

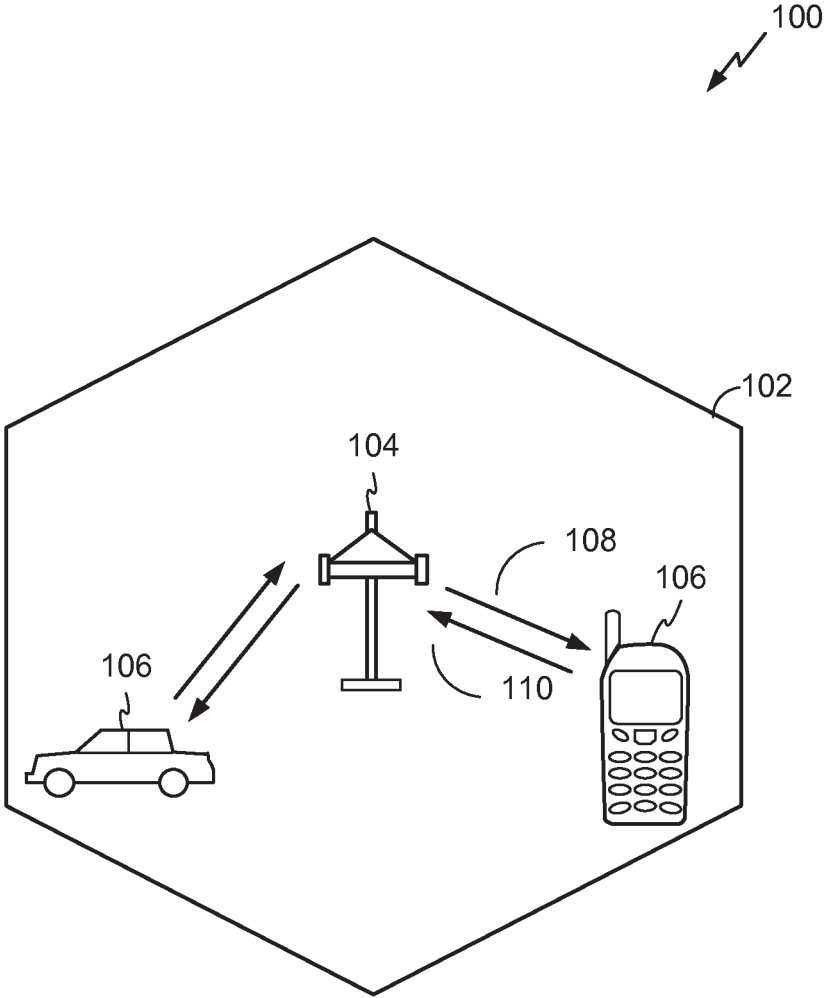


FIG. 1

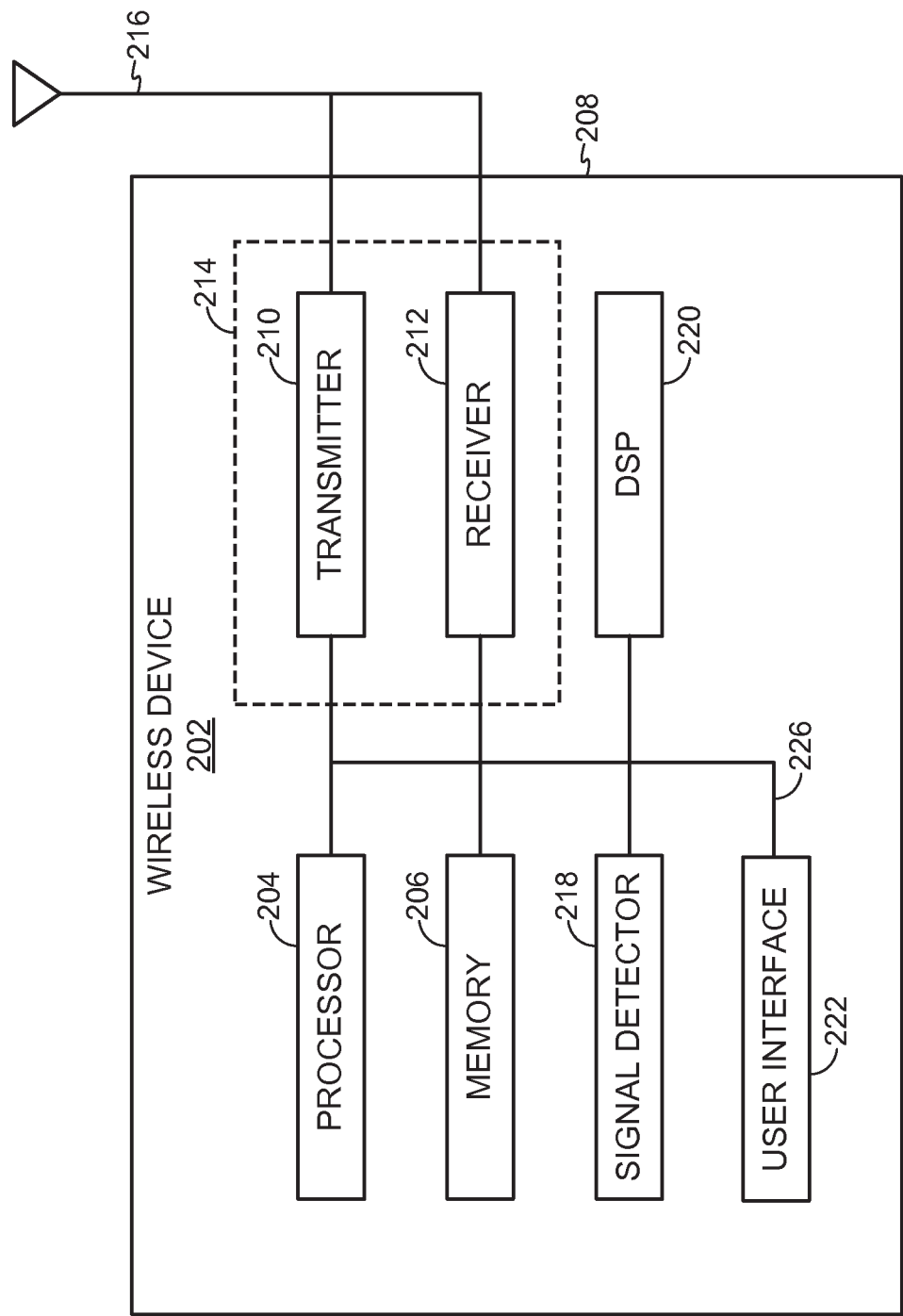


FIG. 2

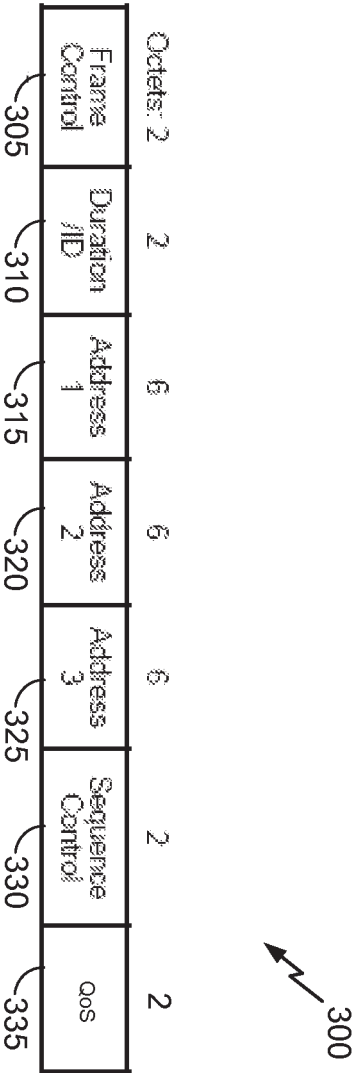


FIG. 3

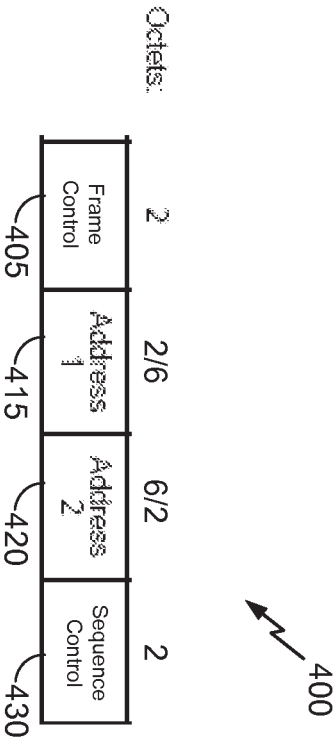


FIG. 4

300a

Field Name	Size in Octets	Field Description	
fc	2	frame control	305a
dur	2	duration/id	310a
a1	6	receiver address	315a
a2	6	transmitter address	320a
a3	6	destination address	325a
sc	2	sequence control	330a
qc	2	quality of service control	335a
htc	4	header type control	340a
ccmp	8	counter-mode/cbc-mac protocol	345a
llc/snap	8	logical link control/subnetwork access protocol	350a
mic	8	message integrity check	360a
fcs	4	frame control sequence	365a
TOTAL SIZE:	58		

