

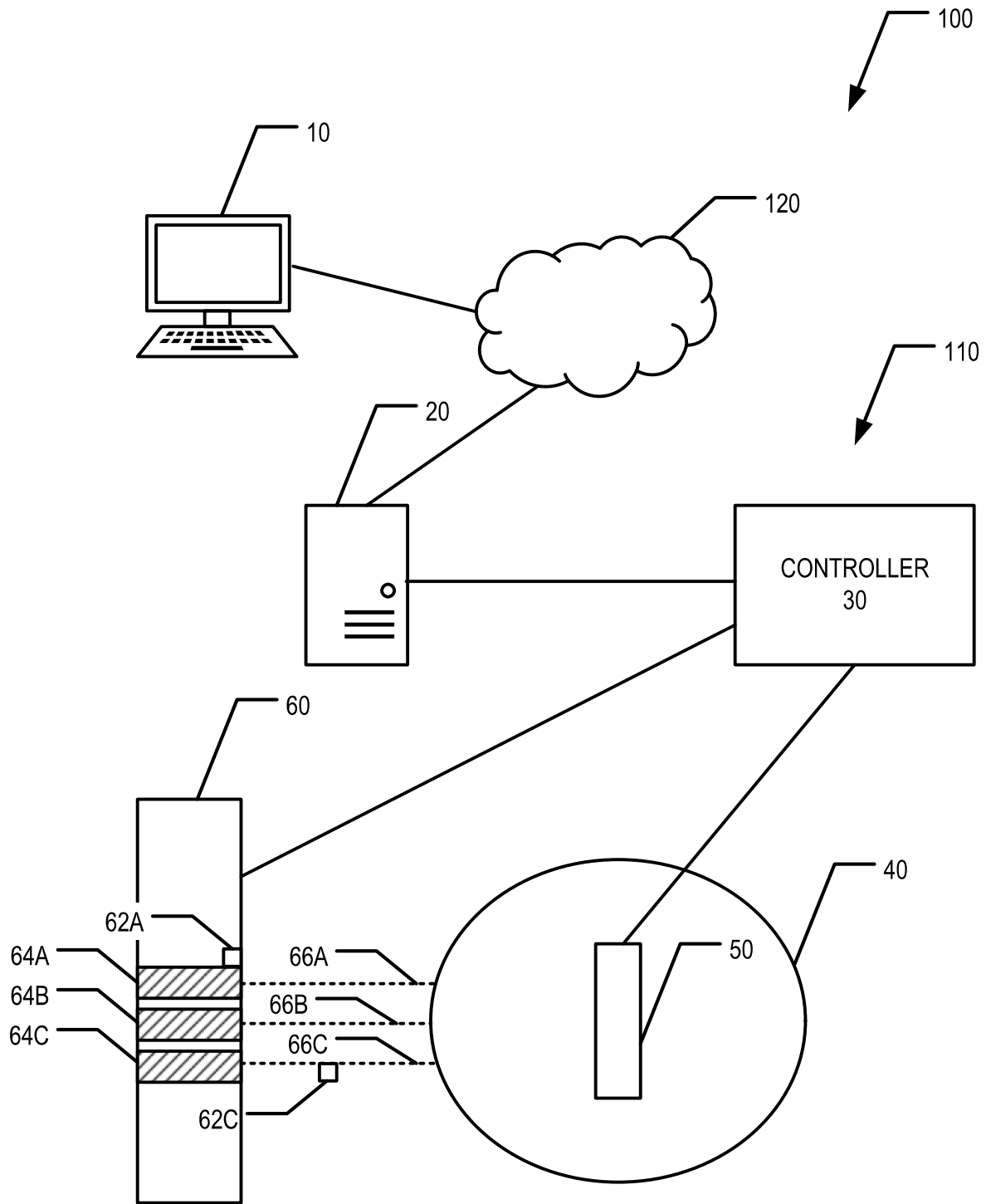


FIG. 1

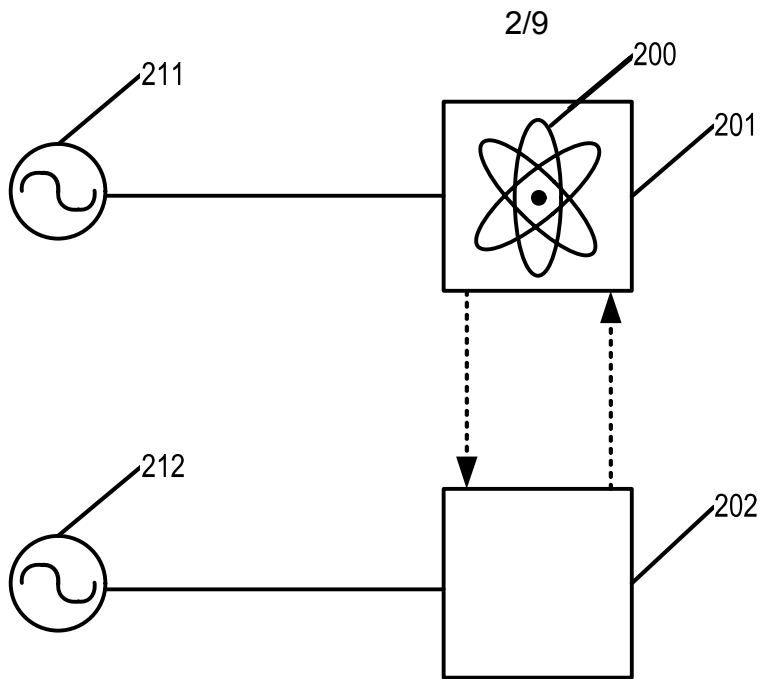


FIG. 2A

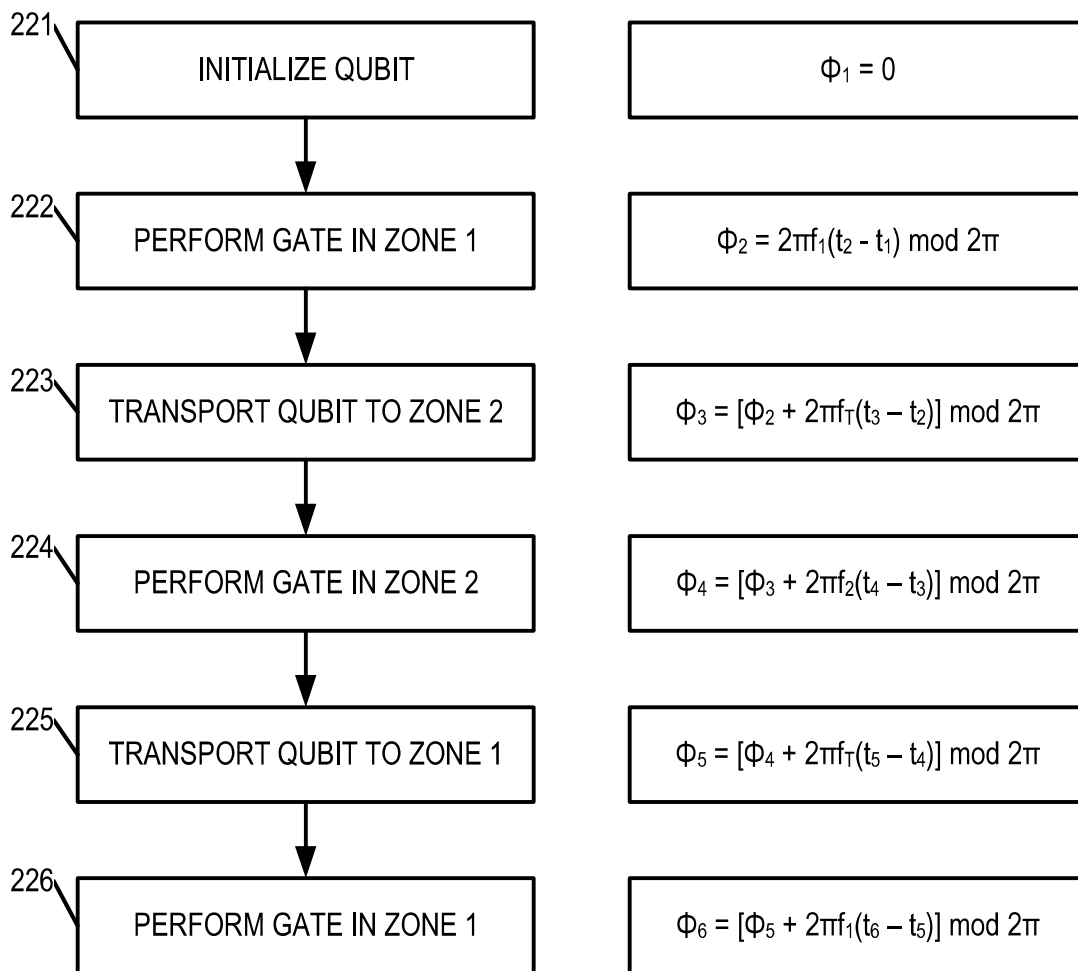
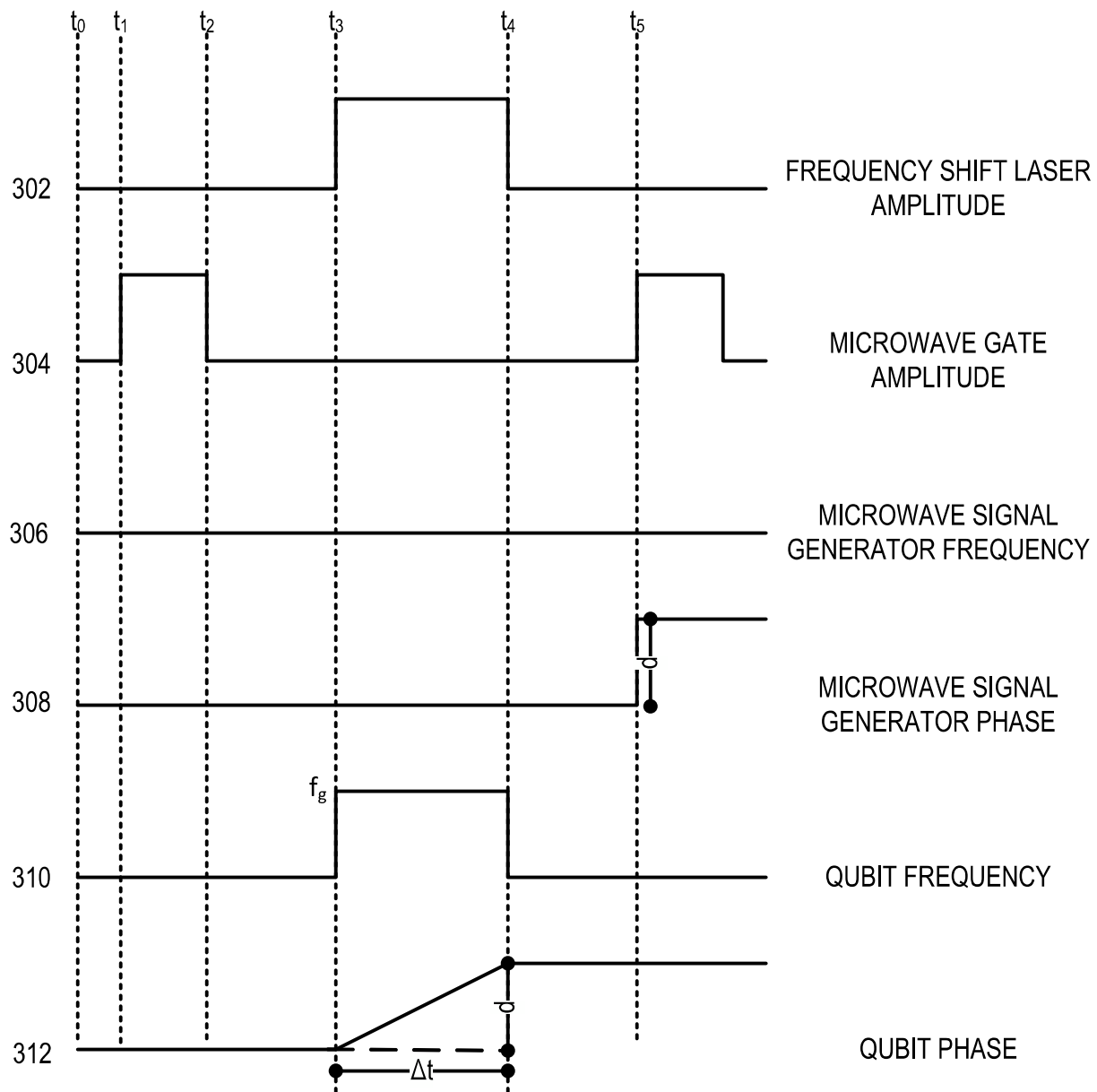
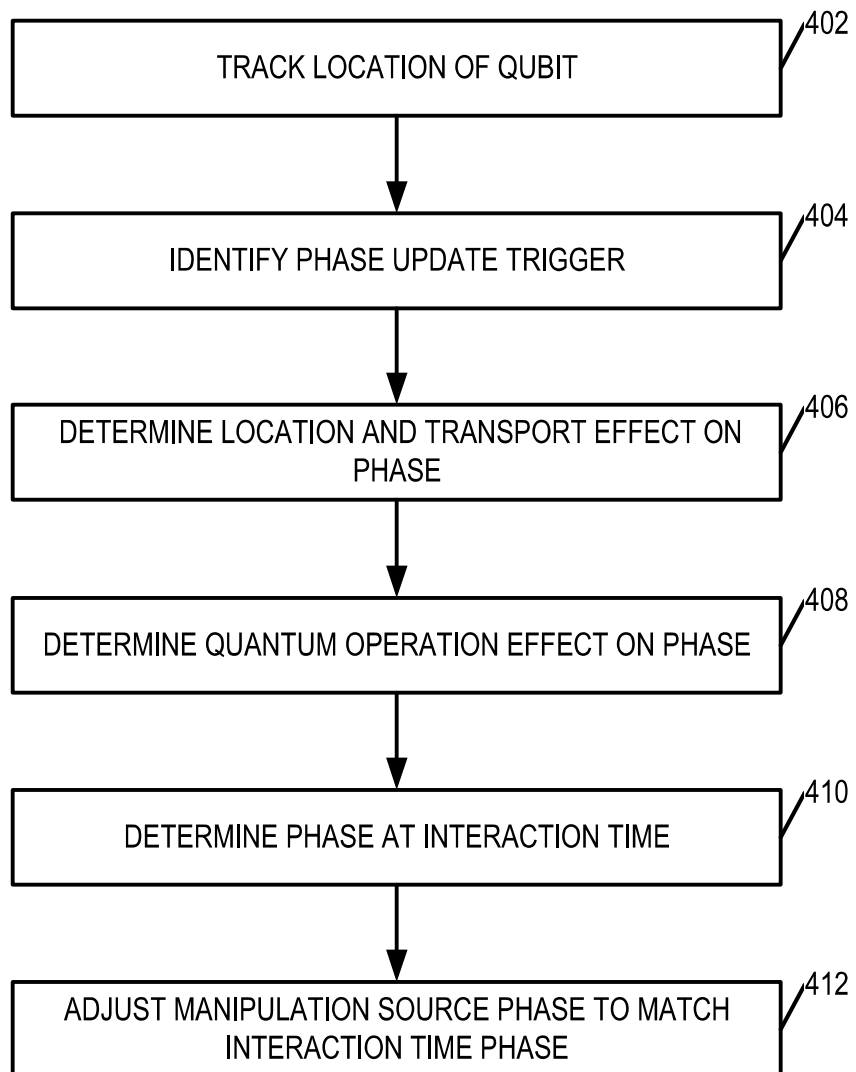
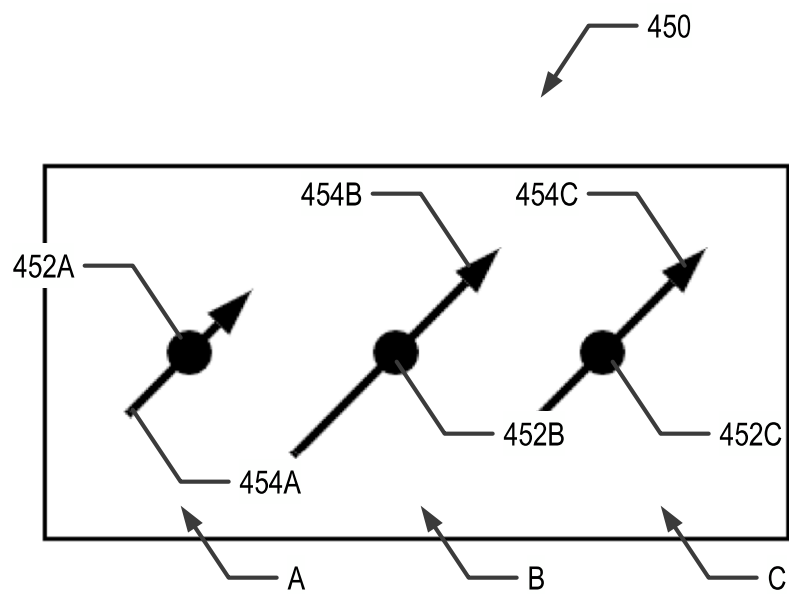


FIG. 2B

