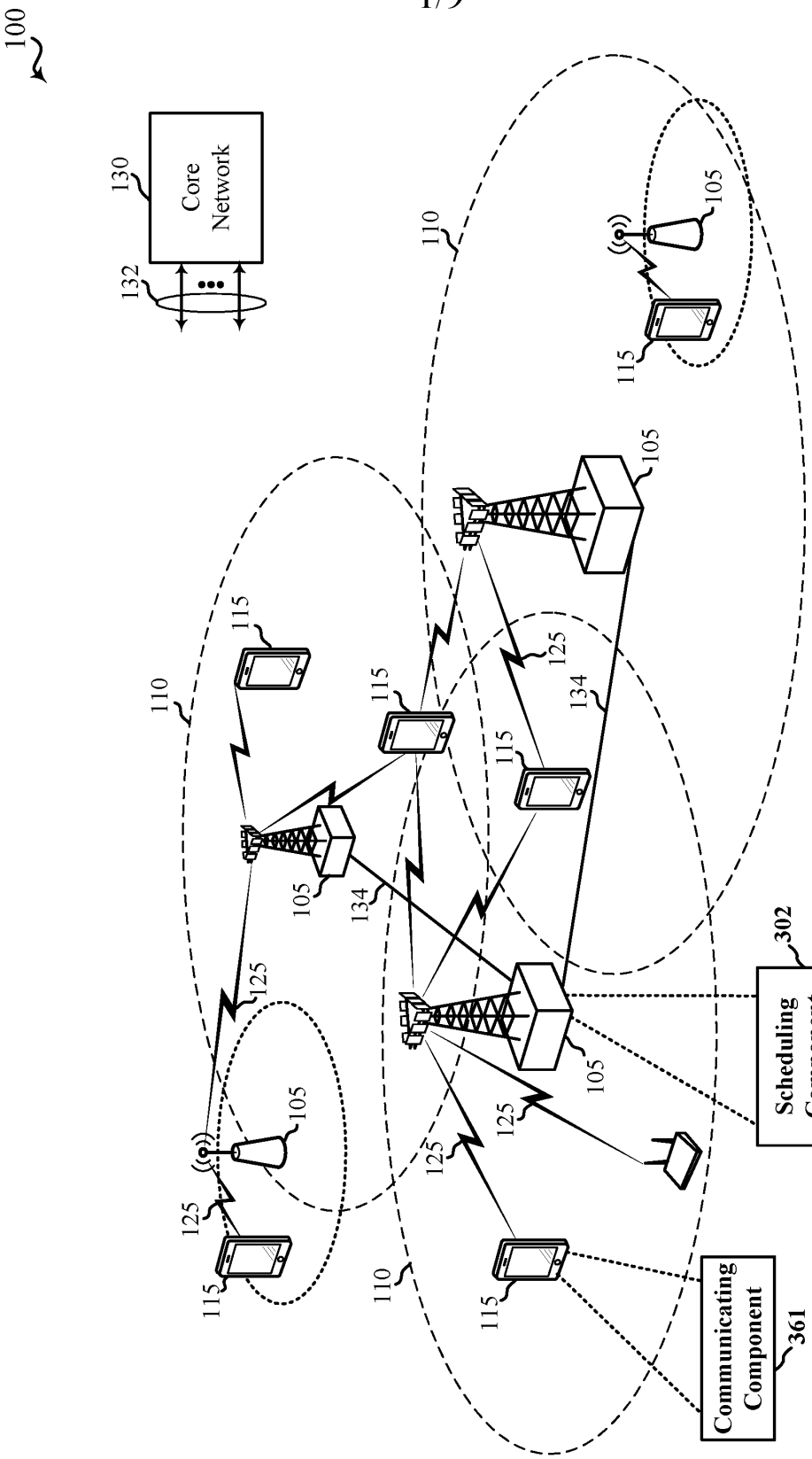
100
130
Core Network
132
110
105
115
125
134
302
Scheduling Component
Communicating Component
361

