

⑦

4) 4 bit to 1's
complement

	A	B	C	D	W	X	Y	Z
m ₀	0	0	0	0	1	1	1	1
m ₁	0	0	0	1	1	1	1	0
m ₂	0	0	1	0	1	1	0	1
m ₃	0	0	1	1	1	1	0	0
m ₄	0	1	0	0	1	0	1	1
m ₅	0	1	0	1	1	0	1	0
m ₆	0	1	1	0	1	0	0	1
m ₇	0	1	1	1	1	0	0	0
m ₈	1	0	0	0	0	1	1	1
m ₉	1	0	0	1	0	1	1	0
m ₁₀	1	0	1	0	0	1	0	1
m ₁₁	1	0	1	1	0	1	0	0
m ₁₂	1	1	0	0	0	0	1	1
m ₁₃	1	1	0	1	0	0	1	0
m ₁₄	1	1	1	0	0	0	0	1
m ₁₅	1	1	1	1	0	0	0	0

$$W = \sum (0, 1, 2, 3, 4, 5, 6, 7)$$

$$X = \sum (0, 1, 2, 3, 8, 9, 10, 11)$$

$$Y = \sum (0, 1, 4, 5, 8, 9, 12, 13)$$

$$Z = \sum (0, 2, 4, 6, 8, 10, 12, 14)$$

W	$\bar{C}\bar{D}$	$\bar{C}D$	$C\bar{D}$	CD
$\bar{A}\bar{B}$	1	1	1	1
$\bar{A}B$	1	1	1	1
$A\bar{B}$				
AB				

X	$\bar{C}\bar{D}$	$\bar{C}D$	$C\bar{D}$	CD
$\bar{A}\bar{B}$	1	1	1	1
$\bar{A}B$				
$A\bar{B}$				
AB	1	1	1	1

$W = \bar{A}$

$X = \bar{B}$

Y	$\bar{C}\bar{D}$	$\bar{C}D$	$C\bar{D}$	CD
$\bar{A}\bar{B}$	1			1
$\bar{A}B$	1			1
$A\bar{B}$	1			1
AB	1			1

Y	$\bar{C}\bar{D}$	$\bar{C}D$	$C\bar{D}$	CD
$\bar{A}\bar{B}$	1	1		
$\bar{A}B$	1	1		
$A\bar{B}$	1	1		
AB	1	1		

$Z = \bar{D}$

$Y = \bar{C}$

