

ENCODING AND DECODING TECHNIQUES FOR
DATA IN 24 BIT SEQUENCES

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FIELD OF THE INVENTION

The present invention relates to communicating digital data through a communication channel. More particularly, the present invention relates to encoding and decoding techniques for data in 24 bit sequences.

BACKGROUND OF THE INVENTION

In the field of digital communications, digital information is typically prepared for transmission through a channel by encoding it. The encoded data is then used to modulate a transmission to the channel. A transmission received from the channel is then typically demodulated and decoded to recover the original information.

The encoding of the digital data serves to improve communication performance so that the transmitted signals are less corrupted by noise, fading, or other interference associated with the channel. The term "channel" can include media such as transmission lines, wireless communication and information storage devices such as magnetic disc



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-2-

drives. In the case of information storage devices, the signal is stored in the channel for a period of time before it is accessed or received. Encoding can reduce the probability of noise being introduced into a recovered digital signal when the encoding is adapted to the known characteristics of the data and its interaction with known noise characteristics of a communication channel.

In typical encoding arrangement, data words of m data bits are encoded into larger code words of n code bits, and the ratio m/n is known as the code rate of the encoding arrangement. Decreasing the code rate improves decoding and can also improve error correction, however, decreased code rate also increases energy consumption and slows communication.

Encoding for magnetic media also typically includes non-return-to-zero-invert-on-1s (NRZI) coding and resynchronization of the received signal using a phase locked loop (PLL). In order to ensure adequate synchronization of the PLL, a run length limit (RLL) of the number "k" of consecutive zeros is an integral part of the encoding. In systems where two interleaved subsequences are encoded to produce two smaller code words for detection by a Viterbi detector, the maximum run length or number "i" of zeros in each of the bitwise interleaved sub-sequence is also limited to reduce delay in the Viterbi detector. The number "w" of ones in a code word affects energy consumption and is known as a Hamming weight. These constraints improve performance, but also tend to eliminate a large number of available code words, which can tend to require a lower code rate. Finding an efficient

-3-

set of constraints "k", "i", and "w" within a suitable code rate is complex for long digital words.

In particular, it is found that transmission of relatively long digital words representing 24 bits of information through a channel that introduces channel noise in the form of irregular timing of received bits and unpredictable short bursts of bit errors is a problem. This problem is present in magnetic disc drives and can be present in other types of channels as well.

SUMMARY OF THE INVENTION

The present invention relates to systems and methods for communicating digital data through a communication channel that improve transmission and solves the above mentioned synchronization and decoding problems.

An encoding system receives 24 bits of information as first and second 12 bit sequences of the data. The encoding system includes a first encoder that generates an 11 bit first codeword and state variables as a function of the first sequence. A second encoder generates a 14 bit second codeword as a function of the second sequence and the state variables. The state variables are represented by four or fewer bits in the second codeword. The first and second codeword together form a 25 bit codeword that coupled to the communication channel.

A decoder system then receives the 25 bit codeword from the communication channel and separates the 25 bit codeword into a 14 bit codeword and an 11 bit codeword. A first decoder receives the 14 bit codeword and generates a first decoded 12 bit

-4-

sequence. The first decoder also generates decoded state variables as a function of four or fewer bits of the 14 bit codeword. A second decoder receives the 11 bit second portion and the state variables and
5 generates a second 12 bit decoded sequence, the first and second decoded sequence together forming a decoded 24 bit sequence of data.

The first and second codewords together form a 25 bit codeword. The encoder limits runs of zeros by
10 encoding the 25 bit codeword with a run length limit $K=7$.

In a preferred embodiment, the encoding and decoding systems and methods are used in a magnetic disc drive.

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BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of an embodiment of a magnetic disc drive in which the present invention can be used.

20 FIG. 2 is a block diagram of embodiments of encoding and decoding systems for communicating data according to the present invention.

FIG. 3 is a flow chart of a method of encoding data.

25 FIG. 4 is a flow chart of a method of decoding data.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

FIG. 1 is a perspective view of a magnetic
30 disc drive 100 in which the present invention is useful. Disc drive 100 includes a housing with a base 102 and a top cover (not shown). Disc drive 100 further includes a disc pack 106, which is mounted on

-5-

a spindle motor (not shown), by a disc clamp 108. Disc pack 106 includes a plurality of individual discs, which are mounted for co-rotation about central axis 109. Each disc surface has an associated head 5 110, which is mounted to disc drive 100 for communication with the disc surface. In the example shown in FIG. 1, heads 110 are supported by suspensions 112 which are in turn attached to track accessing arms 114 of an actuator 116. The actuator 10 shown in FIG. 1 is of the type known as a rotary moving coil actuator and includes a voice coil motor (VCM), shown generally at 118. Voice coil motor 118 rotates actuator 116 with its attached heads 110 about a pivot shaft 120 to position heads 110 over a desired data track along an arcuate path 122 between a disc 15 inner diameter 124 and a disc outer diameter 126. Voice coil motor 118 operates under control of internal circuitry 128.

The heads 110 and rotating disc pack 106 20 form a communication channel which can receive digital data and reproduce the digital data at a later time. Write circuitry within internal circuitry 128 receives data, typically from a digital computer, and then encodes data in codewords adapted to the communication 25 channel. The encoded data is then used to modulate a write current provided to a write transducer in the head 110. The write transducer in the head 110 causes successive code words to be encoded on a magnetic layer on disc pack 106. At a later time, a read 30 transducer in the head recovers the successive code words from the magnetic layer as a serial modulated read signal. Read circuitry within internal circuitry 128 demodulates the read signal into successive

-6-

parallel codewords. The demodulated code words are then decoded by decoder circuitry within circuitry 128, which recovers the digital data for use, typically by a digital computer, at a later time.

5 FIG. 2 shows a block diagram of an embodiment of a system 150 for communicating digital data. System 150 communicates through a communication channel 152, that can comprise an arrangement of magnetic storage discs and heads as shown in FIG. 1. Channel 152 can
10 also be other types of communication channels such as an optical, wireless or transmission line channel.

 An encoding system 154 is adapted to receive first and second 12 bit sequences 156, 158 of the data. The encoding system 154 includes encoder 200
15 that generates an 11 bit first codeword 160, identified as Y10:0 as a function of the first sequence 156. The encoder 200 also generates state variables 162, 164, 166, identified as S0, S1, S2, as functions of the first sequence 156.

20 The encoding system 154 includes encoder 202 that generates a 14 bit second codeword 168, identified as Z13:0, as a function of the second sequence 158 and the state variables 162, 164, 166. The state variables are represented in the second codeword 168
25 by four or fewer bits, preferably the in four initial bits of the second codeword 168.

 In FIG. 2, the encoding system 154 comprises encoder circuits 200, 202, identified as ENC-A and ENC-B. The encoding system 154 also comprises code
30 testers 204, 206, identified as CT-A and CT-B. Detailed examples of operations of the code testers, encoder circuits and decoder circuits is shown in Tables 1-12 below.

-7-

A modulator 170 receives the first and second codewords 160, 168 and is adapted to couple first and second modulated codewords 172, 174 to the communication channel 152. Codewords 160, 168 together comprise a 25 bit codeword. Modulator 170 can be arranged in a conventional manner to receive codewords 160, 168 in a parallel format and provide modulated codewords 172, 174 with analog or physical properties that are compatible with the communication channel 152. In a case where communication channel 152 comprises a magnetic disc and head, codewords 172, 174 will be in the form of serial write currents delivered to a write transducer in the head. With other types of communication channels, modulation can include other known forms of modulation such as AM, FM, PM, FSK, spread spectrum and the like. The system described here can be used over the internet or an intranet, for example.

A receiver 175 in a decoding system 182 receives the first and second modulated codewords 172, 174 from the communication channel 152. Receiver 175 includes a demodulator 176. Receiver 175 can include a Viterbi detector. The demodulator 176 generates first and second demodulated codewords 178, 180. Demodulated codewords 178, 180 can include errors as a result of passing through the communication channel 152. Decoder system 182 receives the first and second demodulated codewords 178, 180. A decoder 210 receives the codeword 180 and generates a decoded sequence 184 and state variables 186, 188, 190, identified as S_0' , S_1' , S_2' , as functions of the second demodulated code word 180. A decoder 208 receives codeword 178 and generates a first decoded sequence 192 as a function of the

-8-

first demodulated codeword 178 and the decoded state variables 186, 188 and 190. Outputs FA and FB of decoders 208, 210 indicate when invalid codewords are decoded.

5 The first and second demodulated codewords 178, 180 together form a 25 bit codeword. The encoding system 154 limits runs of zeros by encoding the 25 bit codeword with a run length limit (RLL) $k=7$. The encoding system 154 also limits runs of zeros by
10 encoding the first and second codewords 160, 168 each with a run length limit (RLL) $i=7$. The encoding system 154 guarantees minimum code energy by encoding the 25 bit word with a minimum Hamming weight $w=9$.

 The decoding system 182 comprises code pattern
15 tester CT-A and CT-B shown at 194, 196 that decode most sequences by recognizing patterns that meet with "k", "i" and "w" constraints. The decoding system 182 also comprises decoder circuits 208, 210, identified as DEC-A, DEC-B. The demodulator 176 preferably
20 includes a local oscillator 177 in a phase locked loop (PLL) that generates a local oscillator output synchronized with the modulated first and second codewords 172, 174. the demodulator 176 generates, or demodulates, the first and second demodulated
25 codewords as a function of the local oscillator output. The communication channel 152 can be in a disc drive, and the modulator is adapted to modulate the disc drive write output, while the demodulator is adapted to demodulate the disc drive read signal. The
30 synchronization of the local oscillator compensates for speed variations in the disc drive.

 In FIG. 3, a method of encoding digital data for transmission through a communication channel is shown

-9-

at 250. At 252, a first sequence of 12 bits of data is received at a first encoder. At 254, the first encoder generates a first codeword of 11 bits and generates state variables as a function of the first
5 sequence. At 256, a second encoder receives a second sequence of 12 bits of data and the state variables. At 258, the second decoder generates a second codeword of 14 bits as a function of the second sequence and the state variables, the state variables being
10 represented by four or fewer bits in the second codeword. At 260, the first and second codewords are combined together to form a 25 bit codeword. At 262, a run length limit $K=7$ is set on the 25 bit codeword to limit errors.

15 In FIG. 4, a method of decoding digital data for transmission received from a communication channel is shown at 300. At 302, a 25 bit encoded digital codeword with a run length limit $K=7$ is received, the codeword representing a 24 bit sequence of data. At
20 304, the 25 bit encoded digital codeword is separated into a 14 bit first portion and an 11 bit second portion. At 306, the 14 bit first portion is received in a first decoder and the first decoder generates a first decoded 12 bit sequence, and also generates
25 decoded state variables as a function of four or fewer bits of the first portion. At 308, the 11 bit second portion and the state variables are received in a second decoder. At 310, a second decoded 12 bit sequence is generated in the second decoder, the first
30 and second decoded 12 bits sequences together forming a decoded 24 bit sequence of data.

Further details of encoders, decoders and code decoders are shown in Tables 1-12 below. Tables are

-10-

used rather than circuit diagrams of flow charts to provide a more compact, understandable description of the logic operations performed. It is understood that the functions described by the tables can be performed
 5 in hardware, software, firmware or any combination of hardware, software and firmware.

Table 1, "Equations for Encoder and Decoder," provides definitions for the symbols or logical operators used in the logic statements in Tables 2-7.

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Table 1

15 **Equations for Encoder and Decoder**
 Symbol definition:

	" "	Bitwise OR
	"&"	Bitwise AND
20	"^"	Bitwise XOR
	"+"	Arithmetic Sum
	"!X"	Inverse of X

25

Table 2 below shows an embodiment of logic operations or calculations in the 11-bit codeword tester (CT-A), shown at 194, 204 of FIG. 2. Table 2 lists the 11 bits of input WA10 - WA0 to the code tester 194 or 204
 30 and the output TA. Intermediate results UA0 - UA8, HWA are calculated as shown, and then the output TA is calculated as a function of UA0 - UA8 as shown in Table 2.

-11-

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Table 2**11-bit codeword tester (CT-A)**

Input: WA10,WA9,WA8,WA7,WA6,WA5,WA4,WA3,WA2,WA1,WA0 (11 bits)

Output: TA

10

UA0 - WA10|WA9|WA8|WA7

UA1 - WA3 |WA2|WA1|WA0

UA2 - WA8 |WA7|WA6|WA5|WA4|WA3|WA2|WA1

UA3 - WA9 |WA8|WA7|WA6|WA5|WA4|WA3|WA2

UA4 - WA6 |WA4|WA2|WA0

UA5 - WA7 |WA5|WA3|WA1

15

UA6 - WA10|WA8|WA6|WA4

UA7 - WA9 |WA7|WA5|WA3

{ HWA - WA10+WA9+WA8+WA7+WA6+WA5+WA4+WA3+WA2+WA1+WA0

if (HWA>=4)

UA8=1

Else

20

UA8=0

}

TA - UA0 & UA1 & UA2 & UA3 & UA4 & UA5 & UA6 & UA7 & UA8

Table 3 below shows an embodiment of logic operations or calculations in the 14-bit codeword tester (CT-B) shown at 206, 196 of FIG. 2. Table 3 lists the 14 bits of inputs WB13 - WB0 to the code tester 206 or 196 and the output TB. Intermediate results UB0 - UB11, HWB are calculated as shown, and the output TB is calculated as a function of UB0 -

30 UB11.

-12-

Table 3

5 14-bit codeword tester (CT-B)

Input: WB9, WB8, WB7, WB6, WB5, WB4, WB3, WB2, WB1, WB0 (10 bits)

Output: TB

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10      UB0 - WB13 | WB12 | WB11 | WB10 | WB9
        UB1 - WB4 | WB3 | WB2 | WB1 | WB0
        UB2 - WB8 | WB7 | WB6 | WB5 | WB4 | WB3 | WB2 | WB1
        UB3 - WB9 | WB8 | WB7 | WB6 | WB5 | WB4 | WB3 | WB2
        UB4 - WB10 | WB9 | WB8 | WB7 | WB6 | WB5 | WB4 | WB3
        UB5 - WB11 | WB10 | WB9 | WB8 | WB7 | WB6 | WB5 | WB4
        UB6 - WB12 | WB11 | WB10 | WB9 | WB8 | WB7 | WB6 | WB5

15      UB7 - WB8 | WB6 | WB4 | WB2 | WB0
        UB8 - WB12 | WB10 | WB8 | WB6 | WB4
        UB9 - WB9 | WB7 | WB5 | WB3 | WB1
        UB10 - WB13 | WB11 | WB9 | WB7 | WB5

20      {      HWB - WB13+WB12+WB11+WB10+WB9+WB8+WB7
                +WB6+WB5+WB4+WB3+WB2+WB1+WB0
        if (HWB>=5)
                UB11=1
        Else
                UB11=0      }

25      TB - UB0 & UB1 & UB2 & UB3 & UB4 & UB5 & UB6
           & UB7 & UB8 & UB9 & UB10 & UB11

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Table 4, shown below and continued on following pages, shows an embodiment of logic operations or calculations in the 11-bit encoder (ENC-A) 200 in FIG.

2. Table 4 lists the inputs to code tester 200 as 11 bits of inputs A10 - A0 and one bit TA received from the code tester 204. Various intermediate results NAO - Gn0 are calculated as shown in Table 4, and then the

Table 4 (part 2 of 6)

Gb = ((NC2|NC0) & (NB10|NB8))|(NC2 & (NB2|NB0))) & (!NA0)
Gb9 = Gb & A7
Gb8 = Gb & A9
Gb7 = Gb & !A7
Gb6 = Gb & (A5|!A7)
Gb5 = Gb & (A5|A7)
Gb4 = Gb & A7
Gb3 = Gb & A3
Gb2 = Gb & A2
Gb1 = Gb & A1
Gb0 = Gb & A0
Gc = !NB0 & NA0
Gc9 = Gc & A10
Gc8 = Gc & A9
Gc7 = Gc & (A8|!A10)
Gc6 = Gc & (!A8|!A10)
Gc5 = Gc & (A8^A10)
Gc4 = Gc7
Gc3 = Gc & A7
Gc2 = Gc & A6
Gc1 = Gc & A5
Gc0 = Gc & A4

Gd = (A10|A8) & (!A6 & !A4) & (A3 & !A2 & !A0)
Gd9 = Gd & A9

-13-

outputs Y10-Y0, S0, S1, S2, WB12, WB13 are calculated using various combinations of the inputs and intermediate results as shown at the conclusion of Table 4.

Table 4 (part 1 of 6)

11-bit Encoder (ENC-A)

10	Input: A11,A10,A9,A8,A7,A6,A5,A4,A3,A2,A1,A0	(12-bit Dataword)
	Input: TA	(From CT-A)
	Output: Y10,Y9,Y8,Y7,Y6,Y5,Y4,Y3,Y2,Y1,Y0	(11-bit Codeword)
	Output: S2,S1,S0	(To ENC-B)
	Output: WB13,WB12	(To CT-B)

$NA0 = !A3 \& !A2 \& !A1 \& !A0$
 $NB0 = !A7 \& !A6 \& !A5 \& !A4$
 $NB2 = !A7 \& !A6 \& A5 \& !A4$
 $NB8 = A7 \& !A6 \& !A5 \& !A4$
 $NB10 = A7 \& !A6 \& A5 \& !A4$
 $NC0 = !A10 \& !A9 \& !A8$
 $NC2 = !A10 \& A9 \& !A8$

$Ga = NC0 \& !A7 \& !NA0$
 $Ga9 = Ga$
 $Ga8 = Ga \& A6$
 $Ga7 = Ga$
 $Ga6 = Ga$
 $Ga5 = Ga \& A5$
 $Ga4 = Ga \& A4$
 $Ga3 = Ga \& A3$
 $Ga2 = Ga \& A2$
 $Ga1 = Ga \& A1$
 $Ga0 = Ga \& A0$

Table 4 (part 3 of 6)

Gd8 = Gd & A8

Gd7 = Gd & A10

Gd6 = Gd & !A10

Gd5 = Gd7

Gd4 = Gd

Gd3 = Gd

Gd2 = Gd & A7

Gd1 = Gd & A5

Gd0 = Gd & A1

Ge = (!A9 & A8) & (!A7 & !A5) & !A3 & !NA0

Ge9 = Ge & A6

Ge8 = Ge & ((A10 & !A6) | (!A10 & A4))

Ge7 = Ge & !A10

Ge6 = Ge & (A10 & A4)

Ge5 = Ge7

Ge4 = Ge & (!A10 | !A4)

Ge3 = Ge & A10

Ge2 = Ge & A2

Ge1 = Ge & A1

Ge0 = Ge & A0

Gf = (A10 & !A9 & !A8) & (!A7 & !A5) & !A3 & !NA0

Gf8 = Gf

Gf7 = Gf & (A6 & A4)

Gf6 = Gf & (A6 ^ A4)

Gf5 = Gf & (!A6 | !A4)

Gf4 = Gf & (A6 | !A4)

Gf2 = Gf & A2

Gf1 = Gf & A1

Gf0 = Gf & A0

Table 4 (part 4 of 6)

Gg - (A9 & (A10 | A8)) & (!A7 & !A5) & !A3 & A2 & !A1

Gg8 - Gg

Gg6 - Gg & A10

Gg5 - Gg

Gg4 - Gg & A8

Gg3 - Gg

Gg2 - Gg & A6

Gg1 - Gg & A4

Gg0 - Gg & A0

Gh - NB0 & NA0

Gh8 - Gh

Gh7 - Gh

Gh4 - Gh

Gh3 - Gh

Gh2 - Gh & A10

Gh1 - Gh & A9

Gh0 - Gh & A8

XD - !(TA |Ga |Gb |Gc |Gd)

Gj - XD & A3

Gj9 - Gj

Gj8 - Gj & (A10 | A8)

Table 4 (part 5 of 6)

$Gj6 = Gj$
 $Gj4 = Gj \& (A10 \mid A9)$
 $Gj2 = Gj \& (A6 \mid A4)$
 $Gj1 = Gj$
 $Gj0 = Gj \& (A6 \mid A2)$

$XJ = XD \& !(Ge \mid Gf \mid Gg \mid Gh \mid Gj)$
 $Gk = XJ \& A2$
 $Gk9 = Gk \& !A9$
 $Gk8 = Gk$
 $Gk7 = Gk \& A9$
 $Gk5 = Gk \& A0$
 $Gk4 = Gk \& ((A7 \& A4) \mid (!A7 \& !A9))$
 $Gk2 = Gk \& ((A6 \& A9) \mid (!A6 \& !A4))$
 $Gk1 = Gk$
 $Gk0 = Gk \& ((A9 \& A4) \mid (!A9 \& !A8))$

$Gm = XJ \& !A2 \& A9$
 $Gm9 = Gm \& (A10 \mid A8)$
 $Gm8 = Gm$
 $Gm7 = Gm \& A10$
 $Gm5 = Gm \& (A8 \mid !A10)$
 $Gm3 = Gm \& ((A6 \& A1) \mid (!A6 \& !A4))$
 $Gm2 = Gm \& (A7 \mid !A1)$
 $Gm1 = Gm \& (A5 \mid A4)$
 $Gm0 = Gm \& (A6 \mid A1)$

-18-

Table 4 (part 6 of 6)

Gn - XJ & !A2 & !A9

Gn9 - Gn

Gn8 - Gn & (A10 | A8)

Gn6 - Gn & (A10 ^ !A8)

Gn4 - Gn & !A8

Gn3 - Gn

Gn2 - Gn & A1

Gn1 - Gn & ((A4 & A1) | (!A4 & A7))

Gn0 - Gn & (A6 | A5 | !A1)

Y10 - (TA & A10) | (!TA & A11)

Y9 - (TA & A9) | (!TA & (Ga9 | Gb9 | Gc9 | Gd9 | Ge9 | Gj9 | Gk9 | Gm9 | Gn9))

Y8 - (TA & A8) | (!TA & (Ga8 | Gb8 | Gc8 | Gd8 | Ge8 | Gf8 | Gh8 | Gj8 | Gk8 | Gm8 | Gn8))

Y7 - (TA & A7) | (!TA & (Ga7 | Gb7 | Gc7 | Gd7 | Ge7 | Gf7 | Gh7 | Gk7 | Gm7))

Y6 - (TA & A6) | (!TA & (Ga6 | Gb6 | Gc6 | Gd6 | Ge6 | Gf6 | Gj6 | Gm6))

Y5 - (TA & A5) | (!TA & (Ga5 | Gb5 | Gc5 | Gd5 | Ge5 | Gf5 | Gj5 | Gm5))

Y4 - (TA & A4) | (!TA & (Ga4 | Gb4 | Gc4 | Gd4 | Ge4 | Gf4 | Gh4 | Gj4 | Gk4 | Gn4))

Y3 - (TA & A3) | (!TA & (Ga3 | Gb3 | Gc3 | Gd3 | Ge3 | Gf3 | Gh3 | Gm3 | Gn3))

Y2 - (TA & A2) | (!TA & (Ga2 | Gb2 | Gc2 | Gd2 | Ge2 | Gf2 | Gj2 | Gk2 | Gm2 | Gn2))

Y1 - (TA & A1) | (!TA & (Ga1 | Gb1 | Gc1 | Gd1 | Ge1 | Gf1 | Gj1 | Gk1 | Gm1 | Gn1))

Y0 - (TA & A0) | (!TA & (Ga0 | Gb0 | Gc0 | Gd0 | Ge0 | Gf0 | Gj0 | Gk0 | Gm0 | Gn0))

S2 - A11 & TA

S1 - !A11 & TA

S0 - !TA

WB13 - S2 | S1

WB12 - S2 | S0

-19-

Table 5, shown on the following pages, shows an embodiment of logic operations or calculations in the 14-bit Encoder (ENC-B) 202 of FIG. 2. Table 5 lists the inputs to Encoder 202 as 12 bits of inputs B11 -
5 B0 and three state variables S2, S1, S0. One bit TB is received from the code tester 206. Various intermediate results NA0 - T0 are calculated as shown in Table 5, and then the outputs Z13-Z0 are calculated using various combinations of the inputs and
10 intermediate results as shown in Table 5.

Table 5 (part 1 of 10)**14-bit Encoder (ENC-B)**

Input: B11,B10,B9,B8,B7,B6,B5,B4,B3,B2,B1,B0	(12-bit Dataword)
Input: S2,S1,S0	(From ENC-A)
Input: TB	(From CT-B)
Output: Z13,Z12,Z11,Z10,Z9,Z8,Z7,Z6,Z5,Z4,Z3,Z2,Z1,Z0	(14-bit Codeword)

$NA0 = \neg B3 \ \& \ \neg B2 \ \& \ \neg B1 \ \& \ \neg B0$
 $NA1 = \neg B3 \ \& \ \neg B2 \ \& \ \neg B1 \ \& \ B0$
 $NA2 = \neg B3 \ \& \ \neg B2 \ \& \ B1 \ \& \ \neg B0$
 $NA3 = \neg B3 \ \& \ \neg B2 \ \& \ B1 \ \& \ B0$
 $NA4 = \neg B3 \ \& \ B2 \ \& \ \neg B1 \ \& \ \neg B0$
 $NA6 = \neg B3 \ \& \ B2 \ \& \ B1 \ \& \ \neg B0$
 $NA7 = \neg B3 \ \& \ B2 \ \& \ B1 \ \& \ B0$
 $NB0 = \neg B7 \ \& \ \neg B6 \ \& \ \neg B5 \ \& \ \neg B4$
 $NB1 = \neg B7 \ \& \ \neg B6 \ \& \ \neg B5 \ \& \ B4$
 $NB5 = \neg B7 \ \& \ B6 \ \& \ \neg B5 \ \& \ B4$
 $NC8 = B11 \ \& \ B10 \ \& \ B9 \ \& \ B8$

$Ha = \neg B4 \ \& \ NA0$
 $Ha11 = Ha \ \& \ (S2 \mid S1)$
 $Ha10 = Ha \ \& \ (\neg S2 \mid S1)$
 $Ha9 = Ha \ \& \ B11$
 $Ha8 = Ha \ \& \ \neg B11$
 $Ha7 = Ha \ \& \ (B10 \mid B9)$
 $Ha6 = Ha \ \& \ (B10 \mid \neg B9)$
 $Ha5 = Ha \ \& \ (B9 \mid \neg B10)$
 $Ha4 = Ha$
 $Ha3 = Ha \ \& \ B8$
 $Ha2 = Ha \ \& \ B7$
 $Ha1 = Ha \ \& \ B6$
 $Ha0 = Ha \ \& \ B5$

Table 5 (part 2 of 10)

Hb - !B8 & !B6 & !B4 & !B2 & !B0 & (!NA0)

Hb11-Hb & (S2 | S1)

Hb10-Hb & (!S2 | S1)

Hb9- Hb

Hb8- Hb

Hb7- Hb & B11

Hb6- Hb & B10

Hb5- Hb

Hb4- Hb & B3

Hb3- Hb & B9

Hb2- Hb & B7

Hb1- Hb & B5

Hb0- Hb & B1

Hc - !B9 & !B7 & !B5 & !B3 & !B1 & (!NA0)

Hc11-Hc & (S2 | S1)

Hc10-Hc & (!S2 | S1)

Hc9- Hc & (B11 | B10)

Hc8- Hc9

Hc7- Hc & (B11 | !B10)

Hc6- Hc & (B10 | !B11)

Hc5- Hc & (!B11 & !B10)

Hc4- Hc & B2

Hc3- Hc & B8

Hc2- Hc & B6

Hc1- Hc & B4

Hc0- Hc & B0

Table 5 (part 3 of 10)

XHac = !Ha & !Hb & !Hc

Hd = S2 & ((!B9 & (NB1 | NB5) & NA0) | NA1 | NA3 | NA6 | NA7) & (XHac)

Hd11 = Hd

Hd9 = Hd

Hd8 = Hd

Hd7 = Hd & (!B7 & !B5 & !B2)

Hd6 = Hd & (B7 | (B11 & !B2))

Hd5 = Hd & (B10 | B5)

Hd4 = Hd & (B11 & B2)

Hd3 = Hd & B4

Hd2 = Hd & (B9 | B8 | B2)

Hd1 = Hd & (B6 | (!B9 & !B4))

Hd0 = Hd & (B2 & B0)

XHad = !Ha & !Hb & !Hc & !Hd

S2X = S2 & XHad

He = S2X & !B3

He11 = He

He9 = He

He6 = He & (!B9 & !B8)

He4 = He & (!B5 & (!B4 | !B1))

He3 = He

He2 = He & !B2

He1 = He & !B1

He0 = He

Hf = S2X & B3

Hf11 = Hf

Hf8 = Hf

Hf7 = Hf & B8

Hf6 = Hf & (!B8 & !B4)

Hf5 = Hf & (!B8 & !B6)

Hf3 = Hf

Hf2 = Hf & (B2 | !B0)

Hf1 = Hf & (B1 | (!B2 & !B0))

Hf0 = Hf & (B0 | !B2)

Table 5 (part 4 of 10)

S1X - S1 & XHac
 S0X - S0 & XHac
 Ja - S1X & !B10 & !B8 & !B6 & !B4
 Ja11- Ja
 Ja10- Ja
 Ja9- Ja & B11
 Ja8- Ja & !B11
 Ja7- Ja & (B9 | (B7 & !B5))
 Ja6- Ja & (B7 & (B9 | B5))
 Ja5- Ja & B5
 Ja4- Ja & (B7 & !B9 & !B5)
 Ja3- Ja & B3
 Ja2- Ja & B2
 Ja1- Ja & B1
 Ja0- Ja & B0

Jb - (S1X | S0X) & B11 & B10
 Jb11- Jb & S1
 Jb10- Jb
 Jb9- Jb
 Jb8- Jb
 Jb7- Jb
 Jb6- Jb
 Jb5- Jb
 Jb3- Jb & B4
 Jb2- Jb & (B9 | B8)
 Jb1- Jb & (B6 | B1)

-24-

Table 5 (part 5 of 10)

Jc - SIX & (B11^B10) & !B2 & !B0

Jc11- Jc

Jc10- Jc

Jc9- Jc

Jc8- Jc

Jc7- Jc & B11

Jc6- Jc & (B9 | B8)

Jc5- Jc & (B5 | (!B8 & !B4))

Jc3- Jc & (!B3 & !B1)

Jc2- Jc & (B9 | B7 | B3)

Jc1- Jc & (B1 | (B6 & B4))

Jd - SIX & (B11^B10) & !Ja & !Jc

Jd11- Jd

Jd10- Jd

Jd9- Jd

Jd8- Jd

Jd4- Jd

Jd3- Jd & (B9 | B3)

Jd2- Jd & (B9 | B7)

Jd1- Jd & B1

Jd0- Jd & !B2

Je - SIX & (!B11 & !B10) & !B2 & !B1 & !B0

Je11- Je

Je10- Je

Je6- Je & B4

Je5- Je & (!B4 | !B3)

Je4- Je & !B9

Je3- Je & !B7

Je2- Je & !B6

Je1- Je & !B5

Je0- Je & (B8 | (B9 & !B4))

Table 5 (part 6 of 10)

Jf - SIX & (!B11 & !B10) & (NA1 | NA4) & !Ja

Jf11-Jf

Jf10-Jf

Jf9-Jf

Jf6-Jf

Jf4-Jf & (B9 | B8)

Jf3-Jf & (B5 | (B9 & !B8))

Jf2-Jf & (B4 | (!B9 & !B6))

Jf1-Jf & (B7 | (B9 & !B8))

Jf0-Jf & B2

Jg - SIX & (!B11 & !B10) & NA2

Jg11-Jg

Jg10-Jg

Jg9-Jg

Jg5-Jg & (B9 | B8)

Jg4-Jg

Jg3-Jg & (!B9 & !B7)

Jg2-Jg & (B9 ^ !B6)

Jg1-Jg & (!B9 & !B5)

