

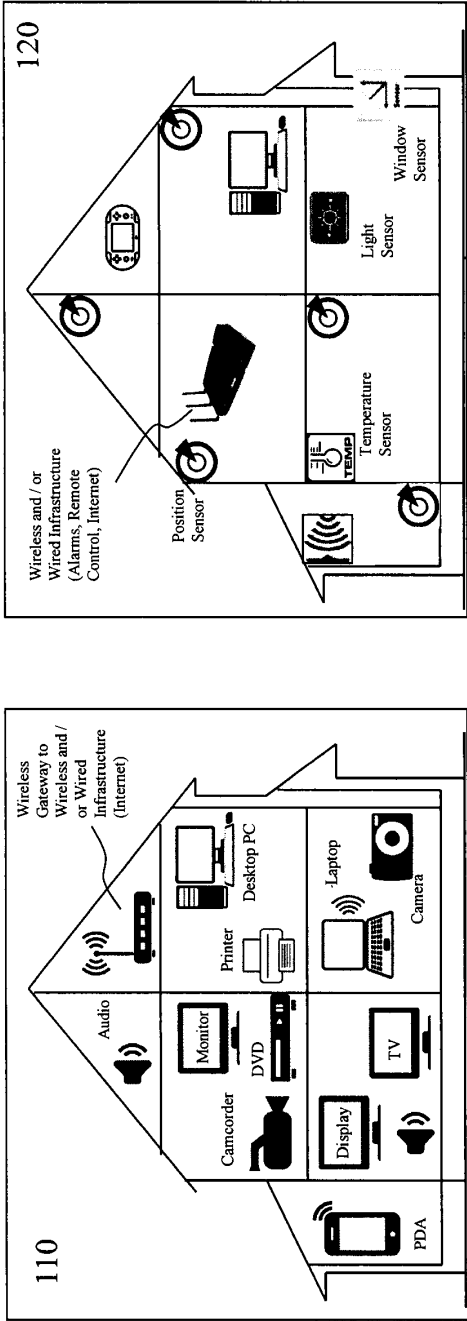


Figure 1

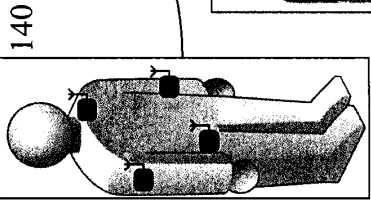
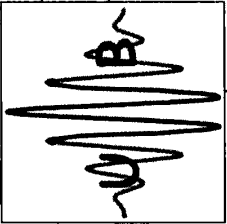
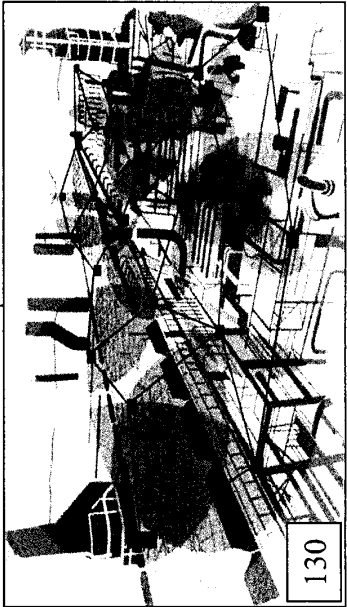
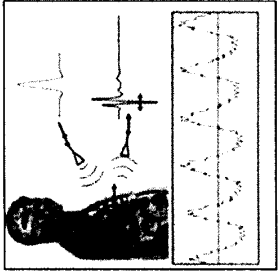


