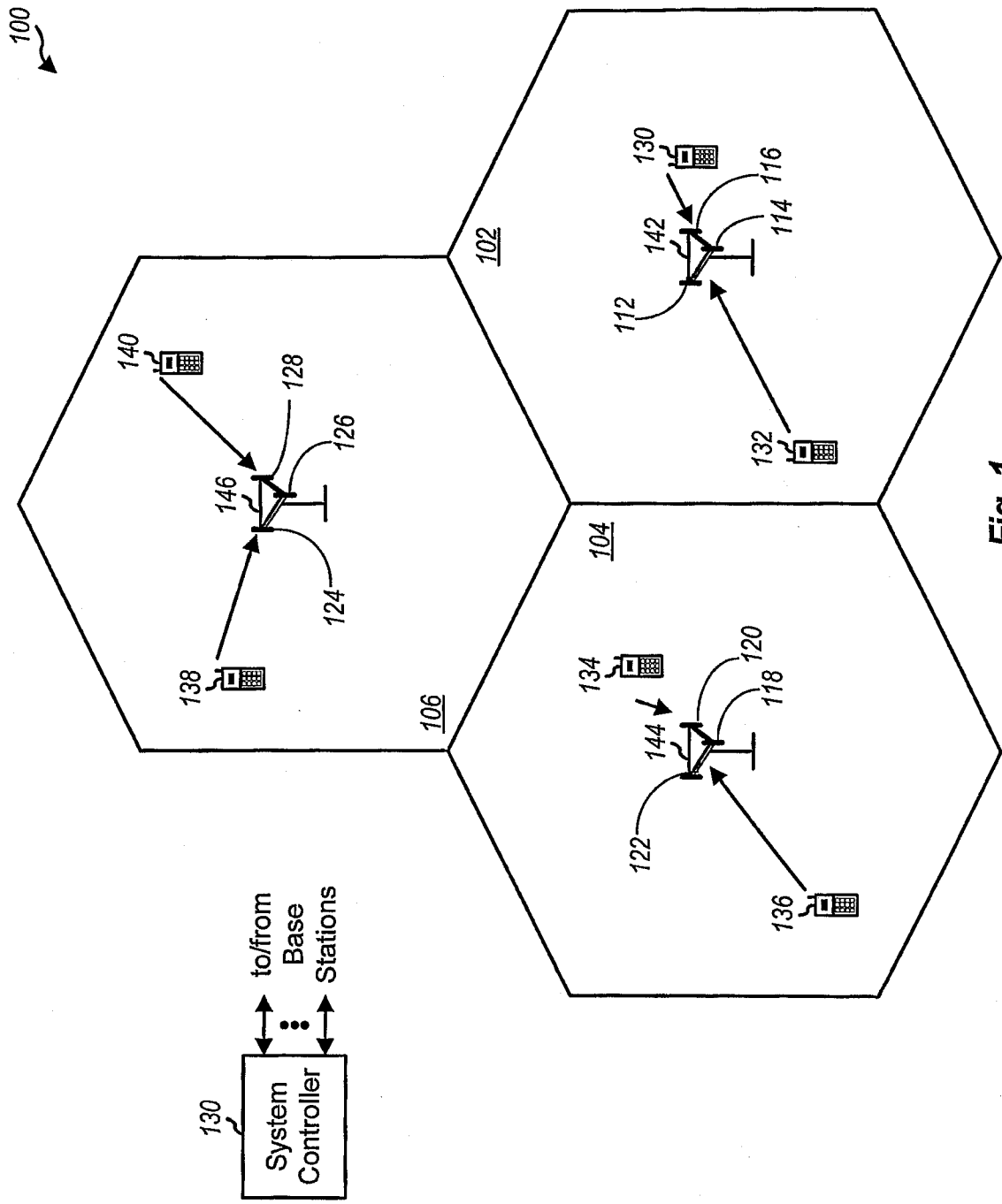

100
102
104
106
112
114
116
118
120
122
124
126
128
130
132
134
136
138
140
142
144
146
130
System Controller
to/from Base Stations