FIG. 1

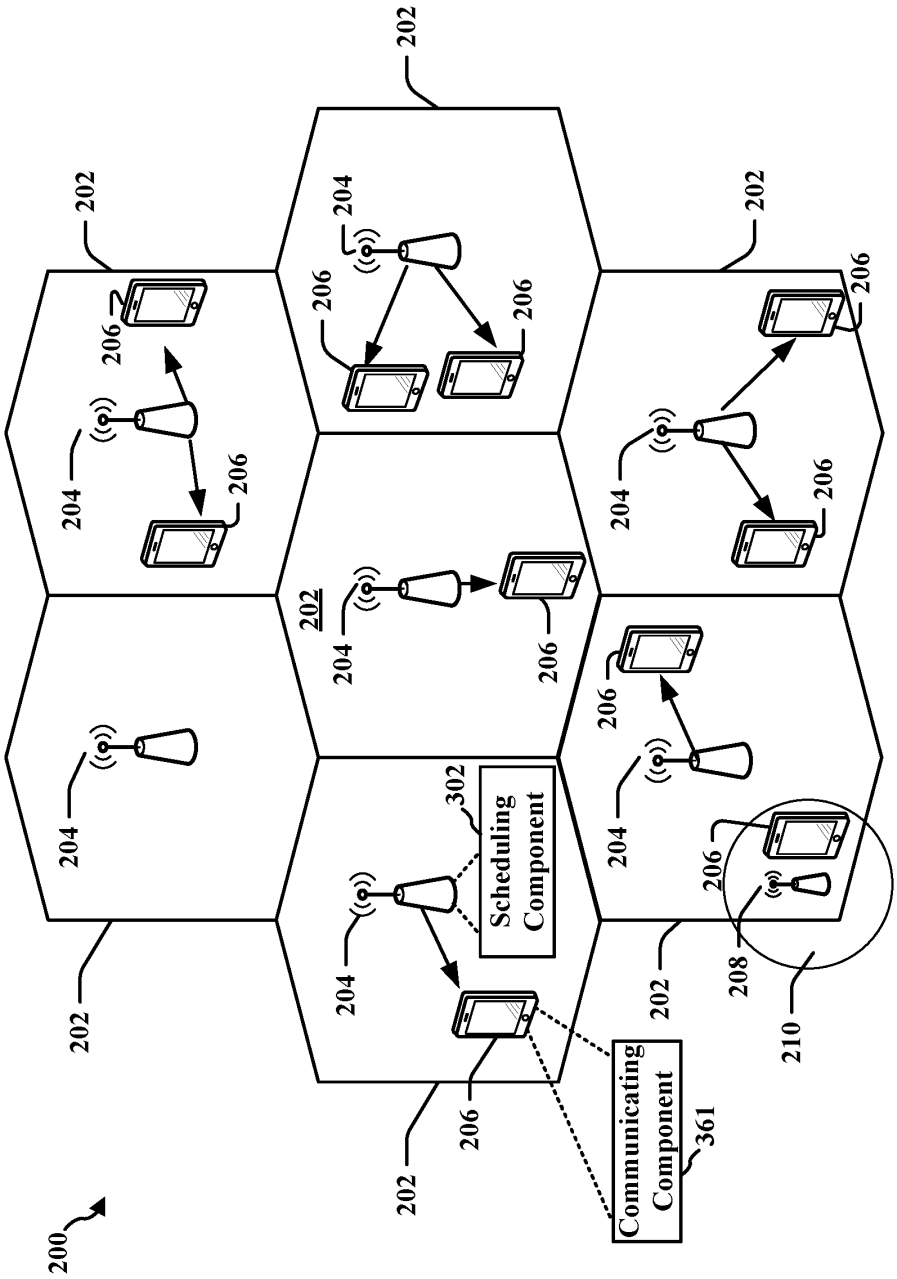
200
202
204
206
208
210
302
Scheduling Component
Communicating Component
361

FIG. 2

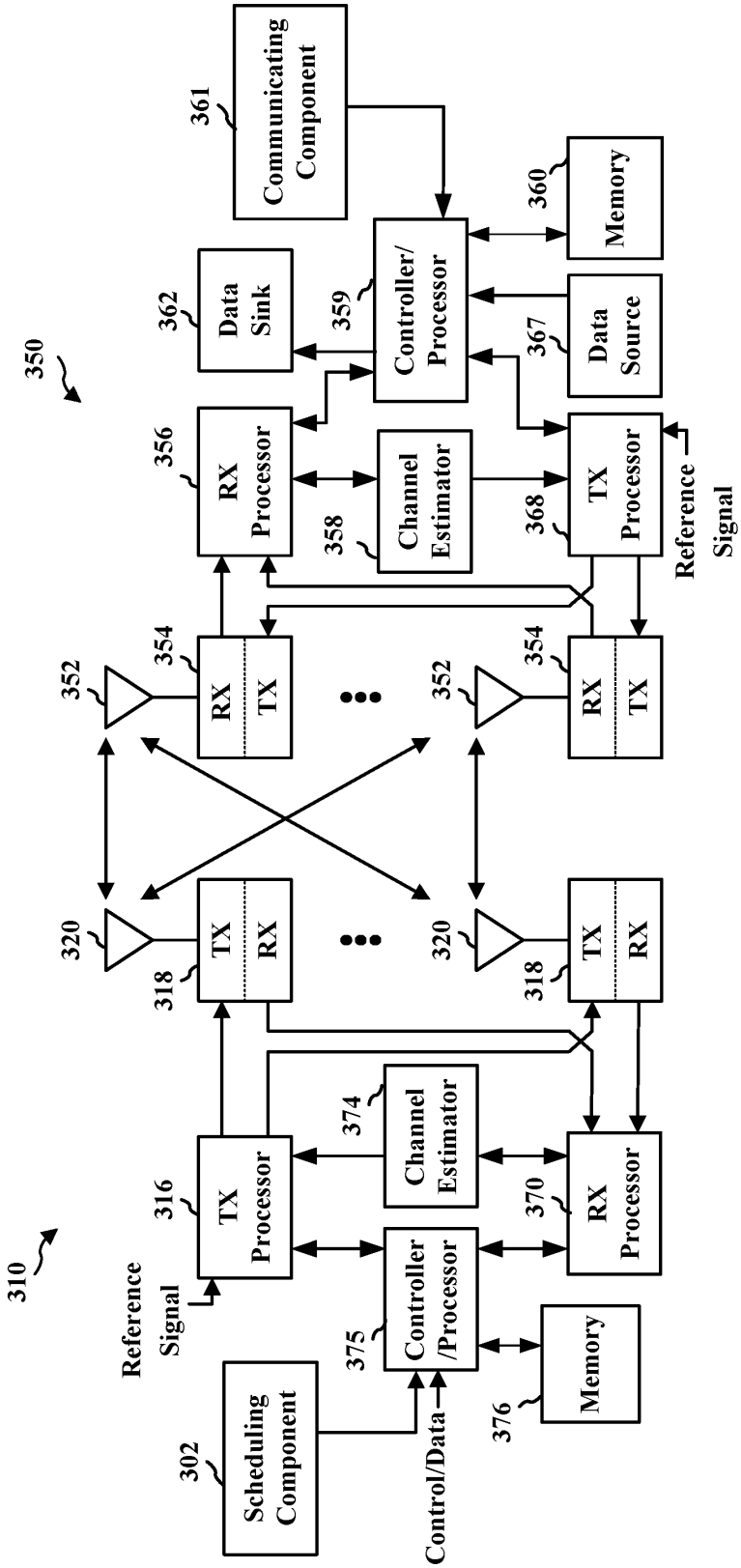
310
350
Communicating Component
361
Memory
360
Controller/ Processor
359
Data Sink
362
Data Source
367
RX Processor
356
Channel Estimator
358
TX Processor
368
Reference Signal
RX
TX
352
354
320
318
TX Processor
316
Channel Estimator
374
RX Processor
370
Controller /Processor
375
Memory
376
Reference Signal
Scheduling Component
302
Control/Data

