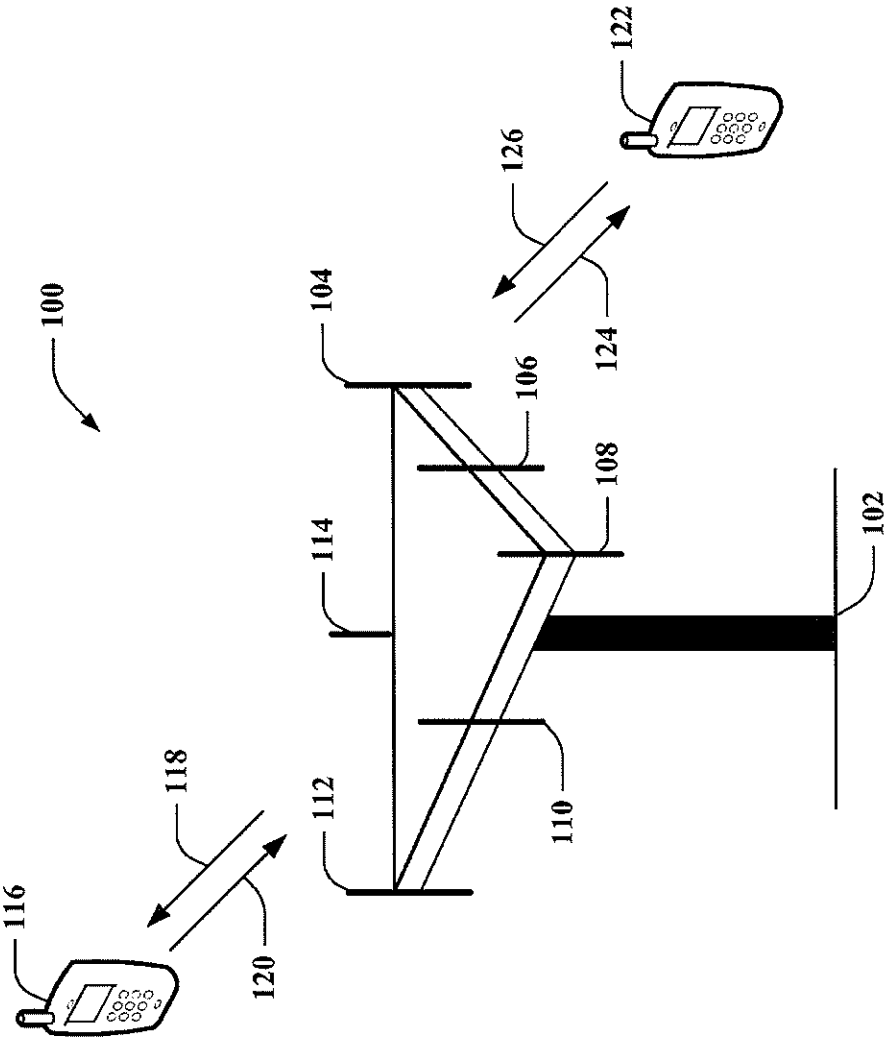


FIG. 1

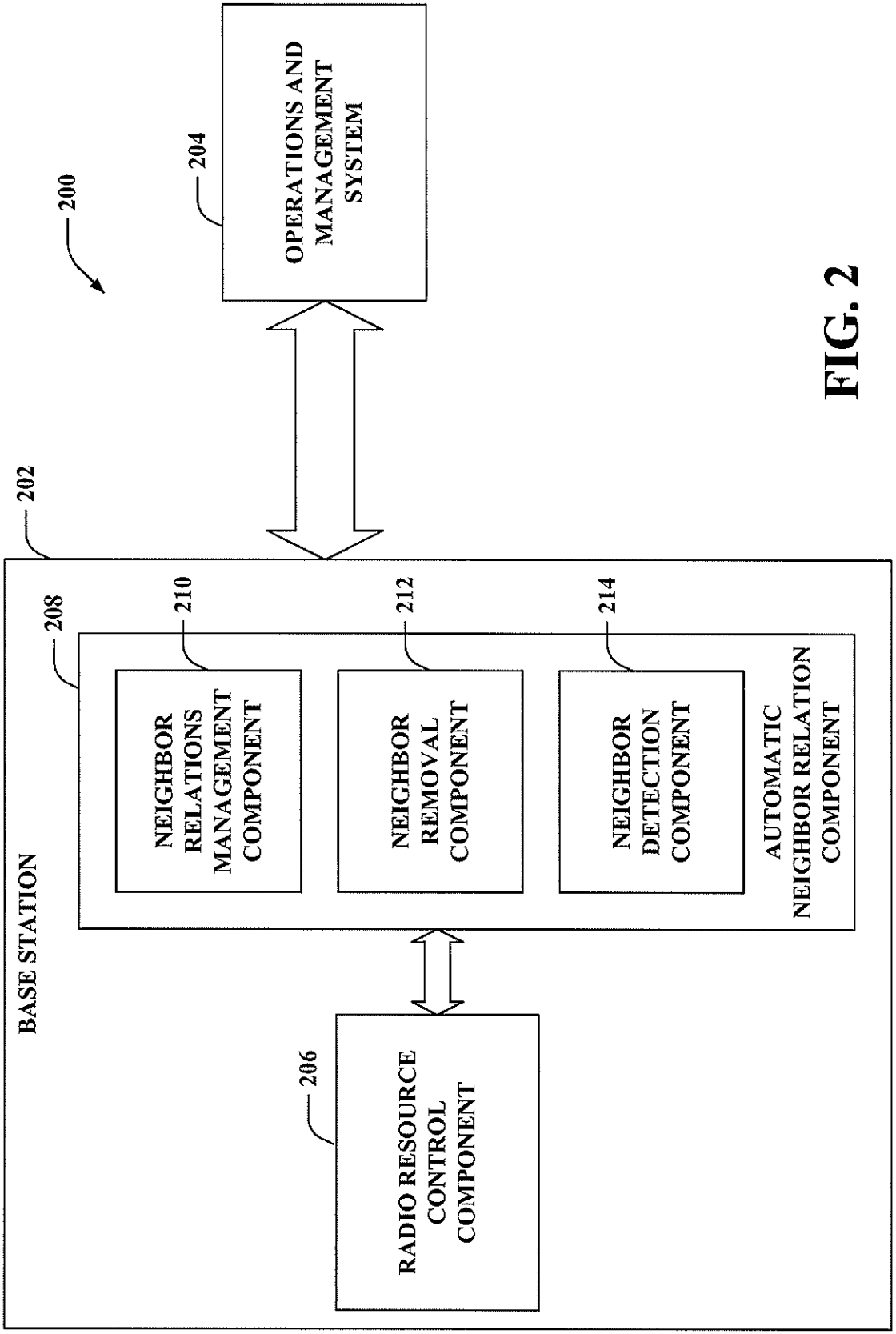

200
204
OPERATIONS AND MANAGEMENT SYSTEM
202
BASE STATION
208
210
NEIGHBOR RELATIONS MANAGEMENT COMPONENT
212
NEIGHBOR REMOVAL COMPONENT
214
NEIGHBOR DETECTION COMPONENT
AUTOMATIC NEIGHBOR RELATION COMPONENT
206
RADIO RESOURCE CONTROL COMPONENT

