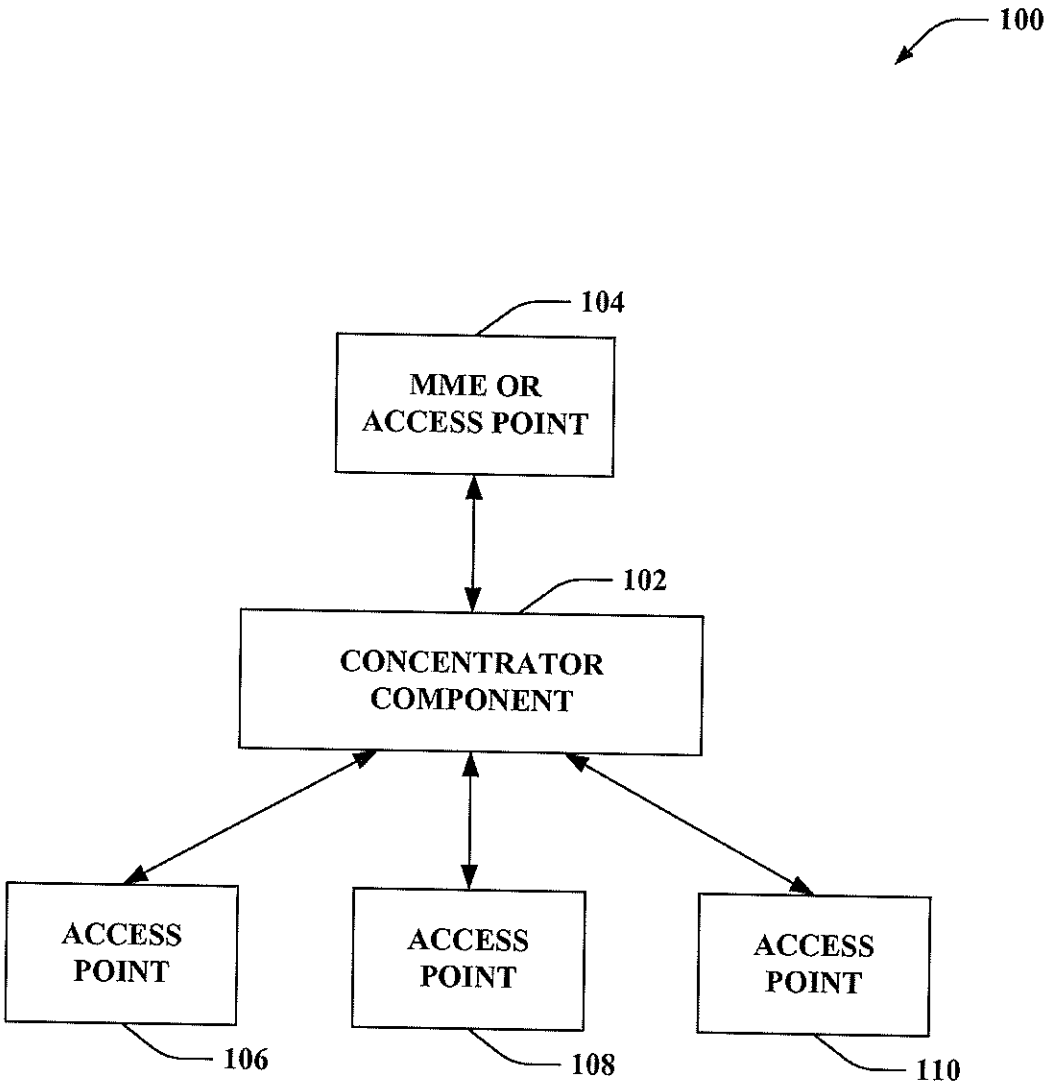

100
104
MME OR ACCESS POINT
102
CONCENTRATOR COMPONENT
ACCESS POINT
106
ACCESS POINT
108
ACCESS POINT
110

FIG. 1

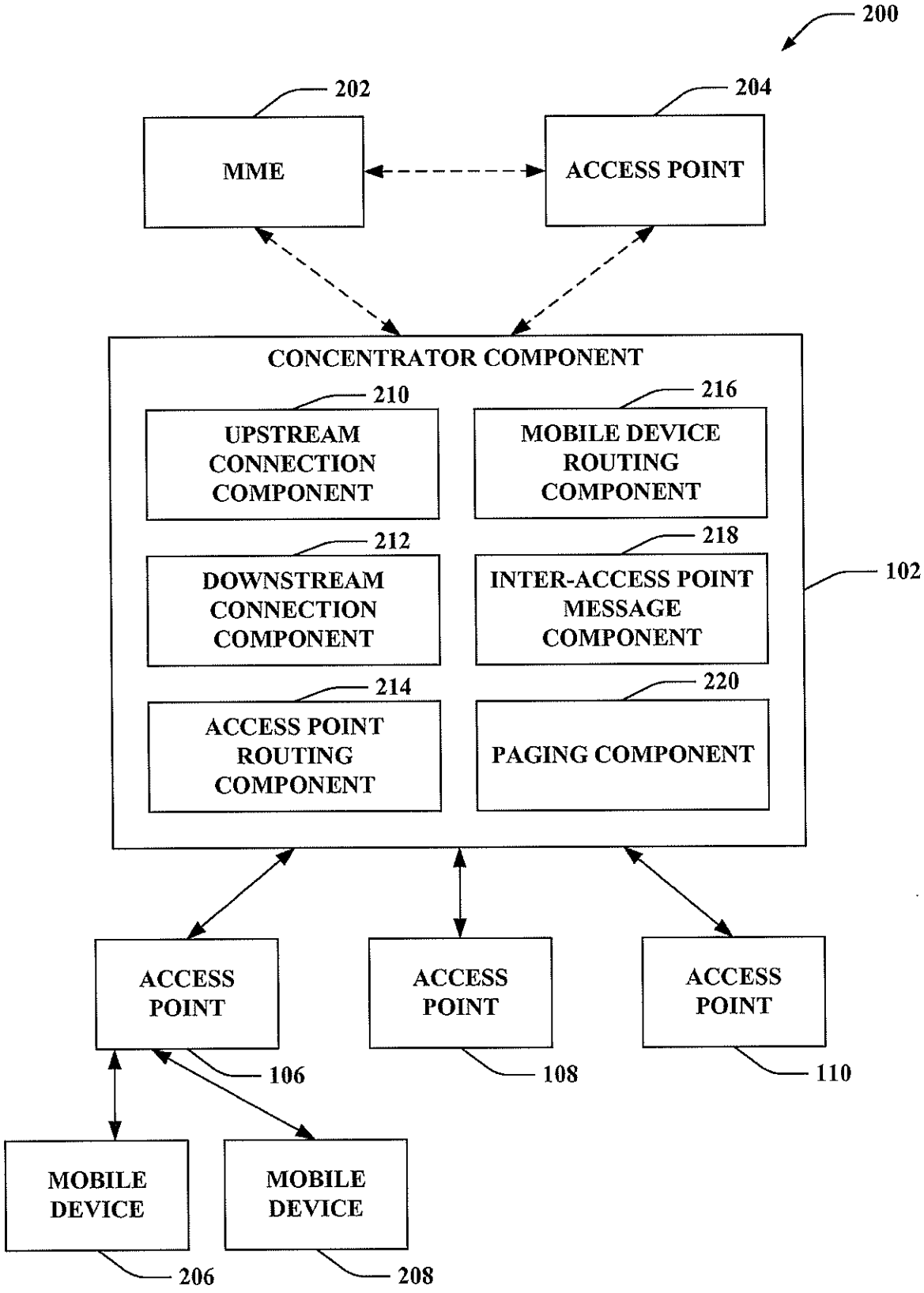

200
202
MME
204
ACCESS POINT
CONCENTRATOR COMPONENT
210
UPSTREAM CONNECTION COMPONENT
216
MOBILE DEVICE ROUTING COMPONENT
212
DOWNSTREAM CONNECTION COMPONENT
218
INTER-ACCESS POINT MESSAGE COMPONENT
102
214
ACCESS POINT ROUTING COMPONENT
220
PAGING COMPONENT
ACCESS POINT
106
ACCESS POINT
108
ACCESS POINT
110
MOBILE DEVICE
206
MOBILE DEVICE
208

FIG. 2

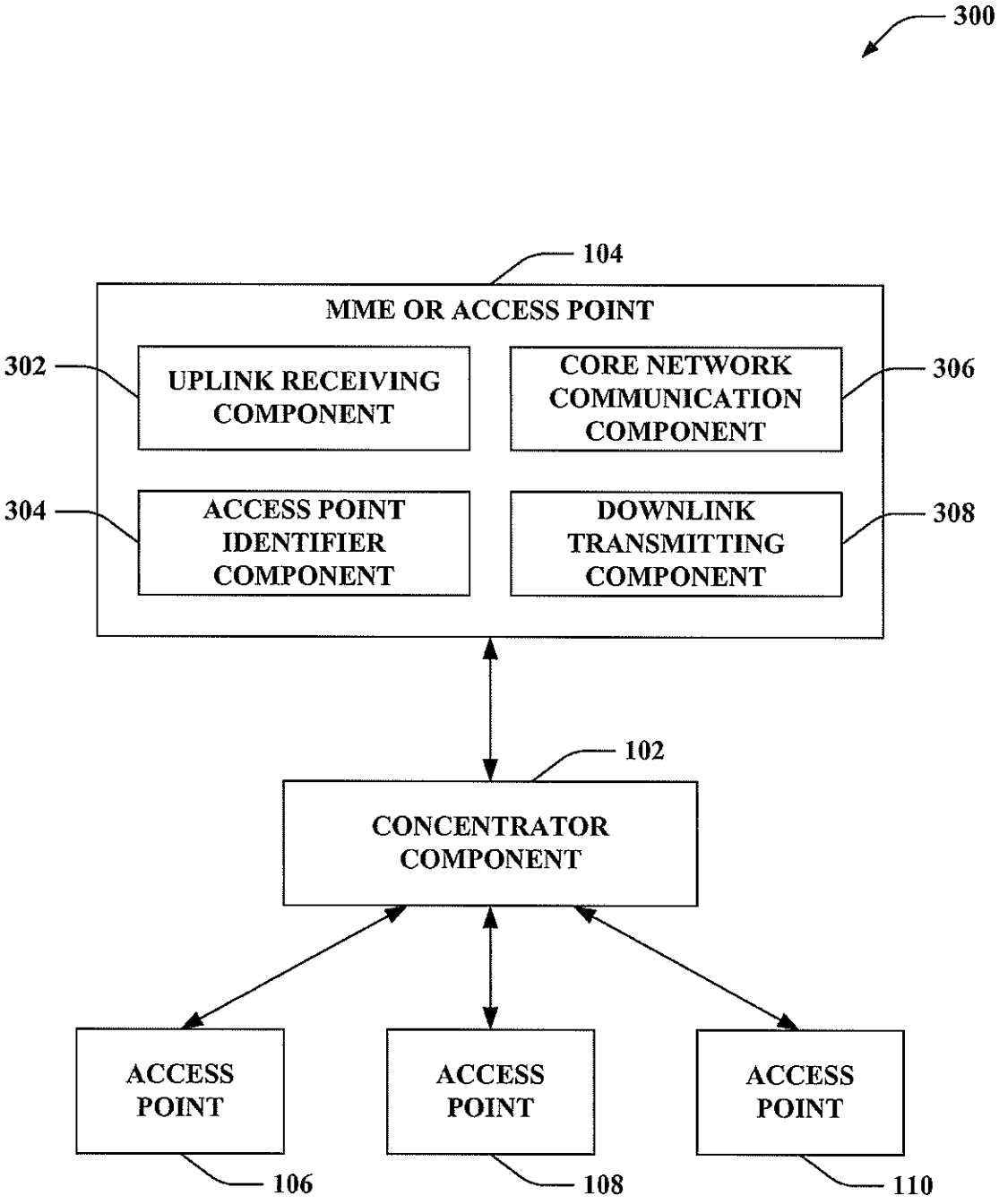

300
104
MME OR ACCESS POINT
302
UPLINK RECEIVING COMPONENT
306
CORE NETWORK COMMUNICATION COMPONENT
304
ACCESS POINT IDENTIFIER COMPONENT
308
DOWNLINK TRANSMITTING COMPONENT
102
CONCENTRATOR COMPONENT
ACCESS POINT
ACCESS POINT
ACCESS POINT
106
108
110

