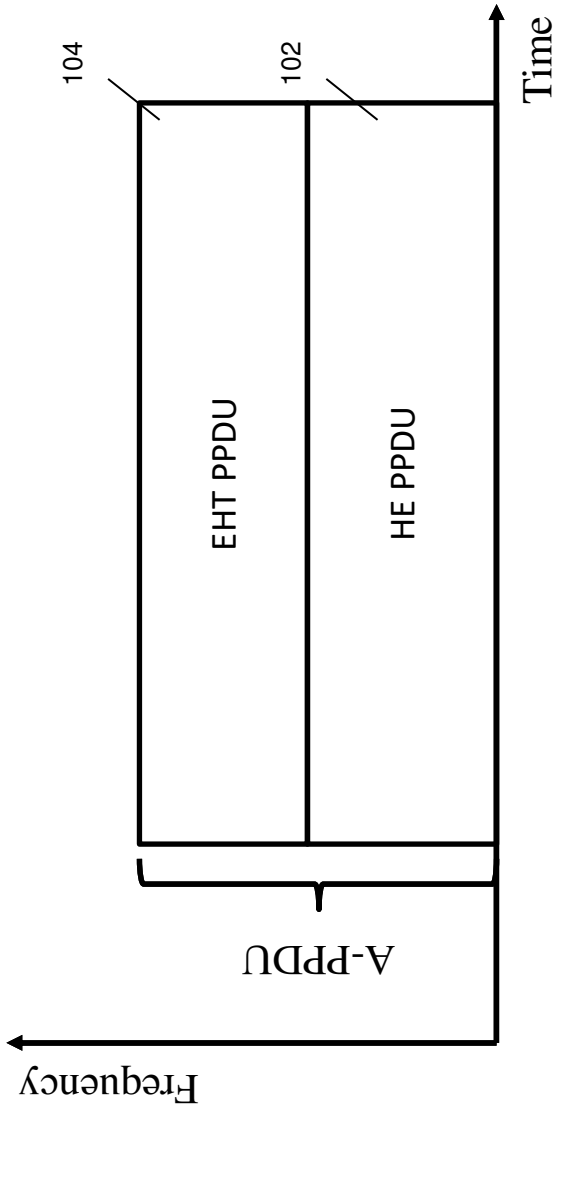


Figure 1

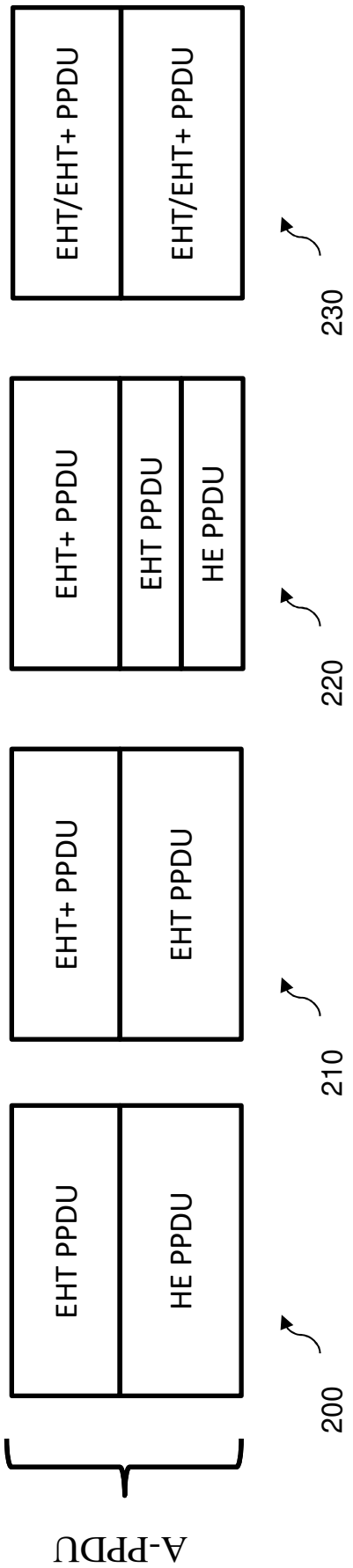

A-PPDU
EHT PPDU
HE PPDU
200
EHT+ PPDU
EHT PPDU
210
EHT+ PPDU
EHT PPDU
HE PPDU
220
EHT/EHT+ PPDU
EHT/EHT+ PPDU
230

Figure 2

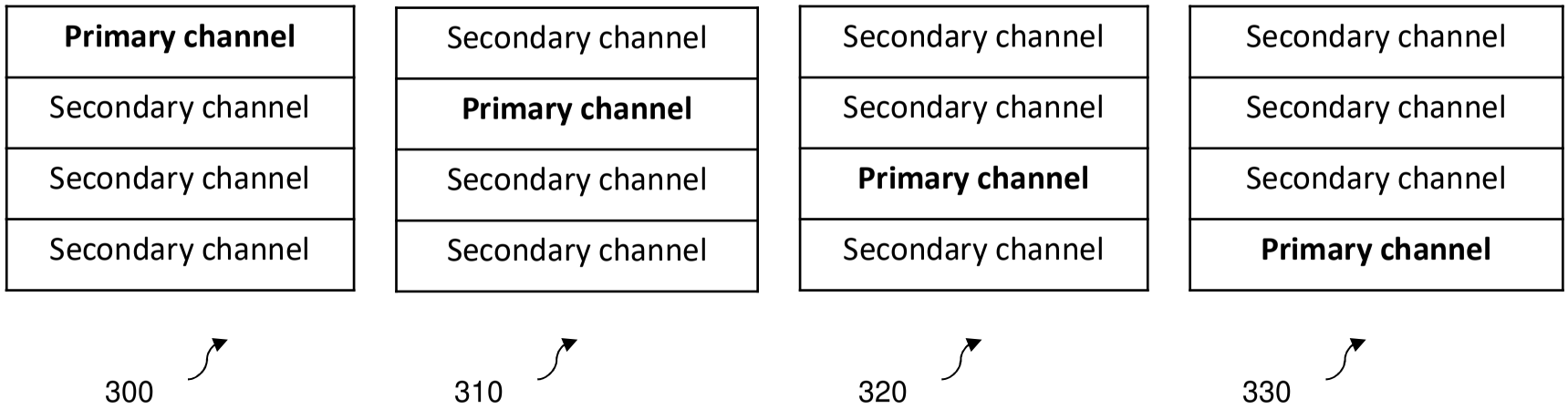

Primary channel
Secondary channel
Secondary channel
Secondary channel
300
Secondary channel
Primary channel
Secondary channel
Secondary channel
310
Secondary channel
Secondary channel
Primary channel
Secondary channel
320
Secondary channel
Secondary channel
Secondary channel
Primary channel
330

Figure 3

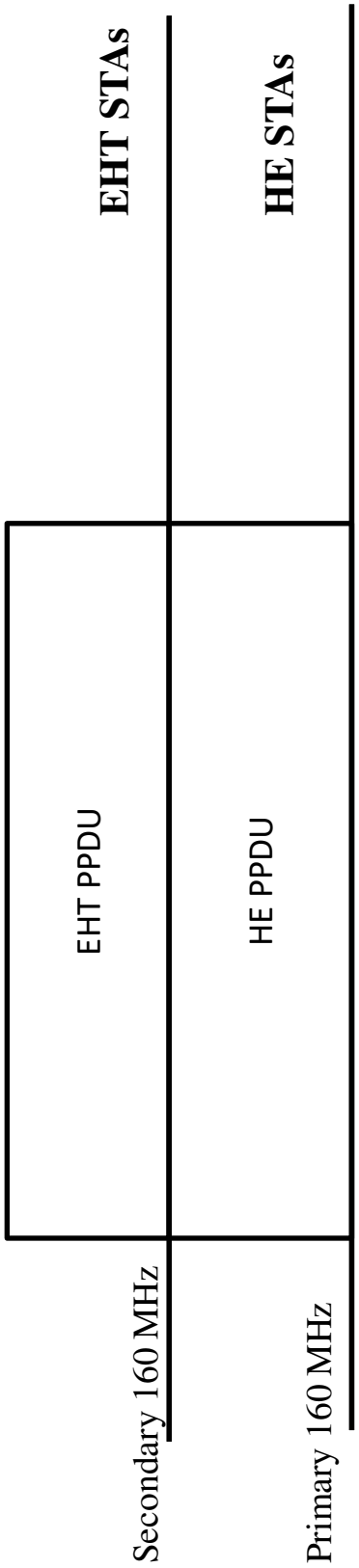

EHT STAs
HE STAs
EHT PPDU
HE PPDU
Secondary 160 MHz
Primary 160 MHz
AP
400

Figure 4

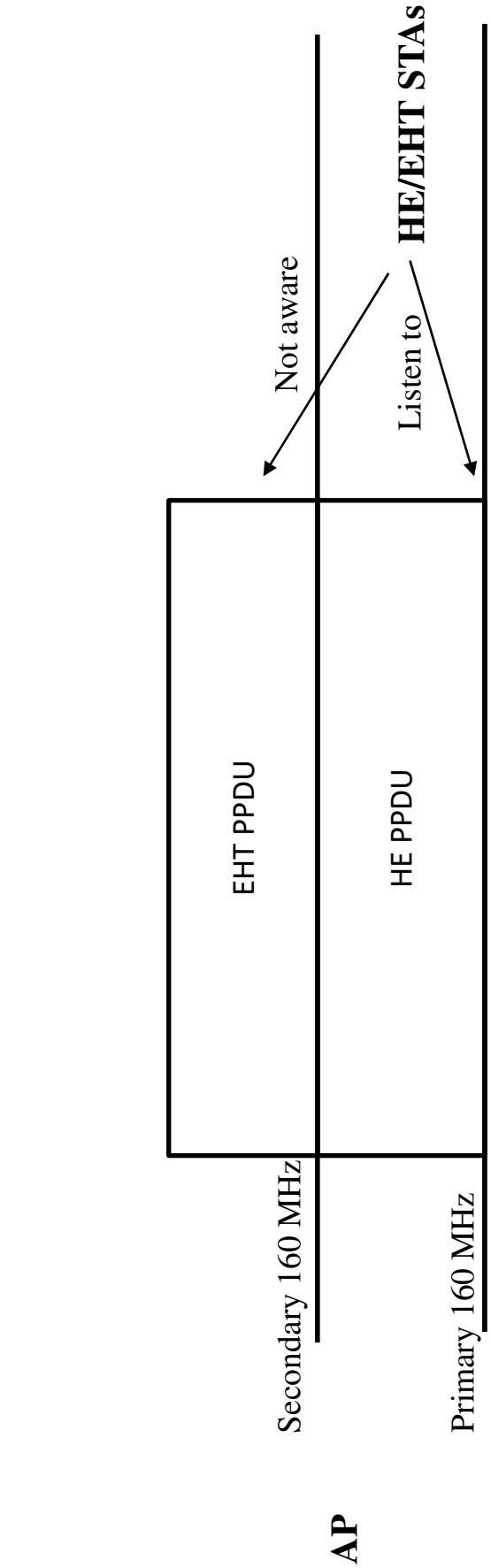

AP
Secondary 160 MHz
Primary 160 MHz
EHT PPDU
HE PPDU
Not aware
Listen to
HE/EHT STAs
500