Fig. 1

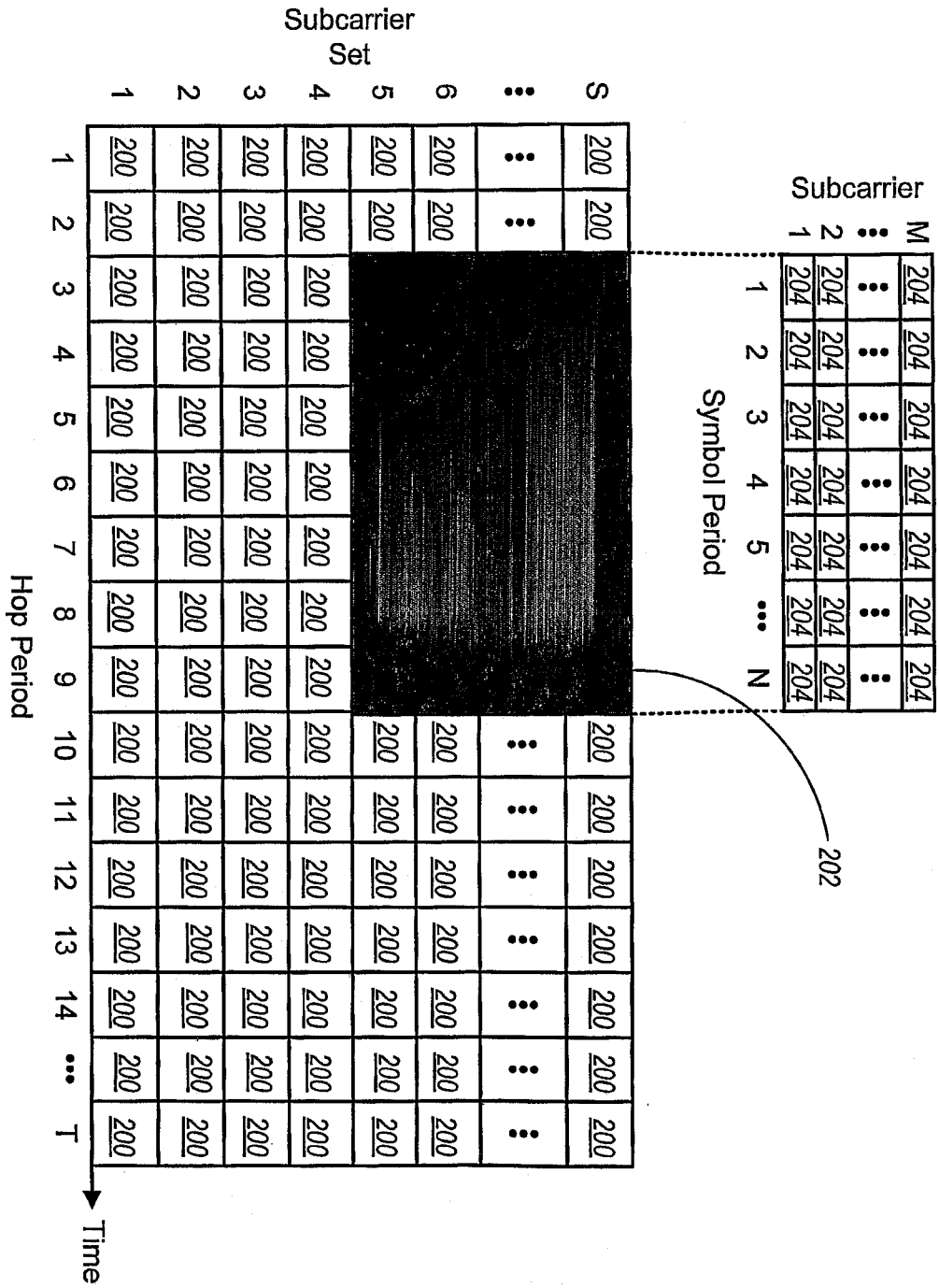

Subcarrier Set
1 2 3 4 5 6 ••• S
Hop Period
1 2 3 4 5 6 7 8 9 10 11 12 13 14 ••• T
Time
Subcarrier
1 2 ••• M
Symbol Period
1 2 3 4 5 ••• N
202

