

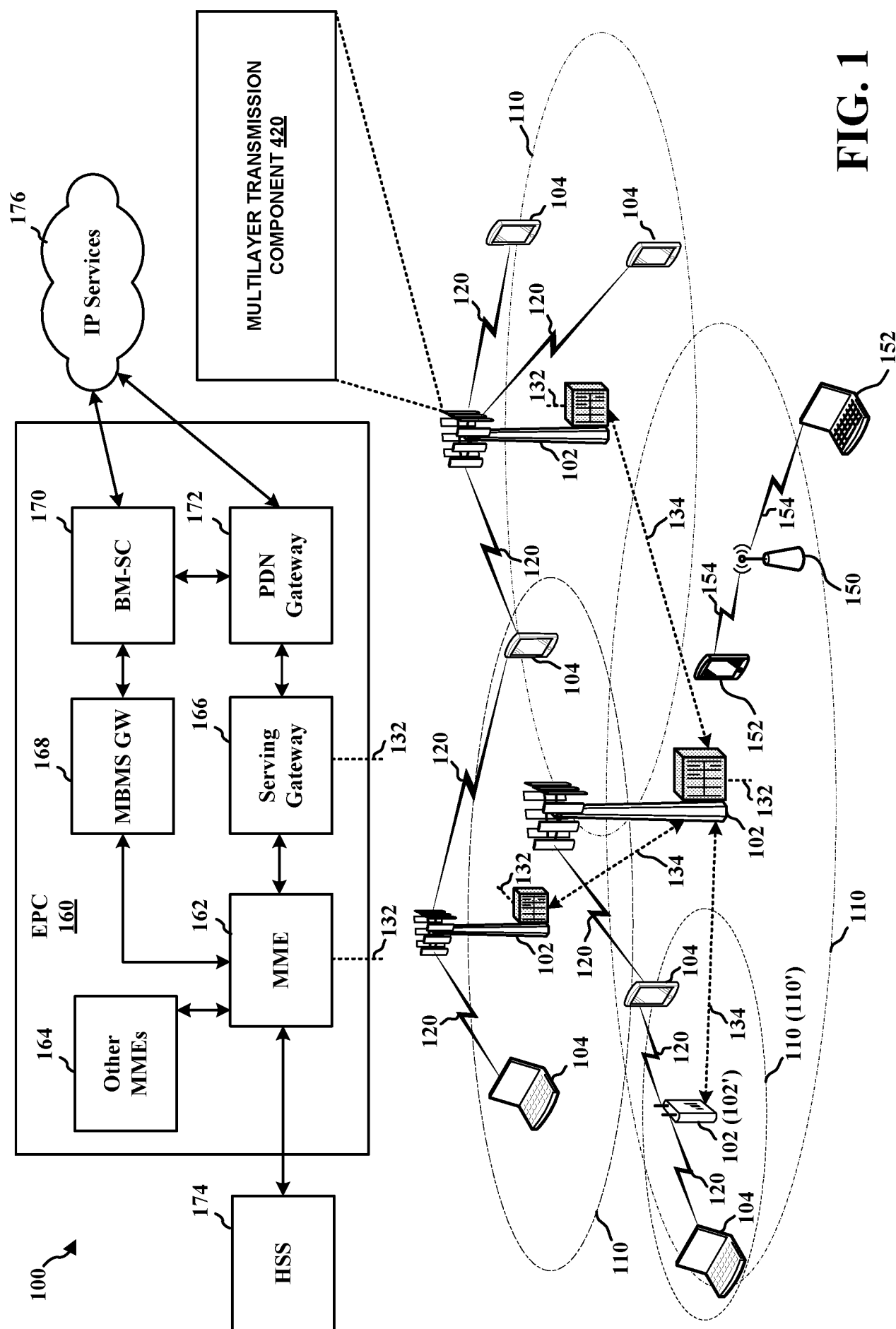


FIG. 1

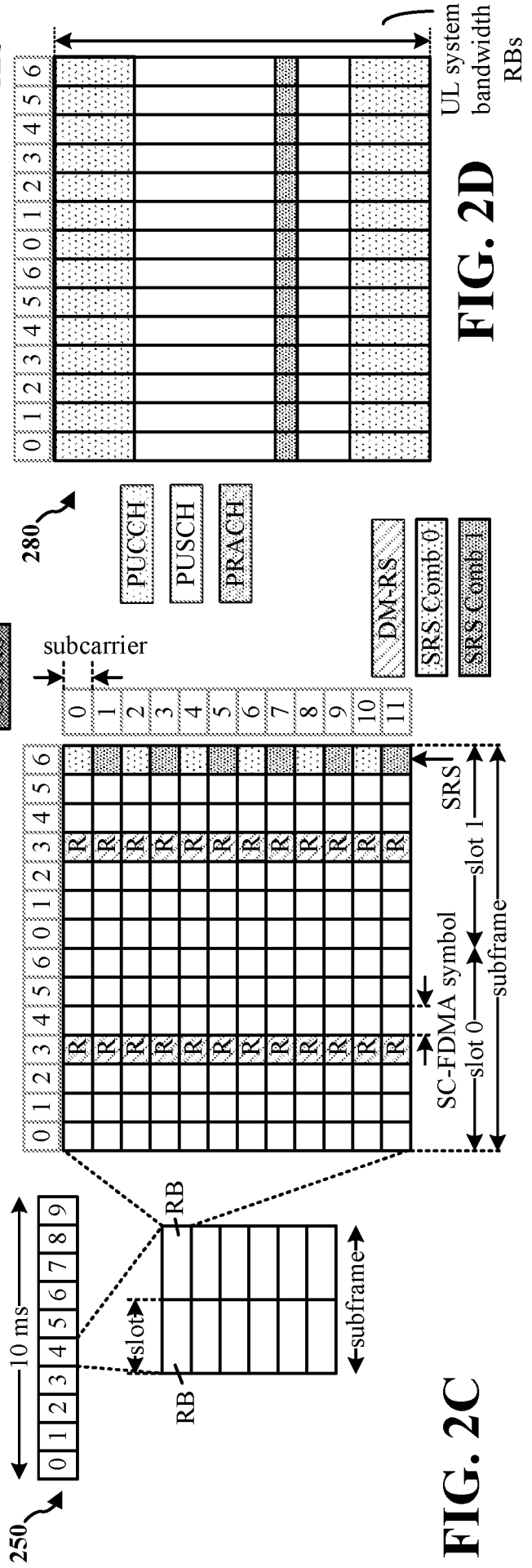
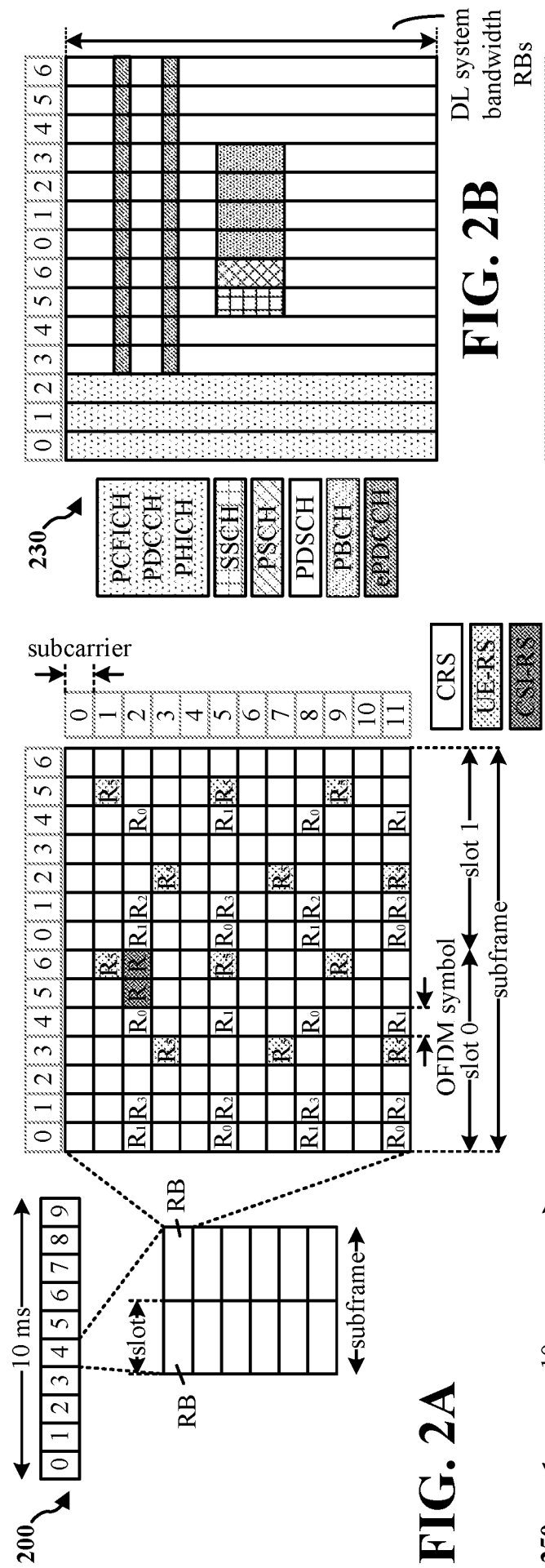