Figure 1



130

140

150

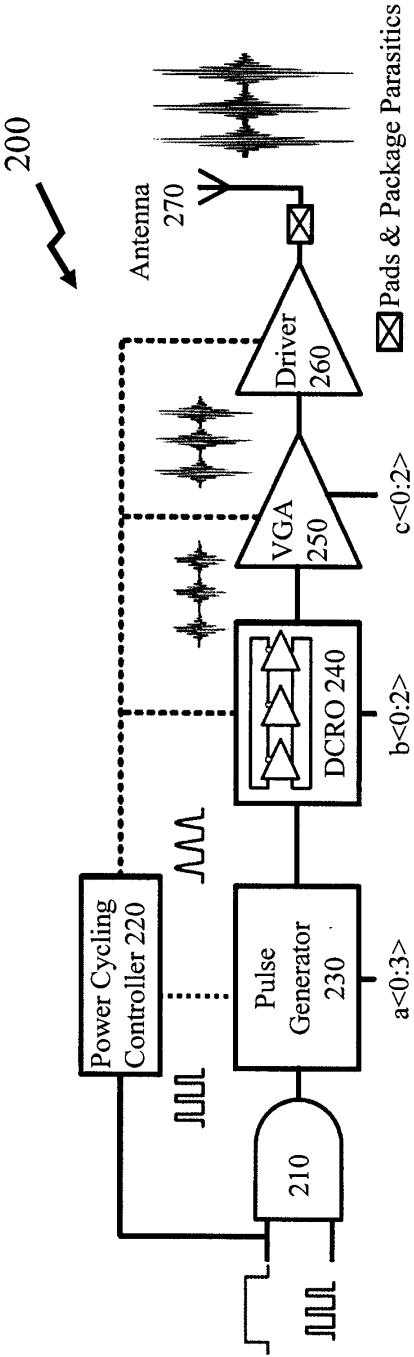


Figure 2

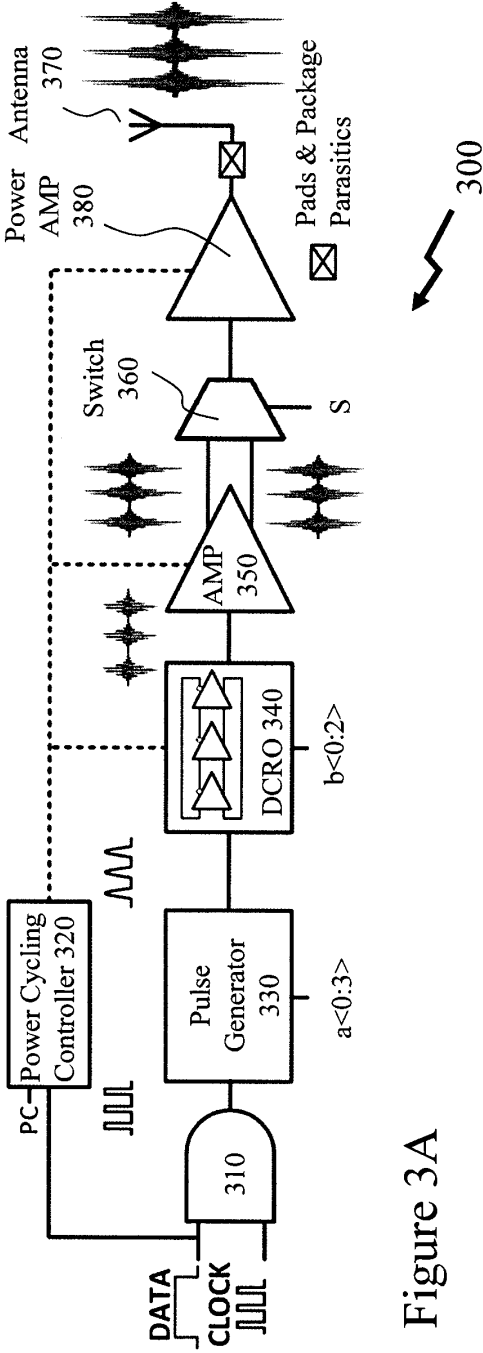


Figure 3A

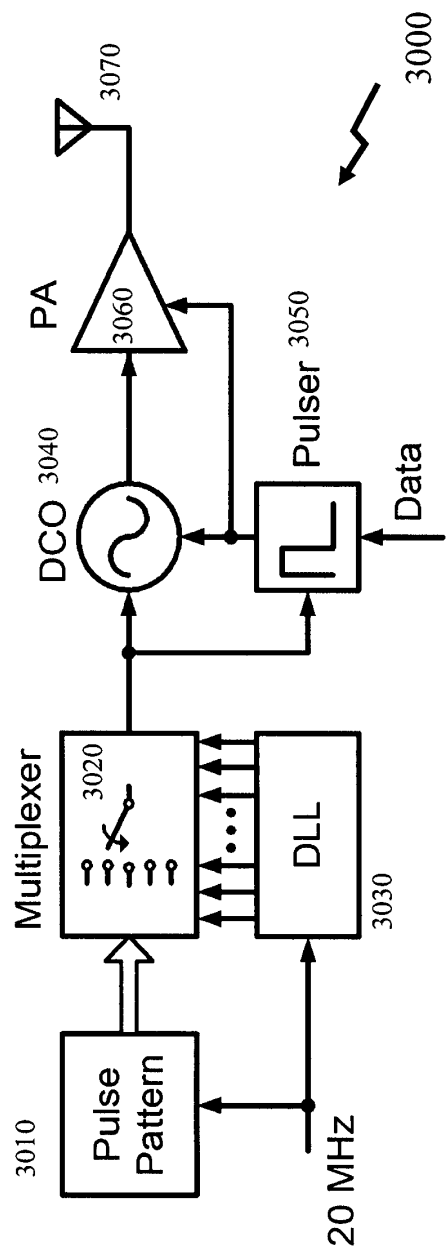


Figure 3B