Fig. 2

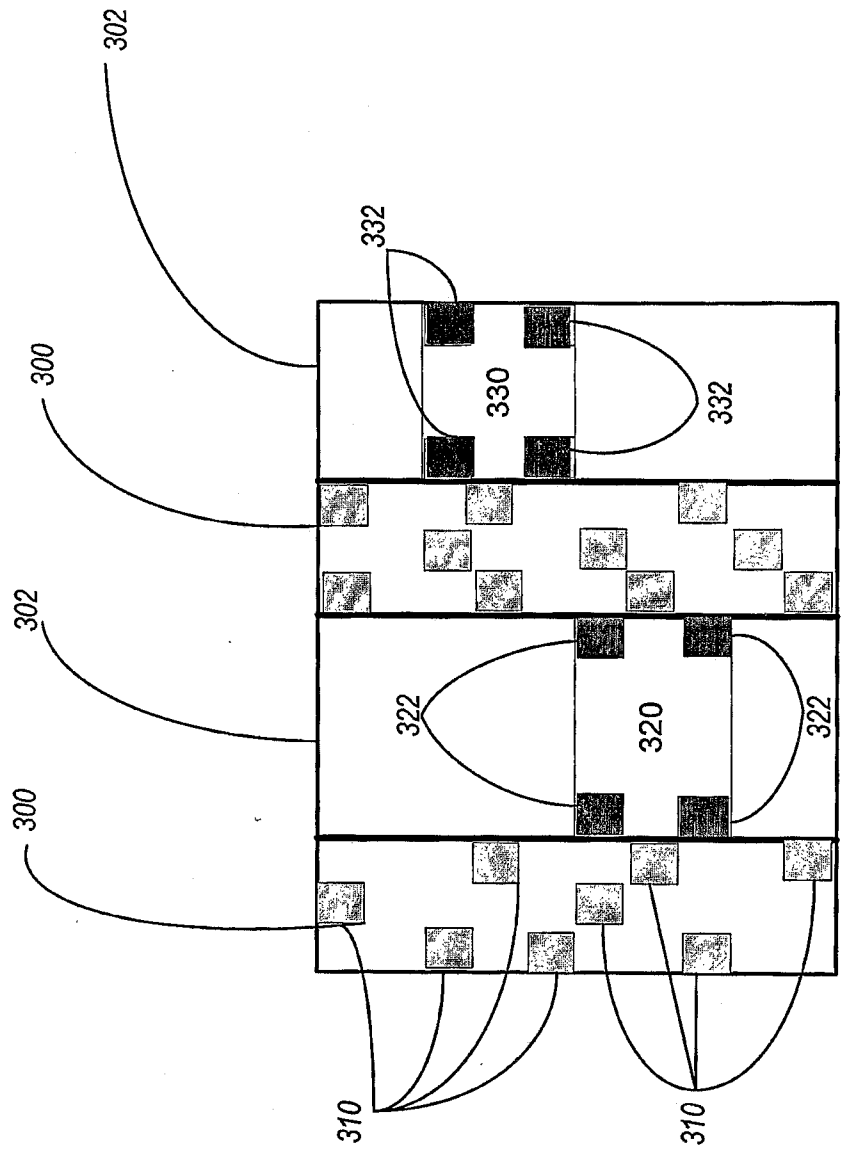


Fig. 3

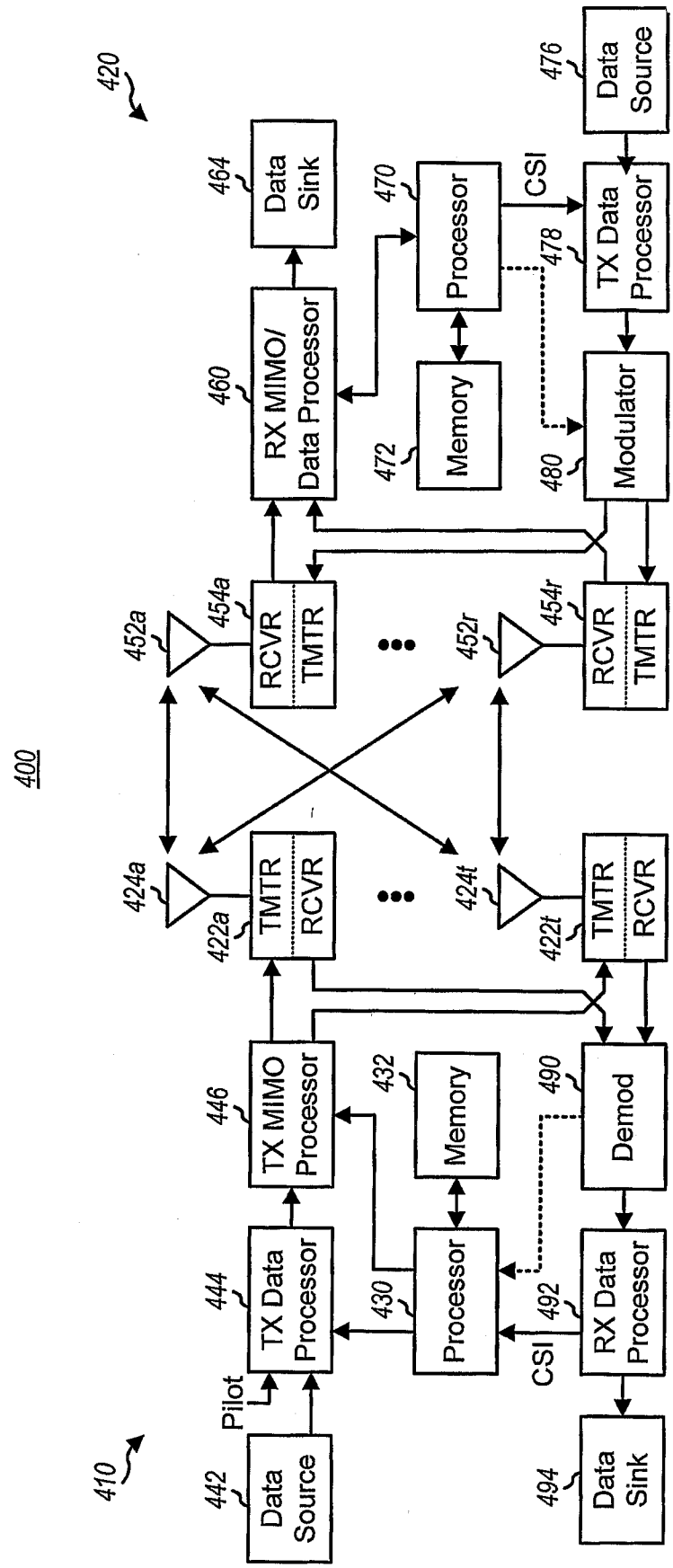

400
410
420
Data Source
442
Pilot
TX Data Processor
444
TX MIMO Processor
446
TMTR
RCVR
422a
424a
424t
422t
452a
452r
454a
454r
RCVR
TMTR
RX MIMO/ Data Processor
460
Data Sink
464
Memory
472
Processor
470
CSI
478
480
Modulator
TX Data Processor
476
Data Source
Memory
432
Processor
430
CSI
492
RX Data Processor
Demod
490
Data Sink
494