FIG. 2B

FIG. 2D

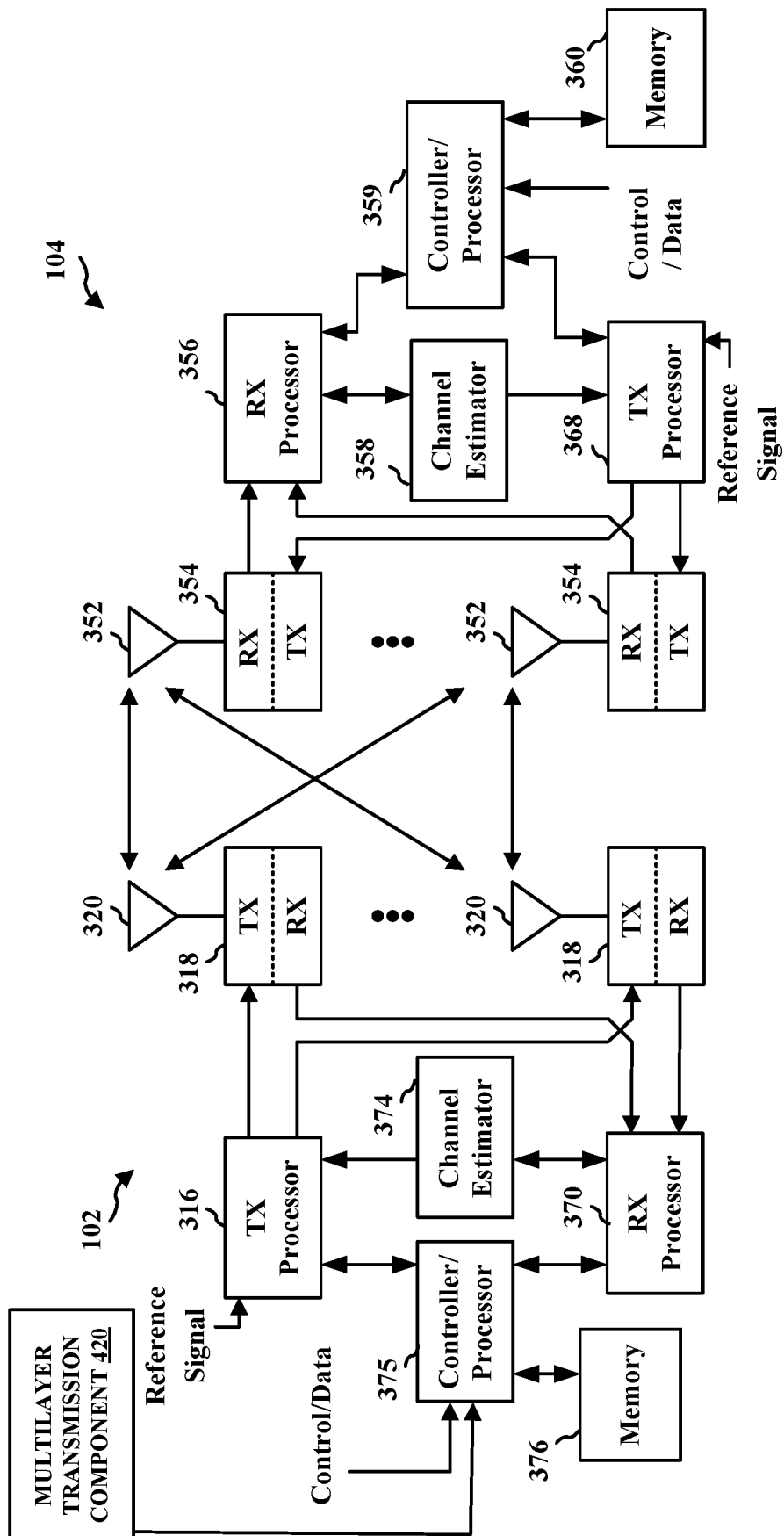
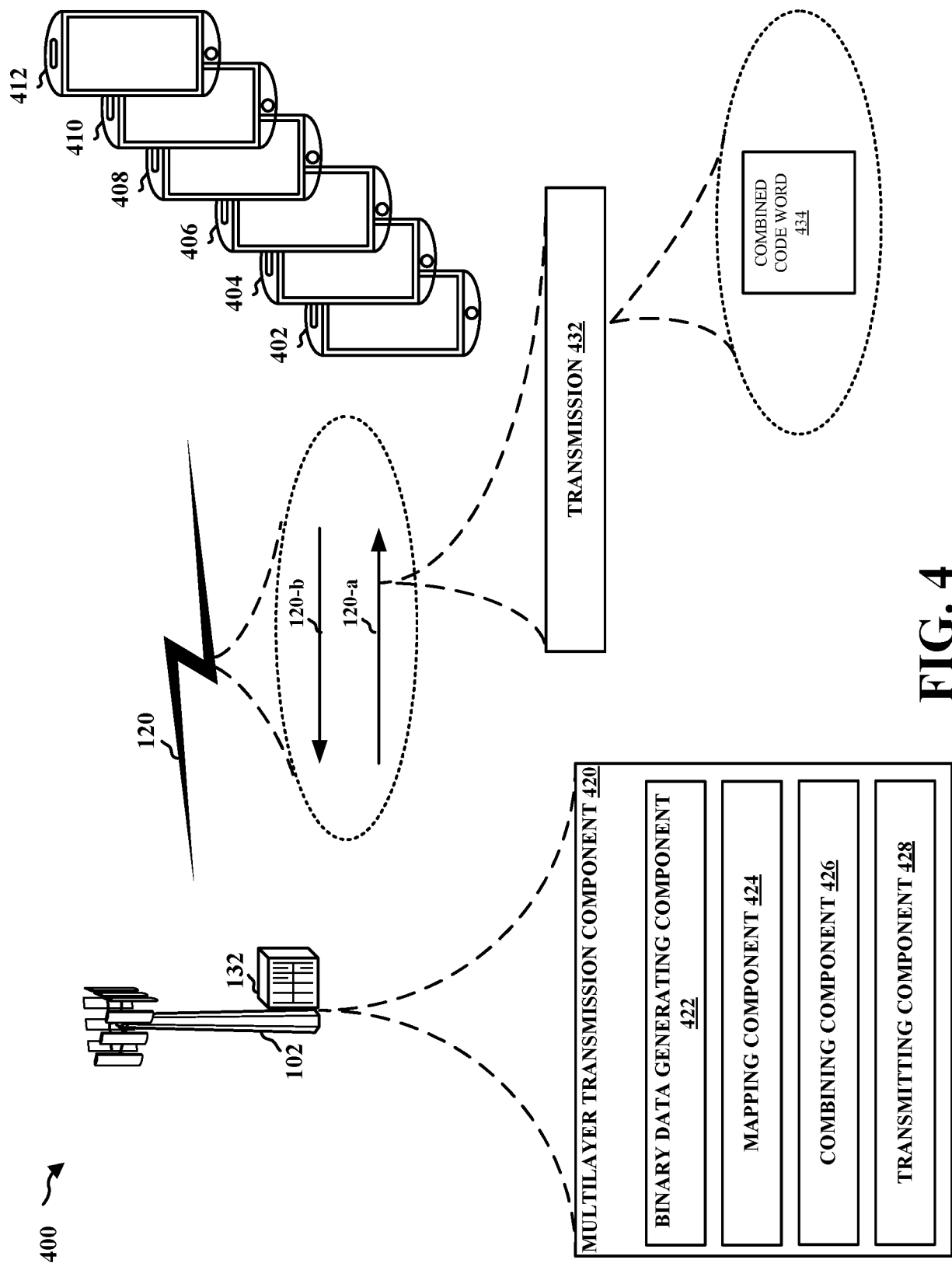


