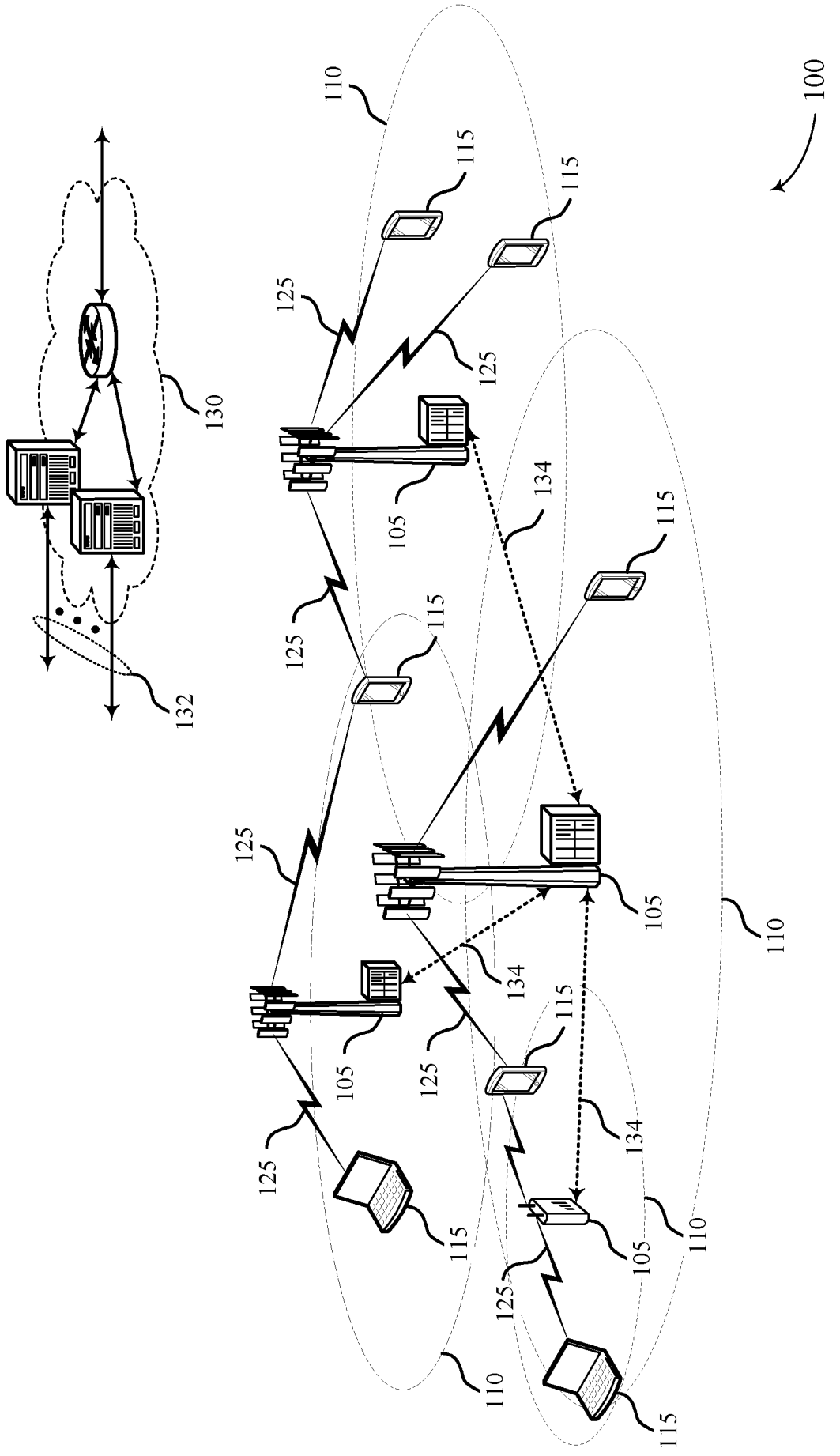

FIG. 1

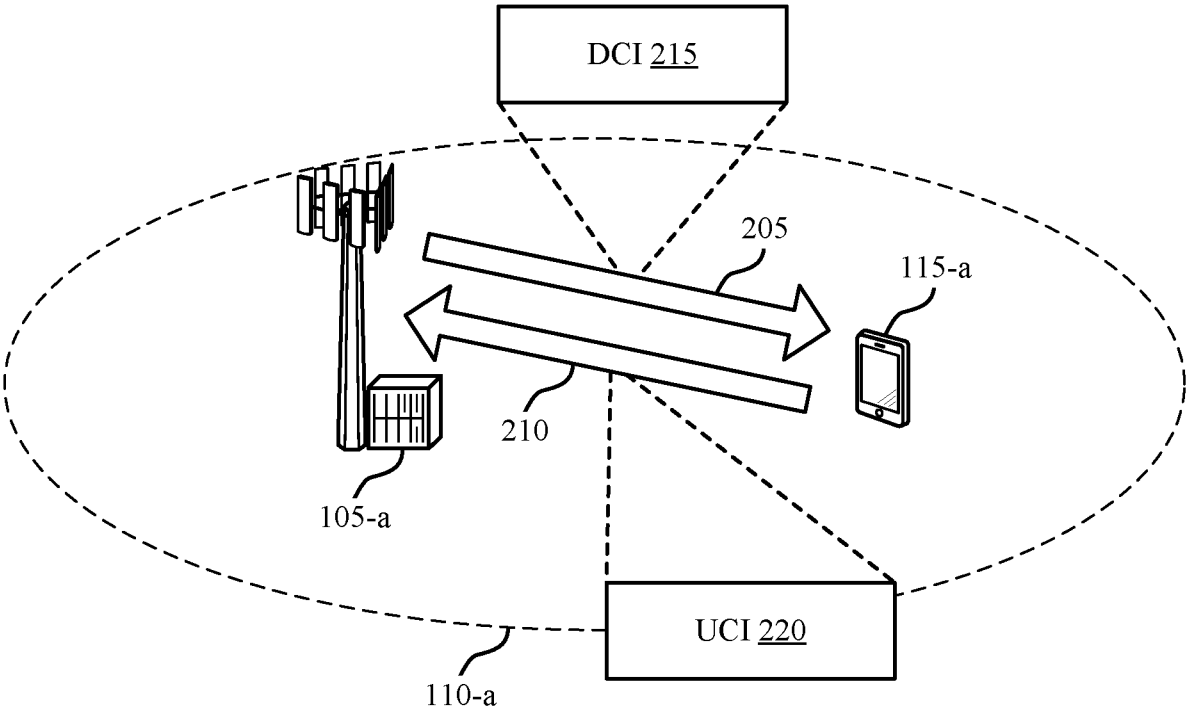

FIG. 2

200

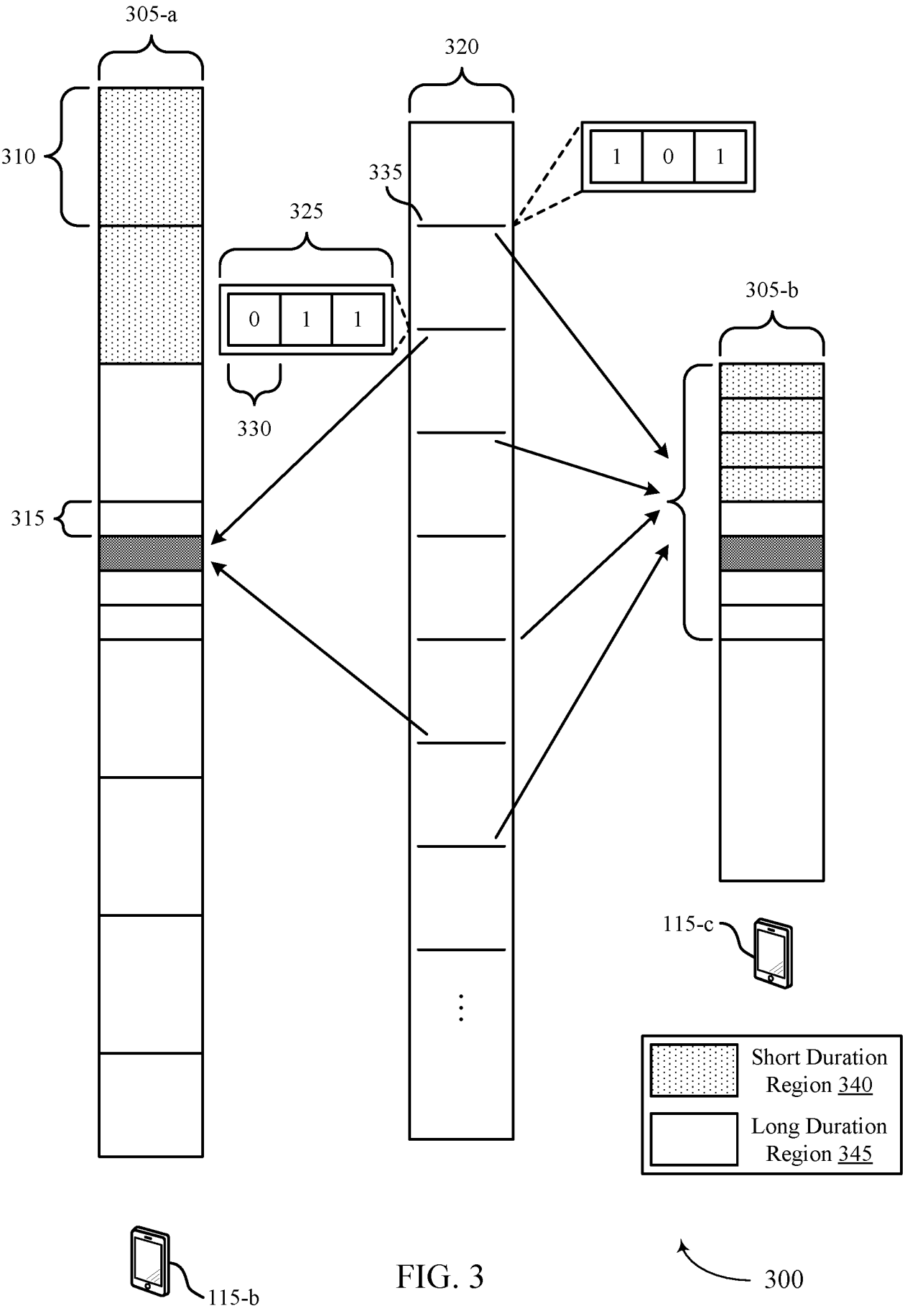
305-a
320
310
335
1 0 1
325
0 1 1
305-b
330
315
115-c
Short Duration Region 340
Long Duration Region 345
115-b
300