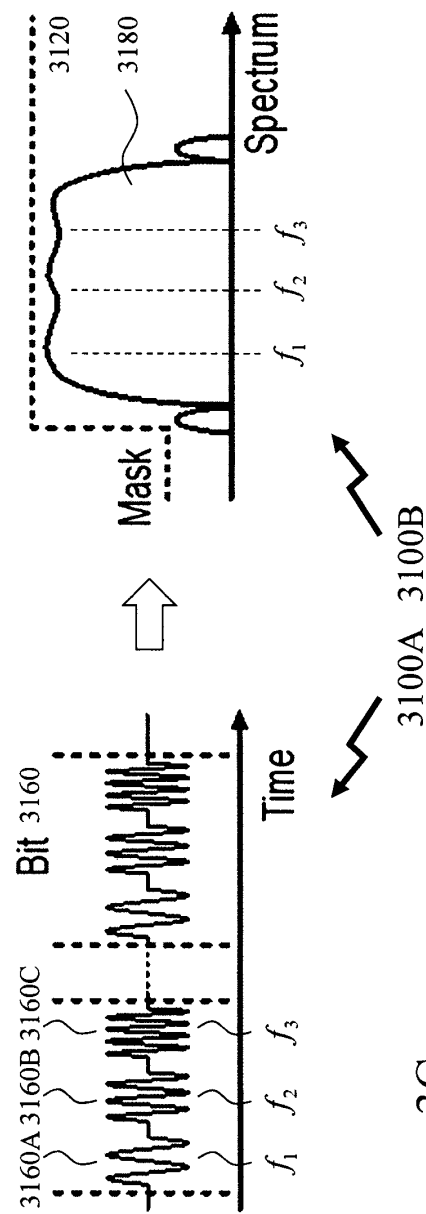


Figure 3C

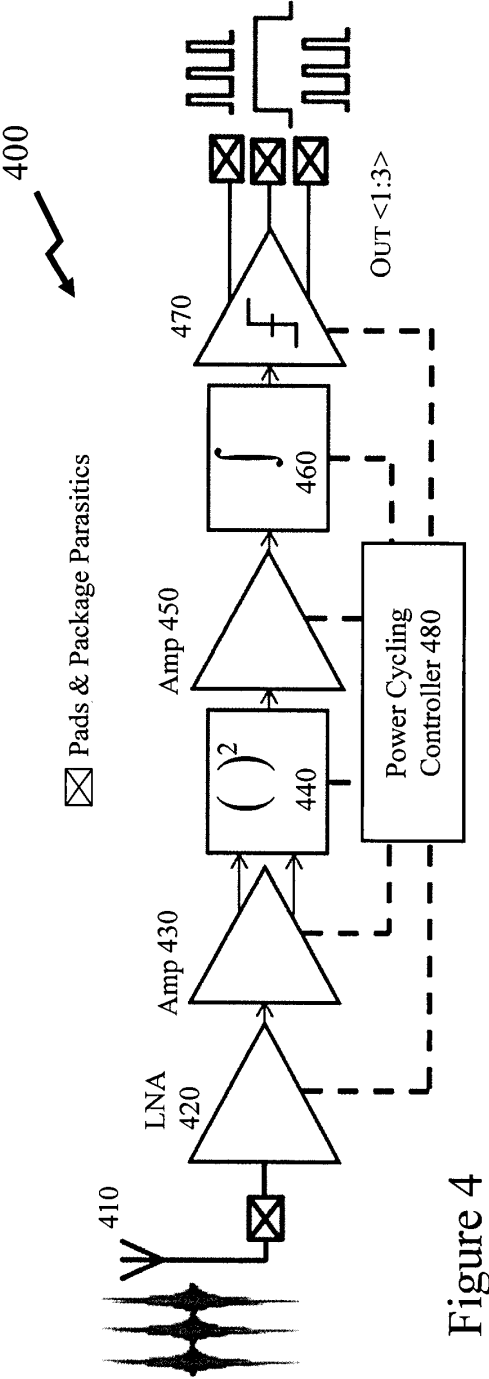


Figure 4

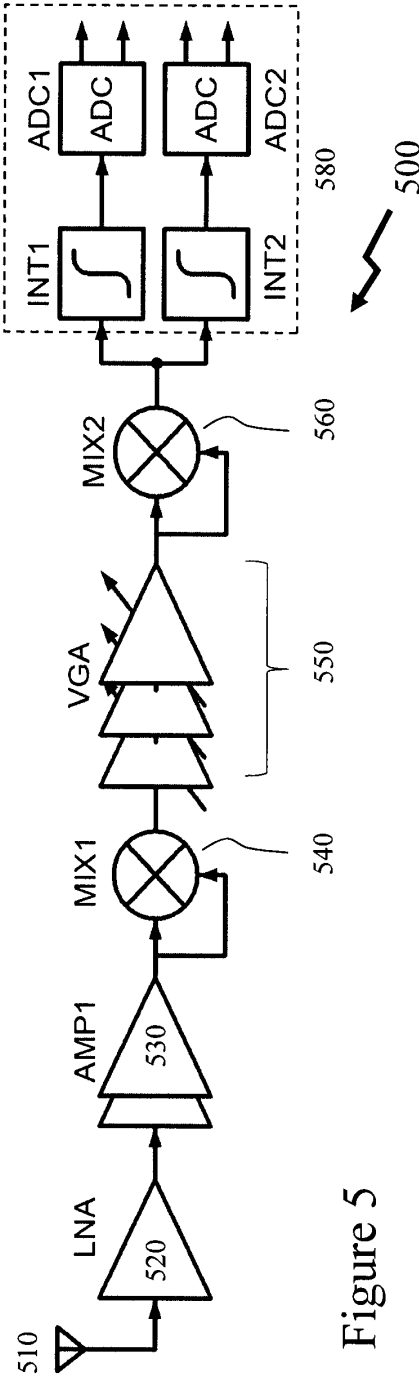


Figure 5