Jg0-Jg & (B9 ^ !B4)

Jh - SIX & (!B11 & !B10) & (!Ja & !Jc & !Jf & !Jg)

Jh11-Jh

Jh10-Jh

Jh8-Jh

Jh6-Jh & !B4

Jh5-Jh & B4

Jh4-Jh & !B6

Jh3-Jh & B3

Jh2-Jh & B2

Jh1-Jh & B1

Jh0-Jh & B0

Table 5 (part 7 of 10)

Ka - S0 & !B11 & !B9 & !B7 & !B5 & !NA0 & XHac

Ka10- Ka & B10

Ka9- Ka & (B8 | !B10)

Ka8- Ka & (B10 ^ B8)

Ka7- Ka & B6

Ka6- Ka & (B6 | !B10 | !B4)

Ka5- Ka & (B4 | !B10 | !B6)

Ka4- Ka & (B4 & (!B10 | !B6))

Ka3- Ka & B3

Ka2- Ka & B2

Ka1- Ka & B1

Ka0- Ka & B0

Kb - S0X & NC8 & NB0

Kb10- Kb

Kb9- Kb

Kb4- Kb

Kb3- Kb & B3

Kb2- Kb & B2

Kb1- Kb & !B3

Kb0- Kb & B0

Kc - S0X & (B11 ^ B10) & !B2 & !B0 & !Ka

Kc10- Kc

Kc9- Kc

Kc8- Kc

Kc7- Kc & (B11 & !B3 & !B1)

Kc6- Kc & (B8 | B3 | B1)

Kc5- Kc & (!B4 | (!B9 & !B8))

Kc3- Kc & (B9 | B8 | B7 | B6)

Kc2- Kc & (!B7 & !B6)

Kc1- Kc & (B7 | B5 | B3)

Table 5 (part 8 of 10)

Kd - SOX & (B11^B10) & !Ka & !Kb & !Kc

Kd10- Kd

Kd9- Kd

Kd8- Kd

Kd4- Kd

Kd3- Kd & B11

Kd2- Kd & B2

Kd1- Kd & !B5

Kd0- Kd & !B7

Ke - SOX & (!B11 & !B10) & !B2 & !B1 & !B0 & !Ka

Ke9- Ke

Ke8- Ke

Ke6- Ke & !B3

Ke5- Ke & (B4 & B3)

Ke4- Ke & (!B9 | (!B8 & !B4))

Ke3- Ke & !B7

Ke2- Ke & !B6

Ke1- Ke & !B5

Ke0- Ke & (B8 | (!B9 & !B4))

Kf - SOX & (!B11 & !B10) & (NA1 | NA4)

Kf9- Kf

Kf8- Kf

Kf7- Kf

Kf6- Kf & (!B9 & !B8)

Kf5- Kf & B8

Kf4- Kf & !B2

Kf3- Kf & !B7

Kf2- Kf & !B6

Kf1- Kf & !B5

Kf0- Kf & B4

Table 5 (part 9 of 10)

Kg - SOX & (!B11 & !B10) & NA2 & !Ka

Kg10- Kg

Kg9- Kg

Kg7- Kg

Kg4- Kg & (B9 | B8)

Kg3- Kg & !B7

Kg2- Kg & !B6

Kg1- Kg & !B5

Kg0- Kg & !B4

Kh - SOX & (!B11 & !B10) & (!Ka & !Kc & !Kf & !Kg)

Kh10- Kh

Kh7- Kh

Kh5- Kh & !B5

Kh4- Kh & !B7

Kh3- Kh & B3

Kh2- Kh & B2

Kh1- Kh & B1

Kh0- Kh & B0

T11 - (Ha11 Hb11 Hc11 Hd11 He11 Hf11 Ja11 Ub11 Uc11 Ud11 Ue11 Uf11 Ug11 Uh11)

T10 - (Ha10 Hb10 Hc10 Ua10 Ub10 Uc10 Ud10 Ue10 Uf10 Ug10 Uh10

Ka10 Kb10 Kc10 Kd10 Kg10 Kh10)

T9 - (Ha9 Hb9 Hc9 Hd9 He9 Ua9 Ub9 Uc9 Ud9 Uf9 Ug9 Ka9 Kb9 Kc9 Kd9 Ke9 Kf9 Kg9)

T8 - (Ha8 Hb8 Hc8 Hd8 Hf8 Ua8 Ub8 Uc8 Ud8 Uf8 Ka8 Kc8 Kd8 Ke8 Kf8)

T7 - (Ha7 Hb7 Hc7 Hd7 Hf7 Ua7 Ub7 Uc7 Ka7 Kc7 Kf7 Kg7 Kh7)

T6 - (Ha6 Hb6 Hc6 Hd6 He6 Hf6 Ua6 Ub6 Uc6 Ue6 Uf6 Uh6 Ka6 Kc6 Ke6 Kf6)

T5 - (Ha5 Hb5 Hc5 Hd5 Hf5 Ua5 Ub5 Uc5 Ue5 Ug5 Uh5 Ka5 Kc5 Ke5 Kf5 Kh5)

T4 - (Ha4 Hb4 Hc4 Hd4 He4 Ua4 Ud4 Ue4 Uf4 Ug4 Uh4 Ka4 Kb4 Kd4 Ke4 Kf4 Kg4 Kh4)

T3 - (Ha3 Hb3 Hc3 Hd3 He3 Hf3 Ua3 Ub3 Uc3 Ud3 Ue3 Uf3 Ug3 Uh3

Ka3 Kb3 Kc3 Kd3 Ke3 Kf3 Kg3 Kh3)

T2 - (Ha2 Hb2 Hc2 Hd2 He2 Hf2 Ua2 Ub2 Uc2 Ud2 Ue2 Uf2 Ug2 Uh2

Ka2 Kb2 Kc2 Kd2 Ke2 Kf2 Kg2 Kh2)

T1 - (Ha1 Hb1 Hc1 Hd1 He1 Hf1 Ua1 Ub1 Uc1 Ud1 Ue1 Uf1 Ug1 Uh1

Ka1 Kb1 Kc1 Kd1 Ke1 Kf1 Kg1 Kh1)

T0 - (Ha0 Hb0 Hc0 Hd0 He0 Hf0 Ua0 Ud0 Ue0 Uf0 Ug0 Uh0

Ka0 Kb0 Kd0 Kc0 Kf0 Kg0 Kh0)

-29-

Table 5 (part 10 of 10)

Z13 -(TB & (S1 | S2))

Z12 -(TB & (S0 | S2))

Z11 -(TB & B11) | (!TB & T11)

Z10 -(TB & B10) | (!TB & T10)

Z9 -(TB & B9) | (!TB & T9)

Z8 -(TB & B8) | (!TB & T8)

Z7 -(TB & B7) | (!TB & T7)

Z6 -(TB & B6) | (!TB & T6)

Z5 -(TB & B5) | (!TB & T5)

Z4 -(TB & B4) | (!TB & T4)

Z3 -(TB & B3) | (!TB & T3)

Z2 -(TB & B2) | (!TB & T2)

Z1 -(TB & B1) | (!TB & T1)

Z0 -(TB & B0) | (!TB & T0)

-30-

Table 6 below shows an embodiment of logic operations or calculations in the 11-bit Decoder (DEC-A) 208 of FIG. 1. Table 6 lists the inputs to Decoder 208 as 11 bits of inputs Y10 - Y0, and three state variables S2, S1, S0, which are recovered state variables. One bit TA is received from the code tester 194 of Fig. 1. Various intermediate results NB1 - S12 are calculated as shown in Table 5, and then the outputs A11-A0, FA are calculated using various combinations of the inputs and intermediate results as shown in Table 6.

Table 6 (part 1 of 5)**11-bit Decoder (DEC-A)**

Input:	Y10,Y9,Y8,Y7,Y6,Y5,Y4,Y3,Y2,Y1,Y0	(11-bit Codeword)
Input:	TA	(From CT-A)
Input:	S2,S1,S0	(From DEC-B)
Output:	A11,A10,A9,A8,A7,A6,A5,A4,A3,A2,A1,A0	(12-bit Dataword)
Output:	FA	(Invalid codeword indicator)

$NB1 = \neg Y7 \& \neg Y6 \& \neg Y5 \& Y4$
 $NB2 = \neg Y7 \& \neg Y6 \& Y5 \& \neg Y4$
 $NB3 = \neg Y7 \& \neg Y6 \& Y5 \& Y4$
 $NB4 = \neg Y7 \& Y6 \& \neg Y5 \& \neg Y4$
 $NB5 = \neg Y7 \& Y6 \& \neg Y5 \& Y4$
 $NB6 = \neg Y7 \& Y6 \& Y5 \& \neg Y4$
 $NB9 = Y7 \& \neg Y6 \& \neg Y5 \& Y4$
 $NB11 = Y7 \& \neg Y6 \& Y5 \& Y4$

$NC1 = \neg Y9 \& Y8$
 $NC2 = Y9 \& \neg Y8$
 $NC3 = Y9 \& Y8$

$Ga = Y9 \& Y7 \& Y6$
 $Gb = (Y9 \& \neg Y7 \& Y5 \& Y4) \mid (\neg Y9 \& Y8 \& Y7 \& Y6 \& \neg Y4)$
 $Gc = (Y9 \& (NB6 \mid NB9)) \mid (\neg Y9 \& Y7 \& Y6 \& Y4)$
 $Gd = ((Y8 \& NB5) \mid NB11) \& Y3$
 $Ge = (NB11 \& \neg Y3) \mid ((NC1 \mid NC2) \& (NB1 \mid NB4) \& Y3)$
 $Gf = NC1 \& (NB3 \mid (\neg Y7 \& Y6) \mid NB9) \& \neg Y3$
 $Gg = NC1 \& \neg Y7 \& (Y6 \mid Y4) \& Y5 \& Y3$
 $Gh = NC1 \& NB9 \& Y3$
 $Gj = (NC3 \mid NC2) \& (\neg Y7 \& Y6 \& \neg Y5 \& \neg Y3)$
 $Gk = ((NC3 \& \neg Y7 \& \neg Y6 \& \neg Y5) \mid (NC1 \& Y7 \& \neg Y6 \& \neg Y4)) \& \neg Y3$
 $Gm = (NC3 \& (Y7 \mid Y5) \& \neg Y6 \& \neg Y4) \mid (NC1 \& NB2)$
 $Gn = ((NC3 \& \neg Y7 \& \neg Y5 \& (\neg Y6 \mid \neg Y4)) \mid (NC2 \& NB5)) \& Y3$

Table 6 (part 2 of 5)

Ga6- Ga & Y8

Ga5- Ga & Y5

Ga4- Ga & Y4

Ga3- Ga & Y3

Ga2- Ga & Y2

Ga1- Ga & Y1

Ga0- Ga & Y0

Gb9- Gb & Y8

Gb7- Gb & Y9

Gb5- Gb & Y6 & Y5

Gb3- Gb & Y3

Gb2- Gb & Y2

Gb1- Gb & Y1

Gb0- Gb & Y0

Gc10- Gc & Y9

Gc9- Gc & Y8

Gc8- Gc & (Y9^Y5)

Gc7- Gc & Y3

Gc6- Gc & Y2

Gc5- Gc & Y1

Gc4- Gc & Y0

Gd10- Gd & Y7

Gd9- Gd & Y9

Gd8- Gd & Y8

Gd7- Gd & Y2

Gd5- Gd & Y1

Gd3- Gd

Gd1- Gd & Y0

Table 6 (part 3 of 5)

Ge10- Ge & !Y7
 Ge8- Ge
 Ge6- Ge & Y9
 Ge4- Ge & (Y6 | (Y8 & Y7))
 Ge2- Ge & Y2
 Ge1- Ge & Y1
 Ge0- Ge & Y0

Gf10- Gf
 Gf6- Gf & (Y7 | (Y6 & Y4))
 Gf4- Gf & (Y7 | !Y4)
 Gf2- Gf & Y2
 Gf1- Gf & Y1
 Gf0- Gf & Y0

Gg10- Gg & Y6
 Gg9- Gg
 Gg8- Gg & Y4
 Gg6- Gg & Y2
 Gg4- Gg & Y1
 Gg2- Gg
 Gg0- Gg & Y0

Gh10- Gh & Y2
 Gh9- Gh & Y1
 Gh8- Gh & Y0

Gj10- Gj & (Y8 & Y4)
 Gj9- Gj & (Y4 & !Y8)
 Gj8- Gj & (Y8 & !Y4)
 Gj7- Gj & (!Y8 & !Y4)
 Gj6- Gj & (Y2 & Y0)
 Gj4- Gj & (Y2 & !Y0)
 Gj3- Gj
 Gj2- Gj & (Y0 & !Y2)
 Gj0- Gj & (!Y2 & !Y0)

-34-

Table 6 (part 4 of 5)

$Gk10 = Gk \ \& \ (Y9 \ \& \ Y2 \ \& \ Y0)$
 $Gk9 = Gk \ \& \ !Y9$
 $Gk8 = Gk \ \& \ (Y9 \ \& \ !Y0)$
 $Gk7 = Gk \ \& \ (Y9 \ \& \ (!Y4 \ | \ !Y2))$
 $Gk6 = Gk \ \& \ ((Y7 \ \& \ Y2) \ | \ (Y9 \ \& \ !Y4 \ \& \ !Y2))$
 $Gk5 = Gk \ \& \ (Y4 \ \& \ Y2)$
 $Gk4 = Gk \ \& \ ((Y7 \ \& \ Y0) \ | \ (Y9 \ \& \ Y4 \ \& \ !Y2))$
 $Gk2 = Gk$
 $Gk0 = Gk \ \& \ Y5$

$Gm10 = Gm \ \& \ Y7$
 $Gm9 = Gm$
 $Gm8 = Gm \ \& \ (Y9 \ \& \ Y5)$
 $Gm7 = Gm \ \& \ (Y3 \ \& \ Y2 \ \& \ Y0)$
 $Gm6 = Gm \ \& \ (((Y9 \ \& \ !Y3) \ | \ (!Y9 \ \& \ (Y3 \ | \ Y2))) \ \& \ Y0)$
 $Gm5 = Gm \ \& \ (Y3 \ \& \ Y1)$
 $Gm4 = Gm \ \& \ (Y1 \ \& \ !Y3)$
 $Gm1 = Gm \ \& \ (!Y2 \ | \ (Y3 \ \& \ Y0))$
 $Gm0 = Gm \ \& \ (!Y0 \ | \ (Y2 \ \& \ !Y3))$

$Gn10 = Gn \ \& \ (Y6 \wedge Y4)$
 $Gn8 = Gn \ \& \ !Y4$
 $Gn7 = Gn \ \& \ (Y1 \ | \ !Y8)$
 $Gn6 = Gn \ \& \ (Y1 \ \& \ Y0 \ \& \ !Y8)$
 $Gn5 = Gn \ \& \ (Y8 \ \& \ (Y2 \ | \ !Y1) \ \& \ Y0)$

$Gn4 = Gn \ \& \ (!Y8 \ \& \ (!Y1 \ | \ !Y0))$
 $Gn1 = Gn \ \& \ Y2$
 $Gn0 = Gn \ \& \ !Y2$

$S12 = S2 \ | \ S1$

Table 6 (part 5 of 5)

A11 - S2 I (S0 & Y10)
 A10 - (S12 & Y10) I (S0 & (Gc10 IGd10 IGe10 IGf10 IGg10 IGh10 IGj10 IGk10 IGm10 IGn10))
 A9 - (S12 & Y9) I (S0 & (Gb9 IGc9 IGd9 IGg9 IGh9 IGj9 IGk9 IGm9))
 A8 - (S12 & Y8) I (S0 & (Gc8 IGd8 IGe8 IGg8 IGh8 IGj8 IGk8 IGm8 IGn8))
 A7 - (S12 & Y7) I (S0 & (Gb7 IGc7 IGd7 IGj7 IGk7 IGm7 IGn7))
 A6 - (S12 & Y6) I (S0 & (Ga6 IGc6 IGe6 IGf6 IGg6 IGj6 IGk6 IGm6 IGn6))
 A5 - (S12 & Y5) I (S0 & (Ga5 IGb5 IGc5 IGd5 IGk5 IGm5 IGn5))
 A4 - (S12 & Y4) I (S0 & (Ga4 IGc4 IGe4 IGf4 IGg4 IGj4 IGk4 IGm4 IGn4))
 A3 - (S12 & Y3) I (S0 & (Ga3 IGb3 IGd3 IGj3))
 A2 - (S12 & Y2) I (S0 & (Ga2 IGb2 IGe2 IGf2 IGg2 IGj2 IGk2))
 A1 - (S12 & Y1) I (S0 & (Ga1 IGb1 IGd1 IGe1 IGf1 IGm1 IGn1))
 A0 - (S12 & Y0) I (S0 & (Ga0 IGb0 IGe0 IGf0 IGg0 IGj0 IGk0 IGm0 IGn0))

PA - (Ga IGb IGc IGd IGe IGf IGg IGh IGj IGk IGm IGn)
 FA - (!TA) I (S0 & !PA)

-36-

Table 7, shown on the following pages, shows an embodiment of logic operations or calculations in the 14-bit Decoder (DEC-B) 210 of FIG. 1. Table 7 lists the inputs to Decoder 210 as 14 bits of inputs Z10 -
5 Z0. One bit TB is received from the code tester 196 of Fig. 2. Various intermediate results NB1 - T0 are calculated as shown in Table 7, and then the outputs B11-B0, FB, S2, S1, S0 are calculated using various combinations of the inputs and intermediate results as
10 shown in Table 7.

Table 7 (part 1 of 8)**14-bit Decoder (DEC-B)**

Input: Z13,Z12,Z11,Z10,Z9,Z8,Z7,Z6,Z5,Z4,Z3,Z2,Z1,Z0 (14-bit Codeword)
 Input: TB (From CT-B)
 Output: B11,B10,B9,B8,B7,B6,B5,B4,B3,B2,B1,B0 (12-bit Dataword)
 Output: S2,S1,S0 (To ENC-B)
 Output: FB (Invalid codeword indicator)

NB1 = !Z7 & !Z6 & !Z5 & Z4

!NB14 = Z7 & Z6 & Z5 & !Z4

NC3 = (!Z11 & !Z10 & Z9 & Z8)

NC4 = (!Z11 & Z10 & !Z9 & !Z8)

NC6 = (!Z11 & Z10 & Z9 & !Z8)

NC7 = (!Z11 & Z10 & Z9 & Z8)

NC9 = (Z11 & !Z10 & !Z9 & Z8)

NC10 = (Z11 & !Z10 & Z9 & !Z8)

NC11 = (Z11 & !Z10 & Z9 & Z8)

NC12 = (Z11 & Z10 & !Z9 & !Z8)

NC13 = (Z11 & Z10 & !Z9 & Z8)

NC14 = (Z11 & Z10 & Z9 & !Z8)

NC15 = (Z11 & Z10 & Z9 & Z8)

Ha = (Z11 | Z10) & (Z9 ^ Z8) & Z4 & ((Z6 & Z5) | (Z7 & (Z6 | Z5)))

Hb = (Z11 | Z10) & Z9 & Z8 & Z5 & (Z4 | (!Z4 & Z0))

Hc = (Z11 | Z10) &

((!Z9 & !Z8 & Z7 & Z6 & Z5) | (Z9 & Z8 & (Z7 | Z6) & !Z5)) & (Z4 | (!Z4 & Z0))

Hd = NC11 & !Hb & !Hc

He = NC10 & (!Z7 & !Z5)

Hf = NC9 & !Z4

Ja = (NC13 | NC14) & !Ha & (Z7 | ((!Z6 | Z5) & !Z4))

Jb = (NC7 | NC15) & NB14 & !Z0

Jc = NC15 & !Z4 & !NB14 & !Hb & !Hc

Jd = NC15 & NB1

Je = NC12 & !Z7

Jf = NC14 & !Z7 & Z6 & !Z5

Jg = NC14 & !Z7 & !Z6 & Z4

Jh = NC13 & !Z7 & ((Z6 & !Z5) | (!Z6 & Z4))

Table 7 (part 2 of 8)

Ka - !Z11 &
 ((!Z10 & Z9 & Z6 & Z5)!(Z10 & (Z9^Z8) & ((Z7 & Z6 & !Z4)!(Z7 & Z5 & (Z6^Z4))))))
 Kb - NC6 & NB1
 Kc - NC7 & !Z4 & !NB14 & !Hb & !Hc
 Kd - NC7 & NB1
 Ke - NC3 & !Z7 & ((Z6 & !Z5)!!Z6)
 Kf - NC3 & Z7 & ((Z6 & !Z5)!!Z6)
 Kg - NC6 & Z7 & !Z6 & !Z5
 Kh - NC4 & Z7 & !Z6

 Ha11 - Ha & Z9
 Ha10 - Ha & Z7 & Z6
 Ha9 - Ha & Z7 & Z5
 Ha8 - Ha & Z3
 Ha7 - Ha & Z2
 Ha6 - Ha & Z1
 Ha5 - Ha & Z0

 Hb11 - Hb & Z7
 Hb10 - Hb & Z6
 Hb9 - Hb & Z3
 Hb7 - Hb & Z2
 Hb5 - Hb & Z1
 Hb3 - Hb & Z4
 Hb1 - Hb & Z0

 Hc11 - Hc & Z9 & Z7
 Hc10 - Hc & Z9 & Z6
 Hc8 - Hc & Z3
 Hc6 - Hc & Z2
 Hc4 - Hc & Z1
 Hc2 - Hc & Z4
 Hc0 - Hc & Z0

Table 7 (part 5 of 8)

Jf9- Jf & (Z3 ^!Z1)
 Jf8- Jf & Z4 & (!Z3 !Z1)
 Jf7- Jf & Z1 & !Z3
 Jf6- Jf & !Z2 & (Z3 !Z4)
 Jf5- Jf & Z3 & !Z1
 Jf4- Jf & (Z2 & (!Z4 ! (Z3 & Z1)))
 Jf2- Jf & Z0
 Jf0- Jf & !Z0

 Jg9- Jg & !Z3 & !Z1
 Jg8- Jg & (Z5 & (Z3 ! (!Z2^Z0)))
 Jg7- Jg & Z1 & !Z3
 Jg6- Jg & ((!Z5 & !Z2) ! (Z5 & ((Z3 & !Z2) ! (!Z3 & (Z2^Z1)))))
 Jg5- Jg & Z3 & !Z1
 Jg4- Jg & ((!Z5 & !Z0) ! (Z5 & ((Z3 !Z1)^Z0)))
 Jg1- Jg

 Jh8- Jh & Z6 & Z4
 Jh6- Jh & !Z4
 Jh4- Jh & !Z6
 Jh3- Jh & Z3
 Jh2- Jh & Z2
 Jh1- Jh & Z1
 Jh0- Jh & Z0

 Ka10- Ka & Z10
 Ka8- Ka & (Z10^Z8)
 Ka6- Ka & Z7
 Ka4- Ka & (Z4 ! (Z10 & Z7 & Z5))
 Ka3- Ka & Z3
 Ka2- Ka & Z2
 Ka1- Ka & Z1
 Ka0- Ka & Z0

 Kb11- Kb
 Kb3- Kb & Z3
 Kb2- Kb & Z2
 Kb1- Kb & !Z3
 Kb0- Kb & Z0

Table 7 (part 6 of 8)

Kc11=Kc & (Z7 | (Z6 & Z5))
 Kc10=Kc & (!Z7 & (!Z6 | !Z5))
 Kc9=Kc & (!Z6 & !Z5)
 Kc8=Kc & (Z6 & (!Z5 | (Z3 & Z2)))
 Kc7=Kc & (Z3 & Z1 & !Z6)
 Kc6=Kc & (!Z2 & (Z6 | !Z1))
 Kc5=Kc & (Z2 & Z1 & !Z6)
 Kc4=Kc & (!Z6 | !Z5 | !Z3)
 Kc3=Kc & (Z6 & Z1)
 Kc1=Kc & (Z6 & Z5 & !Z1)

Kd11=Kd & Z3
 Kd10=Kd & !Z3
 Kd9=Kd & Z1 & Z0
 Kd7=Kd & !Z0
 Kd5=Kd & !Z1
 Kd2=Kd & Z2
 Kd0=Kd & !Z2

Ke9=Ke & (!Z4 | (!Z6 & !Z5 & Z4 & !Z0))
 Ke8=Ke & (Z0 & (Z6 | Z2))
 Ke7=Ke & !Z3
 Ke6=Ke & !Z2
 Ke5=Ke & !Z1
 Ke4=Ke & (Z6 | Z5)
 Ke3=Ke & !Z6

Kf9=Kf & ((!Z6 & !Z5) | (Z3 & Z2 & Z1 & !Z0))
 Kf8=Kf & Z5
 Kf7=Kf & !Z3
 Kf6=Kf & !Z2
 Kf5=Kf & !Z1
 Kf4=Kf & Z0
 Kf2=Kf & !Z4
 Kf0=Kf & Z4

Table 7 (part 7 of 8)

Kg9- Kg & Z3 & Z1
 Kg8- Kg & Z2 & Z0
 Kg7- Kg & !Z3
 Kg6- Kg & !Z2
 Kg5- Kg & !Z1
 Kg4- Kg & !Z0
 Kg1- Kg

Kh9- Kh & Z5 & Z4
 Kh7- Kh & !Z4
 Kh5- Kh & !Z5
 Kh3- Kh & Z3
 Kh2- Kh & Z2
 Kh1- Kh & Z1
 Kh0- Kh & Z0

ZZ - !Z13 & !Z12
 S2 - (Z13 & Z12) ! (ZZ & Z11 & !Z10)
 S1 - (Z13 & !Z12) ! (ZZ & Z11 & Z10)
 S0 - (!Z13 & Z12) ! (ZZ & !Z11)

T11 - (Ha11 Hb11 Hc11 Hd11 Ua11 Ub11 Uc11 Kb11 Kc11 Kd11)
 T10 - (Ha10 Hb10 Hc10 Hd10 Ub10 Uc10 Ud10 Ka10 Kc10 Kd10)
 T9 - (Ha9 Hb9 Hd9 He9 Ua9 Ub9 Uc9 Ud9 Ue9 Uf9 Ug9 Kc9 Kd9 Ke9 Kf9 Kg9 Kh9)
 T8 - (Ha8 Hc8 Hd8 He8 Hf8 Ub8 Uc8 Ue8 Uf8 Ug8 Uh8 Ka8 Kc8 Ke8 Kf8 Kg8)
 T7 - (Ha7 Hb7 Hd7 He7 Ua7 Uc7 Ud7 Ue7 Uf7 Ug7 Kc7 Kd7 Ke7 Kf7 Kg7 Kh7)
 T6 - (Ha6 Hc6 Hd6 He6 Hf6 Ub6 Uc6 Ue6 Uf6 Ug6 Uh6 Ka6 Kc6 Ke6 Kf6 Kg6)
 T5 - (Ha5 Hb5 Hd5 He5 Ua5 Uc5 Ud5 Ue5 Uf5 Ug5 Kc5 Kd5 Ke5 Kf5 Kg5 Kh5)
 T4 - (Hc4 Hd4 He4 Hf4 Ub4 Uc4 Ue4 Uf4 Ug4 Uh4 Ka4 Kc4 Ke4 Kf4 Kg4)
 T3 - (Hb3 Hf3 Ua3 Uc3 Ud3 Ue3 Uh3 Ka3 Kc3 Ke3 Kh3)
 T2 - (Hc2 Hd2 He2 Hf2 Ua2 Ud2 Uf2 Uh2 Ka2 Kb2 Kd2 Kf2 Kh2)
 T1 - (Hb1 Hd1 He1 Hf1 Ua1 Ub1 Uc1 Ud1 Ug1 Uh1 Ka1 Kb1 Kc1 Kg1 Kh1)
 T0 - (Hc0 Hd0 Hf0 Ua0 Ub0 Ud0 Uf0 Uh0 Ka0 Kb0 Kd0 Kf0 Kh0)

Table 7 (part 8 of 8)

B11 = (!ZZ & Z11) | (ZZ & T11)
 B10 = (!ZZ & Z10) | (ZZ & T10)
 B9 = (!ZZ & Z9) | (ZZ & T9)
 B8 = (!ZZ & Z8) | (ZZ & T8)
 B7 = (!ZZ & Z7) | (ZZ & T7)
 B6 = (!ZZ & Z6) | (ZZ & T6)
 B5 = (!ZZ & Z5) | (ZZ & T5)
 B4 = (!ZZ & Z4) | (ZZ & T4)
 B3 = (!ZZ & Z3) | (ZZ & T3)
 B2 = (!ZZ & Z2) | (ZZ & T2)
 B1 = (!ZZ & Z1) | (ZZ & T1)
 B0 = (!ZZ & Z0) | (ZZ & T0)

PB = (Ha Hb Hc Hd He Hf Ua Ub Uc Ud Ue Uf Ug Uh Ka Kb Kc Kd Ke Kf Kg Kh)
 FB = (!TB) | (ZZ & !PB)

TABLE 8 below describes in a simplified format how the states S0, S1, S2 (and also S0', S1', and S2') of FIG. 1 relate to 14 bits code patterns, with "X" indicating no dependency on a bit or, in other words, a so-called "don't care" relationship to a particular bit.

10

Table 8

15

STATE	14-BIT CODE PATTERN	
S0	01XXXXXXXXXXXX	000XXXXXXXXXXXX
S1	10XXXXXXXXXXXX	0011XXXXXXXXXXXX
S2	11XXXXXXXXXXXX	0010XXXXXXXXXXXX

Table 9 on the following pages is a state diagram which maps each 12-bit data word to a corresponding 11-bit code word and next state value. The bit patterns of the data words are shown in hexadecimal form for simplicity with the least significant digit in the 12 bit data word represented in the top line and the two most significant digits represented in the leftmost column of Table 9 followed by an "x" as placeholder for the least significant digit. For example, the 12 bit data word "000" is the first entry in Table 9 where the first row labeled 00X intersects with the column labeled "0". The 11 bit code word for the data word "000" is the 11 bit code word is "198" and the next state value is "0". These

-46-

values are shown at that intersection as "198-0". In Table 9, the 12 bit data words cover the range 000 to FFF, and the corresponding 11 bit code words range within the limits 000 to 7FF. In FIG. 9, all words
5 are shown in hexadecimal format.