FIG. 3

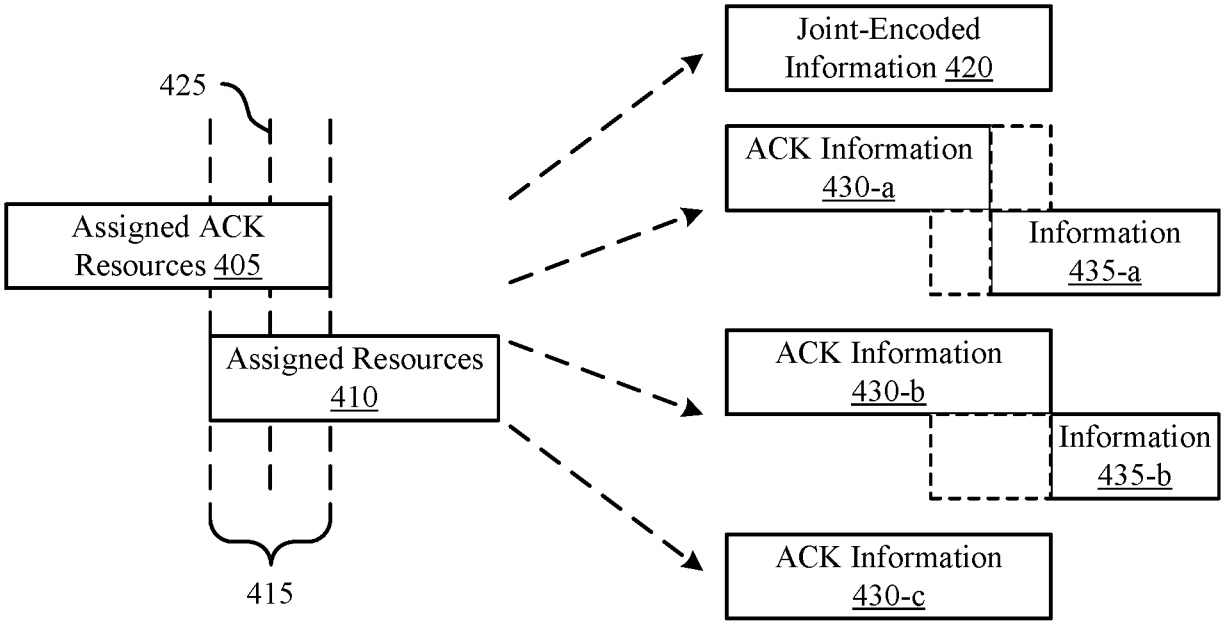

FIG. 4A

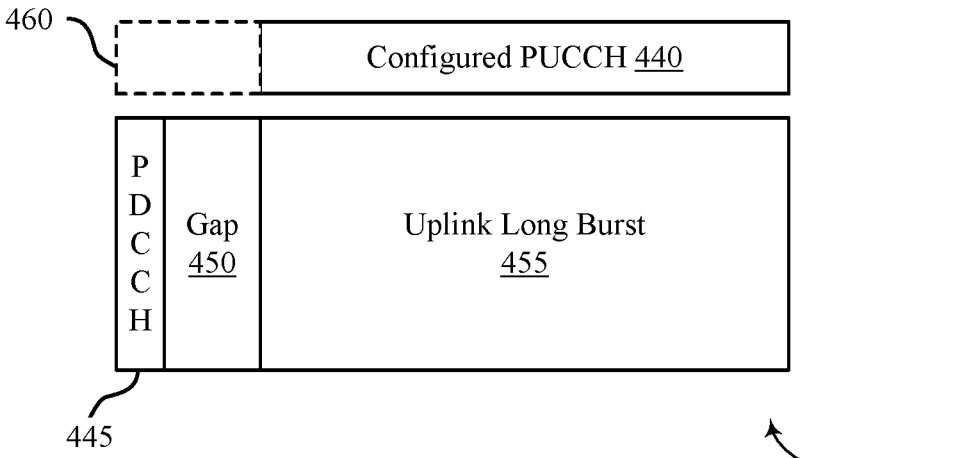

FIG. 4B

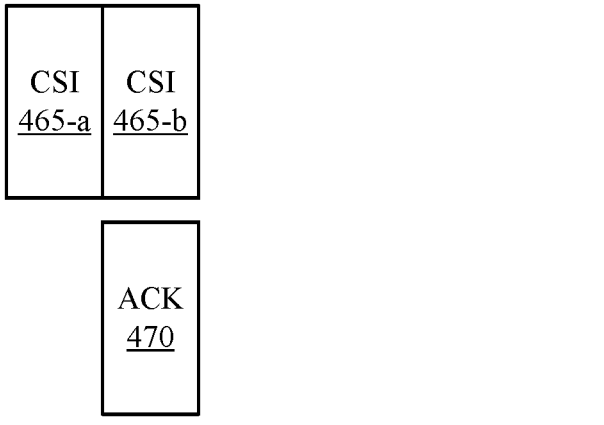

FIG. 4C

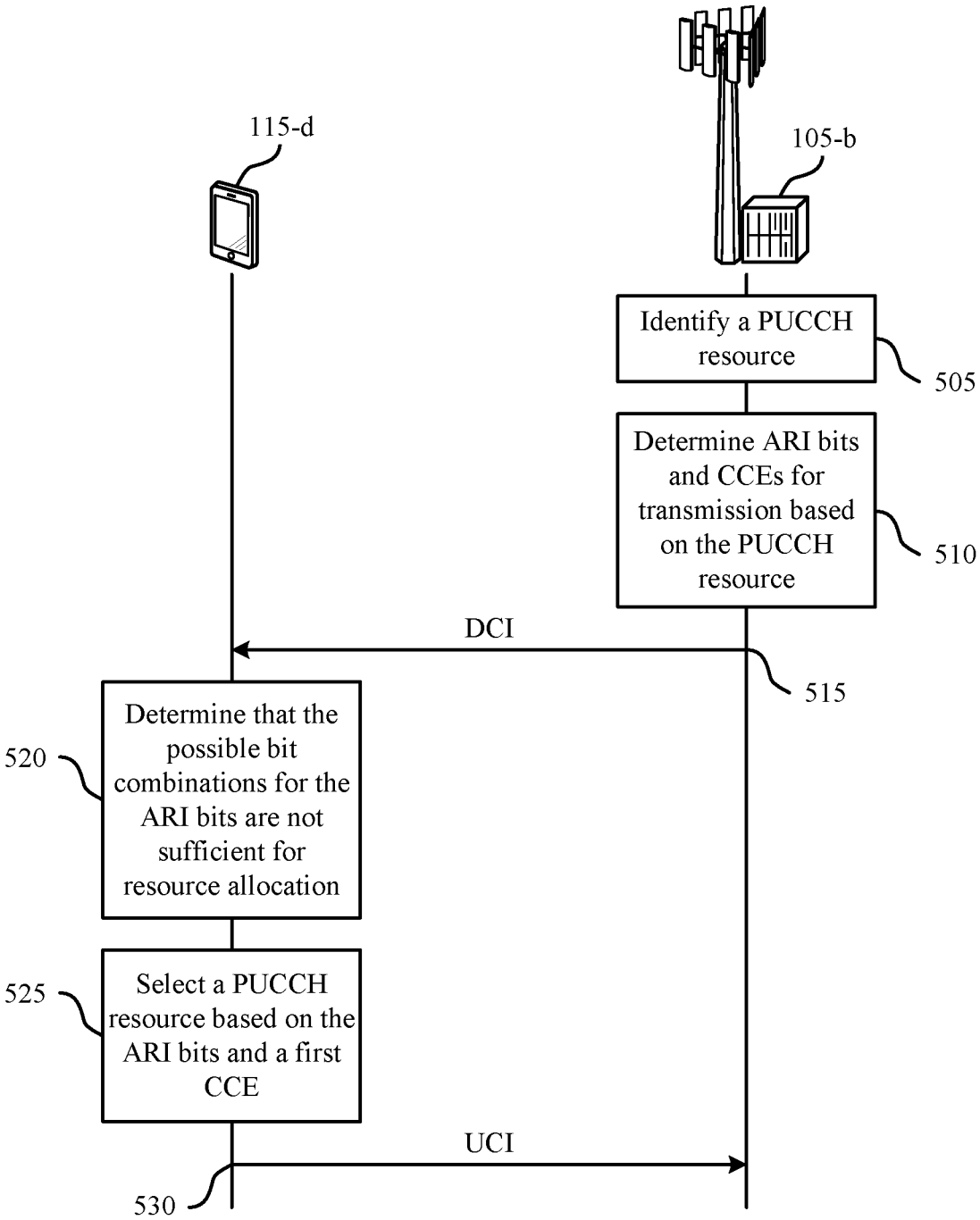
115-d
105-b
Identify a PUCCH resource
505
Determine ARI bits and CCEs for transmission based on the PUCCH resource
510
DCI
515
Determine that the possible bit combinations for the ARI bits are not sufficient for resource allocation