Fig. 4

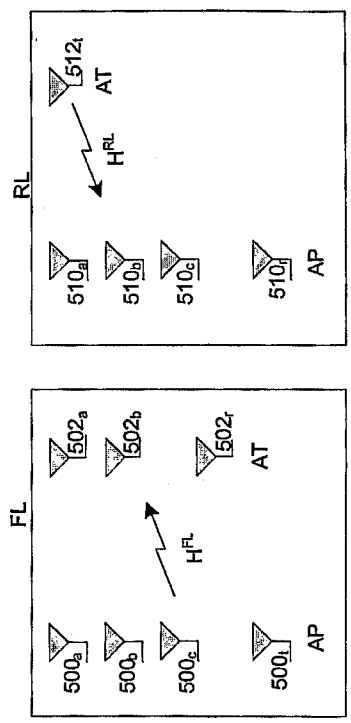

RL
512_t
AT
H^{RL}
510_a
510_b
510_c
510_j
AP

Fig. 5B

FL
502_a
502_b
502_r
AT
H^{FL}
500_a
500_b
500_c
500_l
AP

Fig. 5A

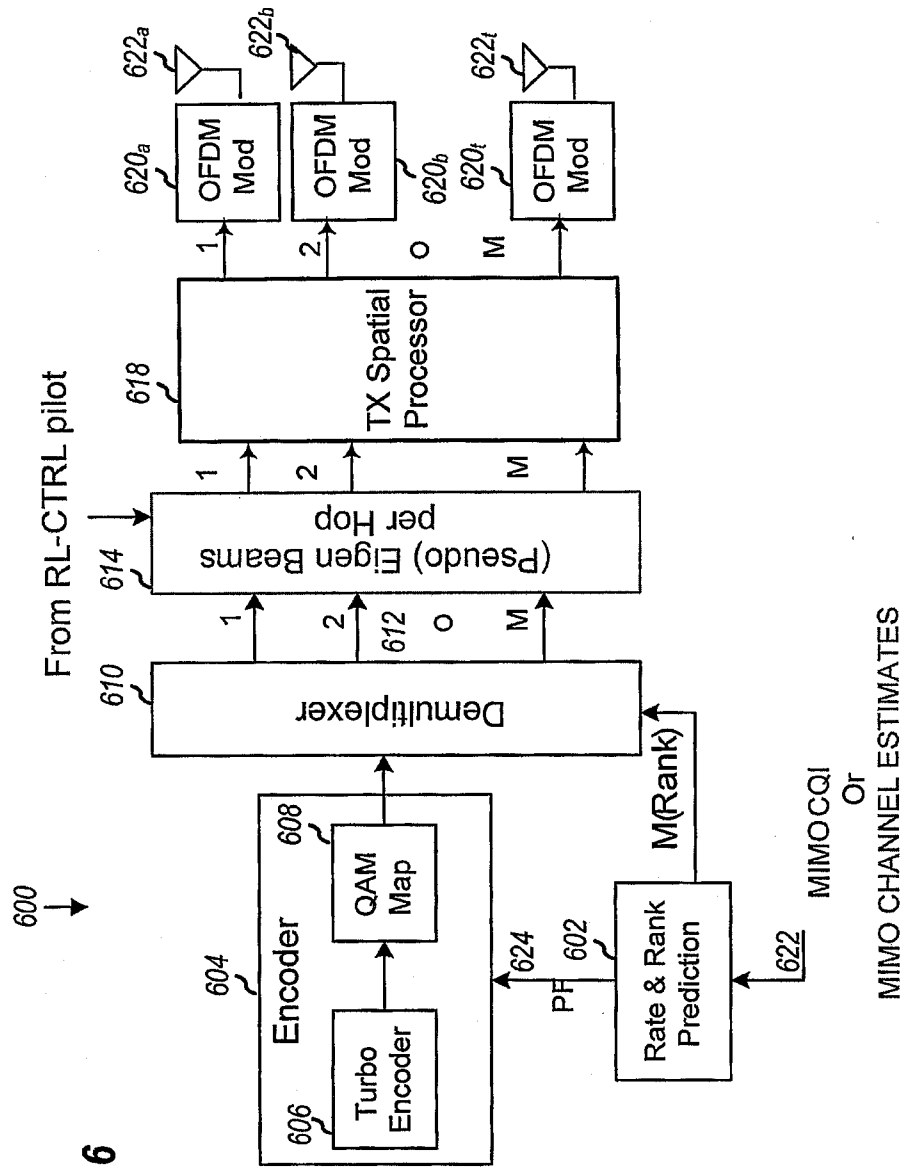
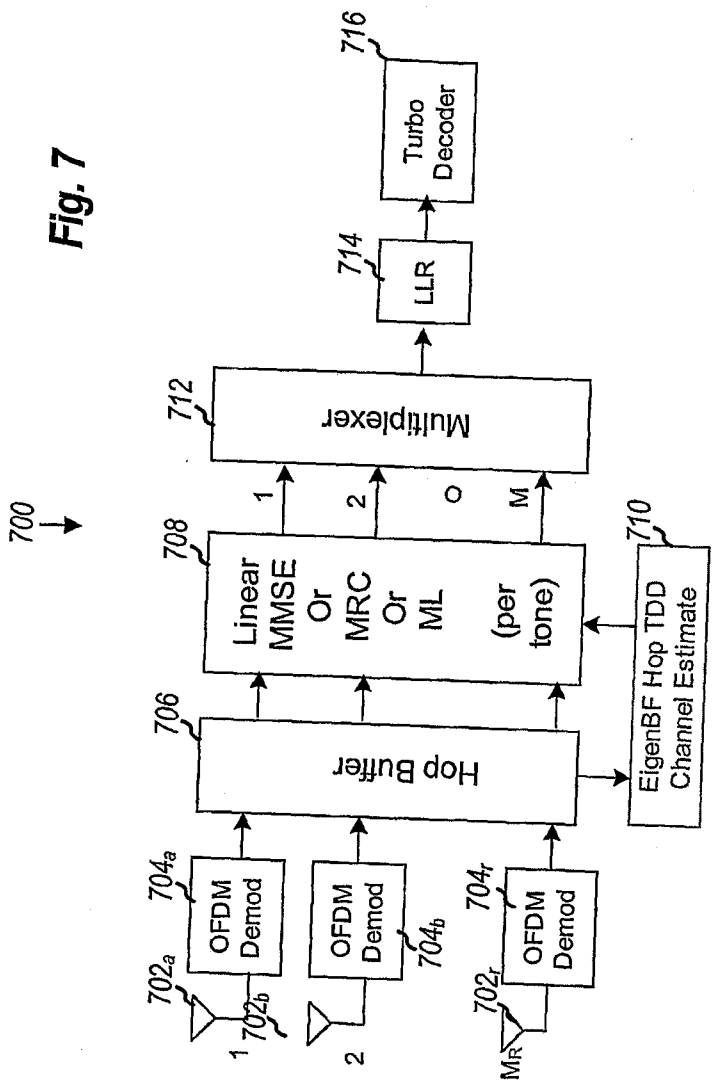