Figure 5

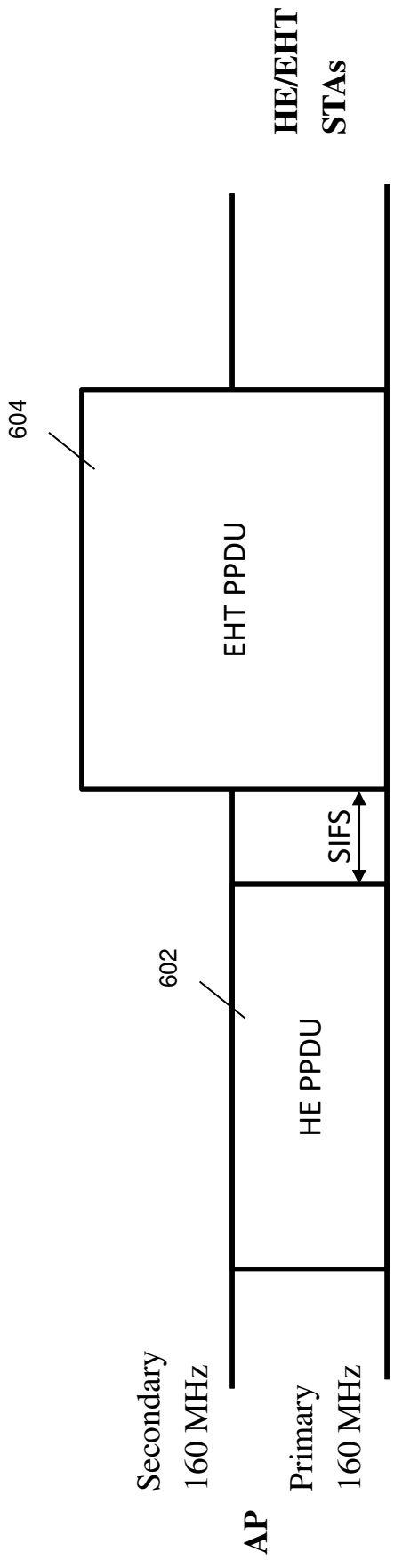


Figure 6A

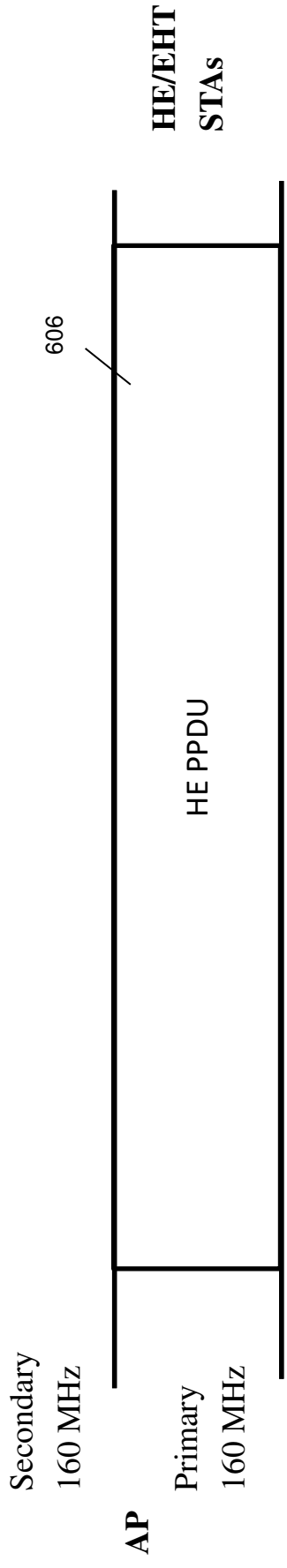


Figure 6B

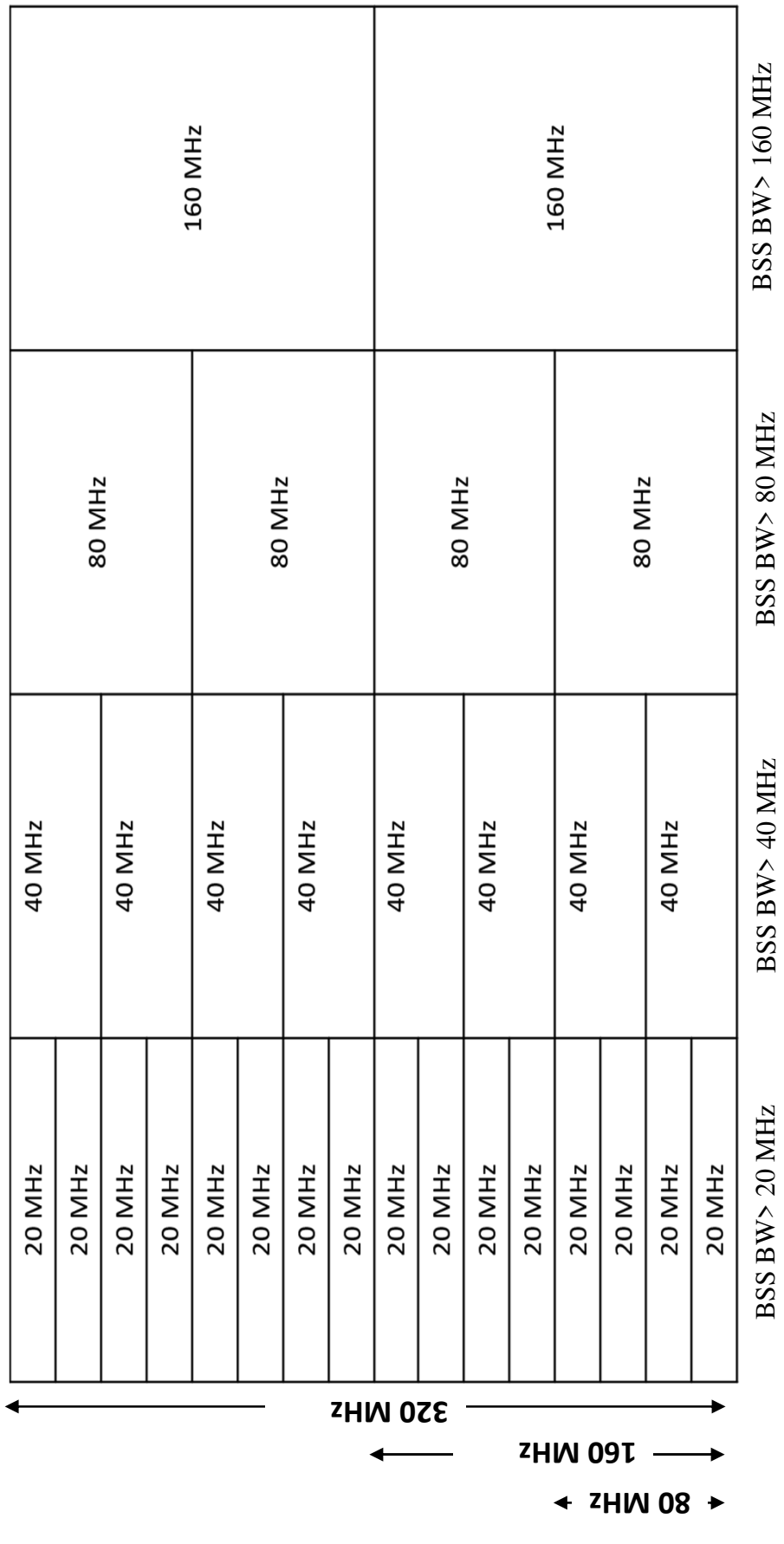

BSS BW> 20 MHz
BSS BW> 40 MHz
BSS BW> 80 MHz
BSS BW> 160 MHz
20 MHz
40 MHz
80 MHz
160 MHz
80 MHz
160 MHz
320 MHz
700

Figure 7

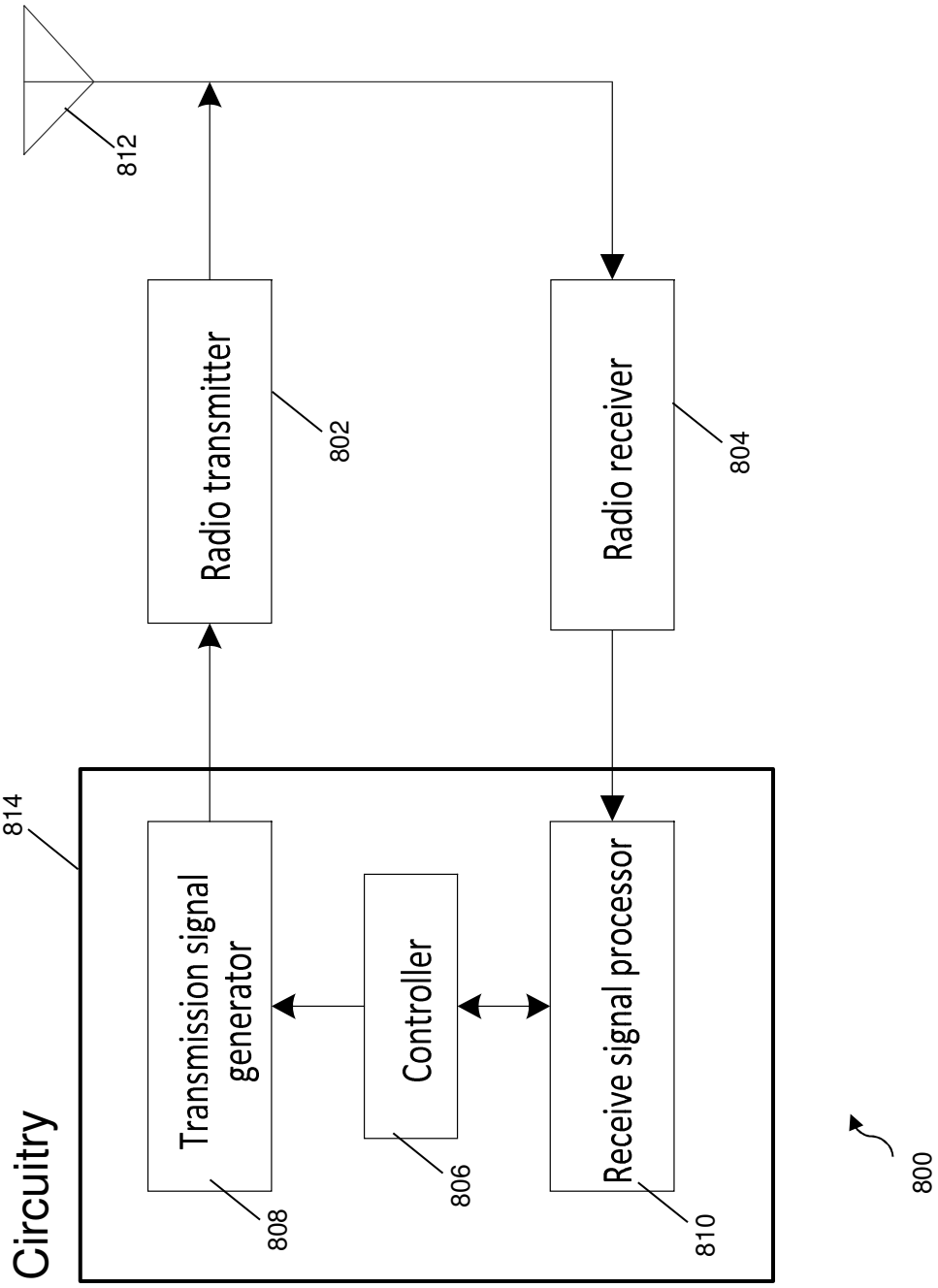

812
Radio transmitter
802
Radio receiver
804
814
Circuitry
Transmission signal generator
808
Controller
806
Receive signal processor
810
800

Figure 8

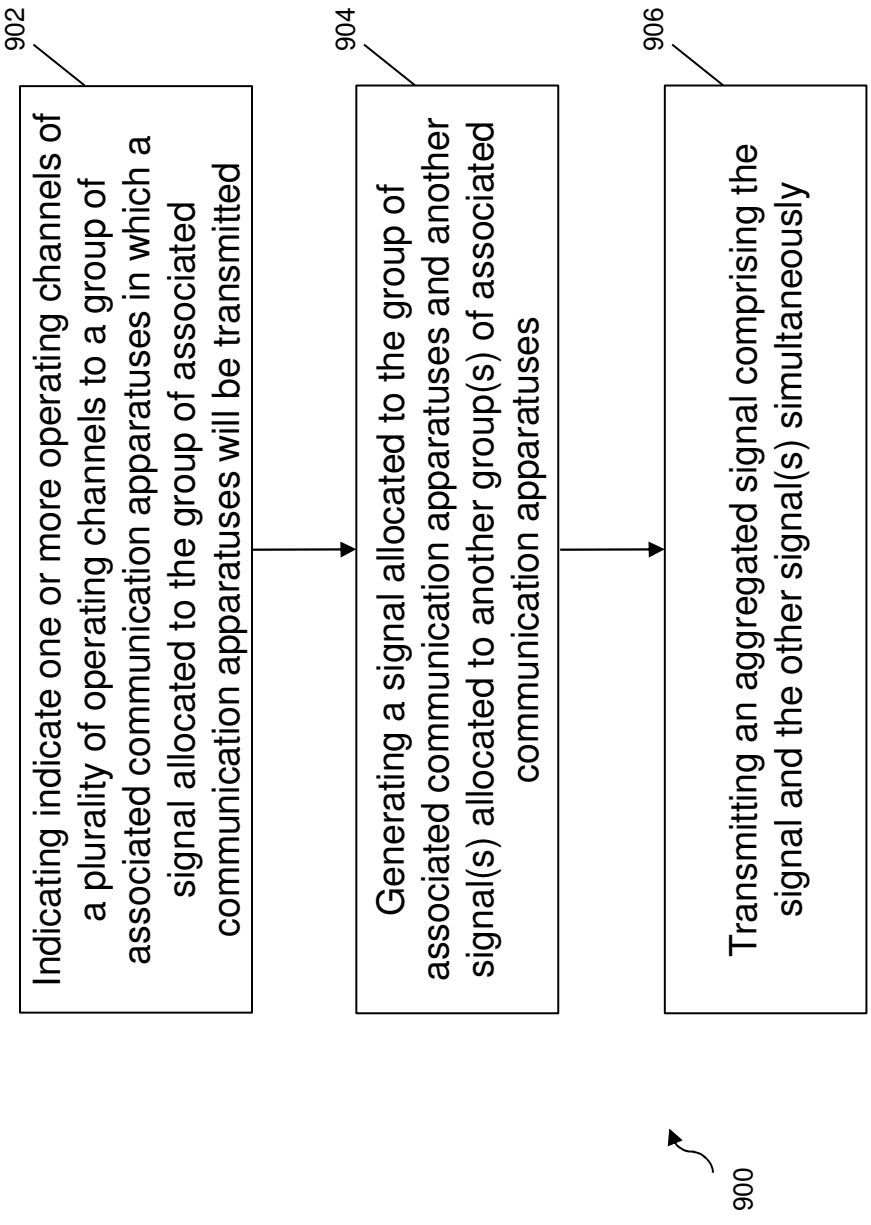

902
Indicating indicate one or more operating channels of a plurality of operating channels to a group of associated communication apparatuses in which a signal allocated to the group of associated communication apparatuses will be transmitted
904
Generating a signal allocated to the group of associated communication apparatuses and another signal(s) allocated to another group(s) of associated communication apparatuses
906
Transmitting an aggregated signal comprising the signal and the other signal(s) simultaneously
900

