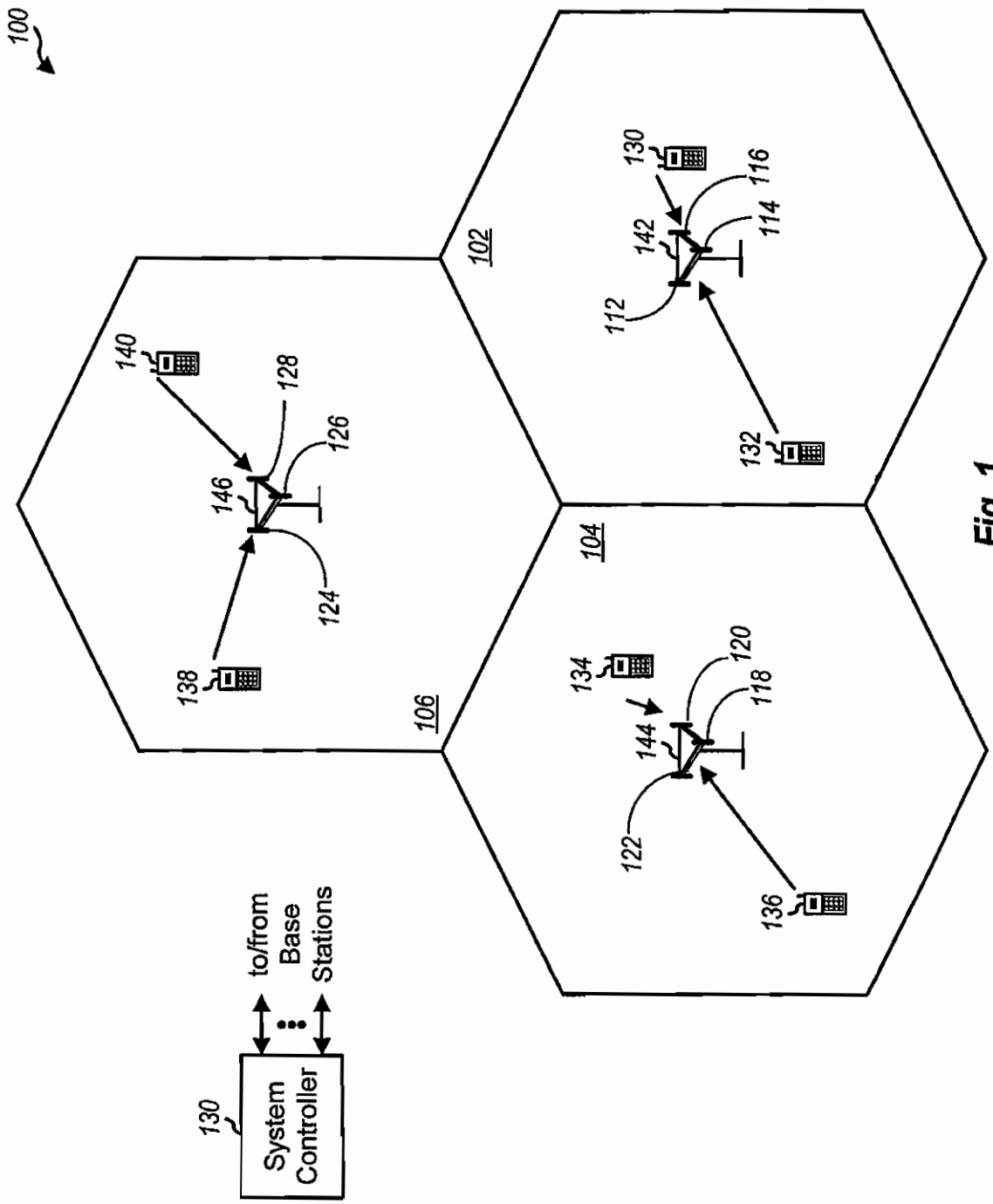

100
102
104
106
112
114
116
130
132
134
136
138
140
142
144
146
118
120
122
124
126
128
130
System Controller
to/from Base Stations