FIG. 3

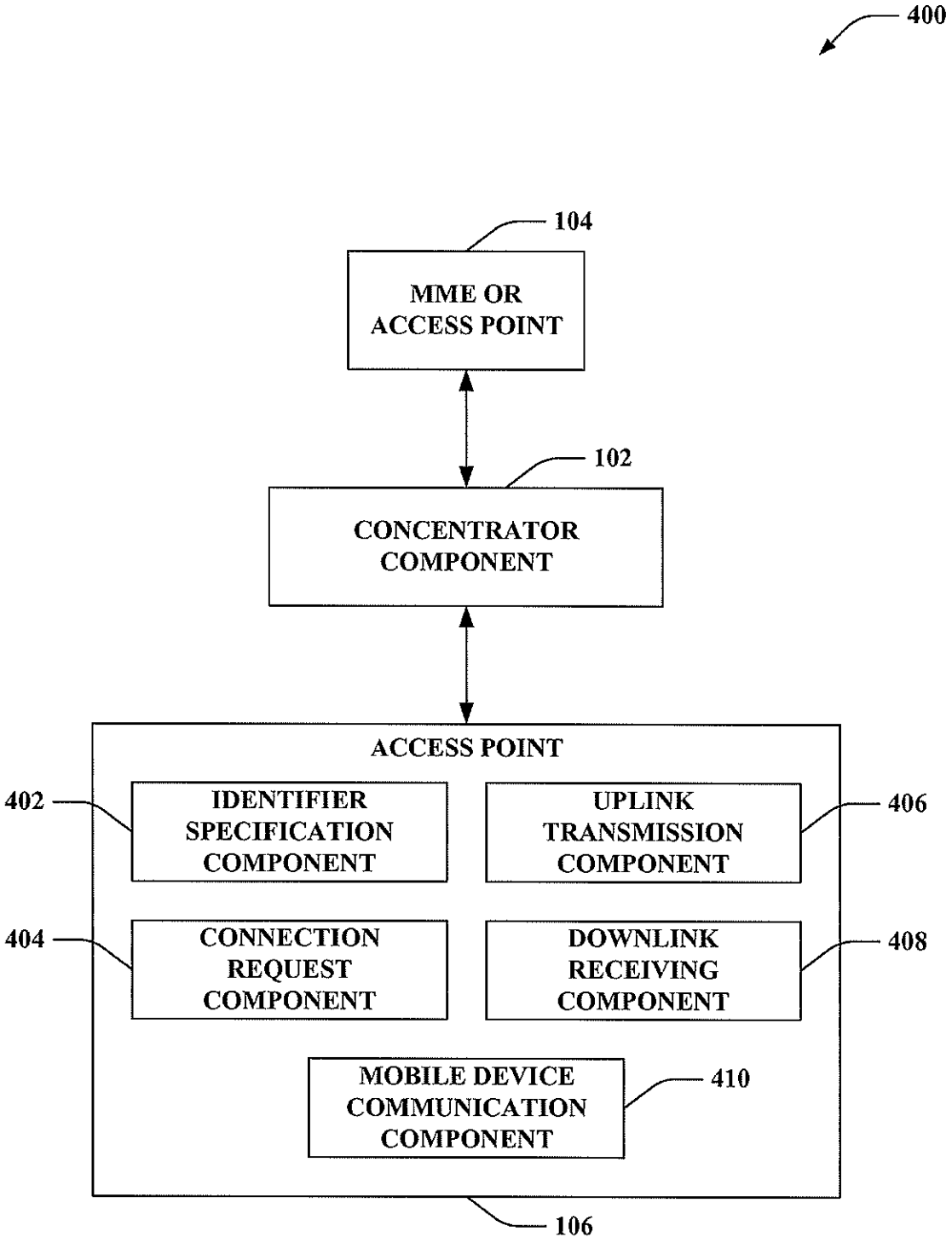

400
104
MME OR ACCESS POINT
102
CONCENTRATOR COMPONENT
ACCESS POINT
402
IDENTIFIER SPECIFICATION COMPONENT
406
UPLINK TRANSMISSION COMPONENT
404
CONNECTION REQUEST COMPONENT
408
DOWNLINK RECEIVING COMPONENT
MOBILE DEVICE COMMUNICATION COMPONENT
410
106

FIG. 4

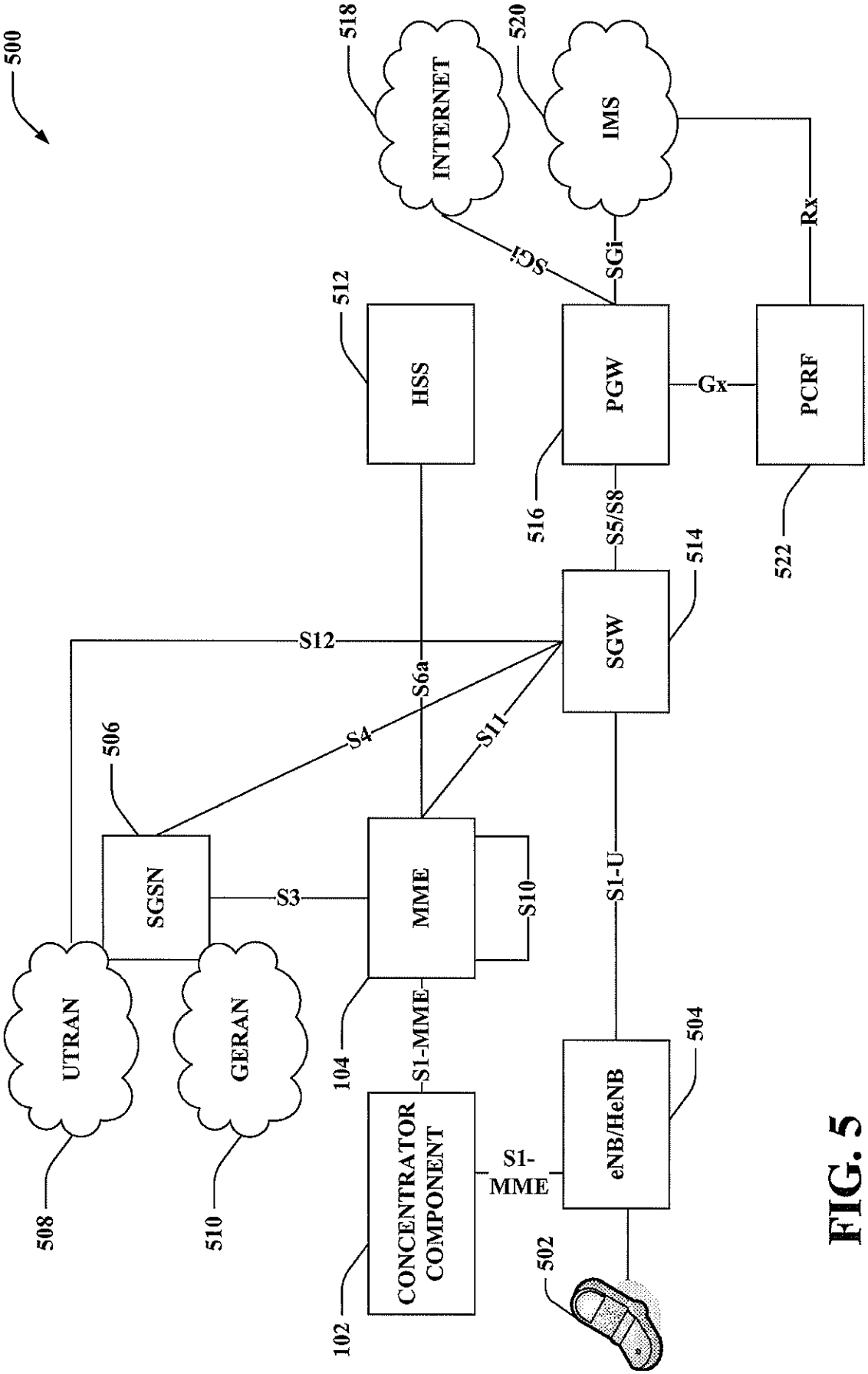

500
518
INTERNET
520
IMS
SGi
SGi
Rx
512
HSS
PGW
Gx
PCRF
516
S5/S8
514
522
SGW
S12
S6a
S4
S11
506
SGSN
S3
MME
S10
S1-U
UTRAN
GERAN
104
S1-MME
504
eNB/HeNB
CONCENTRATOR COMPONENT
S1-MME
508
510
102
502