305a

Field Name	Size in Bits	Field Description	
pv	2	protocol version	372
type	2	frame type	374
subtype	4	frame subtype	376
to-ds	1	to distribution system	378
from-ds	1	from distribution system	380
more frag	1	more fragments	382
retry	1	retry	384
pm	1	power management	386
md	1	more data	388
pf	1	protected frame	390
order	1	order	392
TOTAL SIZE:	16		

FIG. 3A

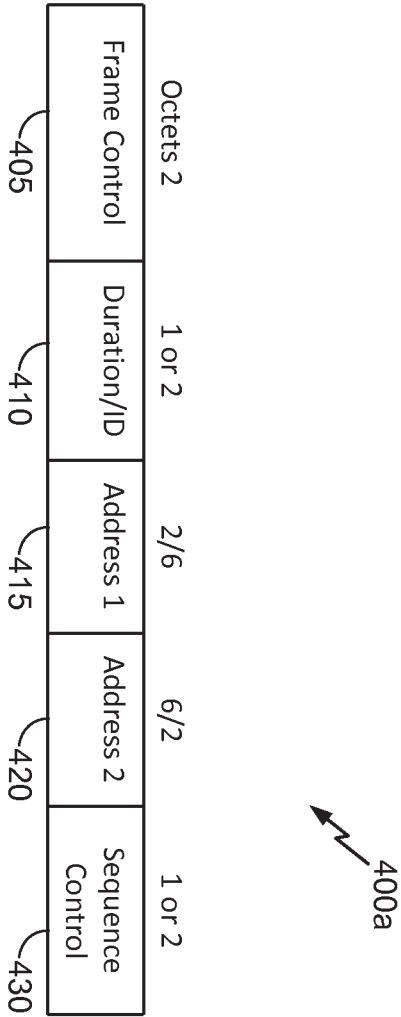


FIG. 4A

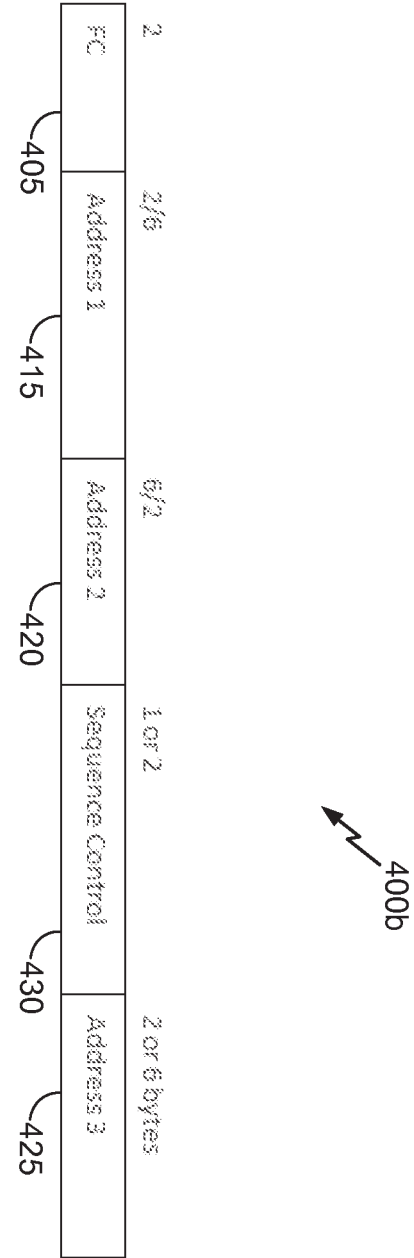


FIG. 4B

Data ⁴¹⁵ ⁴²⁰					ACK
Direction	To-DS/ From-DS	A1 (Rx)	A2 (Tx)	A3 (SA/DA)	A1 (Rx)
DL	01	AID	BSSID	(SA)	pBSSID
UL	10	BSSID	AID	(DA)	AID
Direct	00	RA	AID		AID

FIG. 5

Data ⁴¹⁵ ⁴²⁰					BA		
Direction	To-DS/ From-DS	A1 (Rx)	A2 (Tx)	A3 (SA/DA)	To-DS/ From-DS	A1 (Rx)	A2 (Tx)
DL	01	AID	BSSID	(SA)	10	BSSID	AID
UL	10	BSSID	AID	(DA)	01	AID	BSSID
Direct	00	RA	AID		00	AID	RA

FIG. 6

Data Packet ⁴¹⁵ ⁴²⁰				Block ACK	
Direction	Data-A1 (Rx)	Data-A2 (Tx)	Data-A3	BA-A1 (Tx)	BA-A2 (Rx)
DL	AID	BSSID	(SA)	AID	BSSID
UL	0	STA_MAC	(DA)	0	STA_MAC
Direct	R-AID	TA		R-AID	TA

FIG. 7

Data					BA		
Direction	R-AID	T-AID	BSSID	(SA/DA)	R-AID	T-AID	BSSID
DL	AID	0	BSSID	(SA)	0	AID	BSSID
UL	0	AID	BSSID	(DA)	AID	0	BSSID
Direct	AID1	AID2	BSSID		AID2	AID1	BSSID

FIG. 8

Data					ACK
Direction	R-AID	T-AID	BSSID	(SA/DA)	R-ID
DL	AID	0	BSSID	(SA)	0
UL	0	AID	BSSID	(DA)	AID
Direct	AID1	AID2	BSSID		AID2

FIG. 9

Data ⁴¹⁵ ⁴²⁰					ACK
Direction	to-DS/ from-DS	A1 (AID)	A2 (BSSID)	A3 (SA/DA)	A1 (Rx)
DL	01	AID	BSSID	(SA)	pBSSID
UL	10	AID	BSSID	(DA)	AID
Direct	00	T-AID	RA		AID

FIG. 10

Data ⁴¹⁵ ⁴²⁰					BA		
Direction	to-DS/ from-DS	A1 (AID)	A2 (BSSID/RA)	A3 (SA/DA)	to-DS/ from-DS	A1 (Rx)	A2 (Tx)
DL	01	AID	BSSID	(SA)	10	AID	BSSID
UL	10	AID	BSSID	(DA)	01	AID	BSSID
Direct	00	AID	RA		00	AID	RA

FIG. 11

Data ⁴¹⁵ ⁴²⁰					ACK
Direction	to-DS/ from-DS	A1 (AID)	A2 (BSSID)	A3 (SA/DA)	A1 (Rx)
DL	01	BSSID	AID	(SA)	pBSSID
UL	10	BSSID	AID	(DA)	AID
Direct	00	RA	T-AID		AID

FIG. 12

RTS-A1	RTS-A2	CTS-A1
RA	T-AID	T-AID

FIG. 13

Management frame 415 420				ACK
Direction	to-DS/ from-DS	A1 (Rx)	A2 (Tx)	A1 (Rx)
DL	01	AID	BSSID	pBSSID
UL	10	BSSID	AID	AID

FIG. 14

Data 415 420			ACK
Direction	A1 (Rx)	A2 (Tx)	A1 (Rx)
DL	STA-AID	BSSID	BSSID
UL	BSSID	STA-MAC	STA-MAC
Direct	R-STA-MAC	T-STA-MAC	T-STA-MAC

FIG. 15

Data				
Direction	A1 (Rx)	A2 (Tx)	A3 (SA/DA)	
DL	RA	AID=0	(SA)	1602
UL	BSSID	AID	(DA)	1604
Direct	RA	AID		1606

FIG. 16

Data				
Direction	From-AP	A1 (Rx)	A2 (Tx)	A3 (SA/DA)
DL	1	RA		(SA)
UL	0	BSSID	AID	(DA)
Direct	0	RA	AID	

FIG. 17

Field Name	Size in Bits	Size in Octets	Field Description
fc	16		frame control
pra	5		partial receiver address
pta	11		partial transmitter address
aci	2		access category index
hcs	4		header check sequence
ccmp	64	8	counter-mode/cbc-mac protocol
ethertype	16	2	ethertype
mic	64	8	message integrity check
TOTAL SIZE:	182	23	
SIZE REDUCTION:	61%		

Field Name	Size in Bits	Field Description
pv	2	protocol version
type	2	frame type
subtype	4	frame subtype
to-ds	1	to distribution system
from-ds	1	from distribution system
more frag	1	more fragments
retry	1	retry
pm	1	power management
md	1	more data
pf	1	protected frame
order	1	order
TOTAL SIZE:	16	

FIG. 18

Field Name	Size in Bits	Size in Octets	Field Description
fc	8		frame control
pra	5		partial receiver address
pta	11		partial transmitter address
aci	2		access category index
hcs	4		header check sequence
ccmp	64	8	counter-mode/cbc-mac protocol
ethertype	16	2	ethertype
mic	64	8	message integrity check
TOTAL SIZE:	174	22	
SIZE REDUCTION:	63%		

Field Name	Size in Bits	Field Description
pv	2	protocol version
type	2	frame type
a3 present	1	address 3 present
retry	1	retry
pm	1	power management
md	1	more data
TOTAL SIZE:	8	

FIG. 19

Field Name	Size in Bits	Size in Octets	Field Description
fc	8		frame control
pta	11		partial transmitter address
aci	2		access category index
hcs	4		header check sequence
ccmp	64	8	counter-mode/cbc-mac protocol
ethertype	16	2	ethertype
mic	64	8	message integrity check
TOTAL SIZE:	169	21	
SIZE REDUCTION:	64%		