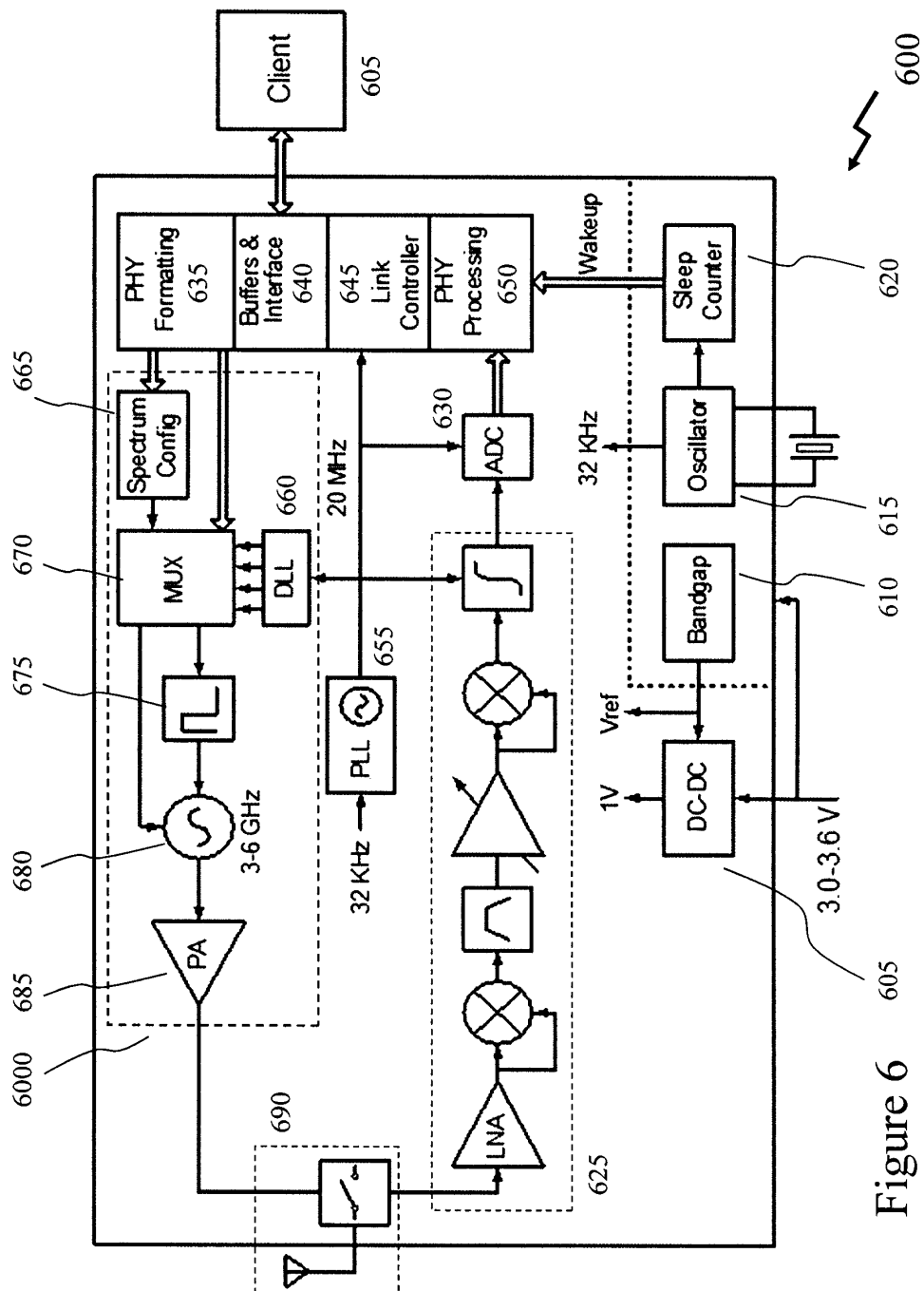


Figure 6

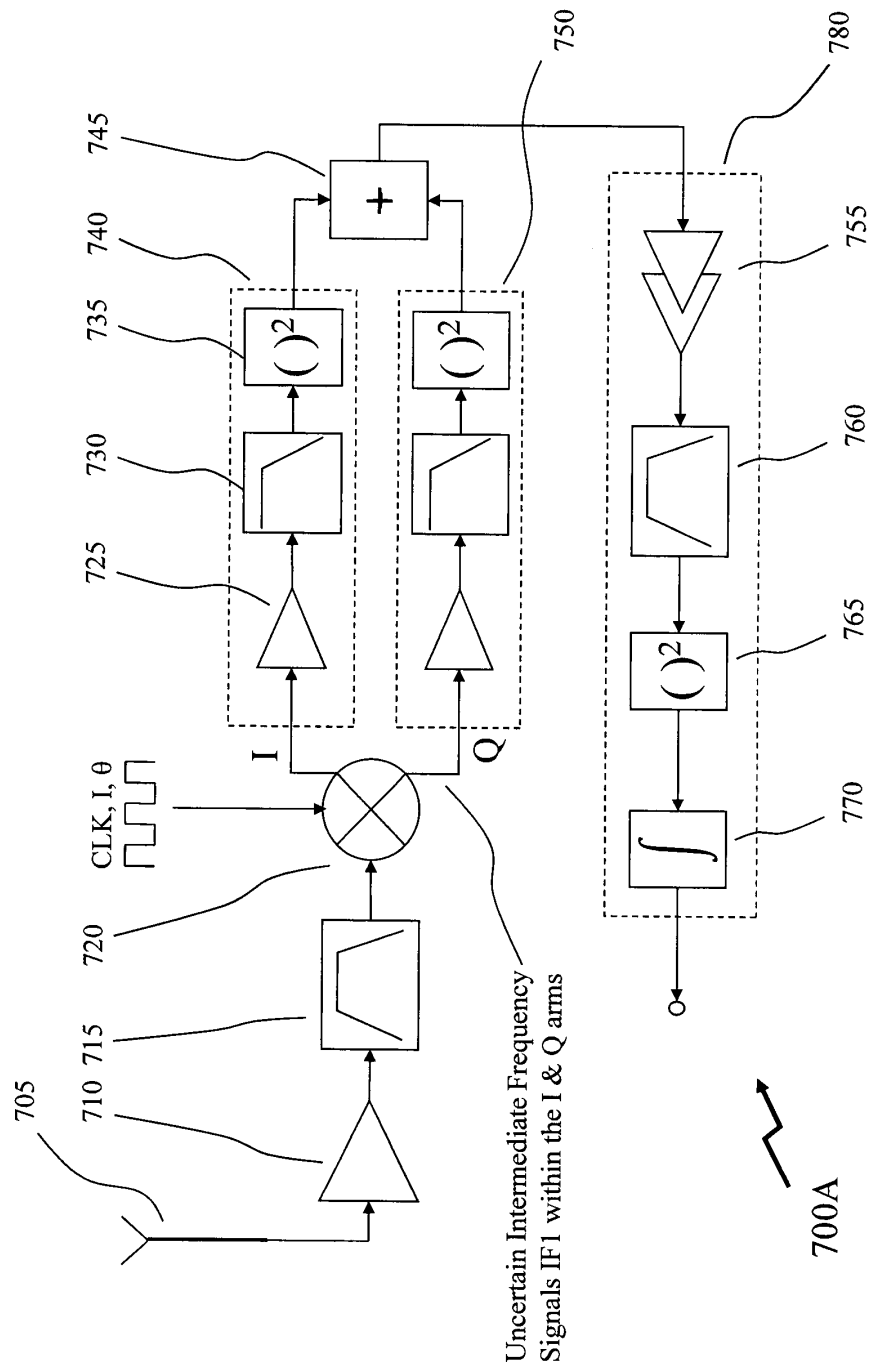


Figure 7A

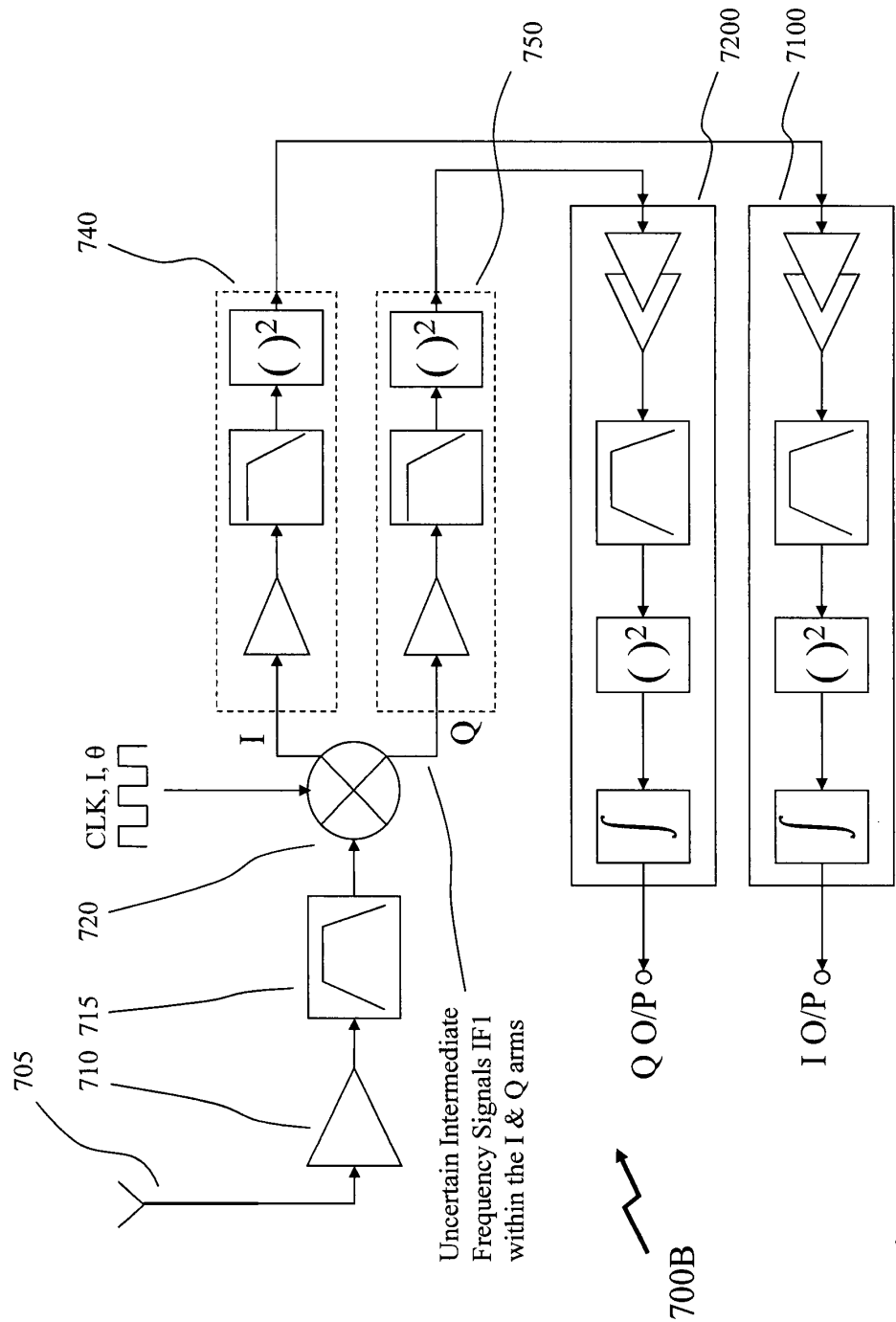


Figure 7B

Decoded	Encoded	Decoded	Encoded
0000	000000	1000	010001
0001	000011	1001	010010
0010	000101	1010	010100
0011	000110	1011	100010
0100	001001	1100	011000
0101	001010	1101	110000
0110	001100	1110	101000
0111	100100	1111	100001