Table 9 (Part 1 of 6)

State Diagram of 11-bit code word mapping for 24/25 (0,7/7) code																
	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
00X	198-0	2C1-0	2C2-0	2C3-0	2C4-0	2C5-0	2C6-0	2C7-0	2C8-0	2C9-0	2CA-0	2CB-0	2CC-0	2CD-0	2CE-0	2CF-0
01X	001-0	2D1-0	2D2-0	2D3-0	2D4-0	2D5-0	2D6-0	2D7-0	2D8-0	2D9-0	2DA-0	2DB-0	2DC-0	2DD-0	2DE-0	2DF-0
02X	002-0	2E1-0	2E2-0	2E3-0	2E4-0	2E5-0	2E6-0	2E7-0	2E8-0	2E9-0	2EA-0	2EB-0	2EC-0	2ED-0	2EE-0	2EF-0
03X	003-0	2F1-0	2F2-0	2F3-0	2F4-0	2F5-0	2F6-0	2F7-0	2F8-0	2F9-0	2FA-0	2FB-0	2FC-0	2FD-0	2FE-0	2FF-0
04X	004-0	3C1-0	3C2-0	3C3-0	3C4-0	3C5-0	3C6-0	3C7-0	3C8-0	3C9-0	3CA-0	3CB-0	3CC-0	3CD-0	3CE-0	3CF-0
05X	005-0	3D1-0	3D2-0	3D3-0	3D4-0	3D5-0	3D6-0	3D7-0	3D8-0	3D9-0	3DA-0	3DB-0	3DC-0	3DD-0	3DE-0	3DF-0
06X	006-0	3E1-0	3E2-0	3E3-0	3E4-0	3E5-0	3E6-0	3E7-0	3E8-0	3E9-0	3EA-0	3EB-0	3EC-0	3ED-0	3EE-0	3EF-0
07X	007-0	3F1-0	3F2-0	3F3-0	3F4-0	3F5-0	3F6-0	3F7-0	3F8-0	3F9-0	3FA-0	3FB-0	3FC-0	3FD-0	3FE-0	3FF-0
08X	008-0	231-0	232-0	233-0	234-0	235-0	236-0	237-0	238-0	239-0	23A-0	23B-0	23C-0	23D-0	23E-0	23F-0
09X	009-0	259-0	25E-0	093-1	313-0	095-1	096-1	097-1	246-0	099-1	09A-1	09B-1	09C-1	09D-1	09E-1	09F-1
0AX	00A-0	271-0	272-0	273-0	274-0	275-0	276-0	277-0	278-0	279-0	27A-0	27B-0	27C-0	27D-0	27E-0	27F-0
0BX	00B-0	081-1	082-1	083-1	084-1	085-1	086-1	087-1	088-1	089-1	08A-1	08B-1	08C-1	08D-1	08E-1	08F-1
0CX	00C-0	25B-0	25F-0	0C3-1	303-0	0C5-1	0C6-1	0C7-1	247-0	0C9-1	0CA-1	0CB-1	0CC-1	0CD-1	0CE-1	0CF-1
0DX	00D-0	0D1-1	0D2-1	0D3-1	0D4-1	0D5-1	0D6-1	0D7-1	0D8-1	0D9-1	0DA-1	0DB-1	0DC-1	0DD-1	0DE-1	0DF-1
0EX	00E-0	0E1-1	0E2-1	0E3-1	0E4-1	0E5-1	0E6-1	0E7-1	0E8-1	0E9-1	0EA-1	0EB-1	0EC-1	0ED-1	0EE-1	0EF-1
0FX	00F-0	0F1-1	0F2-1	0F3-1	0F4-1	0F5-1	0F6-1	0F7-1	0F8-1	0F9-1	0FA-1	0FB-1	0FC-1	0FD-1	0FE-1	0FF-1
10X	199-0	081-0	082-0	083-0	084-0	085-0	086-0	087-0	158-0	342-0	159-0	10B-1	343-0	10D-1	10E-1	10F-1
11X	0F1-0	181-0	182-0	183-0	184-0	185-0	186-0	187-0	345-0	119-1	11A-1	11B-1	11C-1	11D-1	11E-1	11F-1
12X	0F2-0	309-0	30D-0	123-1	316-0	125-1	126-1	127-1	15A-0	129-1	15B-0	12B-1	12C-1	12D-1	12E-1	12F-1
13X	0F3-0	131-1	132-1	133-1	134-1	135-1	136-1	137-1	138-1	139-1	13A-1	13B-1	13C-1	13D-1	13E-1	13F-1
14X	0F4-0	281-0	282-0	283-0	284-0	285-0	286-0	287-0	347-0	149-1	14A-1	14B-1	14C-1	14D-1	14E-1	14F-1
15X	0F5-0	381-0	382-0	383-0	384-0	385-0	386-0	387-0	153-1	159-1	15A-1	15B-1	15C-1	15D-1	15E-1	15F-1
16X	0F6-0	161-1	162-1	163-1	164-1	165-1	166-1	167-1	168-1	169-1	16A-1	16B-1	16C-1	16D-1	16E-1	16F-1
17X	0F7-0	171-1	172-1	173-1	174-1	175-1	176-1	177-1	178-1	179-1	17A-1	17B-1	17C-1	17D-1	17E-1	17F-1
18X	0F8-0	3C8-0	30E-0	183-1	306-0	185-1	186-1	187-1	15C-0	189-1	15D-0	18B-1	18C-1	18D-1	18E-1	18F-1
19X	0F9-0	191-1	192-1	193-1	194-1	195-1	196-1	197-1	198-1	199-1	19A-1	19B-1	19C-1	19D-1	19E-1	19F-1
1AX	0FA-0	1A1-1	30F-0	1A3-1	1A4-1	1A5-1	1A6-1	1A7-1	15E-0	1A9-1	15F-0	1AB-1	1AC-1	1AD-1	1AE-1	1AF-1
1BX	0FB-0	181-1	182-1	183-1	184-1	185-1	186-1	187-1	188-1	189-1	18A-1	18B-1	18C-1	18D-1	18E-1	18F-1
1CX	0FC-0	1C1-1	1C2-1	1C3-1	1C4-1	1C5-1	1C6-1	1C7-1	1C8-1	1C9-1	1CA-1	1CB-1	1CC-1	1CD-1	1CE-1	1CF-1
1DX	0FD-0	1D1-1	1D2-1	1D3-1	1D4-1	1D5-1	1D6-1	1D7-1	1D8-1	1D9-1	1DA-1	1DB-1	1DC-1	1DD-1	1DE-1	1DF-1
1EX	0FE-0	1E1-1	1E2-1	1E3-1	1E4-1	1E5-1	1E6-1	1E7-1	1E8-1	1E9-1	1EA-1	1EB-1	1EC-1	1ED-1	1EE-1	1EF-1
1FX	0FF-0	1F1-1	1F2-1	1F3-1	1F4-1	1F5-1	1F6-1	1F7-1	1F8-1	1F9-1	1FA-1	1FB-1	1FC-1	1FD-1	1FE-1	1FF-1
20X	19A-0	1C1-0	1C2-0	1C3-0	1C4-0	1C5-0	1C6-0	1C7-0	1C8-0	1C9-0	1CA-0	1CB-0	1CC-0	1CD-0	1CE-0	1CF-0
21X	1D1-0	126-0	123-0	213-1	183-0	1A3-0	216-1	217-1	256-0	219-1	21A-1	21B-1	21C-1	21D-1	21E-1	21F-1
22X	1D2-0	1E1-0	1E2-0	1E3-0	1E4-0	1E5-0	1E6-0	1E7-0	1E8-0	1E9-0	1EA-0	1EB-0	1EC-0	1ED-0	1EE-0	1EF-0
23X	1D3-0	231-1	232-1	233-1	234-1	235-1	236-1	237-1	238-1	239-1	23A-1	23B-1	23C-1	23D-1	23E-1	23F-1
24X	1D4-0	125-0	129-0	243-1	186-0	1A6-0	246-1	247-1	257-0	249-1	24A-1	24B-1	24C-1	24D-1	24E-1	24F-1
25X	1D5-0	127-0	252-1	253-1	187-0	1A7-0	256-1	257-1	258-1	259-1	25A-1	25B-1	25C-1	25D-1	25E-1	25F-1
26X	1D6-0	261-1	262-1	263-1	264-1	265-1	266-1	267-1	268-1	269-1	26A-1	26B-1	26C-1	26D-1	26E-1	26F-1
27X	1D7-0	271-1	272-1	273-1	274-1	275-1	276-1	277-1	278-1	279-1	27A-1	27B-1	27C-1	27D-1	27E-1	27F-1
28X	1D8-0	331-0	332-0	333-0	334-0	335-0	336-0	337-0	338-0	339-0	33A-0	33B-0	33C-0	33D-0	33E-0	33F-0
29X	1D9-0	291-1	292-1	293-1	294-1	295-1	296-1	297-1	298-1	299-1	29A-1	29B-1	29C-1	29D-1	29E-1	29F-1
2AX	1DA-0	371-0	372-0	373-0	374-0	375-0	376-0	377-0	378-0	379-0	37A-0	37B-0	37C-0	37D-0	37E-0	37F-0
2BX	1DB-0	281-1	282-1	283-1	284-1	285-1	286-1	287-1	288-1	289-1	28A-1	28B-1	28C-1	28D-1	28E-1	28F-1
2CX	1DC-0	2C1-1	2C2-1	2C3-1	2C4-1	2C5-1	2C6-1	2C7-1	2C8-1	2C9-1	2CA-1	2CB-1	2CC-1	2CD-1	2CE-1	2CF-1
2DX	1DD-0	2D1-1	2D2-1	2D3-1	2D4-1	2D5-1	2D6-1	2D7-1	2D8-1	2D9-1	2DA-1	2DB-1	2DC-1	2DD-1	2DE-1	2DF-1
2EX	1DE-0	2E1-1	2E2-1	2E3-1	2E4-1	2E5-1	2E6-1	2E7-1	2E8-1	2E9-1	2EA-1	2EB-1	2EC-1	2ED-1	2EE-1	2EF-1
2FX	1DF-0	2F1-1	2F2-1	2F3-1	2F4-1	2F5-1	2F6-1	2F7-1	2F8-1	2F9-1	2FA-1	2FB-1	2FC-1	2FD-1	2FE-1	2FF-1

Table 9 (Part 2 of 6)

		State Diagram of 11-bit code word mapping for 24/25 (0,7/7) code															
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
30X	19B-0	32C-0	329-0	303-1	138-0	139-0	306-1	307-1		358-0	309-1	359-0	30B-1	30C-1	30D-1	30E-1	30F-1
31X	1F1-0	326-0	312-1	313-1	13A-0	13B-0	316-1	317-1		318-1	319-1	31A-1	31B-1	31C-1	31D-1	31E-1	31F-1
32X	1F2-0	321-1	32B-0	323-1	324-1	325-1	326-1	327-1		35A-0	329-1	35B-0	32B-1	32C-1	32D-1	32E-1	32F-1
33X	1F3-0	331-1	332-1	333-1	334-1	335-1	336-1	337-1		338-1	339-1	33A-1	33B-1	33C-1	33D-1	33E-1	33F-1
34X	1F4-0	325-0	342-1	343-1	13C-0	13D-0	346-1	347-1		348-1	349-1	34A-1	34B-1	34C-1	34D-1	34E-1	34F-1
35X	1F5-0	327-0	352-1	353-1	13E-0	13F-0	356-1	357-1		358-1	359-1	35A-1	35B-1	35C-1	35D-1	35E-1	35F-1
36X	1F6-0	361-1	362-1	363-1	364-1	365-1	366-1	367-1		368-1	369-1	36A-1	36B-1	36C-1	36D-1	36E-1	36F-1
37X	1F7-0	371-1	372-1	373-1	374-1	375-1	376-1	377-1		378-1	379-1	37A-1	37B-1	37C-1	37D-1	37E-1	37F-1
38X	1F8-0	381-1	32D-0	383-1	384-1	385-1	386-1	387-1		35C-0	389-1	35D-0	38B-1	38C-1	38D-1	38E-1	38F-1
39X	1F9-0	391-1	392-1	393-1	394-1	395-1	396-1	397-1		398-1	399-1	39A-1	39B-1	39C-1	39D-1	39E-1	39F-1
3AX	1FA-0	3A1-1	32F-0	3A3-1	3A4-1	3A5-1	3A6-1	3A7-1		35E-0	3A9-1	35F-0	3AB-1	3AC-1	3AD-1	3AE-1	3AF-1
3BX	1FB-0	3B1-1	3B2-1	3B3-1	3B4-1	3B5-1	3B6-1	3B7-1		3B8-1	3B9-1	3BA-1	3BB-1	3BC-1	3BD-1	3BE-1	3BF-1
3CX	1FC-0	3C1-1	3C2-1	3C3-1	3C4-1	3C5-1	3C6-1	3C7-1		3C8-1	3C9-1	3CA-1	3CB-1	3CC-1	3CD-1	3CE-1	3CF-1
3DX	1FD-0	3D1-1	3D2-1	3D3-1	3D4-1	3D5-1	3D6-1	3D7-1		3D8-1	3D9-1	3DA-1	3DB-1	3DC-1	3DD-1	3DE-1	3DF-1
3EX	1FE-0	3E1-1	3E2-1	3E3-1	3E4-1	3E5-1	3E6-1	3E7-1		3E8-1	3E9-1	3EA-1	3EB-1	3EC-1	3ED-1	3EE-1	3EF-1
3FX	1FF-0	3F1-1	3F2-1	3F3-1	3F4-1	3F5-1	3F6-1	3F7-1		3F8-1	3F9-1	3FA-1	3FB-1	3FC-1	3FD-1	3FE-1	3FF-1
40X	19C-0	131-0	132-0	133-0	134-0	135-0	136-0	137-0		088-0	352-0	089-0	40B-1	353-0	40D-1	40E-1	40F-1
41X	261-0	161-0	162-0	163-0	164-0	165-0	166-0	167-0		356-0	419-1	41A-1	41B-1	41C-1	41D-1	41E-1	41F-1
42X	262-0	319-0	31D-0	423-1	317-0	425-1	426-1	427-1		08A-0	429-1	08B-0	42B-1	42C-1	42D-1	42E-1	42F-1
43X	263-0	431-1	432-1	433-1	434-1	435-1	436-1	437-1		438-1	439-1	43A-1	43B-1	43C-1	43D-1	43E-1	43F-1
44X	264-0	171-0	172-0	173-0	174-0	175-0	176-0	177-0		357-0	449-1	44A-1	44B-1	44C-1	44D-1	44E-1	44F-1
45X	265-0	191-0	192-0	193-0	194-0	195-0	196-0	197-0		458-1	459-1	45A-1	45B-1	45C-1	45D-1	45E-1	45F-1
46X	266-0	461-1	462-1	463-1	464-1	465-1	466-1	467-1		468-1	469-1	46A-1	46B-1	46C-1	46D-1	46E-1	46F-1
47X	267-0	471-1	472-1	473-1	474-1	475-1	476-1	477-1		478-1	479-1	47A-1	47B-1	47C-1	47D-1	47E-1	47F-1
48X	268-0	31B-0	31E-0	483-1	307-0	485-1	486-1	487-1		08C-0	489-1	08D-0	48B-1	48C-1	48D-1	48E-1	48F-1
49X	269-0	491-1	492-1	493-1	494-1	495-1	496-1	497-1		498-1	499-1	49A-1	49B-1	49C-1	49D-1	49E-1	49F-1
4AX	26A-0	4A1-1	31F-0	4A3-1	4A4-1	4A5-1	4A6-1	4A7-1		08E-0	4A9-1	08F-0	4AB-1	4AC-1	4AD-1	4AE-1	4AF-1
4BX	26B-0	4B1-1	4B2-1	4B3-1	4B4-1	4B5-1	4B6-1	4B7-1		4B8-1	4B9-1	4BA-1	4BB-1	4BC-1	4BD-1	4BE-1	4BF-1
4CX	26C-0	4C1-1	4C2-1	4C3-1	4C4-1	4C5-1	4C6-1	4C7-1		4C8-1	4C9-1	4CA-1	4CB-1	4CC-1	4CD-1	4CE-1	4CF-1
4DX	26D-0	4D1-1	4D2-1	4D3-1	4D4-1	4D5-1	4D6-1	4D7-1		4D8-1	4D9-1	4DA-1	4DB-1	4DC-1	4DD-1	4DE-1	4DF-1
4EX	26E-0	4E1-1	4E2-1	4E3-1	4E4-1	4E5-1	4E6-1	4E7-1		4E8-1	4E9-1	4EA-1	4EB-1	4EC-1	4ED-1	4EE-1	4EF-1
4FX	26F-0	4F1-1	4F2-1	4F3-1	4F4-1	4F5-1	4F6-1	4F7-1		4F8-1	4F9-1	4FA-1	4FB-1	4FC-1	4FD-1	4FE-1	4FF-1
50X	19D-0	119-0	11A-0	11B-0	11C-0	11D-0	11E-0	11F-0		183-0	509-1	189-0	50B-1	50C-1	50D-1	50E-1	50F-1
51X	291-0	149-0	14A-0	14B-0	14C-0	14D-0	14E-0	14F-0		518-1	519-1	51A-1	51B-1	51C-1	51D-1	51E-1	51F-1
52X	292-0	521-1	34D-0	523-1	524-1	525-1	526-1	527-1		1BA-0	529-1	1BB-0	52B-1	52C-1	52D-1	52E-1	52F-1
53X	293-0	531-1	532-1	533-1	534-1	535-1	536-1	537-1		538-1	539-1	53A-1	53B-1	53C-1	53D-1	53E-1	53F-1
54X	294-0	219-0	21A-0	21B-0	21C-0	21D-0	21E-0	21F-0		548-1	549-1	54A-1	54B-1	54C-1	54D-1	54E-1	54F-1
55X	295-0	249-0	24A-0	24B-0	24C-0	24D-0	24E-0	24F-0		558-1	559-1	55A-1	55B-1	55C-1	55D-1	55E-1	55F-1
56X	296-0	561-1	562-1	563-1	564-1	565-1	566-1	567-1		568-1	569-1	56A-1	56B-1	56C-1	56D-1	56E-1	56F-1
57X	297-0	571-1	572-1	573-1	574-1	575-1	576-1	577-1		578-1	579-1	57A-1	57B-1	57C-1	57D-1	57E-1	57F-1
58X	298-0	581-1	34E-0	583-1	584-1	585-1	586-1	587-1		1BC-0	589-1	1BD-0	58B-1	58C-1	58D-1	58E-1	58F-1
59X	299-0	591-1	592-1	593-1	594-1	595-1	596-1	597-1		598-1	599-1	59A-1	59B-1	59C-1	59D-1	59E-1	59F-1
5AX	29A-0	5A1-1	34F-0	5A3-1	5A4-1	5A5-1	5A6-1	5A7-1		1BE-0	5A9-1	1BF-0	5AB-1	5AC-1	5AD-1	5AE-1	5AF-1
5BX	29B-0	5B1-1	5B2-1	5B3-1	5B4-1	5B5-1	5B6-1	5B7-1		5B8-1	5B9-1	5BA-1	5BB-1	5BC-1	5BD-1	5BE-1	5BF-1
5CX	29C-0	5C1-1	5C2-1	5C3-1	5C4-1	5C5-1	5C6-1	5C7-1		5C8-1	5C9-1	5CA-1	5CB-1	5CC-1	5CD-1	5CE-1	5CF-1
5DX	29D-0	5D1-1	5D2-1	5D3-1	5D4-1	5D5-1	5D6-1	5D7-1		5D8-1	5D9-1	5DA-1	5DB-1	5DC-1	5DD-1	5DE-1	5DF-1
5EX	29E-0	5E1-1	5E2-1	5E3-1	5E4-1	5E5-1	5E6-1	5E7-1		5E8-1	5E9-1	5EA-1	5EB-1	5EC-1	5ED-1	5EE-1	5EF-1
5FX	29F-0	5F1-1	5F2-1	5F3-1	5F4-1	5F5-1	5F6-1	5F7-1		5F8-1	5F9-1	5FA-1	5FB-1	5FC-1	5FD-1	5FE-1	5FF-1

Table 9 (Part 3 of 6)

State Diagram of 11-bit code word mapping for 24/25 (0,7/7) code																
	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
60X	19E-0	38C-0	389-0	603-1	168-0	169-0	606-1	607-1	258-0	609-1	289-0	608-1	60C-1	60D-1	60E-1	60F-1
61X	361-0	386-0	612-1	613-1	16A-0	168-0	616-1	617-1	618-1	619-1	61A-1	61B-1	61C-1	61D-1	61E-1	61F-1
62X	362-0	621-1	388-0	623-1	624-1	625-1	626-1	627-1	28A-0	629-1	28B-0	62B-1	62C-1	62D-1	62E-1	62F-1
63X	363-0	631-1	632-1	633-1	634-1	635-1	636-1	637-1	638-1	639-1	63A-1	63B-1	63C-1	63D-1	63E-1	63F-1
64X	364-0	385-0	642-1	643-1	16C-0	16D-0	646-1	647-1	648-1	649-1	64A-1	64B-1	64C-1	64D-1	64E-1	64F-1
65X	365-0	387-0	652-1	653-1	16E-0	16F-0	656-1	657-1	658-1	659-1	65A-1	65B-1	65C-1	65D-1	65E-1	65F-1
66X	366-0	661-1	662-1	663-1	664-1	665-1	666-1	667-1	668-1	669-1	66A-1	66B-1	66C-1	66D-1	66E-1	66F-1
67X	367-0	671-1	672-1	673-1	674-1	675-1	676-1	677-1	678-1	679-1	67A-1	67B-1	67C-1	67D-1	67E-1	67F-1
68X	368-0	681-1	38D-0	683-1	684-1	685-1	686-1	687-1	28C-0	689-1	28D-0	68B-1	68C-1	68D-1	68E-1	68F-1
69X	369-0	691-1	692-1	693-1	694-1	695-1	696-1	697-1	698-1	699-1	69A-1	69B-1	69C-1	69D-1	69E-1	69F-1
6AX	36A-0	6A1-1	38F-0	6A3-1	6A4-1	6A5-1	6A6-1	6A7-1	28E-0	6A9-1	28F-0	6AB-1	6AC-1	6AD-1	6AE-1	6AF-1
6BX	36B-0	6B1-1	6B2-1	6B3-1	6B4-1	6B5-1	6B6-1	6B7-1	6B8-1	6B9-1	6BA-1	6BB-1	6BC-1	6BD-1	6BE-1	6BF-1
6CX	36C-0	6C1-1	6C2-1	6C3-1	6C4-1	6C5-1	6C6-1	6C7-1	6C8-1	6C9-1	6CA-1	6CB-1	6CC-1	6CD-1	6CE-1	6CF-1
6DX	36D-0	6D1-1	6D2-1	6D3-1	6D4-1	6D5-1	6D6-1	6D7-1	6D8-1	6D9-1	6DA-1	6DB-1	6DC-1	6DD-1	6DE-1	6DF-1
6EX	36E-0	6E1-1	6E2-1	6E3-1	6E4-1	6E5-1	6E6-1	6E7-1	6E8-1	6E9-1	6EA-1	6EB-1	6EC-1	6ED-1	6EE-1	6EF-1
6FX	36F-0	6F1-1	6F2-1	6F3-1	6F4-1	6F5-1	6F6-1	6F7-1	6F8-1	6F9-1	6FA-1	6FB-1	6FC-1	6FD-1	6FE-1	6FF-1
70X	19F-0	3AC-0	3A9-0	703-1	178-0	179-0	706-1	707-1	388-0	709-1	389-0	708-1	70C-1	70D-1	70E-1	70F-1
71X	391-0	3A6-0	712-1	713-1	17A-0	17B-0	716-1	717-1	718-1	719-1	71A-1	71B-1	71C-1	71D-1	71E-1	71F-1
72X	392-0	721-1	3AB-0	723-1	724-1	725-1	726-1	727-1	38A-0	729-1	38B-0	72B-1	72C-1	72D-1	72E-1	72F-1
73X	393-0	731-1	732-1	733-1	734-1	735-1	736-1	737-1	738-1	739-1	73A-1	73B-1	73C-1	73D-1	73E-1	73F-1
74X	394-0	3A5-0	742-1	743-1	17C-0	17D-0	746-1	747-1	748-1	749-1	74A-1	74B-1	74C-1	74D-1	74E-1	74F-1
75X	395-0	3A7-0	752-1	753-1	17E-0	17F-0	756-1	757-1	758-1	759-1	75A-1	75B-1	75C-1	75D-1	75E-1	75F-1
76X	396-0	761-1	762-1	763-1	764-1	765-1	766-1	767-1	768-1	769-1	76A-1	76B-1	76C-1	76D-1	76E-1	76F-1
77X	397-0	771-1	772-1	773-1	774-1	775-1	776-1	777-1	778-1	779-1	77A-1	77B-1	77C-1	77D-1	77E-1	77F-1
78X	398-0	781-1	3AD-0	783-1	784-1	785-1	786-1	787-1	38C-0	789-1	38D-0	78B-1	78C-1	78D-1	78E-1	78F-1
79X	399-0	791-1	792-1	793-1	794-1	795-1	796-1	797-1	798-1	799-1	79A-1	79B-1	79C-1	79D-1	79E-1	79F-1
7AX	39A-0	7A1-1	3AF-0	7A3-1	7A4-1	7A5-1	7A6-1	7A7-1	38E-0	7A9-1	38F-0	7AB-1	7AC-1	7AD-1	7AE-1	7AF-1
7BX	39B-0	7B1-1	7B2-1	7B3-1	7B4-1	7B5-1	7B6-1	7B7-1	7B8-1	7B9-1	7BA-1	7BB-1	7BC-1	7BD-1	7BE-1	7BF-1
7CX	39C-0	7C1-1	7C2-1	7C3-1	7C4-1	7C5-1	7C6-1	7C7-1	7C8-1	7C9-1	7CA-1	7CB-1	7CC-1	7CD-1	7CE-1	7CF-1
7DX	39D-0	7D1-1	7D2-1	7D3-1	7D4-1	7D5-1	7D6-1	7D7-1	7D8-1	7D9-1	7DA-1	7DB-1	7DC-1	7DD-1	7DE-1	7DF-1
7EX	39E-0	7E1-1	7E2-1	7E3-1	7E4-1	7E5-1	7E6-1	7E7-1	7E8-1	7E9-1	7EA-1	7EB-1	7EC-1	7ED-1	7EE-1	7EF-1
7FX	39F-0	7F1-1	7F2-1	7F3-1	7F4-1	7F5-1	7F6-1	7F7-1	7F8-1	7F9-1	7FA-1	7FB-1	7FC-1	7FD-1	7FE-1	7FF-1
80X	598-0	6C1-0	6C2-0	6C3-0	6C4-0	6C5-0	6C6-0	6C7-0	6C8-0	6C9-0	6CA-0	6CB-0	6CC-0	6CD-0	6CE-0	6CF-0
81X	4D1-0	6D1-0	6D2-0	6D3-0	6D4-0	6D5-0	6D6-0	6D7-0	6D8-0	6D9-0	6DA-0	6DB-0	6DC-0	6DD-0	6DE-0	6DF-0
82X	4D2-0	6E1-0	6E2-0	6E3-0	6E4-0	6E5-0	6E6-0	6E7-0	6E8-0	6E9-0	6EA-0	6EB-0	6EC-0	6ED-0	6EE-0	6EF-0
83X	4D3-0	6F1-0	6F2-0	6F3-0	6F4-0	6F5-0	6F6-0	6F7-0	6F8-0	6F9-0	6FA-0	6FB-0	6FC-0	6FD-0	6FE-0	6FF-0
84X	4D4-0	7C1-0	7C2-0	7C3-0	7C4-0	7C5-0	7C6-0	7C7-0	7C8-0	7C9-0	7CA-0	7CB-0	7CC-0	7CD-0	7CE-0	7CF-0
85X	4D5-0	7D1-0	7D2-0	7D3-0	7D4-0	7D5-0	7D6-0	7D7-0	7D8-0	7D9-0	7DA-0	7DB-0	7DC-0	7DD-0	7DE-0	7DF-0
86X	4D6-0	7E1-0	7E2-0	7E3-0	7E4-0	7E5-0	7E6-0	7E7-0	7E8-0	7E9-0	7EA-0	7EB-0	7EC-0	7ED-0	7EE-0	7EF-0
87X	4D7-0	7F1-0	7F2-0	7F3-0	7F4-0	7F5-0	7F6-0	7F7-0	7F8-0	7F9-0	7FA-0	7FB-0	7FC-0	7FD-0	7FE-0	7FF-0
88X	4D8-0	631-0	632-0	633-0	634-0	635-0	636-0	637-0	638-0	639-0	63A-0	63B-0	63C-0	63D-0	63E-0	63F-0
89X	4D9-0	659-0	65E-0	093-2	713-0	095-2	096-2	097-2	646-0	099-2	09A-2	09B-2	09C-2	09D-2	09E-2	09F-2
8AX	4DA-0	671-0	672-0	673-0	674-0	675-0	676-0	677-0	678-0	679-0	67A-0	67B-0	67C-0	67D-0	67E-0	67F-0
8BX	4DB-0	081-2	082-2	083-2	084-2	085-2	086-2	087-2	088-2	089-2	08A-2	08B-2	08C-2	08D-2	08E-2	08F-2
8CX	4DC-0	65B-0	65F-0	0C3-2	703-0	0C5-2	0C6-2	0C7-2	647-0	0C9-2	0CA-2	0CB-2	0CC-2	0CD-2	0CE-2	0CF-2
8DX	4DD-0	0D1-2	0D2-2	0D3-2	0D4-2	0D5-2	0D6-2	0D7-2	0D8-2	0D9-2	0DA-2	0DB-2	0DC-2	0DD-2	0DE-2	0DF-2
8EX	4DE-0	0E1-2	0E2-2	0E3-2	0E4-2	0E5-2	0E6-2	0E7-2	0E8-2	0E9-2	0EA-2	0EB-2	0EC-2	0ED-2	0EE-2	0EF-2
8FX	4DF-0	0F1-2	0F2-2	0F3-2	0F4-2	0F5-2	0F6-2	0F7-2	0F8-2	0F9-2	0FA-2	0FB-2	0FC-2	0FD-2	0FE-2	0FF-2

Table 9 (Part 4 of 6)