FIG. 3

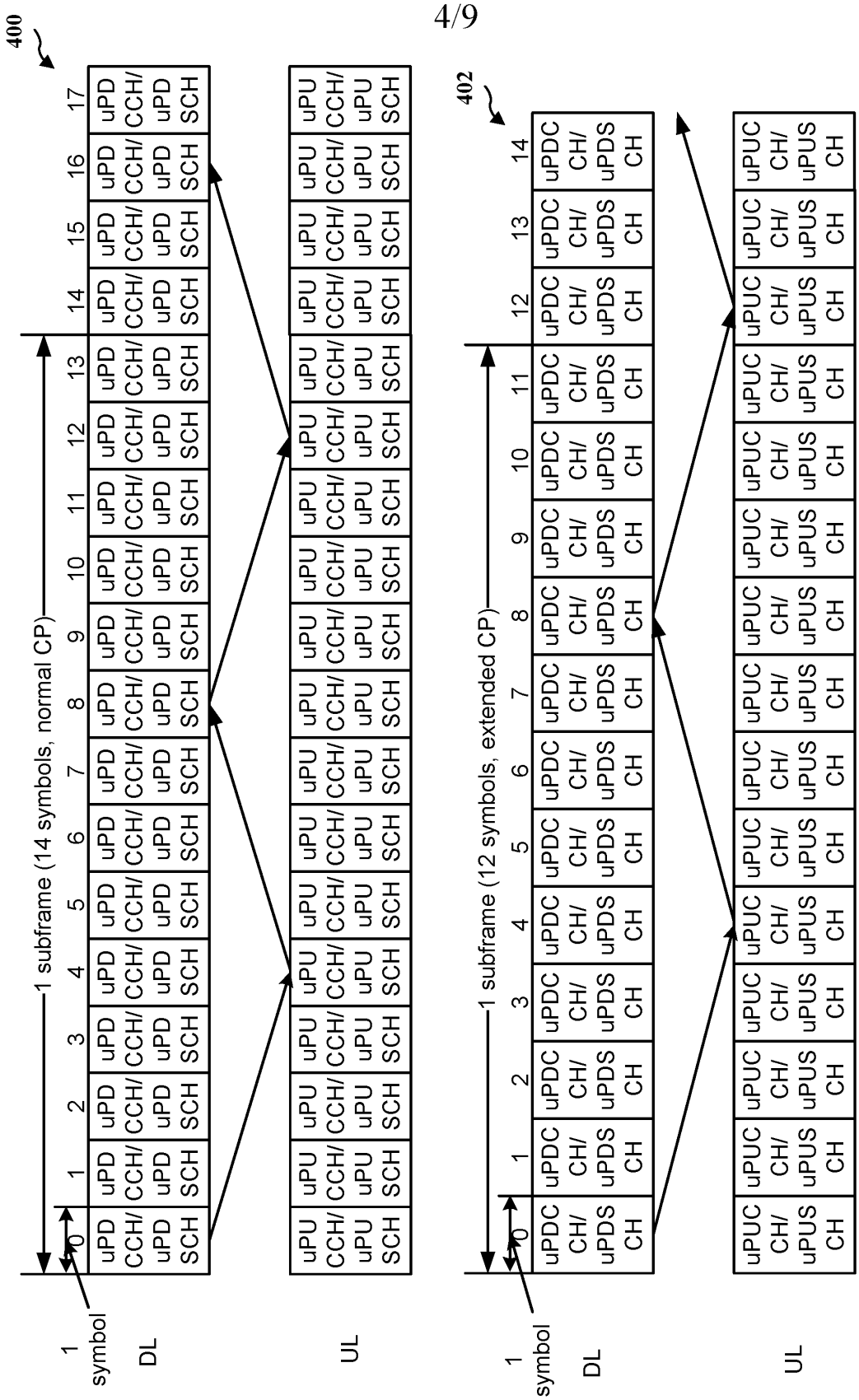
400
1 subframe (14 symbols, normal CP)
1 symbol
DL
UL
402
1 subframe (12 symbols, extended CP)
1 symbol
DL
UL