FIG. 2

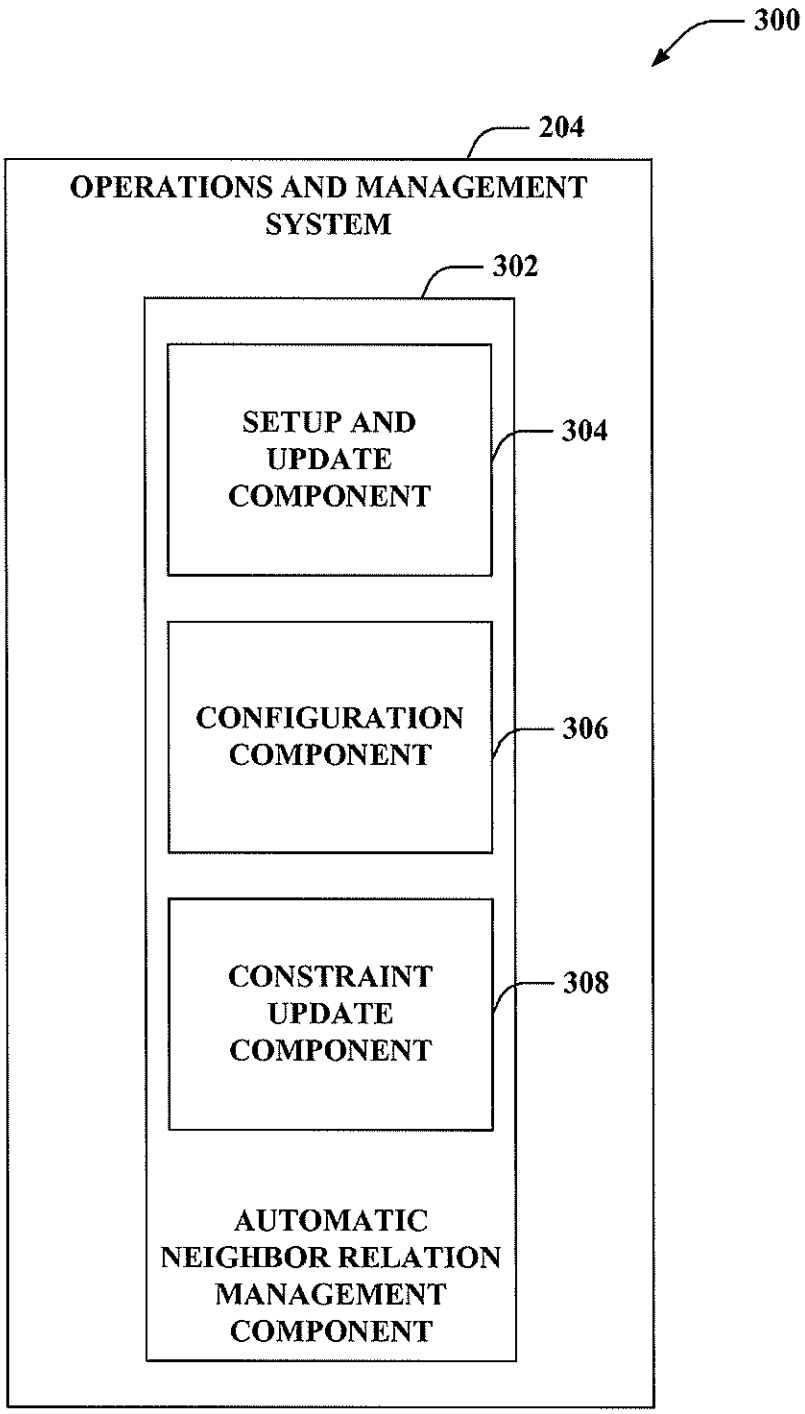

300
204
OPERATIONS AND MANAGEMENT SYSTEM
302
SETUP AND UPDATE COMPONENT
304
CONFIGURATION COMPONENT
306
CONSTRAINT UPDATE COMPONENT
308
AUTOMATIC NEIGHBOR RELATION MANAGEMENT COMPONENT

FIG. 3

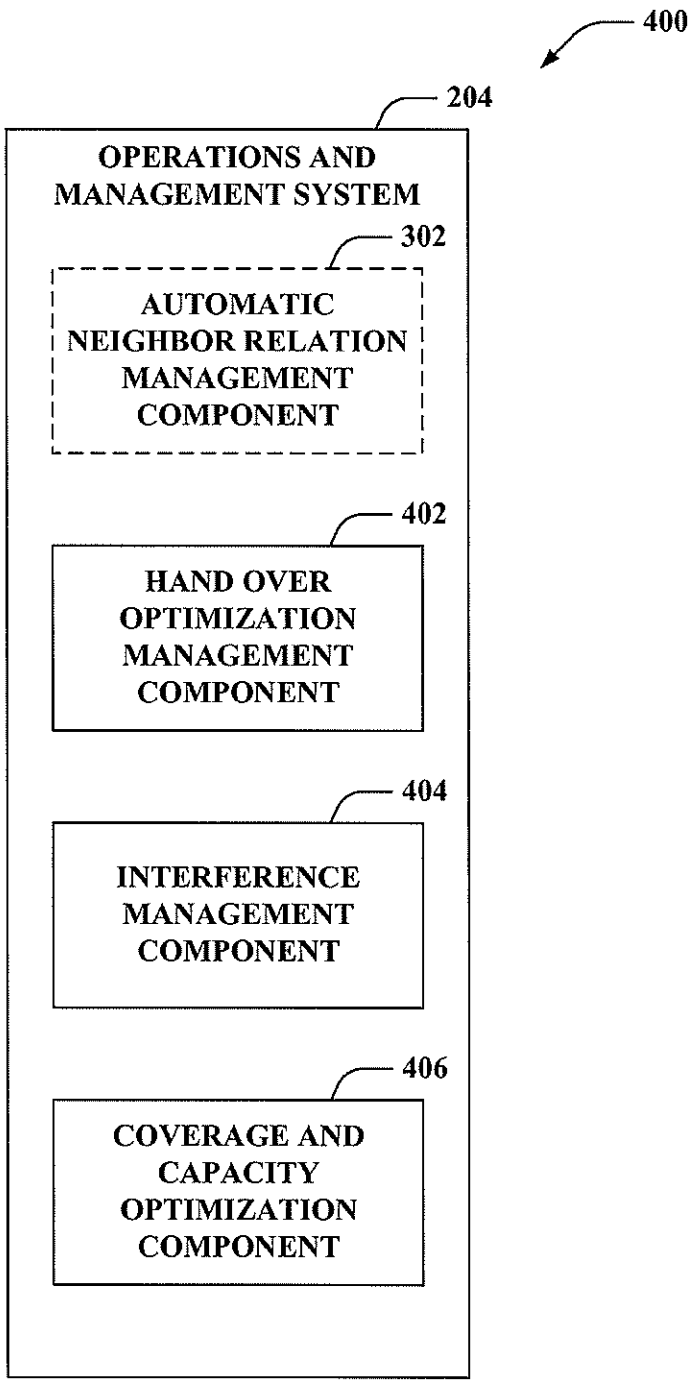

400
204
OPERATIONS AND MANAGEMENT SYSTEM
302
AUTOMATIC NEIGHBOR RELATION MANAGEMENT COMPONENT
402
HAND OVER OPTIMIZATION MANAGEMENT COMPONENT
404
INTERFERENCE MANAGEMENT COMPONENT
406
COVERAGE AND CAPACITY OPTIMIZATION COMPONENT