State Diagram of 11-bit code word mapping for 24/25 (0,7/7) code																
	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
90X	599-0	481-0	482-0	483-0	484-0	485-0	486-0	487-0	558-0	742-0	559-0	108-2	743-0	100-2	10E-2	10F-2
91X	4F1-0	581-0	582-0	583-0	584-0	585-0	586-0	587-0	746-0	119-2	11A-2	11B-2	11C-2	11D-2	11E-2	11F-2
92X	4F2-0	709-0	700-0	123-2	716-0	125-2	126-2	127-2	55A-0	129-2	55B-0	12B-2	12C-2	12D-2	12E-2	12F-2
93X	4F3-0	131-2	132-2	133-2	134-2	135-2	136-2	137-2	138-2	139-2	13A-2	13B-2	13C-2	13D-2	13E-2	13F-2
94X	4F4-0	681-0	682-0	683-0	684-0	685-0	686-0	687-0	747-0	149-2	14A-2	14B-2	14C-2	14D-2	14E-2	14F-2
95X	4F5-0	781-0	782-0	783-0	784-0	785-0	786-0	787-0	158-2	159-2	15A-2	15B-2	15C-2	15D-2	15E-2	15F-2
96X	4F6-0	161-2	162-2	163-2	164-2	165-2	166-2	167-2	168-2	169-2	16A-2	16B-2	16C-2	16D-2	16E-2	16F-2
97X	4F7-0	171-2	172-2	173-2	174-2	175-2	176-2	177-2	178-2	179-2	17A-2	17B-2	17C-2	17D-2	17E-2	17F-2
98X	4F8-0	708-0	70E-0	183-2	70C-0	185-2	186-2	187-2	55C-0	189-2	55D-0	18B-2	18C-2	18D-2	18E-2	18F-2
99X	4F9-0	191-2	192-2	193-2	194-2	195-2	196-2	197-2	198-2	199-2	19A-2	19B-2	19C-2	19D-2	19E-2	19F-2
9AX	4FA-0	1A1-2	70F-0	1A3-2	1A4-2	1A5-2	1A6-2	1A7-2	55E-0	1A9-2	55F-0	1AB-2	1AC-2	1AD-2	1AE-2	1AF-2
9BX	4FB-0	1B1-2	1B2-2	1B3-2	1B4-2	1B5-2	1B6-2	1B7-2	1B8-2	1B9-2	1BA-2	1BB-2	1BC-2	1BD-2	1BE-2	1BF-2
9CX	4FC-0	1C1-2	1C2-2	1C3-2	1C4-2	1C5-2	1C6-2	1C7-2	1C8-2	1C9-2	1CA-2	1CB-2	1CC-2	1CD-2	1CE-2	1CF-2
9DX	4FD-0	1D1-2	1D2-2	1D3-2	1D4-2	1D5-2	1D6-2	1D7-2	1D8-2	1D9-2	1DA-2	1DB-2	1DC-2	1DD-2	1DE-2	1DF-2
9EX	4FE-0	1E1-2	1E2-2	1E3-2	1E4-2	1E5-2	1E6-2	1E7-2	1E8-2	1E9-2	1EA-2	1EB-2	1EC-2	1ED-2	1EE-2	1EF-2
9FX	4FF-0	1F1-2	1F2-2	1F3-2	1F4-2	1F5-2	1F6-2	1F7-2	1F8-2	1F9-2	1FA-2	1FB-2	1FC-2	1FD-2	1FE-2	1FF-2
ADX	59A-0	5C1-0	5C2-0	5C3-0	5C4-0	5C5-0	5C6-0	5C7-0	5C8-0	5C9-0	5CA-0	5CB-0	5CC-0	5CD-0	5CE-0	5CF-0
A1X	5D1-0	526-0	523-0	213-2	583-0	5A3-0	216-2	217-2	656-0	219-2	21A-2	21B-2	21C-2	21D-2	21E-2	21F-2
A2X	5D2-0	5E1-0	5E2-0	5E3-0	5E4-0	5E5-0	5E6-0	5E7-0	5E8-0	5E9-0	5EA-0	5EB-0	5EC-0	5ED-0	5EE-0	5EF-0
A3X	5D3-0	231-2	232-2	233-2	234-2	235-2	236-2	237-2	238-2	239-2	23A-2	23B-2	23C-2	23D-2	23E-2	23F-2
A4X	5D4-0	525-0	529-0	243-2	586-0	5A6-0	246-2	247-2	657-0	249-2	24A-2	24B-2	24C-2	24D-2	24E-2	24F-2
A5X	5D5-0	527-0	252-2	253-2	587-0	5A7-0	256-2	257-2	258-2	259-2	25A-2	25B-2	25C-2	25D-2	25E-2	25F-2
A6X	5D6-0	261-2	262-2	263-2	264-2	265-2	266-2	267-2	268-2	269-2	26A-2	26B-2	26C-2	26D-2	26E-2	26F-2
A7X	5D7-0	271-2	272-2	273-2	274-2	275-2	276-2	277-2	278-2	279-2	27A-2	27B-2	27C-2	27D-2	27E-2	27F-2
A8X	5D8-0	731-0	732-0	733-0	734-0	735-0	736-0	737-0	738-0	739-0	73A-0	73B-0	73C-0	73D-0	73E-0	73F-0
A9X	5D9-0	291-2	292-2	293-2	294-2	295-2	296-2	297-2	298-2	299-2	29A-2	29B-2	29C-2	29D-2	29E-2	29F-2
AAX	5DA-0	771-0	772-0	773-0	774-0	775-0	776-0	777-0	778-0	779-0	77A-0	77B-0	77C-0	77D-0	77E-0	77F-0
ABX	5DB-0	281-2	282-2	283-2	284-2	285-2	286-2	287-2	288-2	289-2	28A-2	28B-2	28C-2	28D-2	28E-2	28F-2
ACX	5DC-0	2C1-2	2C2-2	2C3-2	2C4-2	2C5-2	2C6-2	2C7-2	2C8-2	2C9-2	2CA-2	2CB-2	2CC-2	2CD-2	2CE-2	2CF-2
ADX	5DD-0	2D1-2	2D2-2	2D3-2	2D4-2	2D5-2	2D6-2	2D7-2	2D8-2	2D9-2	2DA-2	2DB-2	2DC-2	2DD-2	2DE-2	2DF-2
AEX	5DE-0	2E1-2	2E2-2	2E3-2	2E4-2	2E5-2	2E6-2	2E7-2	2E8-2	2E9-2	2EA-2	2EB-2	2EC-2	2ED-2	2EE-2	2EF-2
AFX	5DF-0	2F1-2	2F2-2	2F3-2	2F4-2	2F5-2	2F6-2	2F7-2	2F8-2	2F9-2	2FA-2	2FB-2	2FC-2	2FD-2	2FE-2	2FF-2
B0X	59B-0	72C-0	729-0	303-2	538-0	539-0	306-2	307-2	758-0	309-2	759-0	30B-2	30C-2	30D-2	30E-2	30F-2
B1X	5F1-0	726-0	312-2	313-2	53A-0	53B-0	316-2	317-2	318-2	319-2	31A-2	31B-2	31C-2	31D-2	31E-2	31F-2
B2X	5F2-0	321-2	72B-0	323-2	324-2	325-2	326-2	327-2	75A-0	329-2	75B-0	32B-2	32C-2	32D-2	32E-2	32F-2
B3X	5F3-0	331-2	332-2	333-2	334-2	335-2	336-2	337-2	338-2	339-2	33A-2	33B-2	33C-2	33D-2	33E-2	33F-2
B4X	5F4-0	725-0	342-2	343-2	53C-0	53D-0	346-2	347-2	348-2	349-2	34A-2	34B-2	34C-2	34D-2	34E-2	34F-2
B5X	5F5-0	727-0	352-2	353-2	53E-0	53F-0	356-2	357-2	358-2	359-2	35A-2	35B-2	35C-2	35D-2	35E-2	35F-2
B6X	5F6-0	361-2	362-2	363-2	364-2	365-2	366-2	367-2	368-2	369-2	36A-2	36B-2	36C-2	36D-2	36E-2	36F-2
B7X	5F7-0	371-2	372-2	373-2	374-2	375-2	376-2	377-2	378-2	379-2	37A-2	37B-2	37C-2	37D-2	37E-2	37F-2
B8X	5F8-0	381-2	72D-0	383-2	384-2	385-2	386-2	387-2	75C-0	389-2	75D-0	38B-2	38C-2	38D-2	38E-2	38F-2
B9X	5F9-0	391-2	392-2	393-2	394-2	395-2	396-2	397-2	398-2	399-2	39A-2	39B-2	39C-2	39D-2	39E-2	39F-2
BAX	5FA-0	3A1-2	72F-0	3A3-2	3A4-2	3A5-2	3A6-2	3A7-2	75E-0	3A9-2	75F-0	3AB-2	3AC-2	3AD-2	3AE-2	3AF-2
B8X	5FB-0	3B1-2	3B2-2	3B3-2	3B4-2	3B5-2	3B6-2	3B7-2	3B8-2	3B9-2	3BA-2	3BB-2	3BC-2	3BD-2	3BE-2	3BF-2
BCX	5FC-0	3C1-2	3C2-2	3C3-2	3C4-2	3C5-2	3C6-2	3C7-2	3C8-2	3C9-2	3CA-2	3CB-2	3CC-2	3CD-2	3CE-2	3CF-2
BDX	5FD-0	3D1-2	3D2-2	3D3-2	3D4-2	3D5-2	3D6-2	3D7-2	3D8-2	3D9-2	3DA-2	3DB-2	3DC-2	3DD-2	3DE-2	3DF-2
BEX	5FE-0	3E1-2	3E2-2	3E3-2	3E4-2	3E5-2	3E6-2	3E7-2	3E8-2	3E9-2	3EA-2	3EB-2	3EC-2	3ED-2	3EE-2	3EF-2
BFX	5FF-0	3F1-2	3F2-2	3F3-2	3F4-2	3F5-2	3F6-2	3F7-2	3F8-2	3F9-2	3FA-2	3FB-2	3FC-2	3FD-2	3FE-2	3FF-2

Table 9 (Part 5 of 6)

State Diagram of 11-bit code word mapping for 24/25 (0,7/7) code																
	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
C0X	59C-0	531-0	532-0	533-0	534-0	535-0	536-0	537-0	488-0	752-0	489-0	408-2	753-0	400-2	40E-2	40F-2
C1X	661-0	561-0	562-0	563-0	564-0	565-0	566-0	567-0	756-0	419-2	41A-2	41B-2	41C-2	41D-2	41E-2	41F-2
C2X	662-0	719-0	71D-0	423-2	717-0	425-2	426-2	427-2	48A-0	429-2	48B-0	42B-2	42C-2	42D-2	42E-2	42F-2
C3X	663-0	431-2	432-2	433-2	434-2	435-2	436-2	437-2	438-2	439-2	43A-2	43B-2	43C-2	43D-2	43E-2	43F-2
C4X	664-0	571-0	572-0	573-0	574-0	575-0	576-0	577-0	757-0	449-2	44A-2	44B-2	44C-2	44D-2	44E-2	44F-2
C5X	665-0	591-0	592-0	593-0	594-0	595-0	596-0	597-0	458-2	459-2	45A-2	45B-2	45C-2	45D-2	45E-2	45F-2
C6X	666-0	461-2	462-2	463-2	464-2	465-2	466-2	467-2	468-2	469-2	46A-2	46B-2	46C-2	46D-2	46E-2	46F-2
C7X	667-0	471-2	472-2	473-2	474-2	475-2	476-2	477-2	478-2	479-2	47A-2	47B-2	47C-2	47D-2	47E-2	47F-2
C8X	668-0	71B-0	71E-0	483-2	707-0	485-2	486-2	487-2	48C-0	489-2	48D-0	48B-2	48C-2	48D-2	48E-2	48F-2
C9X	669-0	491-2	492-2	493-2	494-2	495-2	496-2	497-2	498-2	499-2	49A-2	49B-2	49C-2	49D-2	49E-2	49F-2
CAX	66A-0	4A1-2	71F-0	4A3-2	4A4-2	4A5-2	4A6-2	4A7-2	48E-0	4A9-2	48F-0	4AB-2	4AC-2	4AD-2	4AE-2	4AF-2
CBX	66B-0	4B1-2	4B2-2	4B3-2	4B4-2	4B5-2	4B6-2	4B7-2	489-2	4B9-2	4BA-2	4BB-2	4BC-2	4BD-2	4BE-2	4BF-2
CCX	66C-0	4C1-2	4C2-2	4C3-2	4C4-2	4C5-2	4C6-2	4C7-2	4C8-2	4C9-2	4CA-2	4CB-2	4CC-2	4CD-2	4CE-2	4CF-2
CDX	66D-0	4D1-2	4D2-2	4D3-2	4D4-2	4D5-2	4D6-2	4D7-2	4D8-2	4D9-2	4DA-2	4DB-2	4DC-2	4DD-2	4DE-2	4DF-2
CEX	66E-0	4E1-2	4E2-2	4E3-2	4E4-2	4E5-2	4E6-2	4E7-2	4E8-2	4E9-2	4EA-2	4EB-2	4EC-2	4ED-2	4EE-2	4EF-2
CFX	66F-0	4F1-2	4F2-2	4F3-2	4F4-2	4F5-2	4F6-2	4F7-2	4F8-2	4F9-2	4FA-2	4FB-2	4FC-2	4FD-2	4FE-2	4FF-2
D0X	59D-0	519-0	51A-0	51B-0	51C-0	51D-0	51E-0	51F-0	538-0	509-2	589-0	50B-2	50C-2	50D-2	50E-2	50F-2
D1X	691-0	549-0	54A-0	54B-0	54C-0	54D-0	54E-0	54F-0	518-2	519-2	51A-2	51B-2	51C-2	51D-2	51E-2	51F-2
D2X	692-0	521-2	74D-0	523-2	524-2	525-2	526-2	527-2	53A-0	529-2	58B-0	52B-2	52C-2	52D-2	52E-2	52F-2
D3X	693-0	531-2	532-2	533-2	534-2	535-2	536-2	537-2	538-2	539-2	53A-2	53B-2	53C-2	53D-2	53E-2	53F-2
D4X	694-0	619-0	61A-0	61B-0	61C-0	61D-0	61E-0	61F-0	548-2	549-2	54A-2	54B-2	54C-2	54D-2	54E-2	54F-2
D5X	695-0	649-0	64A-0	64B-0	64C-0	64D-0	64E-0	64F-0	558-2	559-2	55A-2	55B-2	55C-2	55D-2	55E-2	55F-2
D6X	696-0	561-2	562-2	563-2	564-2	565-2	566-2	567-2	568-2	569-2	56A-2	56B-2	56C-2	56D-2	56E-2	56F-2
D7X	697-0	571-2	572-2	573-2	574-2	575-2	576-2	577-2	578-2	579-2	57A-2	57B-2	57C-2	57D-2	57E-2	57F-2
D8X	698-0	581-2	74E-0	583-2	584-2	585-2	586-2	587-2	588-2	589-2	58A-2	58B-2	58C-2	58D-2	58E-2	58F-2
D9X	699-0	591-2	592-2	593-2	594-2	595-2	596-2	597-2	598-2	599-2	59A-2	59B-2	59C-2	59D-2	59E-2	59F-2
DAX	69A-0	5A1-2	74F-0	5A3-2	5A4-2	5A5-2	5A6-2	5A7-2	59E-0	5A9-2	58F-0	5AB-2	5AC-2	5AD-2	5AE-2	5AF-2
DBX	69B-0	5B1-2	5B2-2	5B3-2	5B4-2	5B5-2	5B6-2	5B7-2	598-2	599-2	59A-2	59B-2	59C-2	59D-2	59E-2	59F-2
DCX	69C-0	5C1-2	5C2-2	5C3-2	5C4-2	5C5-2	5C6-2	5C7-2	598-2	599-2	59A-2	59B-2	59C-2	59D-2	59E-2	59F-2
DDX	69D-0	5D1-2	5D2-2	5D3-2	5D4-2	5D5-2	5D6-2	5D7-2	598-2	599-2	59A-2	59B-2	59C-2	59D-2	59E-2	59F-2
DEX	69E-0	5E1-2	5E2-2	5E3-2	5E4-2	5E5-2	5E6-2	5E7-2	598-2	599-2	59A-2	59B-2	59C-2	59D-2	59E-2	59F-2
DFX	69F-0	5F1-2	5F2-2	5F3-2	5F4-2	5F5-2	5F6-2	5F7-2	598-2	599-2	59A-2	59B-2	59C-2	59D-2	59E-2	59F-2
E0X	59E-0	78C-0	789-0	803-2	568-0	569-0	606-2	607-2	608-0	609-2	689-0	60B-2	60C-2	60D-2	60E-2	60F-2
E1X	761-0	786-0	612-2	613-2	56A-0	56B-0	616-2	617-2	618-2	619-2	61A-2	61B-2	61C-2	61D-2	61E-2	61F-2
E2X	762-0	621-2	78B-0	623-2	624-2	625-2	626-2	627-2	68A-0	629-2	68B-0	62B-2	62C-2	62D-2	62E-2	62F-2
E3X	763-0	631-2	632-2	633-2	634-2	635-2	636-2	637-2	638-2	639-2	63A-2	63B-2	63C-2	63D-2	63E-2	63F-2
E4X	764-0	785-0	642-2	643-2	56C-0	56D-0	646-2	647-2	648-2	649-2	64A-2	64B-2	64C-2	64D-2	64E-2	64F-2
E5X	765-0	787-0	652-2	653-2	56E-0	56F-0	656-2	657-2	658-2	659-2	65A-2	65B-2	65C-2	65D-2	65E-2	65F-2
E6X	766-0	661-2	662-2	663-2	664-2	665-2	666-2	667-2	668-2	669-2	66A-2	66B-2	66C-2	66D-2	66E-2	66F-2
E7X	767-0	671-2	672-2	673-2	674-2	675-2	676-2	677-2	678-2	679-2	67A-2	67B-2	67C-2	67D-2	67E-2	67F-2
E8X	768-0	681-2	78D-0	683-2	684-2	685-2	686-2	687-2	68C-0	689-2	68D-0	68B-2	68C-2	68D-2	68E-2	68F-2
E9X	769-0	691-2	692-2	693-2	694-2	695-2	696-2	697-2	698-2	699-2	69A-2	69B-2	69C-2	69D-2	69E-2	69F-2
EAX	76A-0	6A1-2	78F-0	6A3-2	6A4-2	6A5-2	6A6-2	6A7-2	69E-0	6A9-2	68F-0	6AB-2	6AC-2	6AD-2	6AE-2	6AF-2
EBX	76B-0	6B1-2	6B2-2	6B3-2	6B4-2	6B5-2	6B6-2	6B7-2	698-2	699-2	69A-2	69B-2	69C-2	69D-2	69E-2	69F-2
ECX	76C-0	6C1-2	6C2-2	6C3-2	6C4-2	6C5-2	6C6-2	6C7-2	6C8-2	6C9-2	6CA-2	6CB-2	6CC-2	6CD-2	6CE-2	6CF-2
EDX	76D-0	6D1-2	6D2-2	6D3-2	6D4-2	6D5-2	6D6-2	6D7-2	6D8-2	6D9-2	6DA-2	6DB-2	6DC-2	6DD-2	6DE-2	6DF-2
EEX	76E-0	6E1-2	6E2-2	6E3-2	6E4-2	6E5-2	6E6-2	6E7-2	6E8-2	6E9-2	6EA-2	6EB-2	6EC-2	6ED-2	6EE-2	6EF-2
EFX	76F-0	6F1-2	6F2-2	6F3-2	6F4-2	6F5-2	6F6-2	6F7-2	6F8-2	6F9-2	6FA-2	6FB-2	6FC-2	6FD-2	6FE-2	6FF-2

12 MAR 2003

-52-

Table 9 (Part 6 of 6)

State Diagram of 11-bit code word mapping for 24/25 (0,7/7) code																
	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
FOX	59F-0	7AC-0	7A9-0	703-2	578-0	579-0	705-2	707-2	788-0	789-2	789-0	708-2	70C-2	70D-2	70E-2	70F-2
F1X	791-0	7A6-0	712-2	713-2	57A-0	57B-0	715-2	717-2	718-2	719-2	71A-2	71B-2	71C-2	71D-2	71E-2	71F-2
F2X	792-0	721-2	7AB-0	723-2	724-2	725-2	726-2	727-2	78A-0	729-2	78B-0	72B-2	72C-2	72D-2	72E-2	72F-2
F3X	793-0	731-2	732-2	733-2	734-2	735-2	736-2	737-2	738-2	739-2	73A-2	73B-2	73C-2	73D-2	73E-2	73F-2
F4X	794-0	7A5-0	742-2	743-2	57C-0	57D-0	746-2	747-2	748-2	749-2	74A-2	74B-2	74C-2	74D-2	74E-2	74F-2
F5X	795-0	7A7-0	752-2	753-2	57E-0	57F-0	756-2	757-2	758-2	759-2	75A-2	75B-2	75C-2	75D-2	75E-2	75F-2
F6X	796-0	761-2	762-2	763-2	764-2	765-2	766-2	767-2	768-2	769-2	76A-2	76B-2	76C-2	76D-2	76E-2	76F-2
F7X	797-0	771-2	772-2	773-2	774-2	775-2	776-2	777-2	778-2	779-2	77A-2	77B-2	77C-2	77D-2	77E-2	77F-2
F8X	798-0	781-2	7AD-0	783-2	784-2	785-2	786-2	787-2	78C-0	789-2	78D-0	78B-2	78C-2	78D-2	78E-2	78F-2
F9X	799-0	791-2	792-2	793-2	794-2	795-2	796-2	797-2	798-2	799-2	79A-2	79B-2	79C-2	79D-2	79E-2	79F-2
FAX	79A-0	7A1-2	7AF-0	7A3-2	7AA-2	7A5-2	7A6-2	7A7-2	78E-0	7A9-2	7BF-0	7AB-2	7AC-2	7AD-2	7AE-2	7AF-2
FBX	79B-0	7B1-2	7B2-2	7B3-2	7B4-2	7B5-2	7B6-2	7B7-2	788-2	789-2	7BA-2	7BB-2	7BC-2	7BD-2	7BE-2	7BF-2
FCX	79C-0	7C1-2	7C2-2	7C3-2	7C4-2	7C5-2	7C6-2	7C7-2	7C8-2	7C9-2	7CA-2	7CB-2	7CC-2	7CD-2	7CE-2	7CF-2
FDX	79D-0	7D1-2	7D2-2	7D3-2	7D4-2	7D5-2	7D6-2	7D7-2	7D8-2	7D9-2	7DA-2	7DB-2	7DC-2	7DD-2	7DE-2	7DF-2
FEX	79E-0	7E1-2	7E2-2	7E3-2	7E4-2	7E5-2	7E6-2	7E7-2	7E8-2	7E9-2	7EA-2	7EB-2	7EC-2	7ED-2	7EE-2	7EF-2
FFX	79F-0	7F1-2	7F2-2	7F3-2	7F4-2	7F5-2	7F6-2	7F7-2	7F8-2	7F9-2	7FA-2	7FB-2	7FC-2	7FD-2	7FE-2	7FF-2

12 MAR 2003

-53-

Table 10 on the following pages is an encoding table for the 14-bit encoder when the state S0 is active. The arrangement of Table 10 is similar to
5 Table 9, however, the state is "0" for all of Table 10 as indicated at the top of Table 10.

-54-

Table 10 (Part 1 of 6)

State 0 of 14-bit code word for 24/25 (0,7/7) code																
	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
00X	0570	04E1	0721	0263	04F0	04F1	0266	0267	0730	0269	0731	026B	026C	026D	026E	026F
01X	035E	C1E3	0272	0273	04F2	04F3	0276	0277	0278	0279	027A	027B	027C	027D	027E	027F
02X	0571	030C	0723	0493	030C	0495	0496	1027	0732	0499	0733	102B	049C	102D	102E	102F
03X	035C	030D	068C	1033	030D	1035	1036	1037	033C	1039	103A	103B	103C	103D	103E	103F
04X	0572	04E5	02E2	02E3	04F4	04F5	02E6	02E7	02E8	02E9	02EA	02EB	02EC	02ED	02EE	02EF
05X	035A	04E7	02F2	02F3	04F6	04F7	02F6	02F7	02F8	02F9	02FA	02FB	02FC	02FD	02FE	02FF
06X	0573	0308	0689	1063	0308	1065	1066	1067	0319	1069	106A	106B	106C	106D	106E	106F
07X	0358	1071	1072	1073	1074	1075	1076	1077	1078	1079	107A	107B	107C	107D	107E	107F
08X	0574	0306	0725	04A3	0306	04A5	04A6	1087	0734	04A9	0735	108B	04AC	108D	108E	108F
09X	0356	0307	0686	1093	0307	1095	1096	1097	033A	1099	109A	109B	109C	109D	109E	109F
0AX	0575	0304	0727	10A3	0304	10A5	10A6	10A7	0736	10A9	0737	10AB	10AC	10AD	10AE	10AF
0BX	0354	1081	1082	1083	1084	1085	1086	1087	1088	1089	108A	108B	108C	108D	108E	108F
0CX	0576	0302	0683	10C3	0302	10C5	10C6	10C7	0313	10C9	10CA	10CB	10CC	10CD	10CE	10CF
0DX	0352	1001	1002	1003	1004	1005	1006	1007	1008	1009	100A	100B	100C	100D	100E	100F
0EX	0577	10E1	10E2	10E3	10E4	10E5	10E6	10E7	10E8	10E9	10EA	10EB	10EC	10ED	10EE	10EF
0FX	10F0	10F1	10F2	10F3	10F4	10F5	10F6	10F7	10F8	10F9	10FA	10FB	10FC	10FD	10FE	10FF
10X	0578	04E9	0362	0363	04F8	04F9	0366	0367	0368	0369	036A	036B	036C	036D	036E	036F
11X	035F	04EB	0372	0373	04FA	04FB	0376	0377	0378	0379	037A	037B	037C	037D	037E	037F
12X	0579	038C	069D	1123	03AC	1125	1126	1127	031D	1129	112A	112B	112C	112D	112E	112F
13X	035D	1131	1132	1133	1134	1135	1136	1137	1138	1139	113A	113B	113C	113D	113E	113F
14X	057A	04ED	03E2	03E3	04FC	04FD	03E6	03E7	03E8	03E9	03EA	03EB	03EC	03ED	03EE	03EF
15X	035B	04EF	03F2	03F3	04FE	04FF	03F6	03F7	03F8	03F9	03FA	03FB	03FC	03FD	03FE	03FF
16X	057B	1161	1162	1163	1164	1165	1166	1167	1168	1169	116A	116B	116C	116D	116E	116F
17X	1170	1171	1172	1173	1174	1175	1176	1177	1178	1179	117A	117B	117C	117D	117E	117F
18X	057C	0386	0697	1183	03A6	1185	1186	1187	0317	1189	118A	118B	118C	118D	118E	118F
19X	0357	1191	1192	1193	1194	1195	1196	1197	1198	1199	119A	119B	119C	119D	119E	119F
1AX	057D	11A1	11A2	11A3	11A4	11A5	11A6	11A7	11A8	11A9	11AA	11AB	11AC	11AD	11AE	11AF
1BX	1180	1181	1182	1183	1184	1185	1186	1187	1188	1189	118A	118B	118C	118D	118E	118F
1CX	057E	11C1	11C2	11C3	11C4	11C5	11C6	11C7	11C8	11C9	11CA	11CB	11CC	11CD	11CE	11CF
1DX	11D0	11D1	11D2	11D3	11D4	11D5	11D6	11D7	11D8	11D9	11DA	11DB	11DC	11DD	11DE	11DF
1EX	057F	11E1	11E2	11E3	11E4	11E5	11E6	11E7	11E8	11E9	11EA	11EB	11EC	11ED	11EE	11EF
1FX	11F0	11F1	11F2	11F3	11F4	11F5	11F6	11F7	11F8	11F9	11FA	11FB	11FC	11FD	11FE	11FF
20X	0580	039E	0729	0483	038E	0485	0486	1207	0738	0489	0739	120B	049C	120D	120E	120F
21X	034E	039F	069E	1213	038F	1215	1216	1217	032E	1219	121A	121B	121C	121D	121E	121F
22X	0581	039C	072B	1223	038C	1225	1226	1227	073A	1229	073B	122B	122C	122D	122E	122F
23X	034C	1231	1232	1233	1234	1235	1236	1237	1238	1239	123A	123B	123C	123D	123E	123F
24X	0582	039A	069B	1243	038A	1245	1246	1247	031A	1249	124A	124B	124C	124D	124E	124F
25X	034A	1251	1252	1253	1254	1255	1256	1257	1258	1259	125A	125B	125C	125D	125E	125F
26X	0583	1261	1262	1263	1264	1265	1266	1267	1268	1269	126A	126B	126C	126D	126E	126F
27X	1270	1271	1272	1273	1274	1275	1276	1277	1278	1279	127A	127B	127C	127D	127E	127F
28X	0584	0396	072D	1283	0386	1285	1286	1287	073C	1289	073D	128B	128C	128D	128E	128F
29X	0346	1291	1292	1293	1294	1295	1296	1297	1298	1299	129A	129B	129C	129D	129E	129F
2AX	0585	12A1	072F	12A3	12A4	12A5	12A6	12A7	073E	12A9	073F	12AB	12AC	12AD	12AE	12AF
2BX	1280	1281	1282	1283	1284	1285	1286	1287	1288	1289	128A	128B	128C	128D	128E	128F
2CX	0586	12C1	12C2	12C3	12C4	12C5	12C6	12C7	12C8	12C9	12CA	12CB	12CC	12CD	12CE	12CF
2DX	12D0	12D1	12D2	12D3	12D4	12D5	12D6	12D7	12D8	12D9	12DA	12DB	12DC	12DD	12DE	12DF
2EX	0587	12E1	12E2	12E3	12E4	12E5	12E6	12E7	12E8	12E9	12EA	12EB	12EC	12ED	12EE	12EF
2FX	12F0	12F1	12F2	12F3	12F4	12F5	12F6	12F7	12F8	12F9	12FA	12FB	12FC	12FD	12FE	12FF

12 MAR 2003

-55-

Table 10 (Part 2 of 6)

State 0 of 14-bit code word for 24/25 (0,7/7) code																
	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
30X	0588	038E	069F	1303	03AE	1305	1306	1307	030F	1309	130A	130B	130C	130D	130E	130F
31X	034F	1311	1312	1313	1314	1315	1316	1317	1318	1319	131A	131B	131C	131D	131E	131F
32X	0589	1321	1322	1323	1324	1325	1326	1327	1328	1329	132A	132B	132C	132D	132E	132F
33X	1330	1331	1332	1333	1334	1335	1336	1337	1338	1339	133A	133B	133C	133D	133E	133F
34X	058A	1341	1342	1343	1344	1345	1346	1347	1348	1349	134A	134B	134C	134D	134E	134F
35X	1350	1351	1352	1353	1354	1355	1356	1357	1358	1359	135A	135B	135C	135D	135E	135F
36X	058B	1361	1362	1363	1364	1365	1366	1367	1368	1369	136A	136B	136C	136D	136E	136F
37X	1370	1371	1372	1373	1374	1375	1376	1377	1378	1379	137A	137B	137C	137D	137E	137F
38X	058C	1381	1382	1383	1384	1385	1386	1387	1388	1389	138A	138B	138C	138D	138E	138F
39X	1390	1391	1392	1393	1394	1395	1396	1397	1398	1399	139A	139C	139C	139D	139E	139F
3AX	058D	13A1	13A2	13A3	13A4	13A5	13A6	13A7	13A8	13A9	13AA	13AB	13AC	13AD	13AE	13AF
3BX	13B0	13B1	13B2	13B3	13B4	13B5	13B6	13B7	13B8	13B9	13BA	13BB	13BC	13BD	13BE	13BF
3CX	058E	13C1	13C2	13C3	13C4	13C5	13C6	13C7	13C8	13C9	13CA	13CB	13CC	13CD	13CE	13CF
3DX	13D0	13D1	13D2	13D3	13D4	13D5	13D6	13D7	13D8	13D9	13DA	13DB	13DC	13DD	13DE	13DF
3EX	058F	13E1	13E2	13E3	13E4	13E5	13E6	13E7	13E8	13E9	13EA	13EB	13EC	13ED	13EE	13EF
3FX	13F0	13F1	13F2	13F3	13F4	13F5	13F6	13F7	13F8	13F9	13FA	13FB	13FC	13FD	13FE	13FF
40X	05D0	0741	0761	0563	0750	0751	0566	0567	0770	0569	0771	0568	056C	056D	056E	056F
41X	0724	0743	0532	0533	0752	0753	0536	0537	0538	0539	053A	053B	053C	053D	053E	053F
42X	05D1	0711	0763	1423	0715	1425	1426	1427	0772	1429	0773	142B	142C	142D	142E	142F
43X	0726	1431	1432	1433	1434	1435	1436	1437	1438	1439	143A	143B	143C	143D	143E	143F
44X	05D2	0745	05C2	05C3	0754	0755	05C6	05C7	05C8	05C9	05CA	05CB	05CC	05CD	05CE	05CF
45X	0728	0747	05E2	05E3	0756	0757	05E6	05E7	05E8	05E9	05EA	05EB	05EC	05ED	05EE	05EF
46X	05D3	1461	1462	1463	1464	1465	1466	1467	1468	1469	146A	146B	146C	146D	146E	146F
47X	1470	1471	1472	1473	1474	1475	1476	1477	1478	1479	147A	147B	147C	147D	147E	147F
48X	072A	0712	0765	1483	0716	1485	1486	1487	0774	1489	0775	148B	148C	148D	148E	148F
49X	072A	1491	1492	1493	1494	1495	1496	1497	1498	1499	149A	149B	149C	149D	149E	149F
4AX	05D5	14A1	0767	14A3	14A4	14A5	14A6	14A7	0776	14A9	0777	14AB	14AC	14AD	14AE	14AF
4BX	14B0	14B1	14B2	14B3	14B4	14B5	14B6	14B7	14B8	14B9	14BA	14BB	14BC	14BD	14BE	14BF
4CX	05D6	14C1	14C2	14C3	14C4	14C5	14C6	14C7	14C8	14C9	14CA	14CB	14CC	14CD	14CE	14CF
4DX	14D0	14D1	14D2	14D3	14D4	14D5	14D6	14D7	14D8	14D9	14DA	14DB	14DC	14DD	14DE	14DF
4EX	05D7	14E1	14E2	14E3	14E4	14E5	14E6	14E7	14E8	14E9	14EA	14EB	14EC	14ED	14EE	14EF
4FX	14F0	14F1	14F2	14F3	14F4	14F5	14F6	14F7	14F8	14F9	14FA	14FB	14FC	14FD	14FE	14FF
50X	05D8	0749	0562	0563	0758	0759	0566	0567	0568	0569	056A	056B	056C	056D	056E	056F
51X	074C	074B	0532	0533	075A	075B	0536	0537	0538	0539	053A	053B	053C	053D	053E	053F
52X	05D9	1521	1522	1523	1524	1525	1526	1527	1528	1529	152A	152B	152C	152D	152E	152F
53X	1530	1531	1532	1533	1534	1535	1536	1537	1538	1539	153A	153B	153C	153D	153E	153F
54X	05DA	074D	05C2	05C3	075C	075D	05C6	05C7	05C8	05C9	05CA	05CB	05CC	05CD	05CE	05CF
55X	0748	074F	05E2	05E3	075E	075F	05E6	05E7	05E8	05E9	05EA	05EB	05EC	05ED	05EE	05EF
56X	05D8	1561	1562	1563	1564	1565	1566	1567	1568	1569	156A	156B	156C	156D	156E	156F
57X	1570	1571	1572	1573	1574	1575	1576	1577	1578	1579	157A	157B	157C	157D	157E	157F
58X	05DC	1581	1582	1583	1584	1585	1586	1587	1588	1589	158A	158B	158C	158D	158E	158F
59X	1590	1591	1592	1593	1594	1595	1596	1597	1598	1599	159A	159B	159C	159D	159E	159F
5AX	05DD	15A1	15A2	15A3	15A4	15A5	15A6	15A7	15A8	15A9	15AA	15AB	15AC	15AD	15AE	15AF
5BX	15B0	15B1	15B2	15B3	15B4	15B5	15B6	15B7	15B8	15B9	15BA	15BB	15BC	15BD	15BE	15BF
5CX	05DE	15C1	15C2	15C3	15C4	15C5	15C6	15C7	15C8	15C9	15CA	15CB	15CC	15CD	15CE	15CF
5DX	15D0	15D1	15D2	15D3	15D4	15D5	15D6	15D7	15D8	15D9	15DA	15DB	15DC	15DD	15DE	15DF
5EX	05DF	15E1	15E2	15E3	15E4	15E5	15E6	15E7	15E8	15E9	15EA	15EB	15EC	15ED	15EE	15EF
5FX	15F0	15F1	15F2	15F3	15F4	15F5	15F6	15F7	15F8	15F9	15FA	15FB	15FC	15FD	15FE	15FF

