FIG. 1

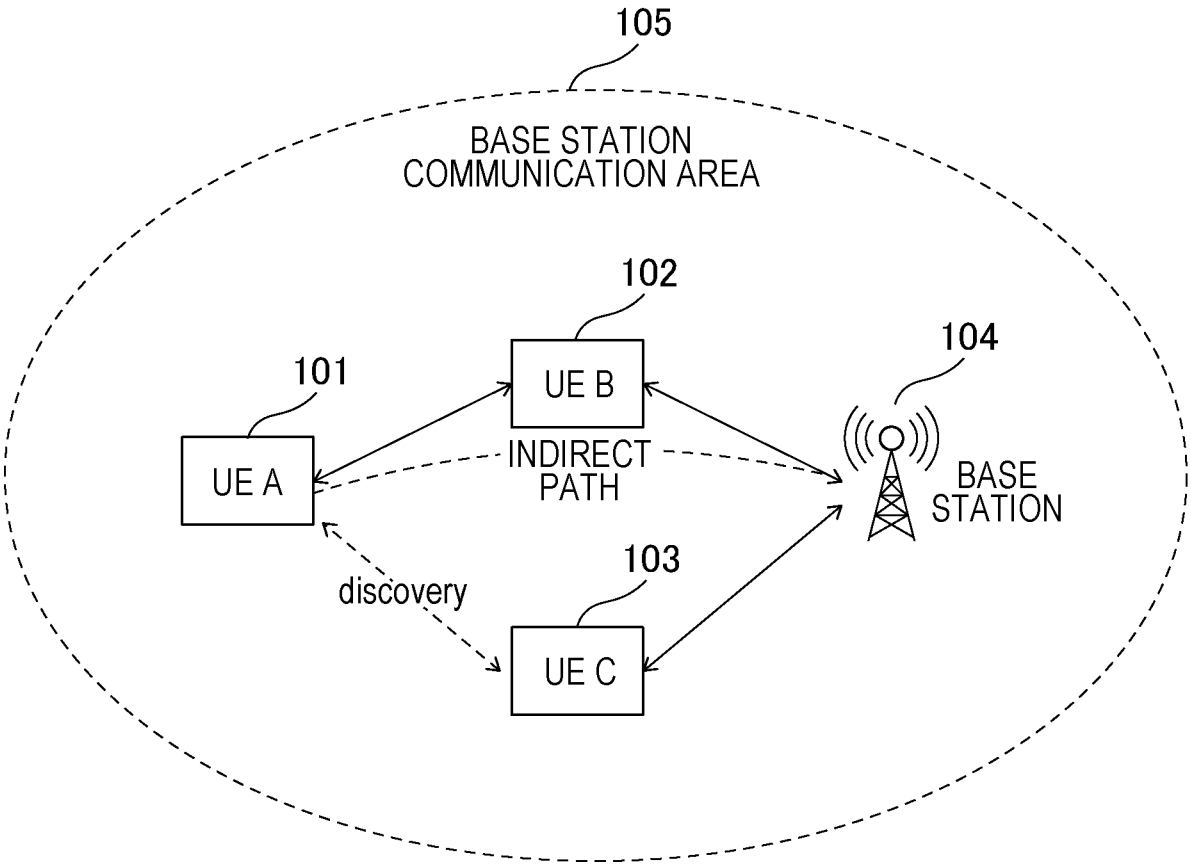

105
BASE STATION
COMMUNICATION AREA
102
104
101
UE B
UE A
INDIRECT
PATH
BASE
STATION
103
discovery
UE C

FIG. 2

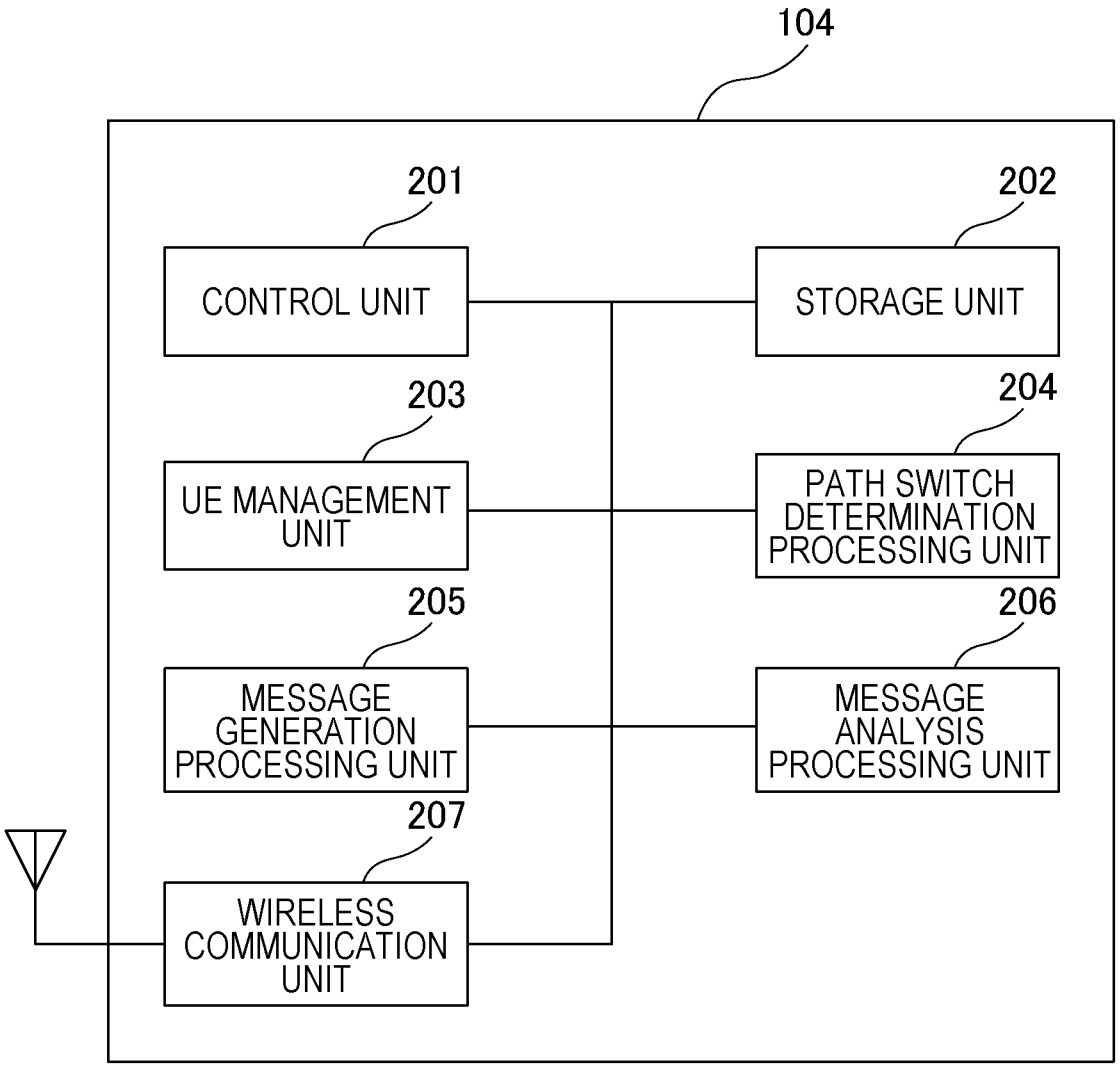

104
201
CONTROL UNIT
202
STORAGE UNIT
203
UE MANAGEMENT UNIT
204
PATH SWITCH DETERMINATION PROCESSING UNIT
205
MESSAGE GENERATION PROCESSING UNIT
206
MESSAGE ANALYSIS PROCESSING UNIT
207
WIRELESS COMMUNICATION UNIT