FIG. 4

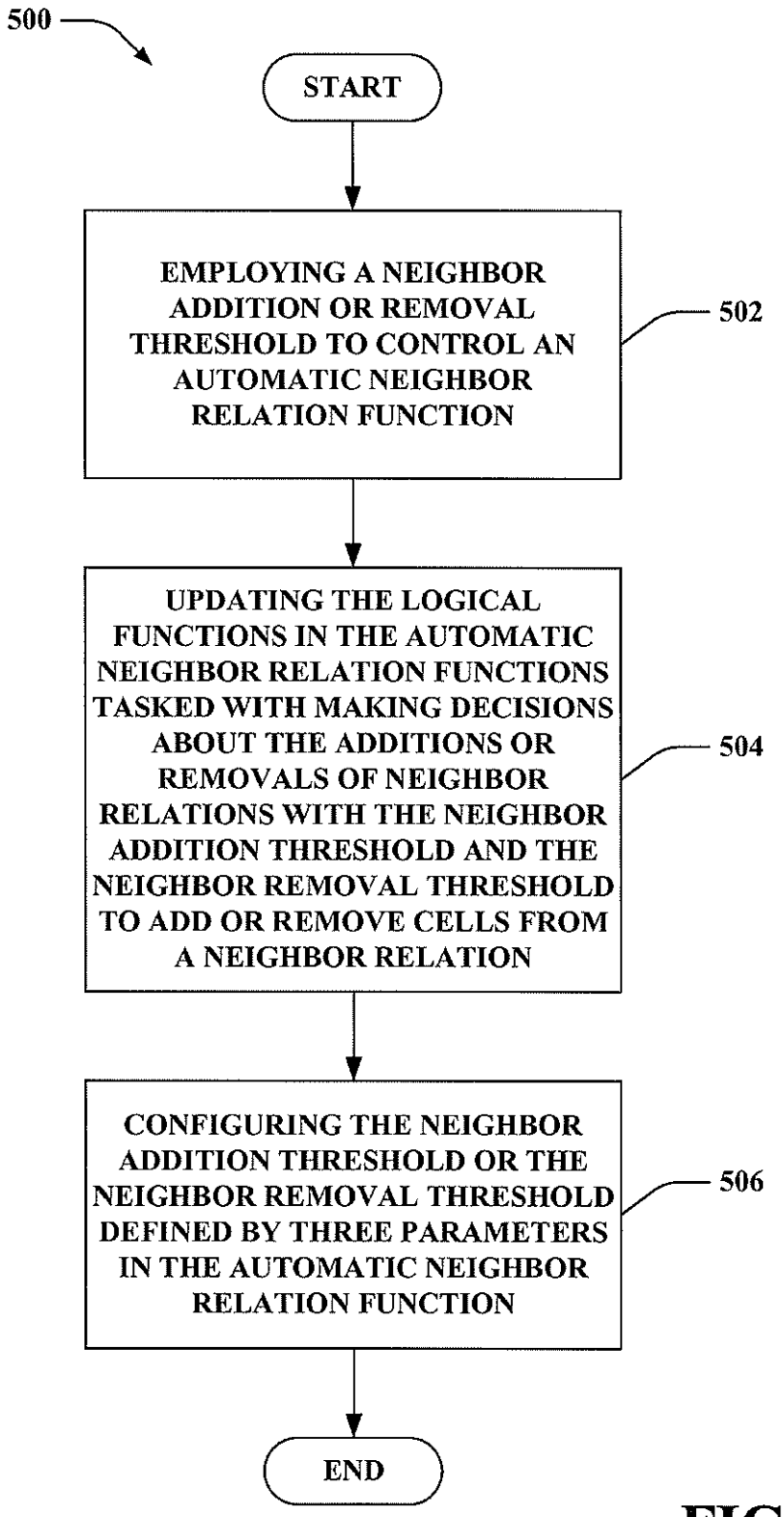

500
START
EMPLOYING A NEIGHBOR ADDITION OR REMOVAL THRESHOLD TO CONTROL AN AUTOMATIC NEIGHBOR RELATION FUNCTION
502
UPDATING THE LOGICAL FUNCTIONS IN THE AUTOMATIC NEIGHBOR RELATION FUNCTIONS TASKED WITH MAKING DECISIONS ABOUT THE ADDITIONS OR REMOVALS OF NEIGHBOR RELATIONS WITH THE NEIGHBOR ADDITION THRESHOLD AND THE NEIGHBOR REMOVAL THRESHOLD TO ADD OR REMOVE CELLS FROM A NEIGHBOR RELATION
504
CONFIGURING THE NEIGHBOR ADDITION THRESHOLD OR THE NEIGHBOR REMOVAL THRESHOLD DEFINED BY THREE PARAMETERS IN THE AUTOMATIC NEIGHBOR RELATION FUNCTION
506
END