Field Name	Size in Bits	Field Description
pv	2	protocol version
type	2	frame type
a3 present	1	address 3 present
retry	1	retry
pm	1	power management
md	1	more data
TOTAL SIZE:	8	

FIG. 20

Field Name	Size in Bits	Size in Octets	Field Description
fc	8		frame control
pra	5		partial receiver address
pta	11		partial transmitter address
a3	48	6	address 3
aci	2		access category index
hcs	4		header check sequence
ccmp	64	8	counter-mode/cbc-mac protocol
ethertype	16	2	ethertype
mic	64	8	message integrity check
TOTAL SIZE:	222	28	
SIZE REDUCTION:	52%		

Field Name	Size in Bits	Field Description
pv	2	protocol version
type	2	frame type
a3 present	1	address 3 present
retry	1	retry
pm	1	power management
md	1	more data
TOTAL SIZE:	8	

FIG. 21

Field Name	Size in Bits	Size in Octets	Field Description
fc	9		frame control
pra	5		partial receiver address
pta	11		partial transmitter address
aci	2		access category index
hcs	4		header check sequence
ccmp	64	8	counter-mode/cbc-mac protocol
ethertype	16	2	ethertype
mic	64	8	message integrity check
TOTAL SIZE:	175	22	
SIZE REDUCTION:	62%		

Field Name	Size in Bits	Field Description
pv	2	protocol version
type	2	frame type
a3 present	1	address 3 present
compr a3	1	compressed a3 present
retry	1	retry
pm	1	power management
md	1	more data
TOTAL SIZE:	9	

FIG. 22

Field Name	Size in Bits	Size in Octets	Field Description
fc	9		frame control
pta	11		partial transmitter address
aci	2		access category index
hcs	4		header check sequence
ccmp	64	8	counter-mode/cbc-mac protocol
ethertype	16	2	ethertype
mic	64	8	message integrity check
TOTAL SIZE:	170	22	
SIZE REDUCTION:	63%		

Field Name	Size in Bits	Field Description
pv	2	protocol version
type	2	frame type
a3 present	1	address 3 present
compr a3	1	compressed a3 present
retry	1	retry
pm	1	power management
md	1	more data
TOTAL SIZE:	9	