Fig. 1

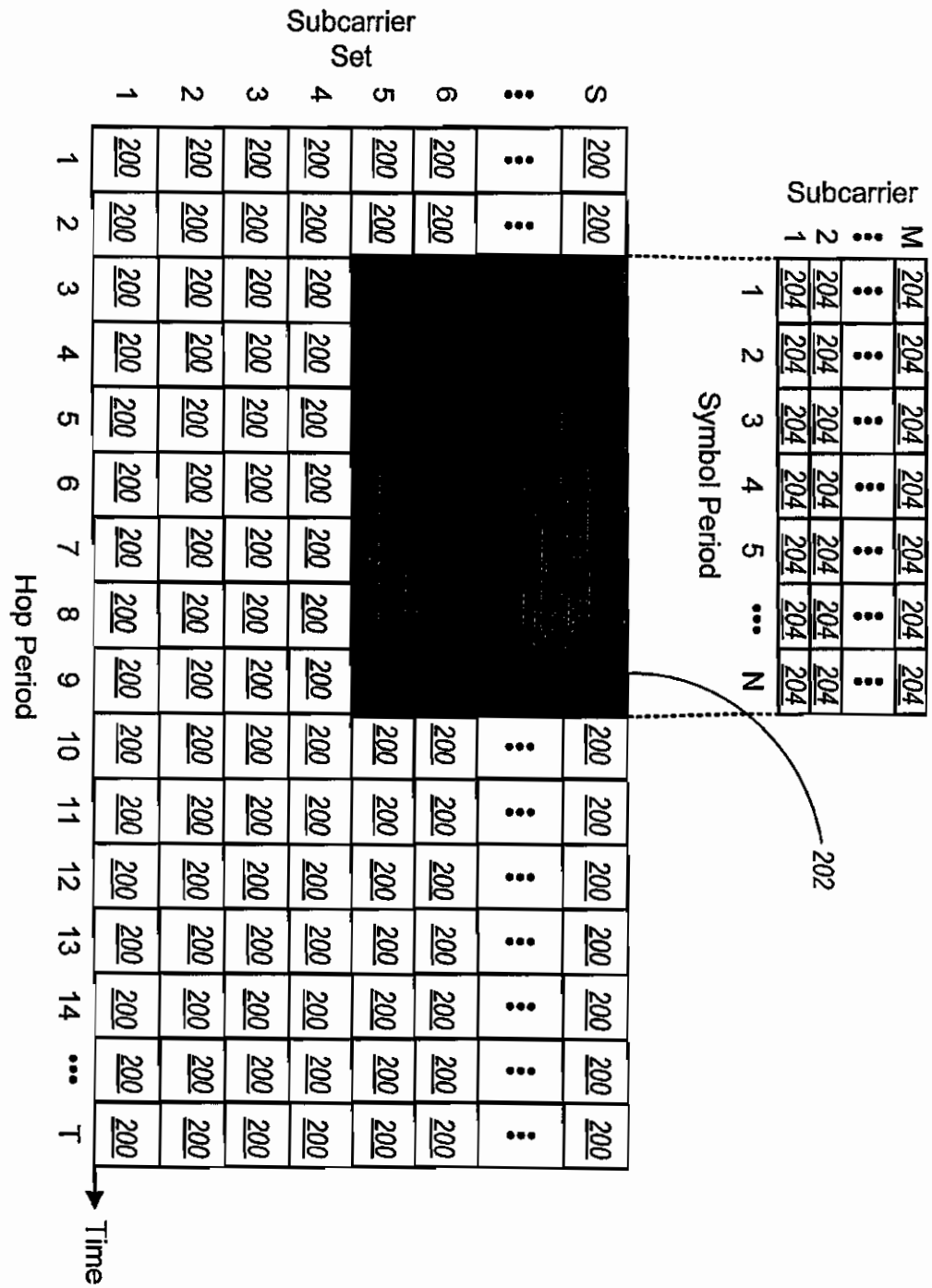

Subcarrier
Set
1 2 3 4 5 6 ... S
Hop Period
1 2 3 4 5 6 7 8 9 10 11 12 13 14 ... T
Time
Subcarrier
M ... 2 1
Symbol Period
1 2 3 4 5 ... N
202