520
Select a PUCCH resource based on the ARI bits and a first CCE
525
UCI
530

FIG. 5

500

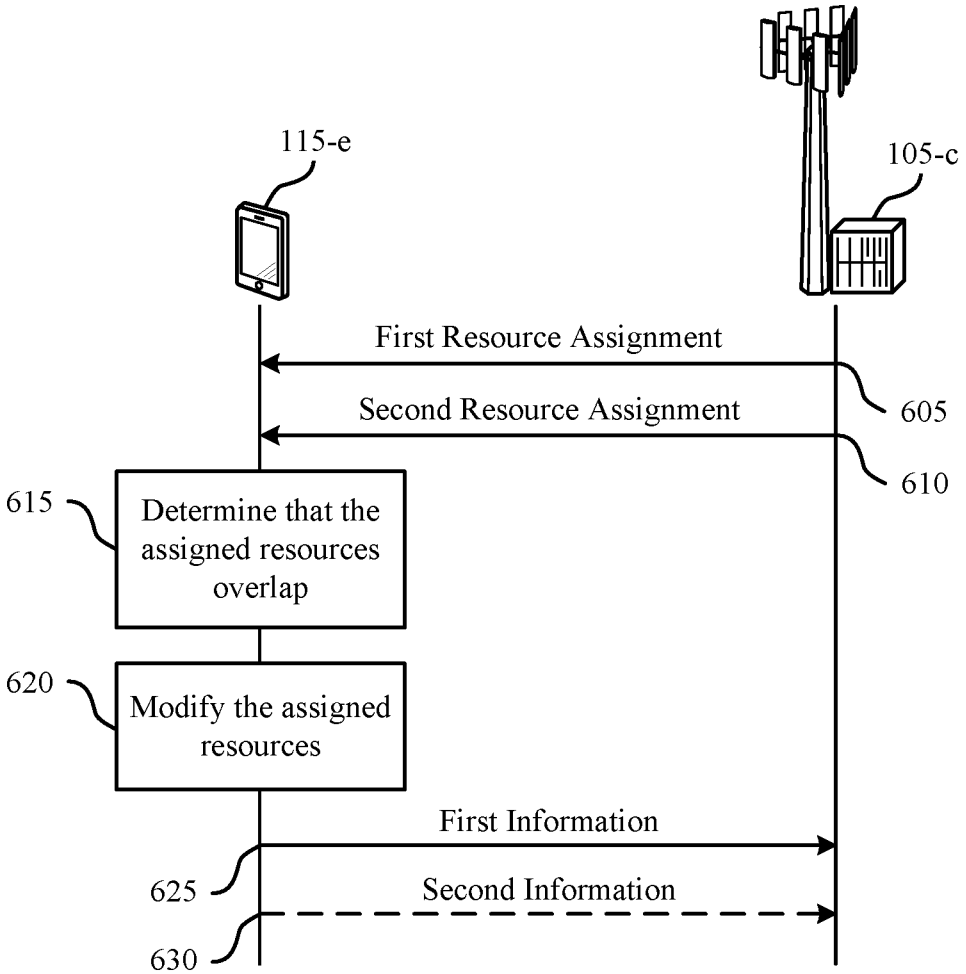
115-e
105-c
First Resource Assignment
605
Second Resource Assignment
610
615
Determine that the assigned resources overlap
620
Modify the assigned resources
First Information
625
Second Information
630