FIG. 3



500 ↗

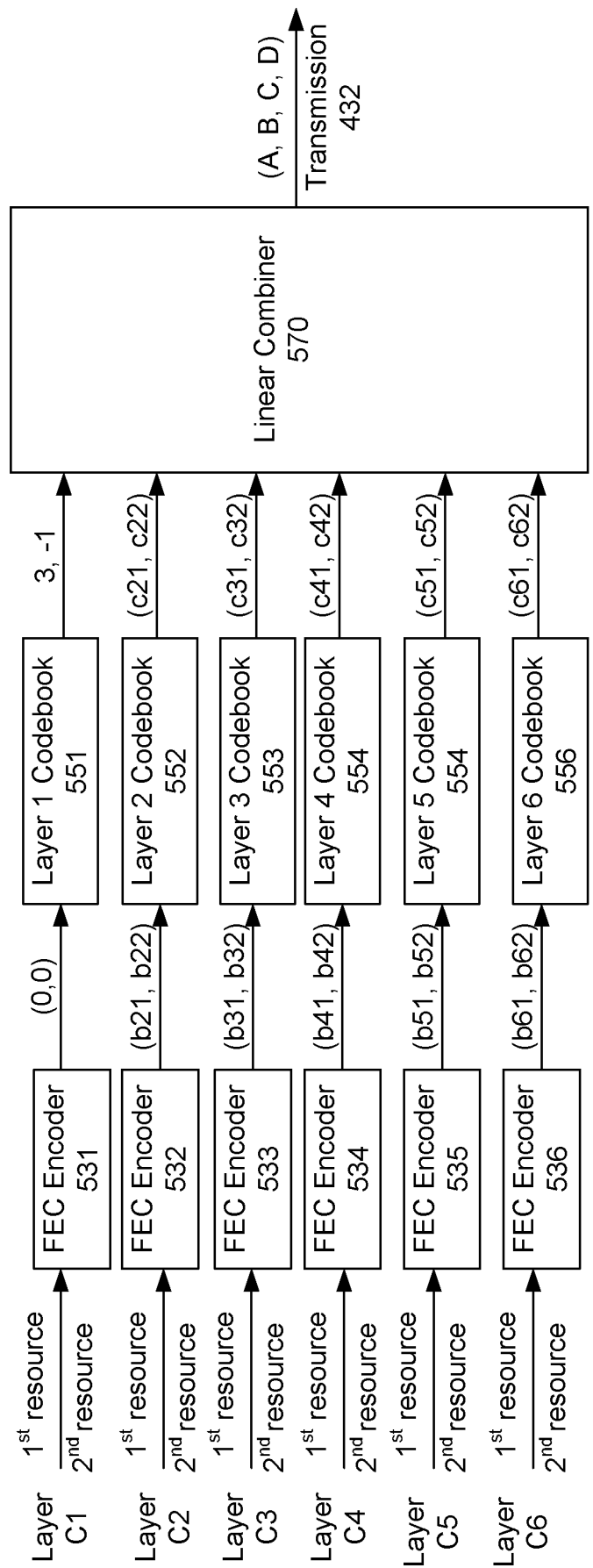


FIG. 5

600 

		Layers					
		C1 615	C2 625	C3 635	C4 645	C5 655	C6 665
Resources	R1 610	1	1	1	0	0	0
	R2 620	1	0	0	1	1	0
	R3 630	0	1	0	1	0	1
	R4 640	0	0	1	0	1	1

