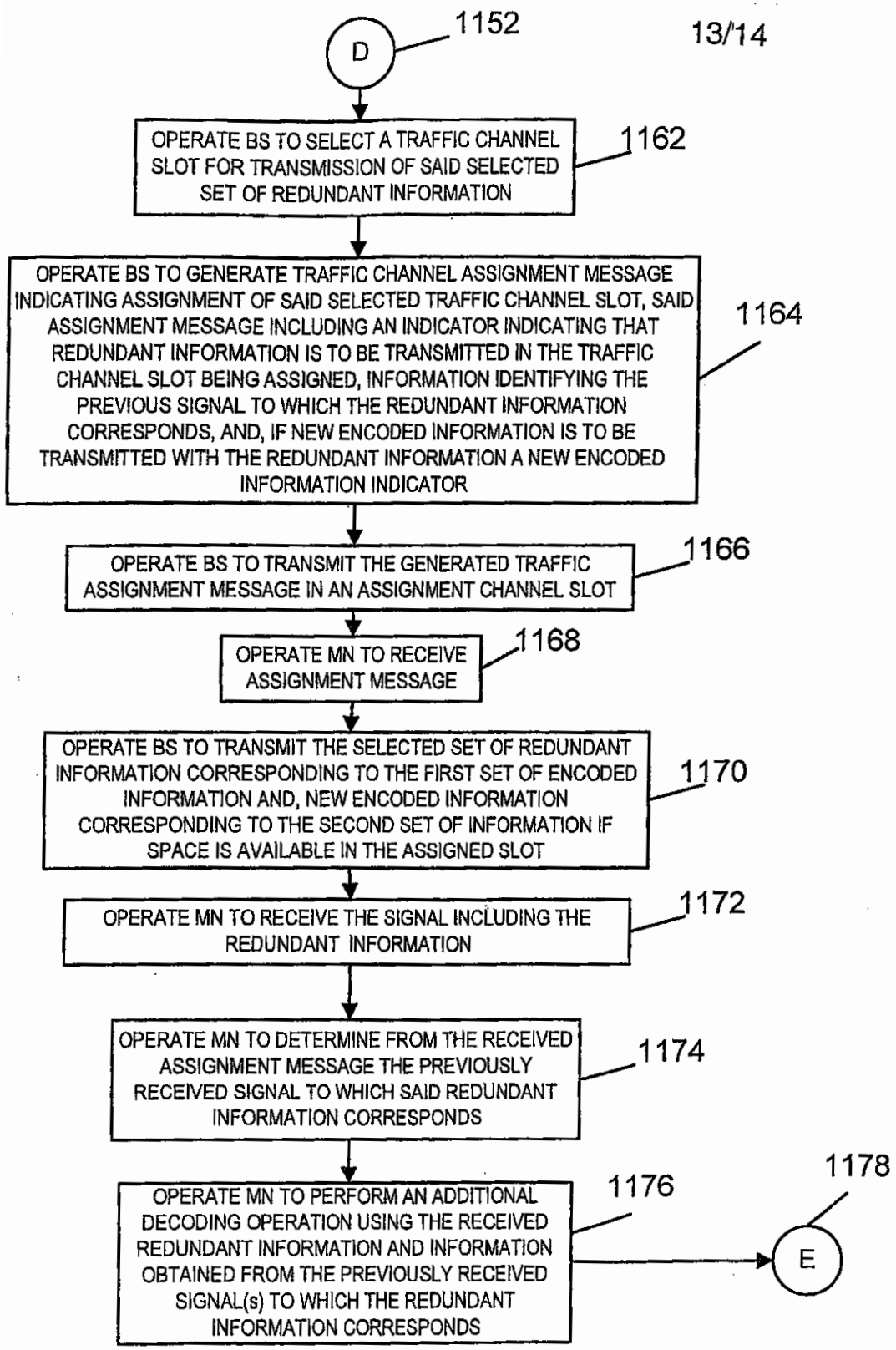

D
1152
OPERATE BS TO SELECT A TRAFFIC CHANNEL SLOT FOR TRANSMISSION OF SAID SELECTED SET OF REDUNDANT INFORMATION
1162
OPERATE BS TO GENERATE TRAFFIC CHANNEL ASSIGNMENT MESSAGE INDICATING ASSIGNMENT OF SAID SELECTED TRAFFIC CHANNEL SLOT, SAID ASSIGNMENT MESSAGE INCLUDING AN INDICATOR INDICATING THAT REDUNDANT INFORMATION IS TO BE TRANSMITTED IN THE TRAFFIC CHANNEL SLOT BEING ASSIGNED, INFORMATION IDENTIFYING THE PREVIOUS SIGNAL TO WHICH THE REDUNDANT INFORMATION CORRESPONDS, AND, IF NEW ENCODED INFORMATION IS TO BE TRANSMITTED WITH THE REDUNDANT INFORMATION A NEW ENCODED INFORMATION INDICATOR
1164
OPERATE BS TO TRANSMIT THE GENERATED TRAFFIC ASSIGNMENT MESSAGE IN AN ASSIGNMENT CHANNEL SLOT
1166
OPERATE MN TO RECEIVE ASSIGNMENT MESSAGE
1168
OPERATE BS TO TRANSMIT THE SELECTED SET OF REDUNDANT INFORMATION CORRESPONDING TO THE FIRST SET OF ENCODED INFORMATION AND, NEW ENCODED INFORMATION CORRESPONDING TO THE SECOND SET OF INFORMATION IF SPACE IS AVAILABLE IN THE ASSIGNED SLOT
1170
OPERATE MN TO RECEIVE THE SIGNAL INCLUDING THE REDUNDANT INFORMATION
1172
OPERATE MN TO DETERMINE FROM THE RECEIVED ASSIGNMENT MESSAGE THE PREVIOUSLY RECEIVED SIGNAL TO WHICH SAID REDUNDANT INFORMATION CORRESPONDS
1174
OPERATE MN TO PERFORM AN ADDITIONAL DECODING OPERATION USING THE RECEIVED REDUNDANT INFORMATION AND INFORMATION OBTAINED FROM THE PREVIOUSLY RECEIVED SIGNAL(s) TO WHICH THE REDUNDANT INFORMATION CORRESPONDS
1176
1178
E