FIG. 6

600

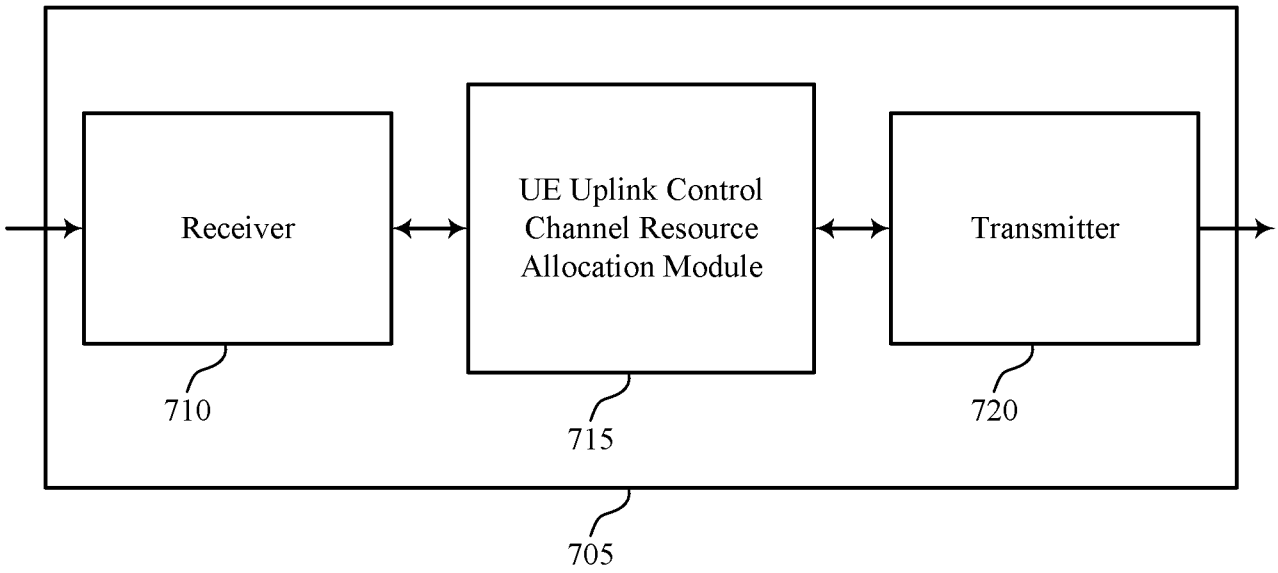
Receiver
UE Uplink Control Channel Resource Allocation Module
Transmitter
710
715
720
705
700

FIG. 7

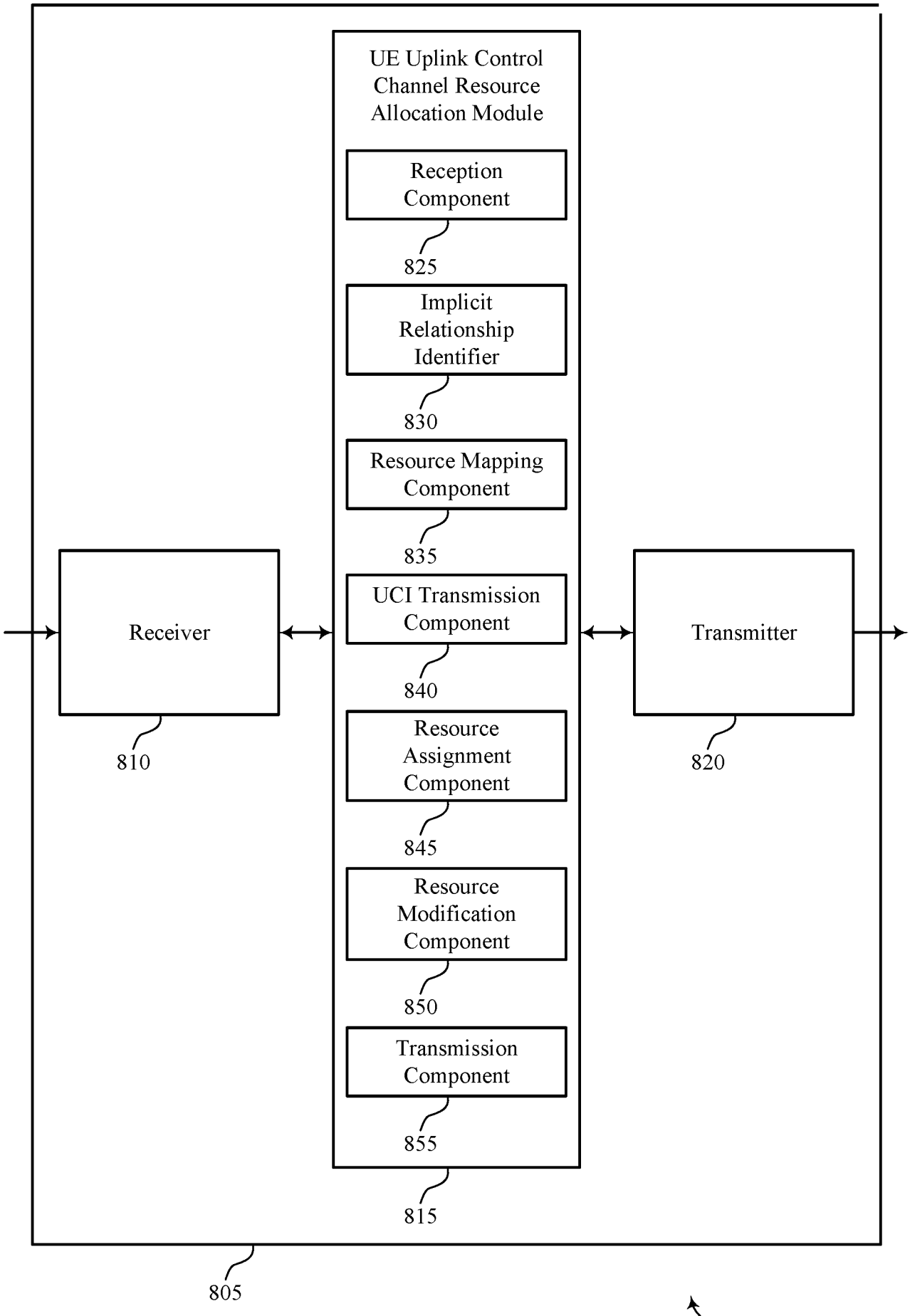
UE Uplink Control Channel Resource Allocation Module
Reception Component
825
Implicit Relationship Identifier
830
Resource Mapping Component
835
UCI Transmission Component
840
Resource Assignment Component
845
Resource Modification Component
850
Transmission Component
855
815
Receiver
810
Transmitter
820
805
800