FIG. 5

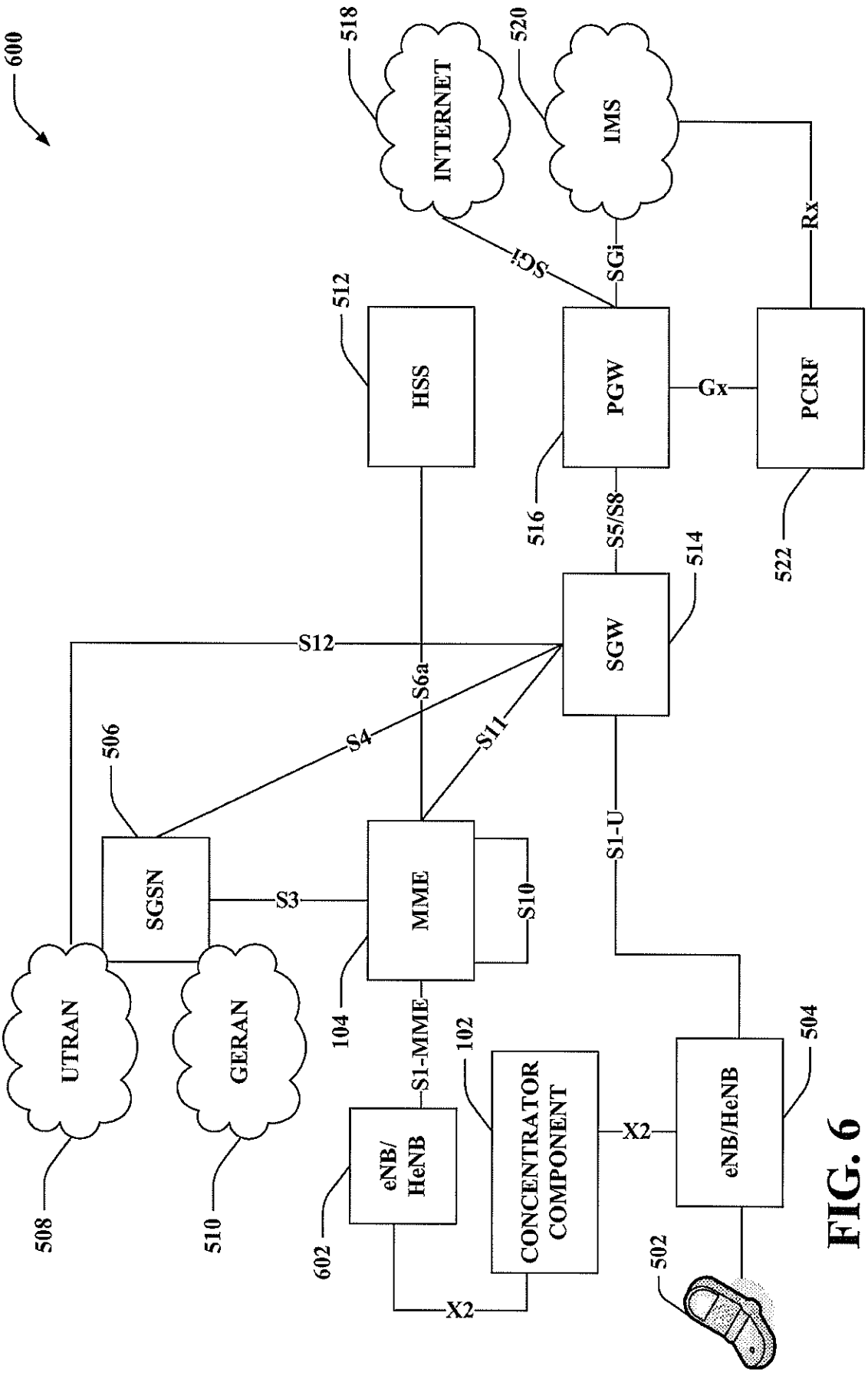

600
518
INTERNET
520
IMS
SGi
SGi
Rx
512
HSS
PGW
Gx
PCRF
516
S5/S8
514
522
SGW
S12
S6a
S4
S11
506
SGSN
S3
MME
S10
S1-U
UTRAN
GERAN
104
S1-MME
102
CONCENTRATOR COMPONENT
X2
eNB/HeNB
504
508
510
602
eNB/ HeNB
X2
502

FIG. 6

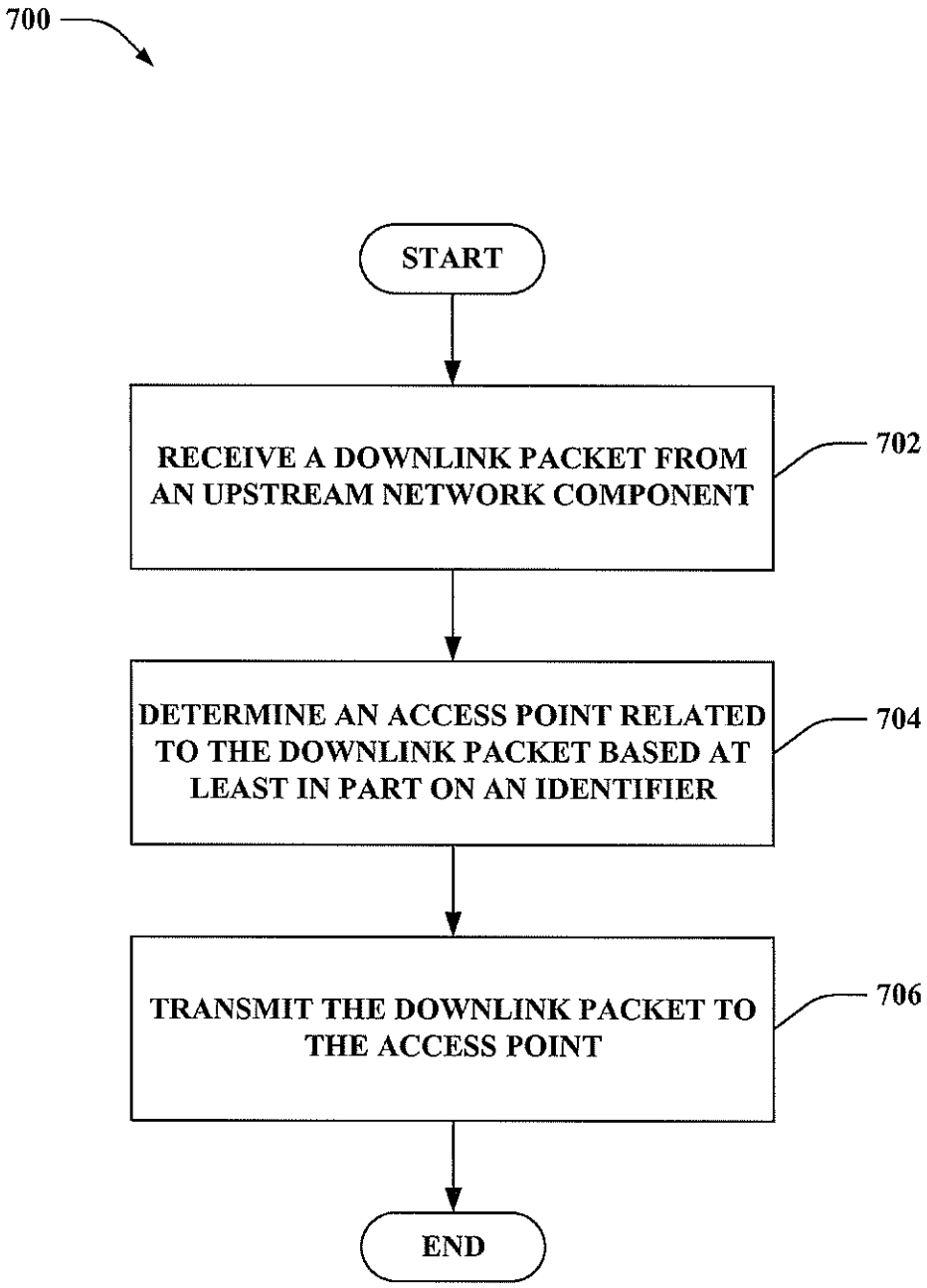

700
START
RECEIVE A DOWNLINK PACKET FROM AN UPSTREAM NETWORK COMPONENT
702
DETERMINE AN ACCESS POINT RELATED TO THE DOWNLINK PACKET BASED AT LEAST IN PART ON AN IDENTIFIER
704
TRANSMIT THE DOWNLINK PACKET TO THE ACCESS POINT
706
END

FIG. 7

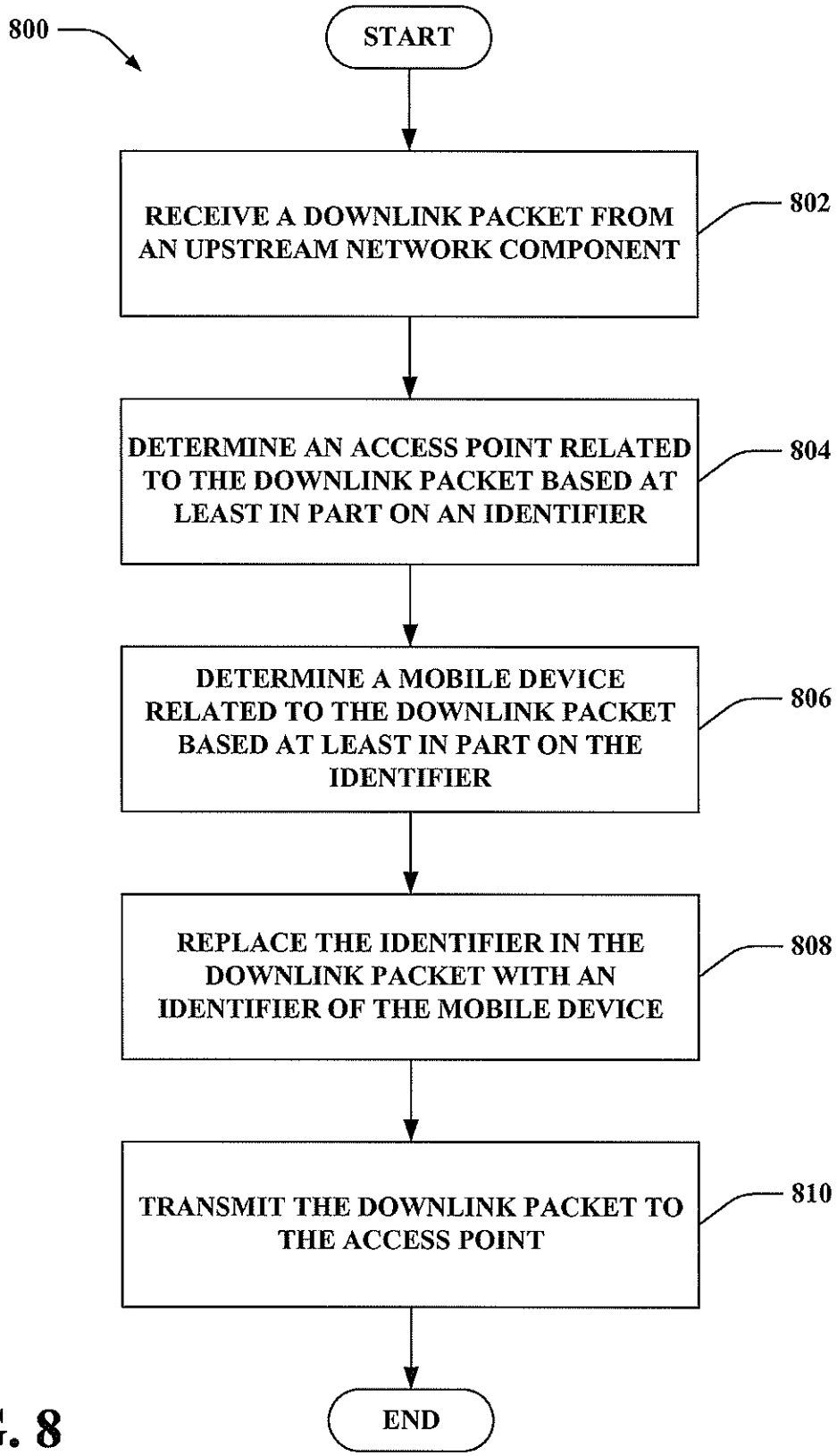

800
START
RECEIVE A DOWNLINK PACKET FROM AN UPSTREAM NETWORK COMPONENT
802
DETERMINE AN ACCESS POINT RELATED TO THE DOWNLINK PACKET BASED AT LEAST IN PART ON AN IDENTIFIER
804
DETERMINE A MOBILE DEVICE RELATED TO THE DOWNLINK PACKET BASED AT LEAST IN PART ON THE IDENTIFIER
806
REPLACE THE IDENTIFIER IN THE DOWNLINK PACKET WITH AN IDENTIFIER OF THE MOBILE DEVICE
808
TRANSMIT THE DOWNLINK PACKET TO THE ACCESS POINT
810
END