FIG. 6

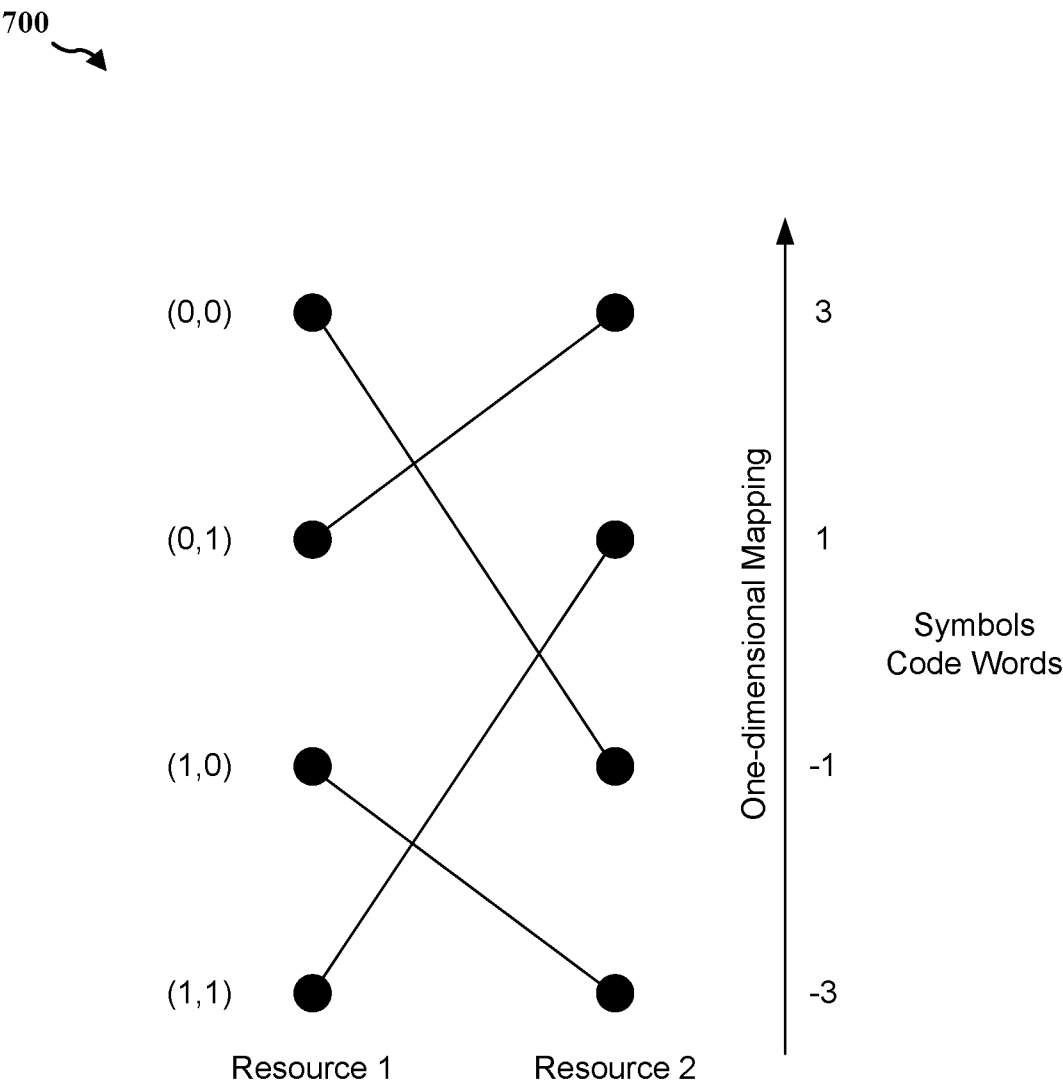


FIG. 7

		Binary Values			
		(0,0)	(0,1)	(1,0)	(1,1)
R1		3	1	-1	-3
R2		-1	3	-3	1

Code Words

FIG. 8

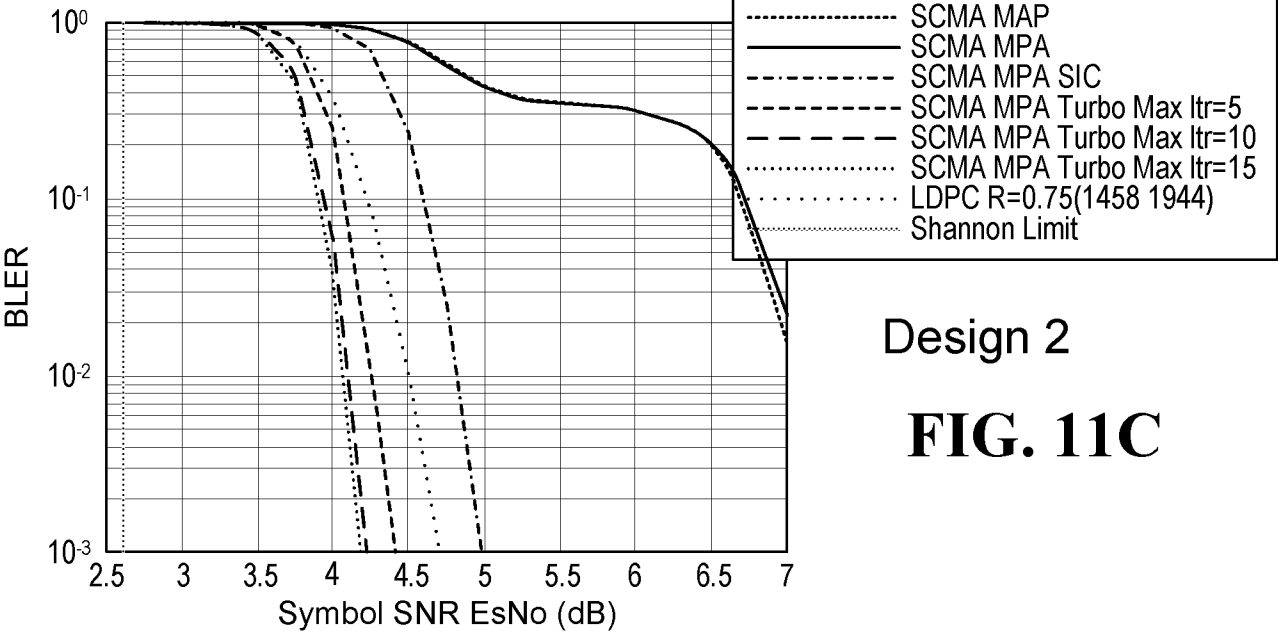
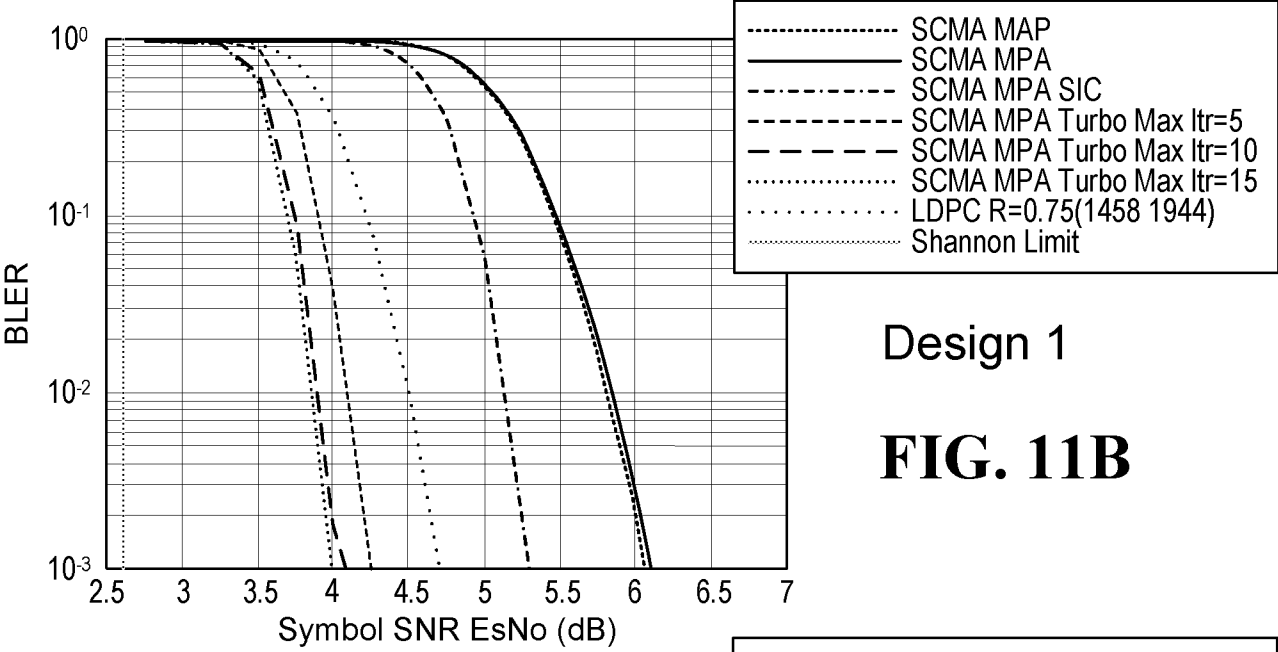
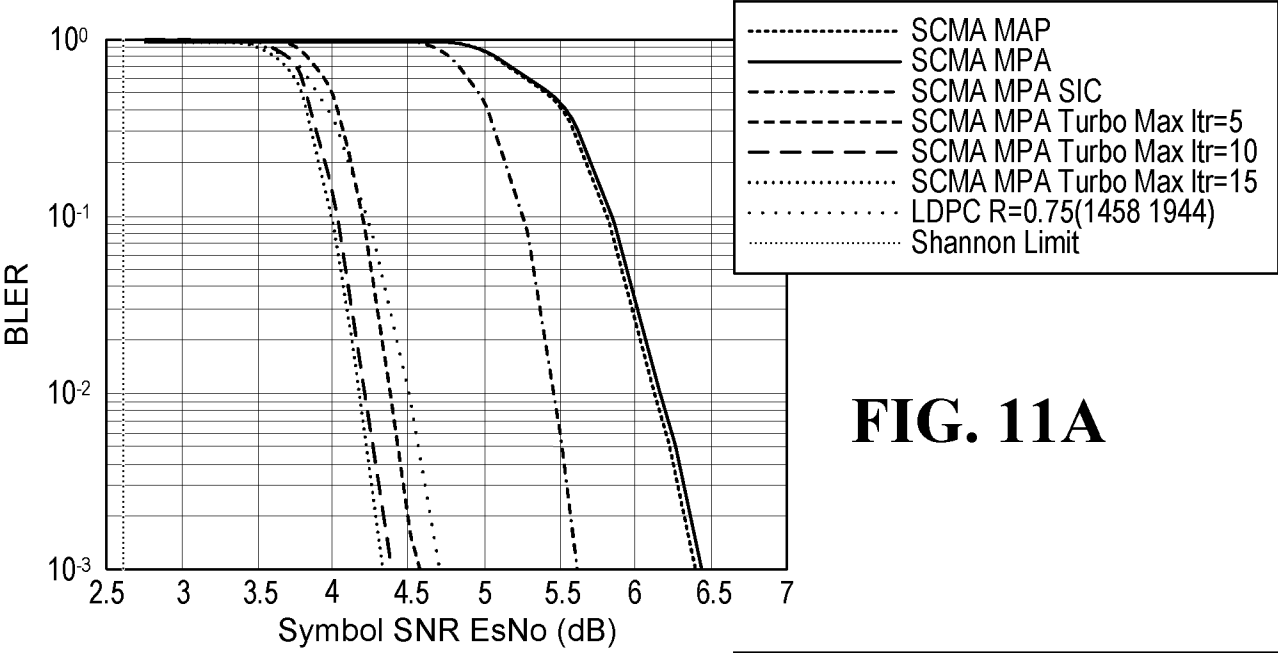
900		Design 1		Design 2		950	
91 *	0.7746	0.2352	-0.2352	-0.7746	-0.2352	-0.7746	-0.2352
	-0.2352	0.7746	0.2352	-0.7746	0.2352	0.7746	0.2352
	0	0	0	0	0	0	0
	0	0	0	0	0	0	0
92 *	0.8873	0.47081	0.1291	-0.1291	0.1291	0.47081	0.8873
	0.47081	0.8873	0.47081	-0.47081	0.47081	0.8873	0.47081
	-0.1291	0.1291	0.8873	-0.8873	0.1291	0.8873	-0.1291
	0.8873	0.47081	0.1291	-0.1291	0.1291	0.47081	0.8873
93 *	-0.8873	0.47081	0.1291	0.1291	0.1291	0.47081	-0.8873