FIG. 5

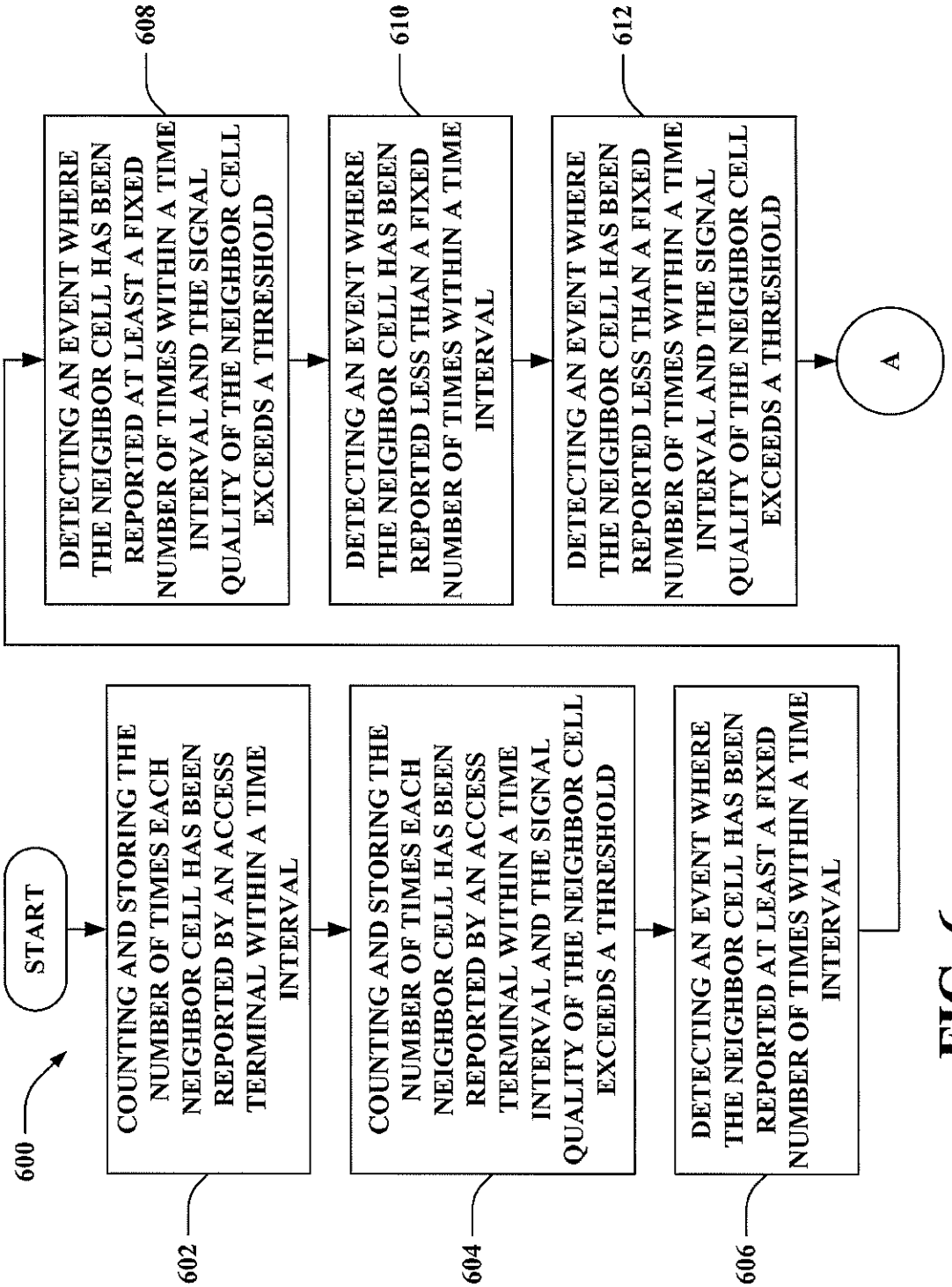

600
START
COUNTING AND STORING THE NUMBER OF TIMES EACH NEIGHBOR CELL HAS BEEN REPORTED BY AN ACCESS TERMINAL WITHIN A TIME INTERVAL
602
COUNTING AND STORING THE NUMBER OF TIMES EACH NEIGHBOR CELL HAS BEEN REPORTED BY AN ACCESS TERMINAL WITHIN A TIME INTERVAL AND THE SIGNAL QUALITY OF THE NEIGHBOR CELL EXCEEDS A THRESHOLD
604
DETECTING AN EVENT WHERE THE NEIGHBOR CELL HAS BEEN REPORTED AT LEAST A FIXED NUMBER OF TIMES WITHIN A TIME INTERVAL
606
DETECTING AN EVENT WHERE THE NEIGHBOR CELL HAS BEEN REPORTED AT LEAST A FIXED NUMBER OF TIMES WITHIN A TIME INTERVAL AND THE SIGNAL QUALITY OF THE NEIGHBOR CELL EXCEEDS A THRESHOLD
608
DETECTING AN EVENT WHERE THE NEIGHBOR CELL HAS BEEN REPORTED LESS THAN A FIXED NUMBER OF TIMES WITHIN A TIME INTERVAL
610
DETECTING AN EVENT WHERE THE NEIGHBOR CELL HAS BEEN REPORTED LESS THAN A FIXED NUMBER OF TIMES WITHIN A TIME INTERVAL AND THE SIGNAL QUALITY OF THE NEIGHBOR CELL EXCEEDS A THRESHOLD
612
A