FIG. 8

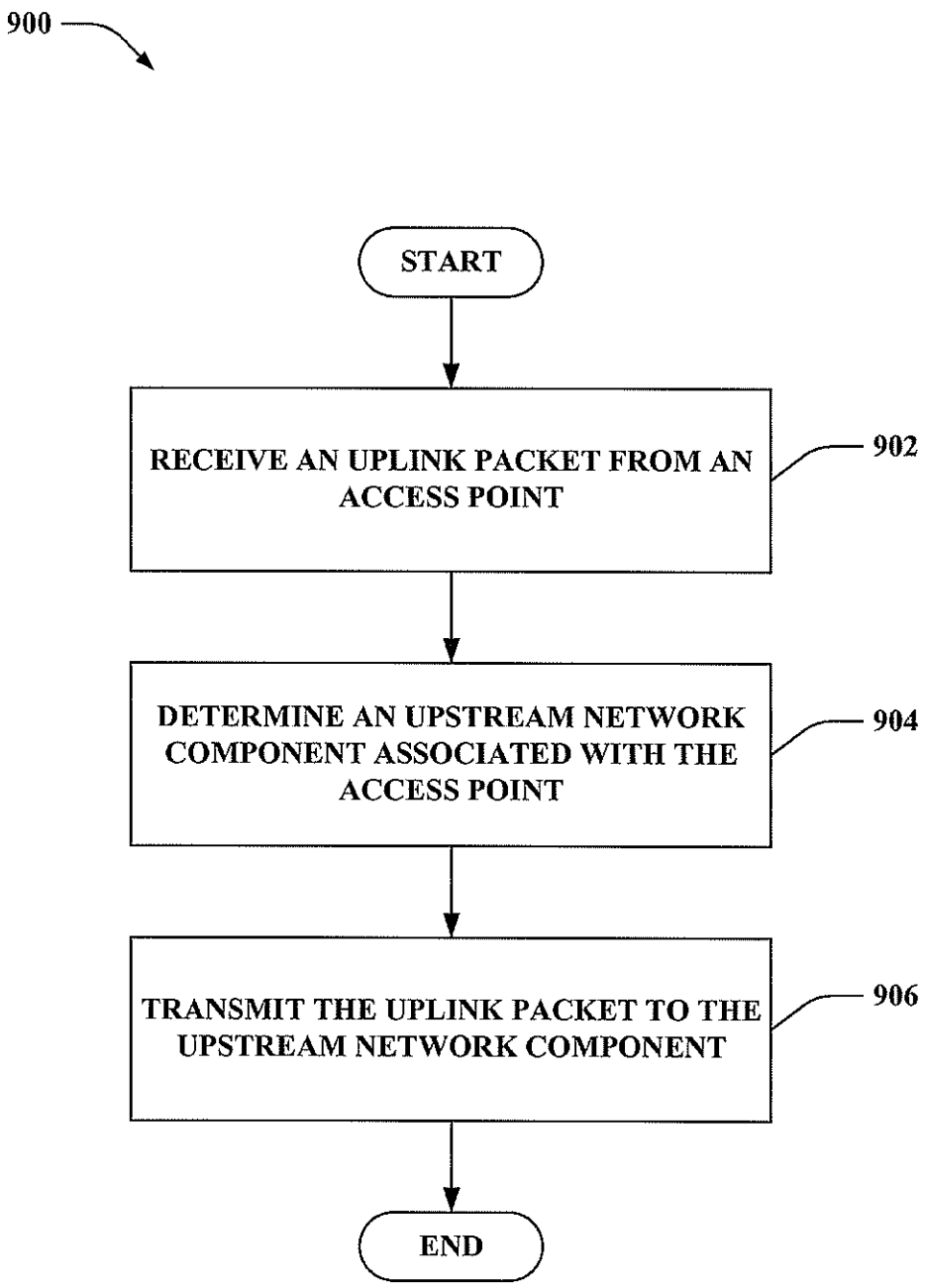

900
START
RECEIVE AN UPLINK PACKET FROM AN ACCESS POINT
902
DETERMINE AN UPSTREAM NETWORK COMPONENT ASSOCIATED WITH THE ACCESS POINT
904
TRANSMIT THE UPLINK PACKET TO THE UPSTREAM NETWORK COMPONENT
906
END

FIG. 9

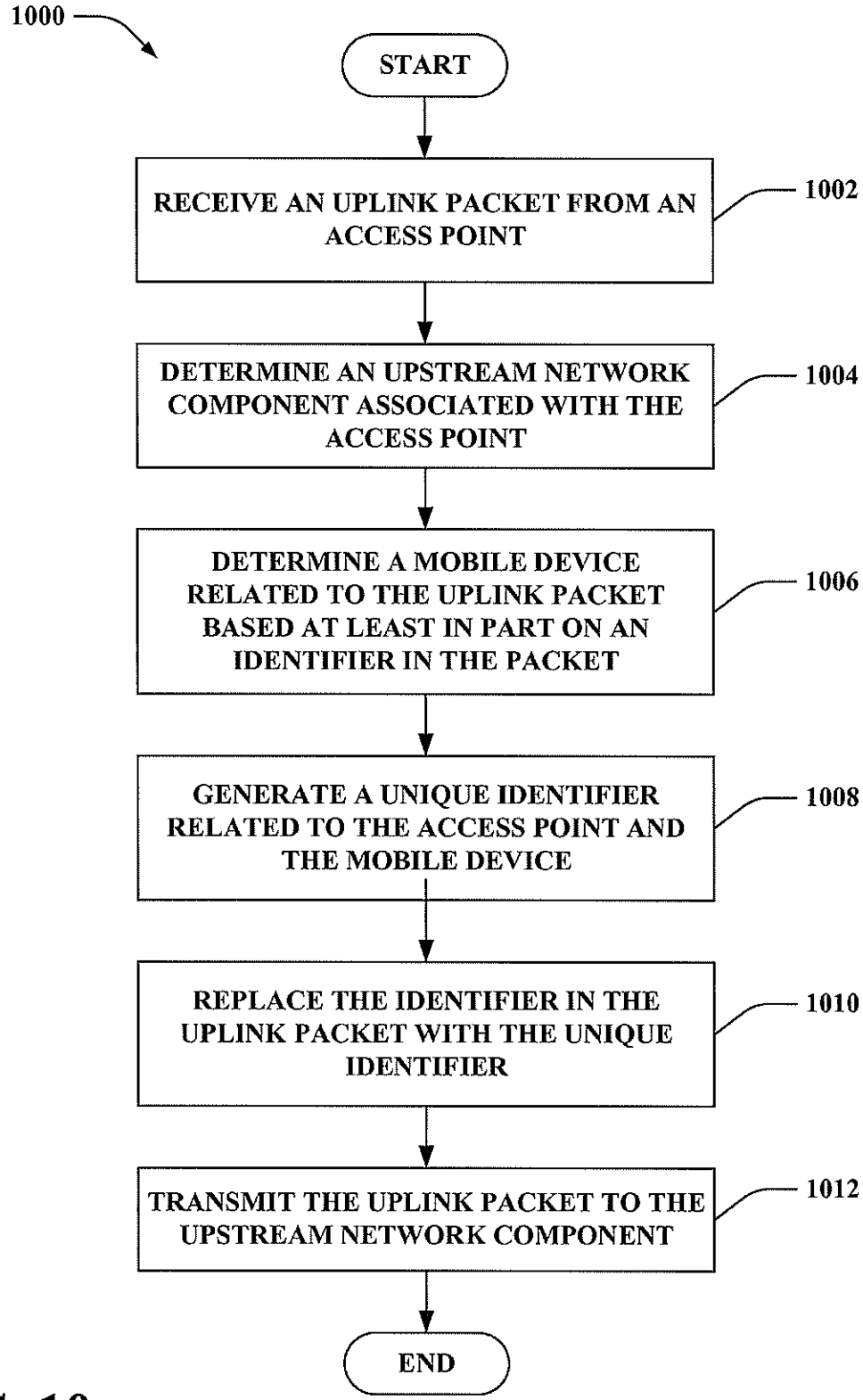

1000
START
RECEIVE AN UPLINK PACKET FROM AN ACCESS POINT
1002
DETERMINE AN UPSTREAM NETWORK COMPONENT ASSOCIATED WITH THE ACCESS POINT
1004
DETERMINE A MOBILE DEVICE RELATED TO THE UPLINK PACKET BASED AT LEAST IN PART ON AN IDENTIFIER IN THE PACKET
1006
GENERATE A UNIQUE IDENTIFIER RELATED TO THE ACCESS POINT AND THE MOBILE DEVICE
1008
REPLACE THE IDENTIFIER IN THE UPLINK PACKET WITH THE UNIQUE IDENTIFIER
1010
TRANSMIT THE UPLINK PACKET TO THE UPSTREAM NETWORK COMPONENT
1012
END

FIG. 10

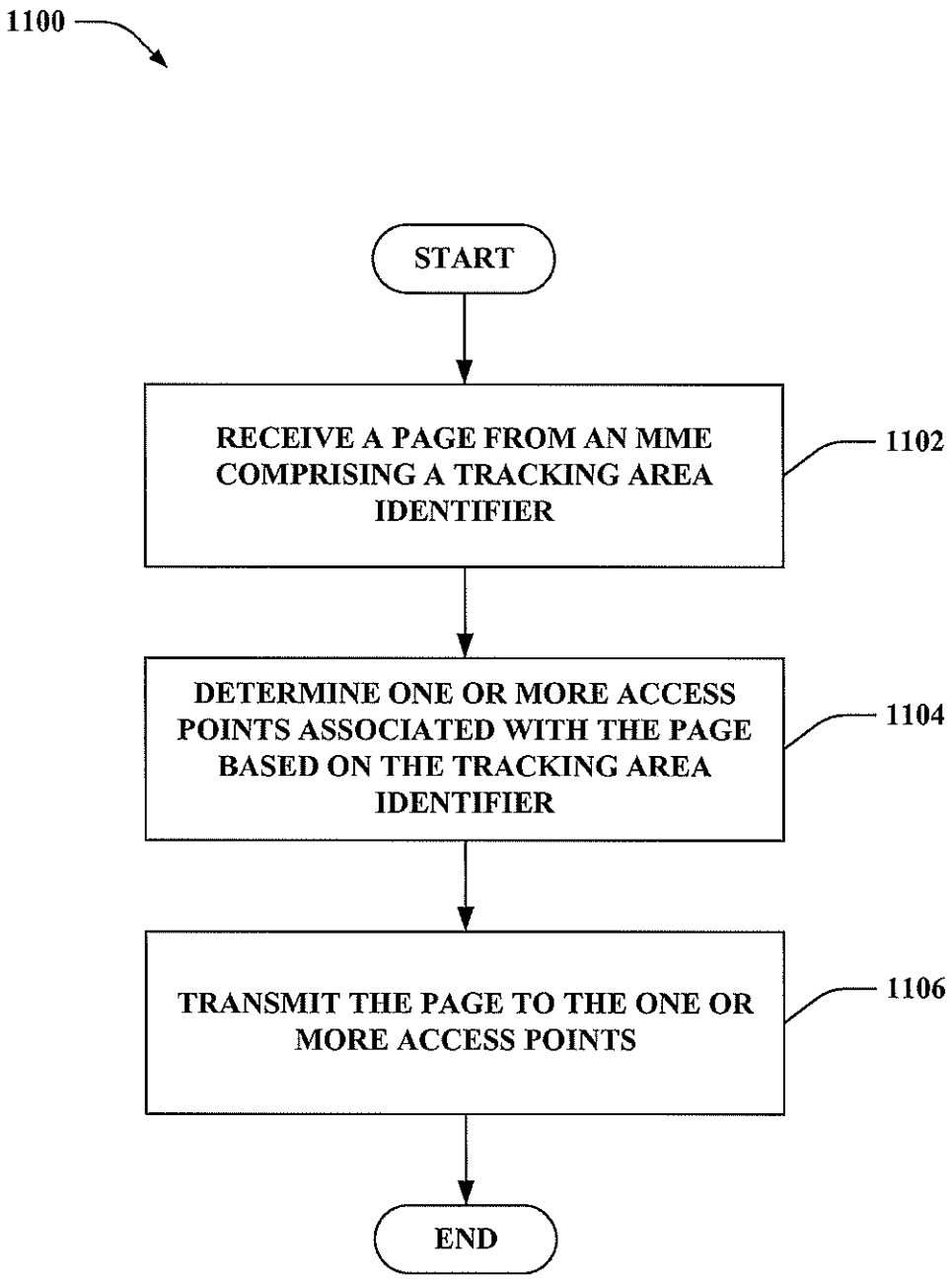

1100
START
RECEIVE A PAGE FROM AN MME COMPRISING A TRACKING AREA IDENTIFIER
1102
DETERMINE ONE OR MORE ACCESS POINTS ASSOCIATED WITH THE PAGE BASED ON THE TRACKING AREA IDENTIFIER
1104
TRANSMIT THE PAGE TO THE ONE OR MORE ACCESS POINTS
1106
END