Fig. 2

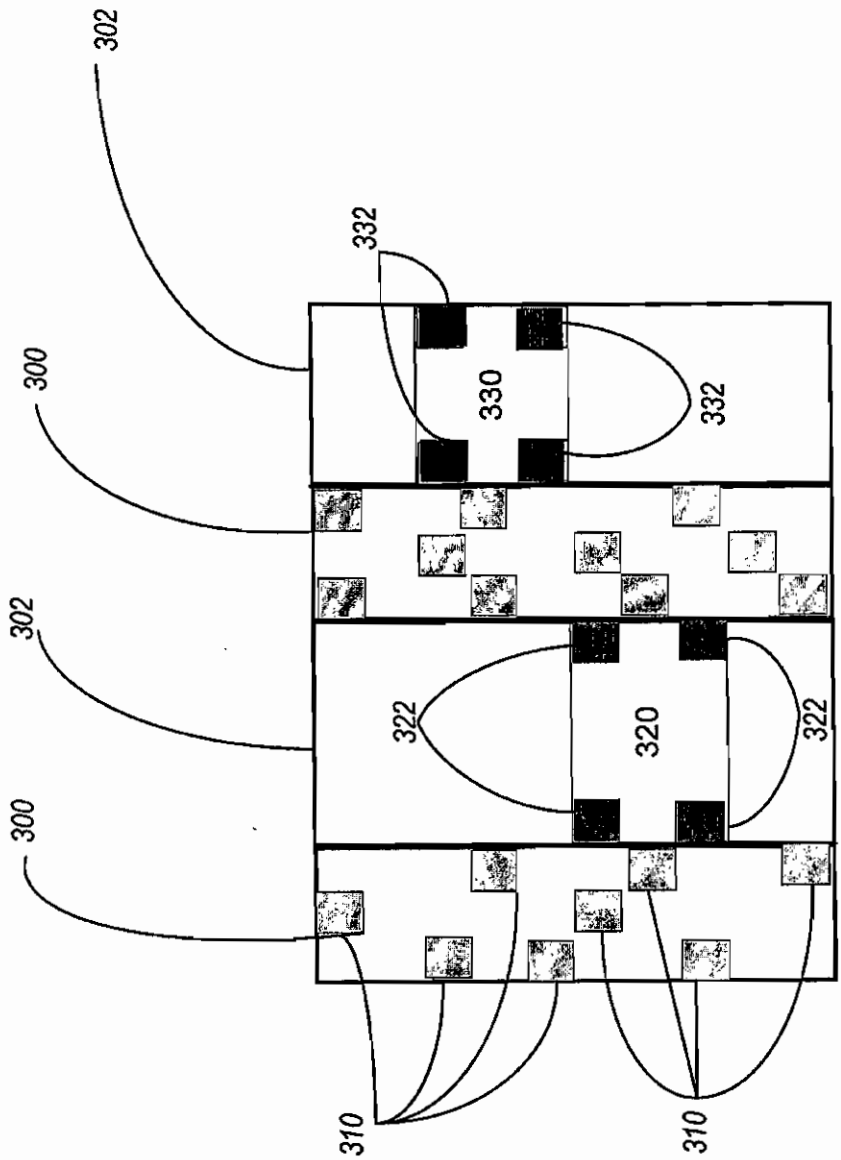



Fig. 3

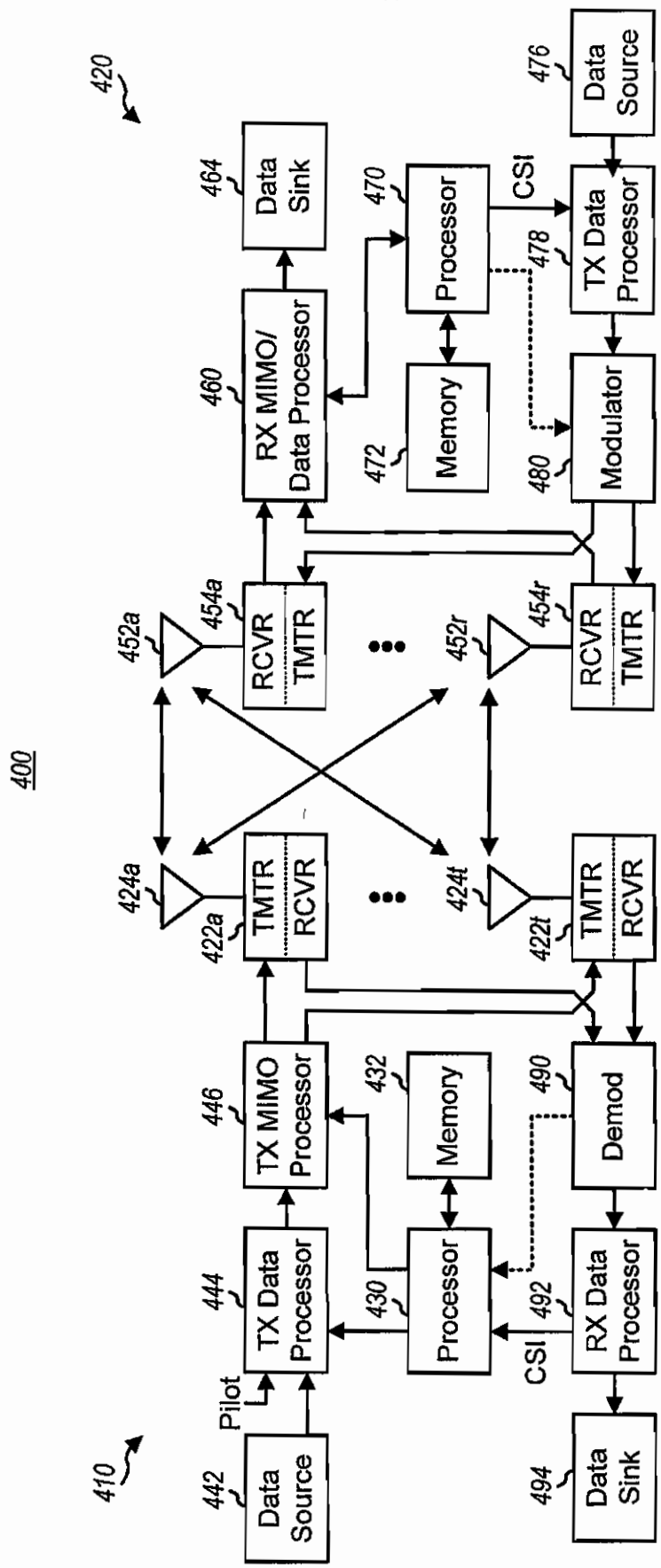

400
410
420
Data Source
442
Pilot
TX Data Processor
444
TX MIMO Processor
446
TMTR
RCVR
422a
424a
Memory
432
Processor
430
CSI
492
RX Data Processor
Demod
490
Data Sink
494
452a
454a
RCVR
TMTR
RX MIMO/ Data Processor
460
Data Sink
464
Memory
472
Processor
470
CSI
478
TX Data Processor
Modulator
480
Data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