Table 10 (Part 3 of 6)

State 0 of 14-bit code word for 24/25 (0,7/7) code																
	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
60X	05F0	0713	0769	1603	0717	1605	1606	1607	0778	1609	0779	1608	160C	160D	160E	160F
61X	070C	1611	1612	1613	1614	1615	1616	1617	1618	1619	161A	161B	161C	161D	161E	161F
62X	05F1	1621	0768	1623	1624	1625	1626	1627	077A	1629	077B	1628	162C	162D	162E	162F
63X	1630	1631	1632	1633	1634	1635	1636	1637	1638	1639	163A	163B	163C	163D	163E	163F
64X	05F2	1641	1642	1643	1644	1645	1646	1647	1648	1649	164A	164B	164C	164D	164E	164F
65X	1650	1651	1652	1653	1654	1655	1656	1657	1658	1659	165A	165B	165C	165D	165E	165F
66X	05F3	1661	1662	1663	1664	1665	1666	1667	1668	1669	166A	166B	166C	166D	166E	166F
67X	1670	1671	1672	1673	1674	1675	1676	1677	1678	1679	167A	167B	167C	167D	167E	167F
68X	05F4	1681	076D	1683	1684	1685	1686	1687	077C	1689	077D	1688	168C	168D	168E	168F
69X	1690	1691	1692	1693	1694	1695	1696	1697	1698	1699	169A	169B	169C	169D	169E	169F
6AX	05F5	16A1	076F	16A3	16A4	16A5	16A6	16A7	077E	16A9	077F	16AB	16AC	16AD	16AE	16AF
6BX	16B0	16B1	16B2	16B3	16B4	16B5	16B6	16B7	16B8	16B9	16BA	16BB	16BC	16BD	16BE	16BF
6CX	05F6	16C1	16C2	16C3	16C4	16C5	16C6	16C7	16C8	16C9	16CA	16CB	16CC	16CD	16CE	16CF
6DX	16D0	16D1	16D2	16D3	16D4	16D5	16D6	16D7	16D8	16D9	16DA	16DB	16DC	16DD	16DE	16DF
6EX	05F7	16E1	16E2	16E3	16E4	16E5	16E6	16E7	16E8	16E9	16EA	16EB	16EC	16ED	16EE	16EF
6FX	16F0	16F1	16F2	16F3	16F4	16F5	16F6	16F7	16F8	16F9	16FA	16FB	16FC	16FD	16FE	16FF
70X	05F8	1701	1702	1703	1704	1705	1706	1707	1708	1709	170A	170B	170C	170D	170E	170F
71X	1710	1711	1712	1713	1714	1715	1716	1717	1718	1719	171A	171B	171C	171D	171E	171F
72X	05F9	1721	1722	1723	1724	1725	1726	1727	1728	1729	172A	172B	172C	172D	172E	172F
73X	1730	1731	1732	1733	1734	1735	1736	1737	1738	1739	173A	173B	173C	173D	173E	173F
74X	05FA	1741	1742	1743	1744	1745	1746	1747	1748	1749	174A	174B	174C	174D	174E	174F
75X	1750	1751	1752	1753	1754	1755	1756	1757	1758	1759	175A	175B	175C	175D	175E	175F
76X	05FB	1761	1762	1763	1764	1765	1766	1767	1768	1769	176A	176B	176C	176D	176E	176F
77X	1770	1771	1772	1773	1774	1775	1776	1777	1778	1779	177A	177B	177C	177D	177E	177F
78X	05FC	1781	1782	1783	1784	1785	1786	1787	1788	1789	178A	178B	178C	178D	178E	178F
79X	1790	1791	1792	1793	1794	1795	1796	1797	1798	1799	179A	179B	179C	179D	179E	179F
7AX	05FD	17A1	17A2	17A3	17A4	17A5	17A6	17A7	17A8	17A9	17AA	17AB	17AC	17AD	17AE	17AF
7BX	17B0	17B1	17B2	17B3	17B4	17B5	17B6	17B7	17B8	17B9	17BA	17BB	17BC	17BD	17BE	17BF
7CX	05FE	17C1	17C2	17C3	17C4	17C5	17C6	17C7	17C8	17C9	17CA	17CB	17CC	17CD	17CE	17CF
7DX	17D0	17D1	17D2	17D3	17D4	17D5	17D6	17D7	17D8	17D9	17DA	17DB	17DC	17DD	17DE	17DF
7EX	05FF	17E1	17E2	17E3	17E4	17E5	17E6	17E7	17E8	17E9	17EA	17EB	17EC	17ED	17EE	17EF
7FX	17F0	17F1	17F2	17F3	17F4	17F5	17F6	17F7	17F8	17F9	17FA	17FB	17FC	17FD	17FE	17FF
80X	0670	0781	07A1	0613	0790	0791	0616	0617	07B0	0619	07B1	1808	061C	180D	180E	180F
81X	07A4	0783	0764	1813	0792	0793	1816	1817	07B6	1819	181A	181B	181C	181D	181E	181F
82X	0671	0719	07A3	1823	071D	1825	1826	1827	07B2	1829	07B3	182B	182C	182D	182E	182F
83X	07A6	1831	1832	1833	1834	1835	1836	1837	1838	1839	183A	183B	183C	183D	183E	183F
84X	0672	0785	0768	1843	0794	0795	1846	1847	07B4	1849	184A	184B	184C	184D	184E	184F
85X	07A8	0787	1852	1853	0796	0797	1856	1857	1858	1859	185A	185B	185C	185D	185E	185F
86X	0673	1861	1862	1863	1864	1865	1866	1867	1868	1869	186A	186B	186C	186D	186E	186F
87X	1870	1871	1872	1873	1874	1875	1876	1877	1878	1879	187A	187B	187C	187D	187E	187F
88X	0674	071A	07A5	1883	071E	1885	1886	1887	07B4	1889	07B5	188B	188C	188D	188E	188F
89X	07AA	1891	1892	1893	1894	1895	1896	1897	1898	1899	189A	189B	189C	189D	189E	189F
8AX	0675	18A1	07A7	18A3	18A4	18A5	18A6	18A7	07B6	18A9	07B7	18AB	18AC	18AD	18AE	18AF
8BX	18B0	18B1	18B2	18B3	18B4	18B5	18B6	18B7	18B8	18B9	18BA	18BB	18BC	18BD	18BE	18BF
8CX	0676	18C1	18C2	18C3	18C4	18C5	18C6	18C7	18C8	18C9	18CA	18CB	18CC	18CD	18CE	18CF
8DX	18D0	18D1	18D2	18D3	18D4	18D5	18D6	18D7	18D8	18D9	18DA	18DB	18DC	18DD	18DE	18DF
8EX	0677	18E1	18E2	18E3	18E4	18E5	18E6	18E7	18E8	18E9	18EA	18EB	18EC	18ED	18EE	18EF
8FX	18F0	18F1	18F2	18F3	18F4	18F5	18F6	18F7	18F8	18F9	18FA	18FB	18FC	18FD	18FE	18FF

Table 10 (Part 4 of 6)

State 0 of 14-bit code word for 24/25 (0,7/7) code																
	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
90X	0678	0789	078C	1903	0798	0799	1906	1907	076E	1909	190A	190B	190C	190D	190E	190F
91X	07CC	078B	1912	1913	079A	079B	1916	1917	1918	1919	191A	191B	191C	191D	191E	191F
92X	0679	1921	1922	1923	1924	1925	1926	1927	1928	1929	192A	192B	192C	192D	192E	192F
93X	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939	193A	193B	193C	193D	193E	193F
94X	067A	078D	1942	1943	079C	079D	1946	1947	1948	1949	194A	194B	194C	194D	194E	194F
95X	07C8	078F	1952	1953	079E	079F	1956	1957	1958	1959	195A	195B	195C	195D	195E	195F
96X	067B	1961	1962	1963	1964	1965	1966	1967	1968	1969	196A	196B	196C	196D	196E	196F
97X	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	197A	197B	197C	197D	197E	197F
98X	067C	1981	1982	1983	1984	1985	1986	1987	1988	1989	198A	198B	198C	198D	198E	198F
99X	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	199A	199B	199C	199D	199E	199F
9AX	067D	19A1	19A2	19A3	19A4	19A5	19A6	19A7	19A8	19A9	19AA	19AB	19AC	19AD	19AE	19AF
9BX	19B0	19B1	19B2	19B3	19B4	19B5	19B6	19B7	19B8	19B9	19BA	19BB	19BC	19BD	19BE	19BF
9CX	067E	19C1	19C2	19C3	19C4	19C5	19C6	19C7	19C8	19C9	19CA	19CB	19CC	19CD	19CE	19CF
9DX	19D0	19D1	19D2	19D3	19D4	19D5	19D6	19D7	19D8	19D9	19DA	19DB	19DC	19DD	19DE	19DF
9EX	067F	19E1	19E2	19E3	19E4	19E5	19E6	19E7	19E8	19E9	19EA	19EB	19EC	19ED	19EE	19EF
9FX	19F0	19F1	19F2	19F3	19F4	19F5	19F6	19F7	19F8	19F9	19FA	19FB	19FC	19FD	19FE	19FF
A0X	0680	071B	0719	1A03	071F	1A05	1A06	1A07	07B8	1A09	07B9	1A0B	1A0C	1A0D	1A0E	1A0F
A1X	078C	1A11	1A12	1A13	1A14	1A15	1A16	1A17	1A18	1A19	1A1A	1A1B	1A1C	1A1D	1A1E	1A1F
A2X	0681	1A21	071B	1A23	1A24	1A25	1A26	1A27	07BA	1A29	07BB	1A2B	1A2C	1A2D	1A2E	1A2F
A3X	1A30	1A31	1A32	1A33	1A34	1A35	1A36	1A37	1A38	1A39	1A3A	1A3B	1A3C	1A3D	1A3E	1A3F
A4X	0682	1A41	1A42	1A43	1A44	1A45	1A46	1A47	1A48	1A49	1A4A	1A4B	1A4C	1A4D	1A4E	1A4F
A5X	1A50	1A51	1A52	1A53	1A54	1A55	1A56	1A57	1A58	1A59	1A5A	1A5B	1A5C	1A5D	1A5E	1A5F
A6X	0683	1A61	1A62	1A63	1A64	1A65	1A66	1A67	1A68	1A69	1A6A	1A6B	1A6C	1A6D	1A6E	1A6F
A7X	1A70	1A71	1A72	1A73	1A74	1A75	1A76	1A77	1A78	1A79	1A7A	1A7B	1A7C	1A7D	1A7E	1A7F
A8X	0684	1A81	071D	1A83	1A84	1A85	1A86	1A87	07BC	1A89	07BD	1A8B	1A8C	1A8D	1A8E	1A8F
A9X	1A90	1A91	1A92	1A93	1A94	1A95	1A96	1A97	1A98	1A99	1A9A	1A9B	1A9C	1A9D	1A9E	1A9F
AAX	0685	1AA1	071F	1AA3	1AA4	1AA5	1AA6	1AA7	07BE	1AA9	07BF	1AAB	1AAC	1AAD	1AAE	1AAF
ABX	1AB0	1AB1	1AB2	1AB3	1AB4	1AB5	1AB6	1AB7	1AB8	1AB9	1ABA	1ABB	1ABC	1ABD	1ABE	1ABF
ACX	0686	1AC1	1AC2	1AC3	1AC4	1AC5	1AC6	1AC7	1AC8	1AC9	1ACA	1ACB	1ACC	1ACD	1ACE	1ACF
ADX	1AD0	1AD1	1AD2	1AD3	1AD4	1AD5	1AD6	1AD7	1AD8	1AD9	1ADA	1ADB	1ADC	1ADD	1ADE	1ADF
AEX	0687	1AE1	1AE2	1AE3	1AE4	1AE5	1AE6	1AE7	1AE8	1AE9	1AEA	1AEB	1AEC	1AED	1AEE	1AEF
AFX	1AF0	1AF1	1AF2	1AF3	1AF4	1AF5	1AF6	1AF7	1AF8	1AF9	1AFA	1AFB	1AFC	1AFD	1AFE	1AFF
B0X	0688	1B01	1B02	1B03	1B04	1B05	1B06	1B07	1B08	1B09	1B0A	1B0B	1B0C	1B0D	1B0E	1B0F
B1X	1B10	1B11	1B12	1B13	1B14	1B15	1B16	1B17	1B18	1B19	1B1A	1B1B	1B1C	1B1D	1B1E	1B1F
B2X	0689	1B21	1B22	1B23	1B24	1B25	1B26	1B27	1B28	1B29	1B2A	1B2B	1B2C	1B2D	1B2E	1B2F
B3X	1B30	1B31	1B32	1B33	1B34	1B35	1B36	1B37	1B38	1B39	1B3A	1B3B	1B3C	1B3D	1B3E	1B3F
B4X	068A	1B41	1B42	1B43	1B44	1B45	1B46	1B47	1B48	1B49	1B4A	1B4B	1B4C	1B4D	1B4E	1B4F
B5X	1B50	1B51	1B52	1B53	1B54	1B55	1B56	1B57	1B58	1B59	1B5A	1B5B	1B5C	1B5D	1B5E	1B5F
B6X	068B	1B61	1B62	1B63	1B64	1B65	1B66	1B67	1B68	1B69	1B6A	1B6B	1B6C	1B6D	1B6E	1B6F
B7X	1B70	1B71	1B72	1B73	1B74	1B75	1B76	1B77	1B78	1B79	1B7A	1B7B	1B7C	1B7D	1B7E	1B7F
B8X	068C	1B81	1B82	1B83	1B84	1B85	1B86	1B87	1B88	1B89	1B8A	1B8B	1B8C	1B8D	1B8E	1B8F
B9X	1B90	1B91	1B92	1B93	1B94	1B95	1B96	1B97	1B98	1B99	1B9A	1B9B	1B9C	1B9D	1B9E	1B9F
BAX	068D	1BA1	1BA2	1BA3	1BA4	1BA5	1BA6	1BA7	1BA8	1BA9	1BAA	1BAB	1BAC	1BAD	1BAE	1BAF
BBX	1BB0	1BB1	1BB2	1BB3	1BB4	1BB5	1BB6	1BB7	1BB8	1BB9	1BBA	1BBB	1BBC	1BBD	1BBE	1BBF
BCX	068E	1BC1	1BC2	1BC3	1BC4	1BC5	1BC6	1BC7	1BC8	1BC9	1BCA	1BCB	1BCC	1BCD	1BCE	1BCF
BDX	1BD0	1BD1	1BD2	1BD3	1BD4	1BD5	1BD6	1BD7	1BD8	1BD9	1BDA	1BDB	1BDC	1BDD	1BDE	1BDF
BEX	068F	1BE1	1BE2	1BE3	1BE4	1BE5	1BE6	1BE7	1BE8	1BE9	1BEA	1BEB	1BEC	1BED	1BEE	1BEF
BFX	1BF0	1BF1	1BF2	1BF3	1BF4	1BF5	1BF6	1BF7	1BF8	1BF9	1BFA	1BFB	1BFC	1BFD	1BFE	1BFF

Table 10 (Part 5 of 6)

State 0 of 14-bit code word for 24/25 (0,7/7) code																
	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
C0X	06D0	07C1	07E1	07E2	07C2	07D1	1C06	1C07	07F0	1C09	07F1	1C08	1C0C	1C0D	1C0E	1C0F
C1X	07E8	07C3	1C12	1C13	07D2	07D3	1C16	1C17	1C18	1C19	1C1A	1C1B	1C1C	1C1D	1C1E	1C1F
C2X	06D1	1C21	07E3	1C23	1C24	1C25	1C26	1C27	07F2	1C29	07F3	1C28	1C2C	1C2D	1C2E	1C2F
C3X	1C30	1C31	1C32	1C33	1C34	1C35	1C36	1C37	1C38	1C39	1C3A	1C3B	1C3C	1C3D	1C3E	1C3F
C4X	06D2	07C5	1C42	1C43	07D4	07D5	1C46	1C47	1C48	1C49	1C4A	1C4B	1C4C	1C4D	1C4E	1C4F
C5X	07EA	07C7	1C52	1C53	07D6	07D7	1C56	1C57	1C58	1C59	1C5A	1C5B	1C5C	1C5D	1C5E	1C5F
C6X	06D3	1C61	1C62	1C63	1C64	1C65	1C66	1C67	1C68	1C69	1C6A	1C6B	1C6C	1C6D	1C6E	1C6F
C7X	1C70	1C71	1C72	1C73	1C74	1C75	1C76	1C77	1C78	1C79	1C7A	1C7B	1C7C	1C7D	1C7E	1C7F
C8X	06D4	1C81	07E5	1C83	1C84	1C85	1C86	1C87	07F4	1C89	07F5	1C88	1C8C	1C8D	1C8E	1C8F
C9X	1C90	1C91	1C92	1C93	1C94	1C95	1C96	1C97	1C98	1C99	1C9A	1C9B	1C9C	1C9D	1C9E	1C9F
CAx	06D5	1CA1	07E7	1CA3	1CA4	1CA5	1CA6	1CA7	07F6	1CA9	07F7	1CAB	1CAC	1CAD	1CAE	1CAF
CBX	1CB0	1CB1	1CB2	1CB3	1CB4	1CB5	1CB6	1CB7	1CB8	1CB9	1CBA	1CBB	1CBC	1CBD	1CBE	1CBF
CCX	06D6	1CC1	1CC2	1CC3	1CC4	1CC5	1CC6	1CC7	1CC8	1CC9	1CCA	1CCB	1CCC	1CCD	1CCE	1CCF
CDX	1CD0	1CD1	1CD2	1CD3	1CD4	1CD5	1CD6	1CD7	1CD8	1CD9	1CDA	1CDB	1CDC	1CDD	1CDE	1CDF
CEX	06D7	1CE1	1CE2	1CE3	1CE4	1CE5	1CE6	1CE7	1CE8	1CE9	1CEA	1CEB	1CEC	1CED	1CEE	1CEF
CFX	1CF0	1CF1	1CF2	1CF3	1CF4	1CF5	1CF6	1CF7	1CF8	1CF9	1CFA	1CFB	1CFC	1CFD	1CFE	1CFF
D0X	06D8	07C9	1D02	1D03	07D8	07D9	1D06	1D07	1D08	1D09	1D0A	1D0B	1D0C	1D0D	1D0E	1D0F
D1X	07EC	07C8	1D12	1D13	07DA	07DB	1D16	1D17	1D18	1D19	1D1A	1D1B	1D1C	1D1D	1D1E	1D1F
D2X	06D9	1D21	1D22	1D23	1D24	1D25	1D26	1D27	1D28	1D29	1D2A	1D2B	1D2C	1D2D	1D2E	1D2F
D3X	1D30	1D31	1D32	1D33	1D34	1D35	1D36	1D37	1D38	1D39	1D3A	1D3B	1D3C	1D3D	1D3E	1D3F
D4X	06DA	07CD	1D42	1D43	07DC	07DD	1D46	1D47	1D48	1D49	1D4A	1D4B	1D4C	1D4D	1D4E	1D4F
D5X	07EE	07CF	1D52	1D53	07DE	07DF	1D56	1D57	1D58	1D59	1D5A	1D5B	1D5C	1D5D	1D5E	1D5F
D6X	06DB	1D61	1D62	1D63	1D64	1D65	1D66	1D67	1D68	1D69	1D6A	1D6B	1D6C	1D6D	1D6E	1D6F
D7X	1D70	1D71	1D72	1D73	1D74	1D75	1D76	1D77	1D78	1D79	1D7A	1D7B	1D7C	1D7D	1D7E	1D7F
D8X	06DC	1D81	1D82	1D83	1D84	1D85	1D86	1D87	1D88	1D89	1D8A	1D8B	1D8C	1D8D	1D8E	1D8F
D9X	1D90	1D91	1D92	1D93	1D94	1D95	1D96	1D97	1D98	1D99	1D9A	1D9B	1D9C	1D9D	1D9E	1D9F
DAx	06DD	1DA1	1DA2	1DA3	1DA4	1DA5	1DA6	1DA7	1DA8	1DA9	1DAA	1DAB	1DAC	1DAD	1DAE	1DAF
DBX	1DB0	1DB1	1DB2	1DB3	1DB4	1DB5	1DB6	1DB7	1DB8	1DB9	1DBA	1DBB	1DBC	1DBD	1DBE	1DBF
DCX	06DE	1DC1	1DC2	1DC3	1DC4	1DC5	1DC6	1DC7	1DC8	1DC9	1DCA	1DCB	1DCC	1DCD	1DCE	1DCF
DOX	1DD0	1DD1	1DD2	1DD3	1DD4	1DD5	1DD6	1DD7	1DD8	1DD9	1DDA	1DDB	1DDC	1DDD	1DDE	1DDF
DEX	06DF	1DE1	1DE2	1DE3	1DE4	1DE5	1DE6	1DE7	1DE8	1DE9	1DEA	1DEB	1DEC	1DED	1DEE	1DEF
DFX	1DF0	1DF1	1DF2	1DF3	1DF4	1DF5	1DF6	1DF7	1DF8	1DF9	1DFA	1DFB	1DFC	1DFD	1DFE	1DFF
E0X	06F0	07EA	07E9	1E03	1E04	1E05	1E06	1E07	07F8	1E09	07F9	1E08	1E0C	1E0D	1E0E	1E0F
E1X	1E10	1E11	1E12	1E13	1E14	1E15	1E16	1E17	1E18	1E19	1E1A	1E1B	1E1C	1E1D	1E1E	1E1F
E2X	06F1	1E21	07EB	1E23	1E24	1E25	1E26	1E27	07FA	1E29	07FB	1E28	1E2C	1E2D	1E2E	1E2F
E3X	1E30	1E31	1E32	1E33	1E34	1E35	1E36	1E37	1E38	1E39	1E3A	1E3B	1E3C	1E3D	1E3E	1E3F
E4X	06F2	1E41	1E42	1E43	1E44	1E45	1E46	1E47	1E48	1E49	1E4A	1E4B	1E4C	1E4D	1E4E	1E4F
ESX	1E50	1E51	1E52	1E53	1E54	1E55	1E56	1E57	1E58	1E59	1E5A	1E5B	1E5C	1E5D	1E5E	1E5F
E6X	06F3	1E61	1E62	1E63	1E64	1E65	1E66	1E67	1E68	1E69	1E6A	1E6B	1E6C	1E6D	1E6E	1E6F
E7X	1E70	1E71	1E72	1E73	1E74	1E75	1E76	1E77	1E78	1E79	1E7A	1E7B	1E7C	1E7D	1E7E	1E7F
E8X	06F4	1E81	07ED	1E83	1E84	1E85	1E86	1E87	07FC	1E89	07FD	1E88	1E8C	1E8D	1E8E	1E8F
E9X	1E90	1E91	1E92	1E93	1E94	1E95	1E96	1E97	1E98	1E99	1E9A	1E9B	1E9C	1E9D	1E9E	1E9F
EAX	06F5	1EA1	07EF	1EA3	1EA4	1EA5	1EA6	1EA7	07FE	1EA9	07FF	1EAB	1EAC	1EAD	1EAE	1EAF
EBX	1EB0	1EB1	1EB2	1EB3	1EB4	1EB5	1EB6	1EB7	1EB8	1EB9	1EBA	1EBB	1EBC	1EBD	1EBE	1EBF
ECX	06F6	1EC1	1EC2	1EC3	1EC4	1EC5	1EC6	1EC7	1EC8	1EC9	1ECA	1ECB	1ECC	1ECD	1ECE	1ECF
EDX	1ED0	1ED1	1ED2	1ED3	1ED4	1ED5	1ED6	1ED7	1ED8	1ED9	1EDA	1EDB	1EDC	1EDD	1EDE	1EDF
EEX	06F7	1EE1	1EE2	1EE3	1EE4	1EE5	1EE6	1EE7	1EE8	1EE9	1EEA	1EEB	1EEC	1EED	1EEE	1EEF
EFX	1EF0	1EF1	1EF2	1EF3	1EF4	1EF5	1EF6	1EF7	1EF8	1EF9	1EFA	1EFB	1EFC	1EFD	1EFE	1EFF

Table 10 (Part 6 of 6)

State 0 of 14-bit code word for 24/25 (0,7/7) code																
	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
FOX	06F8	1F01	1F02	1F03	1F04	1F05	1F06	1F07	1F08	1F09	1F0A	1F0B	1F0C	1F0D	1F0E	1F0F
F1X	1F10	1F11	1F12	1F13	1F14	1F15	1F16	1F17	1F18	1F19	1F1A	1F1B	1F1C	1F1D	1F1E	1F1F
F2X	06F9	1F21	1F22	1F23	1F24	1F25	1F26	1F27	1F28	1F29	1F2A	1F2B	1F2C	1F2D	1F2E	1F2F
F3X	1F30	1F31	1F32	1F33	1F34	1F35	1F36	1F37	1F38	1F39	1F3A	1F3B	1F3C	1F3D	1F3E	1F3F
F4X	06FA	1F41	1F42	1F43	1F44	1F45	1F46	1F47	1F48	1F49	1F4A	1F4B	1F4C	1F4D	1F4E	1F4F
F5X	1F50	1F51	1F52	1F53	1F54	1F55	1F56	1F57	1F58	1F59	1F5A	1F5B	1F5C	1F5D	1F5E	1F5F
F6X	06FB	1F61	1F62	1F63	1F64	1F65	1F66	1F67	1F68	1F69	1F6A	1F6B	1F6C	1F6D	1F6E	1F6F
F7X	1F70	1F71	1F72	1F73	1F74	1F75	1F76	1F77	1F78	1F79	1F7A	1F7B	1F7C	1F7D	1F7E	1F7F
F8X	06FC	1F81	1F82	1F83	1F84	1F85	1F86	1F87	1F88	1F89	1F8A	1F8B	1F8C	1F8D	1F8E	1F8F
F9X	1F90	1F91	1F92	1F93	1F94	1F95	1F96	1F97	1F98	1F99	1F9A	1F9B	1F9C	1F9D	1F9E	1F9F
FAX	06FD	1FA1	1FA2	1FA3	1FA4	1FA5	1FA6	1FA7	1FA8	1FA9	1FAA	1FAB	1FAC	1FAD	1FAE	1FAF
FBX	1FB0	1FB1	1FB2	1FB3	1FB4	1FB5	1FB6	1FB7	1FB8	1FB9	1FBA	1FBB	1FBC	1FBD	1FBE	1FBF
FCX	06FE	1FC1	1FC2	1FC3	1FC4	1FC5	1FC6	1FC7	1FC8	1FC9	1FCA	1FCB	1FCC	1FCD	1FCE	1FCF
FDX	1FD0	1FD1	1FD2	1FD3	1FD4	1FD5	1FD6	1FD7	1FD8	1FD9	1FDA	1FDB	1FDC	1FDD	1FDE	1FDF
FEX	06FF	1FE1	1FE2	1FE3	1FE4	1FE5	1FE6	1FE7	1FE8	1FE9	1FEA	1FEB	1FEC	1FED	1FEE	1FEF
FFX	1FF0	1FF1	1FF2	1FF3	1FF4	1FF5	1FF6	1FF7	1FF8	1FF9	1FFA	1FFB	1FFC	1FFD	1FFE	1FFF

12 MAR 2003

-60-

Table 11 below is an encoding table for the 14-bit encoder when the state S1 is active. The arrangement of Table 11 is similar to Table 10. In
5 Table 11, the state S1 is indicated at the top of the table to be active.