FIG. 3

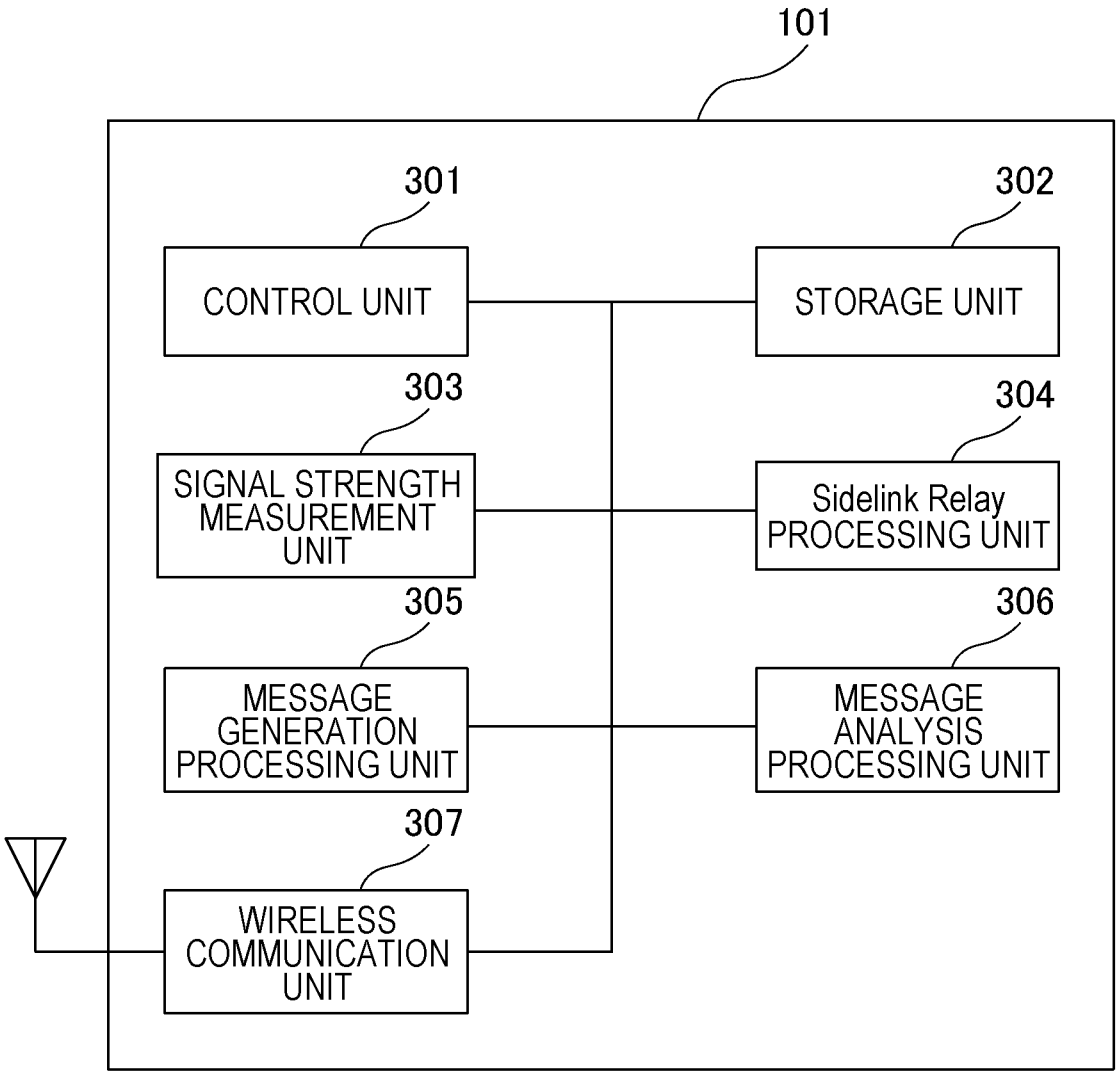

101
301
CONTROL UNIT
302
STORAGE UNIT
303
SIGNAL STRENGTH MEASUREMENT UNIT
304
Sidelink Relay PROCESSING UNIT
305
MESSAGE GENERATION PROCESSING UNIT
306
MESSAGE ANALYSIS PROCESSING UNIT
307
WIRELESS COMMUNICATION UNIT