FIG. 11

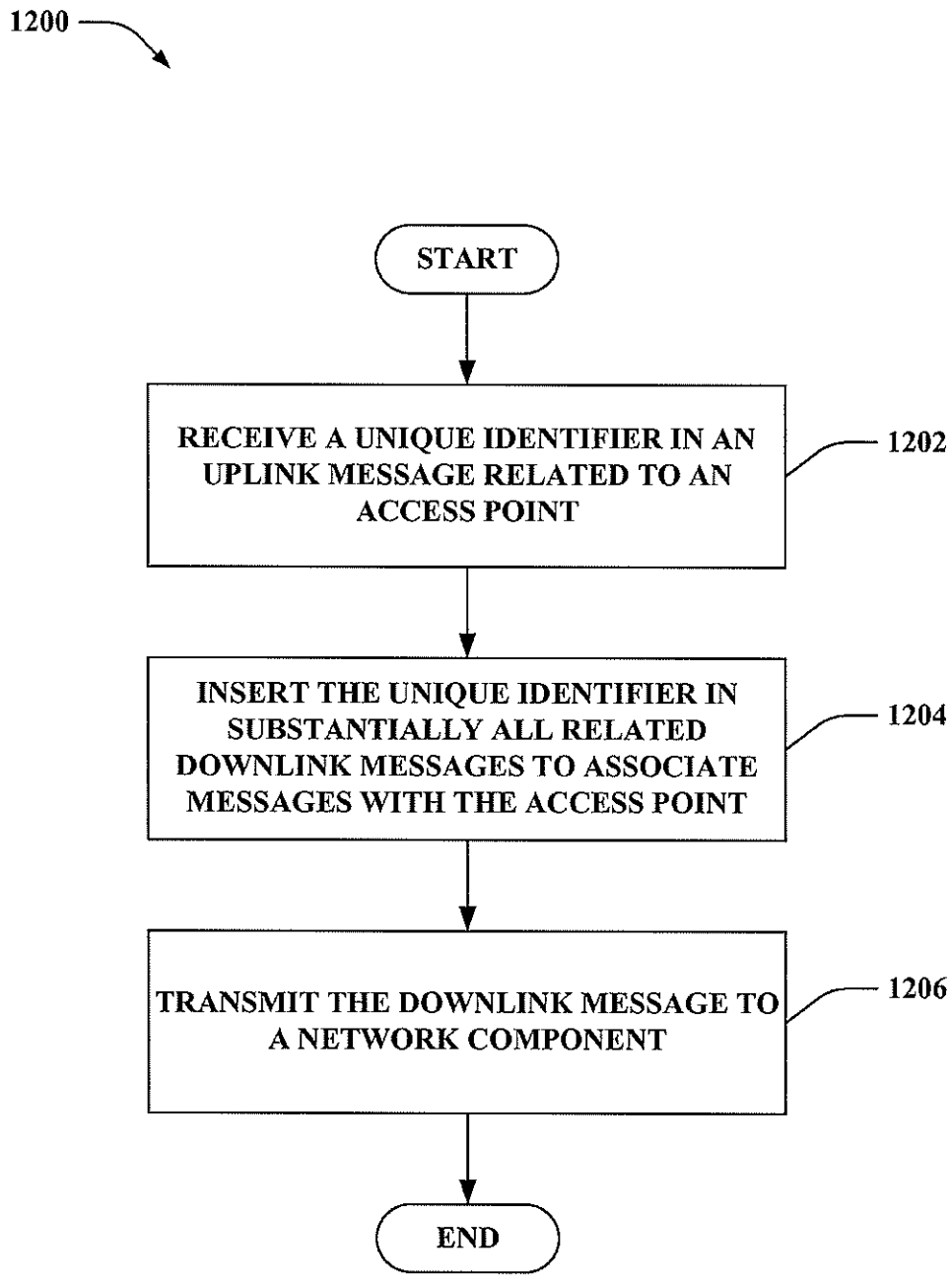

1200
START
RECEIVE A UNIQUE IDENTIFIER IN AN UPLINK MESSAGE RELATED TO AN ACCESS POINT
1202
INSERT THE UNIQUE IDENTIFIER IN SUBSTANTIALLY ALL RELATED DOWNLINK MESSAGES TO ASSOCIATE MESSAGES WITH THE ACCESS POINT
1204
TRANSMIT THE DOWNLINK MESSAGE TO A NETWORK COMPONENT
1206
END

FIG. 12

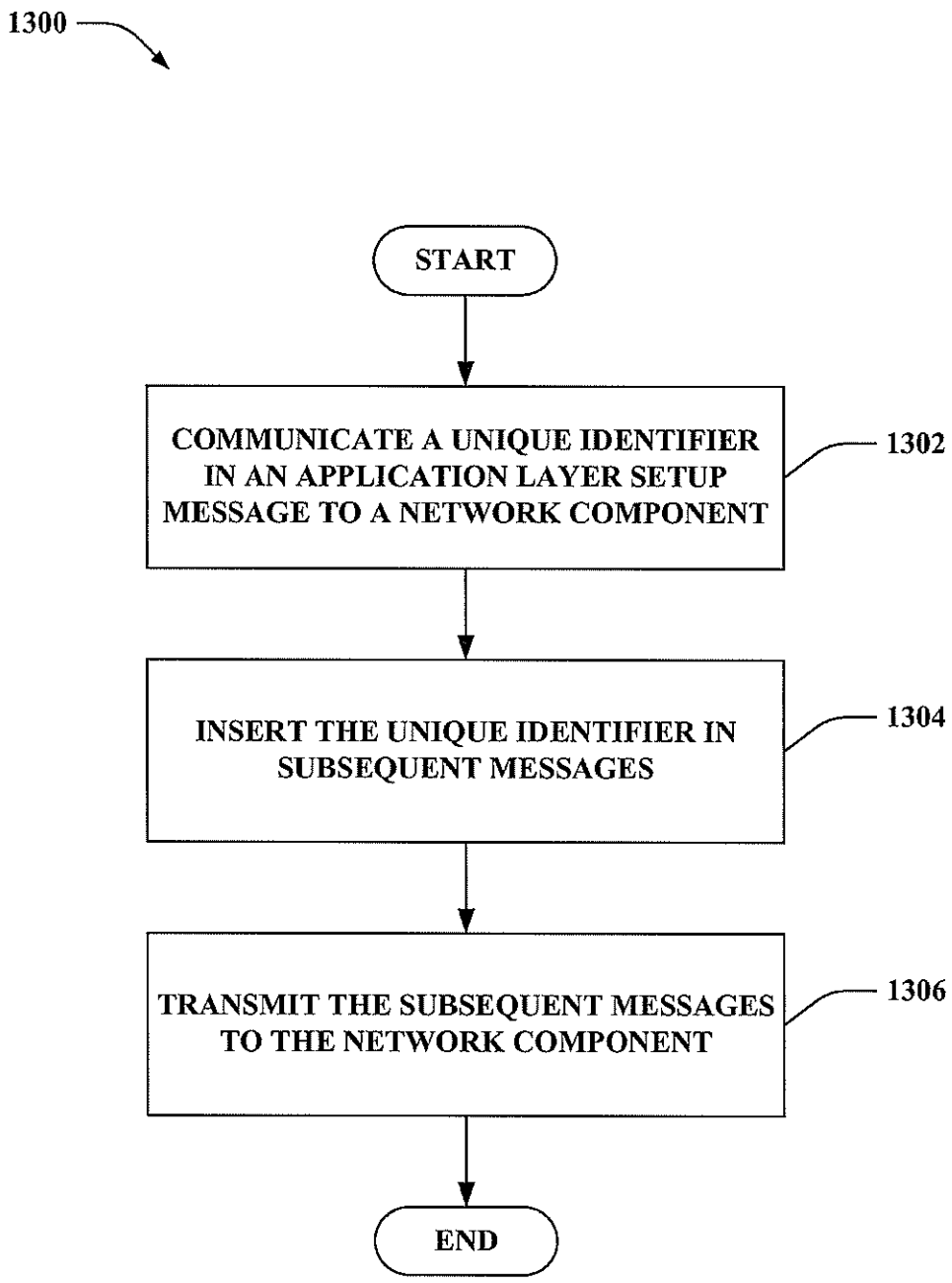

1300
START
COMMUNICATE A UNIQUE IDENTIFIER IN AN APPLICATION LAYER SETUP MESSAGE TO A NETWORK COMPONENT
1302
INSERT THE UNIQUE IDENTIFIER IN SUBSEQUENT MESSAGES
1304
TRANSMIT THE SUBSEQUENT MESSAGES TO THE NETWORK COMPONENT
1306
END