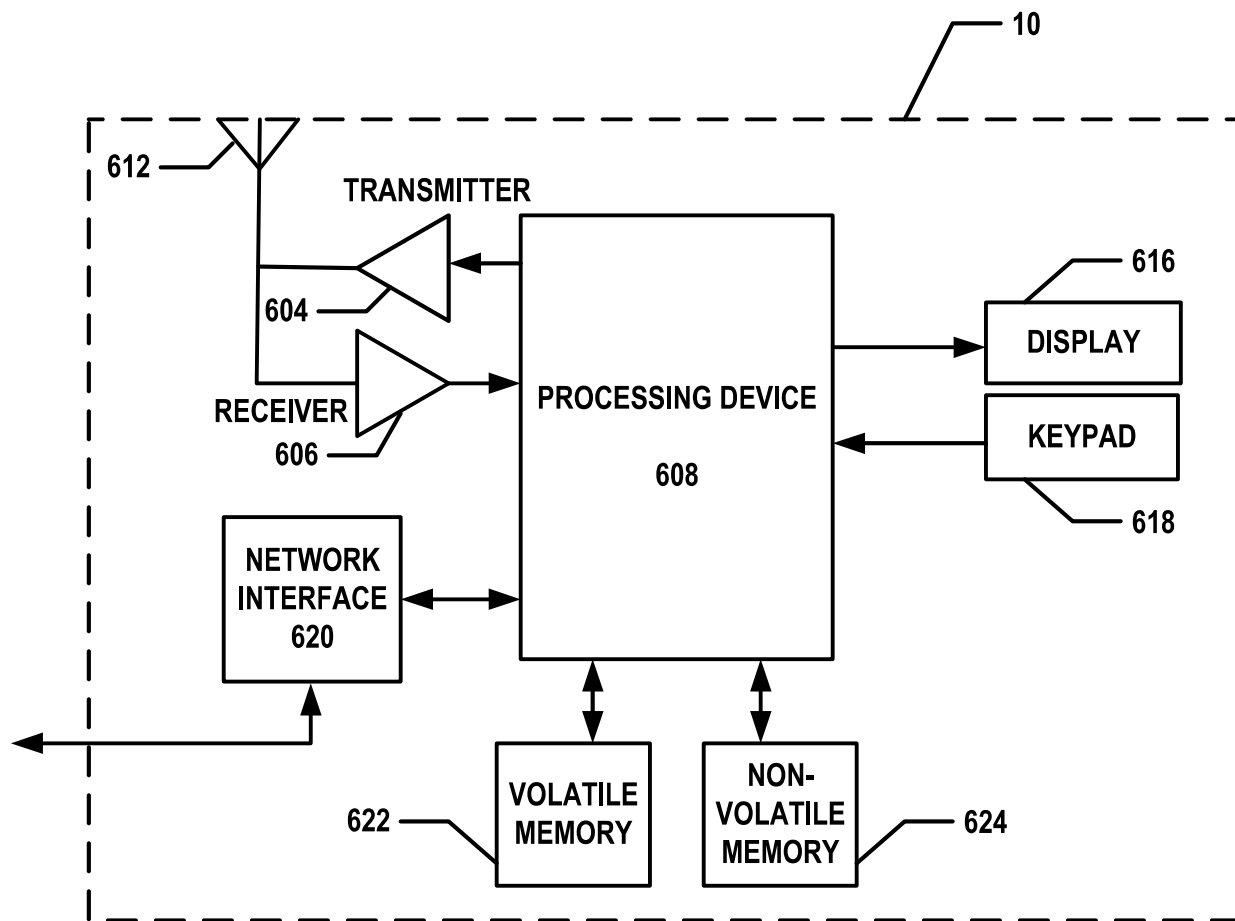
**FIG. 3**

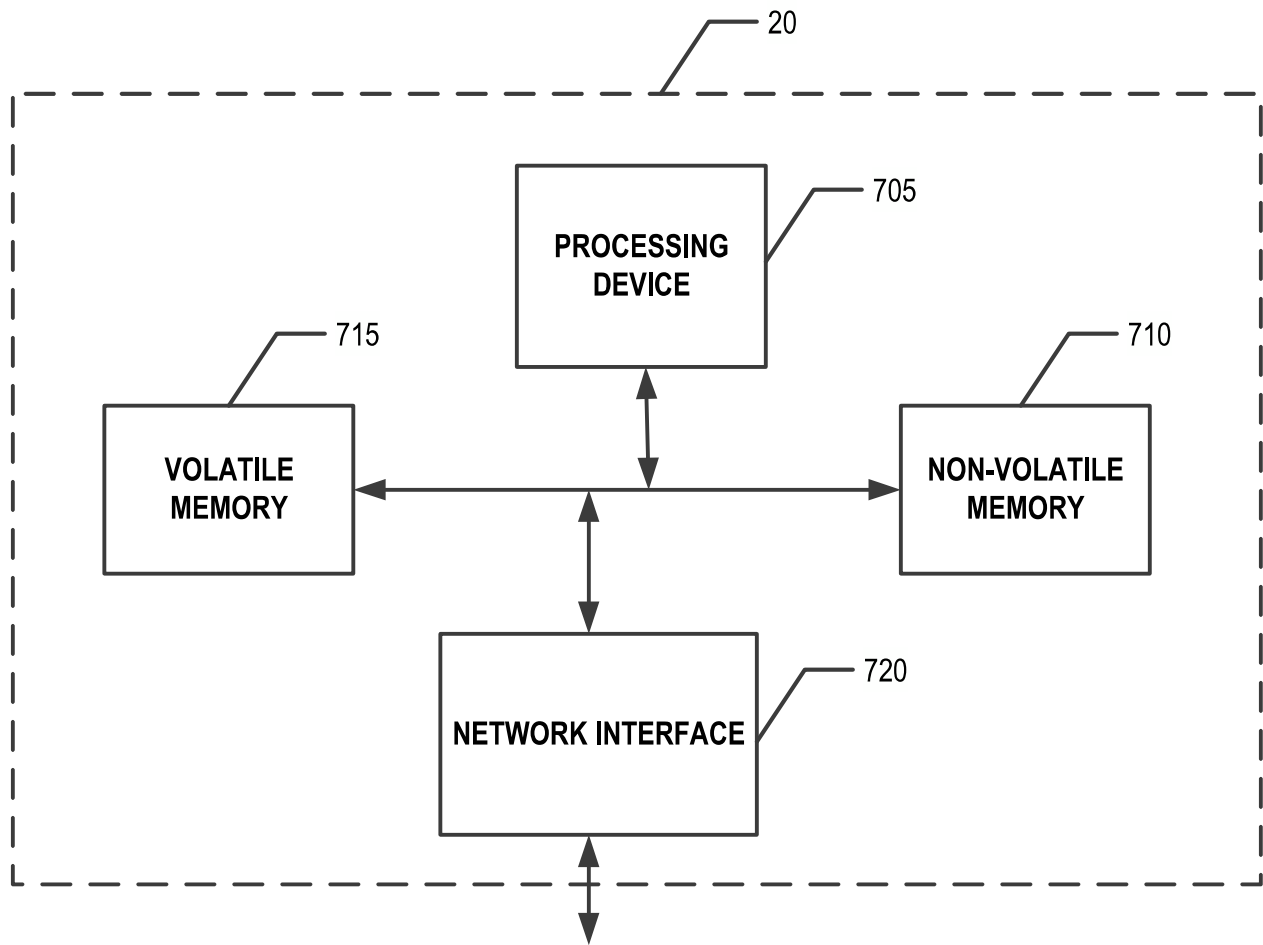
**FIG. 4**

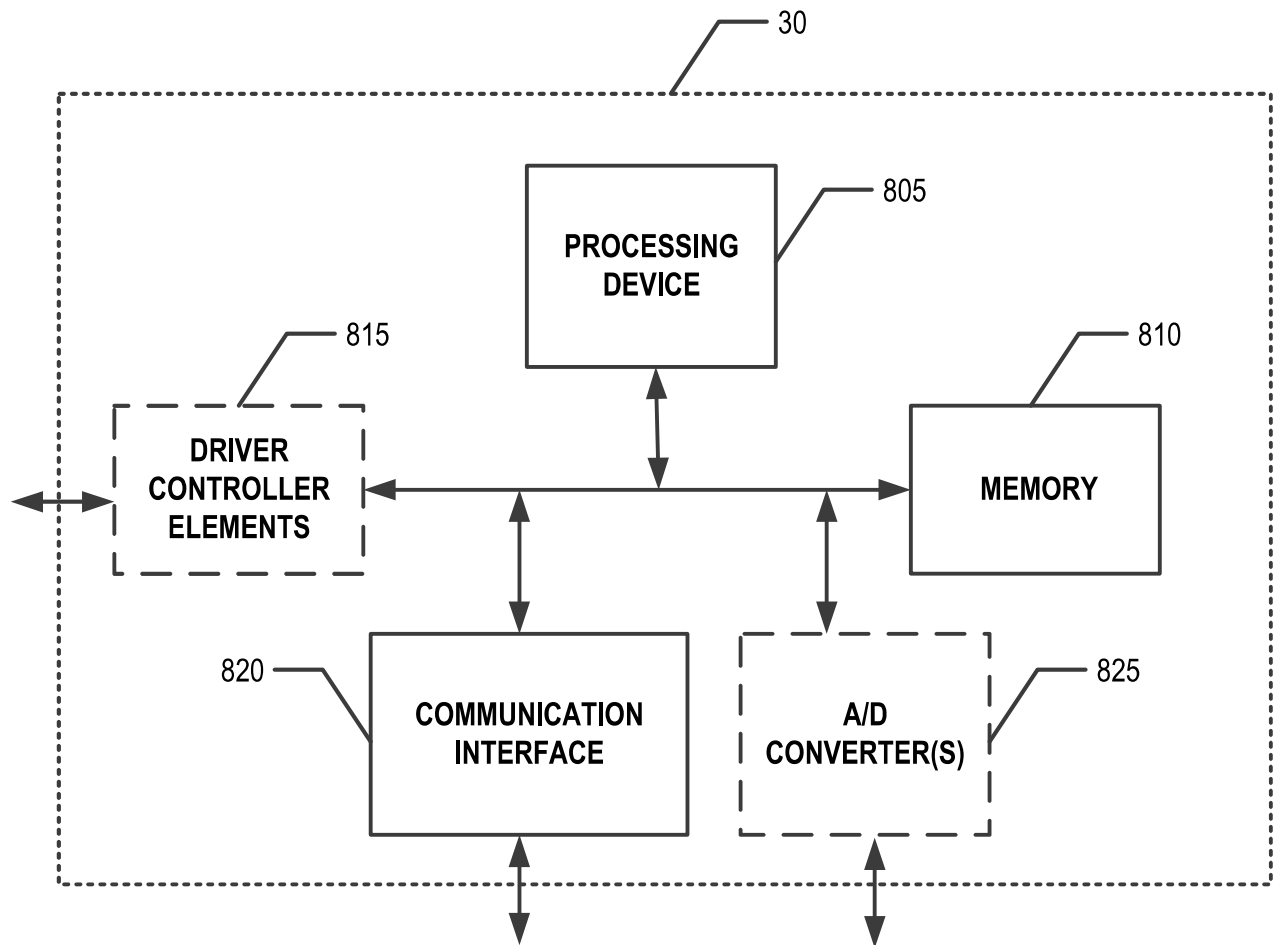
**FIG. 4A**

Time	Qubit Position							Phase Accumulation				Quantum Operations
	A	B	C	D	E	F	G	$\Delta\phi_0$	$\Delta\phi_1$	$\Delta\phi_2$	$\Delta\phi_3$	