	0.47081	0.8873	0.47081	0.47081	0.47081	0.8873	0.47081
	0.8873	0.47081	0.1291	0.1291	0.1291	0.47081	0.8873
	0.1291	0.1291	0.8873	-0.8873	0.1291	0.8873	0.1291
94 *	0.8873	0.47081	0.1291	0.1291	0.1291	0.47081	0.8873
	-0.47081	0.8873	0.47081	-0.47081	0.47081	0.8873	-0.47081
	0.47081	0.8873	0.47081	0.47081	0.47081	0.8873	0.47081
	0.8873	0.47081	0.1291	0.1291	0.1291	0.47081	0.8873
95 *	0.8873	0.47081	0.1291	0.1291	0.1291	0.47081	0.8873
	0.47081	0.8873	0.47081	0.47081	0.47081	0.8873	0.47081
	0.8873	0.47081	0.1291	0.1291	0.1291	0.47081	0.8873
	-0.1291	0.1291	0.8873	-0.8873	0.1291	0.8873	-0.1291
96 *	0.7746	0.2352	-0.2352	-0.7746	-0.2352	-0.7746	-0.2352
	-0.2352	0.7746	0.2352	-0.7746	0.2352	0.7746	0.2352
	0	0	0	0	0	0	0
	0	0	0	0	0	0	0

