

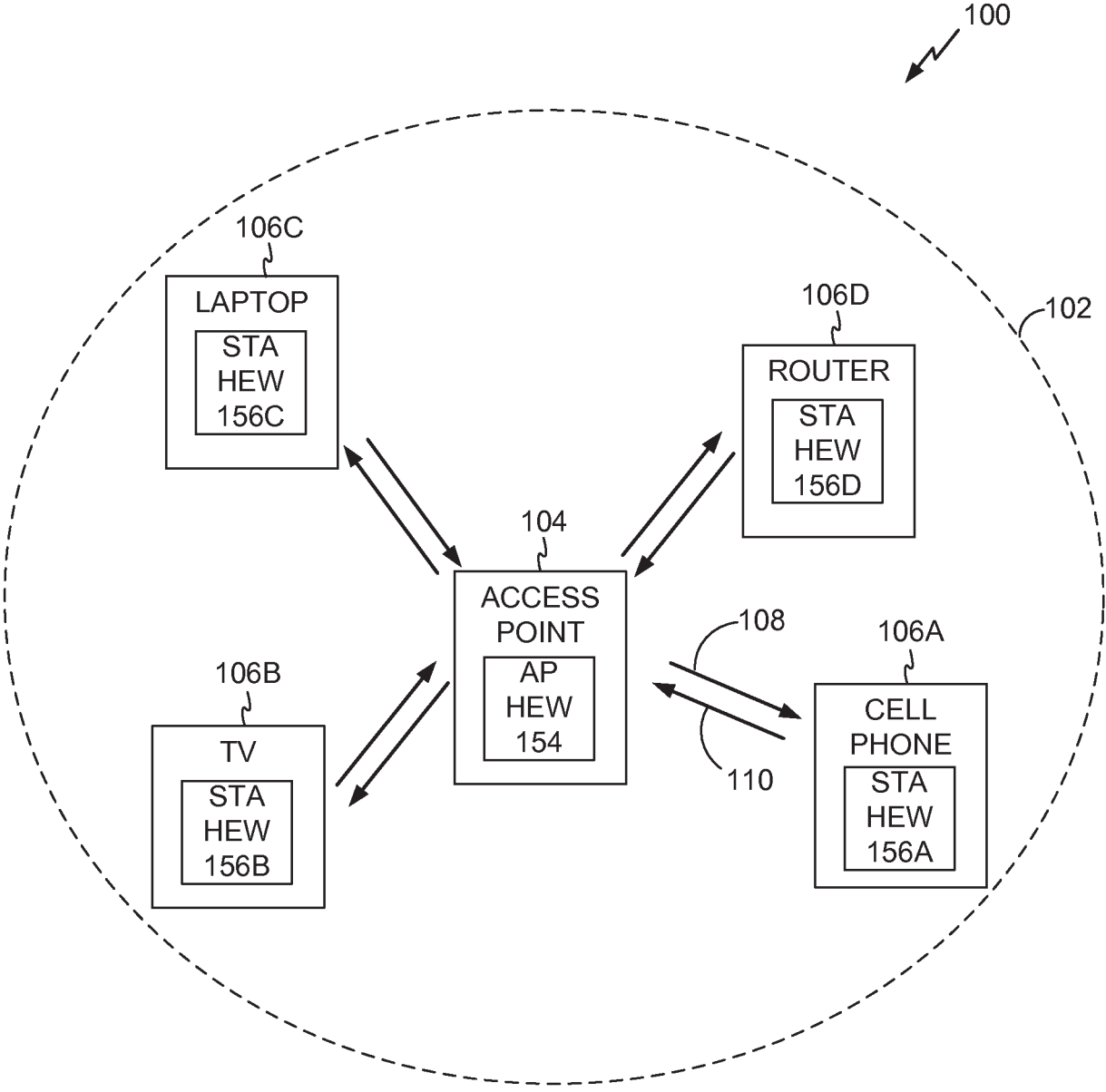


FIG. 1

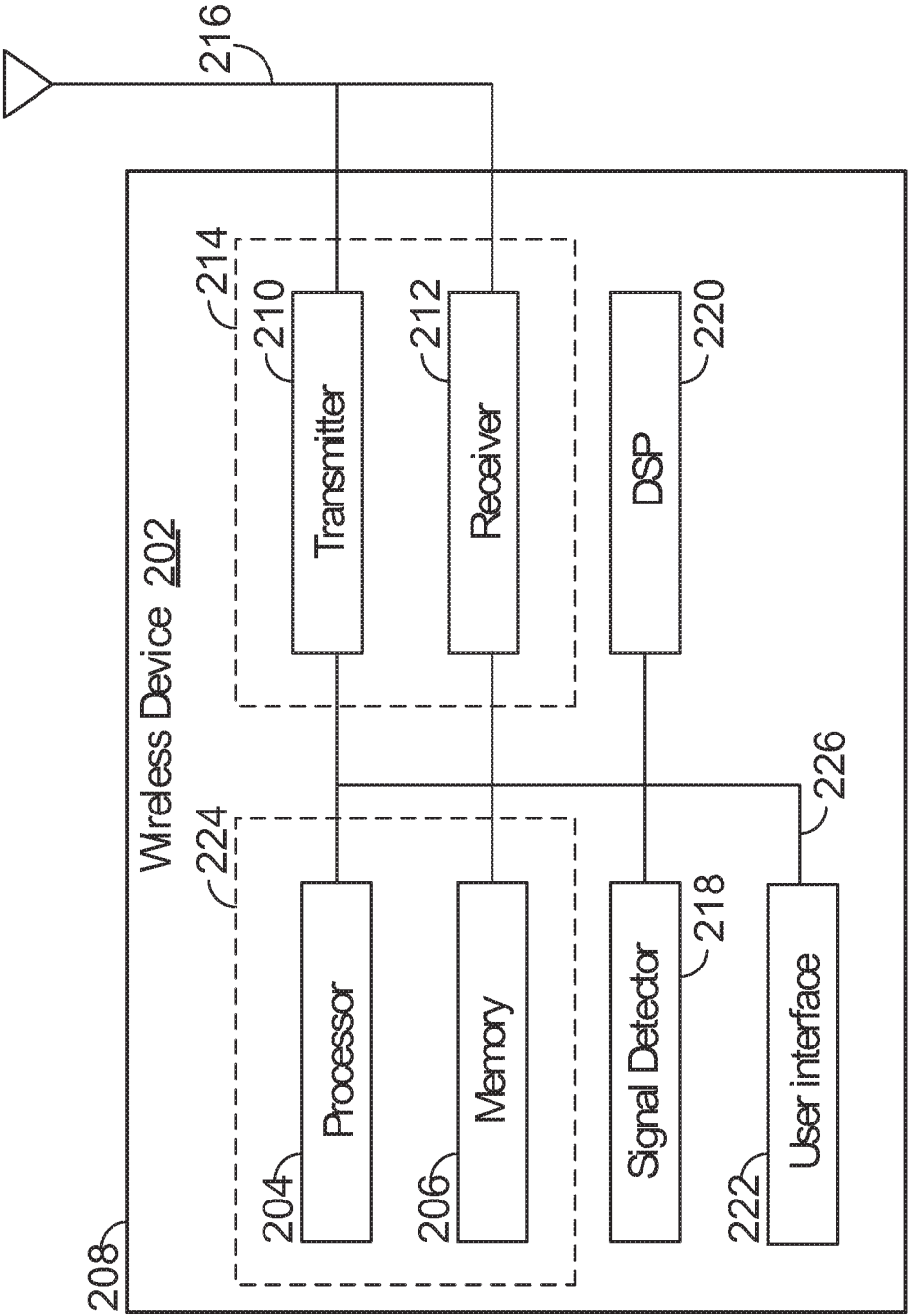


FIG. 2