FIG. 4

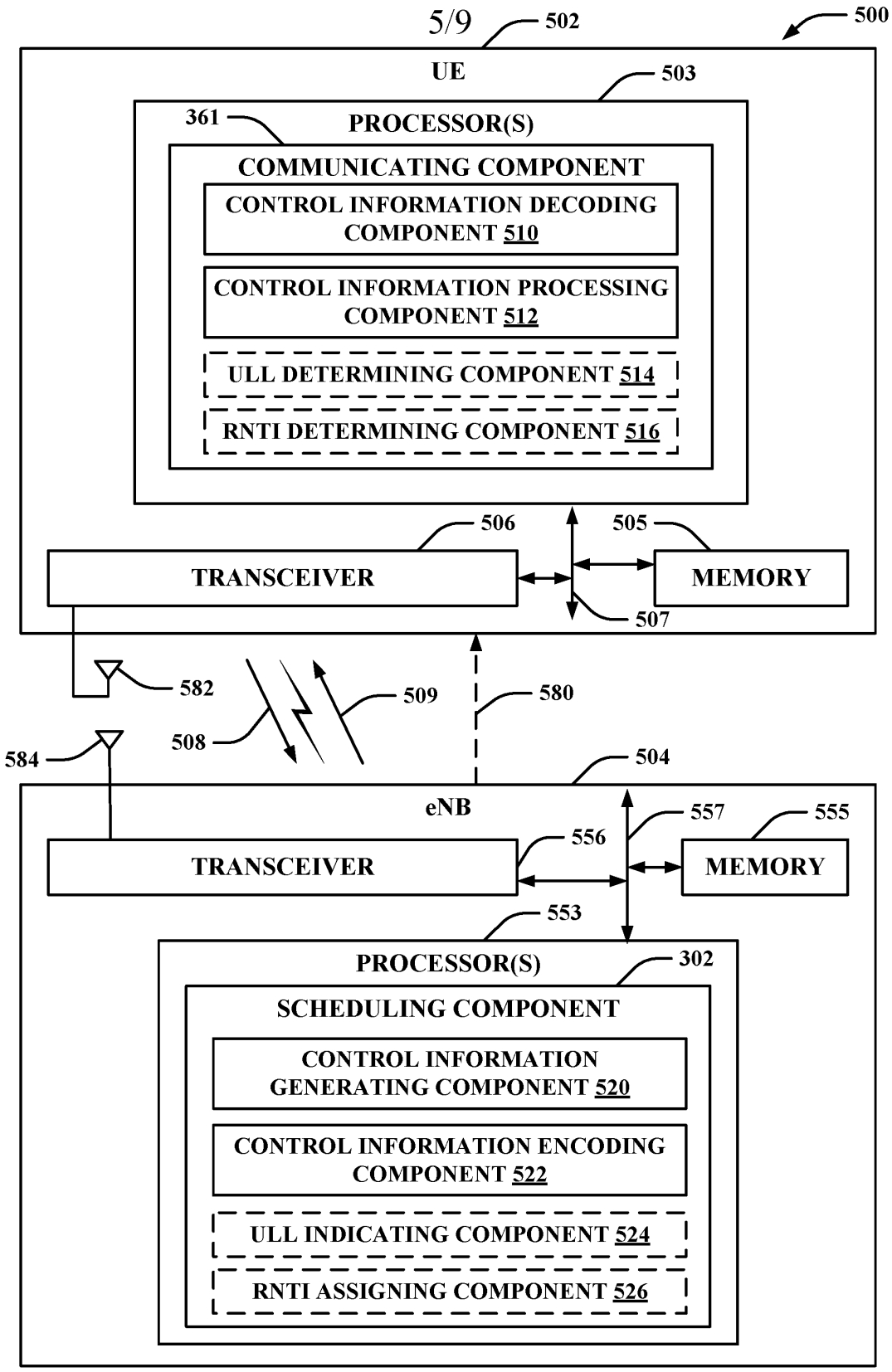
500
502
UE
503
361
PROCESSOR(S)
COMMUNICATING COMPONENT
CONTROL INFORMATION DECODING COMPONENT 510
CONTROL INFORMATION PROCESSING COMPONENT 512
ULL DETERMINING COMPONENT 514
RNTI DETERMINING COMPONENT 516
506
505
TRANSCEIVER
MEMORY
507
582
509
580
508
584
504
eNB
557
555
556
TRANSCEIVER
MEMORY
553
PROCESSOR(S)
302
SCHEDULING COMPONENT
CONTROL INFORMATION GENERATING COMPONENT 520
CONTROL INFORMATION ENCODING COMPONENT 522
ULL INDICATING COMPONENT 524
RNTI ASSIGNING COMPONENT 526