FIG. 23

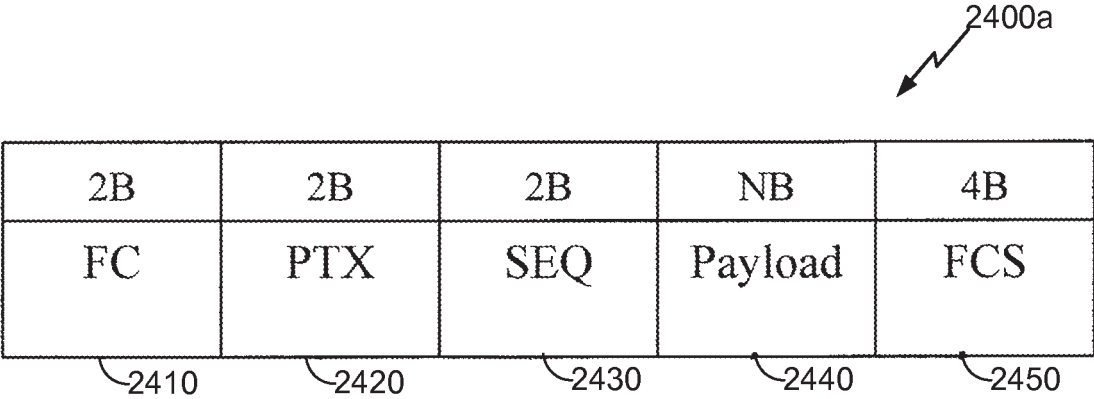


FIG. 24A

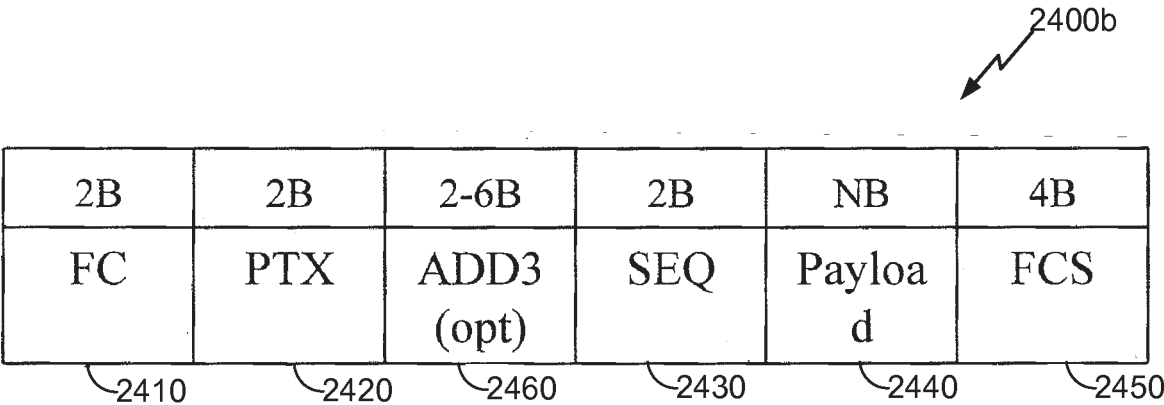


FIG. 24B

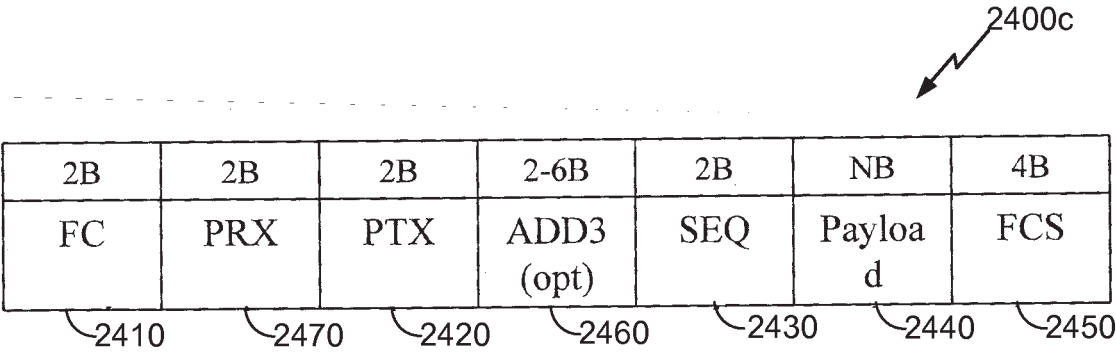


FIG. 24C

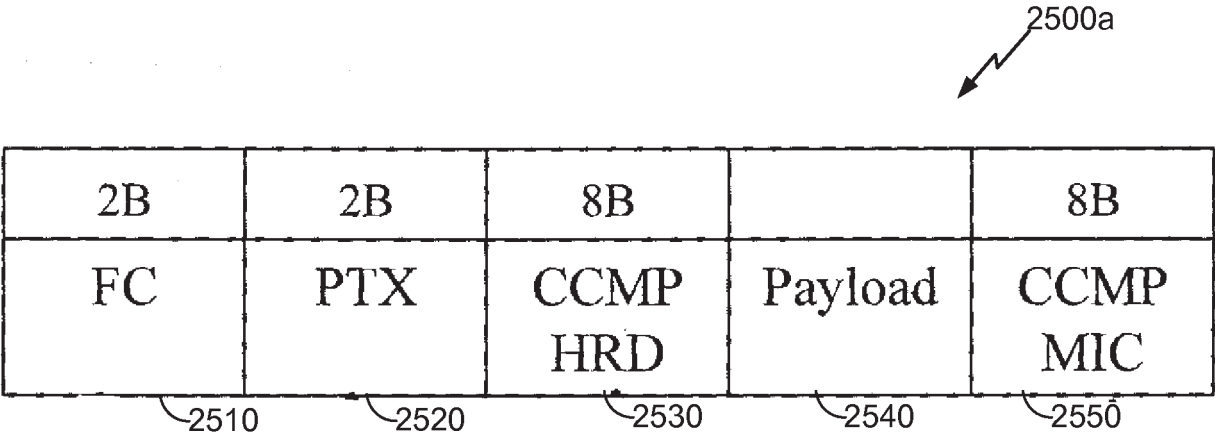


FIG. 25A

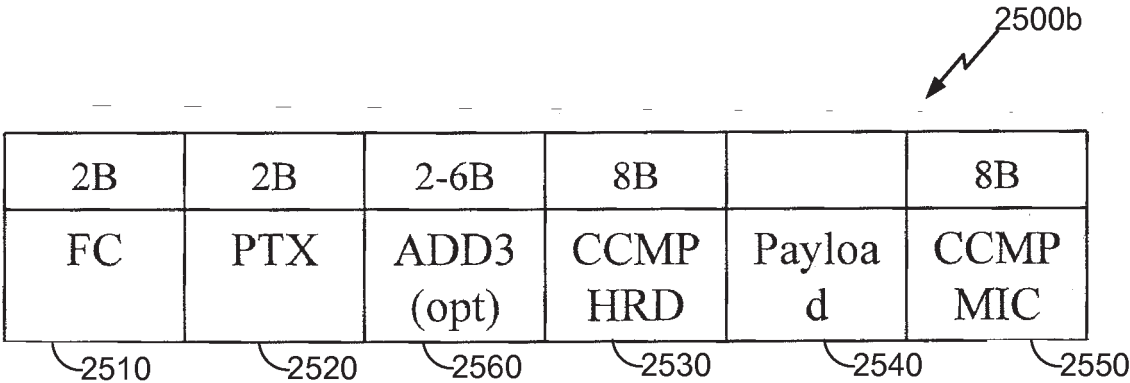


FIG. 25B

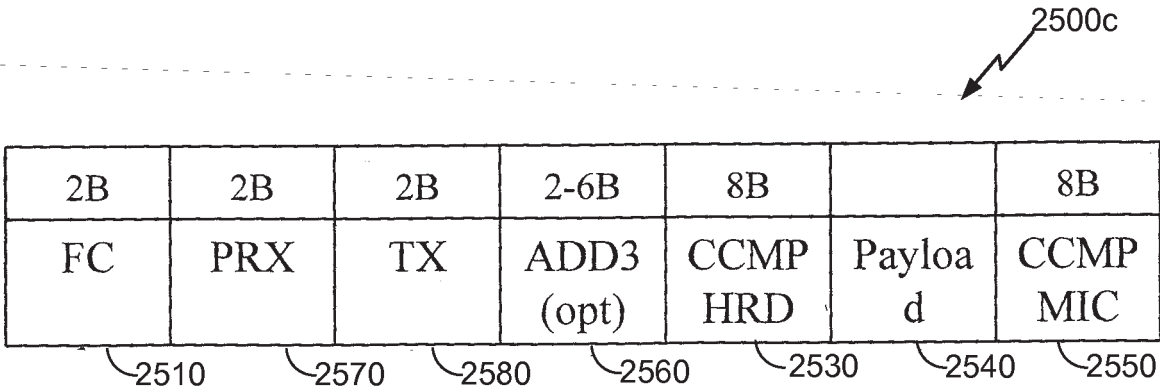


FIG. 25C

2600
↙

Field Name	Size in Octets	Field Description	
fc	2	frame control	2605
dur	2	duration	2610
al	6	address 1	2615
fcs	4	frame control sequence	2620
TOTAL SIZE:	14		

2605 {	Field Name	Size in Bits	Field Description
	pv	2	protocol version
	type	2	frame type
	subtype	4	frame subtype
	to-ds	1	to distribution system
	from-ds	1	from distribution system
	more frag	1	more fragments
	retry	1	retry
	pm	1	power management
	md	1	more data
	pf	1	protected frame
	order	1	order
	TOTAL SIZE:	16	

FIG. 26

Field Name	Size in Bits	Size in Octets	Field Description
fc	9		frame control
hcs	4		header check sequence
TOTAL SIZE:	13	2	
SIZE REDUCTION:	88%		

Field Name	Size in Bits	Field Description
pv	2	protocol version
type	2	frame type
a3 present	1	address 3 present
compr a3	1	compressed a3 present
retry	1	retry
pm	1	power management
md	1	more data
TOTAL SIZE:	9	

FIG. 27

Field Name	Size in Bits	Size in Octets	Field Description
fc	9		frame control
pra	5		partial receiver address
hcs	4		header check sequence
TOTAL SIZE:	18	2	
SIZE REDUCTION:	84%		

Field Name	Size in Bits	Field Description
pv	2	protocol version
type	2	frame type
a3 present	1	address 3 present
compr a3	1	compressed a3 present
retry	1	retry
pm	1	power management
md	1	more data
TOTAL SIZE:	9	

