



, B, A, , e D e u C 1958 "N, f f f i [ , a' n A, u 1/2 e' E »' 2 ~ a o d I, I . C . u " g . " . - a , o e - { , A , A ' s  
 . o , u A , c , t t E E e u " g . " o d I , o s q E c o M . t . ^ - . , I E " \_ E - s , z - B , A 1/2 u - @ , A , , e D . M  
 . t , I ' < , E e c z , o o , , e t t E e o d I , 3 , e e D U B R C 1/2 c , c , I ^ e " E »' 2 ~ a o d I , o - p , o f f f f f 1  
 " T M , I " g E \ . a . I , o s , A , 1/2 D , U , 1/2 C - L ' o , c , I . , ' - 1 b i t . M . t , I - E . o » . C o 1 , E o d I , E ' e " E »' 2 ~ a o d  
 . I , o t u u , u » , I - L - p . « , o | , u 1/2 D  
 . @ { . n , A , I . C . , 1 b j t . , . o » C , , , a e N . 3 S m , E e u " g . " o d I , o A " \ , A , , e E c o e " E »' 2 ~ a o d  
 . I , I - ~ \_ E ' . - U , u 1/2 f f f f f f O , a - O S E ' N x e " T M , I ' o S o " A . « , o 1 - q , u 1/2 , " \ - | . , . o » , E e o 1 < z  
 . M . t , I . , ' o . A " x < L ^ . E A . q , E , A , c , A . n . . , , e D

2.D.o, 1bit ., .o»

. @ , ' - 1 b i t . ^ - . , E 1/2 c , o , I . u - @ , A - E . o » . C o 1 , I f f f f f f f < , o s E a , u A . S - ] , I " A . « , o A E » , .  
 , e a , I , A , , e D . } | 1 , E S e i , I A D / D A . I S . . u . @ , o C . } | 2 , E S e i . I S . . u . @ . E u " g . " f f f f f f g  
 f < , o | , . . D . , 1 b i t . , . o » , I S i - { . \ . - , I . } . | 3 , I , a q E , E , A , A , ; e C < A S O f < [ f v , I ' t , E - E  
 . o » S i , o Y , " ` B S O " , o K " - , E ' . . i , . , e t t E e e - E . o » . C o 1 , I f f f f f f f < , o s E a , . , e t t E  
 , a , A , e e (4),5),6) . D 2 . Y ' E o , I t " . c . i ' 2 , I ^ A ' e , E " @ i , . , e . a . C 3 . Y ' E a , I . \ . - , A , I - E . o » f X  
 f f f f v " , I . s - n , a E » . A , I - E . o » . C o 1 , a - E . o » S i , I " u - I , E S S O , o a , A , t t E " , E e e C " @ i , a . s  
 ^ A ' e e E e e t t E a , , e D - E . o » . C o 1 , I " ` B S O " , I E W . " S U , E . " . a < A S O E S ' I , I < A S O E n , A E ^ ' e , 3  
 , e , e D , u 1/2 a , A , A . C . , . Y , I E n , E , , c , A E W " , o K " - , E ' I , O , t t E e e - E . o » . C o 1 , I f f f f f f f <  
 , I . s E a , o A " \ , A , , e D

2.1 . i . a . o - i , E A . o A . Z

. @ } . | 3 , E . | , . , a q E . I . a S i , o } ' @ U t , u » , e , 1/4 , e , E . d , Y . t , , o u A . A . Z , u l b i t - E . o S i  
 , E ' u - I , . , o A . o A . Z . U t . u . @ , A . d , Y , o K " - , E ' I , O , E n , I ^ A ' e , E " @ i , . , e D - E . o » . C o 1 N q , a  
 " u - I t ] , E 3 S S O , A , , e E « C . o - I , o Y . C . I . a S i , I . Y " , o n , E . , e E ` B S O " , I

$$Y = H(X) \cdot X + H(N_q) \cdot N_q$$

$$H(X) = \frac{\sum_{n=1}^n a_p \cdot (1 - z^{-1})^{n-p}}{(1 - z^{-1}) + z^{-1} \sum_{n=p}^n a_p \cdot (1 - z^{-1})^{n-p}}$$