FIG. 4

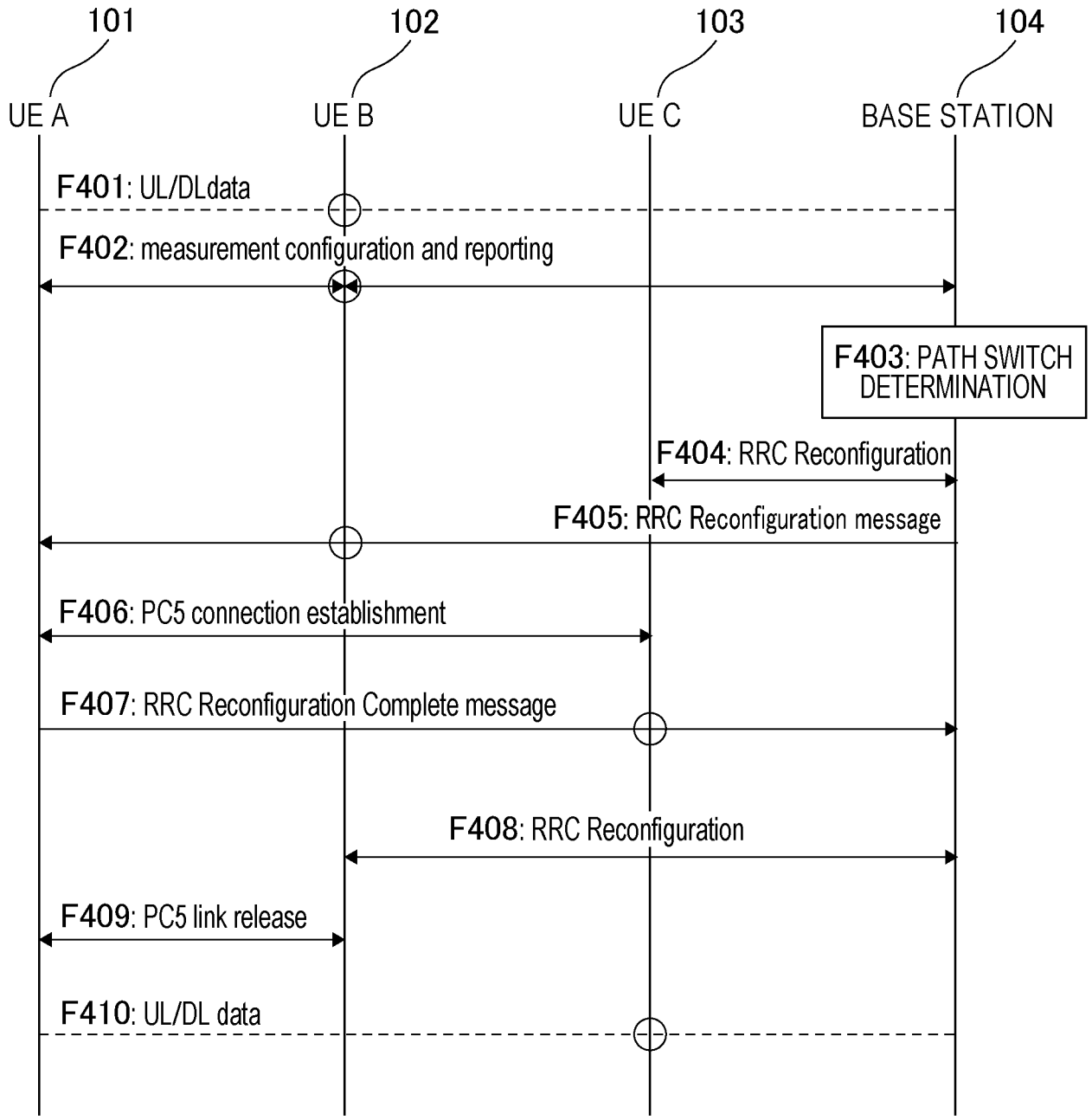

101
102
103
104
UE A
UE B
UE C
BASE STATION
F401: UL/DLdata
F402: measurement configuration and reporting
F403: PATH SWITCH DETERMINATION
F404: RRC Reconfiguration
F405: RRC Reconfiguration message
F406: PC5 connection establishment
F407: RRC Reconfiguration Complete message
F408: RRC Reconfiguration
F409: PC5 link release
F410: UL/DL data