Fig. 4

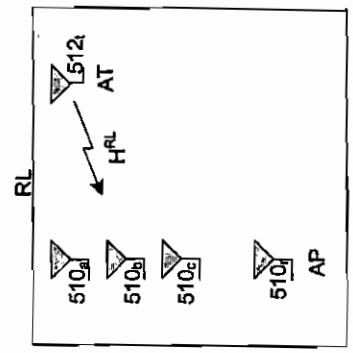

RL
$512_t$
AT
$H^{RL}$
$510_a$
$510_b$
$510_c$
$510_r$
AP

Fig. 5B

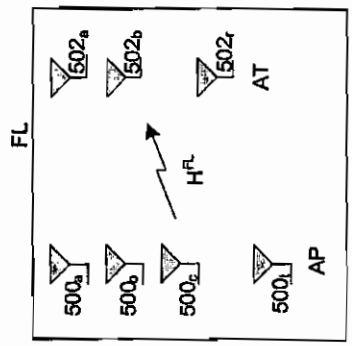

FL
$502_a$
$502_b$
$502_r$
AT
$H^{FL}$
$500_a$
$500_b$
$500_c$
$500_t$
AP

Fig. 5A

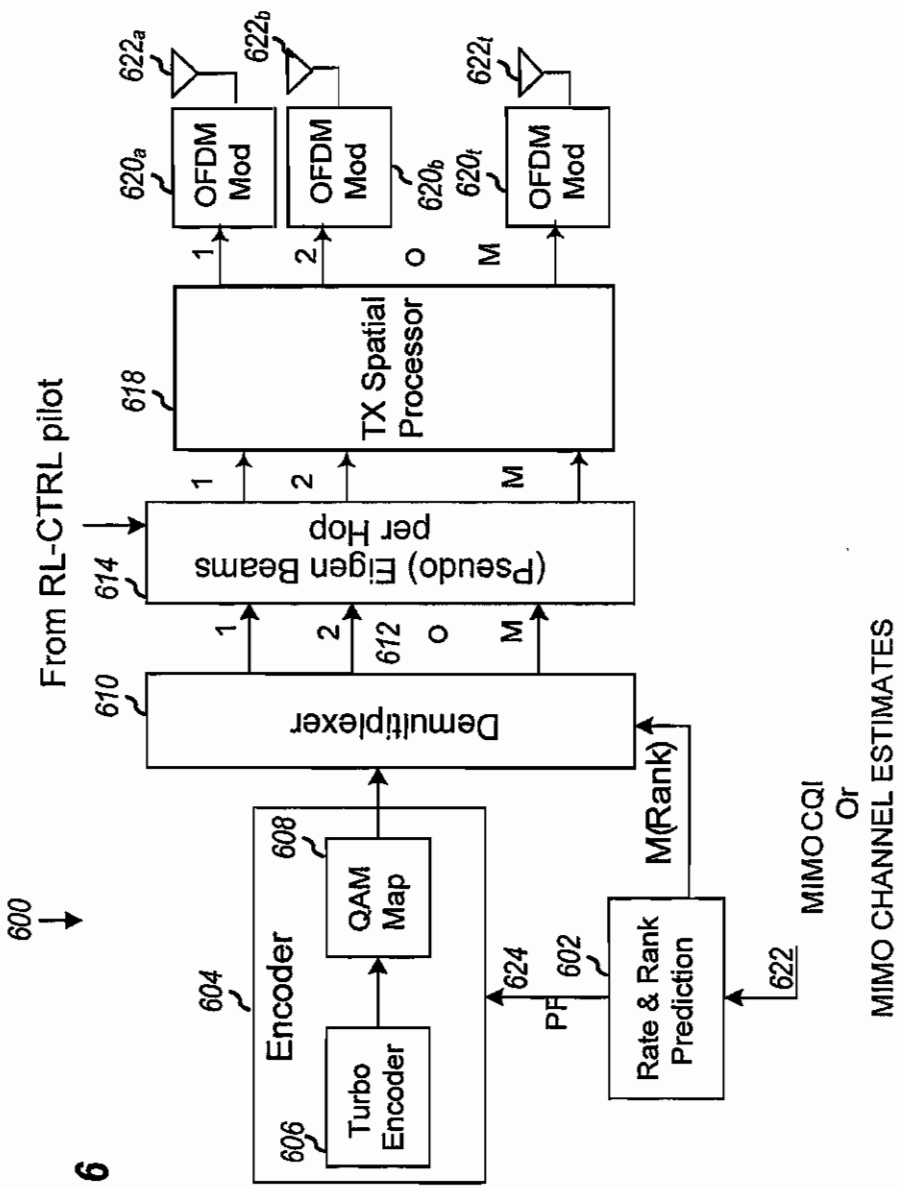
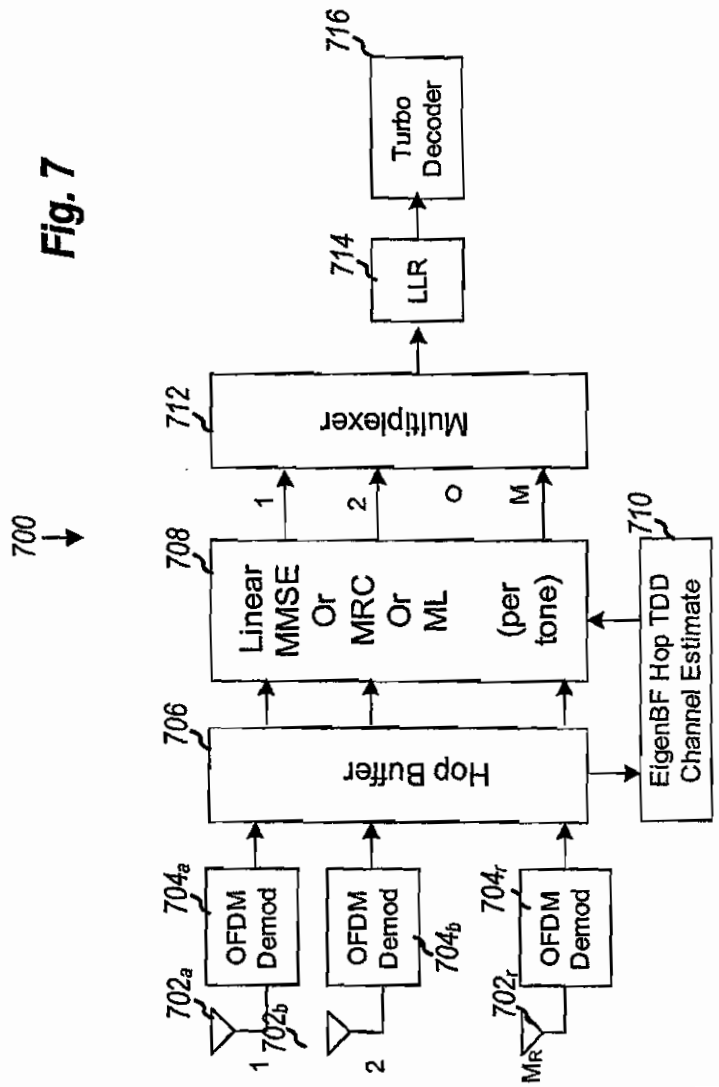