FIG. 28

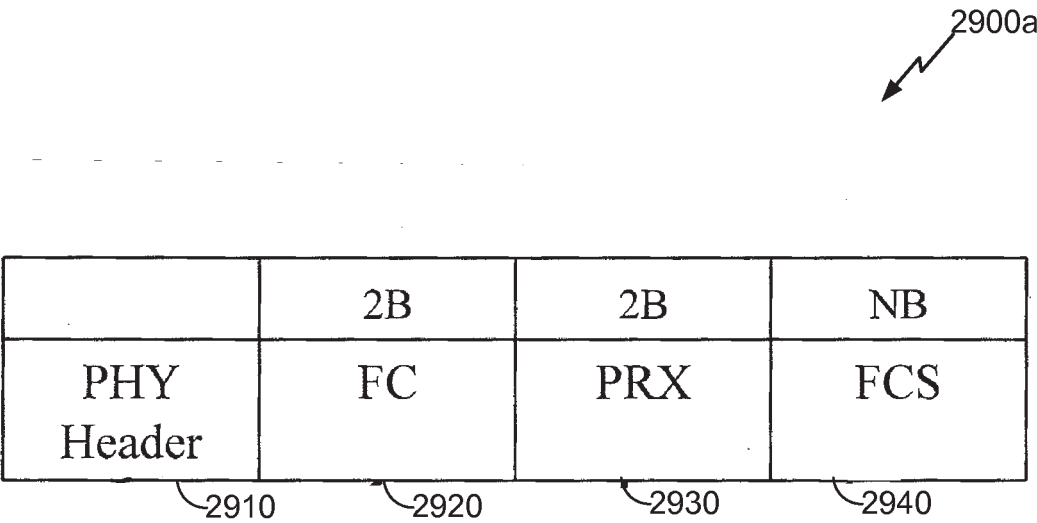


FIG. 29A

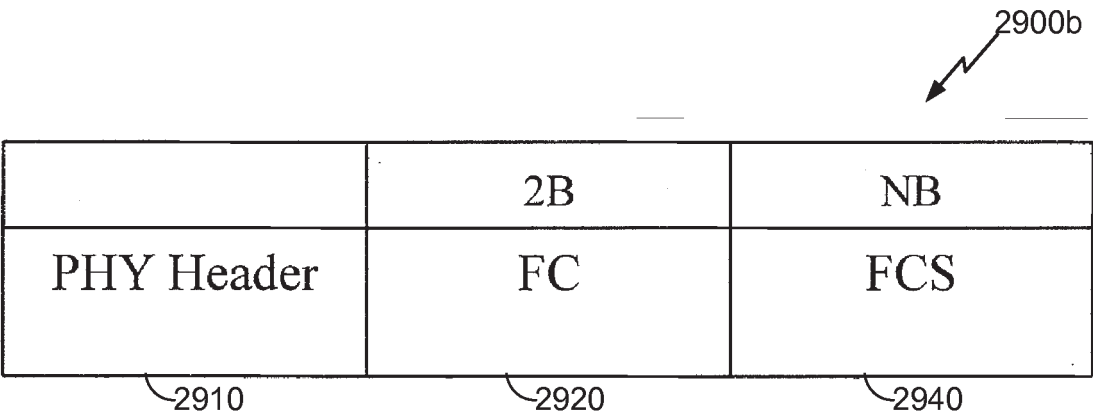


FIG. 29B

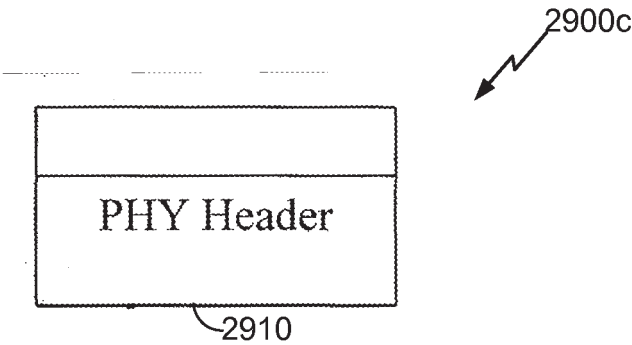


FIG. 29C

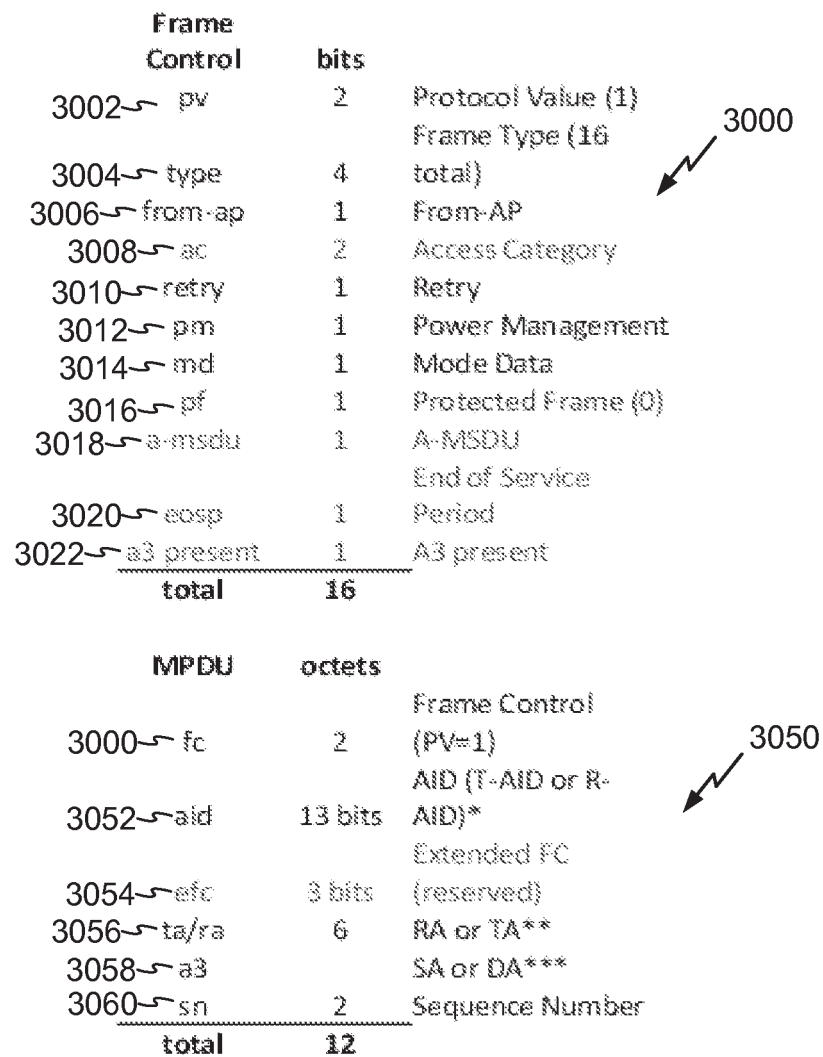


FIG. 30

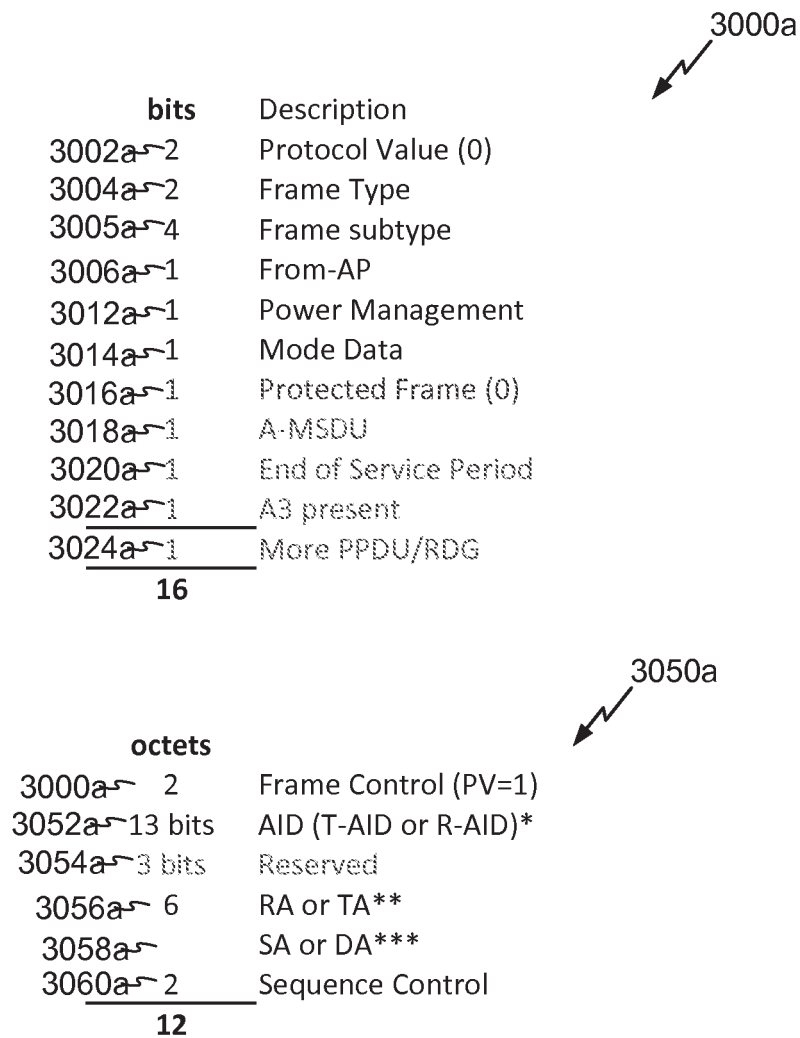


FIG. 30A

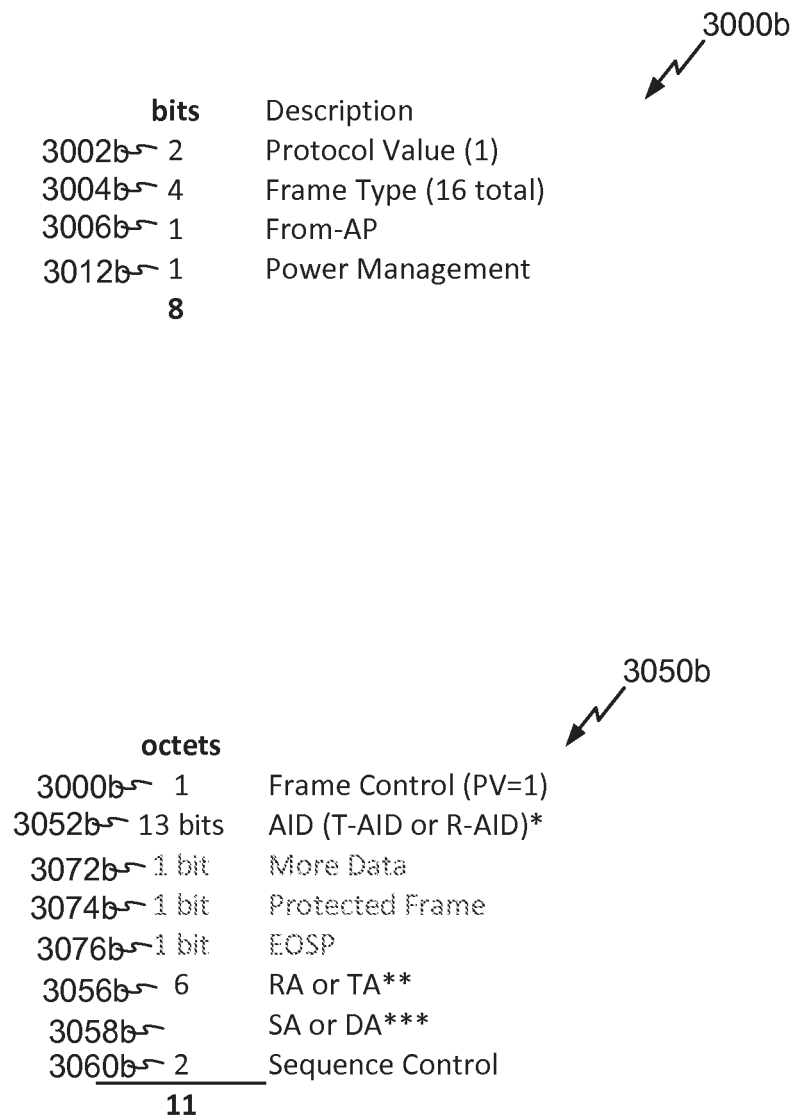


FIG. 30B

Frame Control		bits	
2202	pv	2	Protocol Value (1)
2204	type	4	Frame Type (16 total)
2206	from-ap	1	From-AP
2208	ac	2	Access Category
2210	retry	1	Retry
2212	pm	1	Power Management
2214	md	1	Mode Data
2216	pf	1	Protected Frame (1)
2218	a-msdu	1	A-MSDU
			End of Service
2220	eosp	1	Period
2222	a3 present	1	A3 present
total		16	

3100

MPDU		octets	
2200	fc	2	Frame Control (PV=1)
2252	aid	13 bits	AID (T-AID or R-AID)*
2254	efc	3 bits	Extended FC (reserved)
2256	ta/ra	6	RA or TA**
2258	a3		SA or DA***
2260	sn	2	Sequence Number
3162	ppn	2	Packet PN
3164	mic	8	MIC
total		22	