t_1	0		1		2		3	-1	-1	-1	-1	Configure ([0, ,1, ,2, ,3], [$f_A, \dots, f_G$])
t_2		0	1			2	3	-1	-1	-1	-1	Transport (,0,1, , ,2,3)
t_3		0	1			2	3	0	-1	0	-1	StatePrep (B,F) $\Delta\phi_{0,2} = 0$
t_4		0	1			2	3	$\Delta\phi_0(t_4)$	-1	$\Delta\phi_2(t_4)$	-1	$\text{phase}_0 = \Delta\phi_0 + \Phi_m; \text{phase}_2 = \Delta\phi_2 + \Phi_n$ SQGate ((B, Θ_m , Φ_m), (F, Θ_n , Φ_n)) $\Delta\phi_0 \text{ += } \varphi_{\text{stark}}(\text{gate}_B)$ $\Delta\phi_2 \text{ += } \varphi_{\text{stark}}(\text{gate}_F)$
t_5	0	1			2	3		$\Delta\phi_0(t_5)$	-1	$\Delta\phi_2(t_5)$	-1	$\Delta\phi_{0,2} \text{ += } f_{B,F} * (t_4 - t_3)$ Transport (0,1, , ,2,3,) $\Delta\phi_{0,2} \text{ += } 2\pi f_T * (t_5 - t_4)$
t_6	0	1			2	3		$\Delta\phi_0(t_6)$	0	$\Delta\phi_2(t_6)$	0	StatePrep (B,F) $\Delta\phi_{0,2} \text{ += } f_{A,E} * (t_6 - t_5)$ $\Delta\phi_{1,3} = 0$
t_7	0	1			2	3		$\Delta\phi_0(t_7)$	$\Delta\phi_1(t_7)$	