FIG. 8

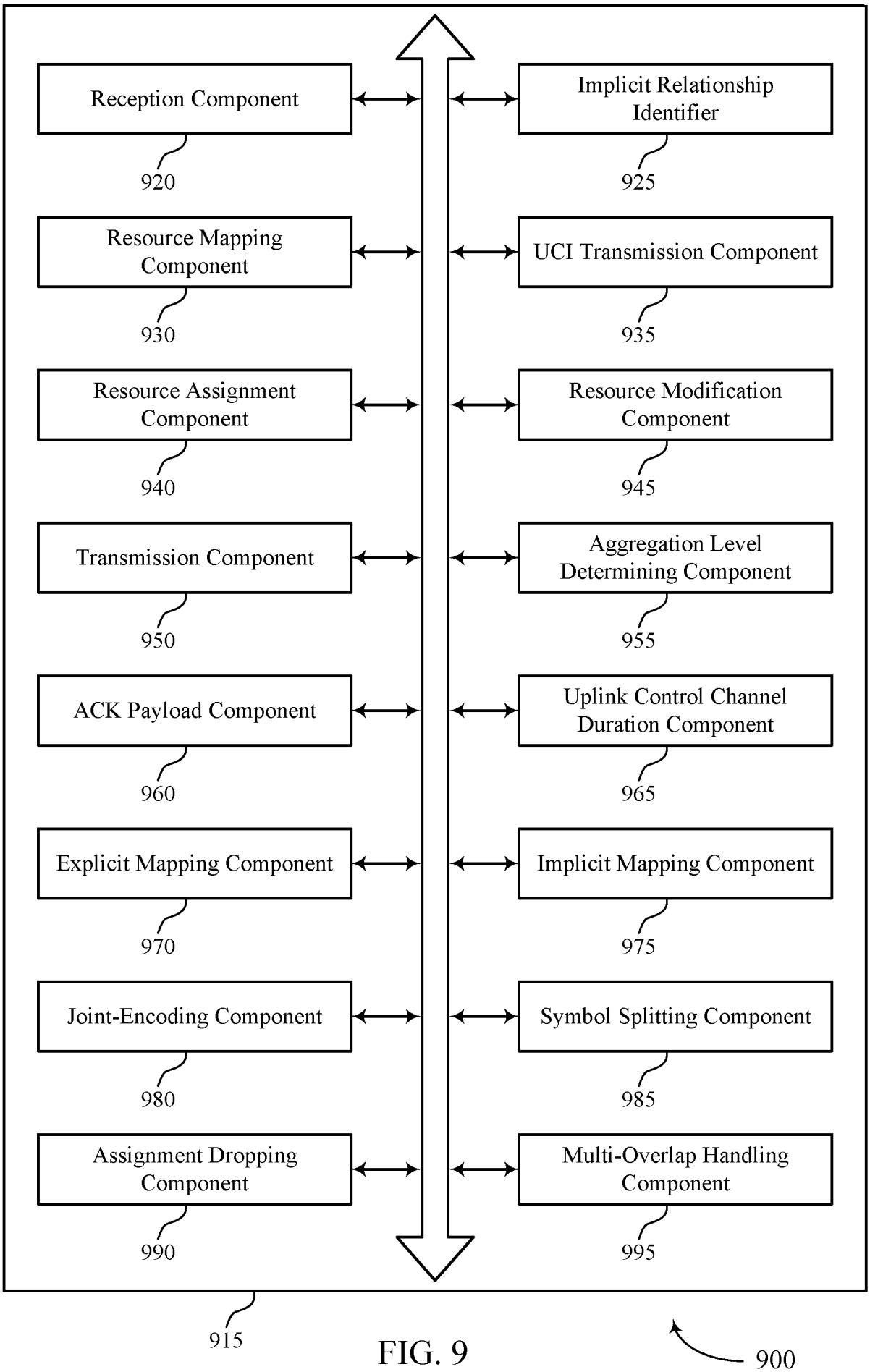
Reception Component
920
Implicit Relationship Identifier
925
Resource Mapping Component
930
UCI Transmission Component
935
Resource Assignment Component
940
Resource Modification Component
945
Transmission Component
950
Aggregation Level Determining Component
955
ACK Payload Component
960
Uplink Control Channel Duration Component
965
Explicit Mapping Component
970
Implicit Mapping Component
975
Joint-Encoding Component
980
Symbol Splitting Component
985
Assignment Dropping Component
990
Multi-Overlap Handling Component
995
915
900

FIG. 9

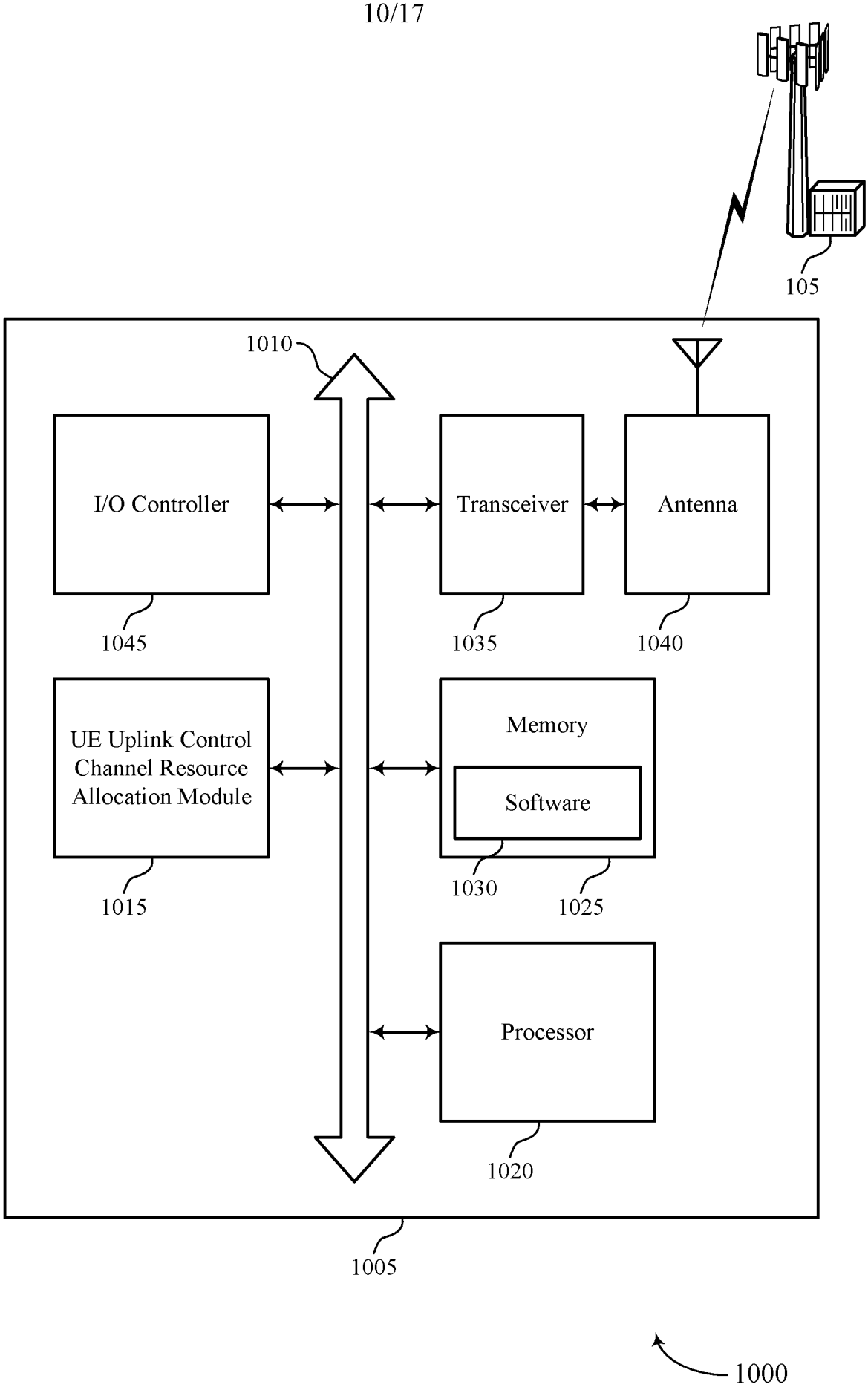
105
1010
I/O Controller
Transceiver
Antenna
1045
1035
1040
UE Uplink Control Channel Resource Allocation Module
Memory
Software
1015
1030
1025
Processor
1020
1005
1000