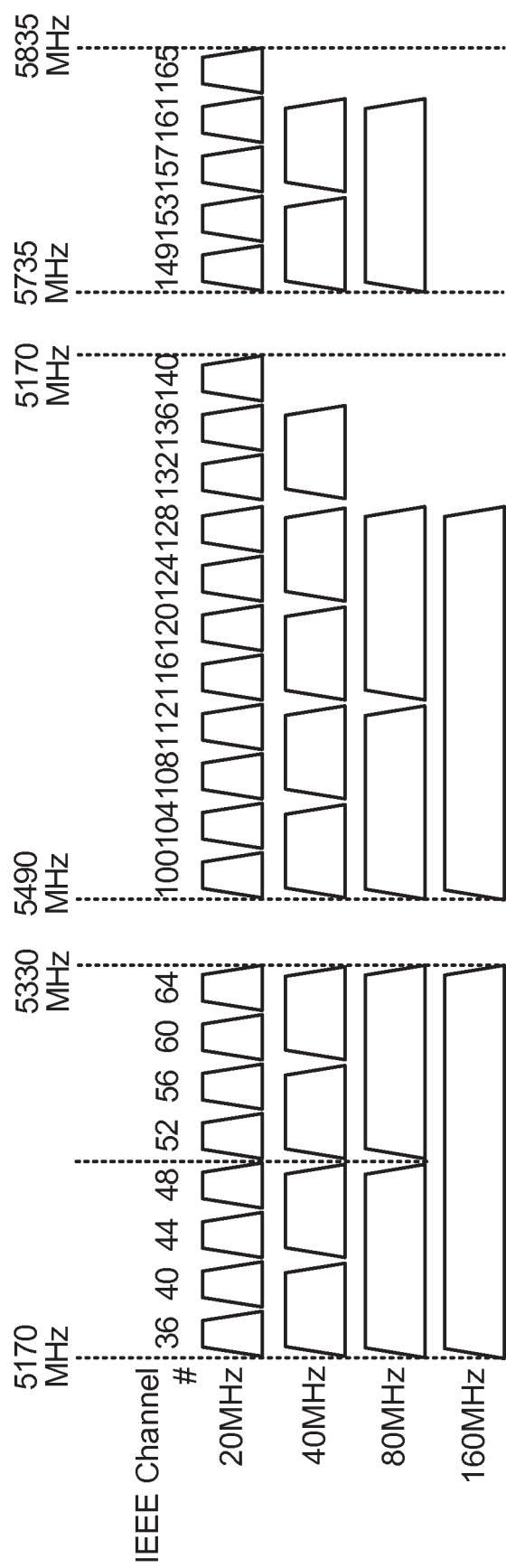


FIG. 3

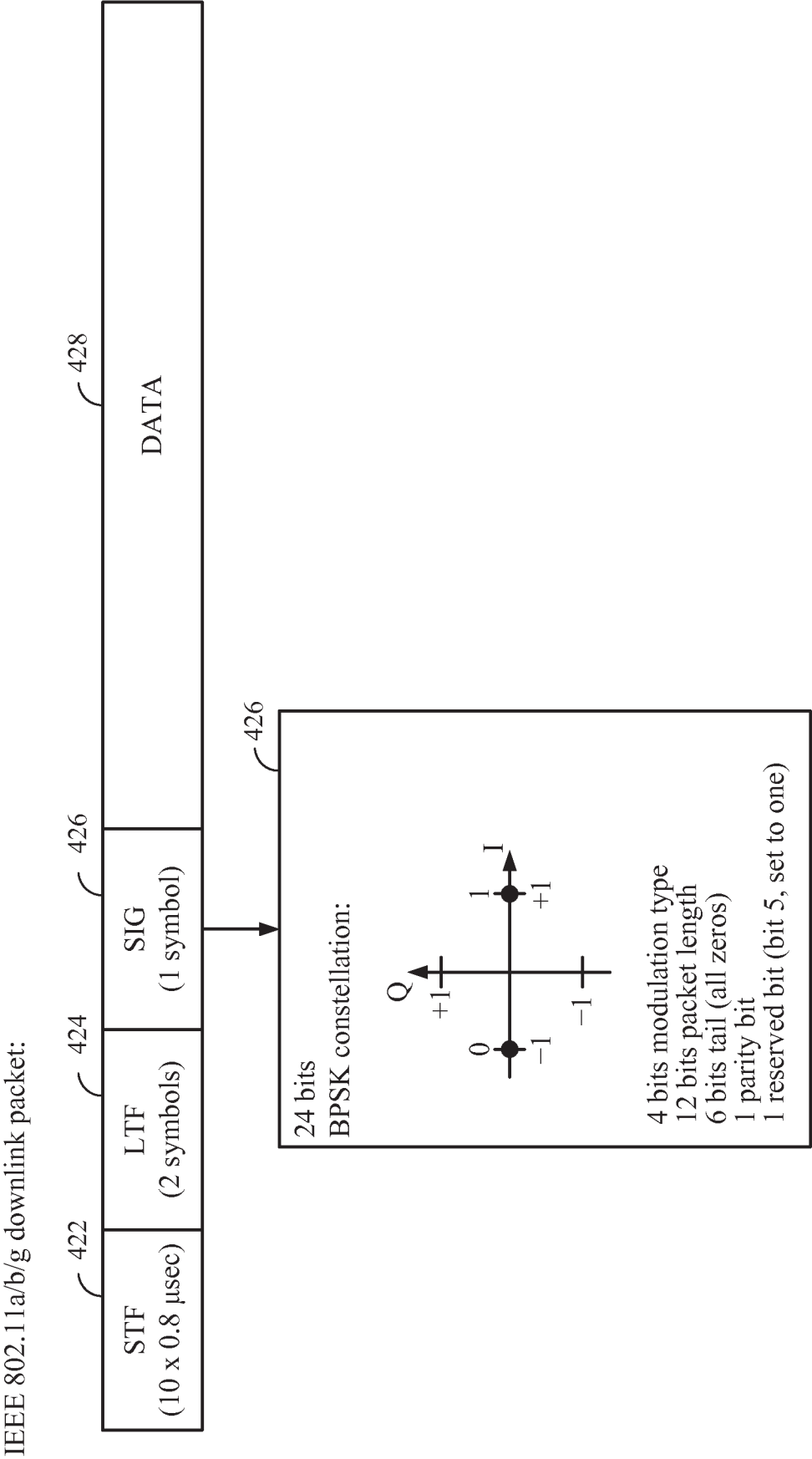


FIG. 4

IEEE 802.11n downlink packet:

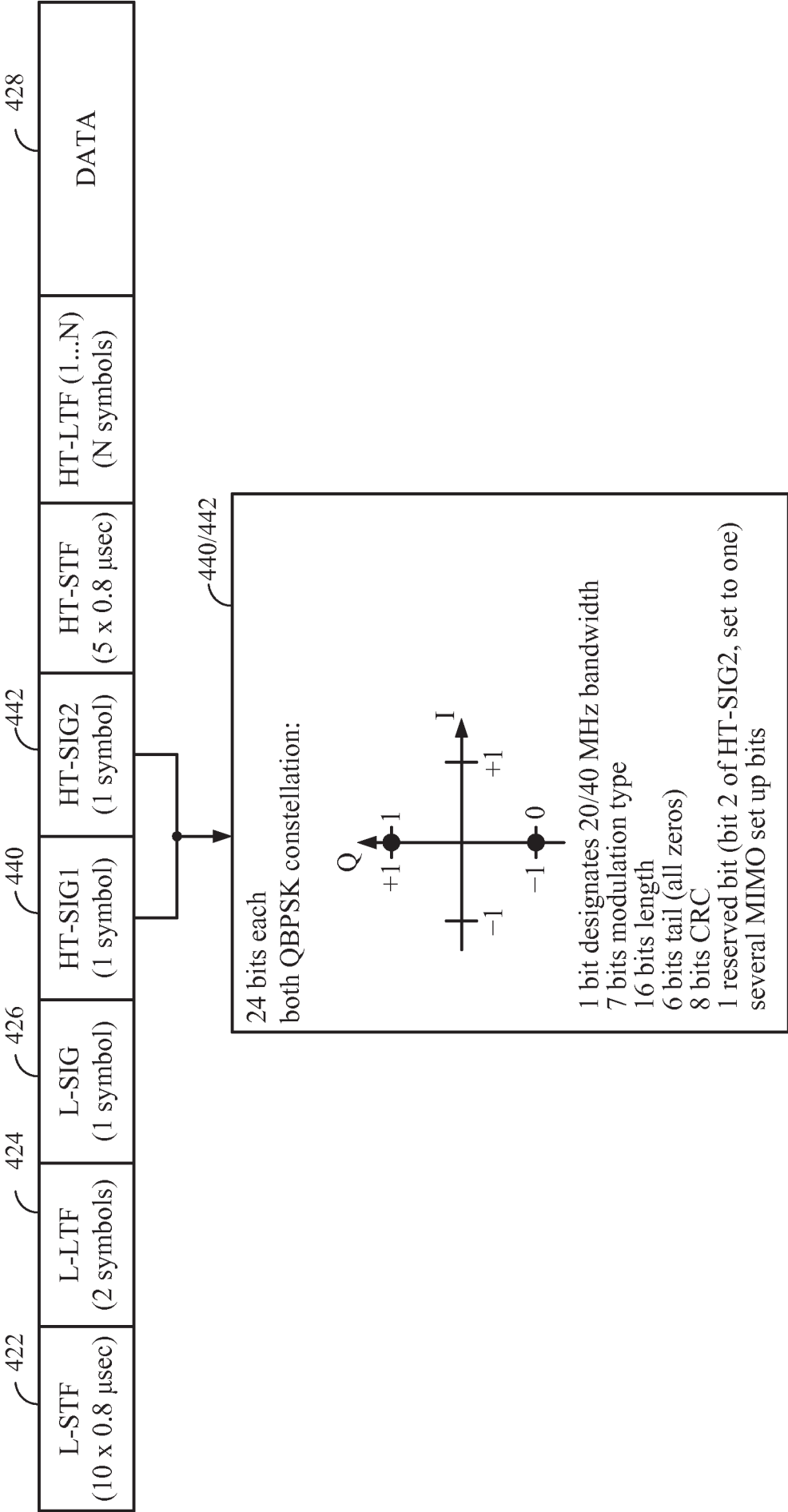


FIG. 5

IEEE 802.11ac downlink packet:

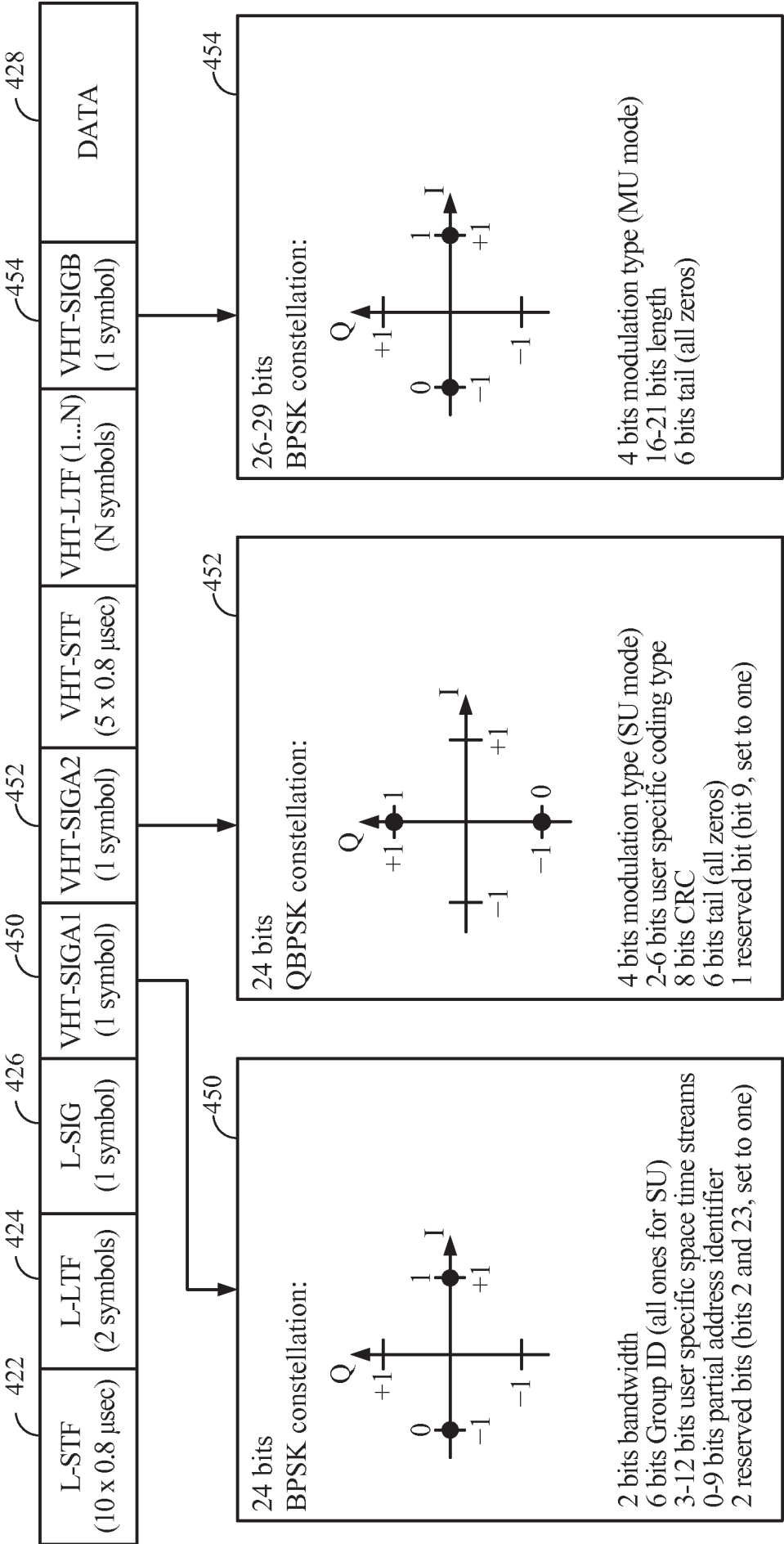


FIG. 6

HE downlink packet:

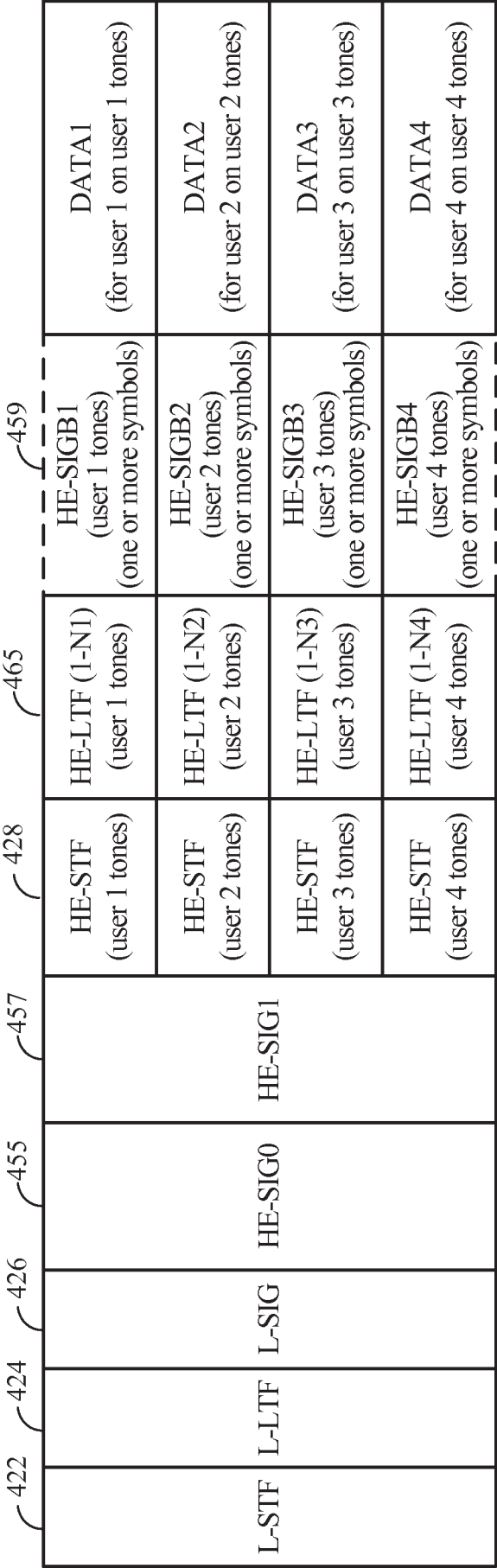


FIG. 7

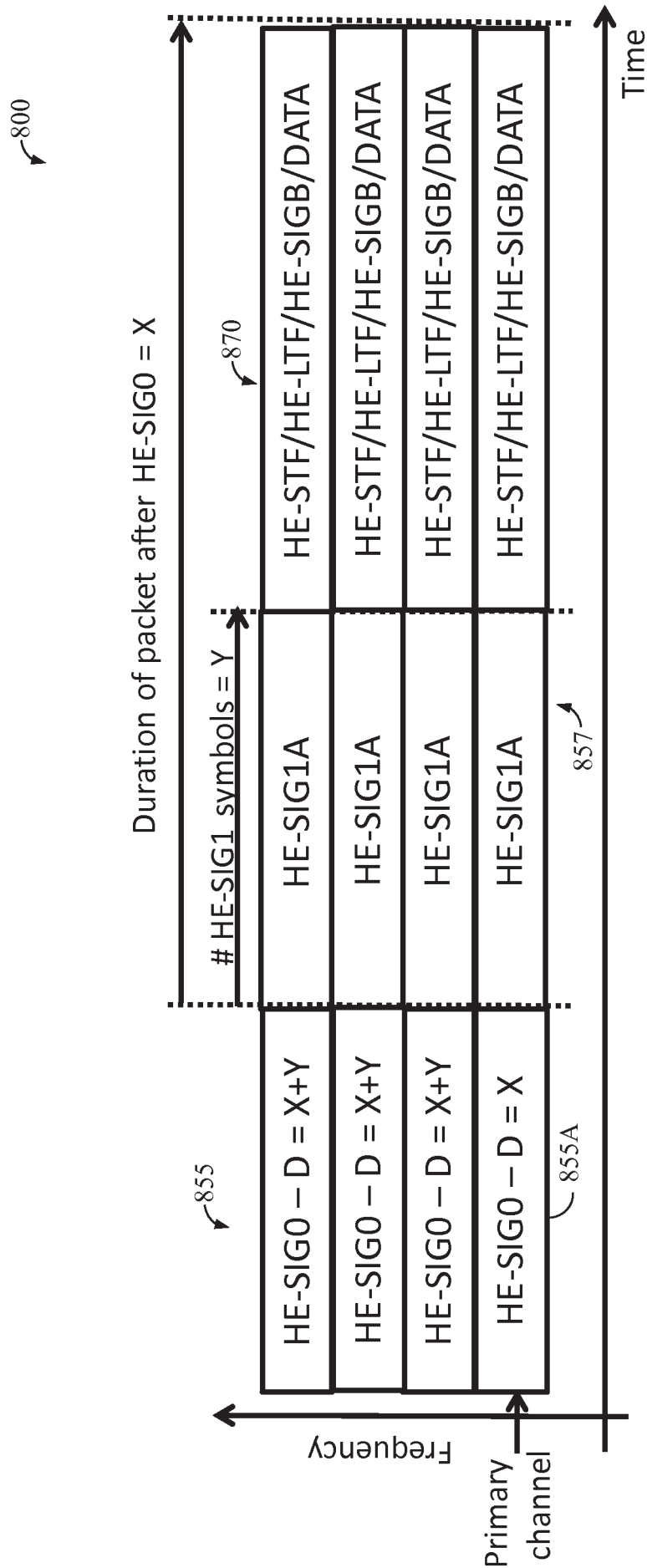


FIG. 8

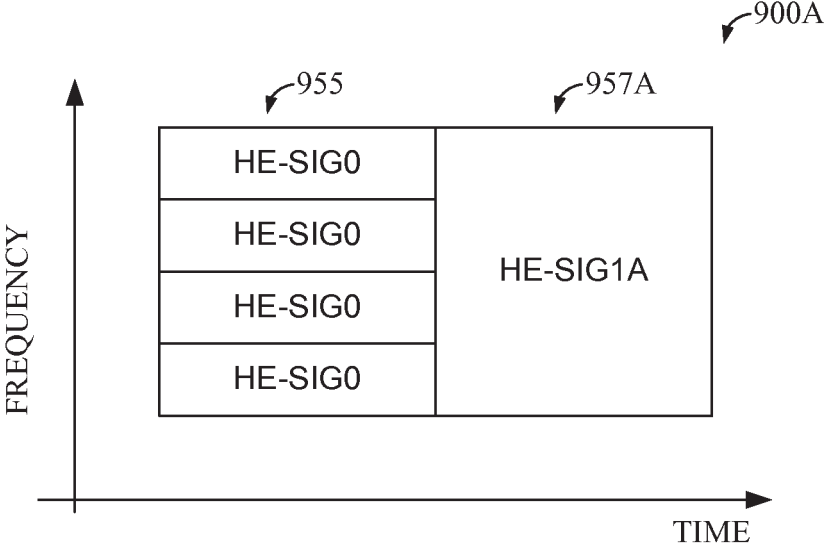


FIG. 9A

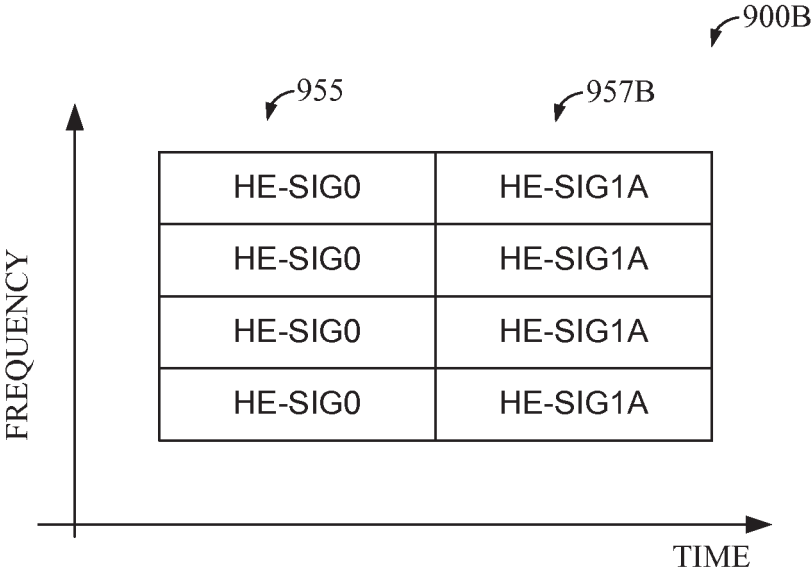


FIG. 9B

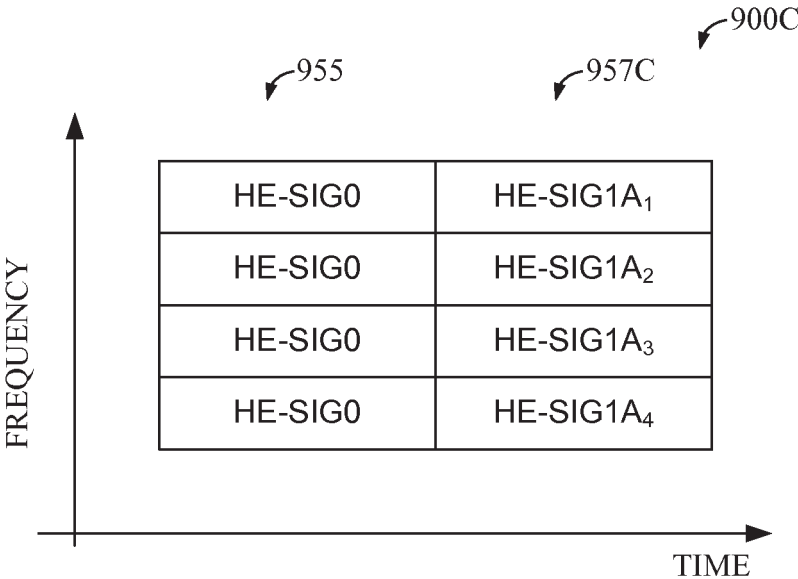


FIG. 9C