600
From RL-CTRL pilot
Encoder
Turbo Encoder
606
QAM Map
608
604
624
PF
602
Rate & Rank Prediction
622
MIMO CQI
Or
MIMO CHANNEL ESTIMATES
M(Rank)
Demultiplexer
610
612
614
(Pseudo) Eigen Beams per Hop
618
TX Spatial Processor
OFDM Mod
620a
620b
620t
622a
622b
622t
1
2
M

Fig. 6

Fig. 7


700
716
Turbo Decoder
714
LLR
712
Multiplexer
708
Linear MMSE Or MRC Or ML (per tone)
710
EigenBF Hop TDD Channel Estimate
706
Hop Buffer
704a
OFDM Demod
704b
OFDM Demod
704r
OFDM Demod
702a
702b
702r
1
2
MR
1
2
0
M

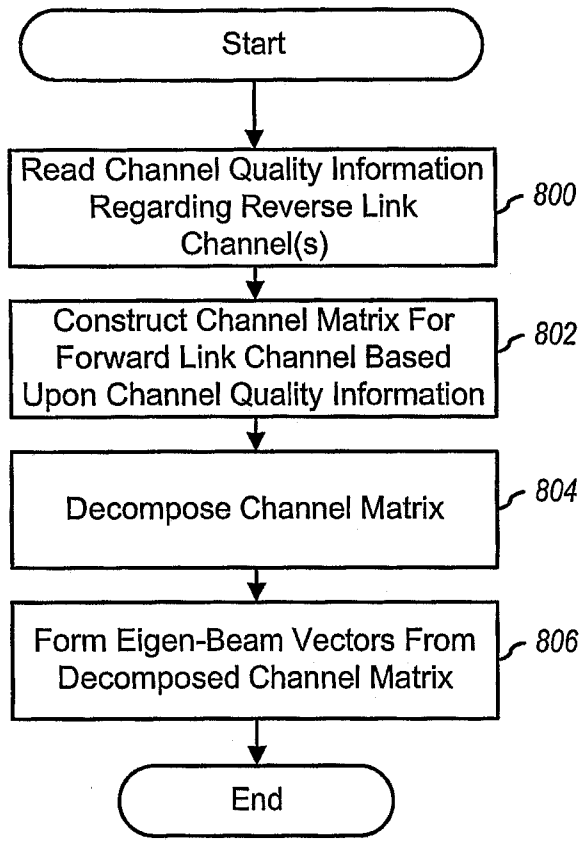

Start
Read Channel Quality Information Regarding Reverse Link Channel(s)
800
Construct Channel Matrix For Forward Link Channel Based Upon Channel Quality Information
802
Decompose Channel Matrix
804
Form Eigen-Beam Vectors From Decomposed Channel Matrix
806
End