FIG. 5

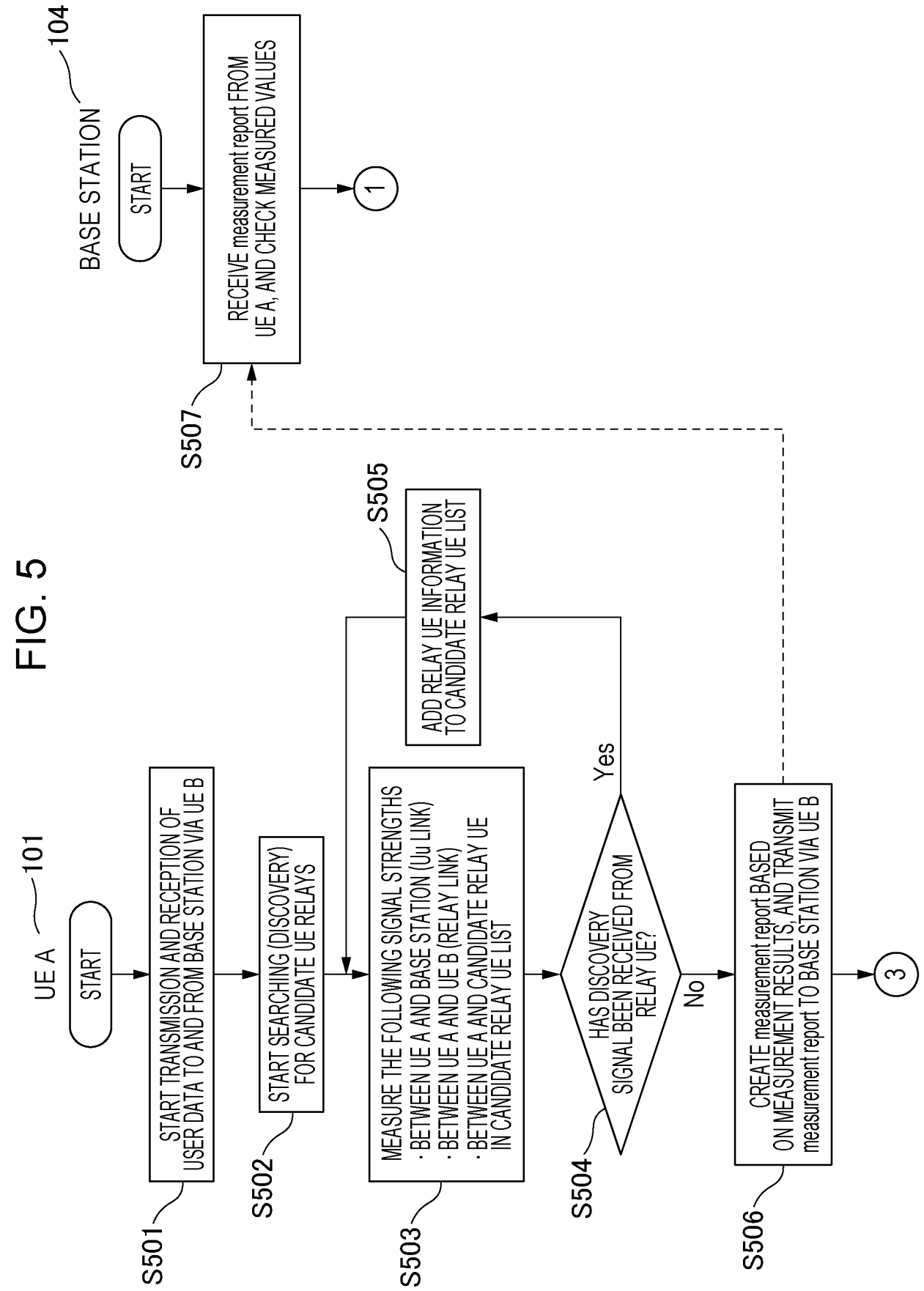

UE A
101
START
START TRANSMISSION AND RECEPTION OF USER DATA TO AND FROM BASE STATION VIA UE B
S501
START SEARCHING (DISCOVERY) FOR CANDIDATE UE RELAYS
S502
MEASURE THE FOLLOWING SIGNAL STRENGTHS
· BETWEEN UE A AND BASE STATION (Uu LINK)
· BETWEEN UE A AND UE B (RELAY LINK)
· BETWEEN UE A AND CANDIDATE RELAY UE IN CANDIDATE RELAY UE LIST
S503
HAS DISCOVERY SIGNAL BEEN RECEIVED FROM RELAY UE?
S504
Yes
ADD RELAY UE INFORMATION TO CANDIDATE RELAY UE LIST
S505
No
CREATE measurement report BASED ON MEASUREMENT RESULTS, AND TRANSMIT measurement report TO BASE STATION VIA UE B