FIG. 5

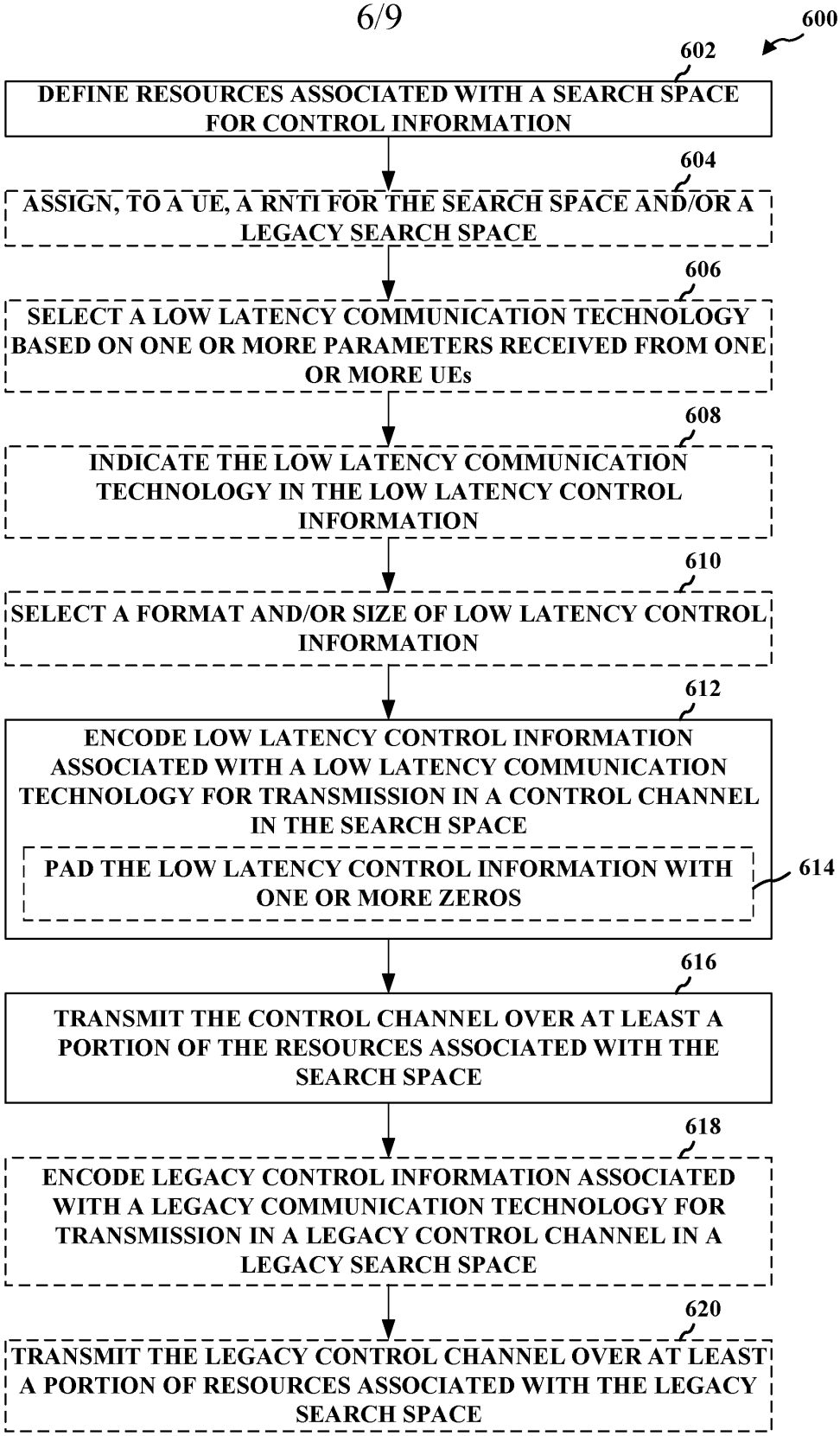
600
602
DEFINE RESOURCES ASSOCIATED WITH A SEARCH SPACE FOR CONTROL INFORMATION
604
ASSIGN, TO A UE, A RNTI FOR THE SEARCH SPACE AND/OR A LEGACY SEARCH SPACE
606
SELECT A LOW LATENCY COMMUNICATION TECHNOLOGY BASED ON ONE OR MORE PARAMETERS RECEIVED FROM ONE OR MORE UEs
608
INDICATE THE LOW LATENCY COMMUNICATION TECHNOLOGY IN THE LOW LATENCY CONTROL INFORMATION
610
SELECT A FORMAT AND/OR SIZE OF LOW LATENCY CONTROL INFORMATION
612
ENCODE LOW LATENCY CONTROL INFORMATION ASSOCIATED WITH A LOW LATENCY COMMUNICATION TECHNOLOGY FOR TRANSMISSION IN A CONTROL CHANNEL IN THE SEARCH SPACE
PAD THE LOW LATENCY CONTROL INFORMATION WITH ONE OR MORE ZEROS
614
616
TRANSMIT THE CONTROL CHANNEL OVER AT LEAST A PORTION OF THE RESOURCES ASSOCIATED WITH THE SEARCH SPACE
618
ENCODE LEGACY CONTROL INFORMATION ASSOCIATED WITH A LEGACY COMMUNICATION TECHNOLOGY FOR TRANSMISSION IN A LEGACY CONTROL CHANNEL IN A LEGACY SEARCH SPACE
620
TRANSMIT THE LEGACY CONTROL CHANNEL OVER AT LEAST A PORTION OF RESOURCES ASSOCIATED WITH THE LEGACY SEARCH SPACE