600
From RL-CTRL pilot
610
Demultiplexer
614
(Pseudo) Eigen Beams per Hop
618
TX Spatial Processor
604
Encoder
606
Turbo Encoder
608
QAM Map
624
602
Rate & Rank Prediction
622
MIMO CQI Or MIMO CHANNEL ESTIMATES
M(Rank)
620a
OFDM Mod
620b
OFDM Mod
620t
OFDM Mod
622a
622b
622t
1
2
612
M

Fig. 6

Fig. 7


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

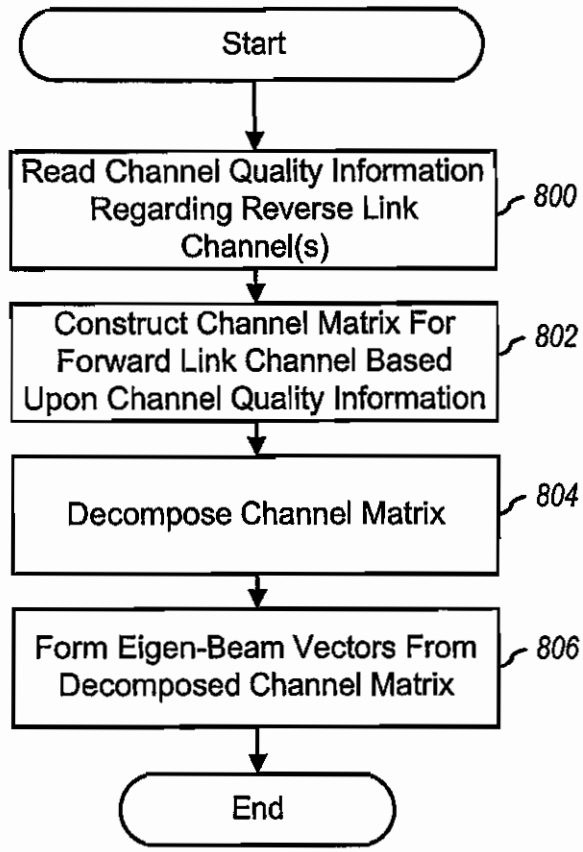

Start
Read Channel Quality Information Regarding Reverse Link Channel(s)
800
Construct Channel Matrix For Forward Link Channel Based Upon Channel Quality Information
802
Decompose Channel Matrix
804
Form Eigen-Beam Vectors From Decomposed Channel Matrix
806
End