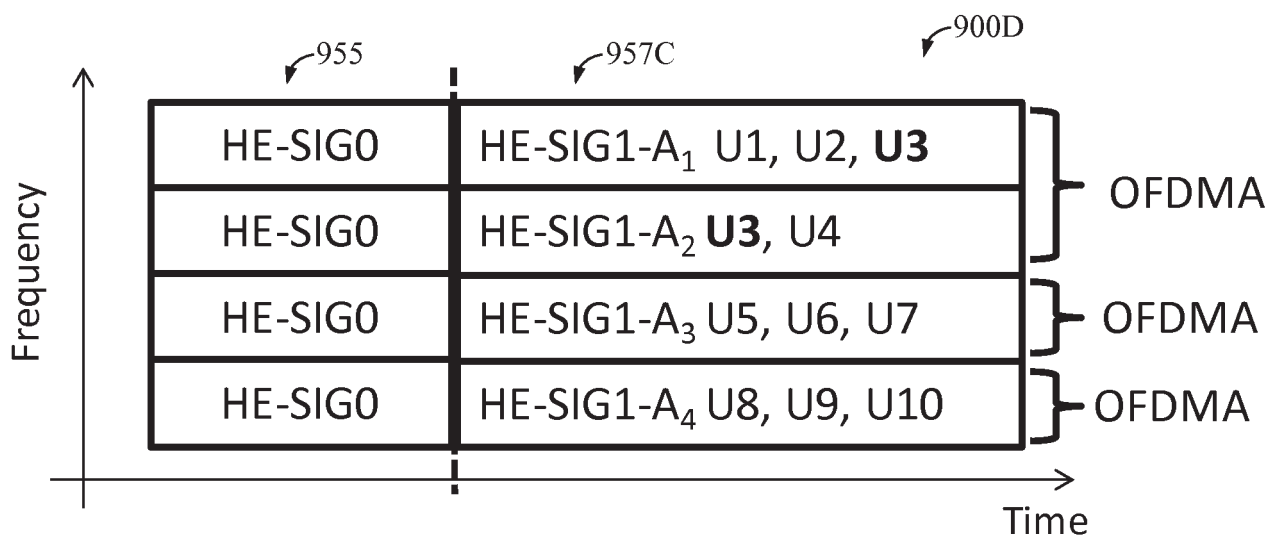


FIG. 9D

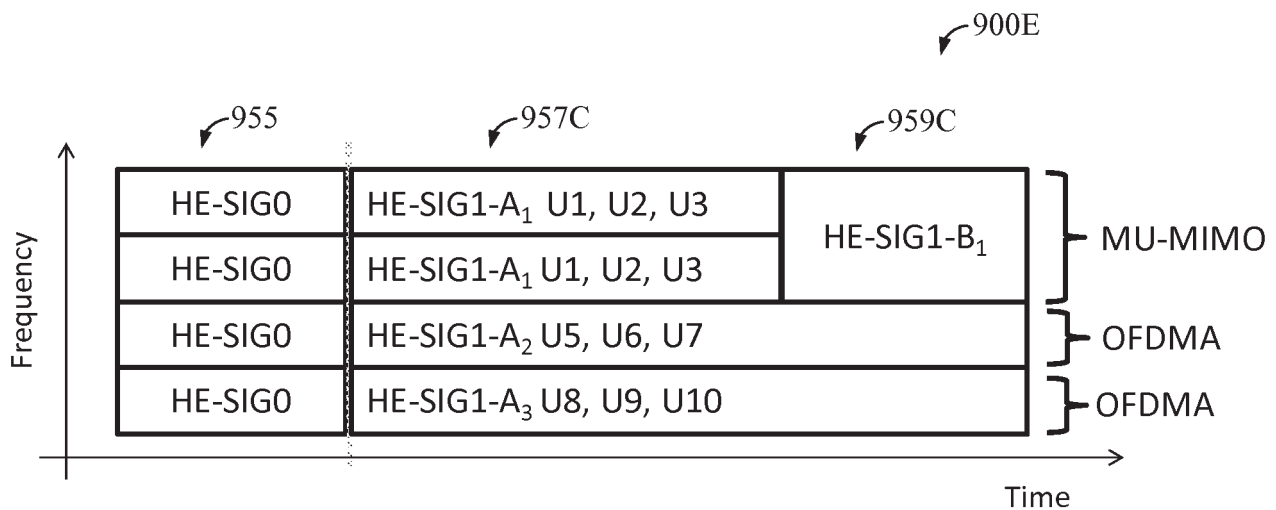


FIG. 9E

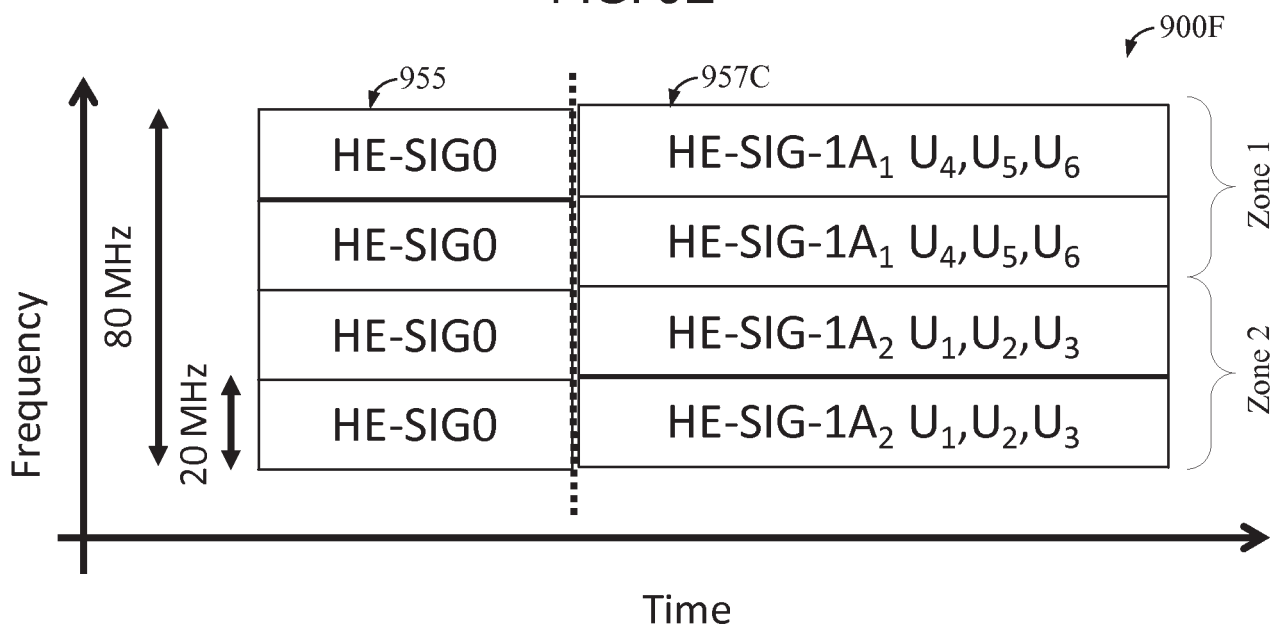


FIG. 9F

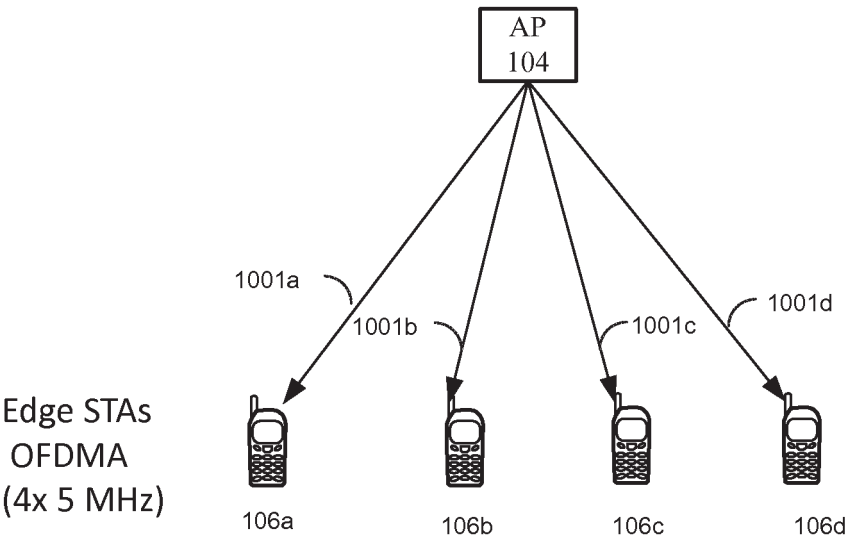


FIG. 10

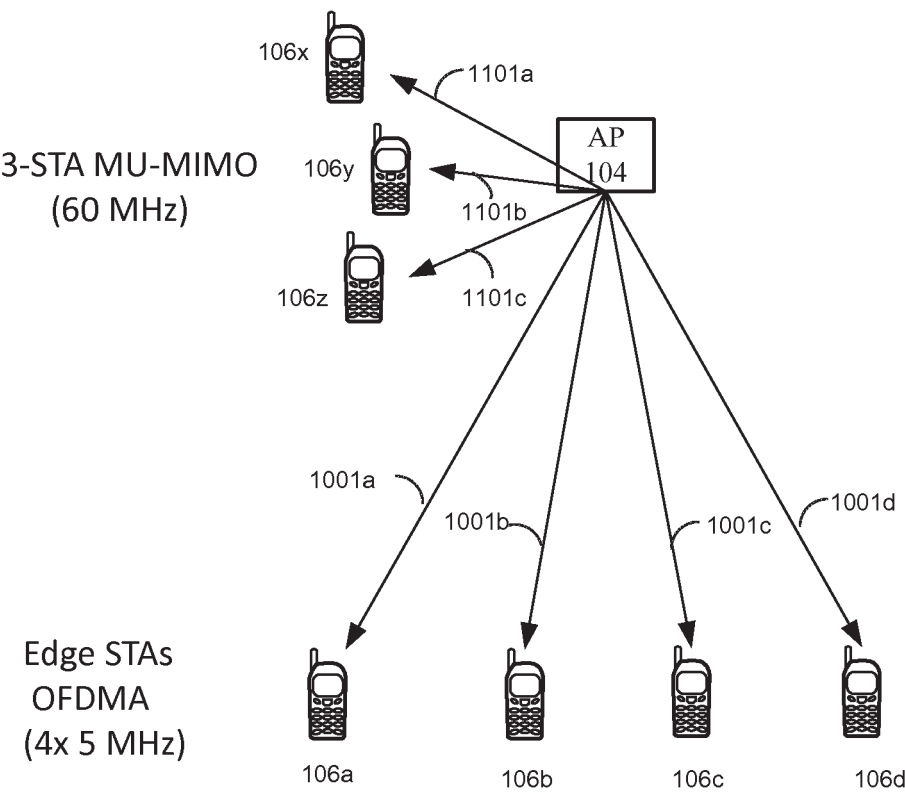


FIG. 11

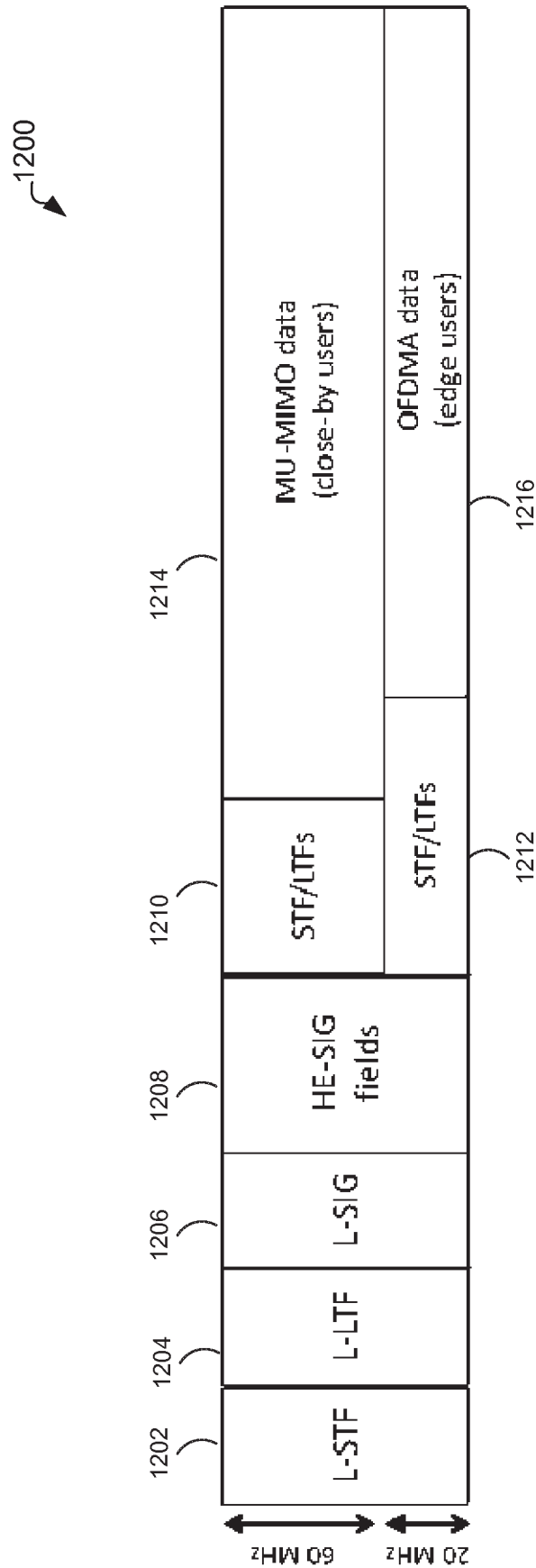