FIG. 6

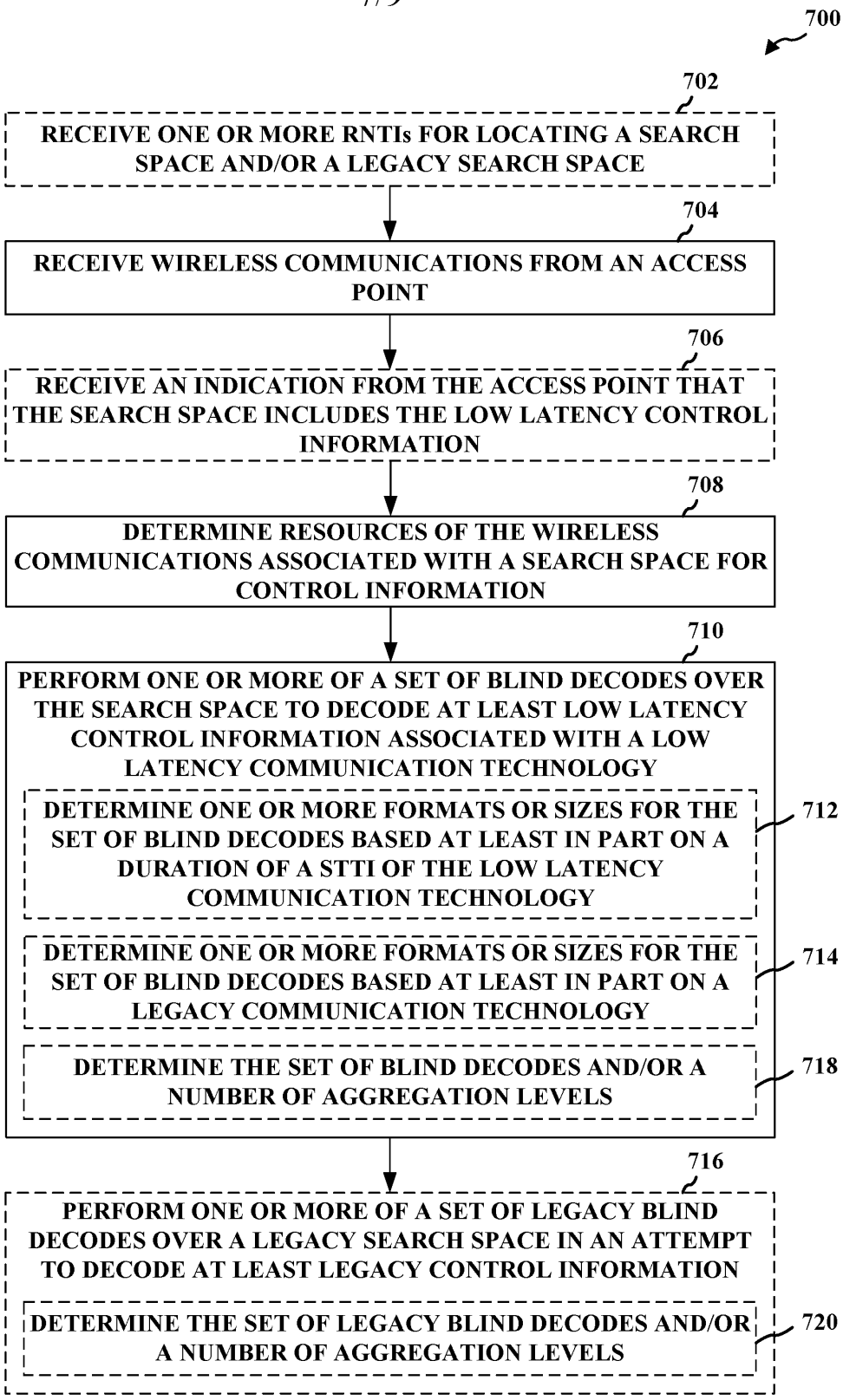
700
702
RECEIVE ONE OR MORE RNTIs FOR LOCATING A SEARCH SPACE AND/OR A LEGACY SEARCH SPACE
704
RECEIVE WIRELESS COMMUNICATIONS FROM AN ACCESS POINT
706
RECEIVE AN INDICATION FROM THE ACCESS POINT THAT THE SEARCH SPACE INCLUDES THE LOW LATENCY CONTROL INFORMATION
708
DETERMINE RESOURCES OF THE WIRELESS COMMUNICATIONS ASSOCIATED WITH A SEARCH SPACE FOR CONTROL INFORMATION
710
PERFORM ONE OR MORE OF A SET OF BLIND DECODES OVER THE SEARCH SPACE TO DECODE AT LEAST LOW LATENCY CONTROL INFORMATION ASSOCIATED WITH A LOW LATENCY COMMUNICATION TECHNOLOGY
DETERMINE ONE OR MORE FORMATS OR SIZES FOR THE SET OF BLIND DECODES BASED AT LEAST IN PART ON A DURATION OF A STTI OF THE LOW LATENCY COMMUNICATION TECHNOLOGY
712
DETERMINE ONE OR MORE FORMATS OR SIZES FOR THE SET OF BLIND DECODES BASED AT LEAST IN PART ON A LEGACY COMMUNICATION TECHNOLOGY
714
DETERMINE THE SET OF BLIND DECODES AND/OR A NUMBER OF AGGREGATION LEVELS
718
716
PERFORM ONE OR MORE OF A SET OF LEGACY BLIND DECODES OVER A LEGACY SEARCH SPACE IN AN ATTEMPT TO DECODE AT LEAST LEGACY CONTROL INFORMATION
DETERMINE THE SET OF LEGACY BLIND DECODES AND/OR A NUMBER OF AGGREGATION LEVELS
720

