Title: CCITT CRC16 Calculator Simulation for DS-PHY

Date: March 1, 1995

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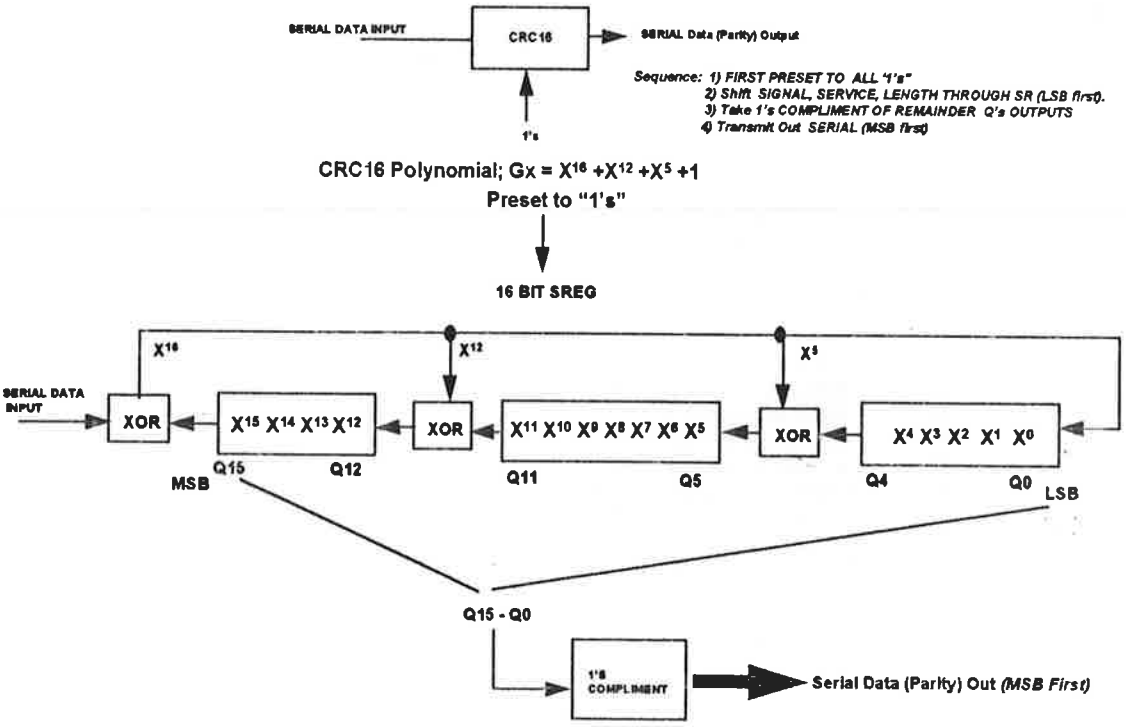
Introduction

The following example illustrates a model for the DS-PHY PLCP header CRC16 calculator as described in section 11.2.3.6 of the P802.11/D1 document. The text clearly states a CCITT model be used preset to ALL 1's. It should be noted that the same model could be used as a SDLC CRC16 calculator by simply resetting the model to zeros before shifting in data. For more details describing the mathematical model of the CRC16 refer to the textbook *"Technical Aspects of Data Communications" by John E. McNamara.*

Recommendation

It is recommended that this model be adopted into the DS-PHY text of P802.11/D1 section 11.2.3.6 and considered by other PHYs using similar polynomials. It will serve as a vehicle to clear up any differences as compared to the scrambler polynomial model described and illustrated in 11.2.4.

Transmit and Receive PLCP Header CRC16 Calculator



Simulation Results: i.e. "C" Program implementing the CRC16 polynominal Using (Signal, Service, Length example)

```
#include <stdio.h>

int data {32}                   {0,1,0,1,  0,0,0,0,  0,0,0,0,  0,0,0,0,
                                 0,0,0,0   0,0,1,1,  0,0,0,0,  0,0,0,0};
main() {
        int I, residue, fdbk;
        residue = 0xFFFF
        printf("       ");
        fprintb(stdout, residue,16);            ;binary print function
        printf("\n");
        for I=0; I<32; I++) {
                fdbd = (residue >> 15) ^ data[i];
                residue = (2 * residue) & 0xFFFF;
                if (fdbk) residue ^=0x1021;
                printf ("%d     ",data[i] );
                fprintb (stdout, residue, 16);
                printf ("\n"); }
        residue ^= 0xFFFF;
        printf ("CRC parity       ");
        fprintb (stdout, residue,16);
        printf ("\n"); }
```

Data	Register MSB LSB	
	1111111111111111	; Initialize Preset to 1's
0	1110111111011111	
1	1101111110111110	
0	1010111101011101	
1	0101111010111010	
0	1011110101110100	
0	0110101011001001	
0	1101010110010010	
0	1011101100000101	
0	0110011000101011	
0	1100110001010110	
0	1000100010001101	
0	0000000100111011	
0	0000001001110110	
0	0000010011101100	
0	0000100111011000	
0	0001001110110000	
0	0010011101100000	
0	0100111011000000	
0	1001110110000000	
0	0010101100100001	
0	0101011001000010	
0	1010110010000100	
1	0101100100001000	
1	1010001000110001	
0	0101010001000011	
0	1010100010000110	
0	0100000100101101	
0	1000001001011010	
0	0001010010010101	
0	0010100100101010	
0	0101001001010100	
0	1010010010101000	
	0101101101010111	**; 1's Compliment, Result = CRC16 Parity**