Table 11 (Part 1 of 6)

State 1 of 14-bit code word for 24/25 (0,7/7) code																
	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
00X	0D70	0CE1	0F21	0D03	0CF0	0CF1	0D06	0D07	0F30	0D09	0F31	0D08	0D0C	0D0D	0D0E	0D0F
01X	0C7E	0CE3	0E1E	0D33	0CF2	0CF3	0D36	0D37	0C5E	0D39	0D3A	0D38	0D3C	0D3D	0D3E	0D3F
02X	0D71	0D21	0F23	0D23	0D24	0D25	0D26	0D27	0F32	0D29	0F33	0D28	0D2C	0D2D	0D2E	0D2F
03X	0C7C	0E4C	0E1C	2D33	0E4D	2D35	2D36	2D37	0C5C	2D39	2D3A	2D38	2D3C	2D3D	2D3E	2D3F
04X	0D72	0CE5	0E18	0D43	0CF4	0CF5	0D46	2D47	0C3A	0D49	0D4A	2D4B	0D4C	2D4D	2D4E	2D4F
05X	0C7A	0CE7	0E1A	2D53	0CF6	0CF7	2D56	2D57	0C5A	2D59	2D5A	2D58	2D5C	2D5D	2D5E	2D5F
06X	0D73	0E48	0E19	2D63	0E49	2D65	2D66	2D67	0C38	2D69	2D6A	2D68	2D6C	2D6D	2D6E	2D6F
07X	0C78	2D71	2D72	2D73	2D74	2D75	2D76	2D77	2D78	2D79	2D7A	2D7B	2D7C	2D7D	2D7E	2D7F
08X	0D74	0D91	0F25	0D93	0D94	0D95	0D96	0D97	0F34	0D99	0F35	0D98	0D9C	0D9D	0D9E	0D9F
09X	0C76	0E46	0E16	2D93	0E47	2D95	2D96	2D97	0C56	2D99	2D9A	2D98	2D9C	2D9D	2D9E	2D9F
0AX	0D75	0D61	0F27	0D63	0D64	0D65	0D66	0D67	0F36	0D69	0F37	0D68	0D6C	0D6D	0D6E	0D6F
0BX	0C74	2D81	2D82	2D83	2D84	2D85	2D86	2D87	2D88	2D89	2D8A	2D8B	2D8C	2D8D	2D8E	2D8F
0CX	0D76	0E42	0E13	2D03	0E43	2D05	2D06	2D07	0C32	2D09	2D0A	2D0B	2D0C	2D0D	2D0E	2D0F
0DX	0C72	2D01	2D02	2D03	2D04	2D05	2D06	2D07	2D08	2D09	2D0A	2D0B	2D0C	2D0D	2D0E	2D0F
0EX	0D77	2D01	2D02	2D03	2D04	2D05	2D06	2D07	2D08	2D09	2D0A	2D0B	2D0C	2D0D	2D0E	2D0F
0FX	2D00	2D01	2D02	2D03	2D04	2D05	2D06	2D07	2D08	2D09	2D0A	2D0B	2D0C	2D0D	2D0E	2D0F
10X	0D78	0CE9	0E3F	0D53	0CF8	0CF9	0D56	2107	0C3F	0D59	0D5A	2108	0D5C	210D	210E	210F
11X	0C7F	0CEB	0E3E	2113	0CFA	0CFB	2116	2117	0C5F	2119	211A	211B	211C	211D	211E	211F
12X	0D79	0E5C	0E3D	2123	0E5D	2125	2126	2127	0C3D	2129	212A	212B	212C	212D	212E	212F
13X	0C7D	2131	2132	2133	2134	2135	2136	2137	2138	2139	213A	213B	213C	213D	213E	213F
14X	0D7A	0CED	0E38	2143	0CFC	0CFD	2146	2147	0C3B	2149	214A	214B	214C	214D	214E	214F
15X	0C7B	0CEF	2152	2153	0CFE	0CF7	2156	2157	2158	2159	215A	215B	215C	215D	215E	215F
16X	0D7B	2161	2162	2163	2164	2165	2166	2167	2168	2169	216A	216B	216C	216D	216E	216F
17X	2170	2171	2172	2173	2174	2175	2176	2177	2178	2179	217A	217B	217C	217D	217E	217F
18X	0D7C	0E56	0E37	2183	0E57	2185	2186	2187	0C37	2189	218A	218B	218C	218D	218E	218F
19X	0C77	2191	2192	2193	2194	2195	2196	2197	2198	2199	219A	219B	219C	219D	219E	219F
1AX	0D7D	21A1	21A2	21A3	21A4	21A5	21A6	21A7	21A8	21A9	21AA	21AB	21AC	21AD	21AE	21AF
1BX	2180	21B1	21B2	21B3	21B4	21B5	21B6	21B7	21B8	21B9	21BA	21BB	21BC	21BD	21BE	21BF
1CX	0D7E	21C1	21C2	21C3	21C4	21C5	21C6	21C7	21C8	21C9	21CA	21CB	21CC	21CD	21CE	21CF
1DX	21D0	21D1	21D2	21D3	21D4	21D5	21D6	21D7	21D8	21D9	21DA	21DB	21DC	21DD	21DE	21DF
1EX	0D7F	21E1	21E2	21E3	21E4	21E5	21E6	21E7	21E8	21E9	21EA	21EB	21EC	21ED	21EE	21EF
1FX	21F0	21F1	21F2	21F3	21F4	21F5	21F6	21F7	21F8	21F9	21FA	21FB	21FC	21FD	21FE	21FF
20X	0D80	0D81	0F29	0D83	0D84	0D85	0D86	0D87	0F38	0D89	0F39	0D88	0D8C	0D8D	0D8E	0D8F
21X	0C8E	0E5E	0E31	2213	0E5F	2215	2216	2217	0C4E	2219	221A	221B	221C	221D	221E	221F
22X	0D81	0DA1	0F2B	0DA3	0DA4	0DA5	0DA6	0DA7	0F3A	0DA9	0F3B	0DAB	0DAC	0DAD	0DAE	0DAF
23X	0C8C	2231	2232	2233	2234	2235	2236	2237	2238	2239	223A	223B	223C	223D	223E	223F
24X	0D82	0E5A	0E34	2243	0E5B	2245	2246	2247	0C2B	2249	224A	224B	224C	224D	224E	224F
25X	0C8A	2251	2252	2253	2254	2255	2256	2257	2258	2259	225A	225B	225C	225D	225E	225F
26X	0D83	2261	2262	2263	2264	2265	2266	2267	2268	2269	226A	226B	226C	226D	226E	226F
27X	2270	2271	2272	2273	2274	2275	2276	2277	2278	2279	227A	227B	227C	227D	227E	227F
28X	0D84	0DC1	0F2D	0DC3	0DC4	0DC5	0DC6	0DC7	0F3C	0DC9	0F3D	0DC8	0DCC	0DCD	0DCE	0DCF
29X	0C86	2291	2292	2293	2294	2295	2296	2297	2298	2299	229A	229B	229C	229D	229E	229F
2AX	0D85	0DE1	0F2F	0DE3	0DE4	0DE5	0DE6	0DE7	0F3E	0DE9	0F3F	0DE8	0DEC	0DED	0DEE	0DEF
2BX	2280	22B1	22B2	22B3	22B4	22B5	22B6	22B7	22B8	22B9	22BA	22BB	22BC	22BD	22BE	22BF
2CX	0D86	22C1	22C2	22C3	22C4	22C5	22C6	22C7	22C8	22C9	22CA	22CB	22CC	22CD	22CE	22CF
2DX	22D0	22D1	22D2	22D3	22D4	22D5	22D6	22D7	22D8	22D9	22DA	22DB	22DC	22DD	22DE	22DF
2EX	0D87	22E1	22E2	22E3	22E4	22E5	22E6	22E7	22E8	22E9	22EA	22EB	22EC	22ED	22EE	22EF
2FX	22F0	22F1	22F2	22F3	22F4	22F5	22F6	22F7	22F8	22F9	22FA	22FB	22FC	22FD	22FE	22FF

Table 11 (Part 2 of 6)

State 1 of 14-bit code word for 24/25 (0,7/7) code																
	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
30X	00B8	0E50	0E30	2303	0E51	2305	2306	2307	0C2F	2309	230A	230B	230C	230D	230E	230F
31X	0C6F	2311	2312	2313	2314	2315	2316	2317	2318	2319	231A	231B	231C	231D	231E	231F
32X	00B9	2321	2322	2323	2324	2325	2326	2327	2328	2329	232A	232B	232C	232D	232E	232F
33X	2330	2331	2332	2333	2334	2335	2336	2337	2338	2339	233A	233B	233C	233D	233E	233F
34X	00BA	2341	2342	2343	2344	2345	2346	2347	2348	2349	234A	234B	234C	234D	234E	234F
35X	2350	2351	2352	2353	2354	2355	2356	2357	2358	2359	235A	235B	235C	235D	235E	235F
36X	00BB	2361	2362	2363	2364	2365	2366	2367	2368	2369	236A	236B	236C	236D	236E	236F
37X	2370	2371	2372	2373	2374	2375	2376	2377	2378	2379	237A	237B	237C	237D	237E	237F
38X	00BC	2381	2382	2383	2384	2385	2386	2387	2388	2389	238A	238B	238C	238D	238E	238F
39X	2390	2391	2392	2393	2394	2395	2396	2397	2398	2399	239A	239B	239C	239D	239E	239F
3AX	00BD	23A1	23A2	23A3	23A4	23A5	23A6	23A7	23A8	23A9	23AA	23AB	23AC	23AD	23AE	23AF
3BX	23B0	23B1	23B2	23B3	23B4	23B5	23B6	23B7	23B8	23B9	23BA	23BB	23BC	23BD	23BE	23BF
3CX	00BE	23C1	23C2	23C3	23C4	23C5	23C6	23C7	23C8	23C9	23CA	23CB	23CC	23CD	23CE	23CF
3DX	23D0	23D1	23D2	23D3	23D4	23D5	23D6	23D7	23D8	23D9	23DA	23DB	23DC	23DD	23DE	23DF
3EX	00BF	23E1	23E2	23E3	23E4	23E5	23E6	23E7	23E8	23E9	23EA	23EB	23EC	23ED	23EE	23EF
3FX	23F0	23F1	23F2	23F3	23F4	23F5	23F6	23F7	23F8	23F9	23FA	23FB	23FC	23FD	23FE	23FF
40X	00D0	0F41	0F61	0F13	0F50	0F51	0F12	2407	0F70	0F19	0F71	2408	0F18	240D	240E	240F
41X	0F08	0F43	0F02	2413	0F52	0F53	2416	2417	0F04	2419	241A	241B	241C	241D	241E	241F
42X	00D1	0F11	0F63	2423	0F10	2425	2426	2427	0F72	2429	0F73	242B	242C	242D	242E	242F
43X	0F28	2431	2432	2433	2434	2435	2436	2437	2438	2439	243A	243B	243C	243D	243E	243F
44X	00D2	0F45	0F22	2443	0F54	0F55	2446	2447	0F24	2449	244A	244B	244C	244D	244E	244F
45X	0F0A	0F47	2452	2453	0F56	0F57	2456	2457	2458	2459	245A	245B	245C	245D	245E	245F
46X	00D3	2461	2462	2463	2464	2465	2466	2467	2468	2469	246A	246B	246C	246D	246E	246F
47X	2470	2471	2472	2473	2474	2475	2476	2477	2478	2479	247A	247B	247C	247D	247E	247F
48X	00D4	0F15	0F65	2483	0F14	2485	2486	2487	0F74	2489	0F75	248B	248C	248D	248E	248F
49X	0F0C	2491	2492	2493	2494	2495	2496	2497	2498	2499	249A	249B	249C	249D	249E	249F
4AX	00D5	24A1	0F67	24A3	24A4	24A5	24A6	24A7	0F76	24A9	0F77	24AB	24AC	24AD	24AE	24AF
4BX	24B0	24B1	24B2	24B3	24B4	24B5	24B6	24B7	24B8	24B9	24BA	24BB	24BC	24BD	24BE	24BF
4CX	00D6	24C1	24C2	24C3	24C4	24C5	24C6	24C7	24C8	24C9	24CA	24CB	24CC	24CD	24CE	24CF
4DX	24D0	24D1	24D2	24D3	24D4	24D5	24D6	24D7	24D8	24D9	24DA	24DB	24DC	24DD	24DE	24DF
4EX	00D7	24E1	24E2	24E3	24E4	24E5	24E6	24E7	24E8	24E9	24EA	24EB	24EC	24ED	24EE	24EF
4FX	24F0	24F1	24F2	24F3	24F4	24F5	24F6	24F7	24F8	24F9	24FA	24FB	24FC	24FD	24FE	24FF
50X	00D8	0F49	0F42	2503	0F58	0F59	2506	2507	0F44	2509	250A	250B	250C	250D	250E	250F
51X	0F48	0F4B	2512	2513	0F5A	0F5B	2516	2517	2518	2519	251A	251B	251C	251D	251E	251F
52X	00D9	2521	2522	2523	2524	2525	2526	2527	2528	2529	252A	252B	252C	252D	252E	252F
53X	2530	2531	2532	2533	2534	2535	2536	2537	2538	2539	253A	253B	253C	253D	253E	253F
54X	00DA	0F4D	2542	2543	0F5C	0F5D	2546	2547	2548	2549	254A	254B	254C	254D	254E	254F
55X	0F4A	0F4F	2552	2553	0F5E	0F5F	2556	2557	2558	2559	255A	255B	255C	255D	255E	255F
56X	00DB	2561	2562	2563	2564	2565	2566	2567	2568	2569	256A	256B	256C	256D	256E	256F
57X	2570	2571	2572	2573	2574	2575	2576	2577	2578	2579	257A	257B	257C	257D	257E	257F
58X	00DC	2581	2582	2583	2584	2585	2586	2587	2588	2589	258A	258B	258C	258D	258E	258F
59X	2590	2591	2592	2593	2594	2595	2596	2597	2598	2599	259A	259B	259C	259D	259E	259F
5AX	00DD	25A1	25A2	25A3	25A4	25A5	25A6	25A7	25A8	25A9	25AA	25AB	25AC	25AD	25AE	25AF
5BX	25B0	25B1	25B2	25B3	25B4	25B5	25B6	25B7	25B8	25B9	25BA	25BB	25BC	25BD	25BE	25BF
5CX	00DE	25C1	25C2	25C3	25C4	25C5	25C6	25C7	25C8	25C9	25CA	25CB	25CC	25CD	25CE	25CF
5DX	25D0	25D1	25D2	25D3	25D4	25D5	25D6	25D7	25D8	25D9	25DA	25DB	25DC	25DD	25DE	25DF
5EX	00DF	25E1	25E2	25E3	25E4	25E5	25E6	25E7	25E8	25E9	25EA	25EB	25EC	25ED	25EE	25EF
5FX	25F0	25F1	25F2	25F3	25F4	25F5	25F6	25F7	25F8	25F9	25FA	25FB	25FC	25FD	25FE	25FF

Table 11 (Part 3 of 6)

State 1 of 14-bit code word for 24/25 (0,7/7) code																
	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
60X	00F0	0F1D	0F69	2603	0F1C	2605	2606	2607	6778	2609	0F79	260B	260C	260D	260E	260F
61X	0F4C	2611	2612	2613	2614	2615	2616	2617	2618	2619	261A	261B	261C	261D	261E	261F
62X	00F1	2621	0F68	2623	2624	2625	2626	2627	0F7A	2629	0F7B	262B	262C	262D	262E	262F
63X	2630	2631	2632	2633	2634	2635	2636	2637	2638	2639	263A	263B	263C	263D	263E	263F
64X	00F2	2641	2642	2643	2644	2645	2646	2647	2648	2649	264A	264B	264C	264D	264E	264F
65X	2650	2651	2652	2653	2654	2655	2656	2657	2658	2659	265A	265B	265C	265D	265E	265F
66X	00F3	2661	2662	2663	2664	2665	2666	2667	2668	2669	266A	266B	266C	266D	266E	266F
67X	2670	2671	2672	2673	2674	2675	2676	2677	2678	2679	267A	267B	267C	267D	267E	267F
68X	00F4	2681	0F6D	2683	2684	2685	2686	2687	0F7C	2689	0F7D	268B	268C	268D	268E	268F
69X	2690	2691	2692	2693	2694	2695	2696	2697	2698	2699	269A	269B	269C	269D	269E	269F
6AX	00F5	26A1	0F6E	26A3	26A4	26A5	26A6	26A7	0F7E	26A9	0F7F	26AB	26AC	26AD	26AE	26AF
6BX	26B0	26B1	26B2	26B3	26B4	26B5	26B6	26B7	26B8	26B9	26BA	26BB	26BC	26BD	26BE	26BF
6CX	00F6	26C1	26C2	26C3	26C4	26C5	26C6	26C7	26C8	26C9	26CA	26CB	26CC	26CD	26CE	26CF
6DX	26D0	26D1	26D2	26D3	26D4	26D5	26D6	26D7	26D8	26D9	26DA	26DB	26DC	26DD	26DE	26DF
6EX	00F7	26E1	26E2	26E3	26E4	26E5	26E6	26E7	26E8	26E9	26EA	26EB	26EC	26ED	26EE	26EF
6FX	26F0	26F1	26F2	26F3	26F4	26F5	26F6	26F7	26F8	26F9	26FA	26FB	26FC	26FD	26FE	26FF
70X	00F8	2701	2702	2703	2704	2705	2706	2707	2708	2709	270A	270B	270C	270D	270E	270F
71X	2710	2711	2712	2713	2714	2715	2716	2717	2718	2719	271A	271B	271C	271D	271E	271F
72X	00F9	2721	2722	2723	2724	2725	2726	2727	2728	2729	272A	272B	272C	272D	272E	272F
73X	2730	2731	2732	2733	2734	2735	2736	2737	2738	2739	273A	273B	273C	273D	273E	273F
74X	00FA	2741	2742	2743	2744	2745	2746	2747	2748	2749	274A	274B	274C	274D	274E	274F
75X	2750	2751	2752	2753	2754	2755	2756	2757	2758	2759	275A	275B	275C	275D	275E	275F
76X	00FB	2761	2762	2763	2764	2765	2766	2767	2768	2769	276A	276B	276C	276D	276E	276F
77X	2770	2771	2772	2773	2774	2775	2776	2777	2778	2779	277A	277B	277C	277D	277E	277F
78X	00FC	2781	2782	2783	2784	2785	2786	2787	2788	2789	278A	278B	278C	278D	278E	278F
79X	2790	2791	2792	2793	2794	2795	2796	2797	2798	2799	279A	279B	279C	279D	279E	279F
7AX	00FD	27A1	27A2	27A3	27A4	27A5	27A6	27A7	27A8	27A9	27AA	27AB	27AC	27AD	27AE	27AF
7BX	27B0	27B1	27B2	27B3	27B4	27B5	27B6	27B7	27B8	27B9	27BA	27BB	27BC	27BD	27BE	27BF
7CX	00FE	27C1	27C2	27C3	27C4	27C5	27C6	27C7	27C8	27C9	27CA	27CB	27CC	27CD	27CE	27CF
7DX	27D0	27D1	27D2	27D3	27D4	27D5	27D6	27D7	27D8	27D9	27DA	27DB	27DC	27DD	27DE	27DF
7EX	00FF	27E1	27E2	27E3	27E4	27E5	27E6	27E7	27E8	27E9	27EA	27EB	27EC	27ED	27EE	27EF
7FX	27F0	27F1	27F2	27F3	27F4	27F5	27F6	27F7	27F8	27F9	27FA	27FB	27FC	27FD	27FE	27FF
80X	0E70	0F81	0FA1	0E03	0F90	0F81	0E05	0E07	0FB0	0E09	0FB1	0E0B	0E0C	0E0D	0E0E	0E0F
81X	0F88	0F83	0F82	2813	0F92	0F93	2816	2817	0FB4	2819	281A	281B	281C	281D	281E	281F
82X	0E71	0E21	0FA3	0E23	0E24	0E25	0E26	0E27	0FB2	0E29	0FB3	0E2B	0E2C	0E2D	0E2E	0E2F
83X	0FA8	2831	2832	2833	2834	2835	2836	2837	2838	2839	283A	283B	283C	283D	283E	283F
84X	0E72	0F85	0FA2	2843	0F94	0F95	2846	2847	0FA4	2849	284A	284B	284C	284D	284E	284F
85X	0F8A	0F87	2852	2853	0F96	0F97	2856	2857	2858	2859	285A	285B	285C	285D	285E	285F
86X	0E73	2861	2862	2863	2864	2865	2866	2867	2868	2869	286A	286B	286C	286D	286E	286F
87X	2870	2871	2872	2873	2874	2875	2876	2877	2878	2879	287A	287B	287C	287D	287E	287F
88X	0E74	0E91	0FA5	0E93	0E94	0E95	0E96	0E97	0FB4	0E99	0FB5	0E9B	0E9C	0E9D	0E9E	0E9F
89X	0F8C	2891	2892	2893	2894	2895	2896	2897	2898	2899	289A	289B	289C	289D	289E	289F
8AX	0E75	0E61	0FA7	0E63	0E64	0E65	0E66	0E67	0FB6	0E69	0FB7	0E6B	0E6C	0E6D	0E6E	0E6F
8BX	28B0	28B1	28B2	28B3	28B4	28B5	28B6	28B7	28B8	28B9	28BA	28BB	28BC	28BD	28BE	28BF
8CX	0E76	28C1	28C2	28C3	28C4	28C5	28C6	28C7	28C8	28C9	28CA	28CB	28CC	28CD	28CE	28CF
8DX	28D0	28D1	28D2	28D3	28D4	28D5	28D6	28D7	28D8	28D9	28DA	28DB	28DC	28DD	28DE	28DF
8EX	0E77	28E1	28E2	28E3	28E4	28E5	28E6	28E7	28E8	28E9	28EA	28EB	28EC	28ED	28EE	28EF
8FX	28F0	28F1	28F2	28F3	28F4	28F5	28F6	28F7	28F8	28F9	28FA	28FB	28FC	28FD	28FE	28FF

Table 11 (Part 4 of 6)

State 1 of 14-bit code word for 24/25 (0,7/7) code																
	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
90X	0E78	0F89	0FC2	2903	0F98	0F89	2906	2907	0FC4	2909	290A	290B	290C	290D	290E	290F
91X	0FC8	0F8B	2912	2913	0F9A	0F9B	2916	2917	2918	2919	291A	291B	291C	291D	291E	291F
92X	0E79	2921	2922	2923	2924	2925	2926	2927	2928	2929	292A	292B	292C	292D	292E	292F
93X	2930	2931	2932	2933	2934	2935	2936	2937	2938	2939	293A	293B	293C	293D	293E	293F
94X	0E7A	0F8D	2942	2943	0F9C	0F9D	2946	2947	2948	2949	294A	294B	294C	294D	294E	294F
95X	0FCA	0F8F	2952	2953	0F9E	0F9F	2956	2957	2958	2959	295A	295B	295C	295D	295E	295F
96X	0E7B	2961	2962	2963	2964	2965	2966	2967	2968	2969	296A	296B	296C	296D	296E	296F
97X	2970	2971	2972	2973	2974	2975	2976	2977	2978	2979	297A	297B	297C	297D	297E	297F
98X	0E7C	2981	2982	2983	2984	2985	2986	2987	2988	2989	298A	298B	298C	298D	298E	298F
99X	2990	2991	2992	2993	2994	2995	2996	2997	2998	2999	299A	299B	299C	299D	299E	299F
9AX	0E7D	29A1	29A2	29A3	29A4	29A5	29A6	29A7	29A8	29A9	29AA	29AB	29AC	29AD	29AE	29AF
9BX	29B0	29B1	29B2	29B3	29B4	29B5	29B6	29B7	29B8	29B9	29BA	29BB	29BC	29BD	29BE	29BF
9CX	0E7E	29C1	29C2	29C3	29C4	29C5	29C6	29C7	29C8	29C9	29CA	29CB	29CC	29CD	29CE	29CF
9DX	29D0	29D1	29D2	29D3	29D4	29D5	29D6	29D7	29D8	29D9	29DA	29DB	29DC	29DD	29DE	29DF
9EX	0E7F	29E1	29E2	29E3	29E4	29E5	29E6	29E7	29E8	29E9	29EA	29EB	29EC	29ED	29EE	29EF
9FX	29F0	29F1	29F2	29F3	29F4	29F5	29F6	29F7	29F8	29F9	29FA	29FB	29FC	29FD	29FE	29FF
A0X	0EB0	0EB1	0FA9	0EB3	0EB4	0EB5	0EB6	0EB7	0FB8	0EB9	0FB9	0EBB	0EBC	0EBD	0EBE	0EBF
A1X	0FCC	2A11	2A12	2A13	2A14	2A15	2A16	2A17	2A18	2A19	2A1A	2A1B	2A1C	2A1D	2A1E	2A1F
A2X	0EB1	0EA1	0FAB	0EA3	0EA4	0EA5	0EA6	0EA7	0FBA	0EA9	0FBB	0EAB	0EAC	0EAD	0EAE	0EAF
A3X	2A30	2A31	2A32	2A33	2A34	2A35	2A36	2A37	2A38	2A39	2A3A	2A3B	2A3C	2A3D	2A3E	2A3F
A4X	0EB2	2A41	2A42	2A43	2A44	2A45	2A46	2A47	2A48	2A49	2A4A	2A4B	2A4C	2A4D	2A4E	2A4F
A5X	2A50	2A51	2A52	2A53	2A54	2A55	2A56	2A57	2A58	2A59	2A5A	2A5B	2A5C	2A5D	2A5E	2A5F
A6X	0EB3	2A61	2A62	2A63	2A64	2A65	2A66	2A67	2A68	2A69	2A6A	2A6B	2A6C	2A6D	2A6E	2A6F
A7X	2A70	2A71	2A72	2A73	2A74	2A75	2A76	2A77	2A78	2A79	2A7A	2A7B	2A7C	2A7D	2A7E	2A7F
A8X	0EB4	0EC1	0FAD	0EC3	0ECA	0EC5	0EC6	0EC7	0FBC	0EC9	0FBD	0ECB	0ECC	0ECD	0ECE	0ECF
A9X	2A90	2A91	2A92	2A93	2A94	2A95	2A96	2A97	2A98	2A99	2A9A	2A9B	2A9C	2A9D	2A9E	2A9F
AAX	0EB5	0EE1	0FAF	0EE3	0EE4	0EE5	0EE6	0EE7	0FBE	0EE9	0FBF	0EEB	0EEC	0EED	0EEE	0EEF
ABX	2AB0	2AB1	2AB2	2AB3	2AB4	2AB5	2AB6	2AB7	2AB8	2AB9	2ABA	2ABB	2ABC	2ABD	2ABE	2ABF
ACX	0EB6	2AC1	2AC2	2AC3	2AC4	2AC5	2AC6	2AC7	2AC8	2AC9	2ACA	2ACB	2ACC	2ACD	2ACE	2ACF
ADX	2AD0	2AD1	2AD2	2AD3	2AD4	2AD5	2AD6	2AD7	2AD8	2AD9	2ADA	2ADB	2ADC	2ADD	2ADE	2ADF
AEX	0EB7	2AE1	2AE2	2AE3	2AE4	2AE5	2AE6	2AE7	2AE8	2AE9	2AEA	2AEB	2AEC	2AED	2AEE	2AEF
AFX	2AF0	2AF1	2AF2	2AF3	2AF4	2AF5	2AF6	2AF7	2AF8	2AF9	2AFA	2AFB	2AFC	2AFD	2AFE	2AFF
B0X	0EB8	2B01	2B02	2B03	2B04	2B05	2B06	2B07	2B08	2B09	2B0A	2B0B	2B0C	2B0D	2B0E	2B0F
B1X	2B10	2B11	2B12	2B13	2B14	2B15	2B16	2B17	2B18	2B19	2B1A	2B1B	2B1C	2B1D	2B1E	2B1F
B2X	0EB9	2B21	2B22	2B23	2B24	2B25	2B26	2B27	2B28	2B29	2B2A	2B2B	2B2C	2B2D	2B2E	2B2F
B3X	2B30	2B31	2B32	2B33	2B34	2B35	2B36	2B37	2B38	2B39	2B3A	2B3B	2B3C	2B3D	2B3E	2B3F
B4X	0EBA	2B41	2B42	2B43	2B44	2B45	2B46	2B47	2B48	2B49	2B4A	2B4B	2B4C	2B4D	2B4E	2B4F
B5X	2B50	2B51	2B52	2B53	2B54	2B55	2B56	2B57	2B58	2B59	2B5A	2B5B	2B5C	2B5D	2B5E	2B5F
B6X	0EBB	2B61	2B62	2B63	2B64	2B65	2B66	2B67	2B68	2B69	2B6A	2B6B	2B6C	2B6D	2B6E	2B6F
B7X	2B70	2B71	2B72	2B73	2B74	2B75	2B76	2B77	2B78	2B79	2B7A	2B7B	2B7C	2B7D	2B7E	2B7F
B8X	0EBC	2B81	2B82	2B83	2B84	2B85	2B86	2B87	2B88	2B89	2B8A	2B8B	2B8C	2B8D	2B8E	2B8F
B9X	2B90	2B91	2B92	2B93	2B94	2B95	2B96	2B97	2B98	2B99	2B9A	2B9B	2B9C	2B9D	2B9E	2B9F
BAX	0EBD	2BA1	2BA2	2BA3	2BA4	2BA5	2BA6	2BA7	2BA8	2BA9	2BAA	2BAB	2BAC	2BAD	2BAE	2BAF
B8X	2BB0	2BB1	2BB2	2BB3	2BB4	2BB5	2BB6	2BB7	2BB8	2BB9	2BBA	2BBB	2BBC	2BBD	2BBE	2BBF
BCX	0EBE	2BC1	2BC2	2BC3	2BC4	2BC5	2BC6	2BC7	2BC8	2BC9	2BCA	2BCB	2BCC	2BCD	2BCE	2BCF
B0X	2BD0	2BD1	2BD2	2BD3	2BD4	2BD5	2BD6	2BD7	2BD8	2BD9	2BDA	2BDB	2BDC	2BDD	2BDE	2BDF
BEX	0EBF	2BE1	2BE2	2BE3	2BE4	2BE5	2BE6	2BE7	2BE8	2BE9	2BEA	2BEB	2BEC	2BED	2BEE	2BEF
BFX	2BF0	2BF1	2BF2	2BF3	2BF4	2BF5	2BF6	2BF7	2BF8	2BF9	2BFA	2BFB	2BFC	2BFD	2BFE	2BFF

Table 11 (Part 5 of 6)