FIG. 10

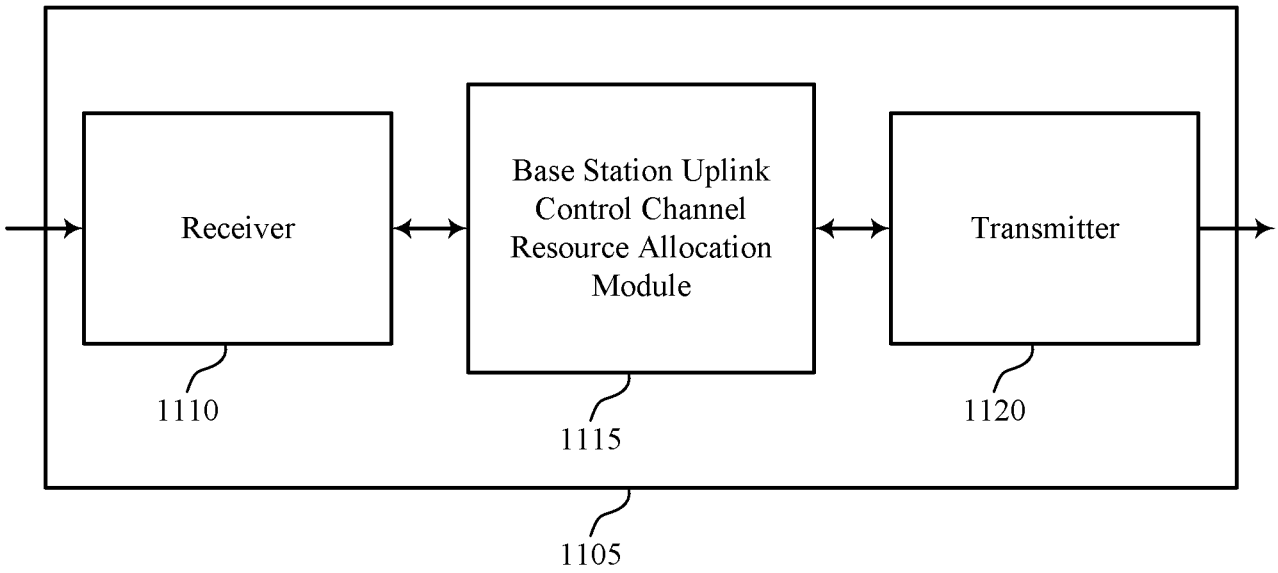
Receiver
Base Station Uplink Control Channel Resource Allocation Module
Transmitter
1110
1115
1120
1105
1100

FIG. 11

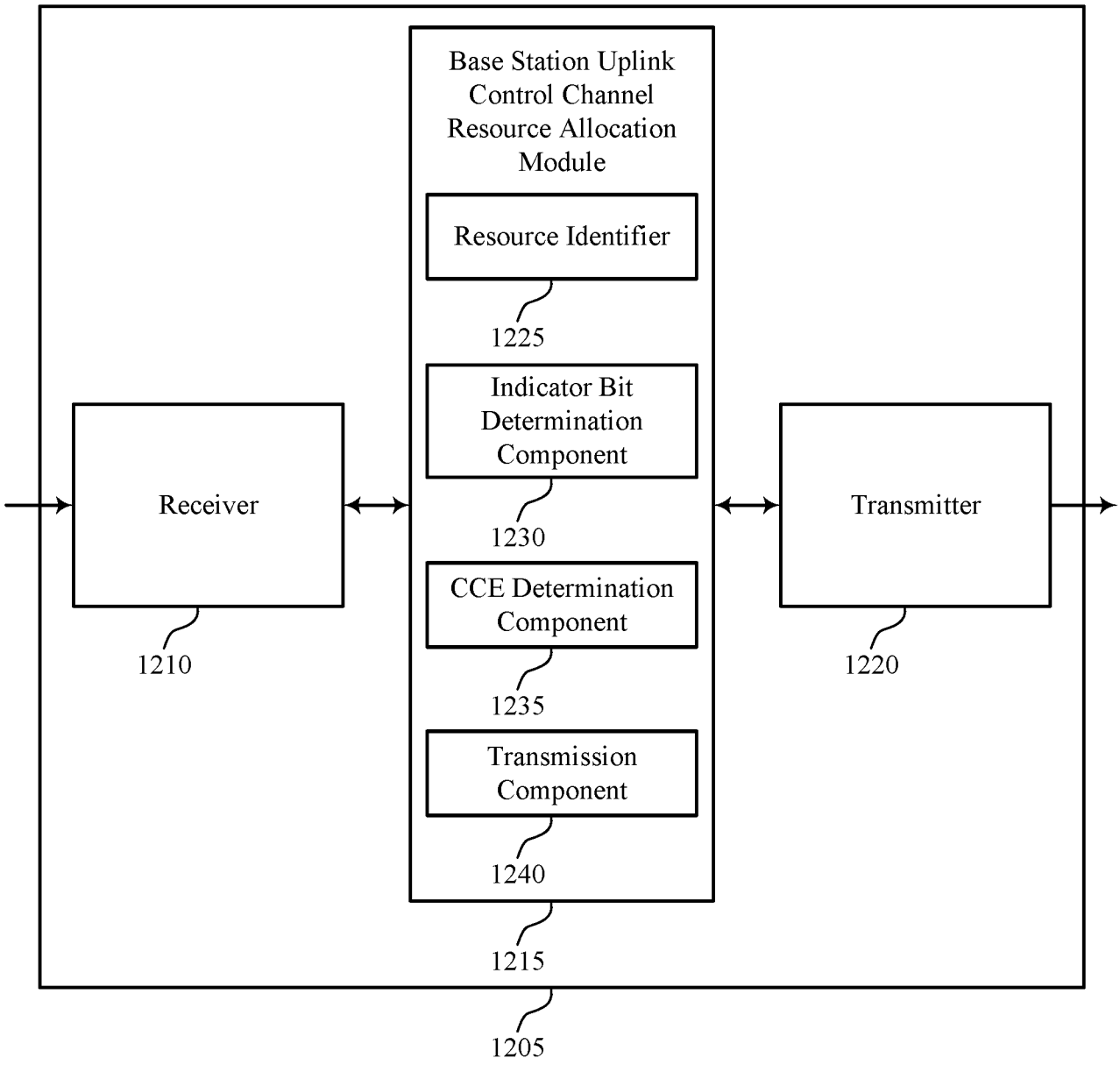
Base Station Uplink Control Channel Resource Allocation Module
Resource Identifier
1225
Indicator Bit Determination Component
1230
CCE Determination Component
1235
Transmission Component
1240
1215
Receiver
1210
Transmitter
1220
1205
1200