FIG. 12

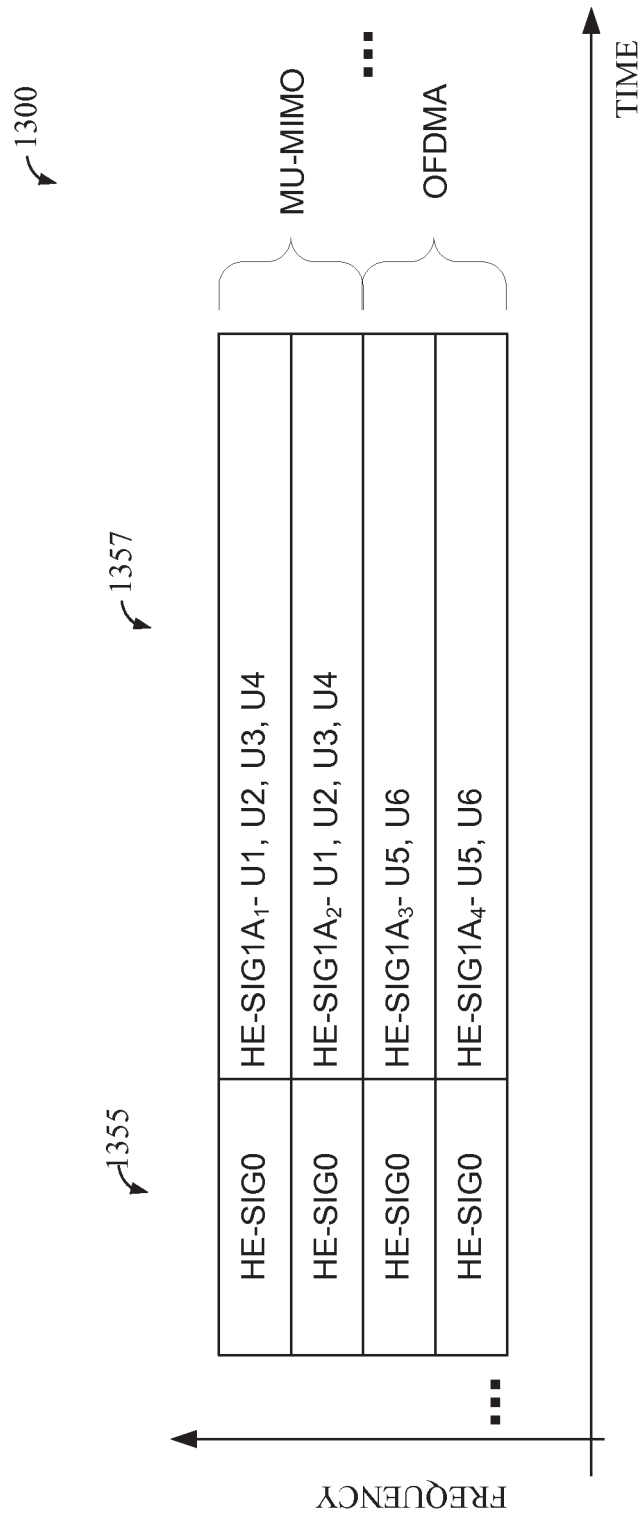


FIG. 13

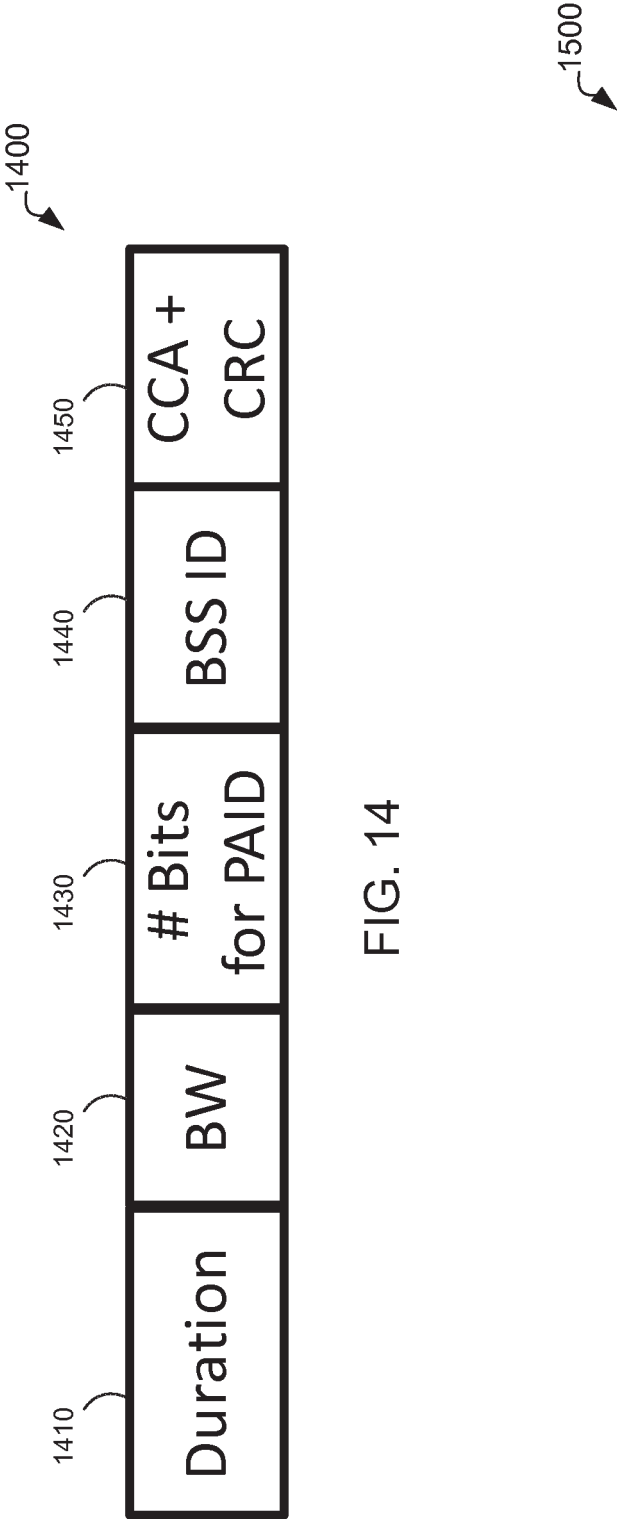


FIG. 14



FIG. 15

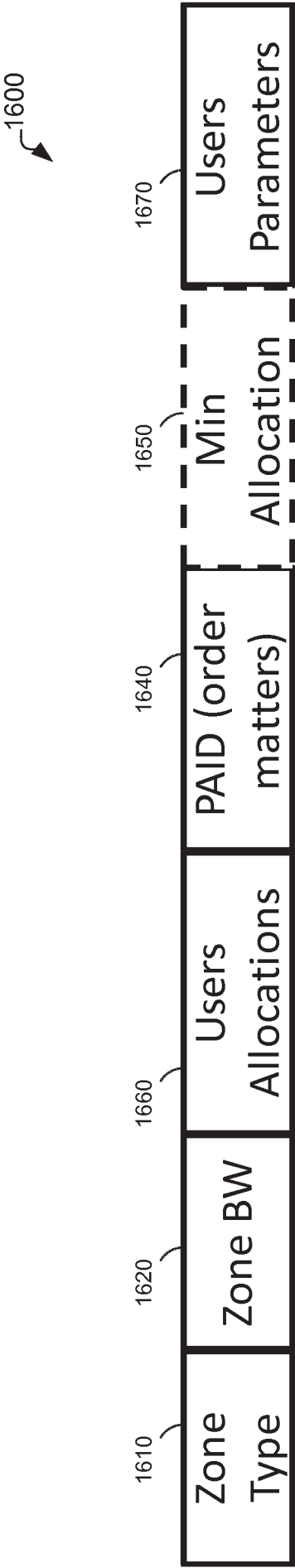


FIG. 16

N = number of users served in this 20 MHz

N = # Users	Fixed Min allocation = 5 MHz	Fixed Min allocation = 2.5 MHz	Dynamic Min Allocation
HE-SIG1 1500	$2+(N-1)\log_2(4) = 2N$ (2 bits to specify # users)	$2+(N-1)\log_2(8) = 3N-1$	$4+(N-1)(\log_2(20/\min_{alloc}))$ (2 bits to specify # users 2 bits to specify min alloc)
HE-SIG1 1600	4 bits	8 bits	$2+20/\min\text{ alloc}$