FIG. 13

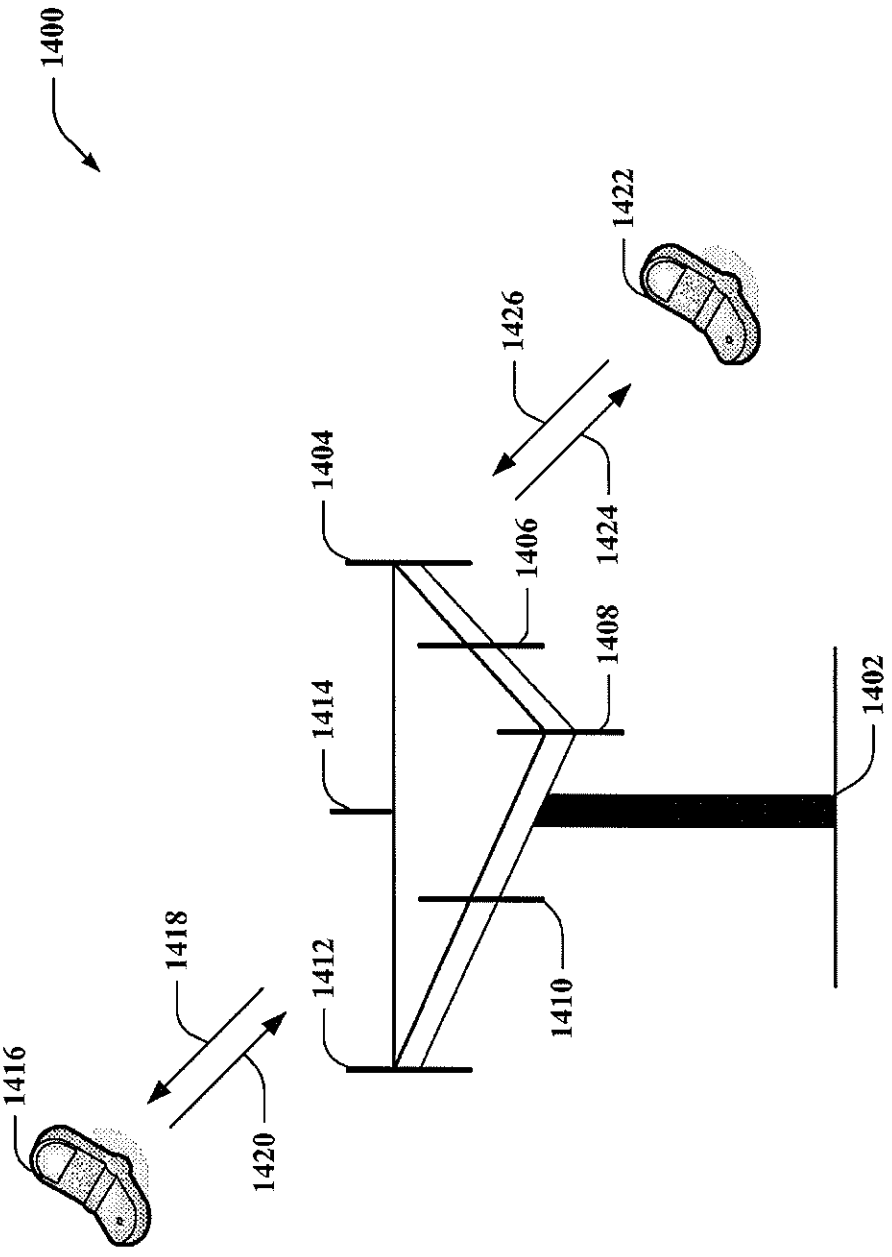

1400
1422
1426
1404
1424
1406
1408
1414
1402
1418
1412
1410
1416
1420

FIG. 14

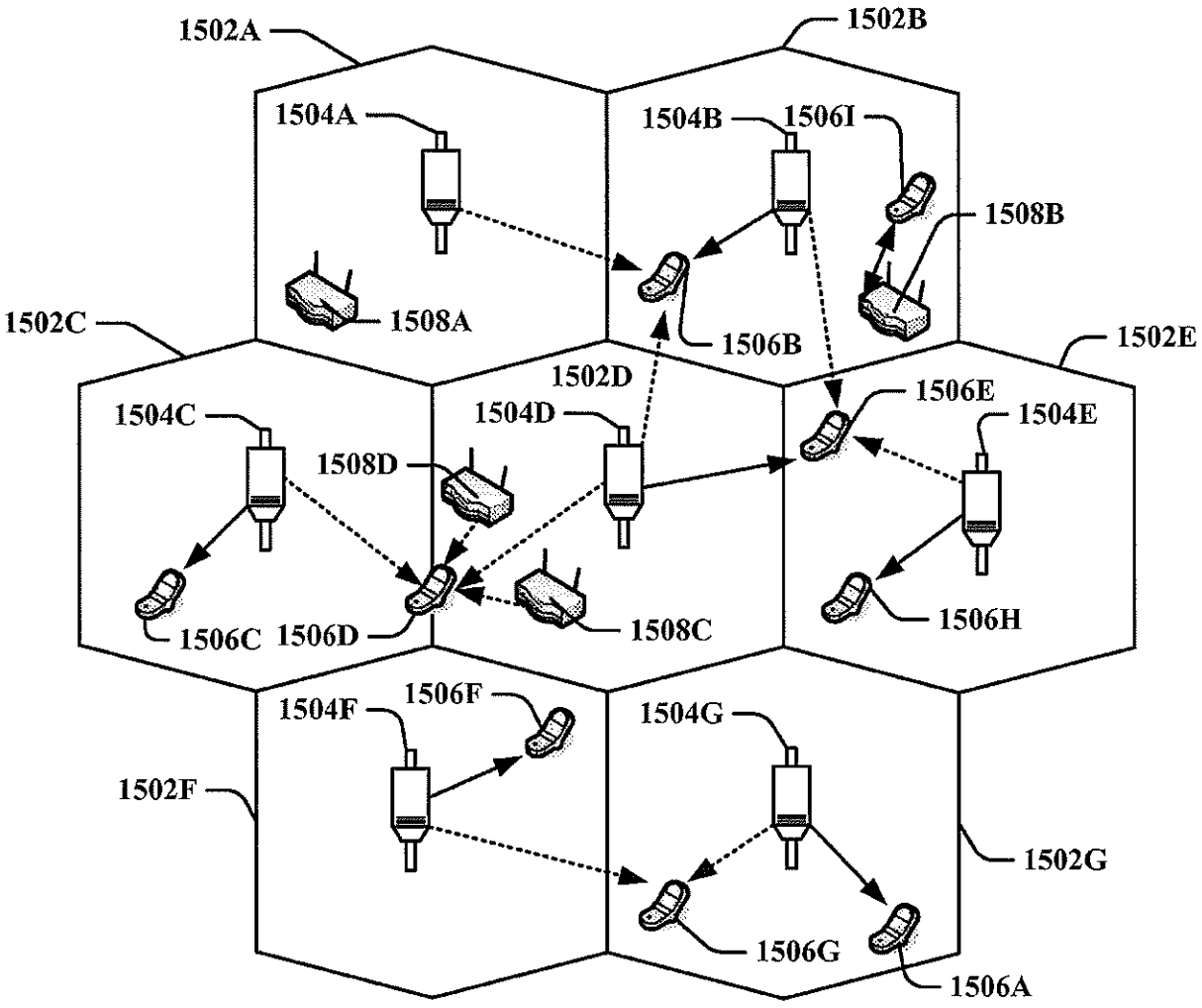

1500
1502A
1502B
1504A
1504B
1506I
1508B
1508A
1506B
1502C
1502E
1502D
1506E
1504C
1504D
1504E
1508D
1506C
1506D
1508C
1506H
1504F
1506F
1504G
1502F
1502G
1506G
1506A

FIG. 15

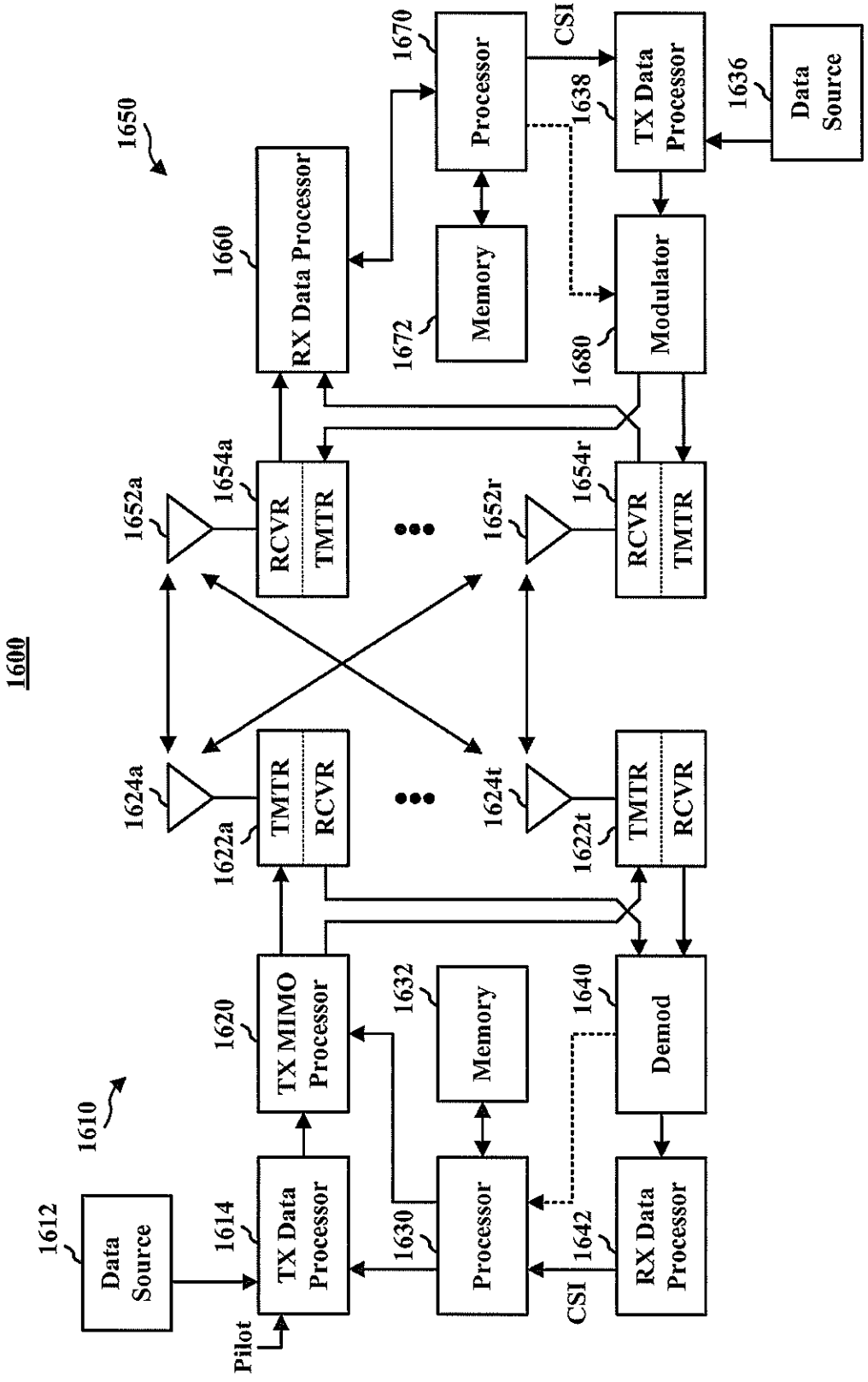

1600
1610
1612
Data Source
1614
TX Data Processor
Pilot
1620
TX MIMO Processor
1622a
TMTR
RCVR
1624a
1624t
1622t
1630
Processor
1632
Memory
1640
Demod
1642
RX Data Processor
CSI
1650
1652a
1652r
1654a
1654r
RCVR
TMTR
1660
RX Data Processor
1670
Processor
1672
Memory
1680
Modulator
1636
Data Source
1638
TX Data Processor
CSI