FIG. 7

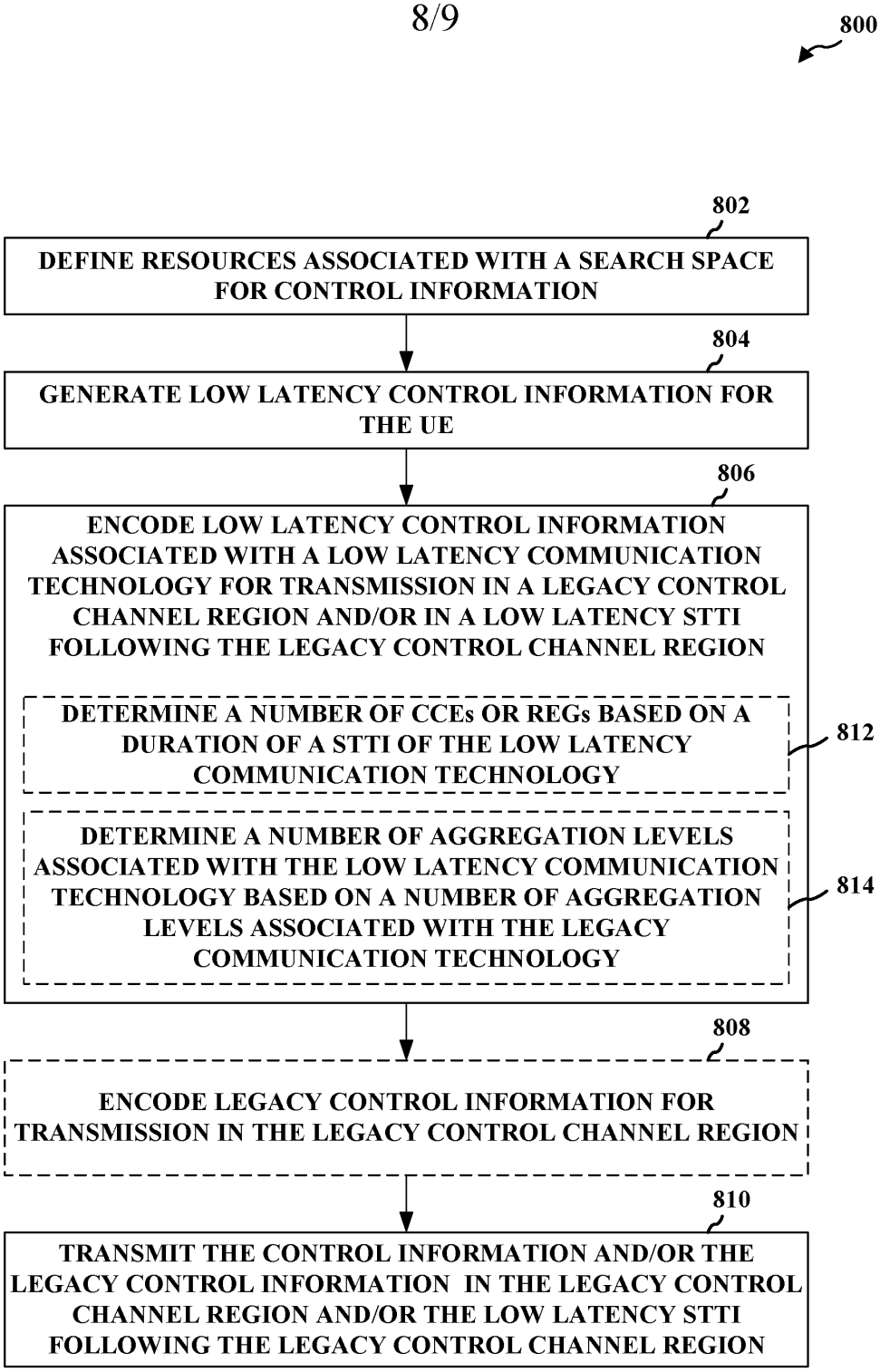
800
802
DEFINE RESOURCES ASSOCIATED WITH A SEARCH SPACE FOR CONTROL INFORMATION
804
GENERATE LOW LATENCY CONTROL INFORMATION FOR THE UE
806
ENCODE LOW LATENCY CONTROL INFORMATION ASSOCIATED WITH A LOW LATENCY COMMUNICATION TECHNOLOGY FOR TRANSMISSION IN A LEGACY CONTROL CHANNEL REGION AND/OR IN A LOW LATENCY STTI FOLLOWING THE LEGACY CONTROL CHANNEL REGION
DETERMINE A NUMBER OF CCEs OR REGs BASED ON A DURATION OF A STTI OF THE LOW LATENCY COMMUNICATION TECHNOLOGY
812
DETERMINE A NUMBER OF AGGREGATION LEVELS ASSOCIATED WITH THE LOW LATENCY COMMUNICATION TECHNOLOGY BASED ON A NUMBER OF AGGREGATION LEVELS ASSOCIATED WITH THE LEGACY COMMUNICATION TECHNOLOGY
814
808
ENCODE LEGACY CONTROL INFORMATION FOR TRANSMISSION IN THE LEGACY CONTROL CHANNEL REGION
810
TRANSMIT THE CONTROL INFORMATION AND/OR THE LEGACY CONTROL INFORMATION IN THE LEGACY CONTROL CHANNEL REGION AND/OR THE LOW LATENCY STTI FOLLOWING THE LEGACY CONTROL CHANNEL REGION