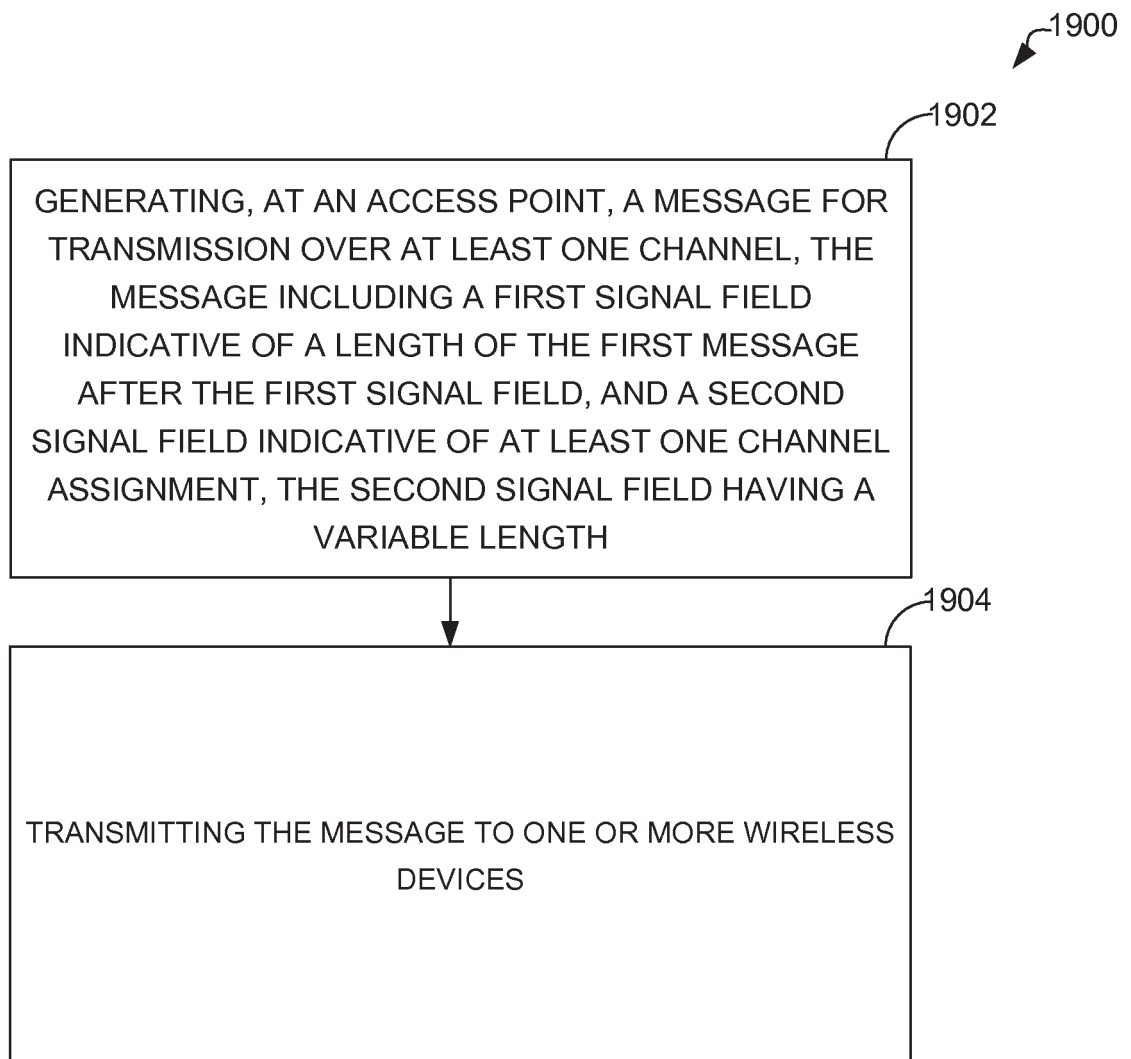
Number of Users	HE-SIG1 1500	HE-SIG1 1600	HE-SIG1 1500	HE-SIG1 1600	HE-SIG1 1500	HE-SIG1 1600	HE-SIG1 1500	HE-SIG1 1600	HE-SIG1 1500	HE-SIG1 1600
2	4		4		5	8		7		
3	6		4		7	8		9		
4	8		4		11	8		13		

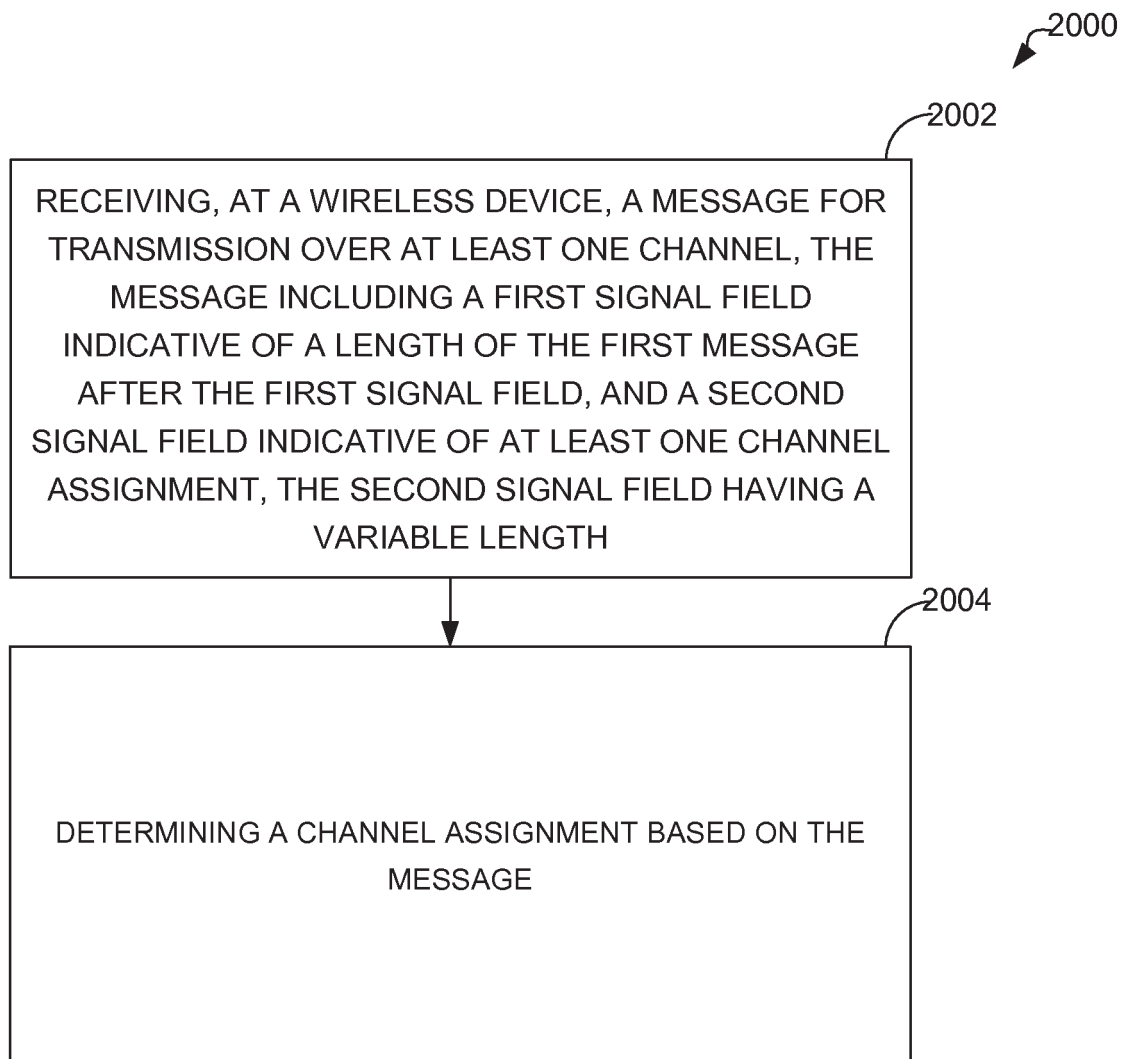
FIG. 17

N = number of users served in this zone; as illustrated a zone bandwidth of 60 MHz

N = # Users	Fixed Min allocation = 5 MHz	Fixed Min allocation = 2.5 MHz	Dynamic Min Allocation	
HE-SIG1 1500	$2+(N-1)\lceil\log_2(12)\rceil=4N-2$ (2 bits to specify # users)	$2+(N-1)\lceil\log_2(24)\rceil=5N-3$	$4+(N-1)(\lceil\log_2(\frac{60}{min})\rceil)$ (2 bits to specify # users 2 bits to specify min alloc)	
HE-SIG1 1600	12 bits	24 bits	2 + 60/min alloc	
<div></div>				
Number of Users	HE-SIG1 1500	HE-SIG1 1600	HE-SIG1 1500 Min All = 2.5 MHz	HE-SIG1 1600 Min All = 2.5 MHz
2	6	12	7	24
3	10	12	12	24
4	14	12	17	24

FIG. 18

**FIG. 19**

**FIG. 20**