Fig. 8

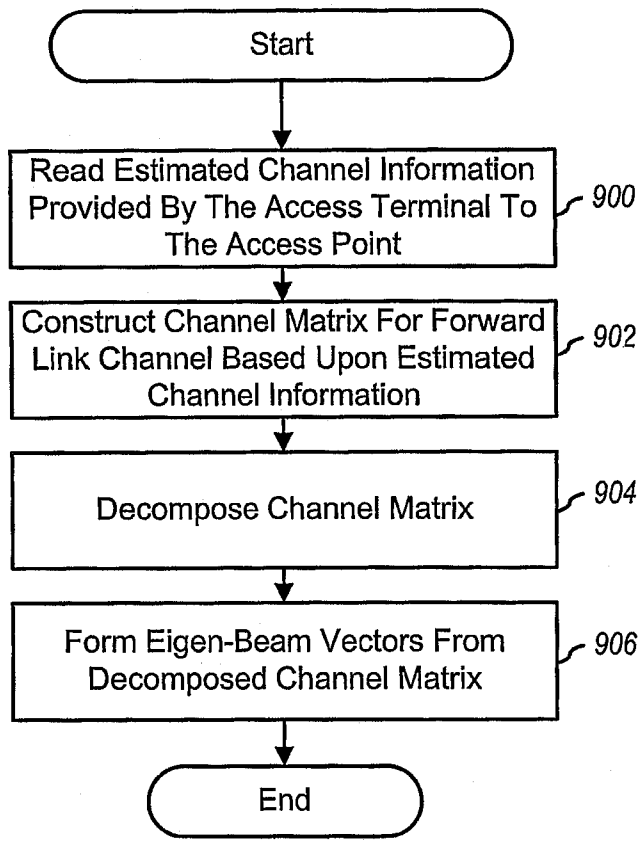

Start
Read Estimated Channel Information Provided By The Access Terminal To The Access Point
900
Construct Channel Matrix For Forward Link Channel Based Upon Estimated Channel Information
902
Decompose Channel Matrix
904
Form Eigen-Beam Vectors From Decomposed Channel Matrix
906
End