FIG. 6

700

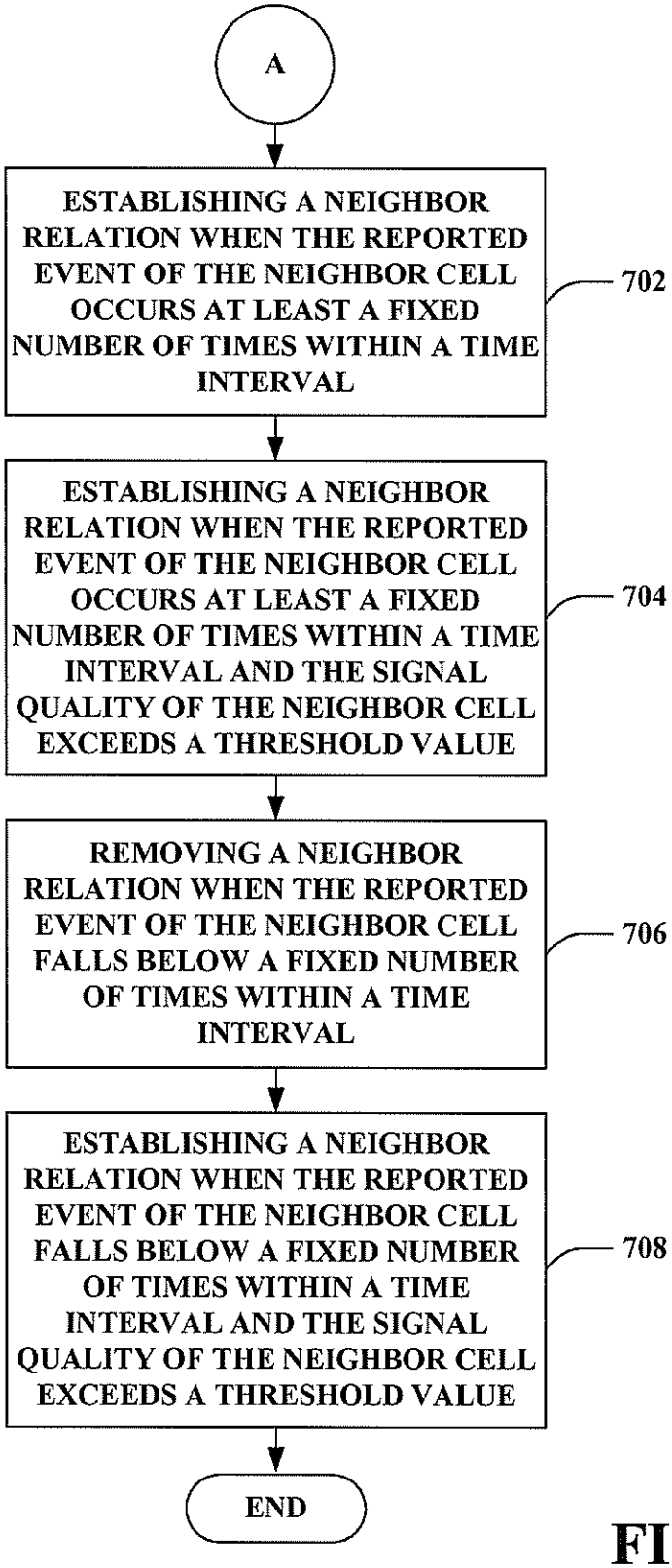

A
ESTABLISHING A NEIGHBOR RELATION WHEN THE REPORTED EVENT OF THE NEIGHBOR CELL OCCURS AT LEAST A FIXED NUMBER OF TIMES WITHIN A TIME INTERVAL
702
ESTABLISHING A NEIGHBOR RELATION WHEN THE REPORTED EVENT OF THE NEIGHBOR CELL OCCURS AT LEAST A FIXED NUMBER OF TIMES WITHIN A TIME INTERVAL AND THE SIGNAL QUALITY OF THE NEIGHBOR CELL EXCEEDS A THRESHOLD VALUE
704
REMOVING A NEIGHBOR RELATION WHEN THE REPORTED EVENT OF THE NEIGHBOR CELL FALLS BELOW A FIXED NUMBER OF TIMES WITHIN A TIME INTERVAL
706
ESTABLISHING A NEIGHBOR RELATION WHEN THE REPORTED EVENT OF THE NEIGHBOR CELL FALLS BELOW A FIXED NUMBER OF TIMES WITHIN A TIME INTERVAL AND THE SIGNAL QUALITY OF THE NEIGHBOR CELL EXCEEDS A THRESHOLD VALUE
708
END

FIG. 7

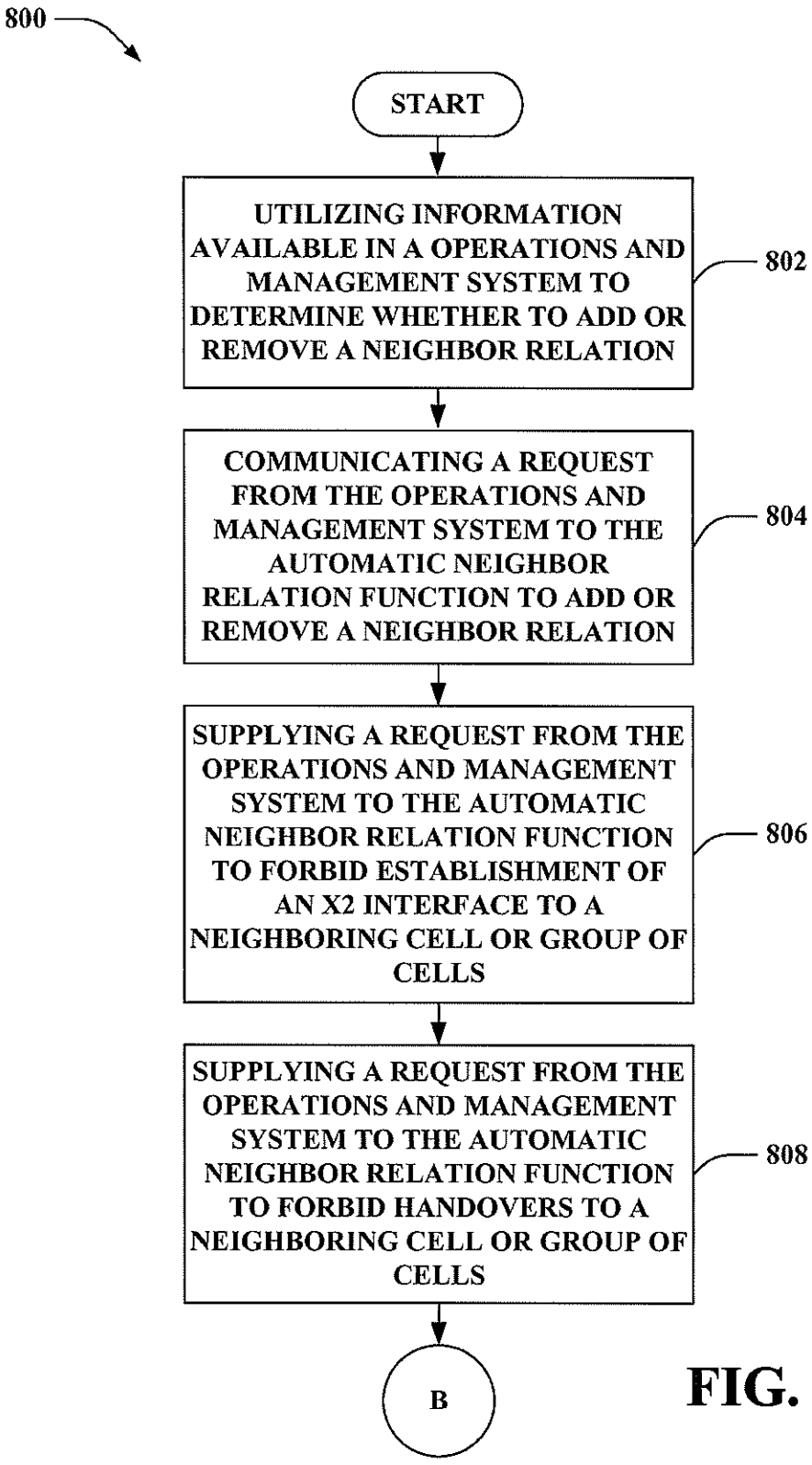

800
START
UTILIZING INFORMATION AVAILABLE IN A OPERATIONS AND MANAGEMENT SYSTEM TO DETERMINE WHETHER TO ADD OR REMOVE A NEIGHBOR RELATION
802
COMMUNICATING A REQUEST FROM THE OPERATIONS AND MANAGEMENT SYSTEM TO THE AUTOMATIC NEIGHBOR RELATION FUNCTION TO ADD OR REMOVE A NEIGHBOR RELATION
804
SUPPLYING A REQUEST FROM THE OPERATIONS AND MANAGEMENT SYSTEM TO THE AUTOMATIC NEIGHBOR RELATION FUNCTION TO FORBID ESTABLISHMENT OF AN X2 INTERFACE TO A NEIGHBORING CELL OR GROUP OF CELLS
806
SUPPLYING A REQUEST FROM THE OPERATIONS AND MANAGEMENT SYSTEM TO THE AUTOMATIC NEIGHBOR RELATION FUNCTION TO FORBID HANDOVERS TO A NEIGHBORING CELL OR GROUP OF CELLS
808
B