FIG. 9A

FIG. 9B

1.5 bits/complex symbol, distance to Shannon Limit				
QPSK + LDPC(R=0.75)	SCMA (6 layers, 4 symbols/layer, 2 bits/layer), LDPC(R=0.5)			
		Other Codebook	Design 1 (Theta_1 = 60, Theta_1 = 120)	Design 2 (Theta_1 = 45, Theta_1 = 90)
	MAP	3.5dB	3.2dB	>4dB
	MPA	3.5dB	3.2dB	>4dB
	MPA+SIC	2.8dB	2.5dB	2.2dB
1.8dB	MPA+Turbo	1.6dB	1.3dB	1.5dB

FIG. 10



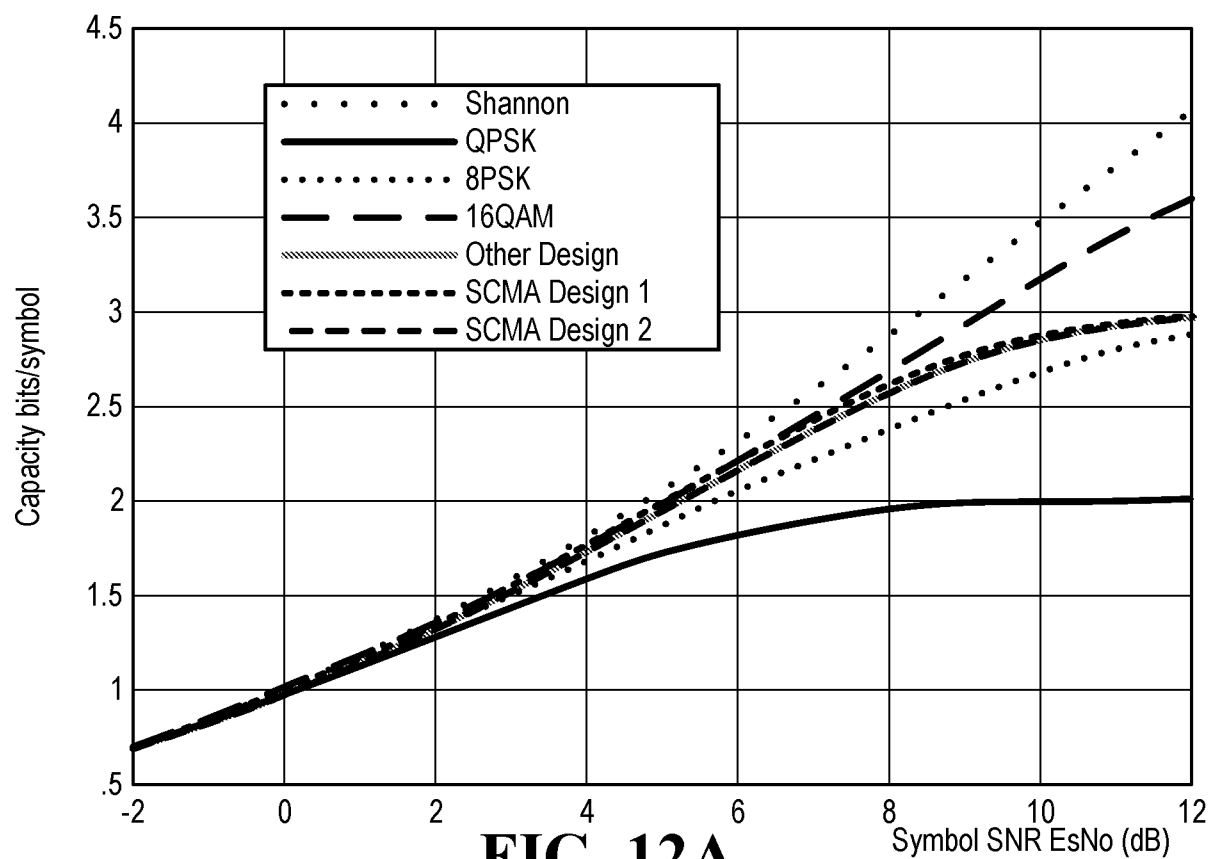


FIG. 12A

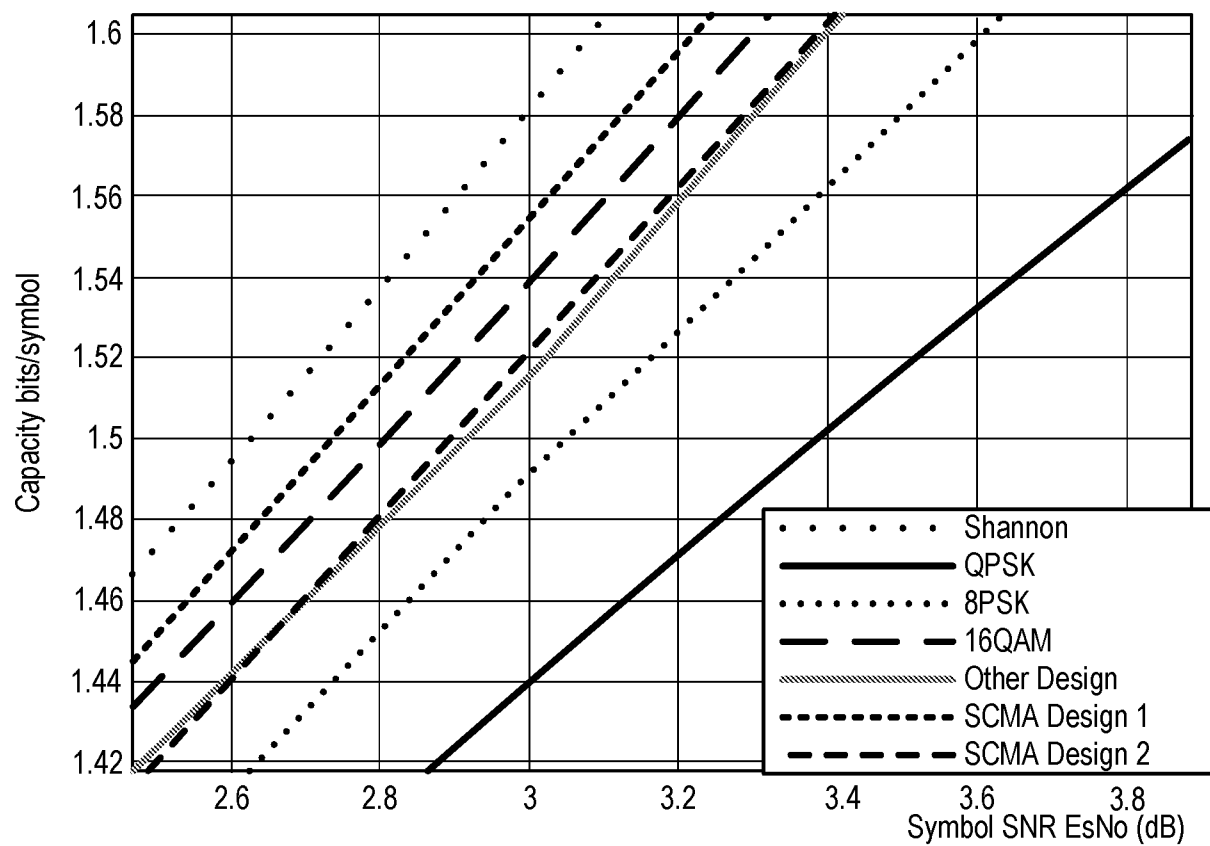
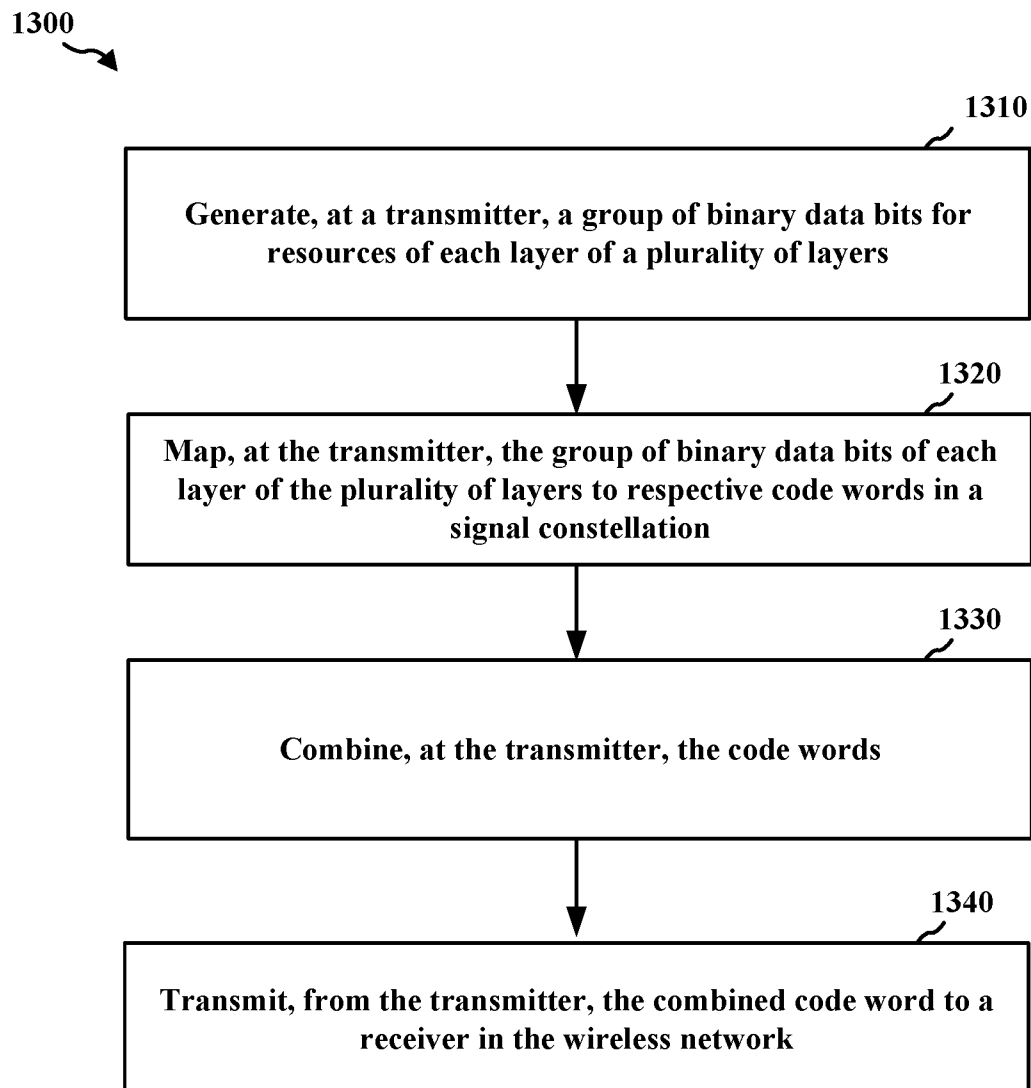