Figure 8

Modulation	OOK	1-bit PPM	2-bit PPM	4-bit PPM	Double PPM	'Invertable' OOK
Energy Cost (nJ/bit)	1	2	2	4	1.5	Between 1 and 1.1
Worst-case Spectral Efficiency	1 bit/pulse	1 bit/pulse	2 bit/pulse	4 bit/pulse	2 bit/pulse	~1.99... bit/pulse
Link Robustness						
Design Complexity	Ultra-low	Low	Medium	High	High	High

Figure 9

Decoded	Encoded	Decoded	Encoded	Decoded	Encoded	Decoded	Encoded
0000	00000001	0100	00010001	1000	00100001	1100	00110000
0001	00000011	01001	00010010	10001	00100010	11001	01100000
00010	00000101	01010	00010100	10010	00100100	11010	10000100
00011	00000110	01011	10010000	10011	01000010	11011	00010000
00100	00001001	01100	00011000	10100	00101000	11100	01010000
00101	00001010	01101	10000010	10101	10001000	11101	00001000
00110	00001100	01110	01001000	10110	10100000	11110	10000000
00111	01000100	01111	01000000	10111	00100000	11111	11000000

Figure 10

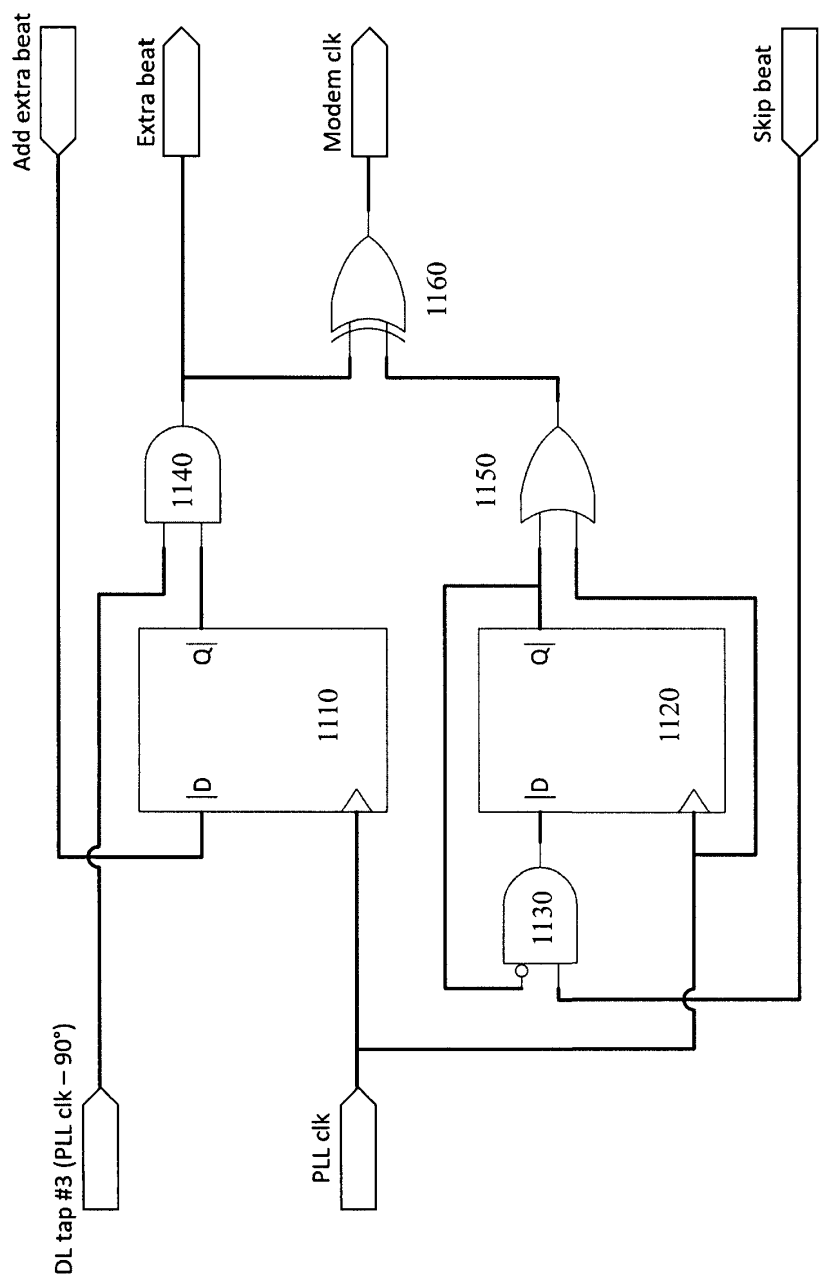


Figure 11

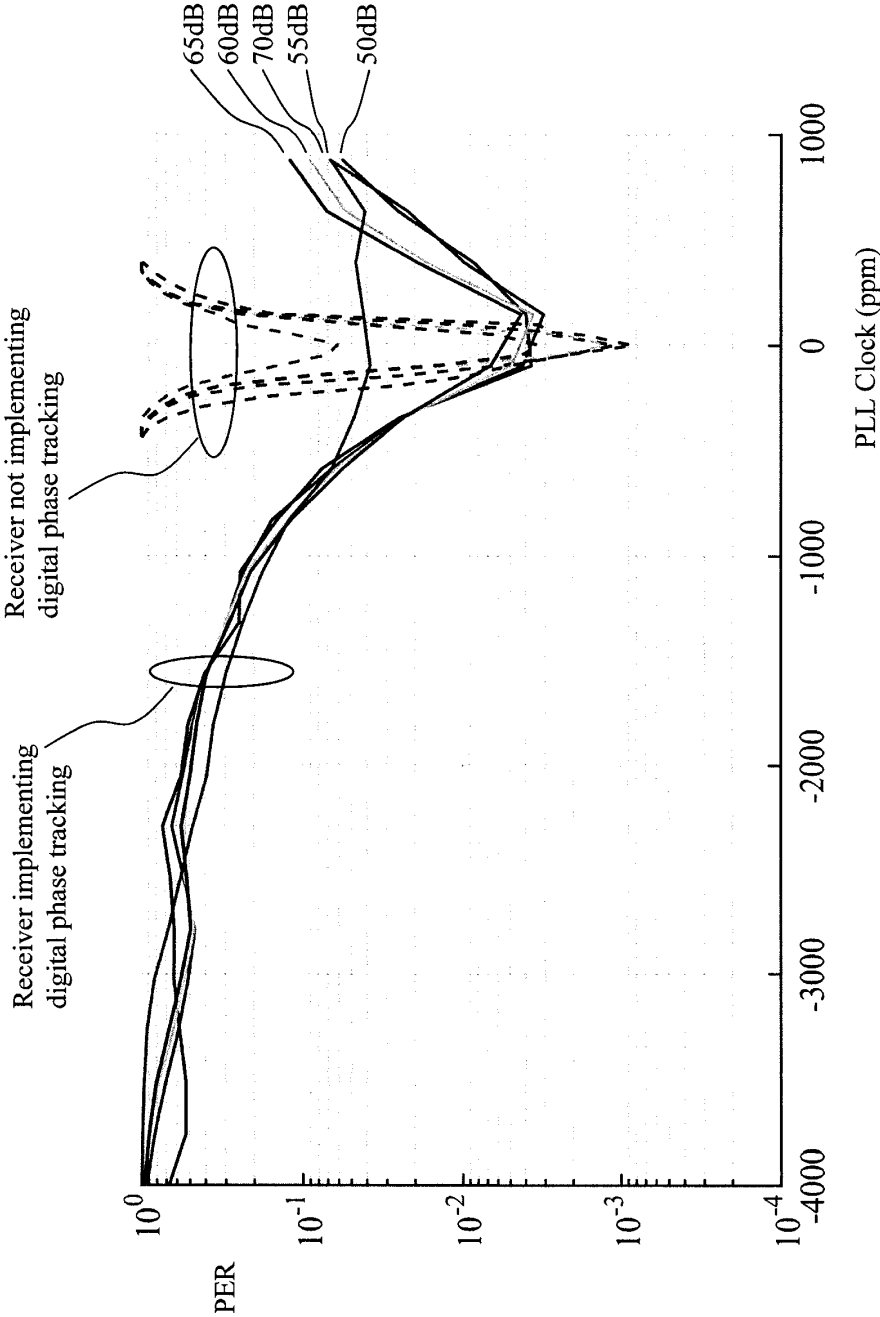


Figure 12

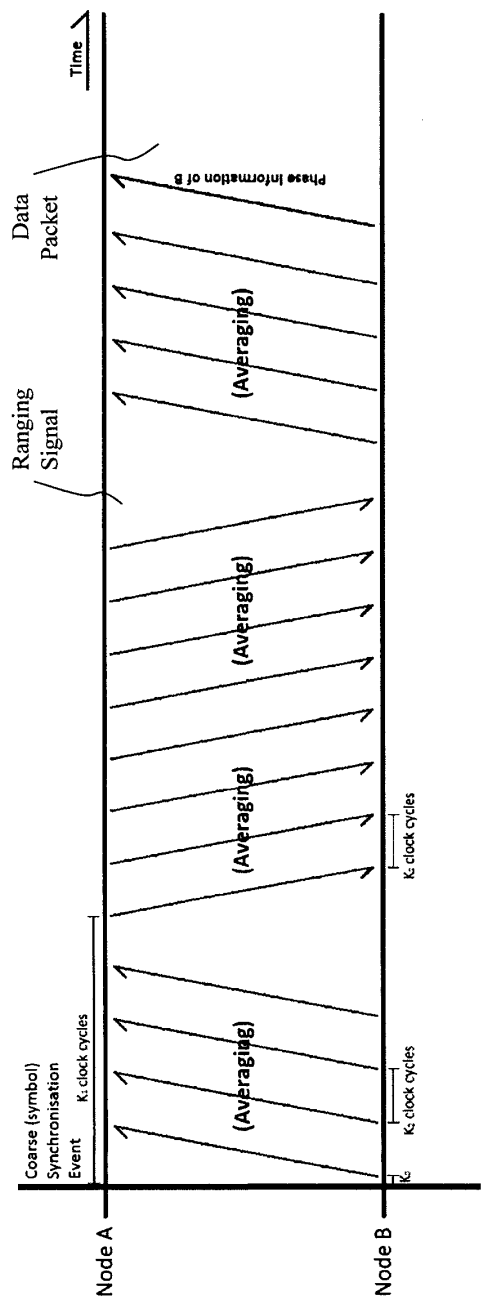


Figure 15

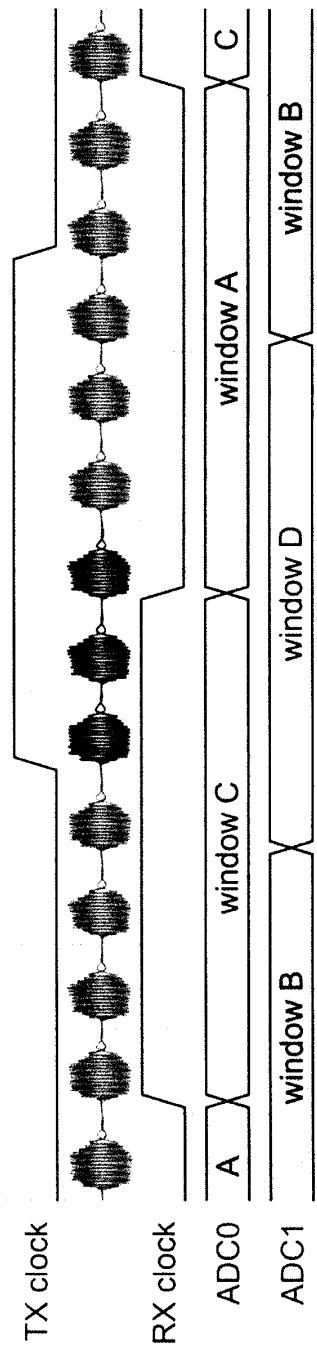


Figure 16

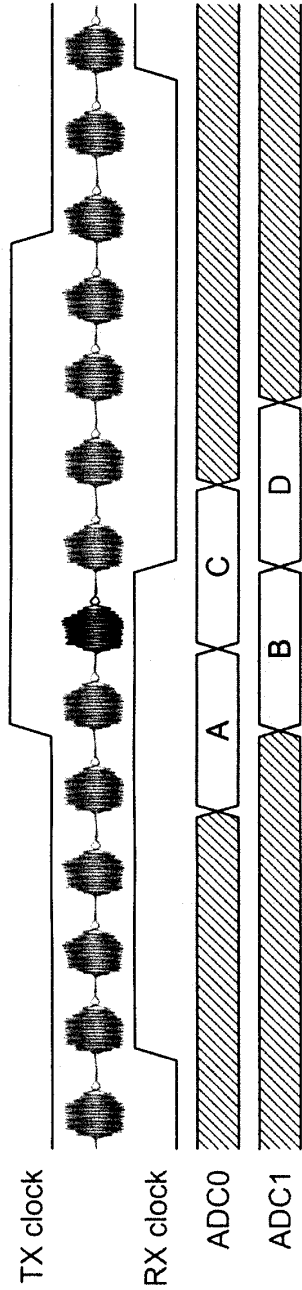


Figure 17

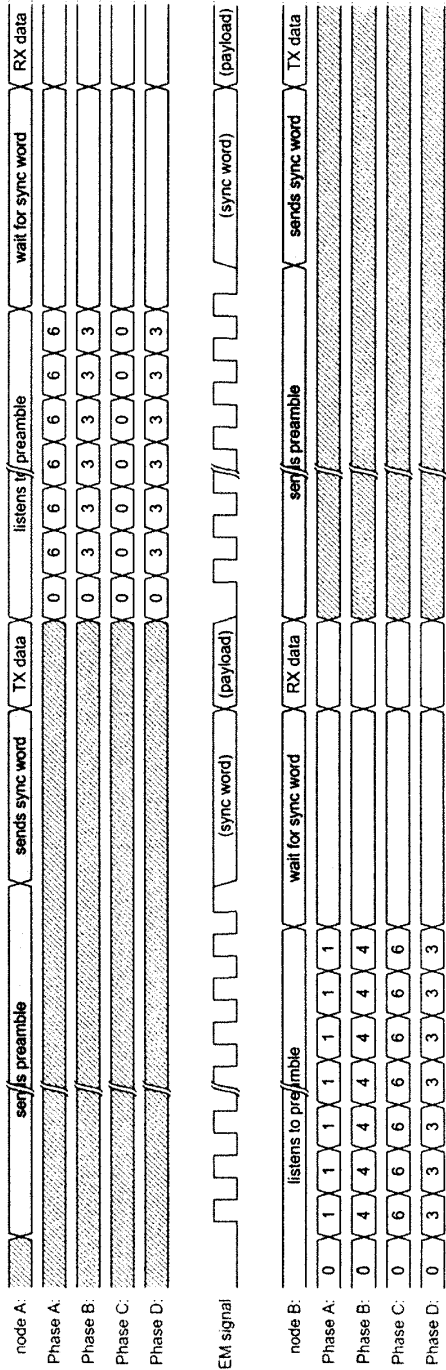


Figure 18