3150

FIG. 31

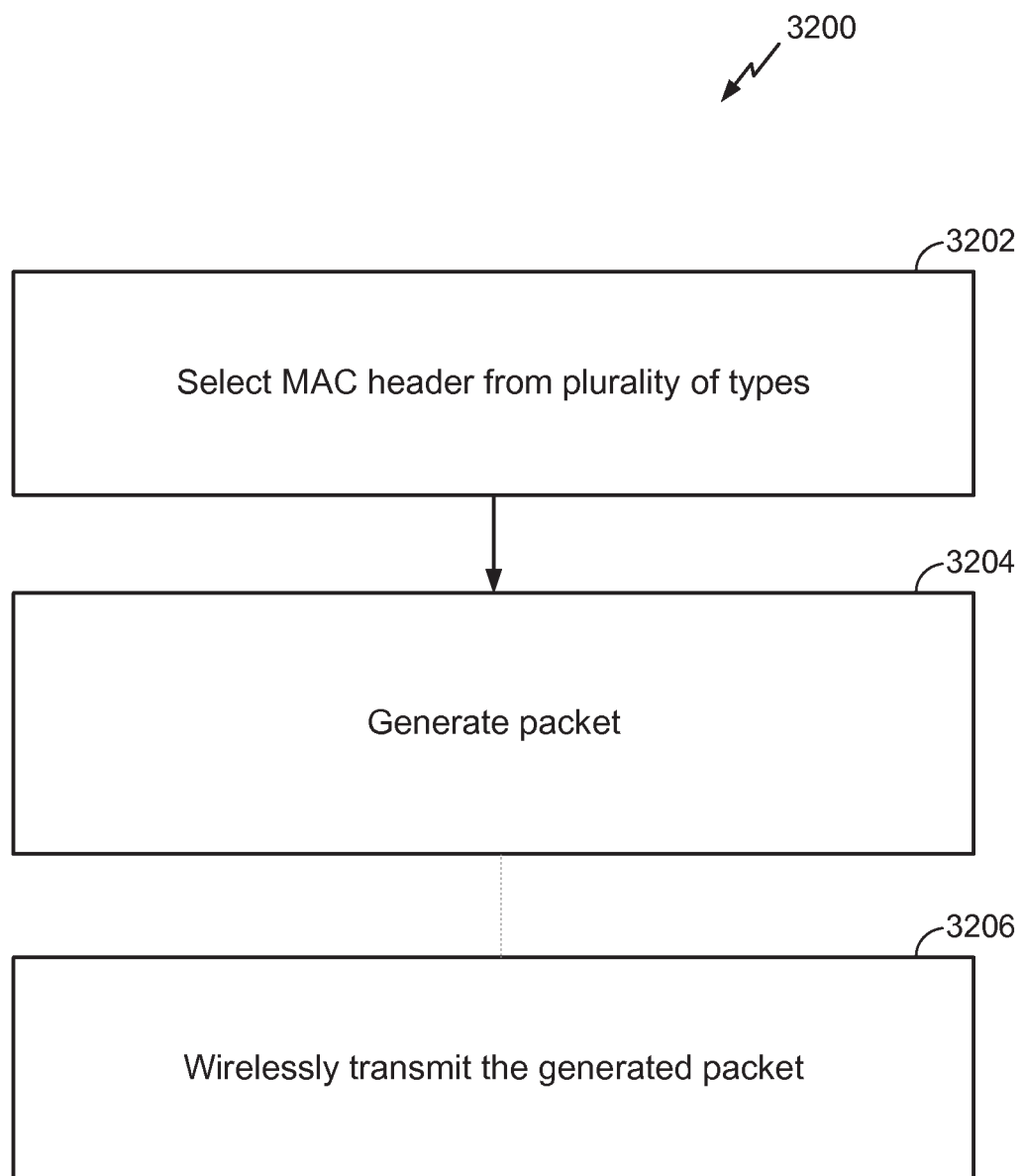


Figure 32

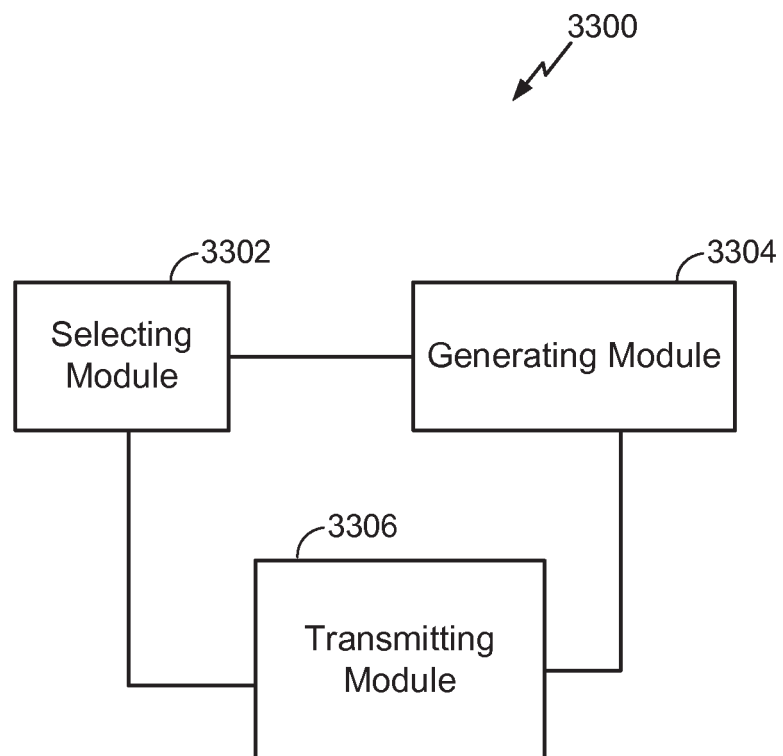


FIG. 33

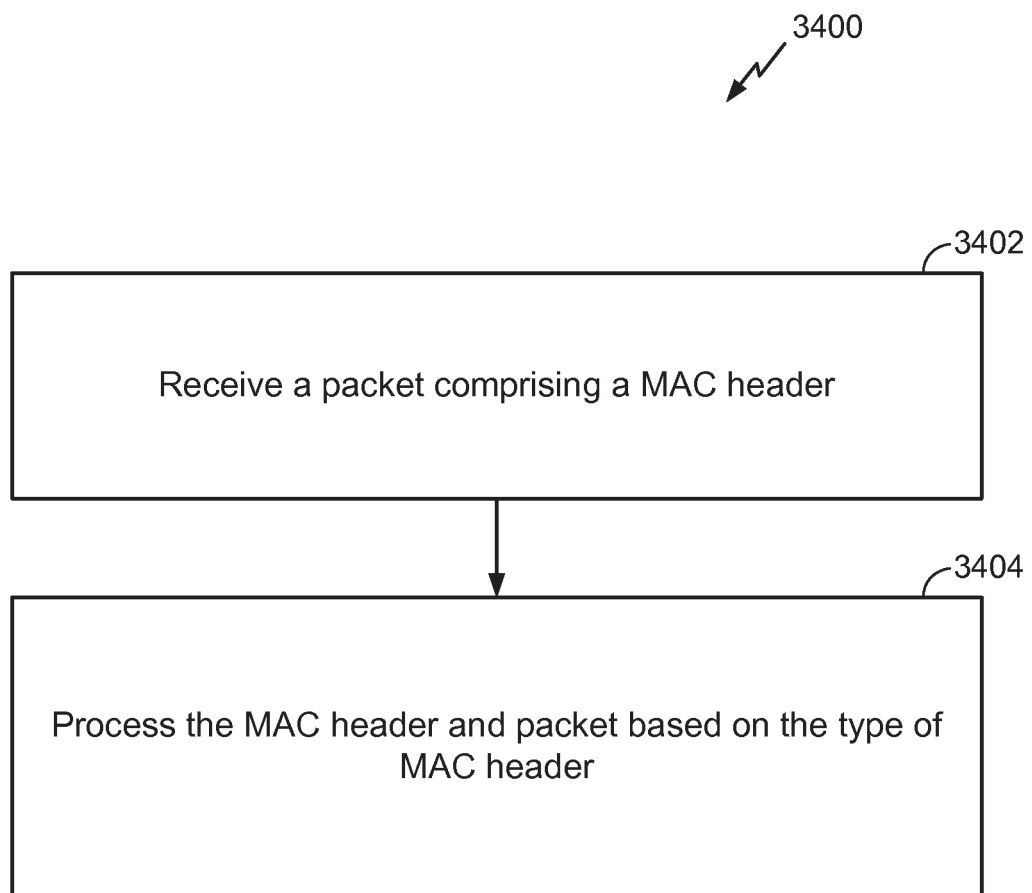


FIG. 34

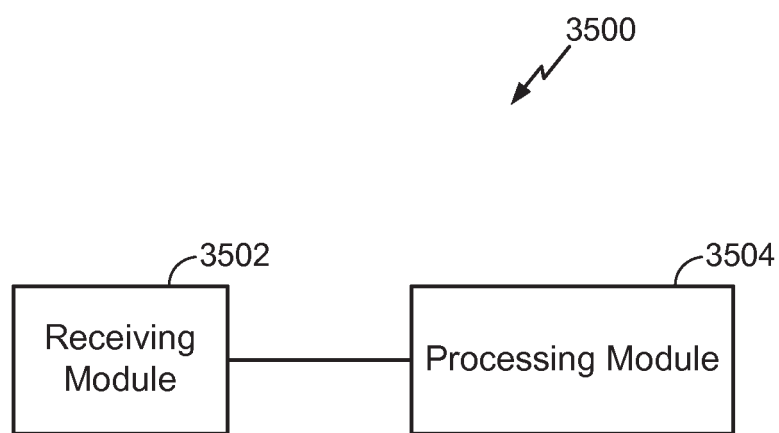