*Fig. 8*

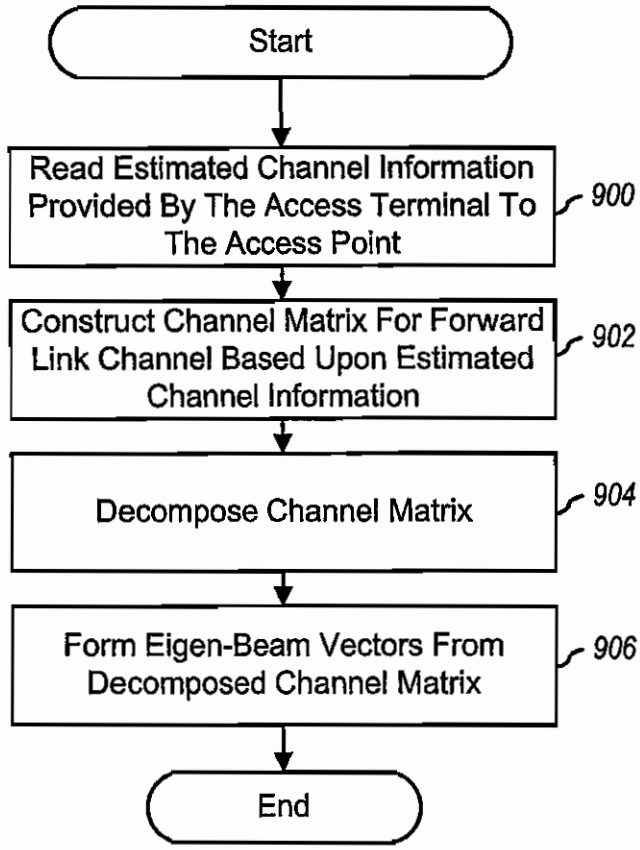

Start
Read Estimated Channel Information Provided By The Access Terminal To The Access Point
900
Construct Channel Matrix For Forward Link Channel Based Upon Estimated Channel Information
902
Decompose Channel Matrix
904
Form Eigen-Beam Vectors From Decomposed Channel Matrix
906
End