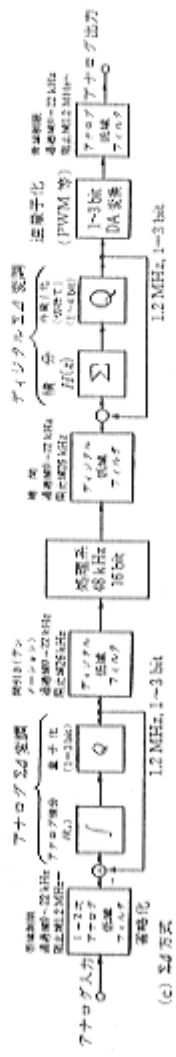
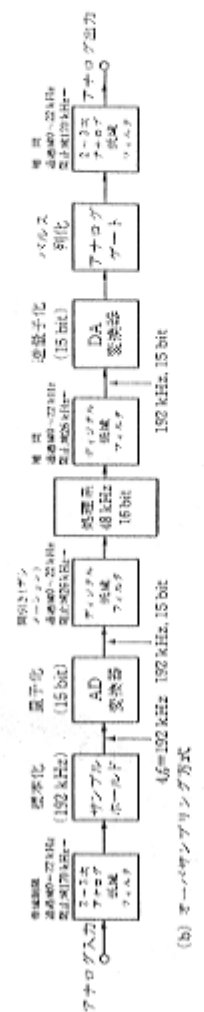
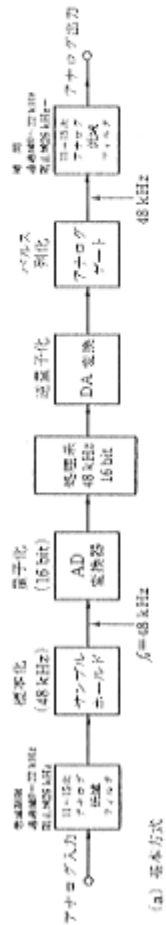
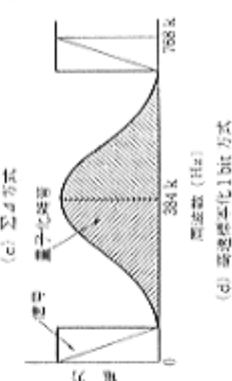
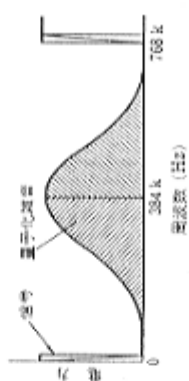
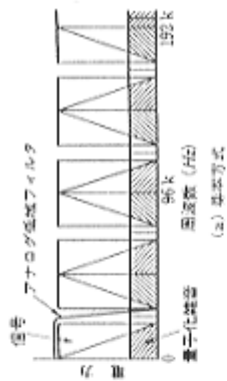
$$H(N_q) = \frac{(1 - z^{-1})^n}{(1 - z^{-1}) + z^{-1} \sum_{n=p}^n a_p \cdot (1 - z^{-1})^{n-p}}$$

. i . j

, E \ , i , 1 , e D , t t A a\_n / a\_{n-1} < 1/2 , I . e . t . C E n , I ^ A ' e , E " @ i , . , e D

2.2 . o f f B [ f f f f f N . f f f f . . [ f h l b i t . , . o »