FIG. 35

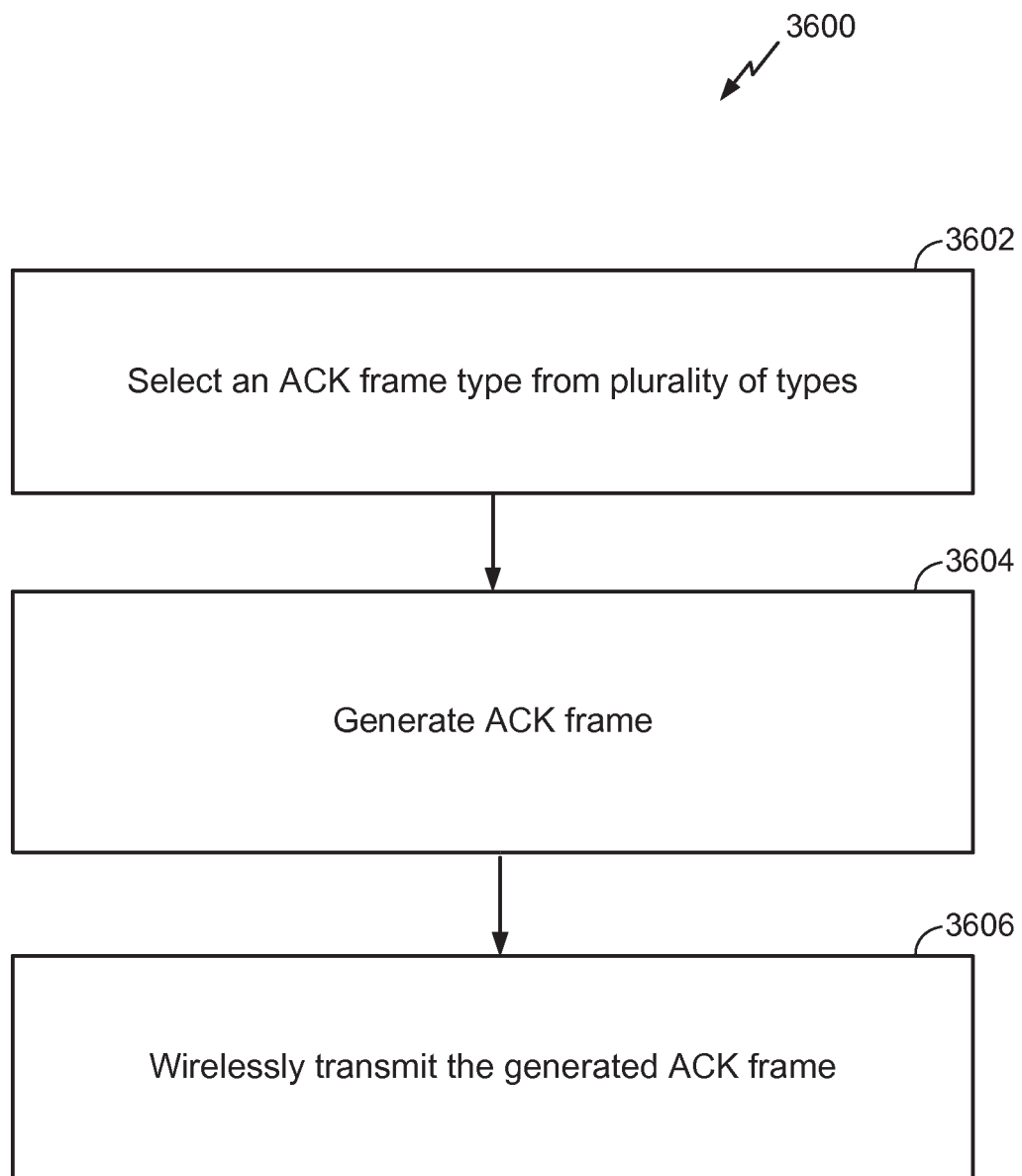


Figure 36

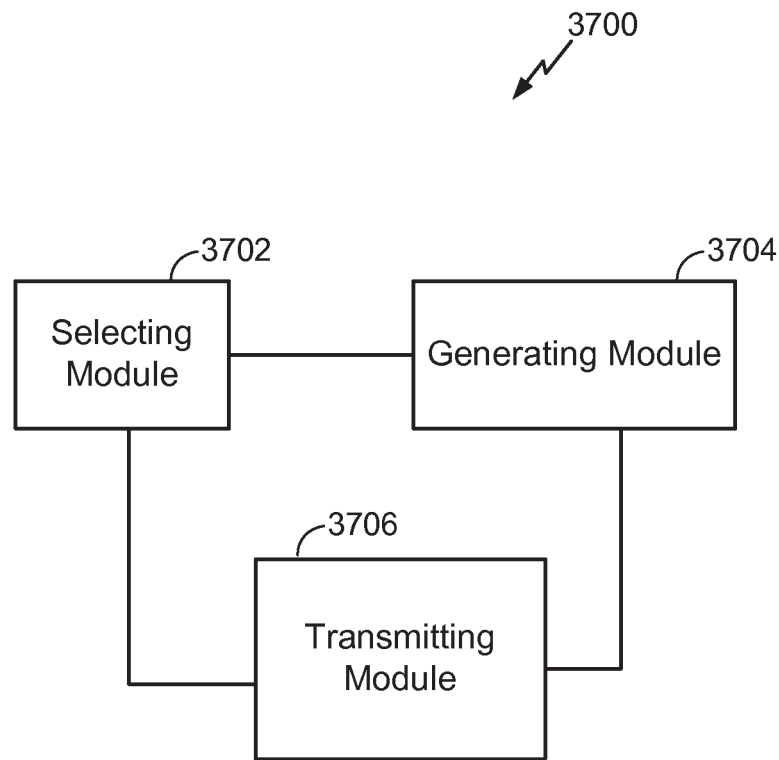


FIG. 37

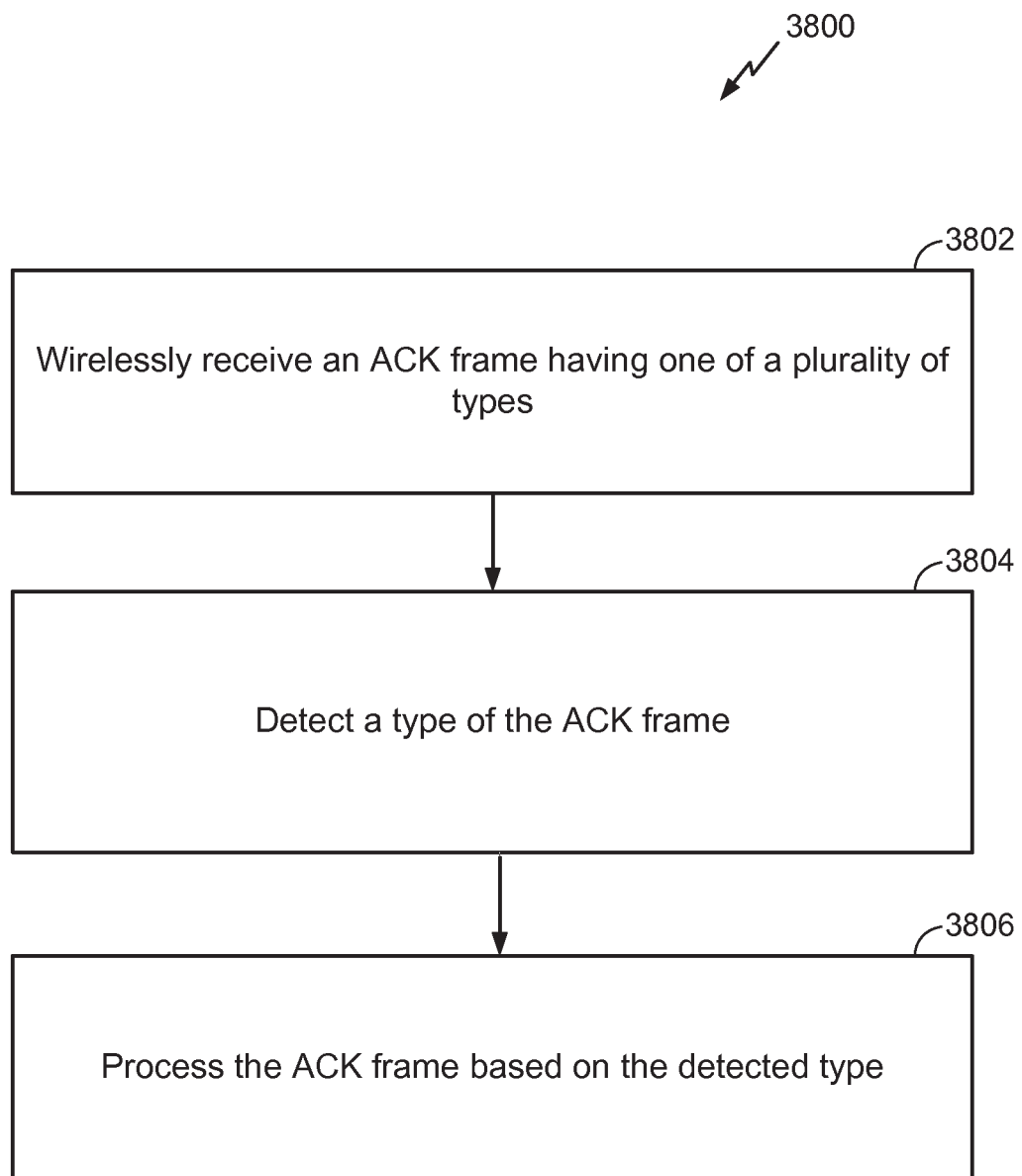


Figure 38

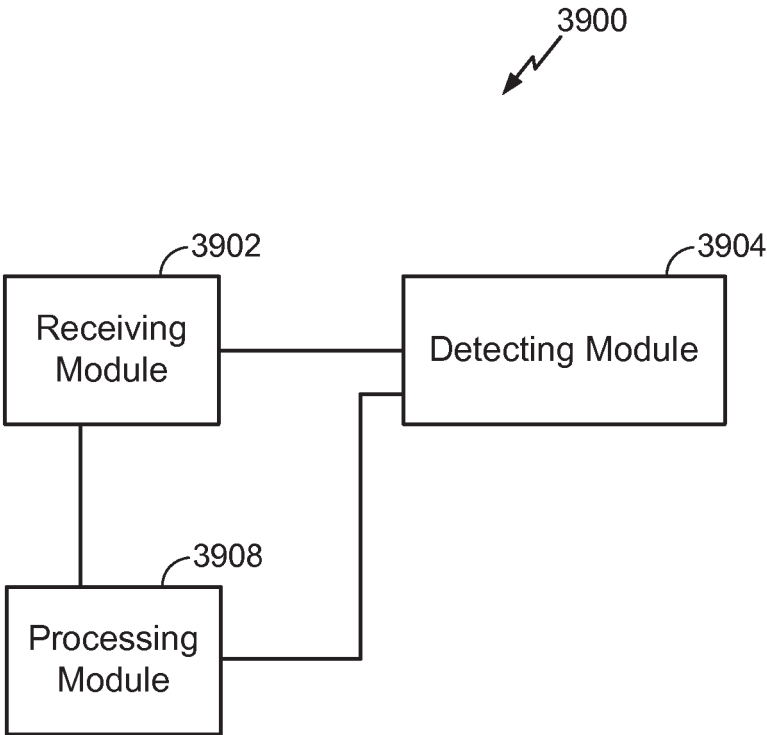


FIG. 39