S506
3
BASE STATION
104
START
RECEIVE measurement report FROM UE A, AND CHECK MEASURED VALUES
S507
1

FIG. 6

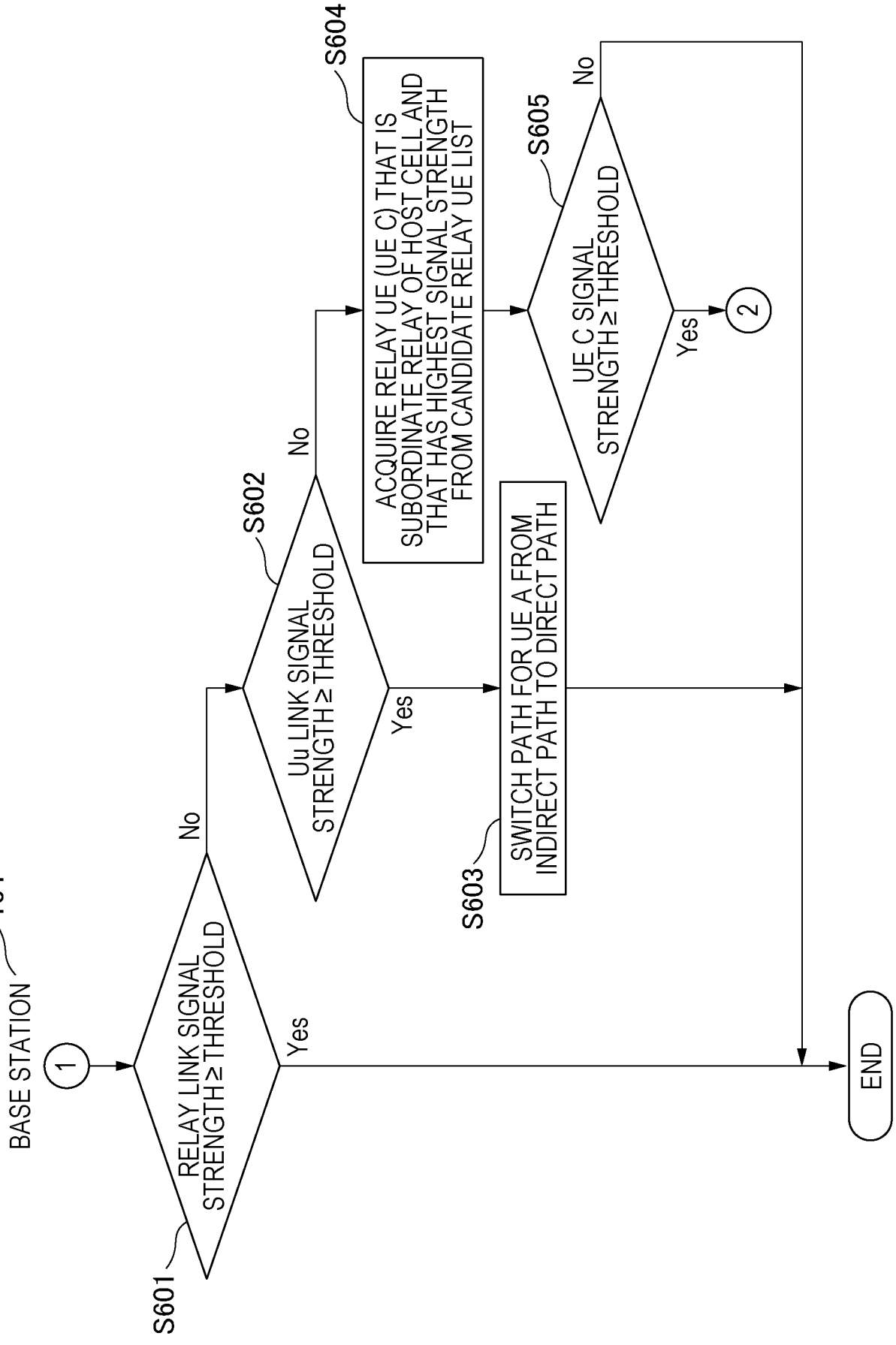

BASE STATION
104
1
RELAY LINK SIGNAL STRENGTH ≥ THRESHOLD
S601
No
Yes
Uu LINK SIGNAL STRENGTH ≥ THRESHOLD
S602
No
Yes
SWITCH PATH FOR UE A FROM INDIRECT PATH TO DIRECT PATH
S603
ACQUIRE RELAY UE (UE C) THAT IS SUBORDINATE RELAY OF HOST CELL AND THAT HAS HIGHEST SIGNAL STRENGTH FROM CANDIDATE RELAY UE LIST
S604
UE C SIGNAL STRENGTH ≥ THRESHOLD
S605
No
Yes
2
END