State 1 of 14-bit code word for 24/25 (0,7/7) code																
	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
C0X	0ED0	0FC1	0FE1	0FE2	0FD0	0FD1	2C06	2C07	0FF0	2C09	0FF1	2C0B	2C0C	2C0D	2C0E	2C0F
C1X	0FE8	0FC3	2C12	2C13	0FD2	0FD3	2C16	2C17	2C18	2C19	2C1A	2C1B	2C1C	2C1D	2C1E	2C1F
C2X	0ED1	2C21	0FE3	2C23	2C24	2C25	2C26	2C27	0FF2	2C29	0FF3	2C2B	2C2C	2C2D	2C2E	2C2F
C3X	2C30	2C31	2C32	2C33	2C34	2C35	2C36	2C37	2C38	2C39	2C3A	2C3B	2C3C	2C3D	2C3E	2C3F
C4X	0ED2	0FC5	2C42	2C43	0FD4	0FD5	2C46	2C47	2C48	2C49	2C4A	2C4B	2C4C	2C4D	2C4E	2C4F
C5X	0FEA	0FC7	2C52	2C53	0FD6	0FD7	2C56	2C57	2C58	2C59	2C5A	2C5B	2C5C	2C5D	2C5E	2C5F
C6X	0ED3	2C61	2C62	2C63	2C64	2C65	2C66	2C67	2C68	2C69	2C6A	2C6B	2C6C	2C6D	2C6E	2C6F
C7X	2C70	2C71	2C72	2C73	2C74	2C75	2C76	2C77	2C78	2C79	2C7A	2C7B	2C7C	2C7D	2C7E	2C7F
C8X	0ED4	2C81	0FE5	2C83	2C84	2C85	2C86	2C87	0FF4	2C89	0FF5	2C8B	2C8C	2C8D	2C8E	2C8F
C9X	2C90	2C91	2C92	2C93	2C94	2C95	2C96	2C97	2C98	2C99	2C9A	2C9B	2C9C	2C9D	2C9E	2C9F
CAX	0ED5	2CA1	0FE7	2CA3	2CA4	2CA5	2CA6	2CA7	0FF6	2CA9	0FF7	2CAB	2CAC	2CAD	2CAE	2CAF
C8X	2CB0	2CB1	2CB2	2CB3	2CB4	2CB5	2CB6	2CB7	2CB8	2CB9	2CBA	2CBB	2CBC	2CBD	2CBE	2CBF
CCX	0ED6	2CC1	2CC2	2CC3	2CC4	2CC5	2CC6	2CC7	2CC8	2CC9	2CCA	2CCB	2CCC	2CCD	2CCE	2CCF
CDX	2CD0	2CD1	2CD2	2CD3	2CD4	2CD5	2CD6	2CD7	2CD8	2CD9	2CDA	2CDB	2CDC	2CDD	2CDE	2CDF
CEX	0ED7	2CE1	2CE2	2CE3	2CE4	2CE5	2CE6	2CE7	2CE8	2CE9	2CEA	2CEB	2CEC	2CED	2CEE	2CEF
CFX	2CF0	2CF1	2CF2	2CF3	2CF4	2CF5	2CF6	2CF7	2CF8	2CF9	2CFA	2CFB	2CFC	2CFD	2CFE	2CFF
D0X	0ED8	0FC9	2D02	2D03	0FD8	0FD9	2D06	2D07	2D08	2D09	2D0A	2D0B	2D0C	2D0D	2D0E	2D0F
D1X	0FEC	0FCB	2D12	2D13	0FDA	0FDB	2D16	2D17	2D18	2D19	2D1A	2D1B	2D1C	2D1D	2D1E	2D1F
D2X	0ED9	2D21	2D22	2D23	2D24	2D25	2D26	2D27	2D28	2D29	2D2A	2D2B	2D2C	2D2D	2D2E	2D2F
D3X	2D30	2D31	2D32	2D33	2D34	2D35	2D36	2D37	2D38	2D39	2D3A	2D3B	2D3C	2D3D	2D3E	2D3F
D4X	0EDA	0FCD	2D42	2D43	0FDC	0FDD	2D46	2D47	2D48	2D49	2D4A	2D4B	2D4C	2D4D	2D4E	2D4F
D5X	0FEE	0FCF	2D52	2D53	0FDE	0FDF	2D56	2D57	2D58	2D59	2D5A	2D5B	2D5C	2D5D	2D5E	2D5F
D6X	0EDB	2D61	2D62	2D63	2D64	2D65	2D66	2D67	2D68	2D69	2D6A	2D6B	2D6C	2D6D	2D6E	2D6F
D7X	2D70	2D71	2D72	2D73	2D74	2D75	2D76	2D77	2D78	2D79	2D7A	2D7B	2D7C	2D7D	2D7E	2D7F
D8X	0EDC	2D81	2D82	2D83	2D84	2D85	2D86	2D87	2D88	2D89	2D8A	2D8B	2D8C	2D8D	2D8E	2D8F
D9X	2D90	2D91	2D92	2D93	2D94	2D95	2D96	2D97	2D98	2D99	2D9A	2D9B	2D9C	2D9D	2D9E	2D9F
DAX	0EDD	2DA1	2DA2	2DA3	2DA4	2DA5	2DA6	2DA7	2DA8	2DA9	2DAA	2DAB	2DAC	2DAD	2DAE	2DAF
DBX	2DB0	2DB1	2DB2	2DB3	2DB4	2DB5	2DB6	2DB7	2DB8	2DB9	2DBA	2DBB	2DBC	2DBD	2DBE	2DBF
DCX	0EDE	2DC1	2DC2	2DC3	2DC4	2DC5	2DC6	2DC7	2DC8	2DC9	2DCA	2DCB	2DCC	2DCD	2DCE	2DCF
DOX	2DD0	2DD1	2DD2	2DD3	2DD4	2DD5	2DD6	2DD7	2DD8	2DD9	2DDA	2DDB	2DDC	2DDD	2DDE	2DDF
DEX	0EDF	2DE1	2DE2	2DE3	2DE4	2DE5	2DE6	2DE7	2DE8	2DE9	2DEA	2DEB	2DEC	2DED	2DEE	2DEF
DFX	2DF0	2DF1	2DF2	2DF3	2DF4	2DF5	2DF6	2DF7	2DF8	2DF9	2DFA	2DFB	2DFC	2DFD	2DFE	2DFF
E0X	0EF0	0FE4	0FE9	2E03	2E04	2E05	2E06	2E07	0FF8	2E09	0FF9	2E0B	2E0C	2E0D	2E0E	2E0F
E1X	2E10	2E11	2E12	2E13	2E14	2E15	2E16	2E17	2E18	2E19	2E1A	2E1B	2E1C	2E1D	2E1E	2E1F
E2X	0EF1	2E21	0FEB	2E23	2E24	2E25	2E26	2E27	0FFA	2E29	0FFB	2E2B	2E2C	2E2D	2E2E	2E2F
E3X	2E30	2E31	2E32	2E33	2E34	2E35	2E36	2E37	2E38	2E39	2E3A	2E3B	2E3C	2E3D	2E3E	2E3F
E4X	0EF2	2E41	2E42	2E43	2E44	2E45	2E46	2E47	2E48	2E49	2E4A	2E4B	2E4C	2E4D	2E4E	2E4F
E5X	2E50	2E51	2E52	2E53	2E54	2E55	2E56	2E57	2E58	2E59	2E5A	2E5B	2E5C	2E5D	2E5E	2E5F
E6X	0EF3	2E61	2E62	2E63	2E64	2E65	2E66	2E67	2E68	2E69	2E6A	2E6B	2E6C	2E6D	2E6E	2E6F
E7X	2E70	2E71	2E72	2E73	2E74	2E75	2E76	2E77	2E78	2E79	2E7A	2E7B	2E7C	2E7D	2E7E	2E7F
E8X	0EF4	2E81	0FED	2E83	2E84	2E85	2E86	2E87	0FFC	2E89	0FFD	2E8B	2E8C	2E8D	2E8E	2E8F
E9X	2E90	2E91	2E92	2E93	2E94	2E95	2E96	2E97	2E98	2E99	2E9A	2E9B	2E9C	2E9D	2E9E	2E9F
EAX	0EF5	2EA1	0FEF	2EA3	2EA4	2EA5	2EA6	2EA7	0FFE	2EA9	0FFF	2EAB	2EAC	2EAD	2EAE	2EAF
EBX	2EB0	2EB1	2EB2	2EB3	2EB4	2EB5	2EB6	2EB7	2EB8	2EB9	2EBA	2EBB	2EBC	2EBD	2EBE	2EBF
ECX	0EF6	2EC1	2EC2	2EC3	2EC4	2EC5	2EC6	2EC7	2EC8	2EC9	2ECA	2ECB	2ECC	2ECD	2ECE	2ECF
EOX	2ED0	2ED1	2ED2	2ED3	2ED4	2ED5	2ED6	2ED7	2ED8	2ED9	2EDA	2EDB	2EDC	2EDD	2EDE	2EDF
EEX	0EF7	2EE1	2EE2	2EE3	2EE4	2EE5	2EE6	2EE7	2EE8	2EE9	2EEA	2EEB	2EEC	2EED	2EEE	2EEF
EFX	2EF0	2EF1	2EF2	2EF3	2EF4	2EF5	2EF6	2EF7	2EF8	2EF9	2EFA	2EFB	2EFC	2EFD	2EFE	2EFF

Table 11 (Part 6 of 6)

State 1 of 14-bit code word for 24/25 (0,7/7) code																
	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
FOX	0EF8	2F01	2F02	2F03	2F04	2F05	2F06	2F07	2F08	2F09	2F0A	2F0B	2F0C	2F0D	2F0E	2F0F
F1X	2F10	2F11	2F12	2F13	2F14	2F15	2F16	2F17	2F18	2F19	2F1A	2F1B	2F1C	2F1D	2F1E	2F1F
F2X	0EF9	2F21	2F22	2F23	2F24	2F25	2F26	2F27	2F28	2F29	2F2A	2F2B	2F2C	2F2D	2F2E	2F2F
F3X	2F30	2F31	2F32	2F33	2F34	2F35	2F36	2F37	2F38	2F39	2F3A	2F3B	2F3C	2F3D	2F3E	2F3F
F4X	0EFA	2F41	2F42	2F43	2F44	2F45	2F46	2F47	2F48	2F49	2F4A	2F4B	2F4C	2F4D	2F4E	2F4F
F5X	2F50	2F51	2F52	2F53	2F54	2F55	2F56	2F57	2F58	2F59	2F5A	2F5B	2F5C	2F5D	2F5E	2F5F
F6X	0EFB	2F61	2F62	2F63	2F64	2F65	2F66	2F67	2F68	2F69	2F6A	2F6B	2F6C	2F6D	2F6E	2F6F
F7X	2F70	2F71	2F72	2F73	2F74	2F75	2F76	2F77	2F78	2F79	2F7A	2F7B	2F7C	2F7D	2F7E	2F7F
F8X	0EFC	2F81	2F82	2F83	2F84	2F85	2F86	2F87	2F88	2F89	2F8A	2F8B	2F8C	2F8D	2F8E	2F8F
F9X	2F90	2F91	2F92	2F93	2F94	2F95	2F96	2F97	2F98	2F99	2F9A	2F9B	2F9C	2F9D	2F9E	2F9F
FAX	0EFD	2FA1	2FA2	2FA3	2FA4	2FA5	2FA6	2FA7	2FA8	2FA9	2FAA	2FAB	2FAC	2FAD	2FAE	2FAF
FBX	2FB0	2FB1	2FB2	2FB3	2FB4	2FB5	2FB6	2FB7	2FB8	2FB9	2FBA	2FBB	2FBC	2FBD	2FBE	2FBF
FCX	0EFE	2FC1	2FC2	2FC3	2FC4	2FC5	2FC6	2FC7	2FC8	2FC9	2FCA	2FCB	2FCC	2FCD	2FCE	2FCF
FDX	2FD0	2FD1	2FD2	2FD3	2FD4	2FD5	2FD6	2FD7	2FD8	2FD9	2FDA	2FDB	2FDC	2FDD	2FDE	2FDF
FEX	0EFF	2FE1	2FE2	2FE3	2FE4	2FE5	2FE6	2FE7	2FE8	2FE9	2FEA	2FEB	2FEC	2FED	2FEE	2FEF
FFX	2FF0	2FF1	2FF2	2FF3	2FF4	2FF5	2FF6	2FF7	2FF8	2FF9	2FFA	2FFB	2FFC	2FFD	2FFE	2FFF

12 MAR 2000

-67-

Table 12 below is an encoding table for the 14-bit encoder when the state S2 is active. The arrangement of Table 12 is similar to Tables 10, 11. In Table 12, the state S2 is indicated at the top of the table to be active.

5

Table 12 (Part 1 of 6)

State 2 of 14-bit code word for 24/25 (0,7/7) code																
	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
00X	0970	08E1	0821	0882	08F0	08F1	0806	0807	0830	0969	0831	0968	096C	096D	0C5E	096F
01X	0888	08E3	0A4D	3013	08F2	08F3	3016	3017	092F	3019	301A	301B	301C	301D	301E	301F
02X	0971	0822	0823	3023	0A4B	3025	3026	3027	0832	3029	0833	302B	302C	302D	302E	302F
03X	0A4F	3031	3032	3033	3034	3035	3036	3037	3038	3039	303A	303B	303C	303D	303E	303F
04X	0972	08E5	0A5D	3043	08F4	08F5	3046	3047	094F	3049	304A	304B	304C	304D	304E	304F
05X	088A	08E7	3052	3053	08F6	08F7	3056	3057	3058	3059	305A	305B	305C	305D	305E	305F
06X	0973	3061	3062	3063	3064	3065	3066	3067	3068	3069	306A	306B	306C	306D	306E	306F
07X	3070	3071	3072	3073	3074	3075	3076	3077	3078	3079	307A	307B	307C	307D	307E	307F
08X	0974	08A2	0825	3083	0A5B	3085	3086	3087	0834	3089	0835	308B	308C	308D	308E	308F
09X	0A5F	3091	3092	3093	3094	3095	3096	3097	3098	3099	309A	309B	309C	309D	309E	309F
0AX	0975	30A1	0827	30A3	30A4	30A5	30A6	30A7	0836	30A9	0837	30AB	30AC	30AD	30AE	30AF
0BX	3080	30B1	3082	30B3	30B4	30B5	30B6	30B7	3088	30B9	30BA	30BB	30BC	30BD	30BE	30BF
0CX	0976	30C1	30C2	30C3	30C4	30C5	30C6	30C7	30C8	30C9	30CA	30CB	30CC	30CD	30CE	30CF
0DX	30D0	30D1	30D2	30D3	30D4	30D5	30D6	30D7	30D8	30D9	30DA	30DB	30DC	30DD	30DE	30DF
0EX	0977	30E1	30E2	30E3	30E4	30E5	30E6	30E7	30E8	30E9	30EA	30EB	30EC	30ED	30EE	30EF
0FX	30F0	30F1	30F2	30F3	30F4	30F5	30F6	30F7	30F8	30F9	30FA	30FB	30FC	30FD	30FE	30FF
10X	0978	08E9	0A1D	3103	08F8	08F9	3106	3107	098F	3109	310A	310B	310C	310D	310E	310F
11X	088C	08E8	3112	3113	08FA	08FB	3116	3117	3118	3119	311A	311B	311C	311D	311E	311F
12X	0979	3121	3122	3123	3124	3125	3126	3127	3128	3129	312A	312B	312C	312D	312E	312F
13X	3130	3131	3132	3133	3134	3135	3136	3137	3138	3139	313A	313B	313C	313D	313E	313F
14X	097A	08ED	3142	3143	08FC	08FD	3146	3147	3148	3149	314A	314B	314C	314D	314E	314F
15X	088E	08EF	3152	3153	08FE	08FF	3156	3157	3158	3159	315A	315B	315C	315D	315E	315F
16X	097B	3161	3162	3163	3164	3165	3166	3167	3168	3169	316A	316B	316C	316D	316E	316F
17X	3170	3171	3172	3173	3174	3175	3176	3177	3178	3179	317A	317B	317C	317D	317E	317F
18X	097C	3181	3182	3183	3184	3185	3186	3187	3188	3189	318A	318B	318C	318D	318E	318F
19X	3190	3191	3192	3193	3194	3195	3196	3197	3198	3199	319A	319B	319C	319D	319E	319F
1AX	097D	31A1	31A2	31A3	31A4	31A5	31A6	31A7	31A8	31A9	31AA	31AB	31AC	31AD	31AE	31AF
1BX	31B0	31B1	31B2	31B3	31B4	31B5	31B6	31B7	31B8	31B9	31BA	31BB	31BC	31BD	31BE	31BF
1CX	097E	31C1	31C2	31C3	31C4	31C5	31C6	31C7	31C8	31C9	31CA	31CB	31CC	31CD	31CE	31CF
1DX	31D0	31D1	31D2	31D3	31D4	31D5	31D6	31D7	31D8	31D9	31DA	31DB	31DC	31DD	31DE	31DF
1EX	097F	31E1	31E2	31E3	31E4	31E5	31E6	31E7	31E8	31E9	31EA	31EB	31EC	31ED	31EE	31EF
1FX	31F0	31F1	31F2	31F3	31F4	31F5	31F6	31F7	31F8	31F9	31FA	31FB	31FC	31FD	31FE	31FF
20X	0980	0824	0829	3203	0A1B	3205	3206	3207	0838	3209	0839	320B	320C	320D	320E	320F
21X	0A1F	3211	3212	3213	3214	3215	3216	3217	3218	3219	321A	321B	321C	321D	321E	321F
22X	0981	3221	082B	3223	3224	3225	3226	3227	083A	3229	083B	322B	322C	322D	322E	322F
23X	3230	3231	3232	3233	3234	3235	3236	3237	3238	3239	323A	323B	323C	323D	323E	323F
24X	0982	3241	3242	3243	3244	3245	3246	3247	3248	3249	324A	324B	324C	324D	324E	324F
25X	3250	3251	3252	3253	3254	3255	3256	3257	3258	3259	325A	325B	325C	325D	325E	325F
26X	0983	3261	3262	3263	3264	3265	3266	3267	3268	3269	326A	326B	326C	326D	326E	326F
27X	3270	3271	3272	3273	3274	3275	3276	3277	3278	3279	327A	327B	327C	327D	327E	327F
28X	0984	3281	082D	3283	3284	3285	3286	3287	083C	3289	083D	328B	328C	328D	328E	328F
29X	3290	3291	3292	3293	3294	3295	3296	3297	3298	3299	329A	329B	329C	329D	329E	329F
2AX	0985	32A1	082F	32A3	32A4	32A5	32A6	32A7	083E	32A9	083F	32AB	32AC	32AD	32AE	32AF
2BX	32B0	32B1	32B2	32B3	32B4	32B5	32B6	32B7	32B8	32B9	32BA	32BB	32BC	32BD	32BE	32BF
2CX	0986	32C1	32C2	32C3	32C4	32C5	32C6	32C7	32C8	32C9	32CA	32CB	32CC	32CD	32CE	32CF
2DX	32D0	32D1	32D2	32D3	32D4	32D5	32D6	32D7	32D8	32D9	32DA	32DB	32DC	32DD	32DE	32DF
2EX	0987	32E1	32E2	32E3	32E4	32E5	32E6	32E7	32E8	32E9	32EA	32EB	32EC	32ED	32EE	32EF
2FX	32F0	32F1	32F2	32F3	32F4	32F5	32F6	32F7	32F8	32F9	32FA	32FB	32FC	32FD	32FE	32FF

Table 12 (Part 2 of 6)

State 2 of 14-bit code word for 24/25 (0,7/7) code																
	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
30X	09B8	3301	3302	3303	3304	3305	3306	3307	3308	3309	330A	330B	330C	330D	330E	330F
31X	3310	3311	3312	3313	3314	3315	3316	3317	3318	3319	331A	331B	331C	331D	331E	331F
32X	09B9	3321	3322	3323	3324	3325	3326	3327	3328	3329	332A	332B	332C	332D	332E	332F
33X	3330	3331	3332	3333	3334	3335	3336	3337	3338	3339	333A	333B	333C	333D	333E	333F
34X	09BA	3341	3342	3343	3344	3345	3346	3347	3348	3349	334A	334B	334C	334D	334E	334F
35X	3350	3351	3352	3353	3354	3355	3356	3357	3358	3359	335A	335B	335C	335D	335E	335F
36X	09BB	3361	3362	3363	3364	3365	3366	3367	3368	3369	336A	336B	336C	336D	336E	336F
37X	3370	3371	3372	3373	3374	3375	3376	3377	3378	3379	337A	337B	337C	337D	337E	337F
38X	09BC	3381	3382	3383	3384	3385	3386	3387	3388	3389	338A	338B	338C	338D	338E	338F
39X	3390	3391	3392	3393	3394	3395	3396	3397	3398	3399	339A	339B	339C	339D	339E	339F
3AX	09BD	33A1	33A2	33A3	33A4	33A5	33A6	33A7	33A8	33A9	33AA	33AB	33AC	33AD	33AE	33AF
3BX	33B0	33B1	33B2	33B3	33B4	33B5	33B6	33B7	33B8	33B9	33BA	33BB	33BC	33BD	33BE	33BF
3CX	09BE	33C1	33C2	33C3	33C4	33C5	33C6	33C7	33C8	33C9	33CA	33CB	33CC	33CD	33CE	33CF
3DX	33D0	33D1	33D2	33D3	33D4	33D5	33D6	33D7	33D8	33D9	33DA	33DB	33DC	33DD	33DE	33DF
3EX	09BF	33E1	33E2	33E3	33E4	33E5	33E6	33E7	33E8	33E9	33EA	33EB	33EC	33ED	33EE	33EF
3FX	33F0	33F1	33F2	33F3	33F4	33F5	33F6	33F7	33F8	33F9	33FA	33FB	33FC	33FD	33FE	33FF
40X	09D0	0841	0861	08A2	0850	0851	3406	3407	0870	3409	0871	340B	340C	340D	340E	340F
41X	08A8	0843	3412	3413	0852	0853	3416	3417	3418	3419	341A	341B	341C	341D	341E	341F
42X	09D1	3421	0863	3423	3424	3425	3426	3427	0872	3429	0873	342B	342C	342D	342E	342F
43X	3430	3431	3432	3433	3434	3435	3436	3437	3438	3439	343A	343B	343C	343D	343E	343F
44X	09D2	0845	3442	3443	0854	0855	3446	3447	3448	3449	344A	344B	344C	344D	344E	344F
45X	08AA	0847	3452	3453	0856	0857	3456	3457	3458	3459	345A	345B	345C	345D	345E	345F
46X	09D3	3461	3462	3463	3464	3465	3466	3467	3468	3469	346A	346B	346C	346D	346E	346F
47X	3470	3471	3472	3473	3474	3475	3476	3477	3478	3479	347A	347B	347C	347D	347E	347F
48X	09D4	3481	0865	3483	3484	3485	3486	3487	0874	3489	0875	348B	348C	348D	348E	348F
49X	3490	3491	3492	3493	3494	3495	3496	3497	3498	3499	349A	349B	349C	349D	349E	349F
4AX	09D5	34A1	0867	34A3	34A4	34A5	34A6	34A7	0876	34A9	0877	34AB	34AC	34AD	34AE	34AF
4BX	34B0	34B1	34B2	34B3	34B4	34B5	34B6	34B7	34B8	34B9	34BA	34BB	34BC	34BD	34BE	34BF
4CX	09D6	34C1	34C2	34C3	34C4	34C5	34C6	34C7	34C8	34C9	34CA	34CB	34CC	34CD	34CE	34CF
4DX	34D0	34D1	34D2	34D3	34D4	34D5	34D6	34D7	34D8	34D9	34DA	34DB	34DC	34DD	34DE	34DF
4EX	09D7	34E1	34E2	34E3	34E4	34E5	34E6	34E7	34E8	34E9	34EA	34EB	34EC	34ED	34EE	34EF
4FX	34F0	34F1	34F2	34F3	34F4	34F5	34F6	34F7	34F8	34F9	34FA	34FB	34FC	34FD	34FE	34FF
50X	09D8	0849	3502	3503	0858	0859	3506	3507	3508	3509	350A	350B	350C	350D	350E	350F
51X	08AC	084B	3512	3513	085A	085B	3516	3517	3518	3519	351A	351B	351C	351D	351E	351F
52X	09D9	3521	3522	3523	3524	3525	3526	3527	3528	3529	352A	352B	352C	352D	352E	352F
53X	3530	3531	3532	3533	3534	3535	3536	3537	3538	3539	353A	353B	353C	353D	353E	353F
54X	09DA	084D	3542	3543	085C	085D	3546	3547	3548	3549	354A	354B	354C	354D	354E	354F
55X	08AE	084F	3552	3553	085E	085F	3556	3557	3558	3559	355A	355B	355C	355D	355E	355F
56X	09DB	3561	3562	3563	3564	3565	3566	3567	3568	3569	356A	356B	356C	356D	356E	356F
57X	3570	3571	3572	3573	3574	3575	3576	3577	3578	3579	357A	357B	357C	357D	357E	357F
58X	09DC	3581	3582	3583	3584	3585	3586	3587	3588	3589	358A	358B	358C	358D	358E	358F
59X	3590	3591	3592	3593	3594	3595	3596	3597	3598	3599	359A	359B	359C	359D	359E	359F
5AX	09DD	35A1	35A2	35A3	35A4	35A5	35A6	35A7	35A8	35A9	35AA	35AB	35AC	35AD	35AE	35AF
5BX	35B0	35B1	35B2	35B3	35B4	35B5	35B6	35B7	35B8	35B9	35BA	35BB	35BC	35BD	35BE	35BF
5CX	09DE	35C1	35C2	35C3	35C4	35C5	35C6	35C7	35C8	35C9	35CA	35CB	35CC	35CD	35CE	35CF
5DX	35D0	35D1	35D2	35D3	35D4	35D5	35D6	35D7	35D8	35D9	35DA	35DB	35DC	35DD	35DE	35DF
5EX	09DF	35E1	35E2	35E3	35E4	35E5	35E6	35E7	35E8	35E9	35EA	35EB	35EC	35ED	35EE	35EF
5FX	35F0	35F1	35F2	35F3	35F4	35F5	35F6	35F7	35F8	35F9	35FA	35FB	35FC	35FD	35FE	35FF

12 MAR 2003

-70-

Table 12 (Part 3 of 6)

State 2 of 14-bit code word for 24/25 (0,7/7) code																
	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
60X	09F0	08A4	0869	3603	3604	3605	3606	3607	0878	3609	0879	3608	360C	360D	360E	360F
61X	3610	3611	3612	3613	3614	3615	3616	3617	3618	3619	361A	361B	361C	361D	361E	361F
62X	09F1	3621	0868	3623	3624	3625	3626	3627	087A	3629	087B	3628	362C	362D	362E	362F
63X	3630	3631	3632	3633	3634	3635	3636	3637	3638	3639	363A	363B	363C	363D	363E	363F
64X	09F2	3641	3642	3643	3644	3645	3646	3647	3648	3649	364A	364B	364C	364D	364E	364F
65X	3650	3651	3652	3653	3654	3655	3656	3657	3658	3659	365A	365B	365C	365D	365E	365F
66X	09F3	3661	3662	3663	3664	3665	3666	3667	3668	3669	366A	366B	366C	366D	366E	366F
67X	3670	3671	3672	3673	3674	3675	3676	3677	3678	3679	367A	367B	367C	367D	367E	367F
68X	09F4	3681	086D	3683	3684	3685	3686	3687	087C	3689	087D	3688	368C	368D	368E	368F
69X	3690	3691	3692	3693	3694	3695	3696	3697	3698	3699	369A	369B	369C	369D	369E	369F
6AX	09F5	36A1	086F	36A3	36A4	36A5	36A6	36A7	087E	36A9	087F	36AB	36AC	36AD	36AE	36AF
6BX	36B0	36B1	36B2	36B3	36B4	36B5	36B6	36B7	36B8	36B9	36BA	36BB	36BC	36BD	36BE	36BF
6CX	09F6	36C1	36C2	36C3	36C4	36C5	36C6	36C7	36C8	36C9	36CA	36CB	36CC	36CD	36CE	36CF
6DX	36D0	36D1	36D2	36D3	36D4	36D5	36D6	36D7	36D8	36D9	36DA	36DB	36DC	36DD	36DE	36DF
6EX	09F7	36E1	36E2	36E3	36E4	36E5	36E6	36E7	36E8	36E9	36EA	36EB	36EC	36ED	36EE	36EF
6FX	36F0	36F1	36F2	36F3	36F4	36F5	36F6	36F7	36F8	36F9	36FA	36FB	36FC	36FD	36FE	36FF
70X	09F8	3701	3702	3703	3704	3705	3706	3707	3708	3709	370A	370B	370C	370D	370E	370F
71X	3710	3711	3712	3713	3714	3715	3716	3717	3718	3719	371A	371B	371C	371D	371E	371F
72X	09F9	3721	3722	3723	3724	3725	3726	3727	3728	3729	372A	372B	372C	372D	372E	372F
73X	3730	3731	3732	3733	3734	3735	3736	3737	3738	3739	373A	373B	373C	373D	373E	373F
74X	09FA	3741	3742	3743	3744	3745	3746	3747	3748	3749	374A	374B	374C	374D	374E	374F
75X	3750	3751	3752	3753	3754	3755	3756	3757	3758	3759	375A	375B	375C	375D	375E	375F
76X	09FB	3761	3762	3763	3764	3765	3766	3767	3768	3769	376A	376B	376C	376D	376E	376F
77X	3770	3771	3772	3773	3774	3775	3776	3777	3778	3779	377A	377B	377C	377D	377E	377F
78X	09FC	3781	3782	3783	3784	3785	3786	3787	3788	3789	378A	378B	378C	378D	378E	378F
79X	3790	3791	3792	3793	3794	3795	3796	3797	3798	3799	379A	379B	379C	379D	379E	379F
7AX	09FD	37A1	37A2	37A3	37A4	37A5	37A6	37A7	37A8	37A9	37AA	37AB	37AC	37AD	37AE	37AF
7BX	37B0	37B1	37B2	37B3	37B4	37B5	37B6	37B7	37B8	37B9	37BA	37BB	37BC	37BD	37BE	37BF
7CX	09FE	37C1	37C2	37C3	37C4	37C5	37C6	37C7	37C8	37C9	37CA	37CB	37CC	37CD	37CE	37CF
7DX	37D0	37D1	37D2	37D3	37D4	37D5	37D6	37D7	37D8	37D9	37DA	37DB	37DC	37DD	37DE	37DF
7EX	09FF	37E1	37E2	37E3	37E4	37E5	37E6	37E7	37E8	37E9	37EA	37EB	37EC	37ED	37EE	37EF
7FX	37F0	37F1	37F2	37F3	37F4	37F5	37F6	37F7	37F8	37F9	37FA	37FB	37FC	37FD	37FE	37FF
80X	0A70	0881	08A1	08C2	0890	0891	0816	0817	0880	3809	08B1	3808	380C	380D	380E	380F
81X	08C8	0883	3812	3813	0892	0893	3816	3817	3818	3819	381A	381B	381C	381D	381E	381F
82X	0A71	3821	08A3	3823	3824	3825	3826	3827	08B2	3829	08B3	3828	382C	382D	382E	382F
83X	3830	3831	3832	3833	3834	3835	3836	3837	3838	3839	383A	383B	383C	383D	383E	383F
84X	0A72	0885	3842	3843	0894	0895	3846	3847	3848	3849	384A	384B	384C	384D	384E	384F
85X	08CA	0887	3852	3853	0896	0897	3856	3857	3858	3859	385A	385B	385C	385D	385E	385F
86X	0A73	3861	3862	3863	3864	3865	3866	3867	3868	3869	386A	386B	386C	386D	386E	386F
87X	3870	3871	3872	3873	3874	3875	3876	3877	3878	3879	387A	387B	387C	387D	387E	387F
88X	0A74	3881	08A5	3883	3884	3885	3886	3887	08B4	3889	08B5	3888	388C	388D	388E	388F
89X	3890	3891	3892	3893	3894	3895	3896	3897	3898	3899	389A	389B	389C	389D	389E	389F
8AX	0A75	38A1	08A7	38A3	38A4	38A5	38A6	38A7	08B6	38A9	08B7	38AB	38AC	38AD	38AE	38AF
8BX	38B0	38B1	38B2	38B3	38B4	38B5	38B6	38B7	38B8	38B9	38BA	38BB	38BC	38BD	38BE	38BF
8CX	0A76	38C1	38C2	38C3	38C4	38C5	38C6	38C7	38C8	38C9	38CA	38CB	38CC	38CD	38CE	38CF
8DX	38D0	38D1	38D2	38D3	38D4	38D5	38D6	38D7	38D8	38D9	38DA	38DB	38DC	38DD	38DE	38DF
8EX	0A77	38E1	38E2	38E3	38E4	38E5	38E6	38E7	38E8	38E9	38EA	38EB	38EC	38ED	38EE	38EF
8FX	38F0	38F1	38F2	38F3	38F4	38F5	38F6	38F7	38F8	38F9	38FA	38FB	38FC	38FD	38FE	38FF

Table 12 (Part 4 of 6)