$\Delta\phi_2(t_7)$	$\Delta\phi_3(t_7)$	$\text{phase}_1 = \Delta\phi_1 + \Phi_m; \text{phase}_3 = \Delta\phi_3 + \Phi_n$ SQGate ((B, Θ_m , Φ_m), (F, Θ_n , Φ_n)) $\Delta\phi_1 \text{ += } \varphi_{\text{stark}}(\text{gate}_B)$ $\Delta\phi_3 \text{ += } \varphi_{\text{stark}}(\text{gate}_F)$
t_8		01				23		$\Delta\phi_0(t_8)$	$\Delta\phi_1(t_8)$	$\Delta\phi_2(t_8)$	$\Delta\phi_3(t_8)$	$\Delta\phi_{0,1,2,3} \text{ += } f_{A,B,E,F} * (t_7 - t_6)$ Transport (,01, , , ,23,) $\Delta\phi_{0,1,2,3} \text{ += } 2\pi f_T * (t_8 - t_7)$
t_9		01				23		$\Delta\phi_0(t_9)$	$\Delta\phi_1(t_9)$	$\Delta\phi_2(t_9)$	$\Delta\phi_3(t_9)$	TQGate (B,F) $\Delta\phi_{0,1} \text{ += } \varphi_{\text{stark}}(\text{gate}_B)$ $\Delta\phi_{2,3} \text{ += } \varphi_{\text{stark}}(\text{gate}_F)$ $\Delta\phi_{0,1,2,3} \text{ += } f_{B,B,F,F} * (t_9 - t_8)$

FIG. 5

**FIG. 6**

**FIG. 7**

**FIG. 8**