Fig. 9

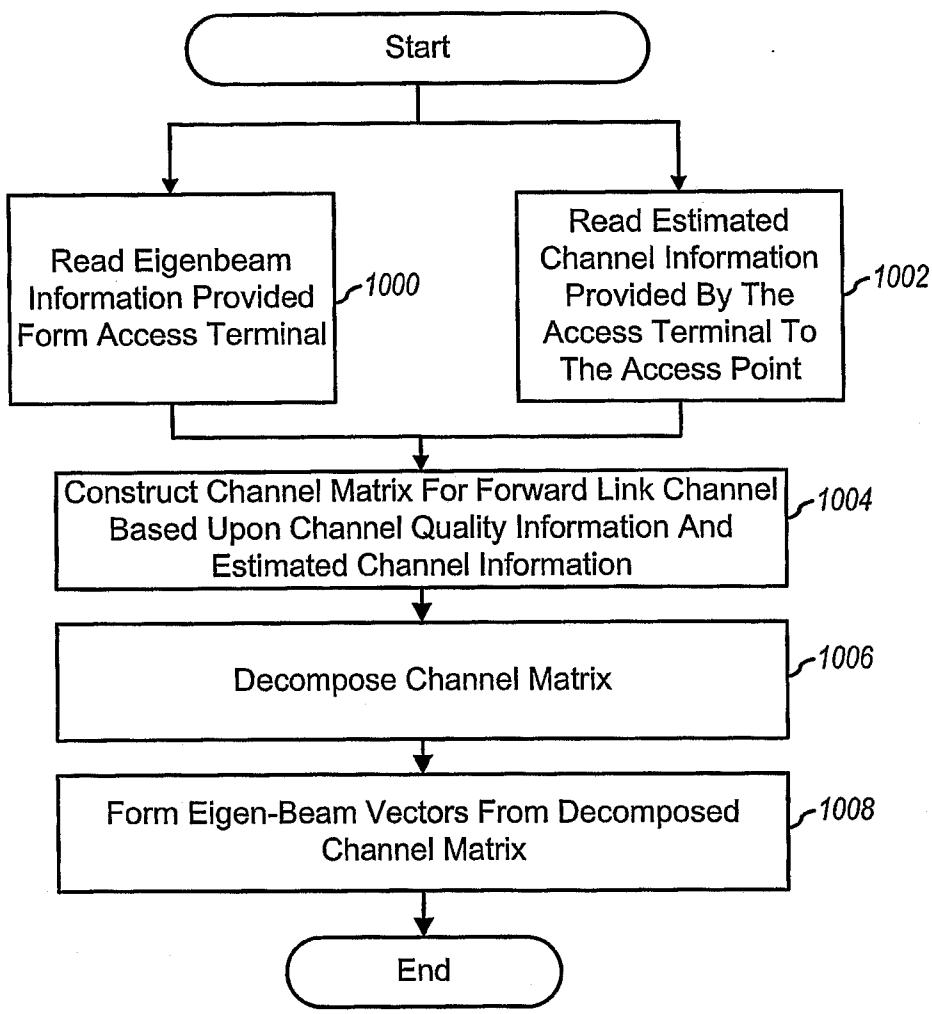

Start
Read Eigenbeam Information Provided Form Access Terminal
1000
Read Estimated Channel Information Provided By The Access Terminal To The Access Point
1002
Construct Channel Matrix For Forward Link Channel Based Upon Channel Quality Information And Estimated Channel Information
1004
Decompose Channel Matrix
1006
Form Eigen-Beam Vectors From Decomposed Channel Matrix
1008
End

Fig. 10

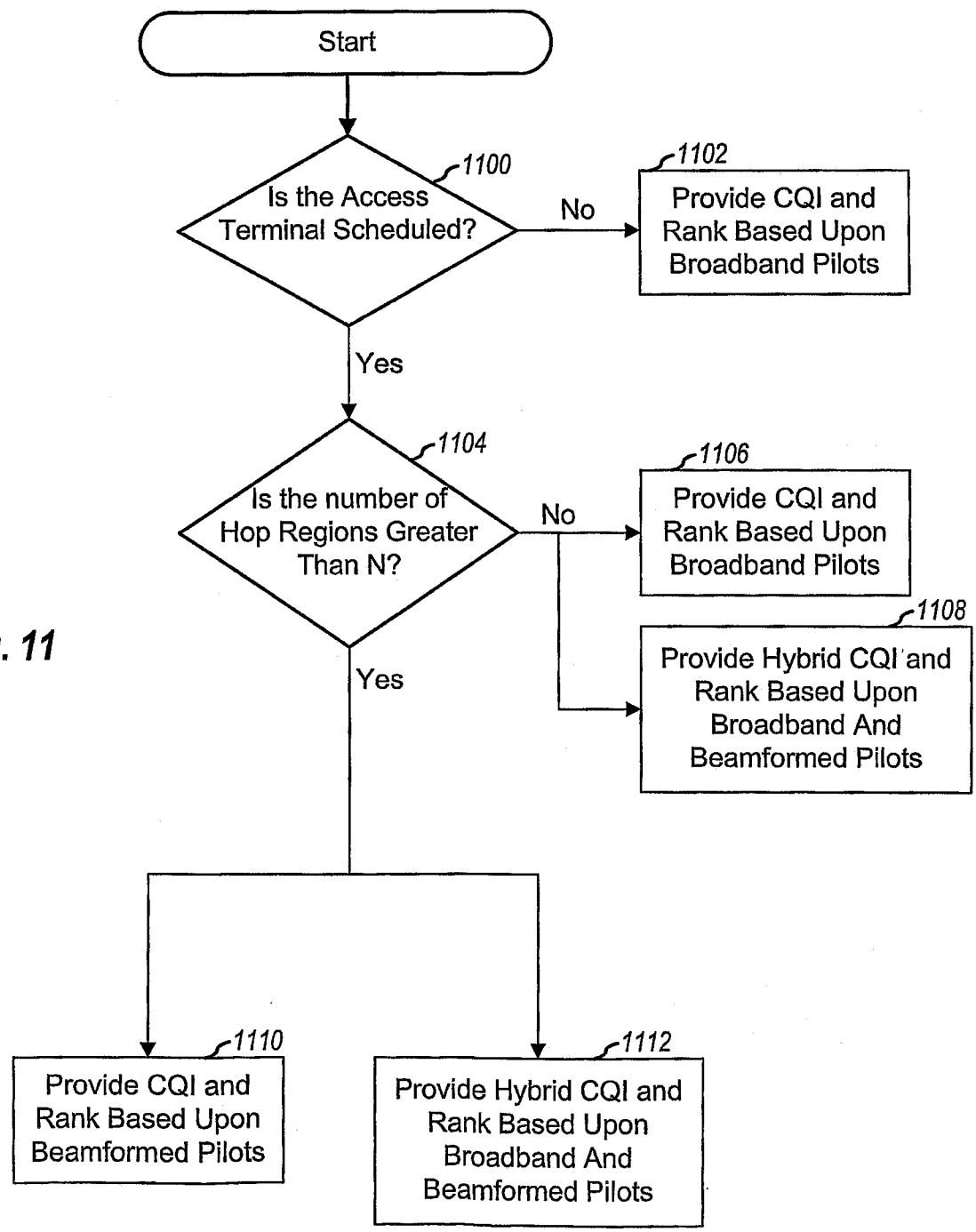

Start
1100
Is the Access Terminal Scheduled?
No
1102
Provide CQI and Rank Based Upon Broadband Pilots
Yes
1104
Is the number of Hop Regions Greater Than N?
No
1106
Provide CQI and Rank Based Upon Broadband Pilots
1108
Provide Hybrid CQI and Rank Based Upon Broadband And Beamformed Pilots
Yes
1110
Provide CQI and Rank Based Upon Beamformed Pilots
1112
Provide Hybrid CQI and Rank Based Upon Broadband And Beamformed Pilots