Figure 9

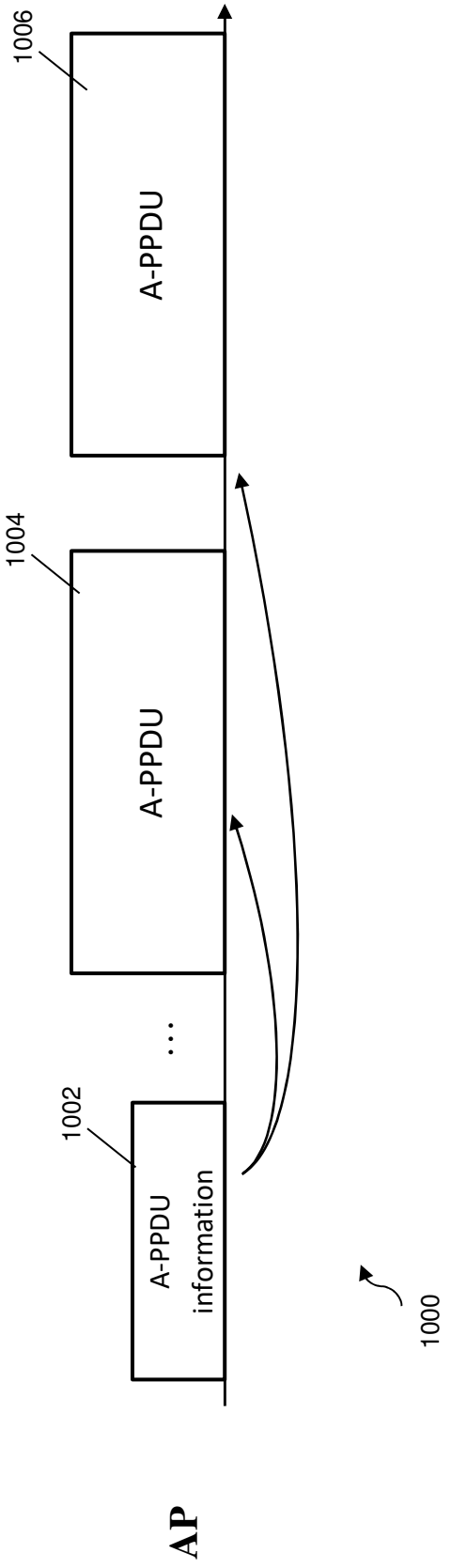


Figure 10

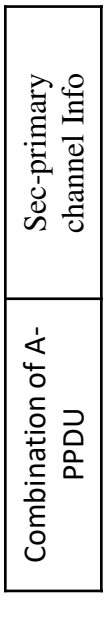


Figure 11

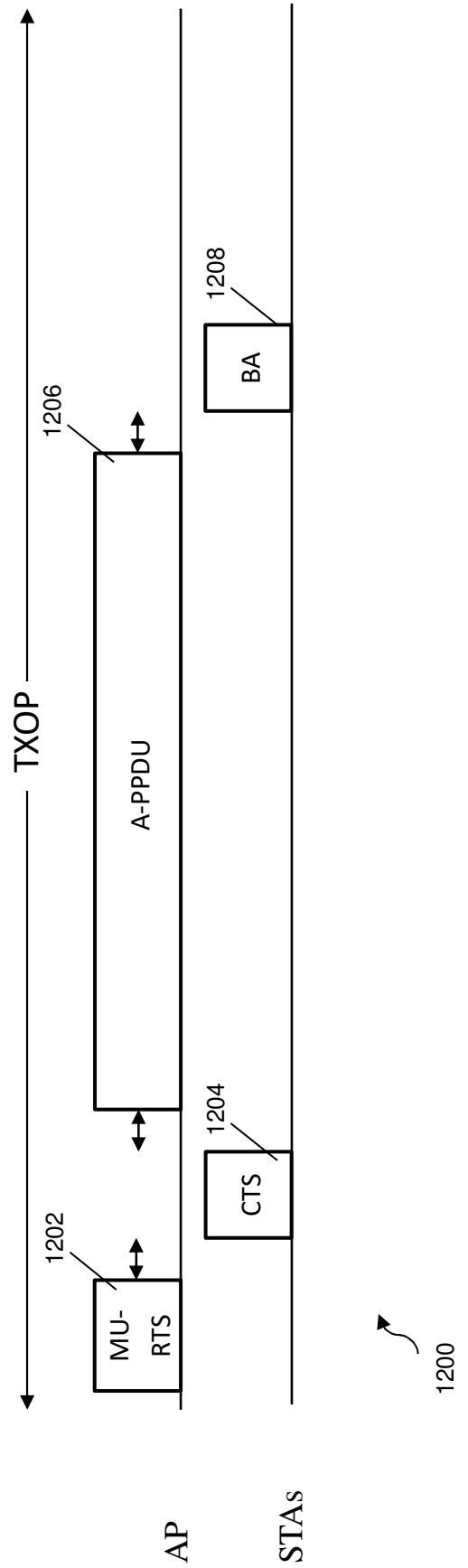


Figure 12

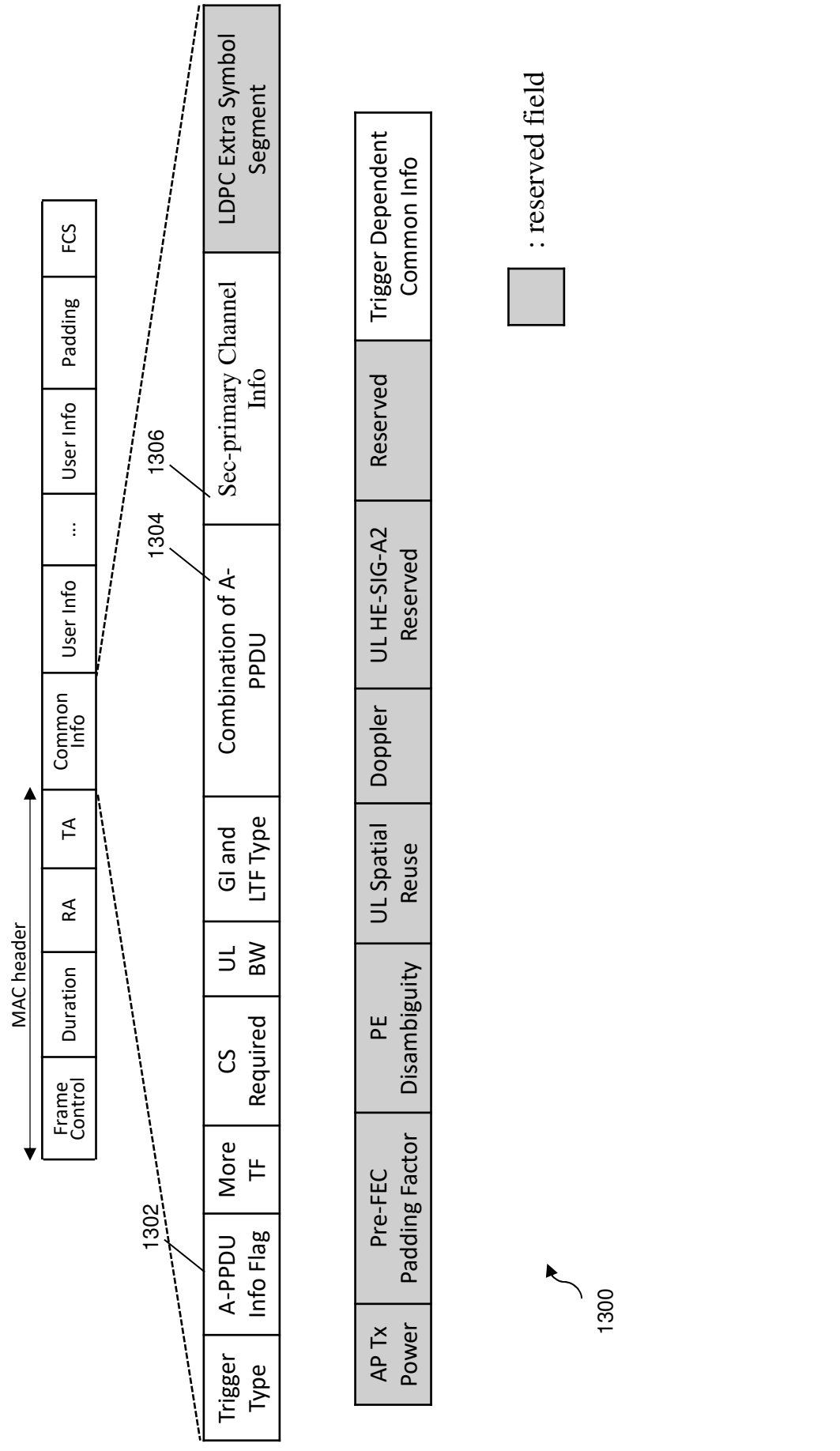

MAC header
Frame Control
Duration
RA
TA
Common Info
User Info
...
User Info
Padding
FCS
1302
1304
1306
Trigger Type
A-PPDU Info Flag
More TF
CS Required
UL BW
GI and LTF Type
Combination of A-PPDU
Sec-primary Channel Info
LDPC Extra Symbol Segment
AP Tx Power
Pre-FEC Padding Factor
PE Disambiguity
UL Spatial Reuse
Doppler
UL HE-SIG-A2 Reserved
Reserved
Trigger Dependent Common Info
: reserved field
1300

Figure 13

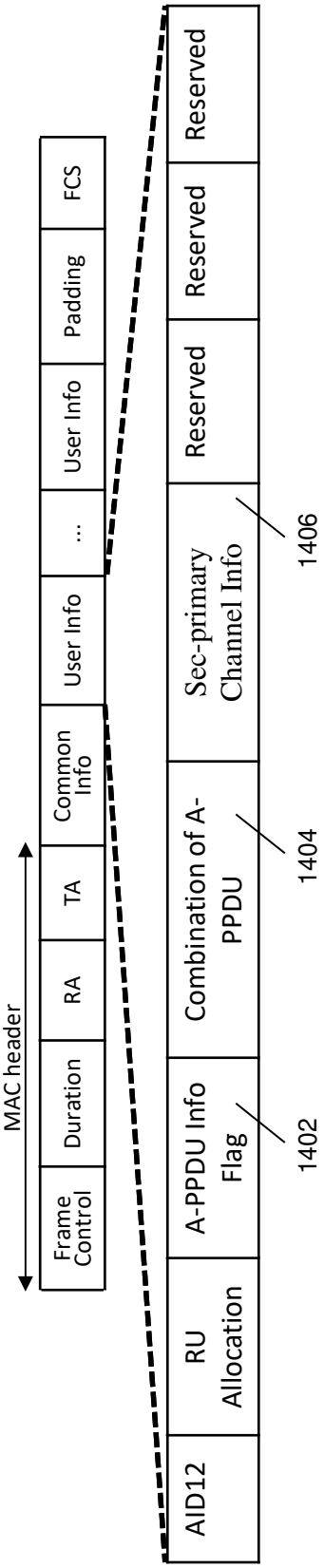

MAC header
Frame Control
Duration
RA
TA
Common Info
User Info
...
User Info
Padding
FCS
AID12
RU Allocation
A-PPDU Info Flag
Combination of A-PPDU
Sec-primary Channel Info
Reserved
Reserved
Reserved
1402
1404
1406
1400

Figure 14

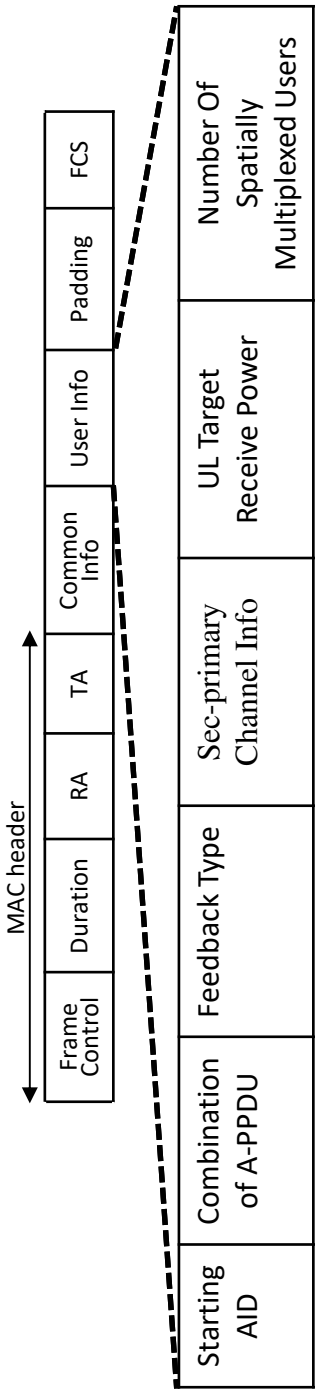

MAC header
Frame Control
Duration
RA
TA
Common Info
User Info
Padding
FCS
Starting AID
Combination of A-PPDU
Feedback Type
Sec-primary Channel Info
UL Target Receive Power
Number Of Spatially Multiplexed Users
1500