FIG. 8

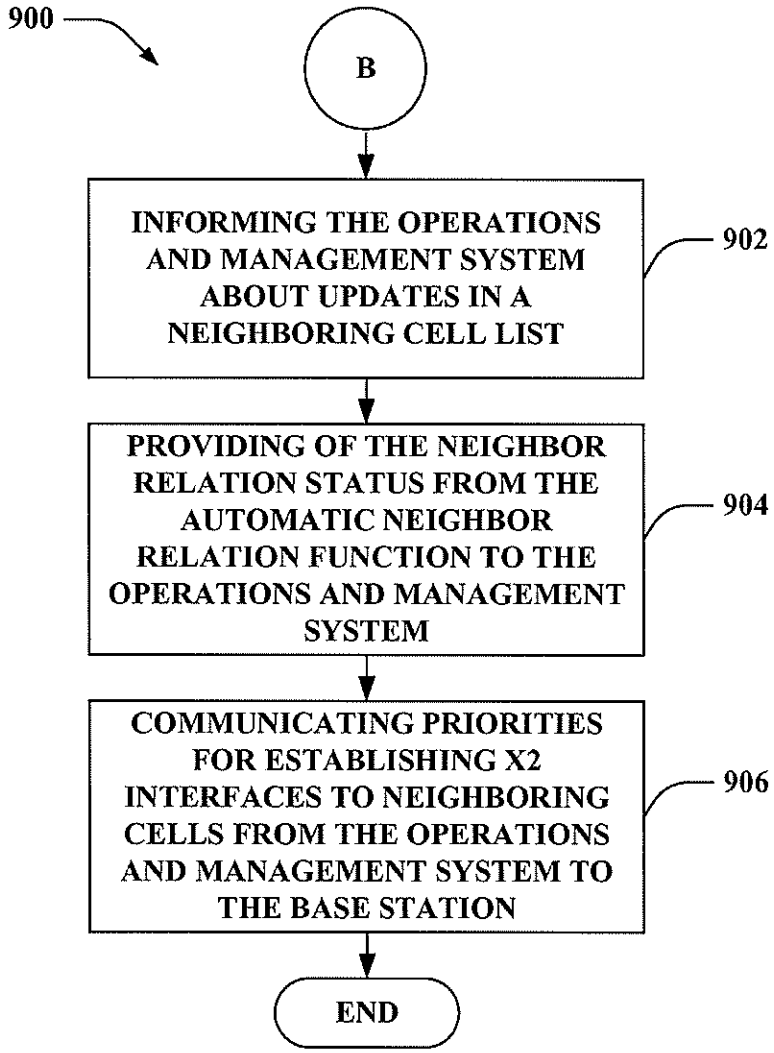

900
B
INFORMING THE OPERATIONS AND MANAGEMENT SYSTEM ABOUT UPDATES IN A NEIGHBORING CELL LIST
902
PROVIDING OF THE NEIGHBOR RELATION STATUS FROM THE AUTOMATIC NEIGHBOR RELATION FUNCTION TO THE OPERATIONS AND MANAGEMENT SYSTEM
904
COMMUNICATING PRIORITIES FOR ESTABLISHING X2 INTERFACES TO NEIGHBORING CELLS FROM THE OPERATIONS AND MANAGEMENT SYSTEM TO THE BASE STATION
906
END

FIG. 9

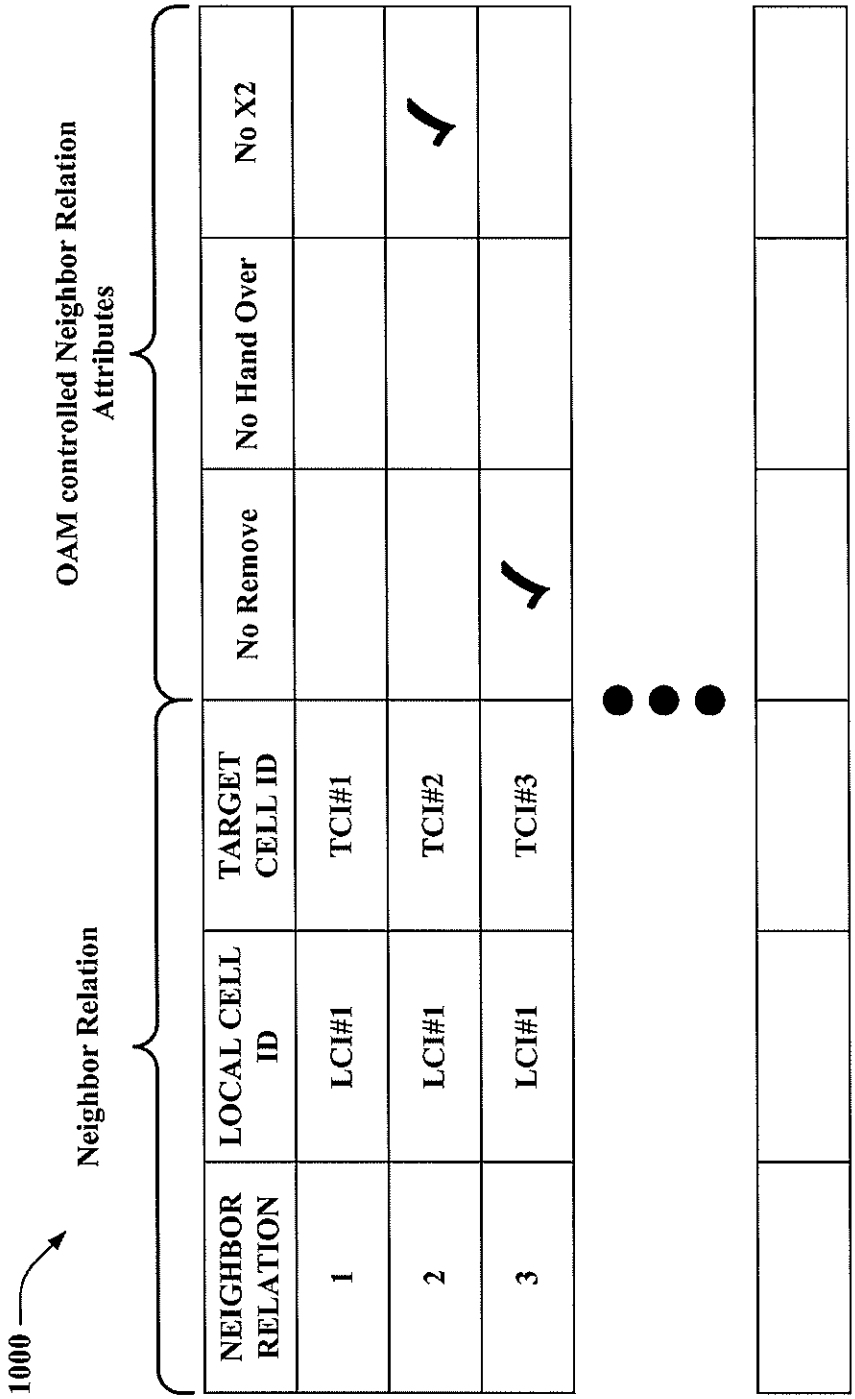

1000
Neighbor Relation
OAM controlled Neighbor Relation Attributes
NEIGHBOR RELATION
LOCAL CELL ID
TARGET CELL ID
No Remove
No Hand Over
No X2
1
LCI#1
TCI#1
2
LCI#1
TCI#2
✓
3
LCI#1
TCI#3
✓