FIG. 7

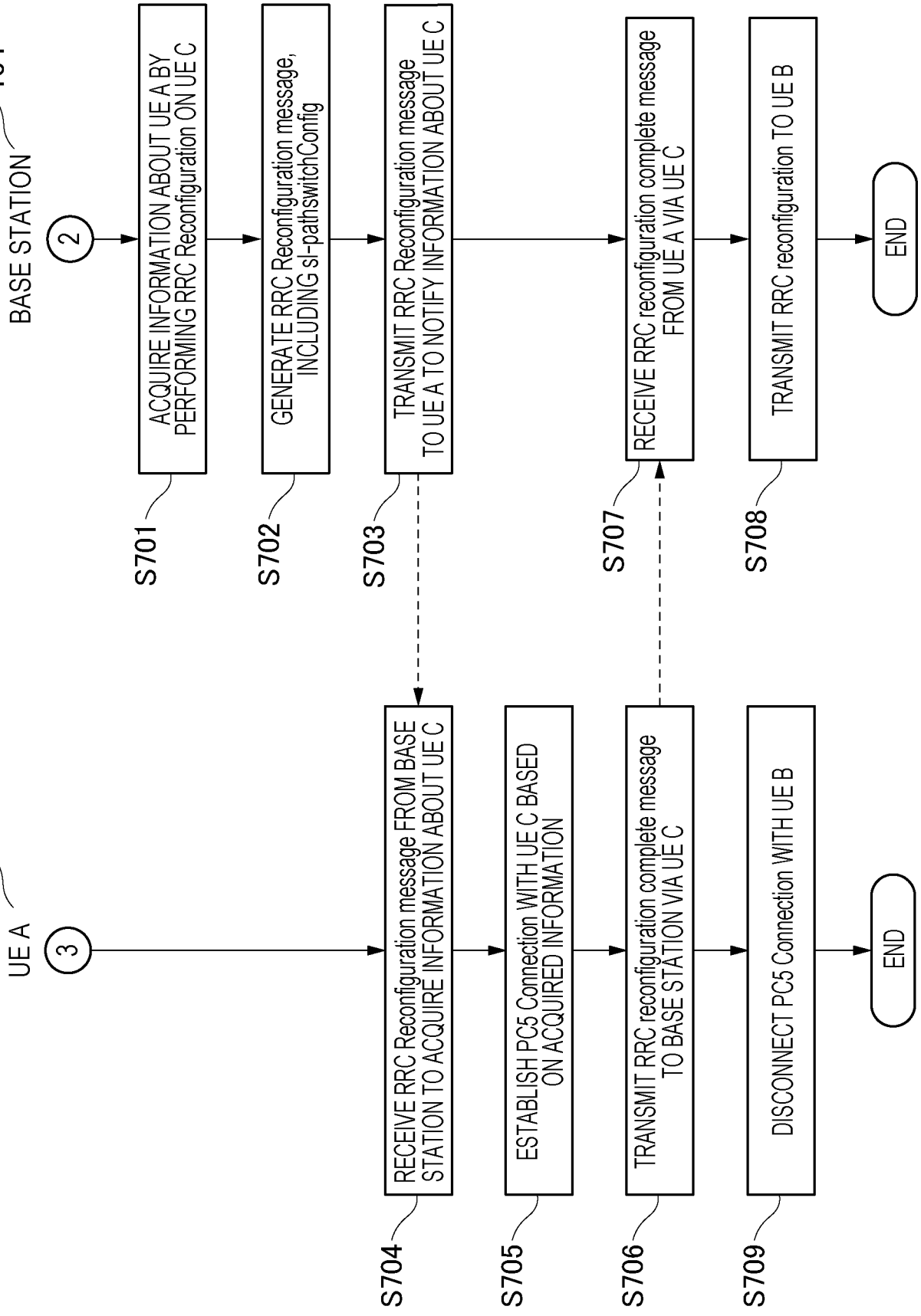

UE A
101
BASE STATION
104
3
2
ACQUIRE INFORMATION ABOUT UE A BY PERFORMING RRC Reconfiguration ON UE C
GENERATE RRC Reconfiguration message, INCLUDING sl-pathswitchConfig
TRANSMIT RRC Reconfiguration message TO UE A TO NOTIFY INFORMATION ABOUT UE C
RECEIVE RRC reconfiguration complete message FROM UE A VIA UE C
TRANSMIT RRC reconfiguration TO UE B
END
S701
S702
S703
S707
S708
RECEIVE RRC Reconfiguration message FROM BASE STATION TO ACQUIRE INFORMATION ABOUT UE C
ESTABLISH PC5 Connection WITH UE C BASED ON ACQUIRED INFORMATION
TRANSMIT RRC reconfiguration complete message TO BASE STATION VIA UE C
DISCONNECT PC5 Connection WITH UE B
END
S704
S705
S706
S709

