May 3, 2000

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Attention: Mr. Dichoso

Re: Answers to questions from E-mail of 04/05/00
Correspondence Reference Number: 13784
FCC ID: H25DSS950TX
731 Confirmation Number EA96934
Equipment Class: DSS-Part 15 Spread Spectrum Transmitter
Applicant: DTC

DTC has collected additional data on H25DSS950TX in order to satisfy the two questions on the referenced E-mail.

1. I contacted Digital Wireless Corp (DWC) and inquired about the particular demodulation method used to handle the DPSK signal from the DSS950 transmitter. They informed me that a delay and multiply type demodulator is employed. A time delay of 2.8 uS at the IF frequency of 70 MHz which equals one chip period is used with a multiplier. This delay is produced with a SAW filter. By multiplying the non-delayed signal and the delayed signal, NON-COHERENT DPSK demodulation is accomplished. This produces a higher theoretical S/N for BER of .0001 than was presented in the response to correspondence 13606. The new curve, which I have presented, shows the theoretical curves for coherent BPSK, coherent DPSK and non-coherent DPSK. It is easy to see where DWC got the 12 to 14 dB based on the non-coherent curve. See attached curve and demodulator circuit**. According to this curve, the theoretical optimum S/N for .0001 BER is 12.3 dB (for non-coherent DPSK demodulation).**

   Using the worst case number and the equation: Gp =S/N + Lsys + (J/S); Gp = 12.3 + 2 + (-2.9) = 11.4 dB, which is compliant.

   References: Reference Data for Engineers, Radio, Electronics computer and communications, Eighth Edition, Prentice Hall, 1995 and Pursley, M.B., Introduction to Digital Communications Systems, Addison-Wesley, 1993

   SAR Questions

2. The original SAR report was obtained from PC Test as a PDF file. This was uploaded to the RF Exposure info folder.

3. The unit has a 2 dBic gain patch antenna. The ERP and the peak-conducted power are essentially the same in this case. This antenna has dipole-like gain and greatly favors vertical polarization, but provides rear-radiation protection. The horizontal gain is less than unity. The aluminum chassis aids in shielding radiation to the body.

4. The back of the device was indeed facing out during the test. This is the correct orientation for use as outlined in the safety warnings on the label and in the manual. It should be noted that the radiation when the unit’s antenna was facing the phantom was somewhat higher.

5. The rectangle in the SAR plot represents the outline of the entire unit. The antenna is a rectangle extending from the top edge about 2/3 down the chassis. The top of the antenna is at left. Energy is leaking around and across the top. The two hot spots are the bottom edges of the antenna. The battery compartment to the right prevents any leakage in the center, resulting in hot spots only on the sides.

Best Regards,

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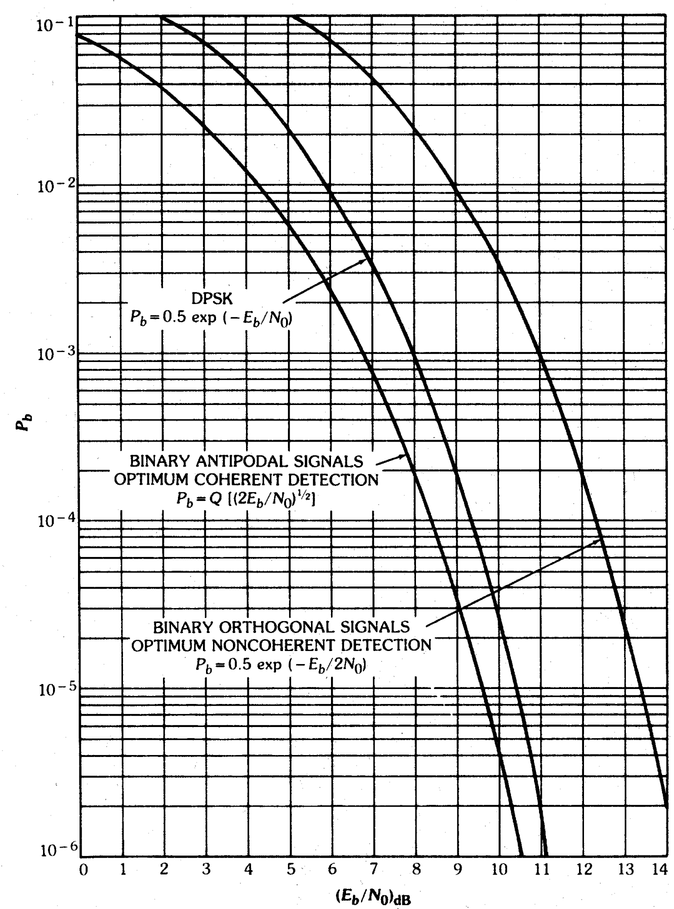

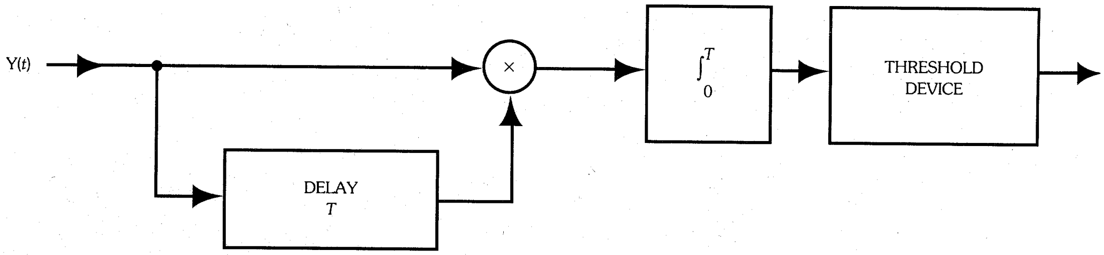

Fig. 22. The delay-and-multiply receiver—a suboptimal receiver for DPSK.