31/32

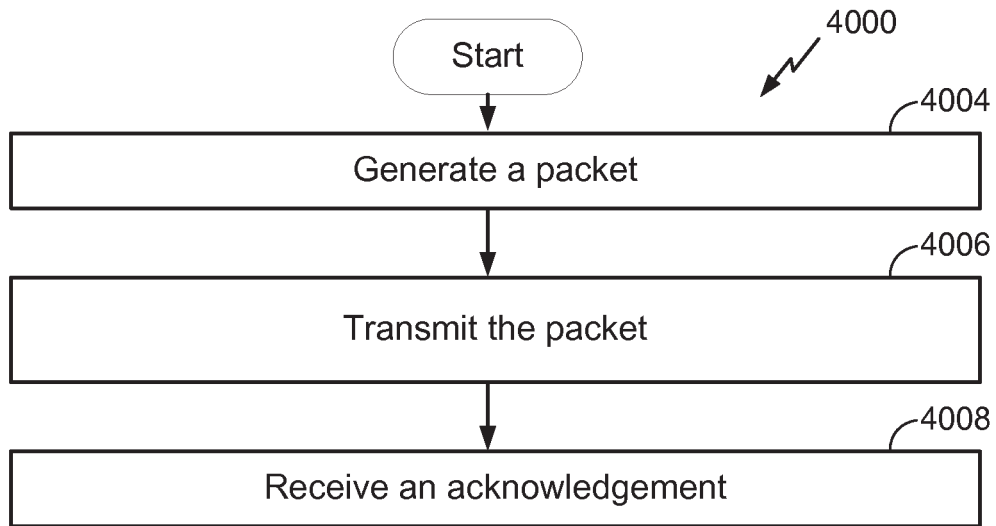


FIG. 40

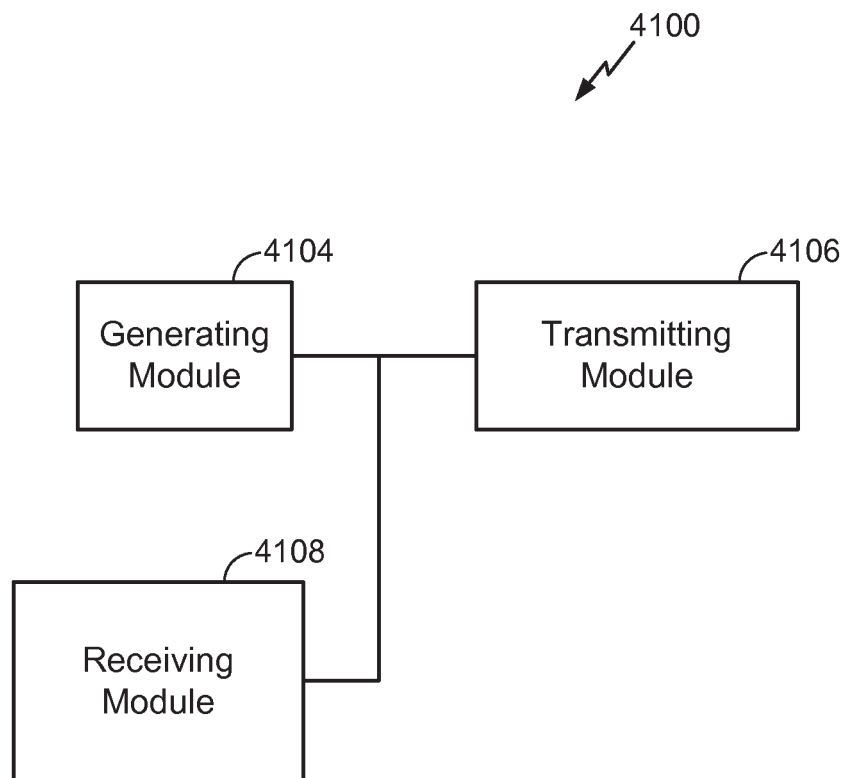


FIG. 41

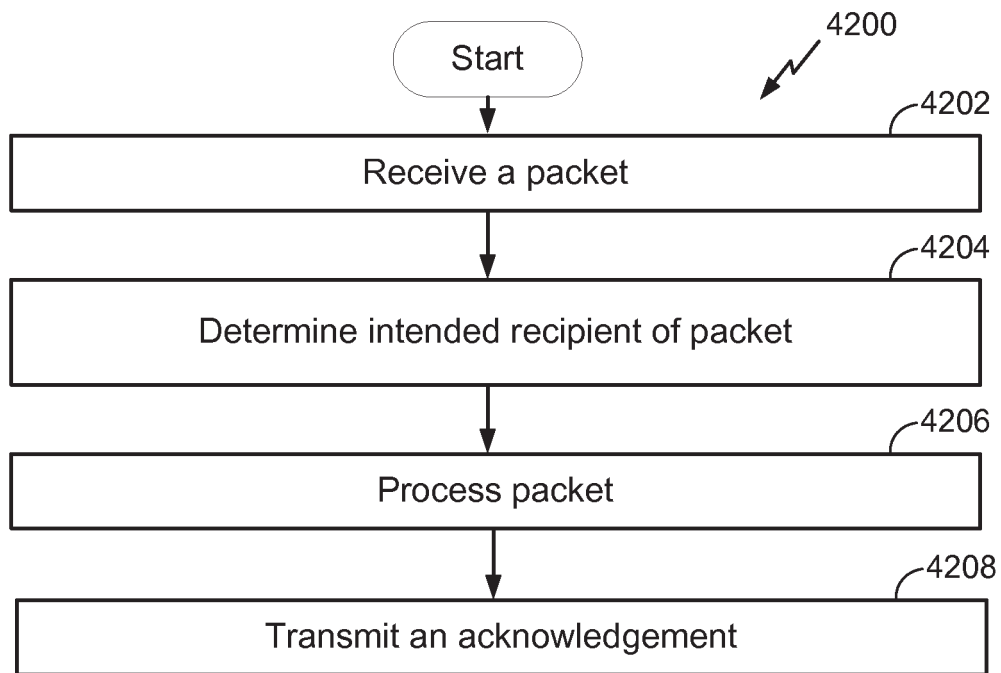


FIG. 42

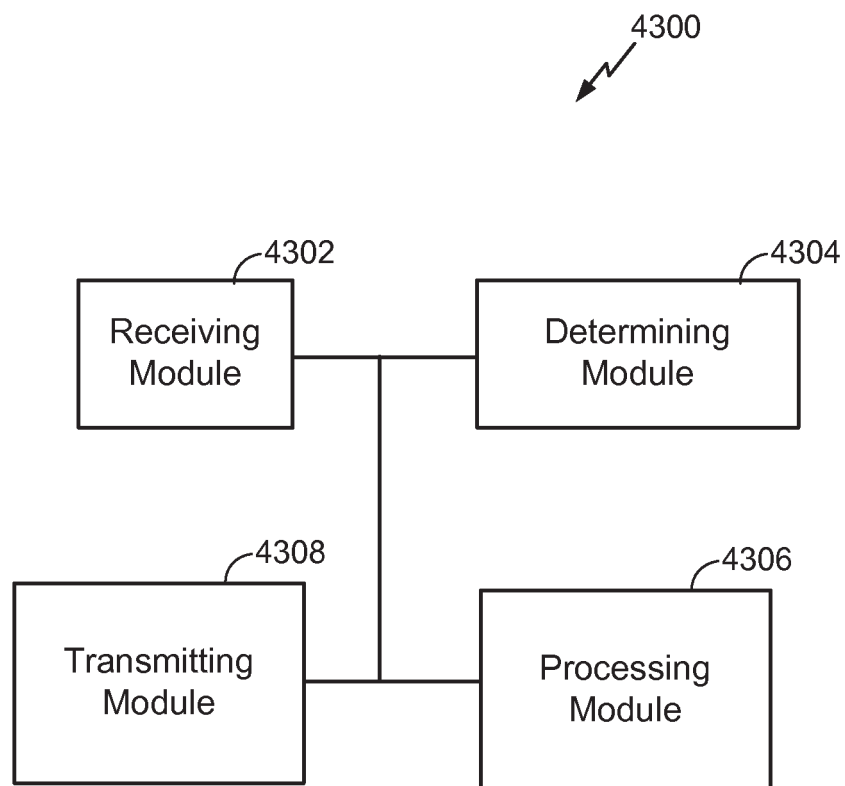


FIG. 43