*Fig. 9*

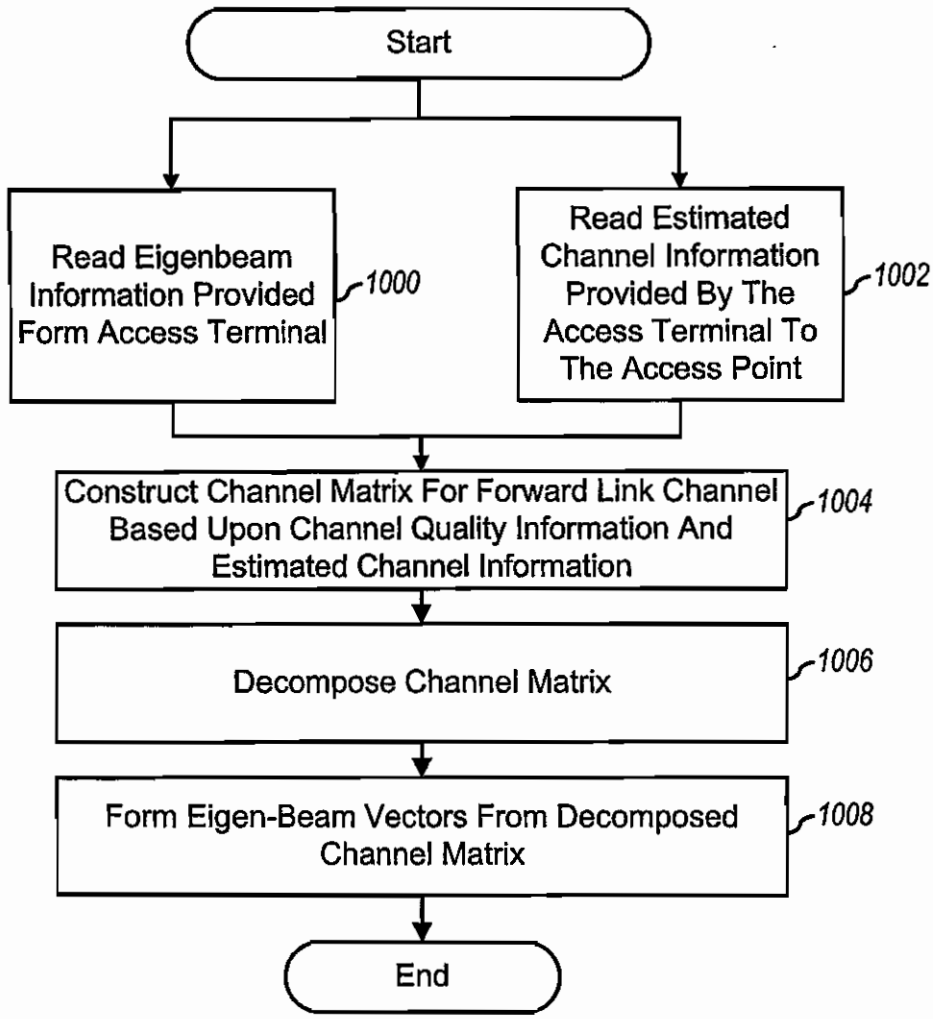

Start
Read Eigenbeam Information Provided Form Access Terminal
1000
Read Estimated Channel Information Provided By The Access Terminal To The Access Point
1002
Construct Channel Matrix For Forward Link Channel Based Upon Channel Quality Information And Estimated Channel Information
1004
Decompose Channel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

*Fig. 10*

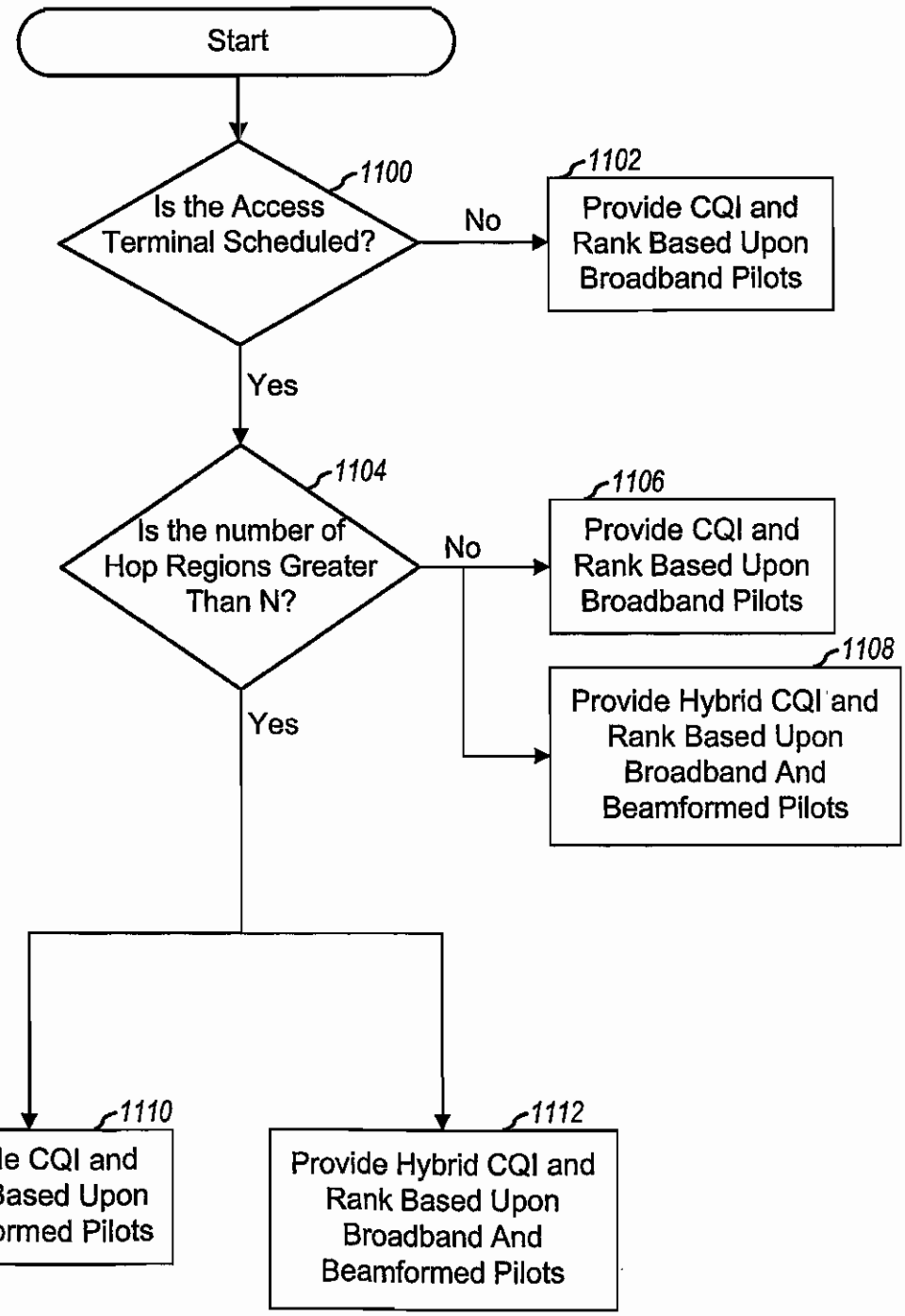

Start
1100
Is the Access Terminal Scheduled?
No
1102
Provide CQI and Rank Based Upon Broadband Pilots
Yes
1104
Is the number of Hop Regions Greater Than N?
No
1106
Provide CQI and Rank Based Upon Broadband Pilots
1108
Provide Hybrid CQI and Rank Based Upon Broadband And Beamformed Pilots
Yes
1110
Provide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