Figure 15

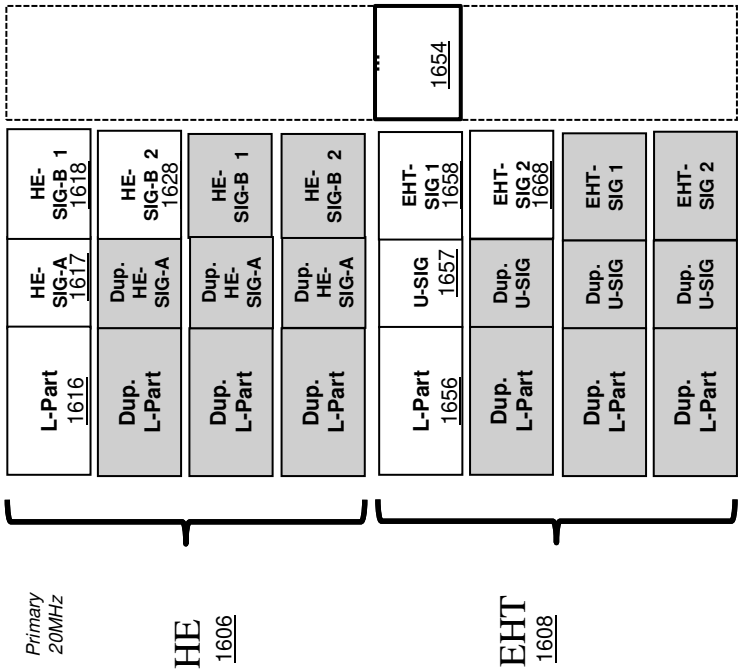


Figure 16B

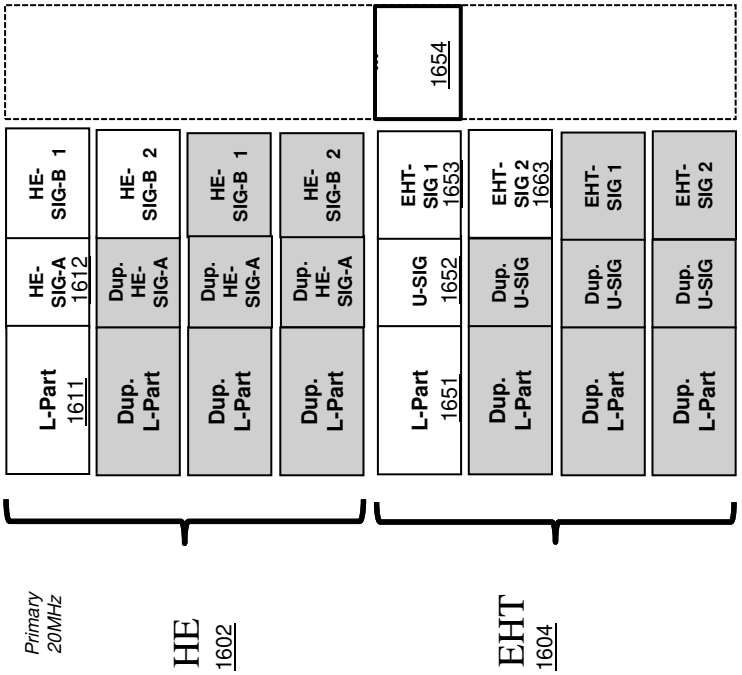


Figure 16A

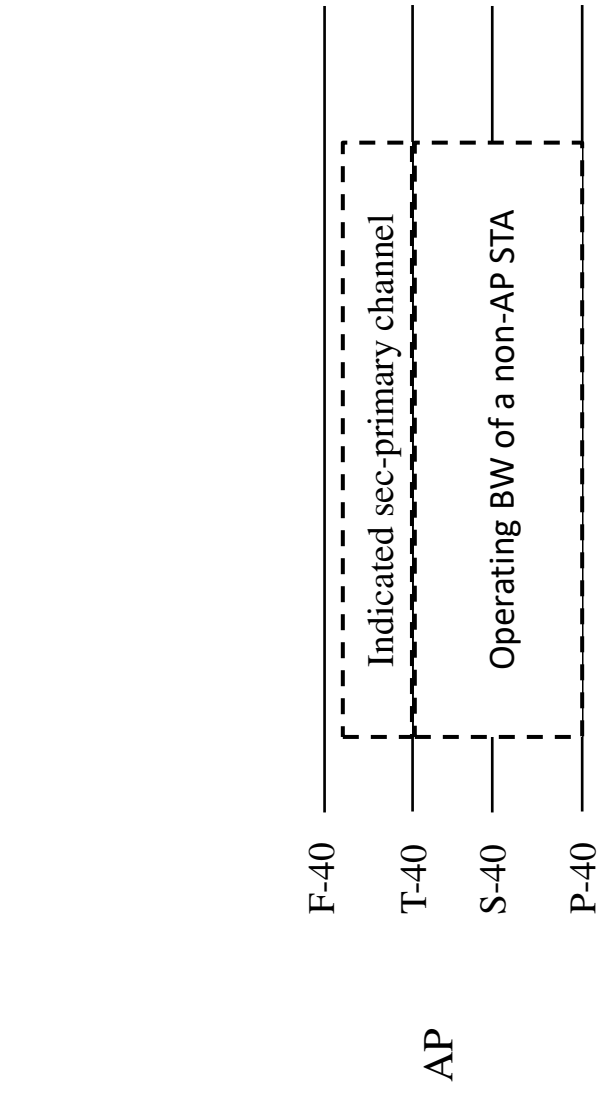

AP
F-40
T-40
S-40
P-40
Indicated sec-primary channel
Operating BW of a non-AP STA
1700

Figure 17

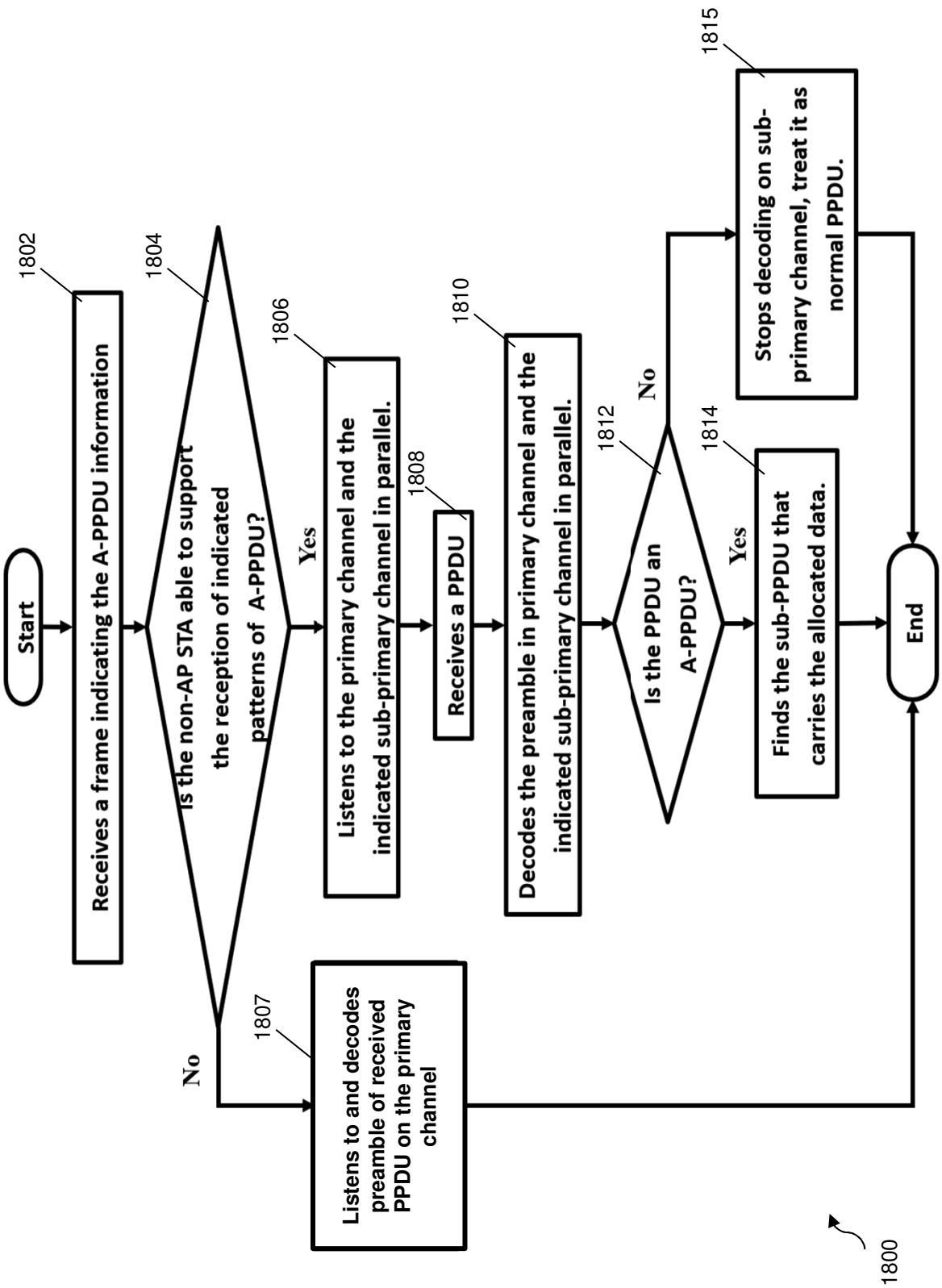

Start
Receives a frame indicating the A-PPDU information
1802
Is the non-AP STA able to support the reception of indicated patterns of A-PPDU?
1804
Yes
No
Listens to the primary channel and the indicated sub-primary channel in parallel.
1806
Receives a PPDU
1808
Decodes the preamble in primary channel and the indicated sub-primary channel in parallel.
1810
Is the PPDU an A-PPDU?
1812
Yes
No
Finds the sub-PPDU that carries the allocated data.
1814
Stops decoding on sub-primary channel, treat it as normal PPDU.
1815
Listens to and decodes preamble of received PPDU on the primary channel
1807
End
1800

Figure 18

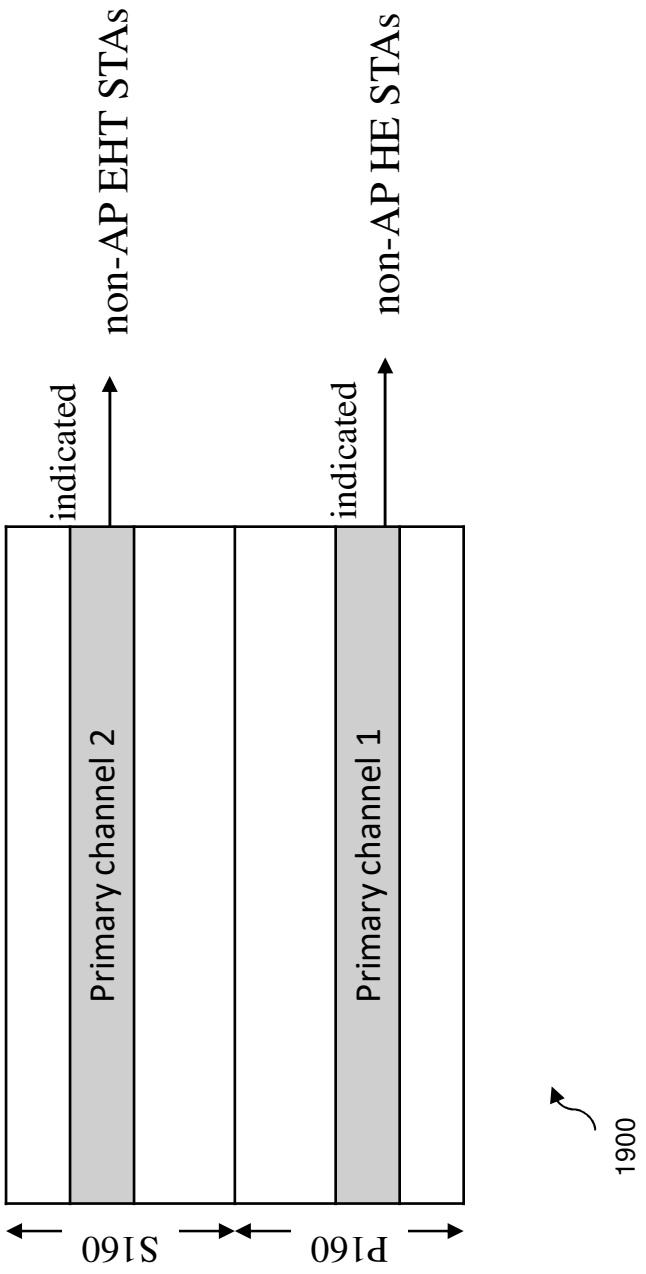

non-AP EHT STAs
non-AP HE STAs
indicated
indicated
Primary channel 2
Primary channel 1
S160
P160
1900

Figure 19

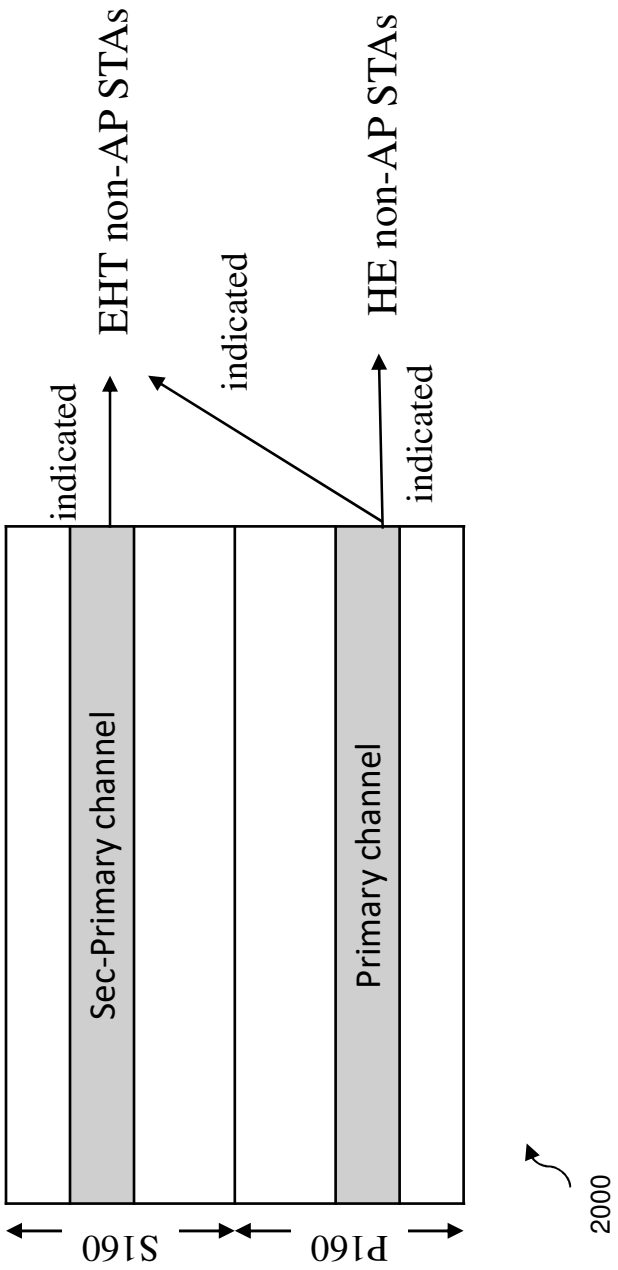

EHT non-AP STAs
indicated
HE non-AP STAs
indicated
indicated
Sec-Primary channel
Primary channel
S160
P160
2000