State 2 of 14-bit code word for 24/25 (0,7/7) code																
	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
90X	0A78	0B89	3902	3903	0B98	0B99	3906	3907	3908	3909	390A	390B	390C	390D	390E	390F
91X	0B0C	0B8B	3912	3913	0B9A	0B9B	3916	3917	3918	3919	391A	391B	391C	391D	391E	391F
92X	0A79	3921	3922	3923	3924	3925	3926	3927	3928	3929	392A	392B	392C	392D	392E	392F
93X	3930	3931	3932	3933	3934	3935	3936	3937	3938	3939	393A	393B	393C	393D	393E	393F
94X	0A7A	0B8D	3942	3943	0B9C	0B9D	3946	3947	3948	3949	394A	394B	394C	394D	394E	394F
95X	0BCE	0B8F	3952	3953	0B9E	0B9F	3956	3957	3958	3959	395A	395B	395C	395D	395E	395F
96X	0A7B	3961	3962	3963	3964	3965	3966	3967	3968	3969	396A	396B	396C	396D	396E	396F
97X	3970	3971	3972	3973	3974	3975	3976	3977	3978	3979	397A	397B	397C	397D	397E	397F
98X	0A7C	3981	3982	3983	3984	3985	3986	3987	3988	3989	398A	398B	398C	398D	398E	398F
99X	3990	3991	3992	3993	3994	3995	3996	3997	3998	3999	399A	399B	399C	399D	399E	399F
9AX	0A7D	39A1	39A2	39A3	39A4	39A5	39A6	39A7	39A8	39A9	39AA	39AB	39AC	39AD	39AE	39AF
9BX	39B0	39B1	39B2	39B3	39B4	39B5	39B6	39B7	39B8	39B9	39BA	39BB	39BC	39BD	39BE	39BF
9CX	0A7E	39C1	39C2	39C3	39C4	39C5	39C6	39C7	39C8	39C9	39CA	39CB	39CC	39CD	39CE	39CF
9DX	39D0	39D1	39D2	39D3	39D4	39D5	39D6	39D7	39D8	39D9	39DA	39DB	39DC	39DD	39DE	39DF
9EX	0A7F	39E1	39E2	39E3	39E4	39E5	39E6	39E7	39E8	39E9	39EA	39EB	39EC	39ED	39EE	39EF
9FX	39F0	39F1	39F2	39F3	39F4	39F5	39F6	39F7	39F8	39F9	39FA	39FB	39FC	39FD	39FE	39FF
A0X	0AB0	0BC4	0BA9	3A03	3A04	3A05	3A06	3A07	0B88	3A09	0B89	3A0B	3A0C	3A0D	3A0E	3A0F
A1X	3A10	3A11	3A12	3A13	3A14	3A15	3A16	3A17	3A18	3A19	3A1A	3A1B	3A1C	3A1D	3A1E	3A1F
A2X	0AB1	3A21	0BAB	3A23	3A24	3A25	3A26	3A27	0B8A	3A29	0B8B	3A2B	3A2C	3A2D	3A2E	3A2F
A3X	3A30	3A31	3A32	3A33	3A34	3A35	3A36	3A37	3A38	3A39	3A3A	3A3B	3A3C	3A3D	3A3E	3A3F
A4X	0AB2	3A41	3A42	3A43	3A44	3A45	3A46	3A47	3A48	3A49	3A4A	3A4B	3A4C	3A4D	3A4E	3A4F
ASX	3A50	3A51	3A52	3A53	3A54	3A55	3A56	3A57	3A58	3A59	3A5A	3A5B	3A5C	3A5D	3A5E	3A5F
A6X	0AB3	3A61	3A62	3A63	3A64	3A65	3A66	3A67	3A68	3A69	3A6A	3A6B	3A6C	3A6D	3A6E	3A6F
A7X	3A70	3A71	3A72	3A73	3A74	3A75	3A76	3A77	3A78	3A79	3A7A	3A7B	3A7C	3A7D	3A7E	3A7F
A8X	0AB4	3A81	0BAD	3A83	3A84	3A85	3A86	3A87	0B8C	3A89	0B8D	3A8B	3A8C	3A8D	3A8E	3A8F
A9X	3A90	3A91	3A92	3A93	3A94	3A95	3A96	3A97	3A98	3A99	3A9A	3A9B	3A9C	3A9D	3A9E	3A9F
AAX	0AB5	3AA1	0BAF	3AA3	3AA4	3AA5	3AA6	3AA7	0B8E	3AA9	0B8F	3AAB	3AAC	3AAD	3AAE	3AAF
ABX	3AB0	3AB1	3AB2	3AB3	3AB4	3AB5	3AB6	3AB7	3AB8	3AB9	3ABA	3ABB	3ABC	3ABD	3ABE	3ABF
ACX	0AB6	3AC1	3AC2	3AC3	3AC4	3AC5	3AC6	3AC7	3AC8	3AC9	3ACA	3ACB	3ACC	3ACD	3ACE	3ACF
ADX	3AD0	3AD1	3AD2	3AD3	3AD4	3AD5	3AD6	3AD7	3AD8	3AD9	3ADA	3ADB	3ADC	3ADD	3ADE	3ADF
AEX	0AB7	3AE1	3AE2	3AE3	3AE4	3AE5	3AE6	3AE7	3AE8	3AE9	3AEA	3AEB	3AEC	3AED	3AEE	3AEF
AFX	3AF0	3AF1	3AF2	3AF3	3AF4	3AF5	3AF6	3AF7	3AF8	3AF9	3AFA	3AFB	3AFC	3AFD	3AFE	3AFF
B0X	0AB8	3B01	3B02	3B03	3B04	3B05	3B06	3B07	3B08	3B09	3B0A	3B0B	3B0C	3B0D	3B0E	3B0F
B1X	3B10	3B11	3B12	3B13	3B14	3B15	3B16	3B17	3B18	3B19	3B1A	3B1B	3B1C	3B1D	3B1E	3B1F
B2X	0AB9	3B21	3B22	3B23	3B24	3B25	3B26	3B27	3B28	3B29	3B2A	3B2B	3B2C	3B2D	3B2E	3B2F
B3X	3B30	3B31	3B32	3B33	3B34	3B35	3B36	3B37	3B38	3B39	3B3A	3B3B	3B3C	3B3D	3B3E	3B3F
B4X	0ABA	3B41	3B42	3B43	3B44	3B45	3B46	3B47	3B48	3B49	3B4A	3B4B	3B4C	3B4D	3B4E	3B4F
B5X	3B50	3B51	3B52	3B53	3B54	3B55	3B56	3B57	3B58	3B59	3B5A	3B5B	3B5C	3B5D	3B5E	3B5F
B6X	0ABB	3B61	3B62	3B63	3B64	3B65	3B66	3B67	3B68	3B69	3B6A	3B6B	3B6C	3B6D	3B6E	3B6F
B7X	3B70	3B71	3B72	3B73	3B74	3B75	3B76	3B77	3B78	3B79	3B7A	3B7B	3B7C	3B7D	3B7E	3B7F
B8X	0ABC	3B81	3B82	3B83	3B84	3B85	3B86	3B87	3B88	3B89	3B8A	3B8B	3B8C	3B8D	3B8E	3B8F
B9X	3B90	3B91	3B92	3B93	3B94	3B95	3B96	3B97	3B98	3B99	3B9A	3B9B	3B9C	3B9D	3B9E	3B9F
BAX	0ABD	3BA1	3BA2	3BA3	3BA4	3BA5	3BA6	3BA7	3BA8	3BA9	3BAA	3BAB	3BAC	3BAD	3BAE	3BAF
BBX	3BB0	3BB1	3BB2	3BB3	3BB4	3BB5	3BB6	3BB7	3BB8	3BB9	3BBA	3BBB	3BBC	3BBD	3BBE	3BBF
BCX	0ABE	3BC1	3BC2	3BC3	3BC4	3BC5	3BC6	3BC7	3BC8	3BC9	3BCA	3BCB	3BCC	3BCD	3BCE	3BCF
BDX	3BD0	3BD1	3BD2	3BD3	3BD4	3BD5	3BD6	3BD7	3BD8	3BD9	3BDA	3BDB	3BDC	3BDD	3BDE	3BDF
BEX	0ABF	3BE1	3BE2	3BE3	3BE4	3BE5	3BE6	3BE7	3BE8	3BE9	3BEA	3BEB	3BEC	3BED	3BEE	3BEF
BFX	3BF0	3BF1	3BF2	3BF3	3BF4	3BF5	3BF6	3BF7	3BF8	3BF9	3BFA	3BFB	3BFC	3BFD	3BFE	3BFF

Table 12 (Part 5 of 6)

State 2 of 14-bit code word for 24/25 (0,7/7) code																
	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
C0X	0AD0	0BC1	0BE1	0BE2	0BD0	0BD1	3C06	3C07	0BF0	3C09	0BF1	3C08	3C0C	3C0D	3C0E	3C0F
C1X	0BE8	0BC3	3C12	3C13	0BD2	0BD3	3C16	3C17	3C18	3C19	3C1A	3C1B	3C1C	3C1D	3C1E	3C1F
C2X	0AD1	3C21	0BE3	3C23	3C24	3C25	3C26	3C27	0BF2	3C29	0BF3	3C2B	3C2C	3C2D	3C2E	3C2F
C3X	3C30	3C31	3C32	3C33	3C34	3C35	3C36	3C37	3C38	3C39	3C3A	3C3B	3C3C	3C3D	3C3E	3C3F
C4X	0AD2	0BC5	3C42	3C43	0BD4	0BD5	3C46	3C47	3C48	3C49	3C4A	3C4B	3C4C	3C4D	3C4E	3C4F
C5X	0BEA	0BC7	3C52	3C53	0BD6	0BD7	3C56	3C57	3C58	3C59	3C5A	3C5B	3C5C	3C5D	3C5E	3C5F
C6X	0AD3	3C61	3C62	3C63	3C64	3C65	3C66	3C67	3C68	3C69	3C6A	3C6B	3C6C	3C6D	3C6E	3C6F
C7X	3C70	3C71	3C72	3C73	3C74	3C75	3C76	3C77	3C78	3C79	3C7A	3C7B	3C7C	3C7D	3C7E	3C7F
C8X	0AD4	3C81	0BE5	3C83	3C84	3C85	3C86	3C87	0BF4	3C89	0BF5	3C8B	3C8C	3C8D	3C8E	3C8F
C9X	3C90	3C91	3C92	3C93	3C94	3C95	3C96	3C97	3C98	3C99	3C9A	3C9B	3C9C	3C9D	3C9E	3C9F
CAX	0AD5	3CA1	0BE7	3CA3	3CA4	3CA5	3CA6	3CA7	0BF6	3CA9	0BF7	3CAB	3CAC	3CAD	3CAE	3CAF
C8X	3CB0	3CB1	3CB2	3CB3	3CB4	3CB5	3CB6	3CB7	3CB8	3CB9	3CBA	3CBB	3CBC	3CBD	3CBE	3CBF
CCX	0AD6	3CC1	3CC2	3CC3	3CC4	3CC5	3CC6	3CC7	3CC8	3CC9	3CCA	3CCB	3CCC	3CCD	3CEE	3CCF
CDX	3CD0	3CD1	3CD2	3CD3	3CD4	3CD5	3CD6	3CD7	3CD8	3CD9	3CDA	3CDB	3CDC	3CDD	3CDE	3CDF
CEX	0AD7	3CE1	3CE2	3CE3	3CE4	3CE5	3CE6	3CE7	3CE8	3CE9	3CEA	3CEB	3CEC	3CED	3CEE	3CEF
CFX	3CF0	3CF1	3CF2	3CF3	3CF4	3CF5	3CF6	3CF7	3CF8	3CF9	3CFA	3CFB	3CFC	3CFD	3CFE	3CFF
D0X	0AD8	0BC9	3C02	3C03	0BD8	0BD9	3D06	3D07	3D08	3D09	3D0A	3D0B	3D0C	3D0D	3D0E	3D0F
D1X	0BEC	0BCB	3D12	3D13	0BD0	0BD8	3D16	3D17	3D18	3D19	3D1A	3D1B	3D1C	3D1D	3D1E	3D1F
D2X	0AD9	3D21	3D22	3D23	3D24	3D25	3D26	3D27	3D28	3D29	3D2A	3D2B	3D2C	3D2D	3D2E	3D2F
D3X	3D30	3D31	3D32	3D33	3D34	3D35	3D36	3D37	3D38	3D39	3D3A	3D3B	3D3C	3D3D	3D3E	3D3F
D4X	0ADA	0BCD	3D42	3D43	0BD0	0BD0	3D46	3D47	3D48	3D49	3D4A	3D4B	3D4C	3D4D	3D4E	3D4F
D5X	0BEE	0BCF	3D52	3D53	0BD0	0BD0	3D56	3D57	3D58	3D59	3D5A	3D5B	3D5C	3D5D	3D5E	3D5F
D6X	0ADB	3D61	3D62	3D63	3D64	3D65	3D66	3D67	3D68	3D69	3D6A	3D6B	3D6C	3D6D	3D6E	3D6F
D7X	3D70	3D71	3D72	3D73	3D74	3D75	3D76	3D77	3D78	3D79	3D7A	3D7B	3D7C	3D7D	3D7E	3D7F
D8X	0ADC	3D81	3D82	3D83	3D84	3D85	3D86	3D87	3D88	3D89	3D8A	3D8B	3D8C	3D8D	3D8E	3D8F
D9X	3D90	3D91	3D92	3D93	3D94	3D95	3D96	3D97	3D98	3D99	3D9A	3D9B	3D9C	3D9D	3D9E	3D9F
DAX	0ADD	3DA1	3DA2	3DA3	3DA4	3DA5	3DA6	3DA7	3DA8	3DA9	3DAA	3DAB	3DAC	3DAD	3DAE	3DAF
D8X	3DB0	3DB1	3DB2	3DB3	3DB4	3DB5	3DB6	3DB7	3DB8	3DB9	3DBA	3DBB	3DBC	3DBD	3DBE	3DBF
DCX	0ADE	3DC1	3DC2	3DC3	3DC4	3DC5	3DC6	3DC7	3DC8	3DC9	3DCA	3DCB	3DCC	3DCD	3DCE	3DCF
DDX	3DD0	3DD1	3DD2	3DD3	3DD4	3DD5	3DD6	3DD7	3DD8	3DD9	3DDA	3DDB	3DDC	3DDD	3DDE	3DDF
DEX	0ADF	3DE1	3DE2	3DE3	3DE4	3DE5	3DE6	3DE7	3DE8	3DE9	3DEA	3DEB	3DEC	3DED	3DEE	3DEF
DFX	3DF0	3DF1	3DF2	3DF3	3DF4	3DF5	3DF6	3DF7	3DF8	3DF9	3DFA	3DFB	3DFC	3DFD	3DFE	3DFF
E0X	0AF0	0BE4	0BE9	3E03	3E04	3E05	3E06	3E07	0EF3	3E09	0BF9	3E0B	3E0C	3E0D	3E0E	3E0F
E1X	3E10	3E11	3E12	3E13	3E14	3E15	3E16	3E17	3E18	3E19	3E1A	3E1B	3E1C	3E1D	3E1E	3E1F
E2X	0AF1	3E21	0BE8	3E23	3E24	3E25	3E26	3E27	0EFA	3E29	0BF8	3E2B	3E2C	3E2D	3E2E	3E2F
E3X	3E30	3E31	3E32	3E33	3E34	3E35	3E36	3E37	3E38	3E39	3E3A	3E3B	3E3C	3E3D	3E3E	3E3F
E4X	0AF2	3E41	3E42	3E43	3E44	3E45	3E46	3E47	3E48	3E49	3E4A	3E4B	3E4C	3E4D	3E4E	3E4F
E5X	3E50	3E51	3E52	3E53	3E54	3E55	3E56	3E57	3E58	3E59	3E5A	3E5B	3E5C	3E5D	3E5E	3E5F
E6X	0AF3	3E61	3E62	3E63	3E64	3E65	3E66	3E67	3E68	3E69	3E6A	3E6B	3E6C	3E6D	3E6E	3E6F
E7X	3E70	3E71	3E72	3E73	3E74	3E75	3E76	3E77	3E78	3E79	3E7A	3E7B	3E7C	3E7D	3E7E	3E7F
E8X	0AF4	3E81	0BED	3E83	3E84	3E85	3E86	3E87	0BFC	3E89	0BFD	3E8B	3E8C	3E8D	3E8E	3E8F
E9X	3E90	3E91	3E92	3E93	3E94	3E95	3E96	3E97	3E98	3E99	3E9A	3E9B	3E9C	3E9D	3E9E	3E9F
EAX	0AF5	3EA1	0BEF	3EA3	3EA4	3EA5	3EA6	3EA7	0BFE	3EA9	0BFF	3EAB	3EAC	3EAD	3EAE	3EAF
EBX	3EB0	3EB1	3EB2	3EB3	3EB4	3EB5	3EB6	3EB7	3EB8	3EB9	3EBA	3EBB	3EBC	3EBD	3EBE	3EBF
ECX	0AF6	3EC1	3EC2	3EC3	3EC4	3EC5	3EC6	3EC7	3EC8	3EC9	3ECA	3ECB	3ECC	3ECD	3ECE	3ECF
EDX	3ED0	3ED1	3ED2	3ED3	3ED4	3ED5	3ED6	3ED7	3ED8	3ED9	3EDA	3EDB	3EDC	3EDD	3EDE	3EDF
EEX	0AF7	3EE1	3EE2	3EE3	3EE4	3EE5	3EE6	3EE7	3EE8	3EE9	3EEA	3EEB	3EEC	3EED	3EEE	3EEF
EFX	3EF0	3EF1	3EF2	3EF3	3EF4	3EF5	3EF6	3EF7	3EF8	3EF9	3EFA	3EFB	3EFC	3EFD	3EFE	3EFF

Table 12 (Part 6 of 6)

State 2 of 14-bit code word for 24/25 (0,7/7) code																
	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
FOX	0AF8	3F01	3F02	3F03	3F04	3F05	3F06	3F07	3F08	3F09	3F0A	3F0B	3F0C	3F0D	3F0E	3F0F
F1X	3F10	3F11	3F12	3F13	3F14	3F15	3F16	3F17	3F18	3F19	3F1A	3F1B	3F1C	3F1D	3F1E	3F1F
F2X	0AF9	3F21	3F22	3F23	3F24	3F25	3F26	3F27	3F28	3F29	3F2A	3F2B	3F2C	3F2D	3F2E	3F2F
F3X	3F30	3F31	3F32	3F33	3F34	3F35	3F36	3F37	3F38	3F39	3F3A	3F3B	3F3C	3F3D	3F3E	3F3F
F4X	0AFA	3F41	3F42	3F43	3F44	3F45	3F46	3F47	3F48	3F49	3F4A	3F4B	3F4C	3F4D	3F4E	3F4F
F5X	3F50	3F51	3F52	3F53	3F54	3F55	3F56	3F57	3F58	3F59	3F5A	3F5B	3F5C	3F5D	3F5E	3F5F
F6X	0AFB	3F61	3F62	3F63	3F64	3F65	3F66	3F67	3F68	3F69	3F6A	3F6B	3F6C	3F6D	3F6E	3F6F
F7X	3F70	3F71	3F72	3F73	3F74	3F75	3F76	3F77	3F78	3F79	3F7A	3F7B	3F7C	3F7D	3F7E	3F7F
F8X	0AFC	3F81	3F82	3F83	3F84	3F85	3F86	3F87	3F88	3F89	3F8A	3F8B	3F8C	3F8D	3F8E	3F8F
F9X	3F90	3F91	3F92	3F93	3F94	3F95	3F96	3F97	3F98	3F99	3F9A	3F9B	3F9C	3F9D	3F9E	3F9F
FAX	0AFD	3FA1	3FA2	3FA3	3FA4	3FA5	3FA6	3FA7	3FA8	3FA9	3FAA	3FAB	3FAC	3FAD	3FAE	3FAF
FBX	3FB0	3FB1	3FB2	3FB3	3FB4	3FB5	3FB6	3FB7	3FB8	3FB9	3FBA	3FBB	3FBC	3FBD	3FBE	3FBF
FCX	0AFE	3FC1	3FC2	3FC3	3FC4	3FC5	3FC6	3FC7	3FC8	3FC9	3FCA	3FCB	3FCC	3FCD	3FCE	3FCF
FDX	3FD0	3FD1	3FD2	3FD3	3FD4	3FD5	3FD6	3FD7	3FD8	3FD9	3FDA	3FDB	3FDC	3FDD	3FDE	3FDF
FEX	0AFF	3FE1	3FE2	3FE3	3FE4	3FE5	3FE6	3FE7	3FE8	3FE9	3FEA	3FEB	3FEC	3FED	3FEE	3FEF
FFX	3FF0	3FF1	3FF2	3FF3	3FF4	3FF5	3FF6	3FF7	3FF8	3FF9	3FFA	3FFB	3FFC	3FFD	3FFE	3FFF

The various constraints on run length limits, Hamming weight are integrated into the encoding and decoding used. The "i" constraint directly affects the delay of decisions in the Viterbi algorithm and also influences the length of error propagation, and the "i" constraint is kept as short as possible. The "k" constraint is also kept short. The encoder 202 and decoder 208 are state driven and all of the code words are carefully chosen such that the state can be determined by the four leading bits of a 14 bit codeword as shown in Table 8.

The m bit data word is separated into two interleaved sequence of p=12 and q=12 bits. The sequence of p bits is mapped into a u=11 bit codeword and a sequence of q bits is mapped into a v = 14 bit codeword. Since 2^p codewords are needed for a p bit sequence, and 2^q codewords are needed for a q bit sequence, the conditions $2^p \leq N_u$ and $2^q \leq N_v$ for the number of bits N in the codewords must be met. An integer "t" is then found experimentally that satisfies the conditions $2^p \leq [N_u * t]$ and $[2^q * t] \leq N_v$ simultaneously. This arrangement ensures that the codewords can be divided into groups corresponding to the state numbers.

The encoding process of mapping m bits of data into n bits of the codewords can be done as follows:

1. Break the m-bit pattern into two patterns of p bits and q bits.
2. Map the p bit pattern into a u bit codeword and a state number S.

-75-

3. Go to the group of v bit codewords that is labeled with state number S and map the q bit pattern into a v bit codeword.

4. Combine the u bit and the v bit codewords to form the n -bit codeword.

The decoding process can be done as follows:

1. Break the n bit pattern into two patterns of u bits and v bits in length.

2. Since the v bit patterns in each state are unique, the state number S of the v bits can be determined. and the q bit data pattern is recovered.

3. Based on the state number S and the u bit code word, recover the p bit data pattern.

4. Combine the p bit and q bit data patterns to form or recover the m bit data pattern.

With $m=24$, $n=25$, $k=7$, $i=7$, $w=9$, the values $p=12$, $q=12$, $u=11$, $v=14$ are selected. There are then 1,484 eleven bit code words and 13,484 fourteen bit code words possible. If t is selected to be 3, then $2^p = 2^{12} = 4096$ and $(N_u * t) = 4452$ and $(2^q * t) = (2^{12} * 3) = 12288$ and $N_v = 13484$ and the inequality conditions above are met. As there are more than enough 14 bit codewords, codewords are chosen so that each state can be determined with a minimal number of bits of the codeword as shown in Table 1.

By employing the method of mapping a data word directly into a code word, the amount of logic in the encoder and decoder can be kept low. This method is able to encode a majority of the data words. In the encoder, 12 bit data words are encoded into 11 bit code words and 14 bit code words alternately. To encode a 12 bit data word into an 11 bit code word, the least significant 11 bits are entered into a

codeword tester CT-A which checks if the 11 bit pattern already satisfies the required constraints. If the constraints are satisfied, the 11 bit word is shifted out as the code word. The state for the next
5 code word is determined by the most significant bit of the data word. If the bit is a "0", the next state will be S1. If the bit is a "1", the next state will be S2. By exhaustive search, there are 1484 11 bit patterns that satisfy the constraints. Of the 4096
10 possible words, 1484 have S1 as the next state, 1484 have S2 as the next state, leaving 1128 data words that do not satisfy the constraints and will be mapped into code words using Boolean logic expressions in equations Ga through Gn shown below.

15 To encode a 12 bit data word into a 14 bit code word, two bits are attached to the 12 bit word as the most significant bits, and the value of these two bits depends on the state indicated by the previous code word mapping. The values 11, 10, and 01 are chosen
20 for corresponding states S2, S1 and S0. These 14 bits are entered into codeword tester CT-B which identifies the 14 bit patterns that satisfy the constraints and shifts those patterns out as the code word. There are 3728, 3464 and 3468 patterns that satisfy the
25 constraints for states S2, S1 and S0 respectively. Since each state needs 4096 patterns, there are 368, 632 and 628 remaining patterns for states S2, S1 and S0 respectively. There are 2824 14-bit patterns that start with 00 available. The Boolean logic that maps
30 these remaining patterns can be found in equations with terms Ha to Hf, Ja to Jh and Ka to Kh.

The decoders are constructed similarly. By using code pattern testers, about 86% of the code patterns

12 MAR 2003

-77-

can be encoded and decoded simply by the code testers. Only about 14% of the patterns require the more complex Boolean logic in the decoders.

The system (150) for communicating digital data through a communication channel (152) comprises an encoding system (154) adapted to receive first (156) and second (158) 12 bit sequences of the data. The encoding (154) generates an 11 bit first codeword (160) and state variables S0 (162), S1 (164), S2 (166) as functions of the first sequence (156).. The encoding system (154) generates a 14 bit second codeword (168) as a function of the second sequence (158) and the state variables (162, 164, 166). A modulator (170) receives the first and second codewords (160, 168) and couples first and second modulated codewords (172, 174) to the communication channel (152). A receiver (179) includes a demodulator (176) that receives first and second modulated codewords (172, 174) from the communication channel (152). The demodulator (176) generates first and second demodulated codewords (178, 180).

The decoding system (182) receives the first and second demodulated codewords (178, 180). The decoding system (182) generates a second decoded sequence (184) and decoded state variables S0' (186), S1' (188), S2' (190) as a function of the second demodulated code word (180). The decoding system (182) generates a first decoded sequence (192) as a function of the first demodulated codeword (178) and the decoded state variables (186, 188, 190).

The first and second codewords (160, 168) together form a 25 bit codeword. The encoding system (154) limits runs of zeros by encoding the 25 bit

codeword with a run length limit $k=7$, and by encoding the first and second codewords (160, 168) each with a run length limit $i=7$. The encoder guarantees a minimum code energy by encoding the 25 bit word with a Hamming weight $w=9$.

The decoding system (182) comprises code pattern testers (194, 196) that decode sequences that meet the "k", "i" and "w" constraints. The decoding system (182) can be a Viterbi detector. The demodulator (176) can generate a local oscillator (177) output synchronized with the modulated first and second codewords (172, 174). The demodulator (176) can generate the first and second demodulated codewords (178, 180) as a function of the local oscillator (177) output.

The communication channel (152) can be in a disc drive (100) with a modulator modulating the disc drive write output, and the demodulator demodulating the disc drive read signal. The synchronization of the local oscillator (177) compensates for speed variations in the disc drive (100). The magnetic disc drive (100) comprises a magnetic disc (106), and a read and write transducer head (110) coupled to the magnetic disc.

It is to be understood that even though numerous characteristics and advantages of various embodiments of the present invention have been set forth in the foregoing description, together with details of the structure and function of various embodiments of the invention, this disclosure is illustrative only, and changes may be made in detail, especially in matters of structure and arrangement of parts within the principles of the present invention to the full extent

12 MAR 2003

-79-

indicated by the broad general meaning of the terms in which the appended claims are expressed. While encoding and decoding are shown in block diagram form, it is understood that it can be done using lookup
5 tables as shown. For example, the particular elements may vary depending on the particular application for the disc drive while maintaining substantially the same functionality without departing from the spirit and scope of the present invention. In addition,
10 although a preferred embodiment described herein is directed to a coding system for a disc drive, it will be appreciated by those skilled in the art that the teachings of the present invention can be applied to other systems, like satellite communications and
15 cellular phone systems, without departing from the spirit and scope of the invention. Various other codes may be used, more than one encoding or decoding table may be linked together, additional or different state numbers may be used, or the data provided to the
20 encoders or decoders can be partitioned or overlap.

-80-

WHAT IS CLAIMED IS:

1. An encoding system for encoding digital data for transmission through a communication channel, comprising:

- 5 a first encoder adapted to receive a first sequence of 12 bits of data and generating a first codeword of 11 bits and state variables as a function of the first sequence; and
- 10 a second encoder adapted to receive a second sequence of 12 bits of data and the state variables and generating a second codeword of 14 bits as a function of the second sequence and the state variables, the state
- 15 variables being represented by four or fewer bits of the second codeword, the first and second codewords together forming a 25 bit codeword, the encoder limiting runs of zeros by encoding the 25 bit codeword with a run
- 20 length limit $k=7$.

2. The encoding system of Claim 1, further comprising:

- 25 code pattern testers coupled to the first and second decoders, the code pattern testers encoding sequences based on a pattern shorter than full encoding of the sequence.

3. The encoding system of Claim 1, further comprising:

- 30 a modulator receiving the first and second codewords and adapted to couple first and

-81-

second modulated codewords to the communication channel.

4. The encoding system of Claim 1 wherein the first
5 and second encoders encode the first and second
codewords each with a run length limit $i=7$, and encode
the 25 bit codeword with a Hamming weight $w=9$, and the
first and second 12 bit sequences of the data are
interleaved.
- 10
5. A method for encoding digital data for
transmission through a communication channel,
comprising:
- 15 (a) receiving a first sequence of 12 bits of
data at a first encoder;
 - (b) generating a first codeword of 11 bits and
state variables as a function of the first
sequence in the first encoder;
 - (c) receiving a second sequence of 12 bits of
20 data and the state variables at a second
encoder;
 - (d) generating a second codeword of 14 bits as a
function of the second sequence and the
state variables, the state variables being
25 represented by four or fewer bits in the
second codeword; and
 - (e) combining the first and second codewords
together to form a 25 bit codeword, and
 - (f) setting a run length limit $k=7$ in the first
30 and second encoders on the 25 bit codeword
to limit runs of zeros.

-82-

6. The method of Claim 5 wherein the encoding limits errors by encoding the first and second codewords each with a run length limit $i=7$, and encoding the 25 bit word with a minimum Hamming weight $w=9$.

5

7. A magnetic disc drive, comprising:

a magnetic disc;

a write transducer coupled to the magnetic disc;

10 a read transducer coupled to the magnetic disc;
and

an encoding system as set forth in Claim 1.

8. A decoding system for decoding data received from
15 a communication channel, comprising:

a receiver configured to receive a 25 bit encoded digital codeword with a run length $k=7$, the codeword representing a 24 bit sequence of data, the receiver separating the 25 bit
20 encoded digital codeword into a 14 bit first portion and an 11 bit second portion;

a first decoder configured to receive the 14 bit first portion and generate a first decoded 12 bit sequence as a function of the first portion, the first decoder generating state
25 variables as a function of four or fewer bits of the first portion; and

a second decoder configured to receive the 11 bit second portion and the state variables
30 generate a second decoded 12 bit sequence, the first and second decoded 12 bit sequences together forming a decoded 24 bit sequence of data.

9. The decoding system of Claim 8, further comprising:

5 code pattern testers coupled to the first and second decoders, the code pattern testers decoding most sequences based on a pattern shorter than full decoding of the sequence.

10 10. The decoding system of Claim 8, wherein the receiver comprises:

15 a demodulator adapted to receive a modulated 25 bit codeword from a communication channel, the demodulator demodulating the 25 bit codeword and providing the first and second portions.

11. A method of decoding digital data received from a communication channel, comprising:

- 20 (a) receiving a 25 bit encoded digital codeword with a run length limit $k=7$ in a receiver, the codeword representing a 24 bit sequence of data,
- 25 (b) separating the 25 bit encoded digital codeword into a 14 bit first portion and an 11 bit second portion in the receiver;
- 30 (c) receiving the 14 bit first portion in a first decoder and generating a first decoded 12 bit sequence, and generating decoded state variables as a function of four or fewer bits of the first portion;
- (d) receiving the 11 bit second portion and the state variables in a second decoder; and

-84-

- (e) generating a second decoded 12 bit sequence in the second decoder, the first and second decoded 12 bits sequences together forming a decoded 24 bit sequence of data.

5

12. The method of Claim 11, further comprising code pattern testing that decodes most sequences by a pattern shorter than full decoding of the sequence.

10 13. A magnetic disc drive, comprising:

a magnetic disc;

a write transducer coupled to the magnetic disc;

a read transducer coupled to the magnetic disc;

15 a decoding system as set forth in claim 8 coupled to the read transducer.

14. A decoding system for decoding data received from a communication channel, comprising:

20 a receiver receiving a 25 bit encoded digital codeword with a run length limit $k=7$, the codeword representing a 24 bit sequence of data, the receiver separating the 25 bit encoded digital codeword into a 14 bit first portion and an 11 bit second portion;

25 a first decoder receiving the 14 bit first portion and generating a first decoded 12 bit sequence as a function of the first portion,

30 means for generating state variables as a function of four or fewer bits of the first portion; and

a second decoder receiving the 11 bit second portion and the state variables, the second

-85-

decoder generating a second decoded 12 bit sequence, the first and second decoded 12 bits sequences together forming a decoded 24 bit sequence of data.

5

15. An encoding system for encoding digital data for transmission through a communication channel, comprising:

10 a first encoder adapted to receive a first sequence of 12 bits of data and generating a first codeword of 11 bits as a function of the first sequence;

15 a second encoder adapted to receive a second sequence of 12 bits of data and generating a second codeword of 14 bits as a function of the second sequence and as a function of state variables; the first and second codewords together forming a 25 bit codeword, the encoder limiting errors by
20 encoding the 25 bit codeword with a run length limit $k=7$ and

25 means for generating the state variables as a function of the first sequence and for coupling the state variable to the second encoder, the state variables being represented by four or fewer bits of the second codeword.