*Fig. 11*

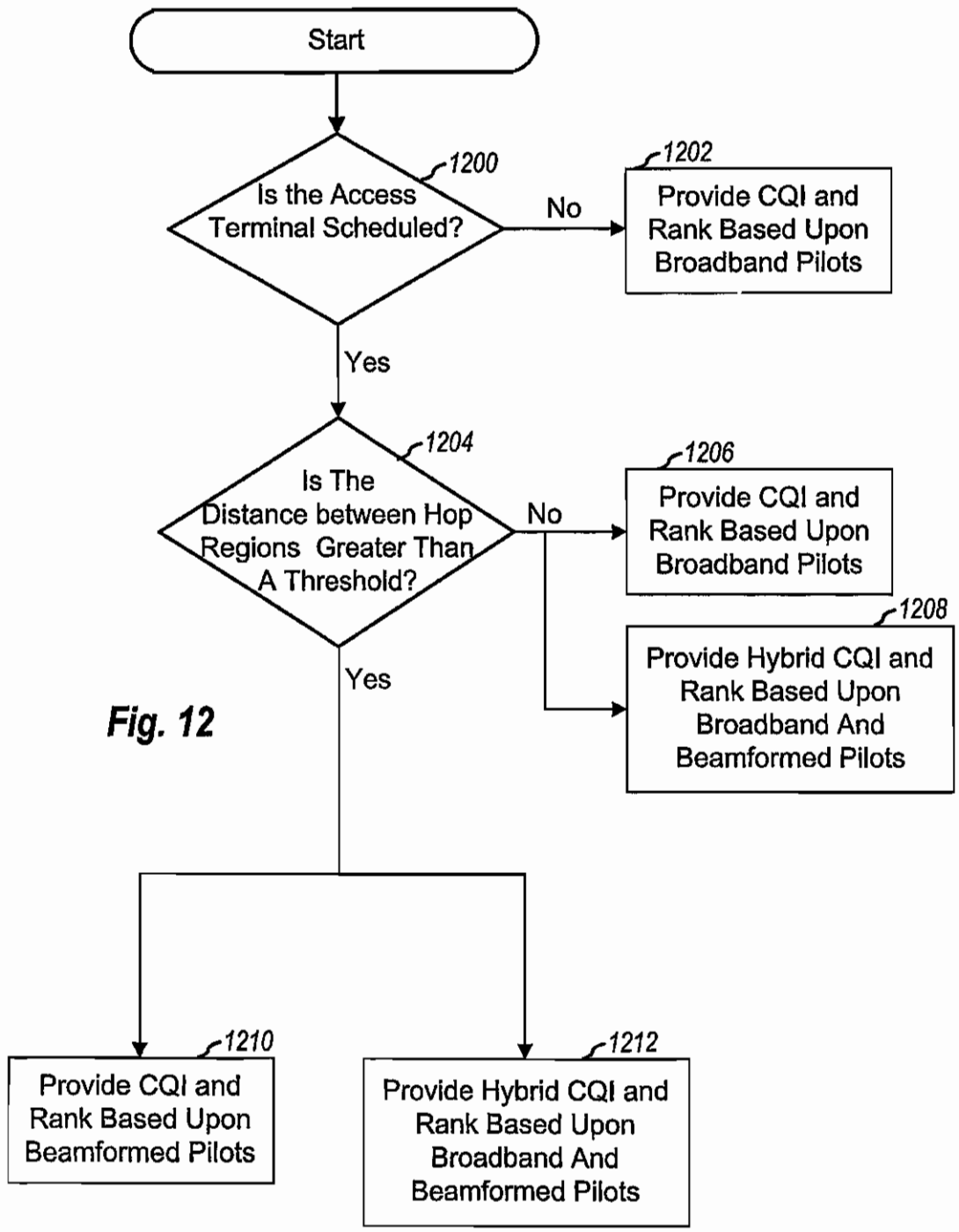

Start
1200
Is the Access Terminal Scheduled?
No
1202
Provide CQI and Rank Based Upon Broadband Pilots
Yes
1204
Is The Distance between Hop Regions Greater Than A Threshold?
No
1206
Provide CQI and Rank Based Upon Broadband Pilots
1208
Provide Hybrid CQI and Rank Based Upon Broadband And Beamformed Pilots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

*Fig. 12*