Figure 20

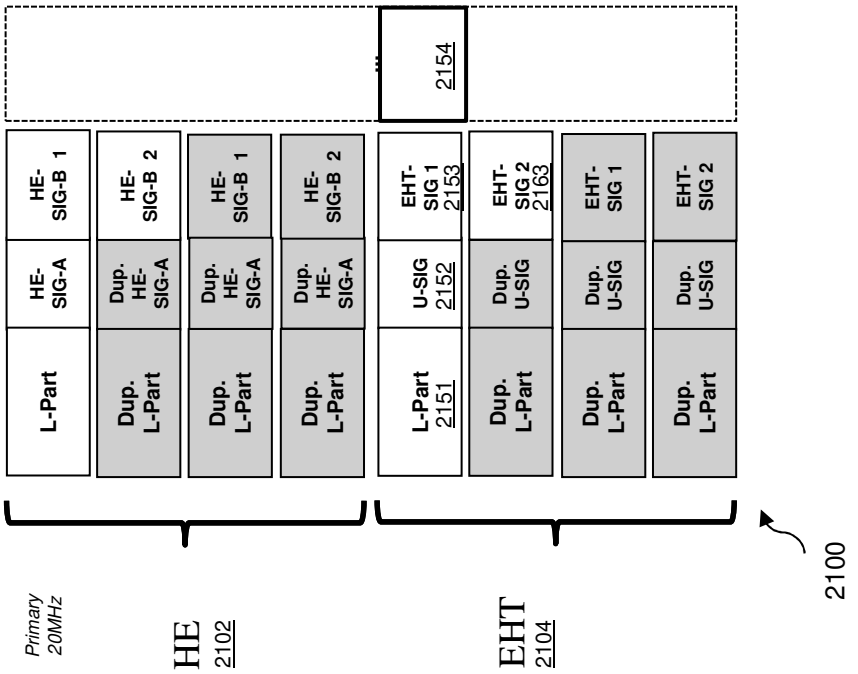

L-Part
HE-SIG-A
HE-SIG-B 1
Dup. L-Part
Dup. HE-SIG-A
HE-SIG-B 2
Dup. L-Part
Dup. HE-SIG-A
HE-SIG-B 1
Dup. L-Part
Dup. HE-SIG-A
HE-SIG-B 2
L-Part 2151
U-SIG 2152
EHT-SIG 1 2153
2154
Dup. L-Part
Dup. U-SIG
EHT-SIG 2 2163
Dup. L-Part
Dup. U-SIG
EHT-SIG 1
Dup. L-Part
Dup. U-SIG
EHT-SIG 2
Primary 20MHz
HE 2102
EHT 2104
2100

Figure 21

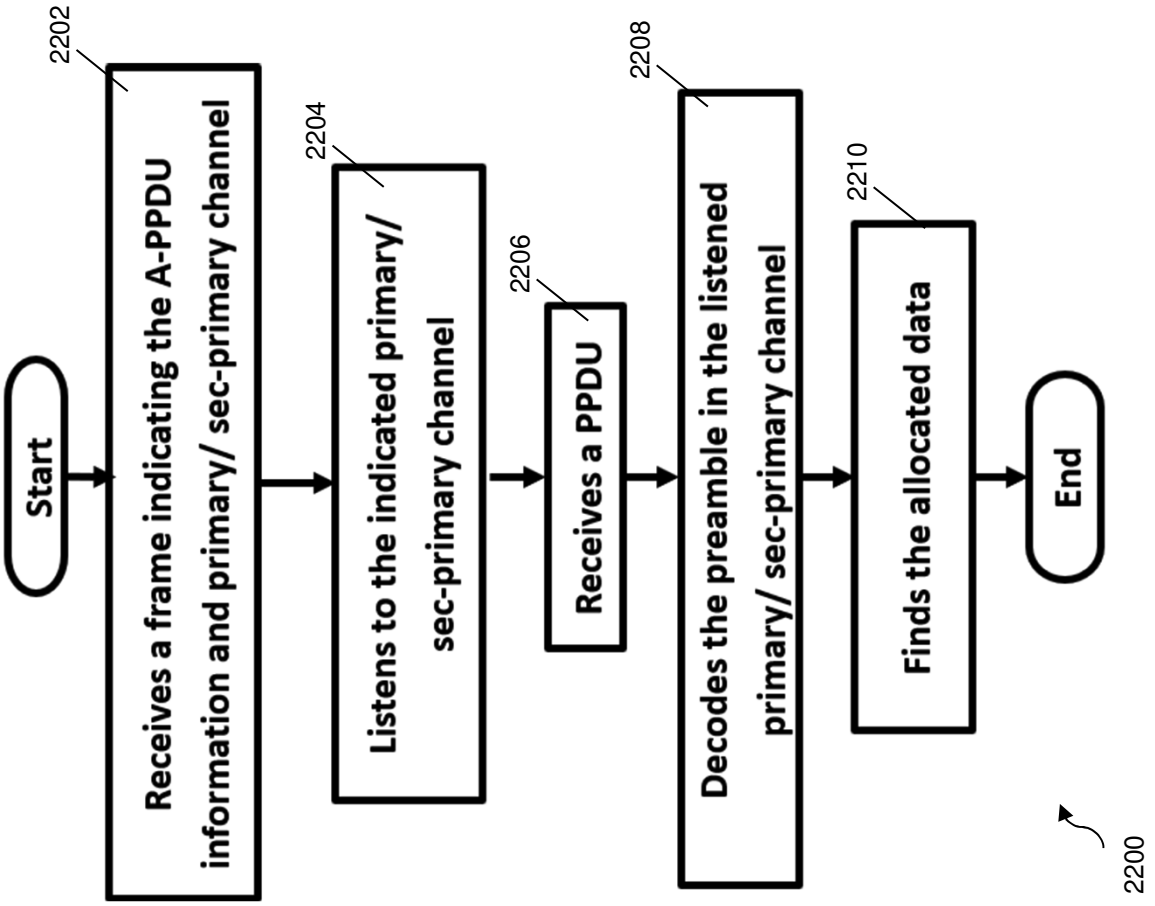

Start
Receives a frame indicating the A-PPDU information and primary/ sec-primary channel
Listens to the indicated primary/ sec-primary channel
Receives a PPDU
Decodes the preamble in the listened primary/ sec-primary channel
Finds the allocated data
End
2202
2204
2206
2208
2210
2200

Figure 22

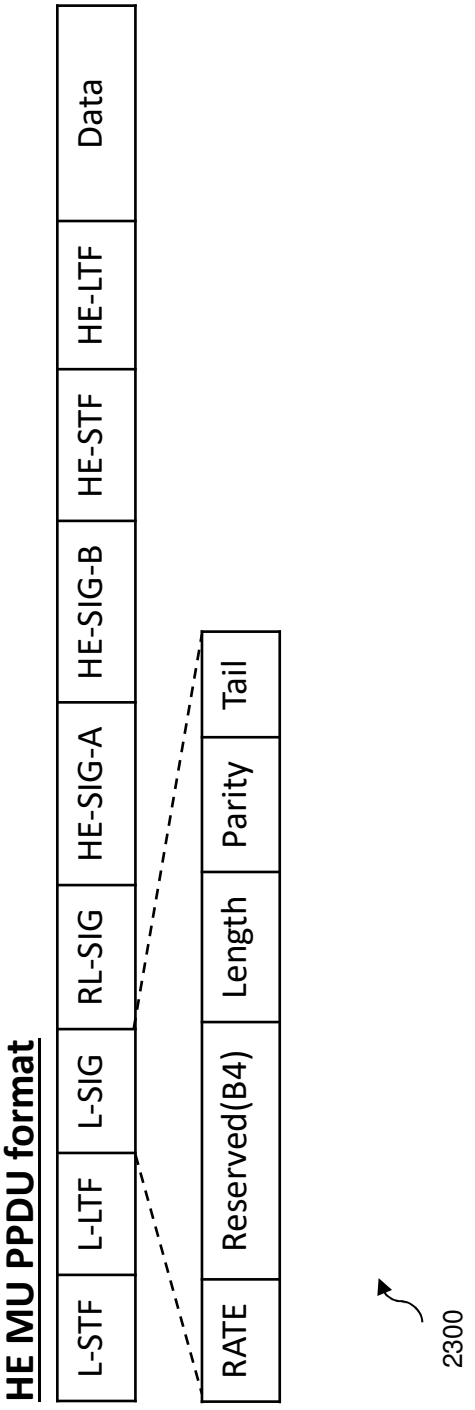

HE MU PPDU format
L-STF
L-LTF
L-SIG
RL-SIG
HE-SIG-A
HE-SIG-B
HE-STF
HE-LTF
Data
RATE
Reserved(B4)
Length
Parity
Tail
2300

Figure 23

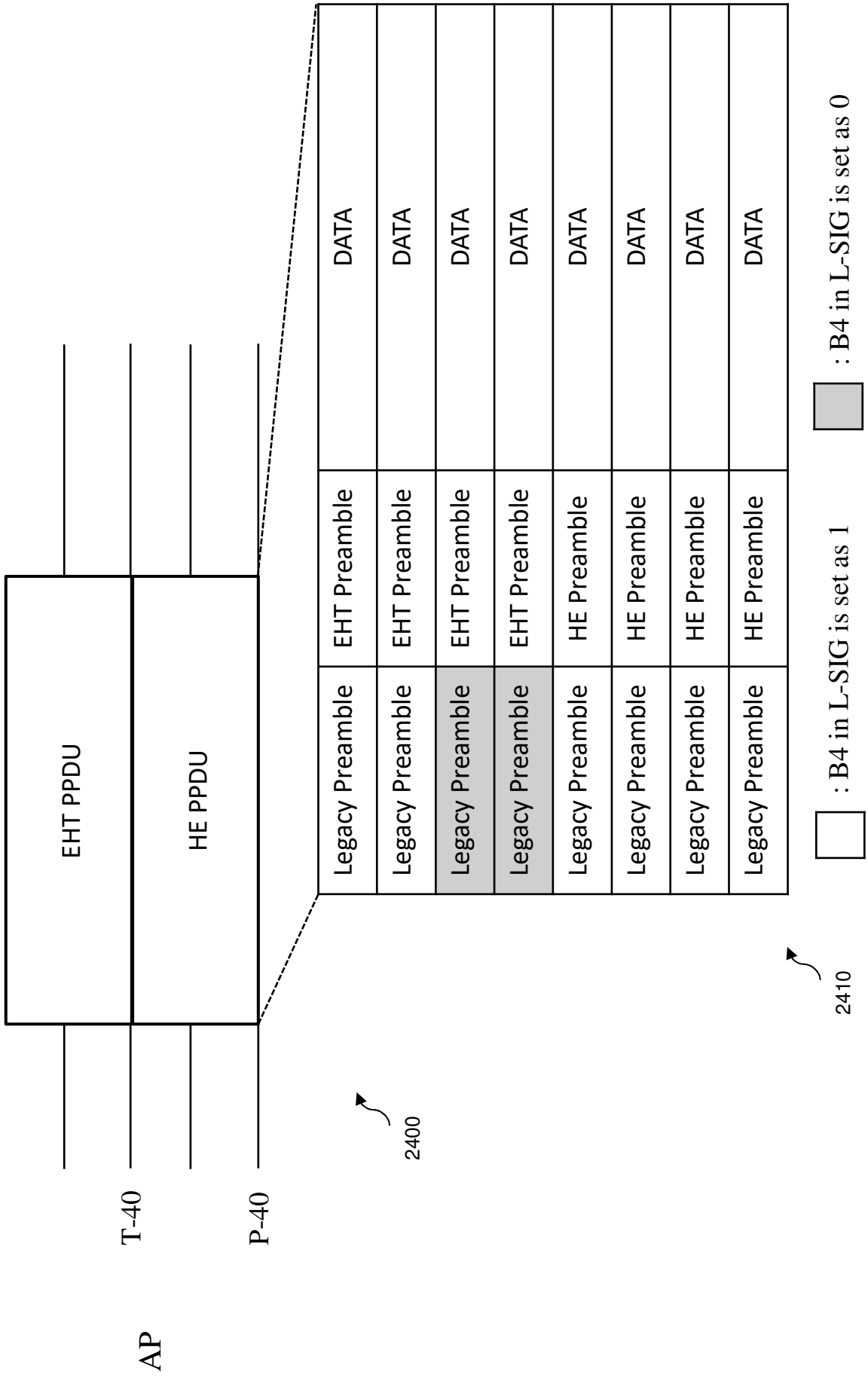

AP
T-40
P-40
EHT PPDU
HE PPDU
2400
Legacy Preamble
EHT Preamble
HE Preamble
DATA
2410
: B4 in L-SIG is set as 1
: B4 in L-SIG is set as 0