FIG. 16

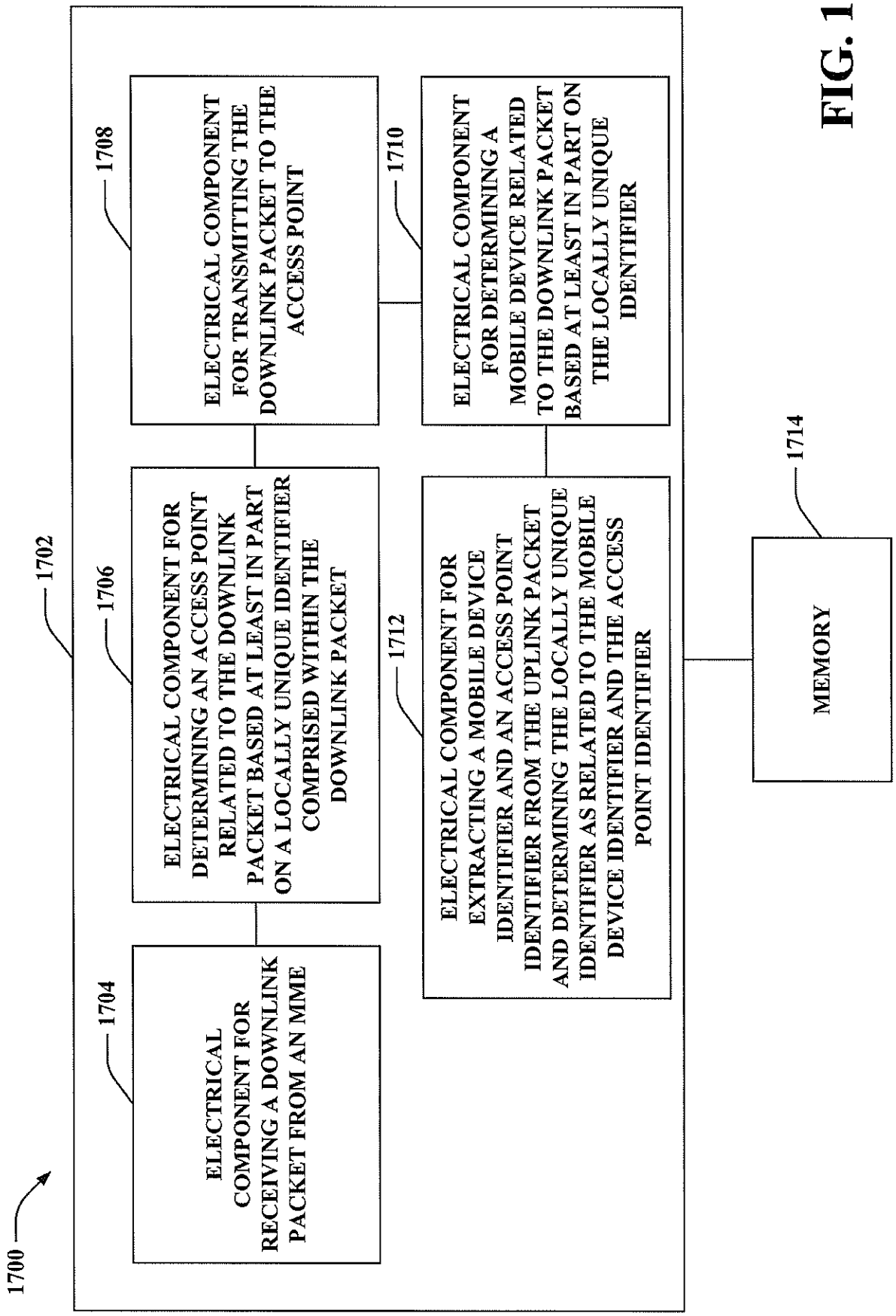

1700
1702
1704
ELECTRICAL COMPONENT FOR RECEIVING A DOWNLINK PACKET FROM AN MME
1706
ELECTRICAL COMPONENT FOR DETERMINING AN ACCESS POINT RELATED TO THE DOWNLINK PACKET BASED AT LEAST IN PART ON A LOCALLY UNIQUE IDENTIFIER COMPRISED WITHIN THE DOWNLINK PACKET
1708
ELECTRICAL COMPONENT FOR TRANSMITTING THE DOWNLINK PACKET TO THE ACCESS POINT
1710
ELECTRICAL COMPONENT FOR DETERMINING A MOBILE DEVICE RELATED TO THE DOWNLINK PACKET BASED AT LEAST IN PART ON THE LOCALLY UNIQUE IDENTIFIER
1712
ELECTRICAL COMPONENT FOR EXTRACTING A MOBILE DEVICE IDENTIFIER AND AN ACCESS POINT IDENTIFIER FROM THE UPLINK PACKET AND DETERMINING THE LOCALLY UNIQUE IDENTIFIER AS RELATED TO THE MOBILE DEVICE IDENTIFIER AND THE ACCESS POINT IDENTIFIER
1714
MEMORY

FIG. 17

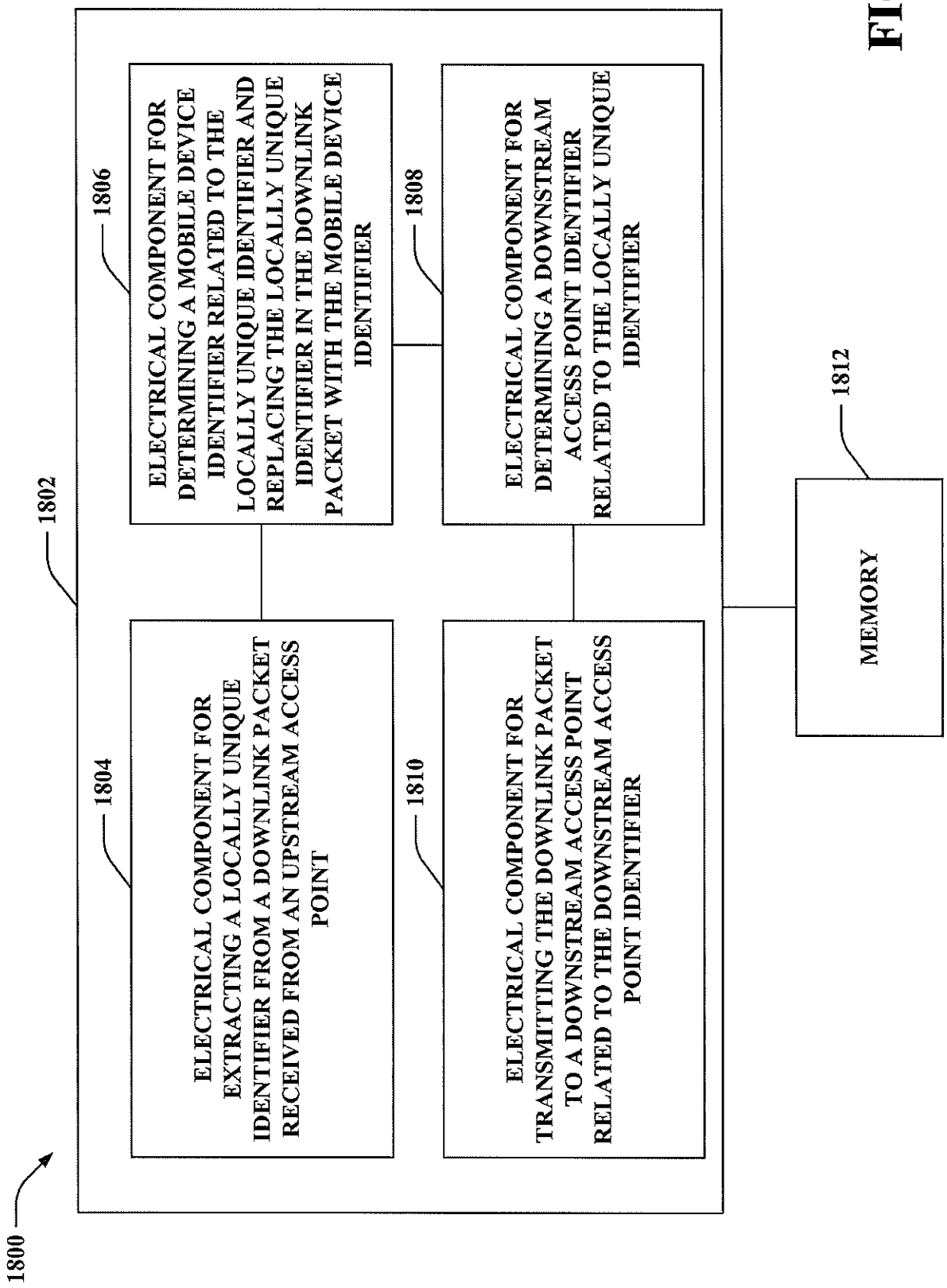

1800
1802
1804
ELECTRICAL COMPONENT FOR EXTRACTING A LOCALLY UNIQUE IDENTIFIER FROM A DOWNLINK PACKET RECEIVED FROM AN UPSTREAM ACCESS POINT
1806
ELECTRICAL COMPONENT FOR DETERMINING A MOBILE DEVICE IDENTIFIER RELATED TO THE LOCALLY UNIQUE IDENTIFIER AND REPLACING THE LOCALLY UNIQUE IDENTIFIER IN THE DOWNLINK PACKET WITH THE MOBILE DEVICE IDENTIFIER
1808
ELECTRICAL COMPONENT FOR DETERMINING A DOWNSTREAM ACCESS POINT IDENTIFIER RELATED TO THE LOCALLY UNIQUE IDENTIFIER
1810
ELECTRICAL COMPONENT FOR TRANSMITTING THE DOWNLINK PACKET TO A DOWNSTREAM ACCESS POINT RELATED TO THE DOWNSTREAM ACCESS POINT IDENTIFIER
1812
MEMORY