Fig. 11

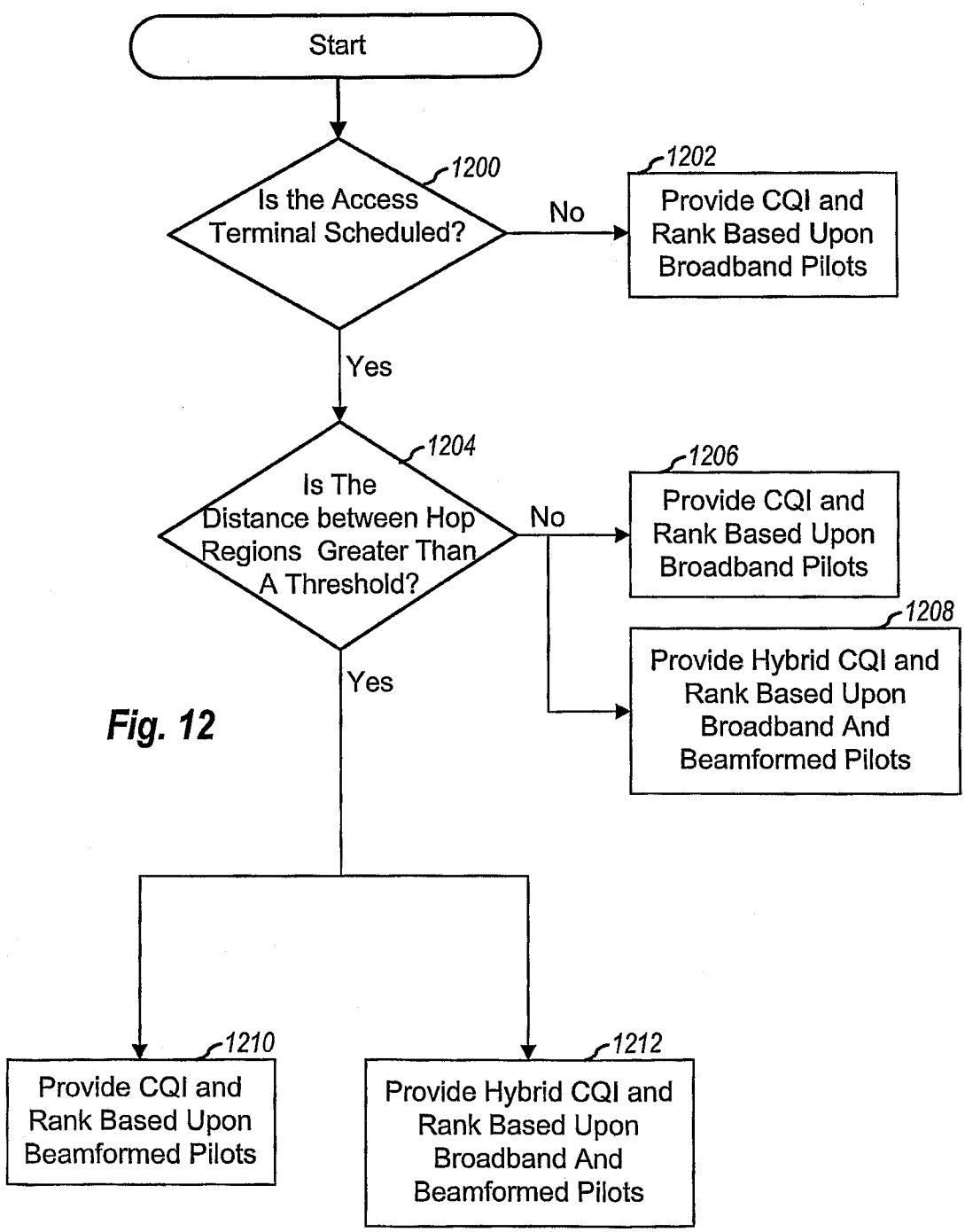

Start
1200
Is the Access Terminal Scheduled?
No
1202
Provide CQI and Rank Based Upon Broadband Pilots
Yes
1204
Is The Distance between Hop Regions Greater Than A Threshold?
No
1206
Provide CQI and Rank Based Upon Broadband Pilots
1208
Provide Hybrid CQI and Rank Based Upon Broadband And Beamformed Pilots
Yes
1210
Provide CQI and Rank Based Upon Beamformed Pilots
1212
Provide Hybrid CQI and Rank Based Upon Broadband And Beamformed Pilots

Fig. 12