FIG. 12

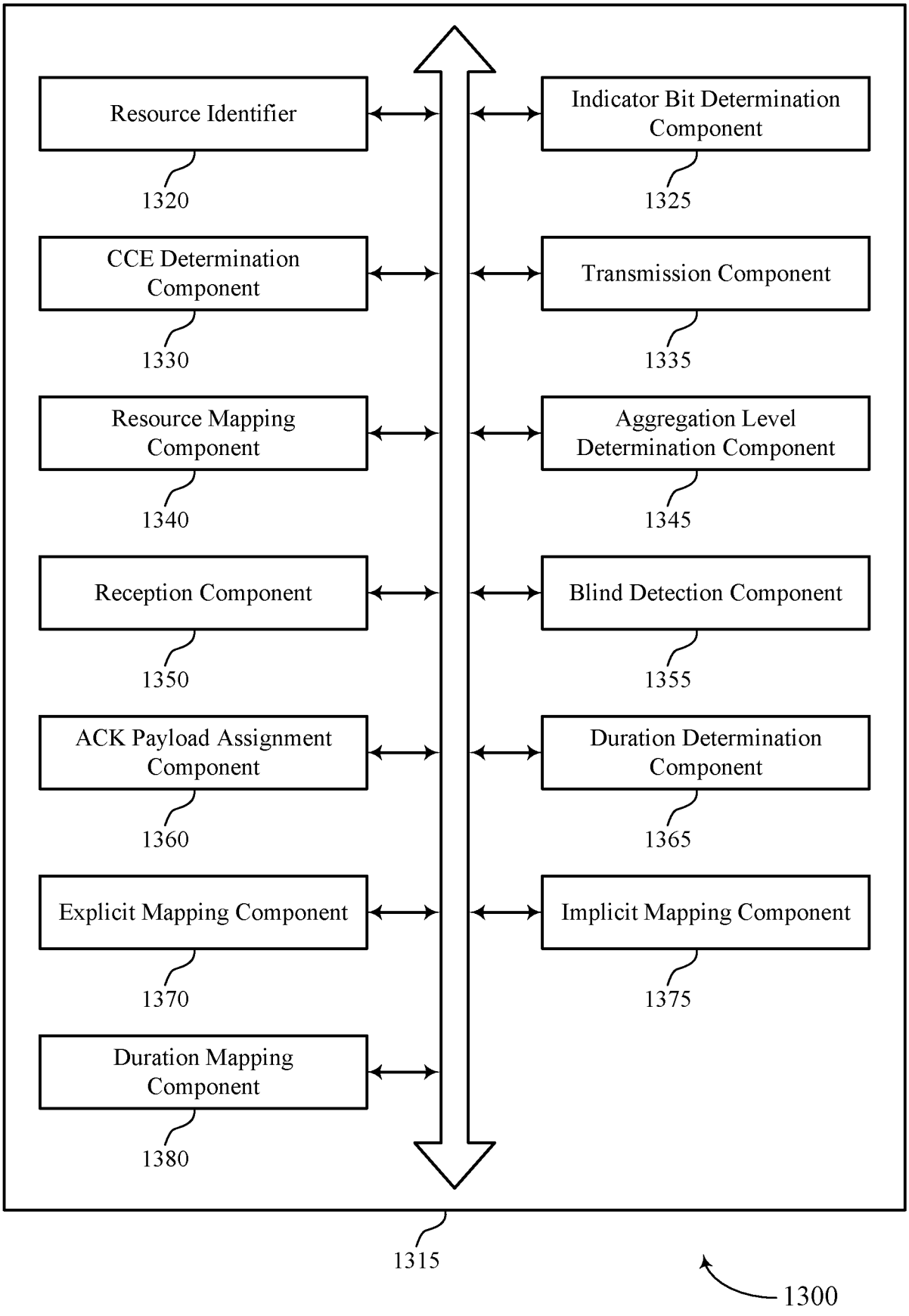
Resource Identifier
1320
Indicator Bit Determination Component
1325
CCE Determination Component
1330
Transmission Component
1335
Resource Mapping Component
1340
Aggregation Level Determination Component
1345
Reception Component
1350
Blind Detection Component
1355
ACK Payload Assignment Component
1360
Duration Determination Component
1365
Explicit Mapping Component
1370
Implicit Mapping Component
1375
Duration Mapping Component
1380
1315
1300

FIG. 13

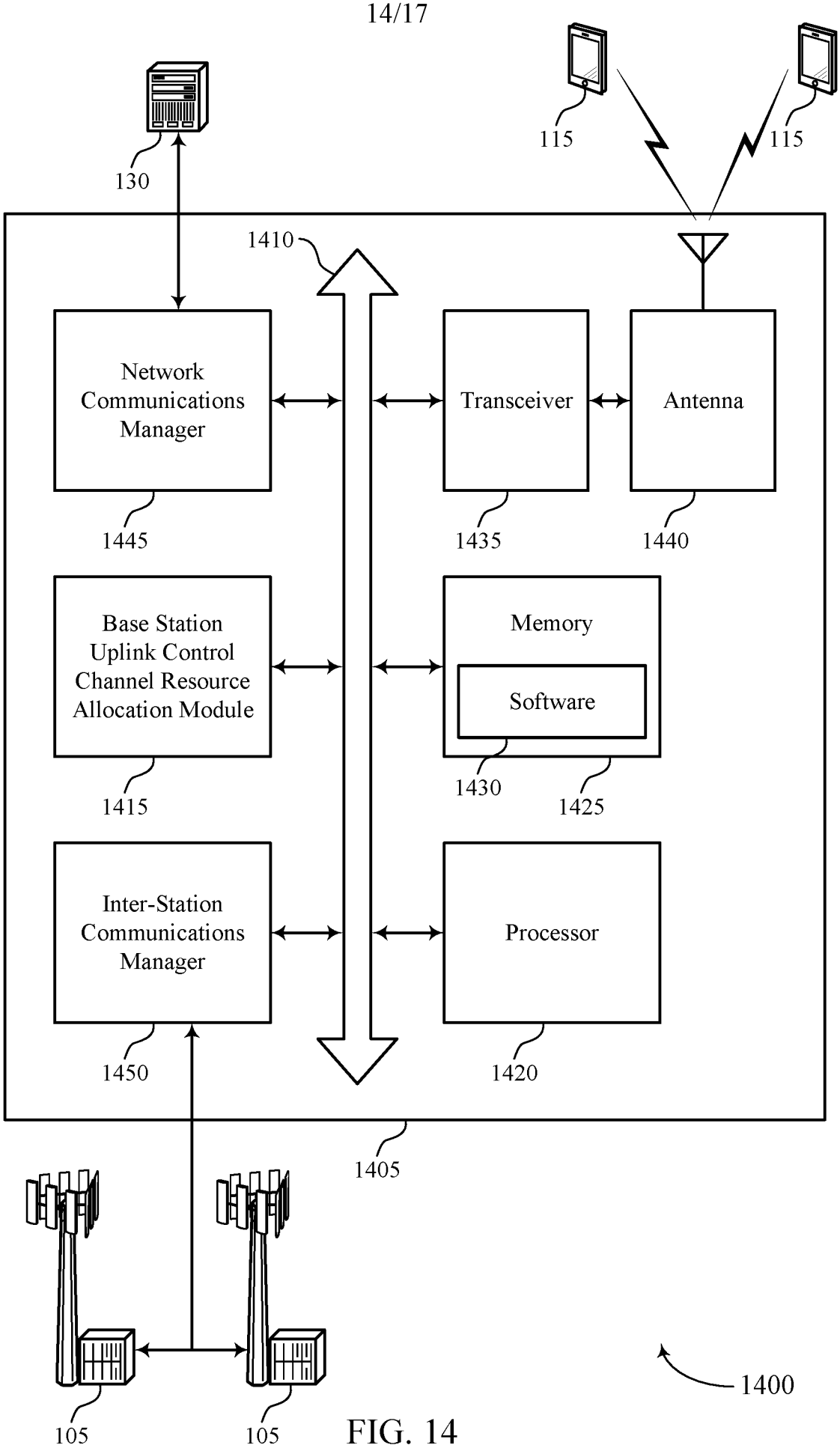
130
115
115
1410
Network Communications Manager
Transceiver
Antenna
1445
1435
1440
Base Station Uplink Control Channel Resource Allocation Module
Memory
Software
1415
1430
1425
Inter-Station Communications Manager
Processor
1450
1420
1405
105
105
1400