FIG. 8

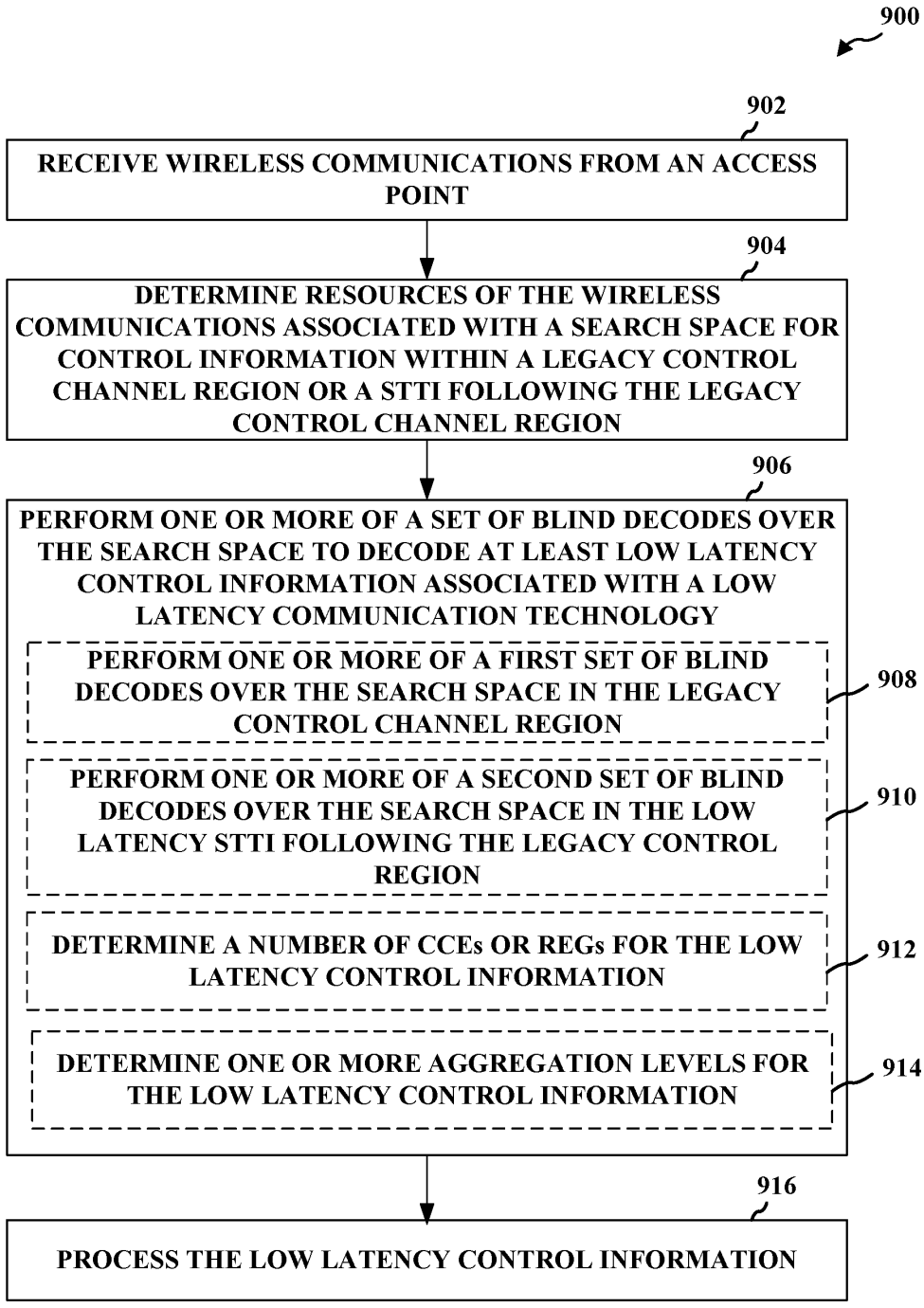
900
902
RECEIVE WIRELESS COMMUNICATIONS FROM AN ACCESS POINT
904
DETERMINE RESOURCES OF THE WIRELESS COMMUNICATIONS ASSOCIATED WITH A SEARCH SPACE FOR CONTROL INFORMATION WITHIN A LEGACY CONTROL CHANNEL REGION OR A STTI FOLLOWING THE LEGACY CONTROL CHANNEL REGION
906
PERFORM ONE OR MORE OF A SET OF BLIND DECODES OVER THE SEARCH SPACE TO DECODE AT LEAST LOW LATENCY CONTROL INFORMATION ASSOCIATED WITH A LOW LATENCY COMMUNICATION TECHNOLOGY
PERFORM ONE OR MORE OF A FIRST SET OF BLIND DECODES OVER THE SEARCH SPACE IN THE LEGACY CONTROL CHANNEL REGION
908
PERFORM ONE OR MORE OF A SECOND SET OF BLIND DECODES OVER THE SEARCH SPACE IN THE LOW LATENCY STTI FOLLOWING THE LEGACY CONTROL REGION
910
DETERMINE A NUMBER OF CCEs OR REGs FOR THE LOW LATENCY CONTROL INFORMATION
912
DETERMINE ONE OR MORE AGGREGATION LEVELS FOR THE LOW LATENCY CONTROL INFORMATION
914
916
PROCESS THE LOW LATENCY CONTROL INFORMATION

FIG. 9