FIG. 8

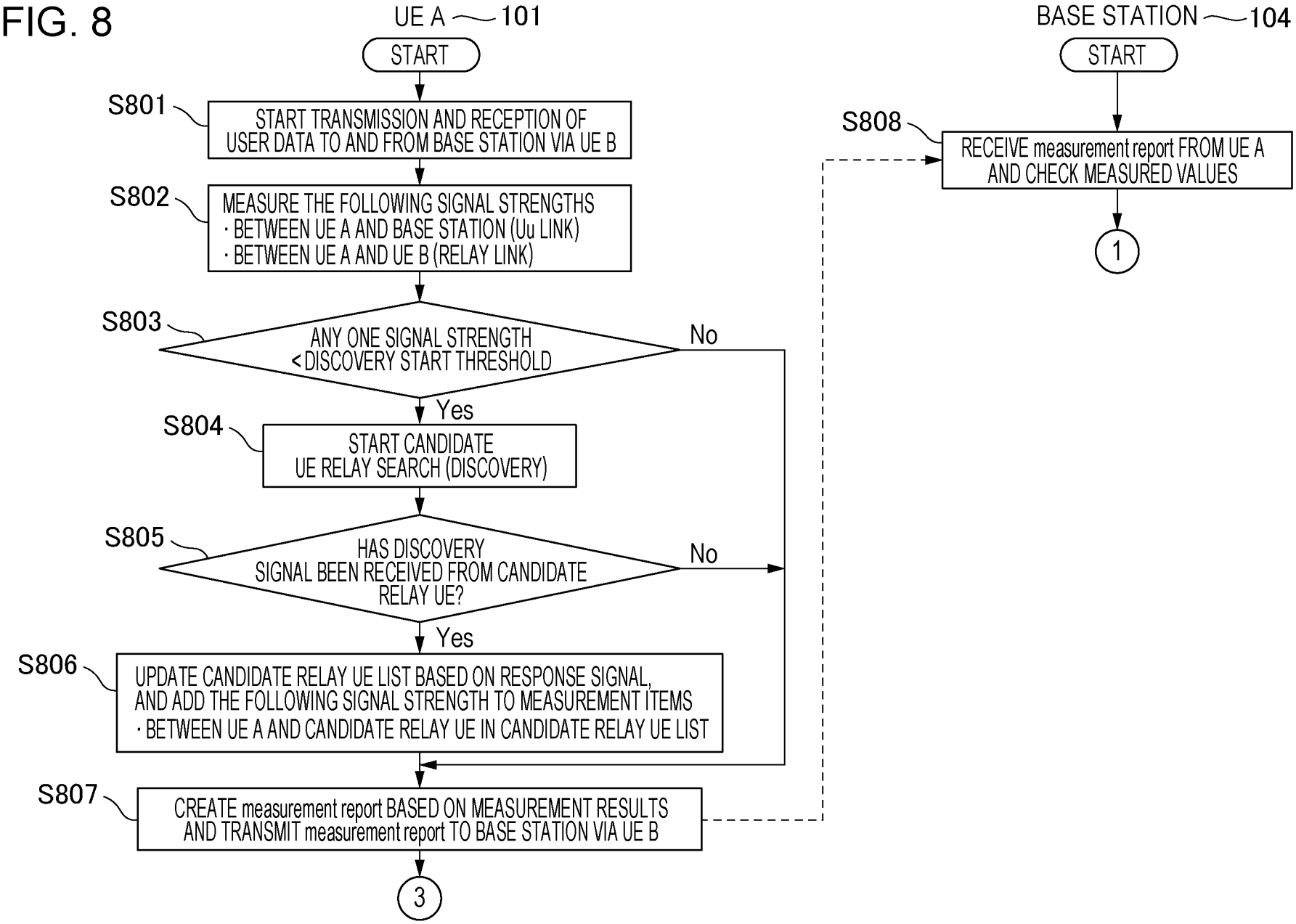
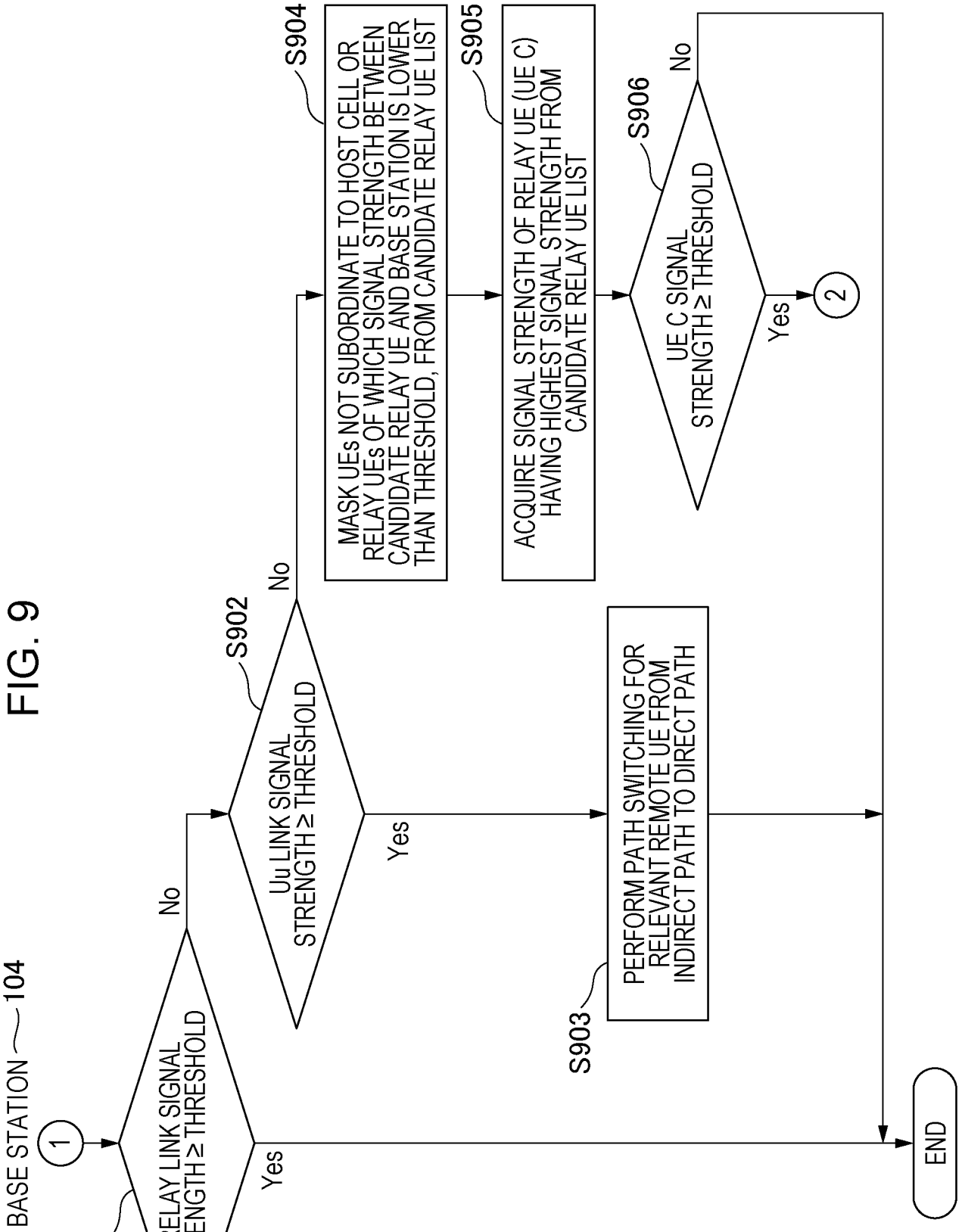