FIG. 10

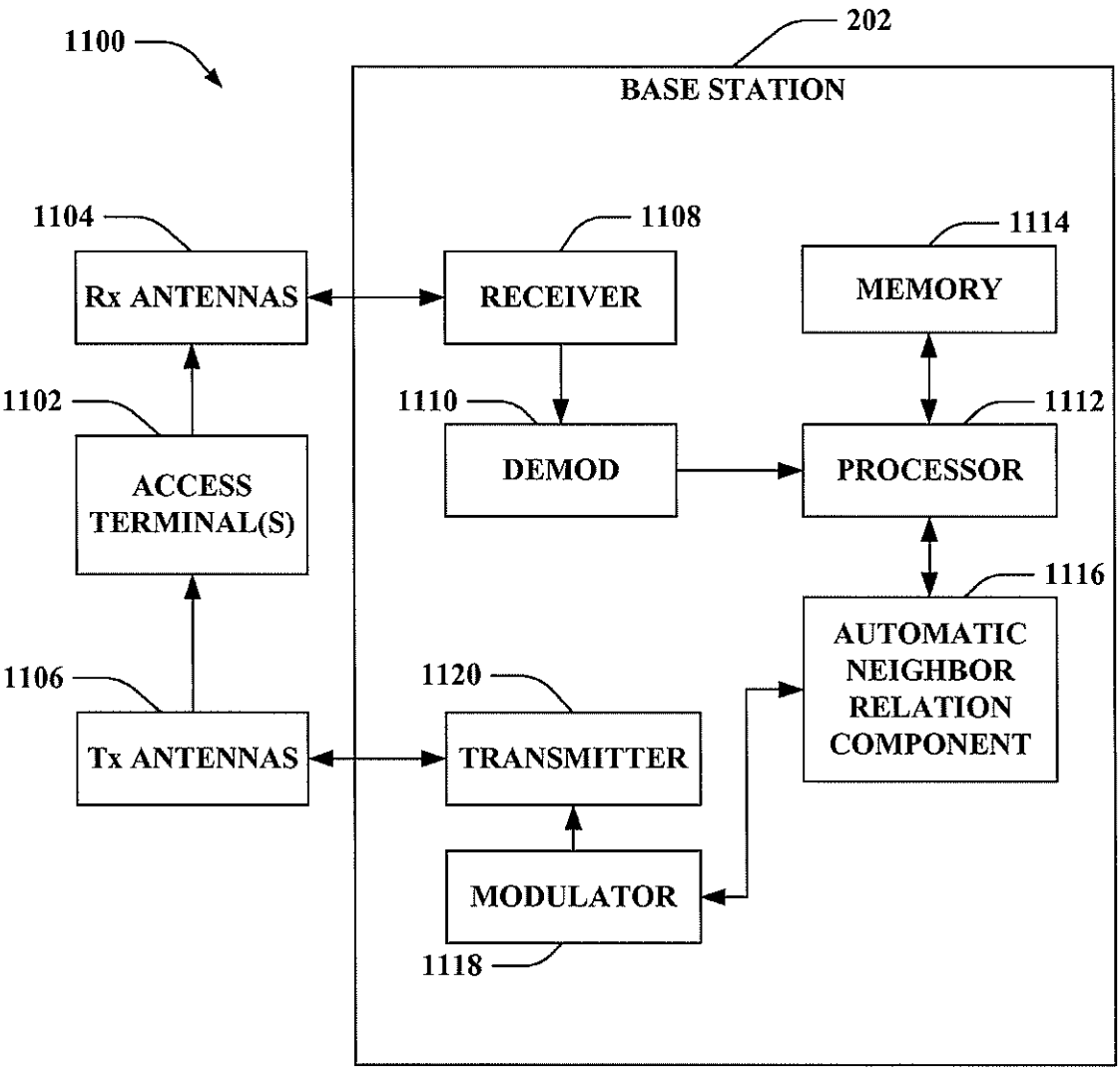

1100
202
BASE STATION
1104
Rx ANTENNAS
1108
RECEIVER
1114
MEMORY
1102
ACCESS TERMINAL(S)
1110
DEMOD
1112
PROCESSOR
1116
AUTOMATIC NEIGHBOR RELATION COMPONENT
1106
Tx ANTENNAS
1120
TRANSMITTER
MODULATOR
1118