FIG. 12B

**FIG. 13**

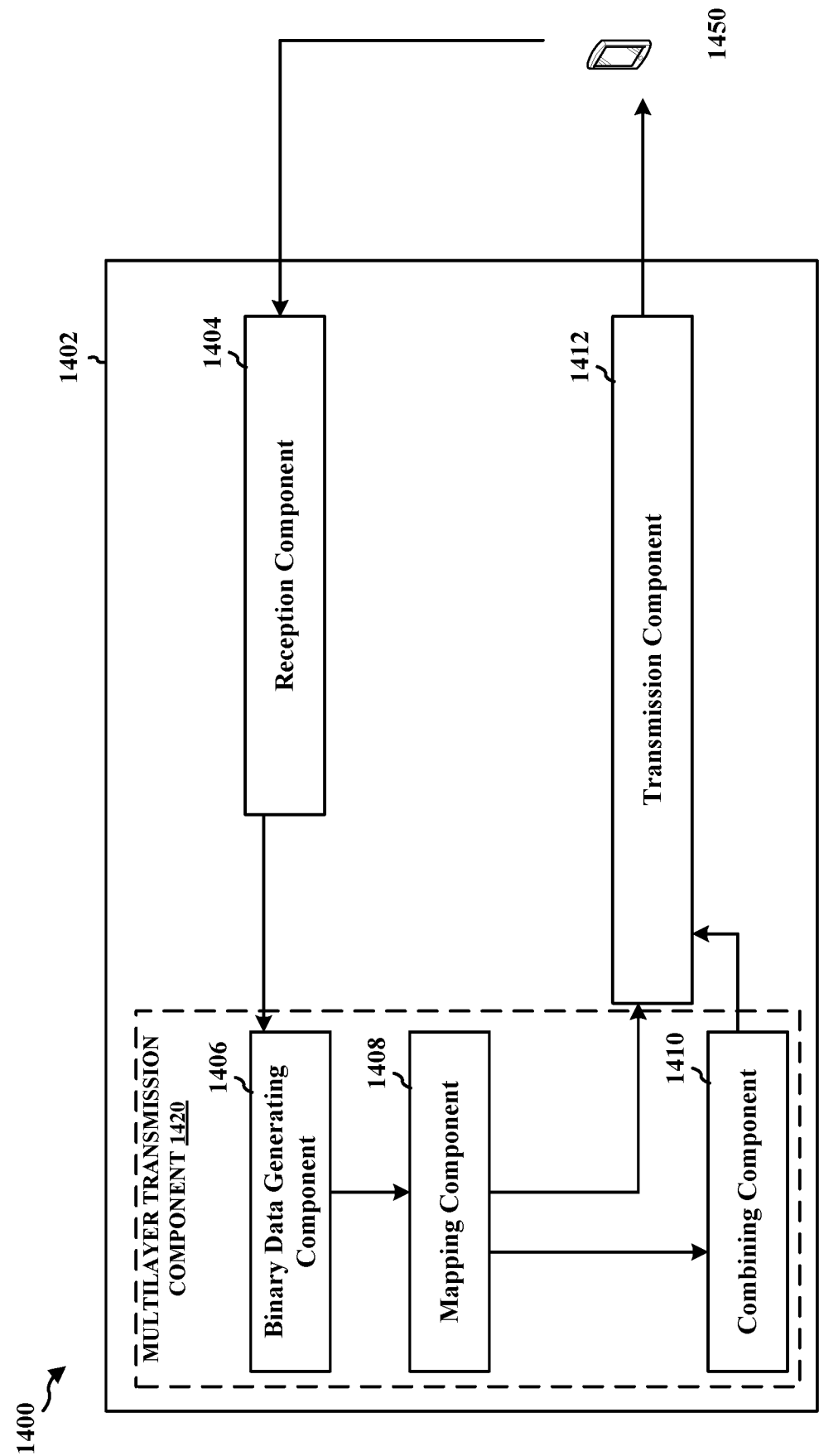


FIG. 14

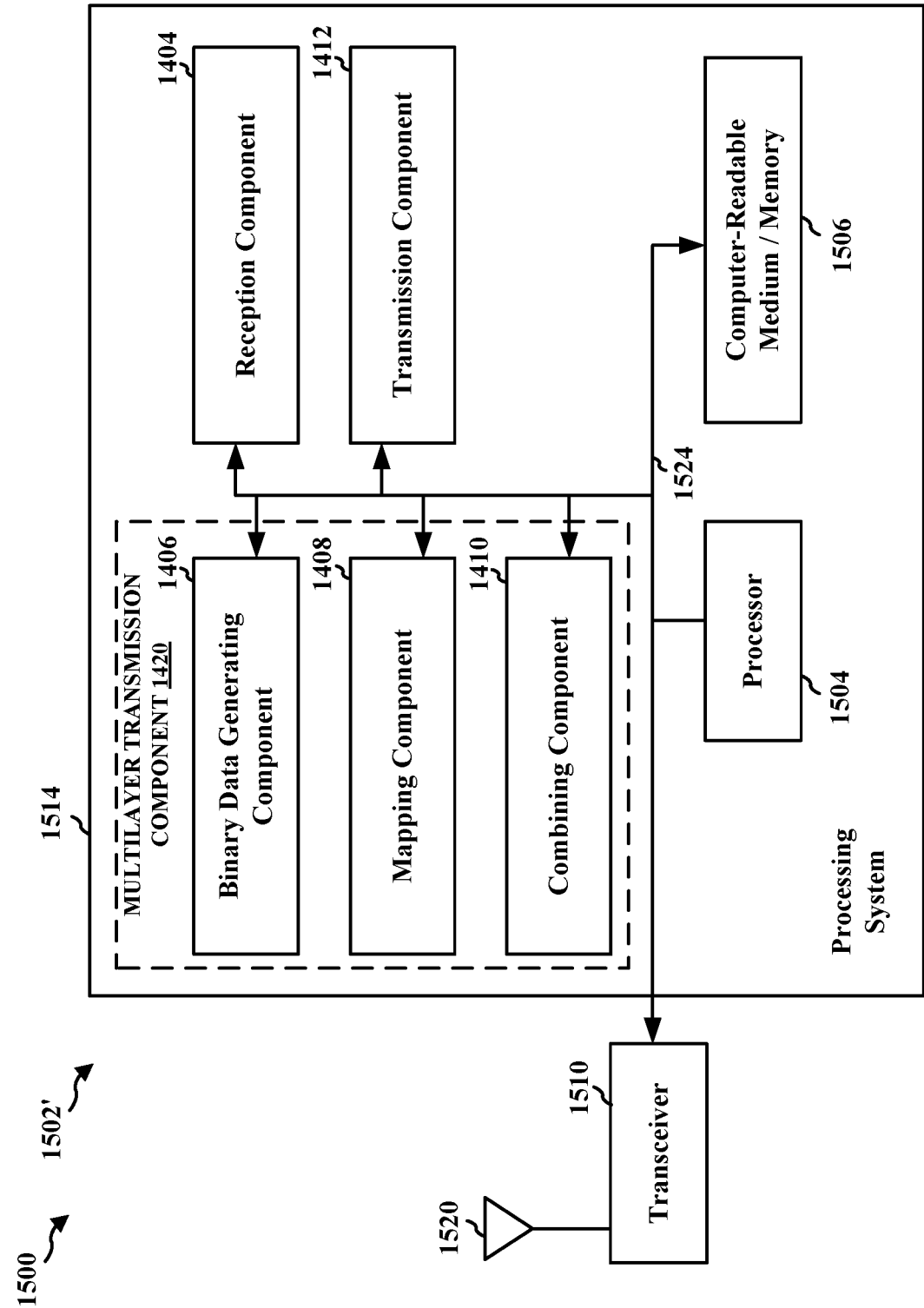


FIG. 15