UE A
101
START
S801
START TRANSMISSION AND RECEPTION OF USER DATA TO AND FROM BASE STATION VIA UE B
S802
MEASURE THE FOLLOWING SIGNAL STRENGTHS
· BETWEEN UE A AND BASE STATION (Uu LINK)
· BETWEEN UE A AND UE B (RELAY LINK)
S803
ANY ONE SIGNAL STRENGTH < DISCOVERY START THRESHOLD
No
Yes
S804
START CANDIDATE UE RELAY SEARCH (DISCOVERY)
S805
HAS DISCOVERY SIGNAL BEEN RECEIVED FROM CANDIDATE RELAY UE?
No
Yes
S806
UPDATE CANDIDATE RELAY UE LIST BASED ON RESPONSE SIGNAL, AND ADD THE FOLLOWING SIGNAL STRENGTH TO MEASUREMENT ITEMS
· BETWEEN UE A AND CANDIDATE RELAY UE IN CANDIDATE RELAY UE LIST
S807
CREATE measurement report BASED ON MEASUREMENT RESULTS AND TRANSMIT measurement report TO BASE STATION VIA UE B
3
BASE STATION
104
START
S808
RECEIVE measurement report FROM UE A AND CHECK MEASURED VALUES
1

FIG. 9


BASE STATION
104
1
S901
RELAY LINK SIGNAL STRENGTH ≥ THRESHOLD
No
Yes
S902
Uu LINK SIGNAL STRENGTH ≥ THRESHOLD
No
Yes
S903
PERFORM PATH SWITCHING FOR RELEVANT REMOTE UE FROM INDIRECT PATH TO DIRECT PATH
S904
MASK UEs NOT SUBORDINATE TO HOST CELL OR RELAY UEs OF WHICH SIGNAL STRENGTH BETWEEN CANDIDATE RELAY UE AND BASE STATION IS LOWER THAN THRESHOLD, FROM CANDIDATE RELAY UE LIST
S905
ACQUIRE SIGNAL STRENGTH OF RELAY UE (UE C) HAVING HIGHEST SIGNAL STRENGTH FROM CANDIDATE RELAY UE LIST
S906
UE C SIGNAL STRENGTH ≥ THRESHOLD
No
Yes
2
END