FIG. 11

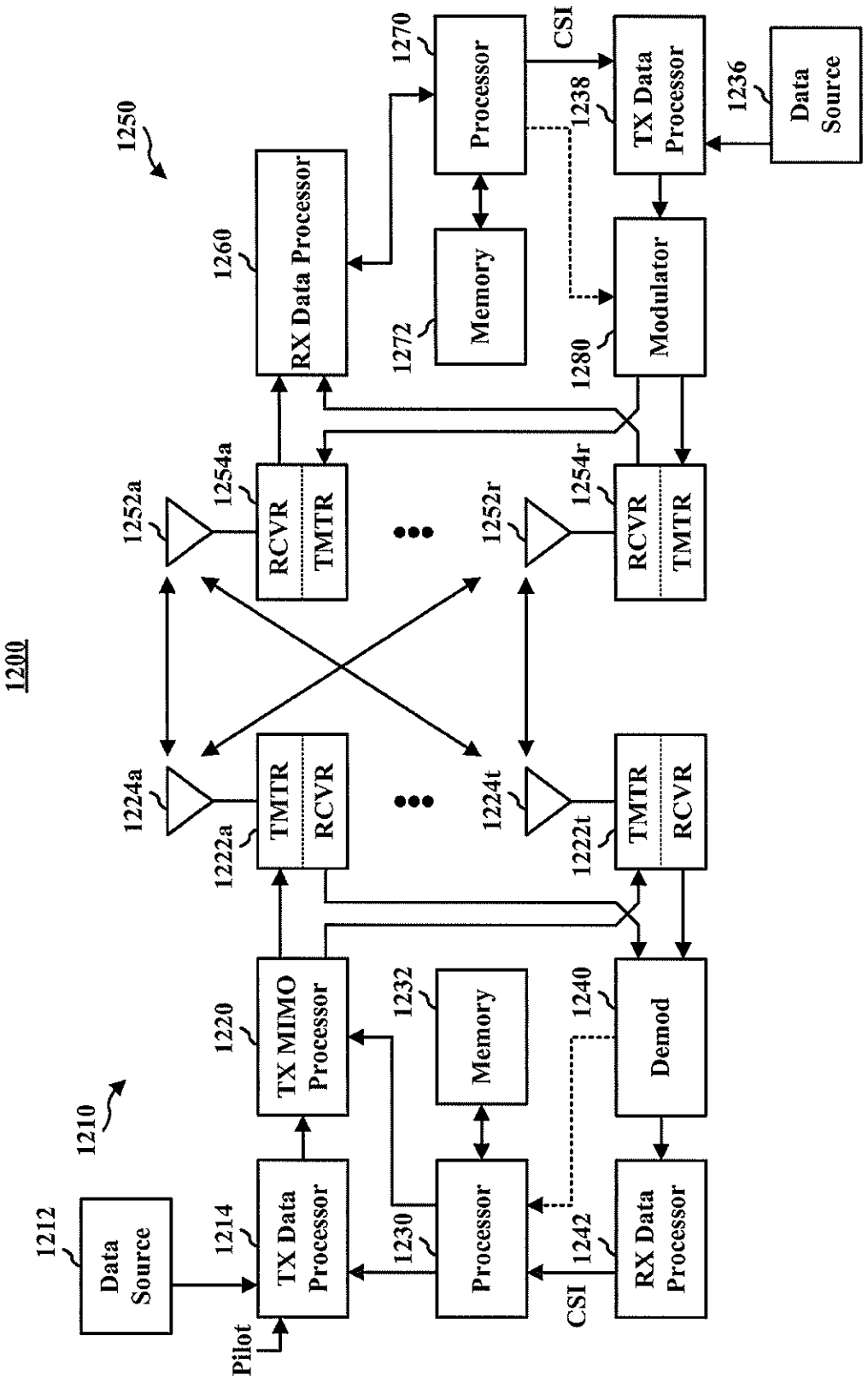

1200
1210
1212
Data Source
1214
TX Data Processor
Pilot
1220
TX MIMO Processor
1222a
TMTR
RCVR
1224a
1224t
1222t
1230
Processor
1232
Memory
1240
Demod
1242
RX Data Processor
CSI
1250
1252a
1252r
1254a
1254r
RCVR
TMTR
1260
RX Data Processor
1270
Processor
1272
Memory
1280
Modulator
1238
TX Data Processor
CSI
1236
Data Source

FIG. 12

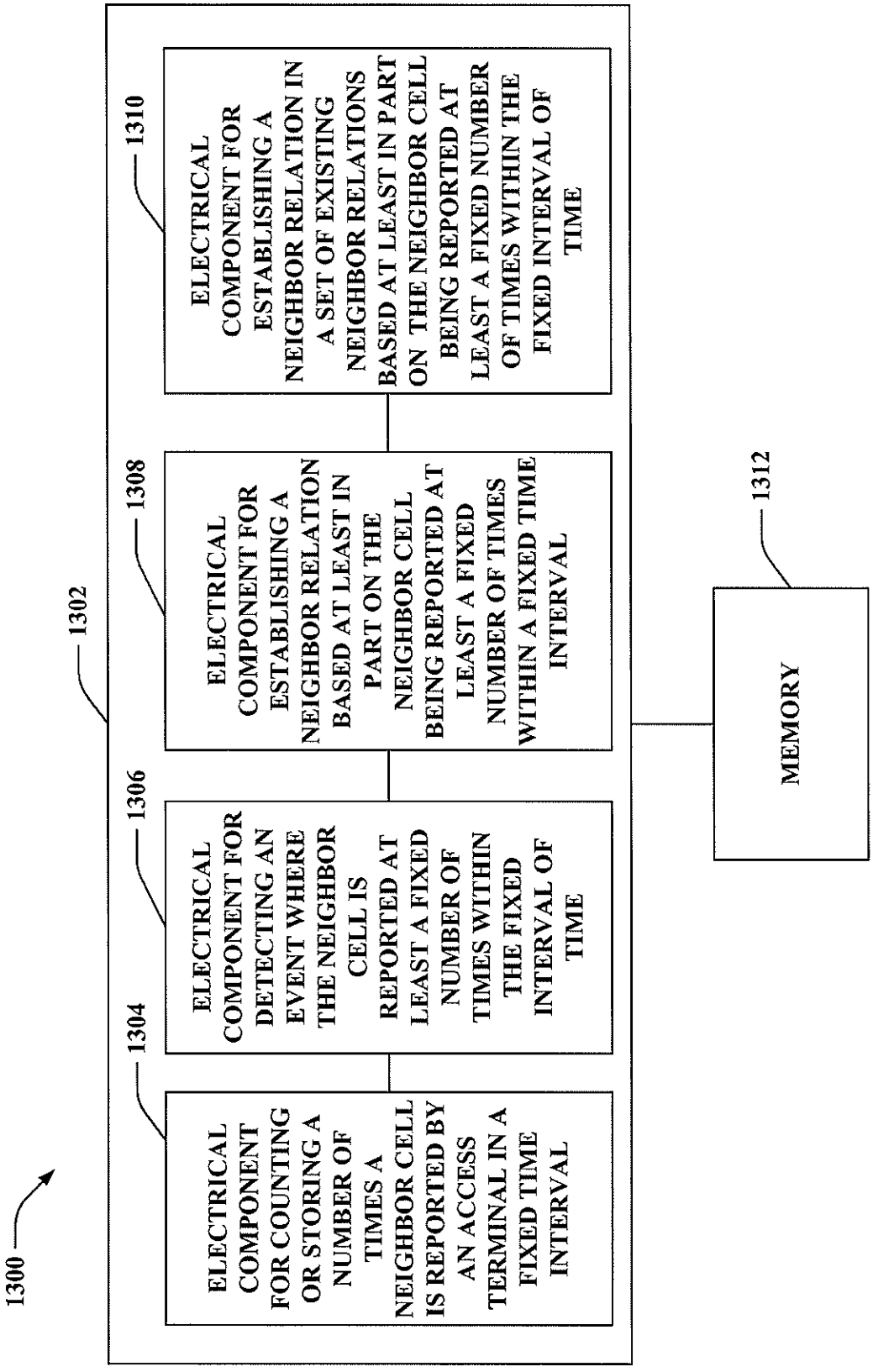

1300
1302
1304
ELECTRICAL COMPONENT FOR COUNTING OR STORING A NUMBER OF TIMES A NEIGHBOR CELL IS REPORTED BY AN ACCESS TERMINAL IN A FIXED TIME INTERVAL
1306
ELECTRICAL COMPONENT FOR DETECTING AN EVENT WHERE THE NEIGHBOR CELL IS REPORTED AT LEAST A FIXED NUMBER OF TIMES WITHIN THE FIXED INTERVAL OF TIME
1308
ELECTRICAL COMPONENT FOR ESTABLISHING A NEIGHBOR RELATION BASED AT LEAST IN PART ON THE NEIGHBOR CELL BEING REPORTED AT LEAST A FIXED NUMBER OF TIMES WITHIN A FIXED TIME INTERVAL
1310
ELECTRICAL COMPONENT FOR ESTABLISHING A NEIGHBOR RELATION IN A SET OF EXISTING NEIGHBOR RELATIONS BASED AT LEAST IN PART ON THE NEIGHBOR CELL BEING REPORTED AT LEAST A FIXED NUMBER OF TIMES WITHIN THE FIXED INTERVAL OF TIME
1312
MEMORY

FIG. 13