Figure 24

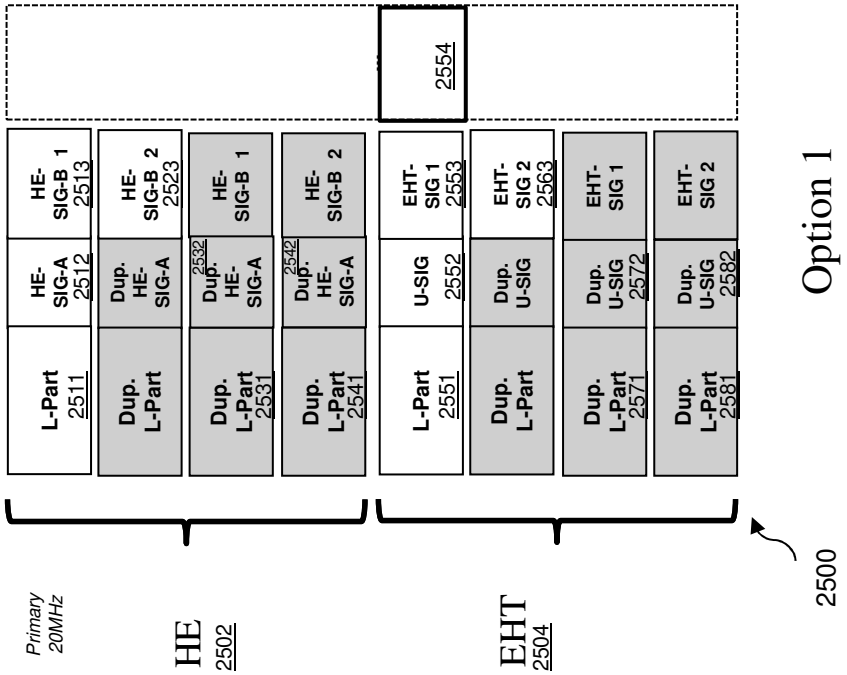


Figure 25A

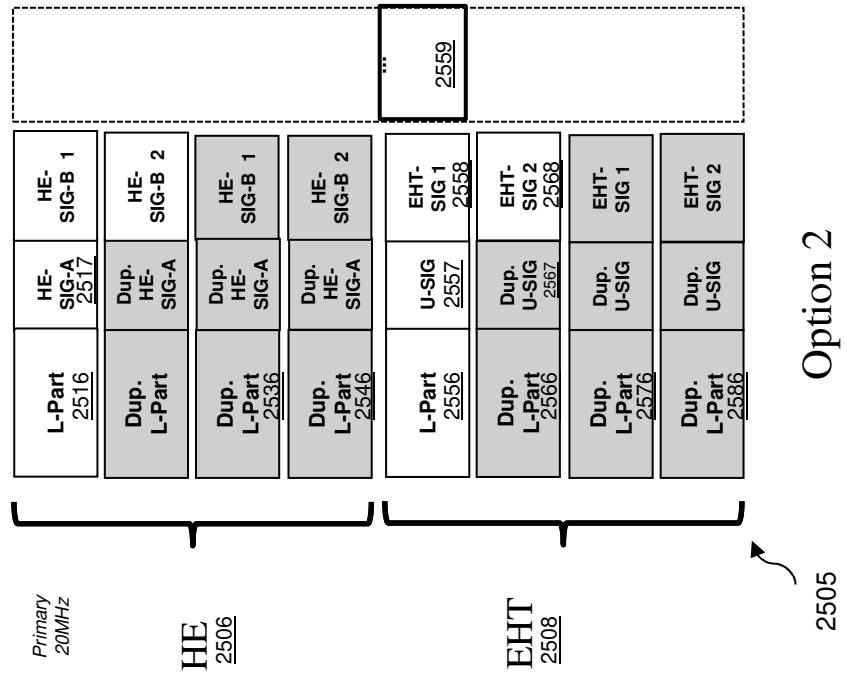


Figure 25B

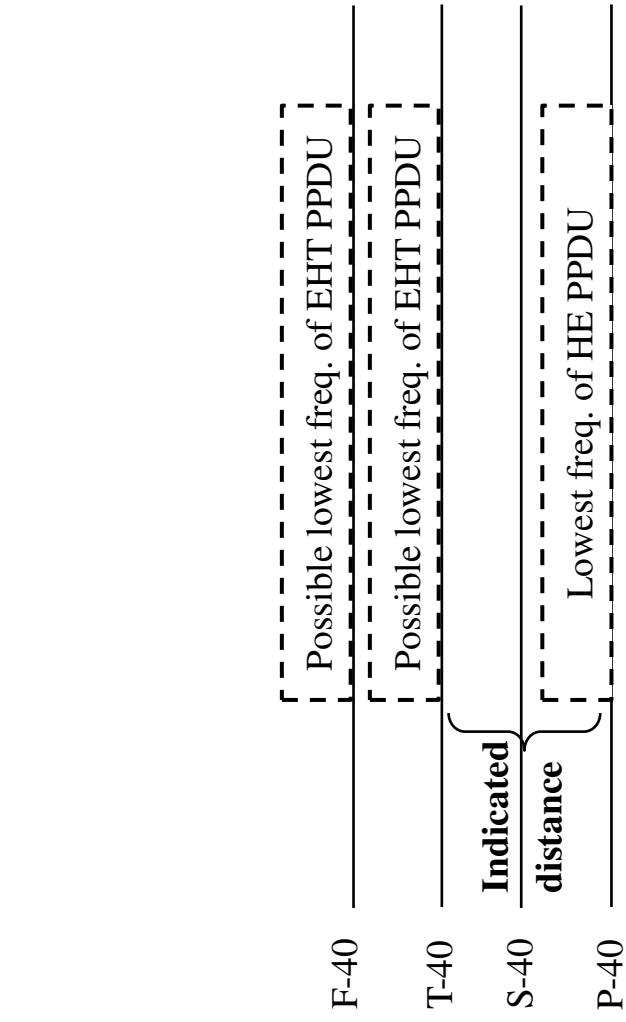

AP
F-40
T-40
S-40
P-40
Possible lowest freq. of EHT PPDU
Possible lowest freq. of EHT PPDU
Indicated
distance
Lowest freq. of HE PPDU
2600

Figure 26

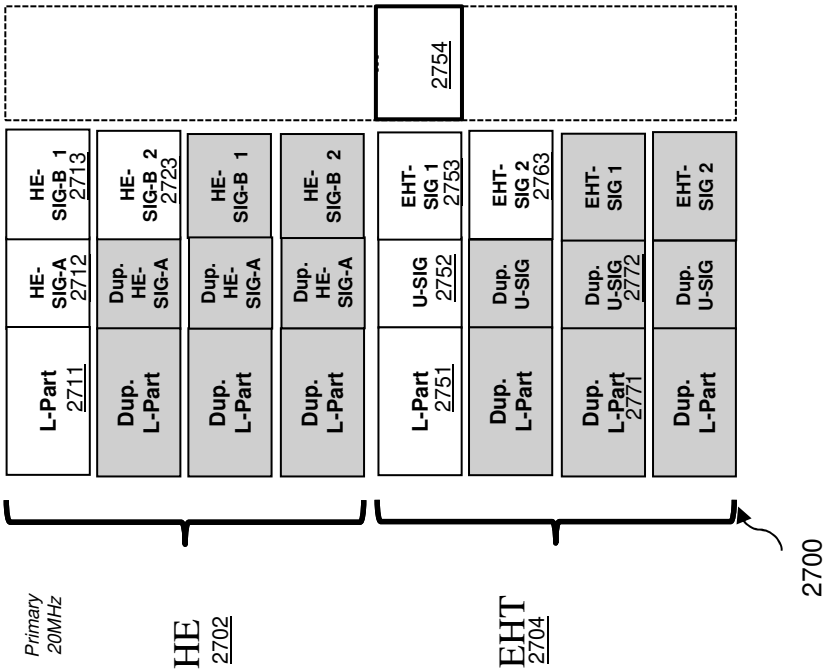

Primary 20MHz
HE 2702
EHT 2704
2700
L-Part 2711
HE-SIG-A 2712
HE-SIG-B 1 2713
Dup. L-Part
Dup. HE-SIG-A
HE-SIG-B 2 2723
HE-SIG-B 1
HE-SIG-B 2
L-Part 2751
U-SIG 2752
EHT-SIG 1 2753
2754
Dup. U-SIG
EHT-SIG 2 2763
Dup. L-Part 2771
Dup. U-SIG 2772
EHT-SIG 1
EHT-SIG 2

Figure 27

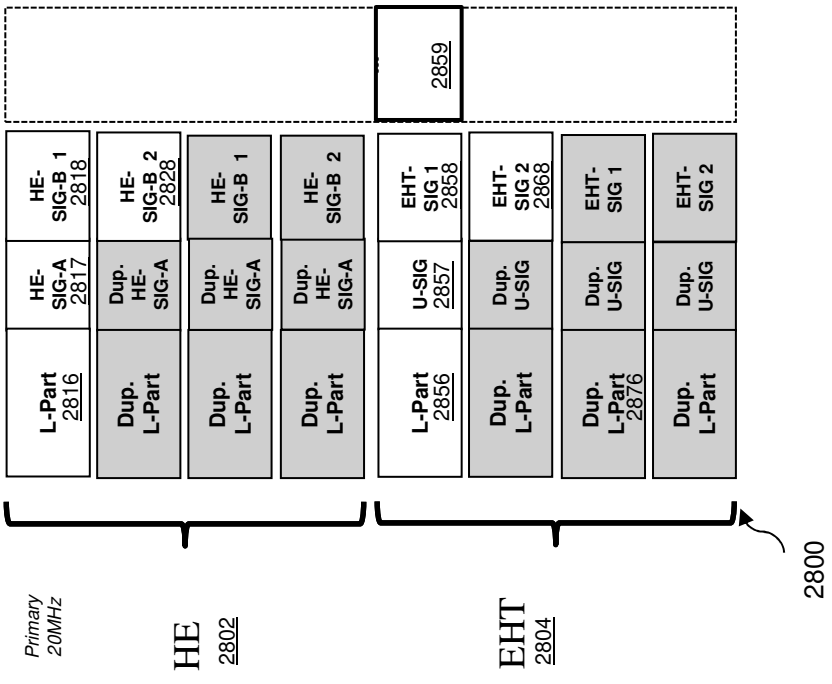

L-Part 2816
HE-SIG-A 2817
HE-SIG-B 1 2818
Dup. L-Part
Dup. HE-SIG-A
HE-SIG-B 2 2828
Dup. L-Part
Dup. HE-SIG-A
HE-SIG-B 1
Dup. L-Part
Dup. HE-SIG-A
HE-SIG-B 2
2859
L-Part 2856
U-SIG 2857
EHT-SIG 1 2858
Dup. L-Part
Dup. U-SIG
EHT-SIG 2 2868
Dup. L-Part 2876
Dup. U-SIG
EHT-SIG 1
Dup. L-Part
Dup. U-SIG
EHT-SIG 2
Primary 20MHz
HE 2802
EHT 2804
2800