. @ } . | 4 , E . | , . , a q E . I . a S i , I S O , f f f B [ f f f f f N < [ f t , f f f B [ f f f f f . . [ f k E n , o Y , , e  
 , t t A < E E e " \_ I . s E a , o A " \ , A , , e D . } | 5 , E . | , . . O , A , I . " . a < A S O E n , o a , A 7 . Y . \ . - , I . M . t  
 , I " ` B S O " H ( x ) . C - E . o » . C o 1 , I " ` B S O " H ( N\_q ) , o f f f . f o [ f f f " , E e e . o , B , 1/2 E E , o } . |  
 6 , E . | , . . D , U , 1/2 C , t e , o a E E . . . i , u 1/2 7 . Y l b i t A D . I S . S i , I " a ' e E o E , o } . | 7 , E . | , . . D  
 . o a . X , I . C 768 k H z . W o » 1 b i t - E . o » , I " o i S i , o . . i , u C ~ o 1 , a ' a ' e " T M , E . g - p , u A , c , e D . }  
 . | 8 , E , » , I . u " g . " A . o , o | , . . D , t , I l b i t . u . @ , I ' E . i , I D A T , E , q , " ` - - " x . C 768 k b i t / s , A  
 ' o 1 " g - I t a , U , A , u t t E a , A , e e q . D 10 k H z , I . u E " g , I " ` - , o A " \ , A , , e D