FIGURE 11D

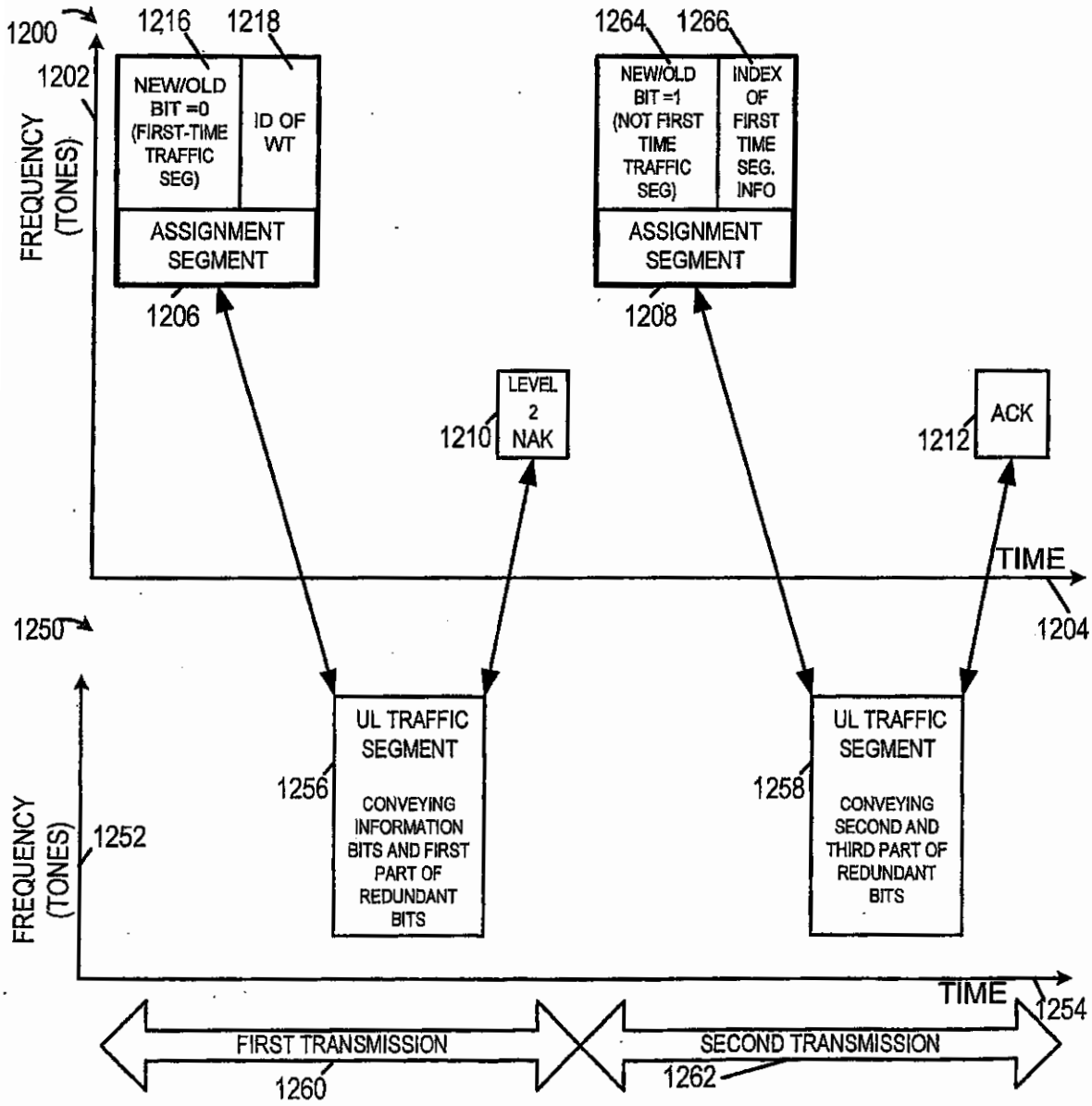

1200
1202
FREQUENCY (TONES)
1216
1218
NEW/OLD BIT =0 (FIRST-TIME TRAFFIC SEG)
ID OF WT
ASSIGNMENT SEGMENT
1206
1264
1266
NEW/OLD BIT =1 (NOT FIRST TIME TRAFFIC SEG)
INDEX OF FIRST TIME SEG. INFO
ASSIGNMENT SEGMENT
1208
LEVEL 2 NAK
1210
ACK
1212
TIME
1204
1250
1252
FREQUENCY (TONES)
UL TRAFFIC SEGMENT
1256
CONVEYING INFORMATION BITS AND FIRST PART OF REDUNDANT BITS
UL TRAFFIC SEGMENT
1258
CONVEYING SECOND AND THIRD PART OF REDUNDANT BITS
TIME
1254
FIRST TRANSMISSION
1260
SECOND TRANSMISSION
1262

FIGURE 12