FIG. 18

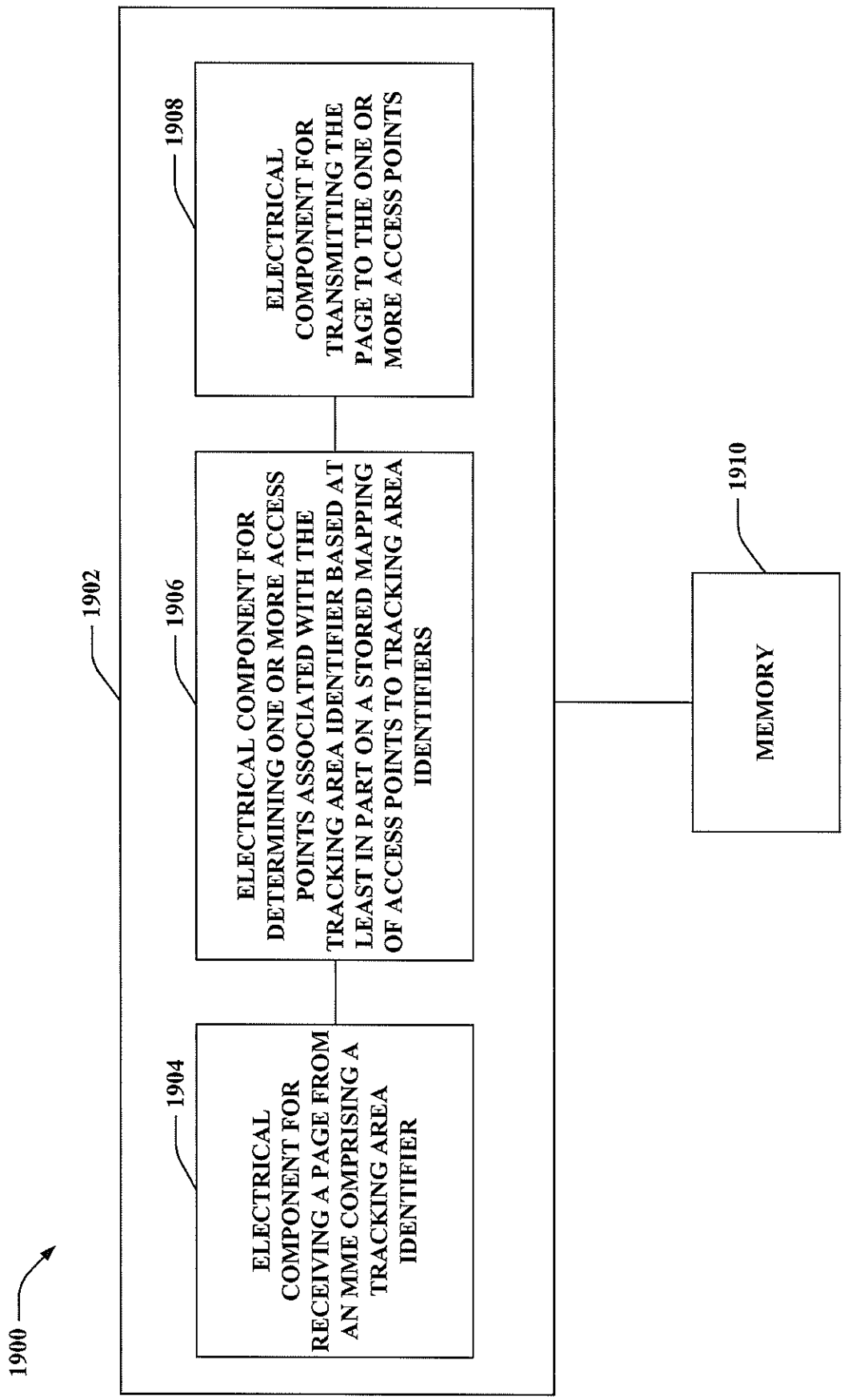
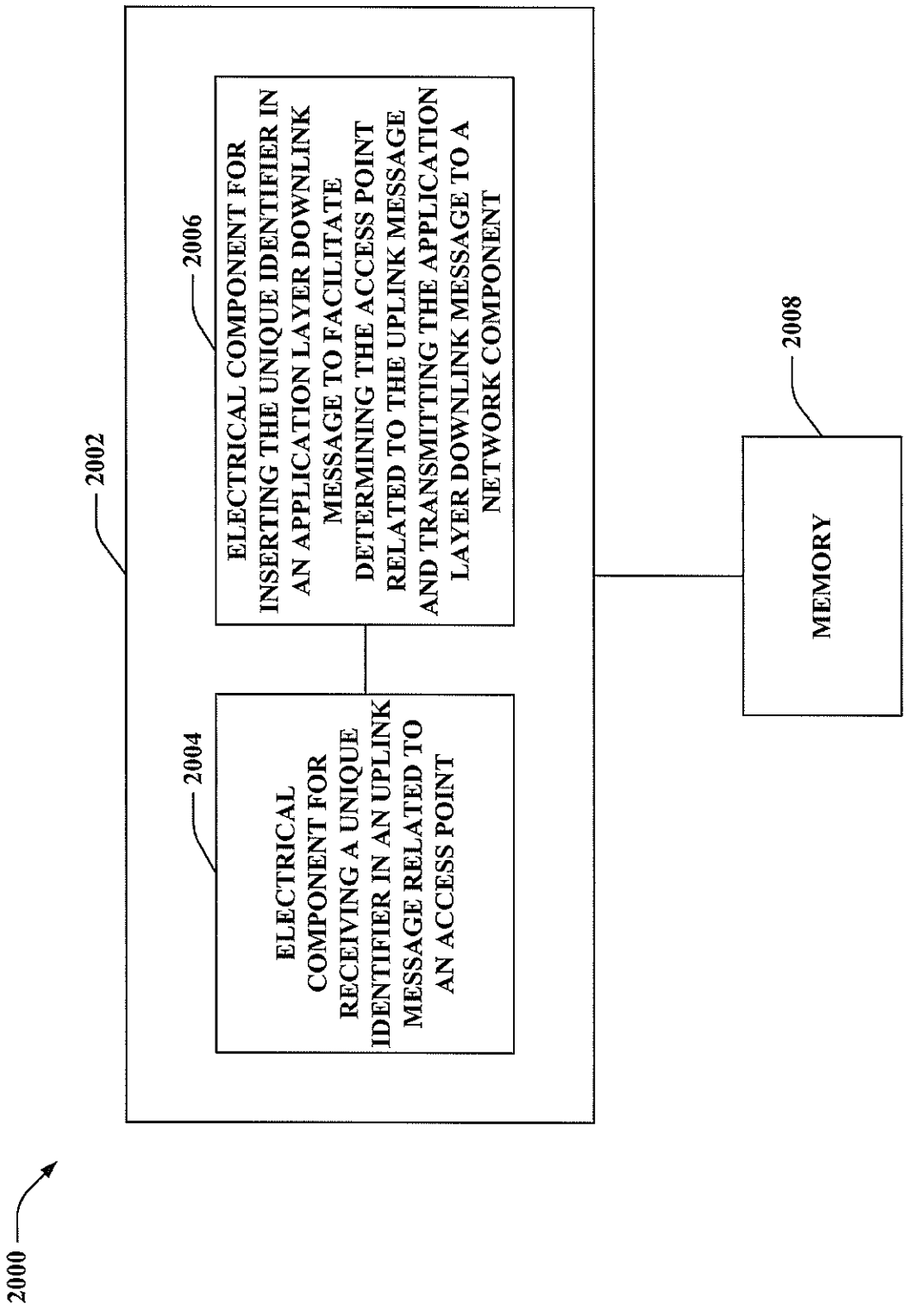

1900
1902
1904
ELECTRICAL COMPONENT FOR RECEIVING A PAGE FROM AN MME COMPRISING A TRACKING AREA IDENTIFIER
1906
ELECTRICAL COMPONENT FOR DETERMINING ONE OR MORE ACCESS POINTS ASSOCIATED WITH THE TRACKING AREA IDENTIFIER BASED AT LEAST IN PART ON A STORED MAPPING OF ACCESS POINTS TO TRACKING AREA IDENTIFIERS
1908
ELECTRICAL COMPONENT FOR TRANSMITTING THE PAGE TO THE ONE OR MORE ACCESS POINTS
1910
MEMORY

FIG. 19

FIG. 20


2000
2002
2004
ELECTRICAL COMPONENT FOR RECEIVING A UNIQUE IDENTIFIER IN AN UPLINK MESSAGE RELATED TO AN ACCESS POINT
2006
ELECTRICAL COMPONENT FOR INSERTING THE UNIQUE IDENTIFIER IN AN APPLICATION LAYER DOWNLINK MESSAGE TO FACILITATE DETERMINING THE ACCESS POINT RELATED TO THE UPLINK MESSAGE AND TRANSMITTING THE APPLICATION LAYER DOWNLINK MESSAGE TO A NETWORK COMPONENT
2008
MEMORY

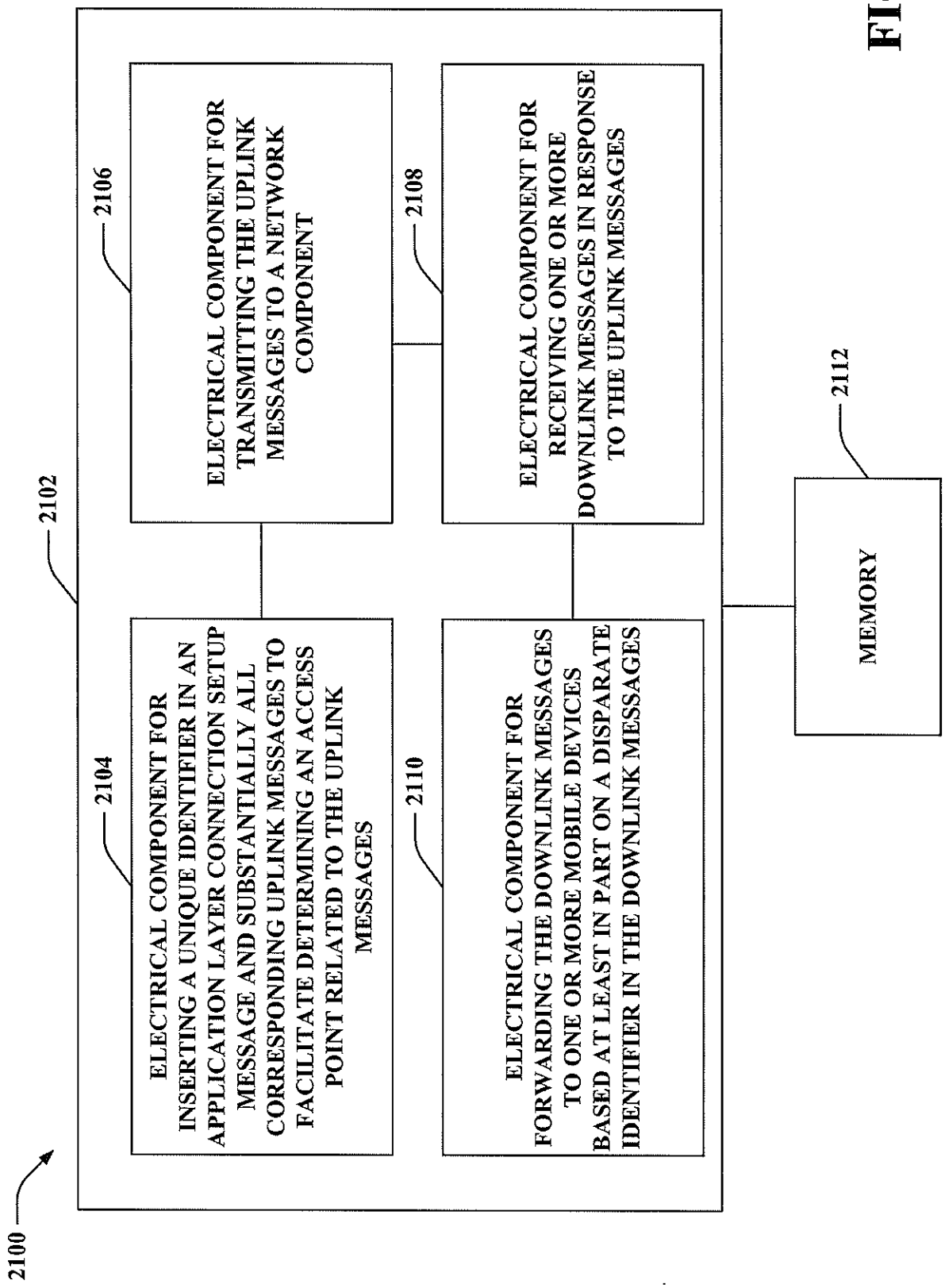

2100
2102
2104
ELECTRICAL COMPONENT FOR INSERTING A UNIQUE IDENTIFIER IN AN APPLICATION LAYER CONNECTION SETUP MESSAGE AND SUBSTANTIALLY ALL CORRESPONDING UPLINK MESSAGES TO FACILITATE DETERMINING AN ACCESS POINT RELATED TO THE UPLINK MESSAGES
2106
ELECTRICAL COMPONENT FOR TRANSMITTING THE UPLINK MESSAGES TO A NETWORK COMPONENT
2108
ELECTRICAL COMPONENT FOR RECEIVING ONE OR MORE DOWNLINK MESSAGES IN RESPONSE TO THE UPLINK MESSAGES
2110
ELECTRICAL COMPONENT FOR FORWARDING THE DOWNLINK MESSAGES TO ONE OR MORE MOBILE DEVICES BASED AT LEAST IN PART ON A DISPARATE IDENTIFIER IN THE DOWNLINK MESSAGES
2112
MEMORY

FIG. 21