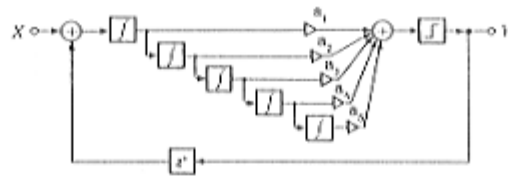


図-3 高速1bit符号化の基本構成

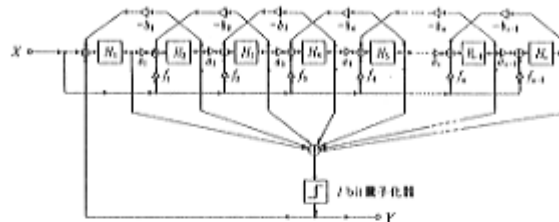


図-4 フィードバック・フォワード高速1bit量子化器の構成

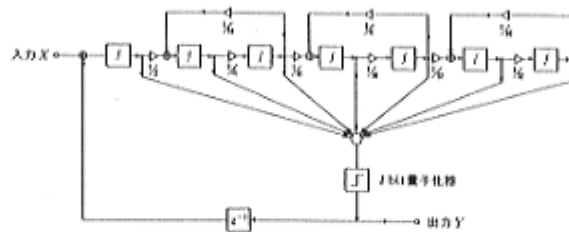


図-5 7次部分帯域高速1bit量子化器の構成

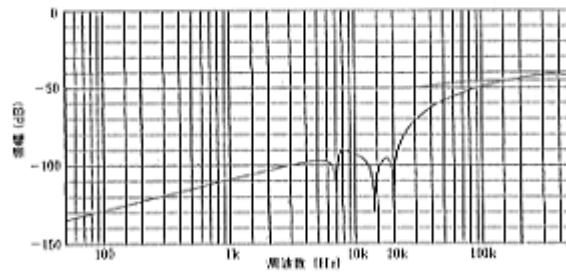


図-6 7次量子化器の $H(x)$ と $H(N_q)$

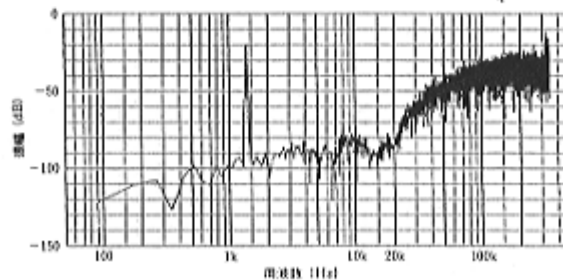


図-7 7次高速1bitAD変換器の出力スペクトル





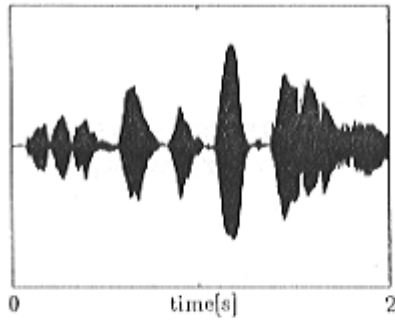


図-1-1 原音

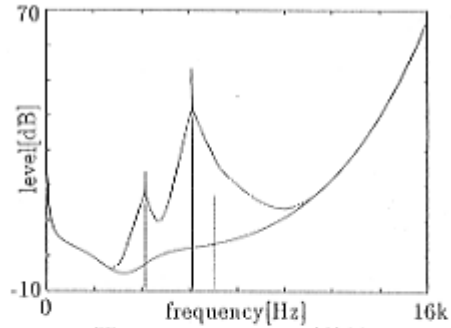
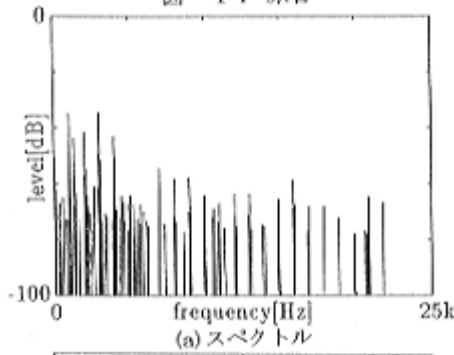
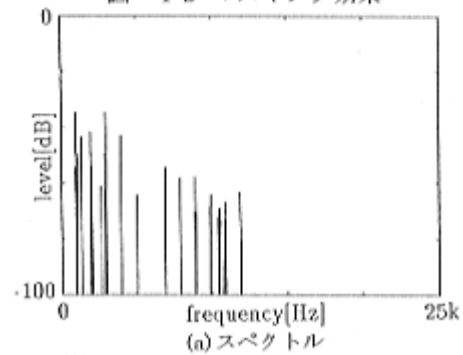


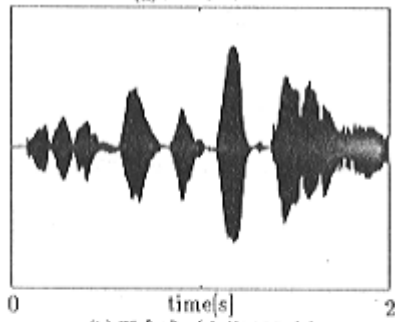
図-1-2 マスキング効果



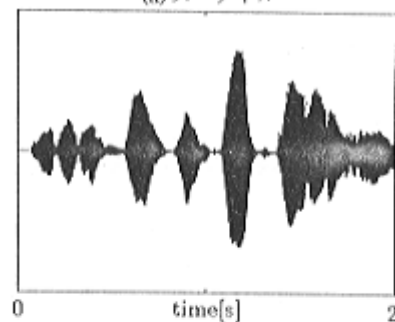
(a) スペクトル



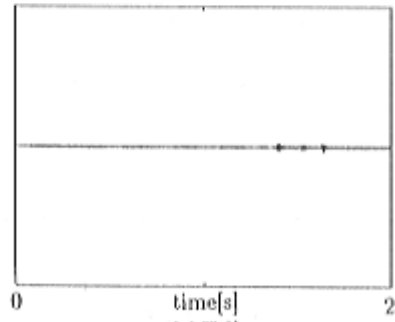
(a) スペクトル



(b)再合成 (上位100本)

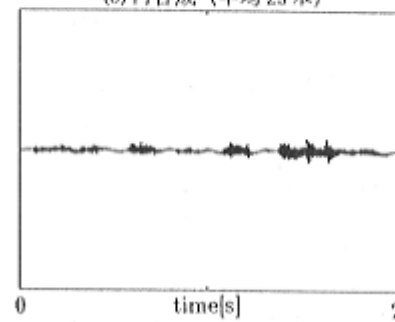


(b)再合成 (平均23本)



(c) 残差

図-1-3 一般化調和解析による結果



(c) 残差

図-1-4 聴覚特性を考慮した結果