FIG. 14

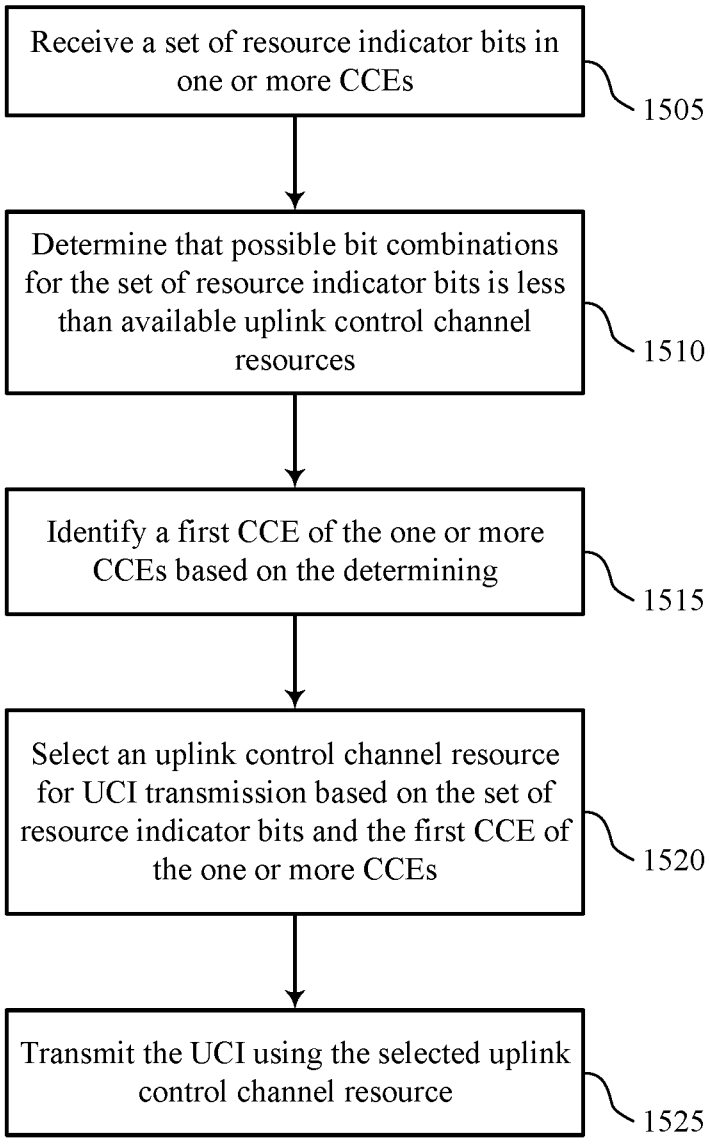
Receive a set of resource indicator bits in one or more CCEs
1505
Determine that possible bit combinations for the set of resource indicator bits is less than available uplink control channel resources
1510
Identify a first CCE of the one or more CCEs based on the determining
1515
Select an uplink control channel resource for UCI transmission based on the set of resource indicator bits and the first CCE of the one or more CCEs
1520
Transmit the UCI using the selected uplink control channel resource
1525
1500

FIG. 15

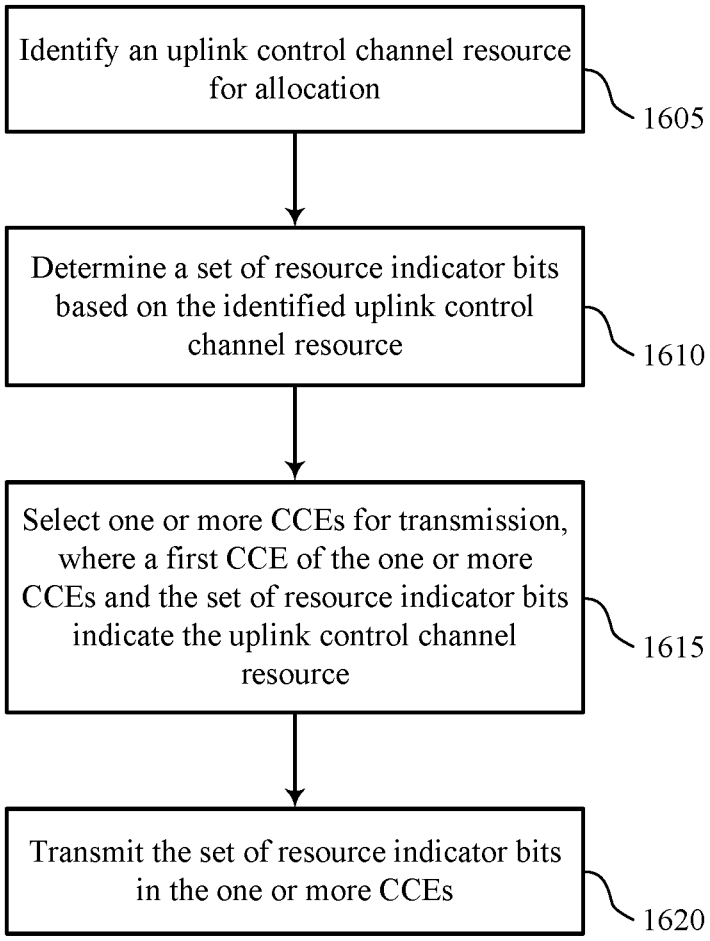
Identify an uplink control channel resource for allocation
1605
Determine a set of resource indicator bits based on the identified uplink control channel resource
1610
Select one or more CCEs for transmission, where a first CCE of the one or more CCEs and the set of resource indicator bits indicate the uplink control channel resource
1615
Transmit the set of resource indicator bits in the one or more CCEs
1620
1600

FIG. 16

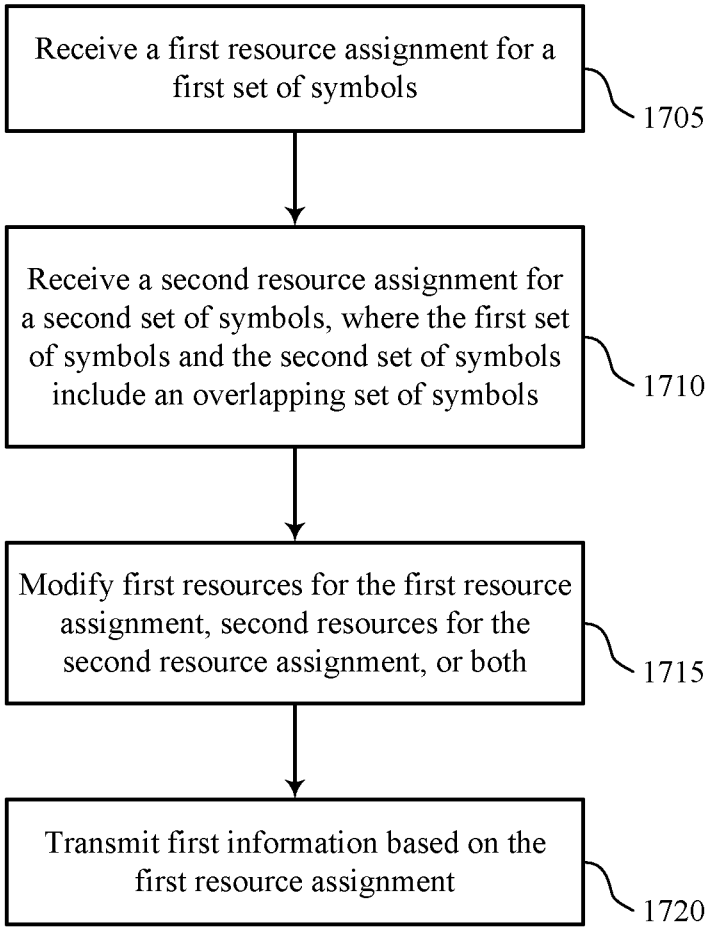
Receive a first resource assignment for a first set of symbols
1705
Receive a second resource assignment for a second set of symbols, where the first set of symbols and the second set of symbols include an overlapping set of symbols
1710
Modify first resources for the first resource assignment, second resources for the second resource assignment, or both
1715
Transmit first information based on the first resource assignment
1720
1700

FIG. 17