Figure 28

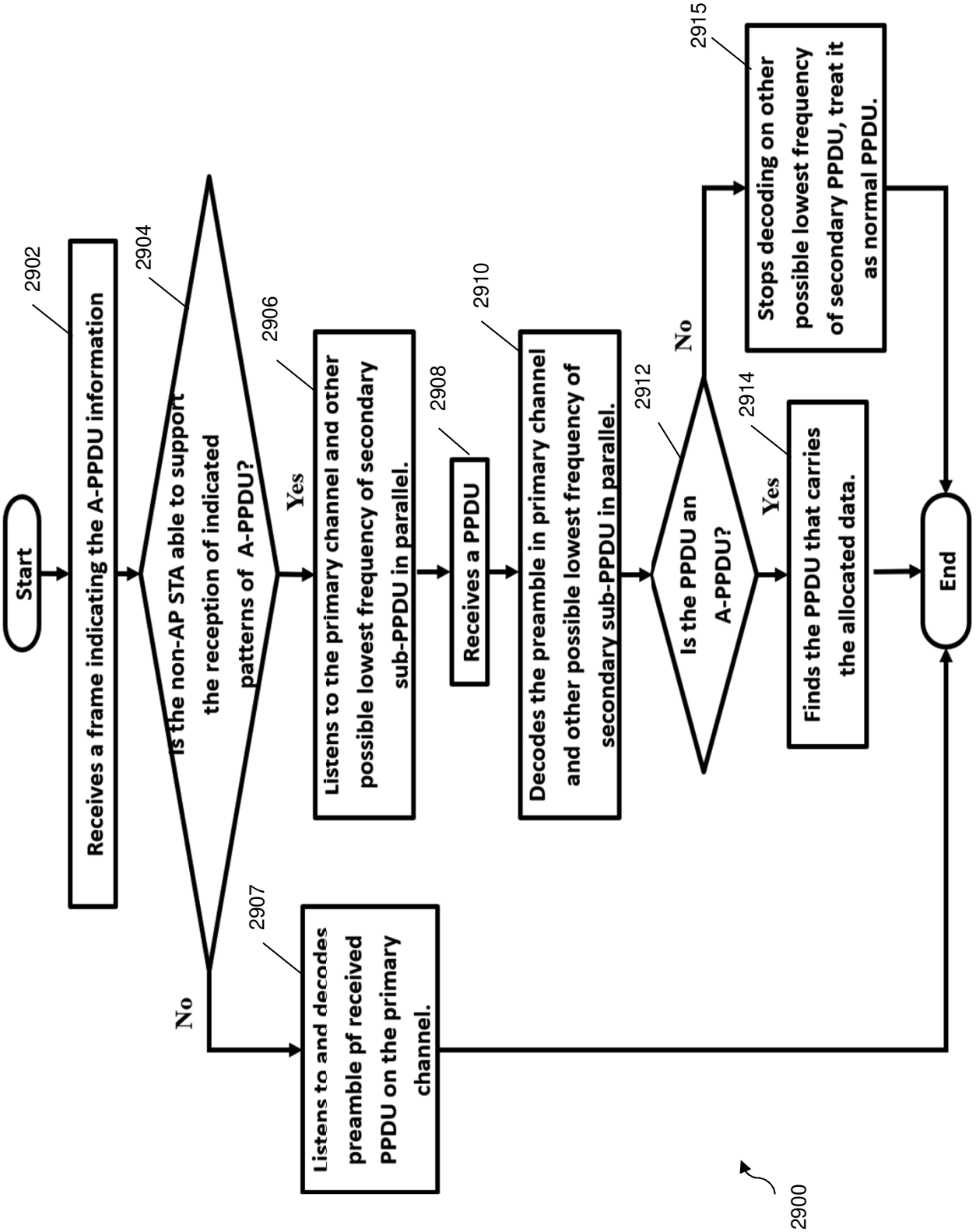

Start
Receives a frame indicating the A-PPDU information
2902
Is the non-AP STA able to support the reception of indicated patterns of A-PPDU?
2904
Yes
No
Listens to the primary channel and other possible lowest frequency of secondary sub-PPDU in parallel.
2906
Receives a PPDU
2908
Decodes the preamble in primary channel and other possible lowest frequency of secondary sub-PPDU in parallel.
2910
Is the PPDU an A-PPDU?
2912
Yes
No
Finds the PPDU that carries the allocated data.
2914
Stops decoding on other possible lowest frequency of secondary PPDU, treat it as normal PPDU.
2915
Listens to and decodes preamble pf received PPDU on the primary channel.
2907
End
2900

Figure 29

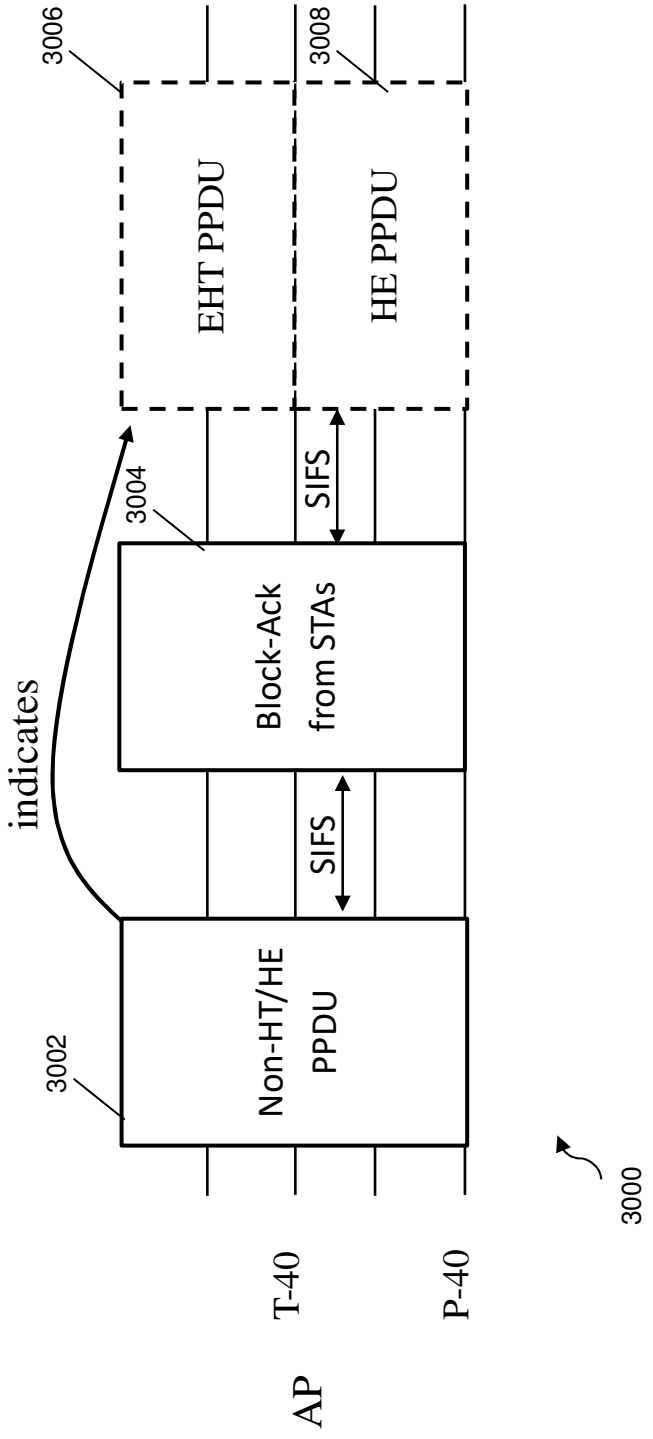

AP
T-40
P-40
3000
3002
Non-HT/HE PPDU
SIFS
3004
Block-Ack from STAs
SIFS
indicates
3006
EHT PPDU
3008
HE PPDU

Figure 30

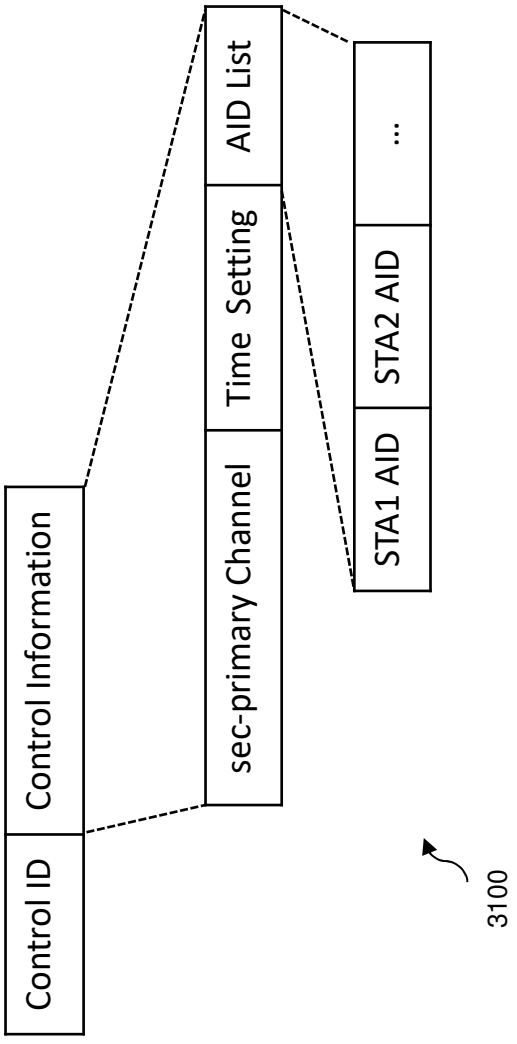

Control ID
Control Information
sec-primary Channel
Time Setting
AID List
STA1 AID
STA2 AID
...
3100

Figure 31

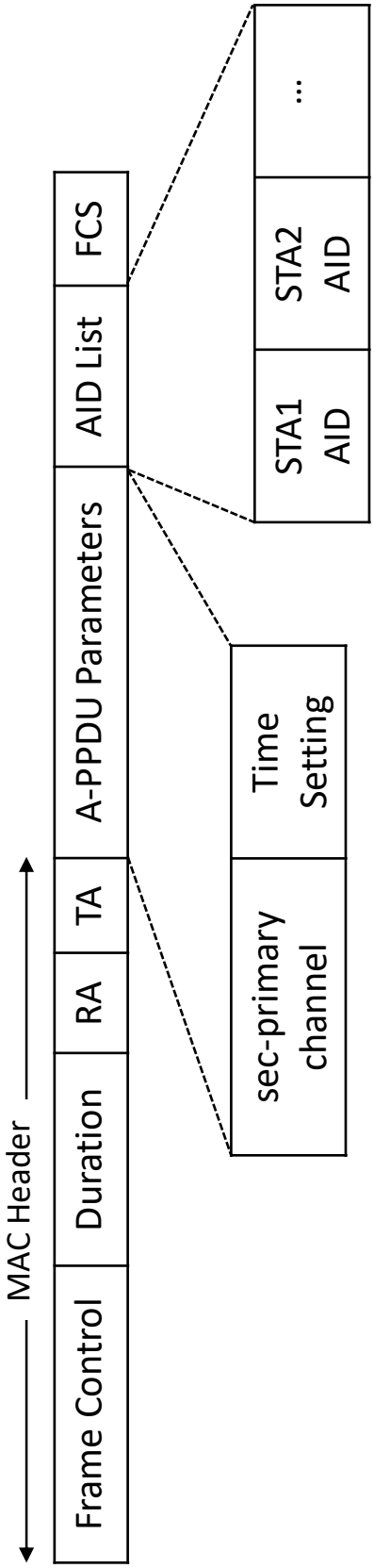

MAC Header
Frame Control
Duration
RA
TA
A-PPDU Parameters
AID List
FCS
STA1 AID
STA2 AID
...
Time Setting
sec-primary channel
3200

Figure 32

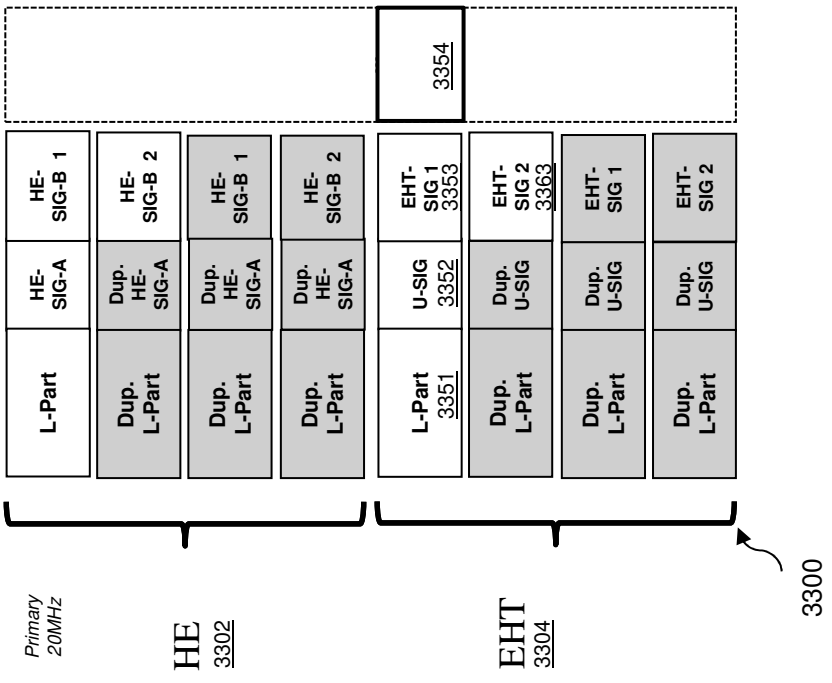

Primary 20MHz
HE 3302
EHT 3304
3300
L-Part
HE-SIG-A
HE-SIG-B 1
HE-SIG-B 2
Dup. L-Part
Dup. HE-SIG-A
Dup. HE-SIG-B 1
Dup. HE-SIG-B 2
L-Part 3351
U-SIG 3352
EHT-SIG 1 3353
3354
Dup. U-SIG
EHT-SIG 2 3363
EHT-SIG 1
EHT-SIG 2

Figure 33

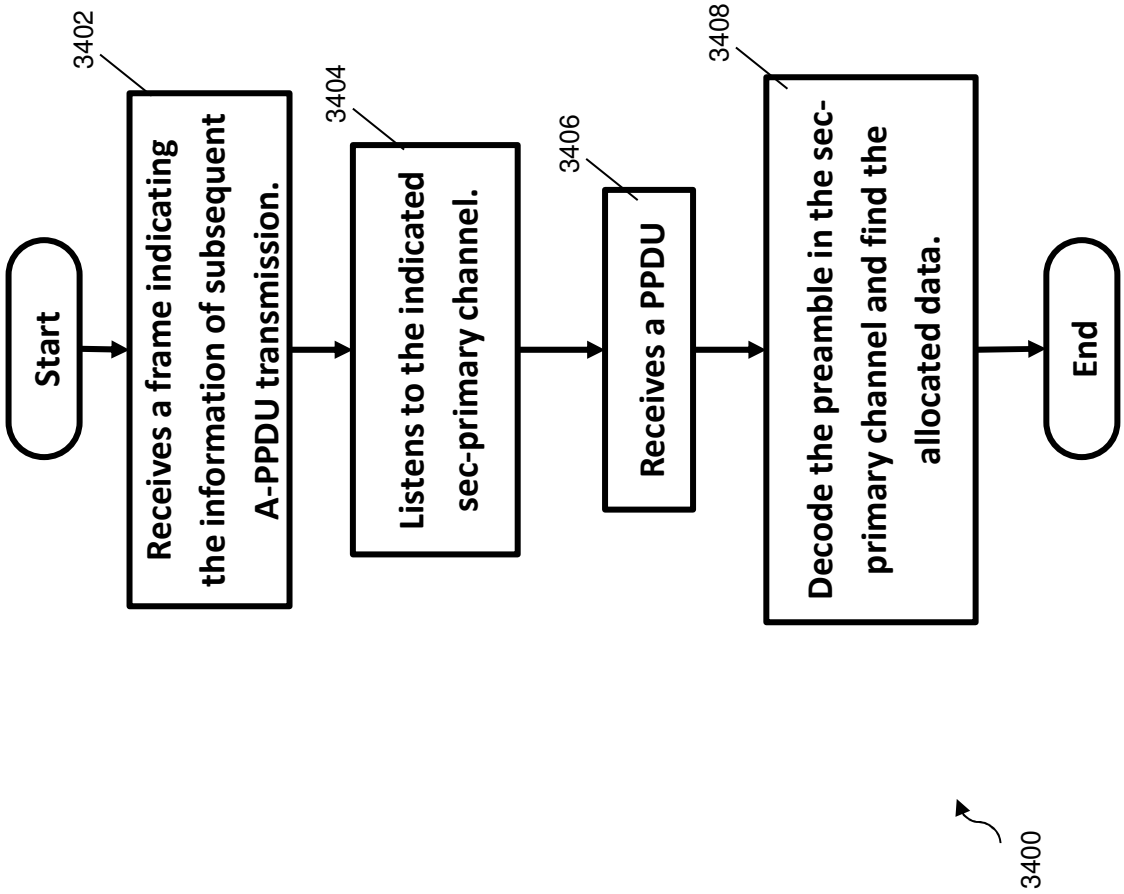

Start
Receives a frame indicating the information of subsequent A-PPDU transmission.
3402
Listens to the indicated sec-primary channel.
3404
Receives a PPDU
3406
Decode the preamble in the sec-primary channel and find the allocated data.
3408
End
3400

Figure 34

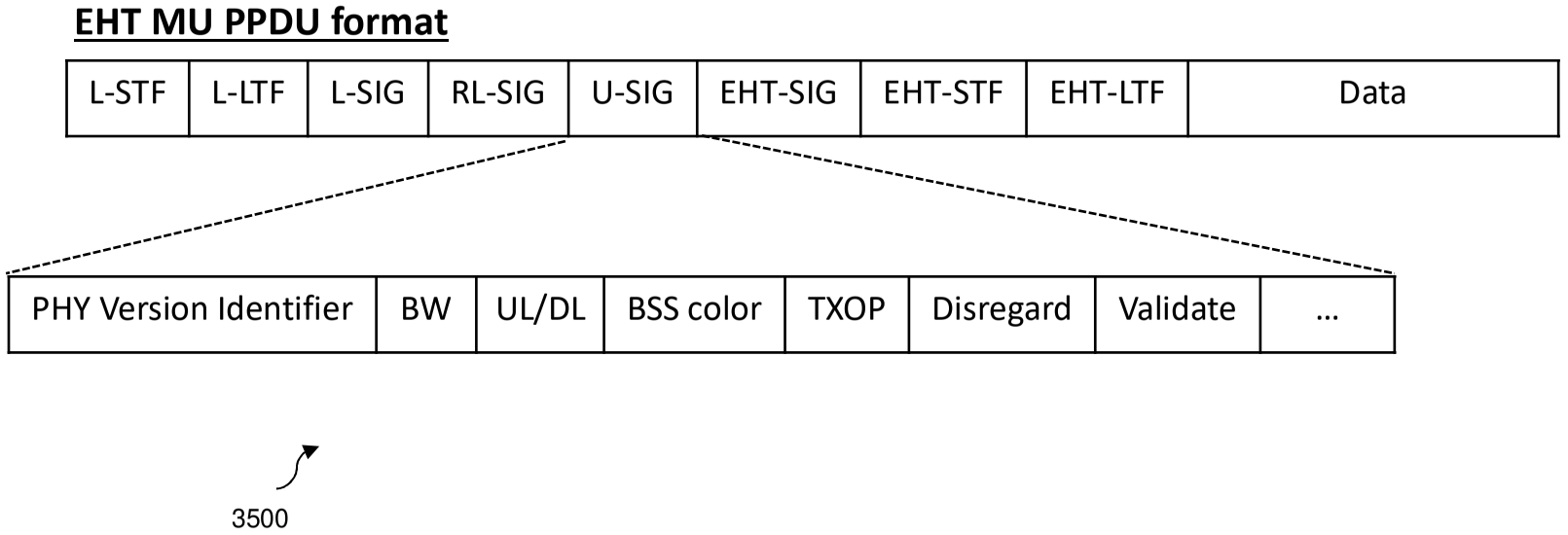

EHT MU PPDU format
L-STF
L-LTF
L-SIG
RL-SIG
U-SIG
EHT-SIG
EHT-STF
EHT-LTF
Data
PHY Version Identifier
BW
UL/DL
BSS color
TXOP
Disregard
Validate
...
3500

Figure 35

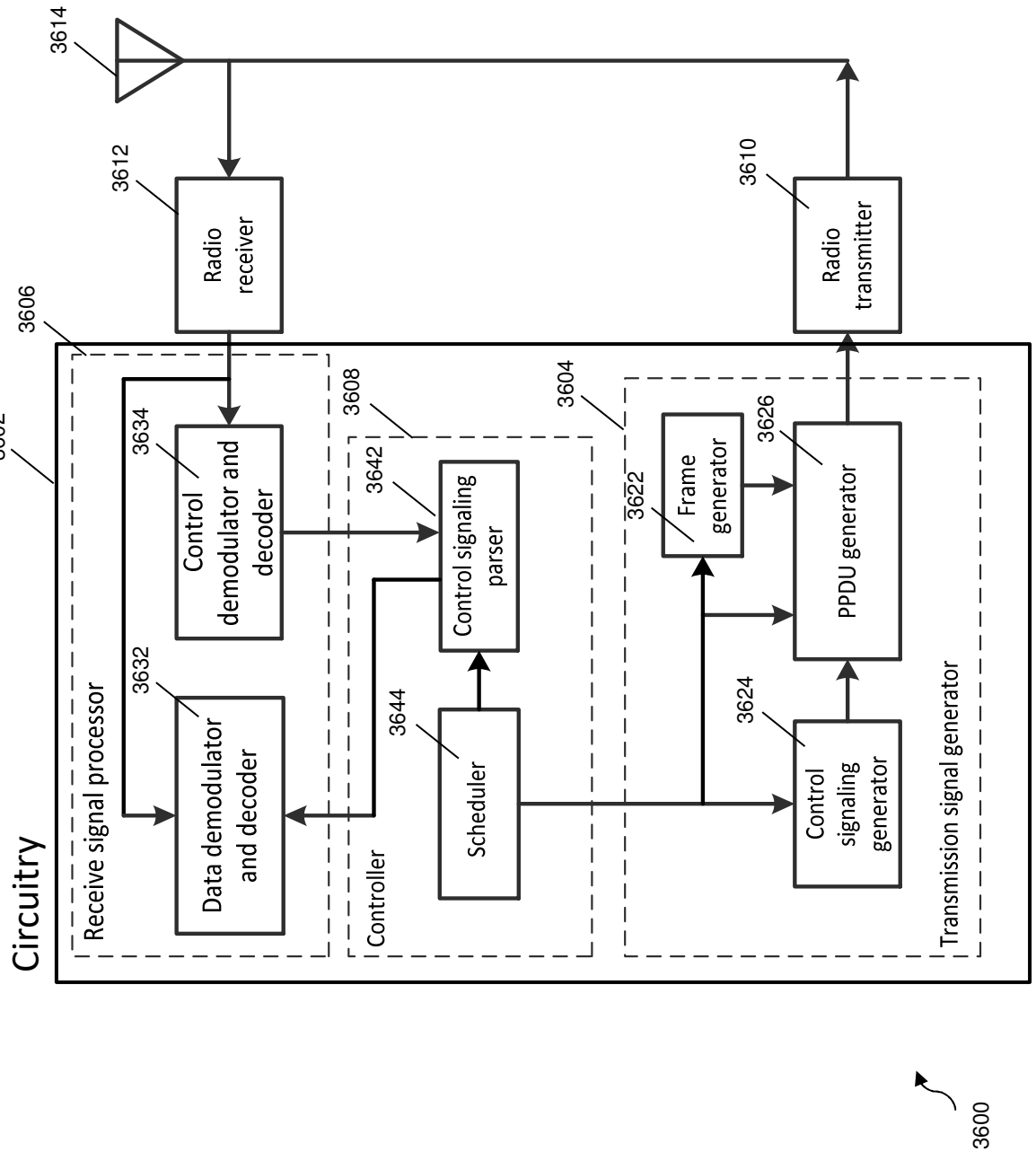

3600
3614
3612
Radio receiver
3610
Radio transmitter
3606
3602
Circuitry
Receive signal processor
3634
Control demodulator and decoder
3632
Data demodulator and decoder
3608
Controller
3642
Control signaling parser
3644
Scheduler
3604
Transmission signal generator
3622
Frame generator
3626
PPDU generator
3624
Control signaling generator

Figure 36

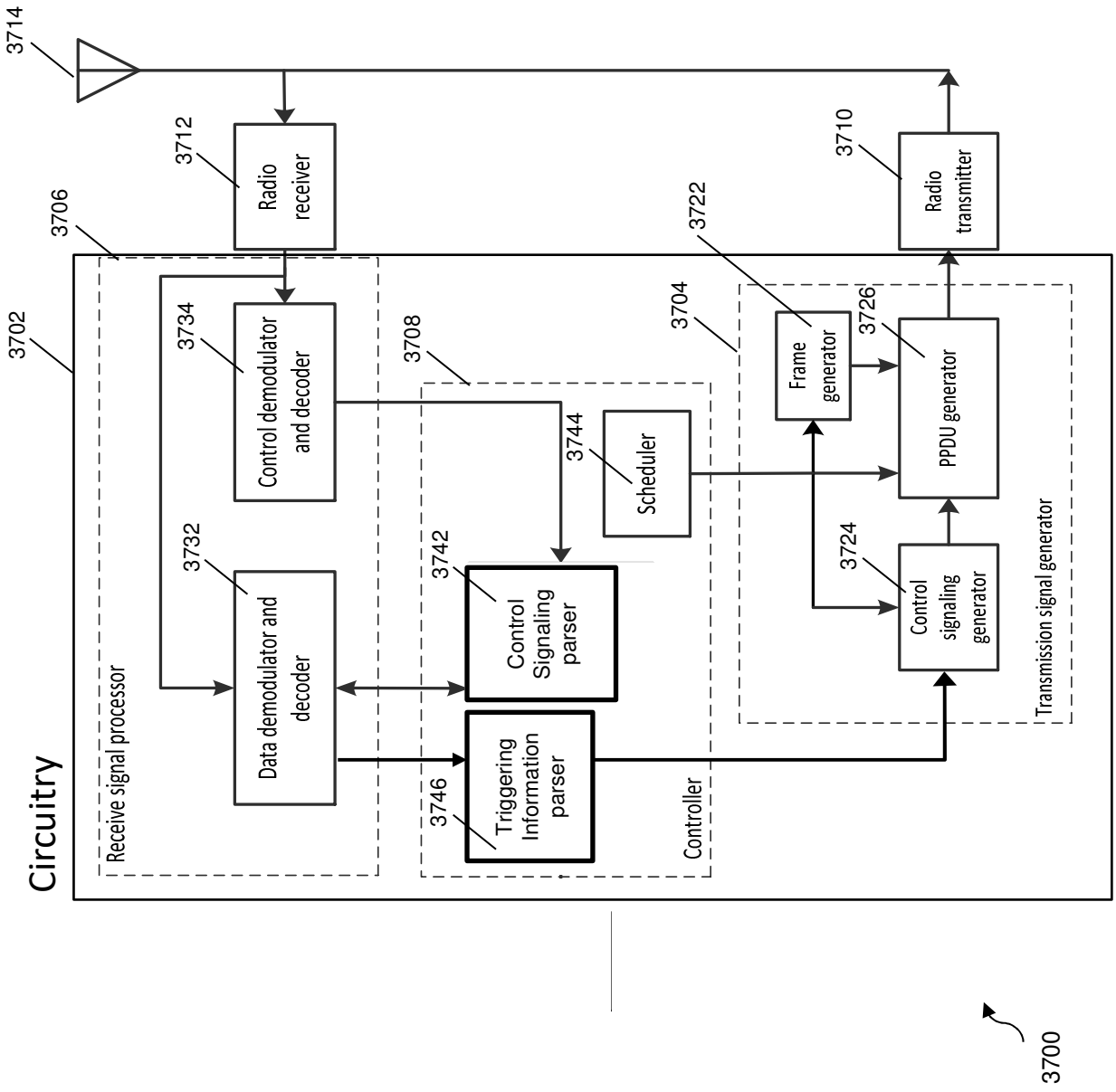

3714
3712
Radio receiver
3710
Radio transmitter
3706
3722
3702
3734
Control demodulator and decoder
3704
3726
Frame generator
3708
3744
Scheduler
PPDU generator
3732
3742
Control Signaling parser
3724
Control signaling generator
Data demodulator and decoder
Transmission signal generator
Circuitry
Receive signal processor
3746
Triggering Information parser
Controller
3700

Figure 37