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Power Spectral Densities of Baseband Signals in EPC Class-1 Gen-2 UHF RFID Systems

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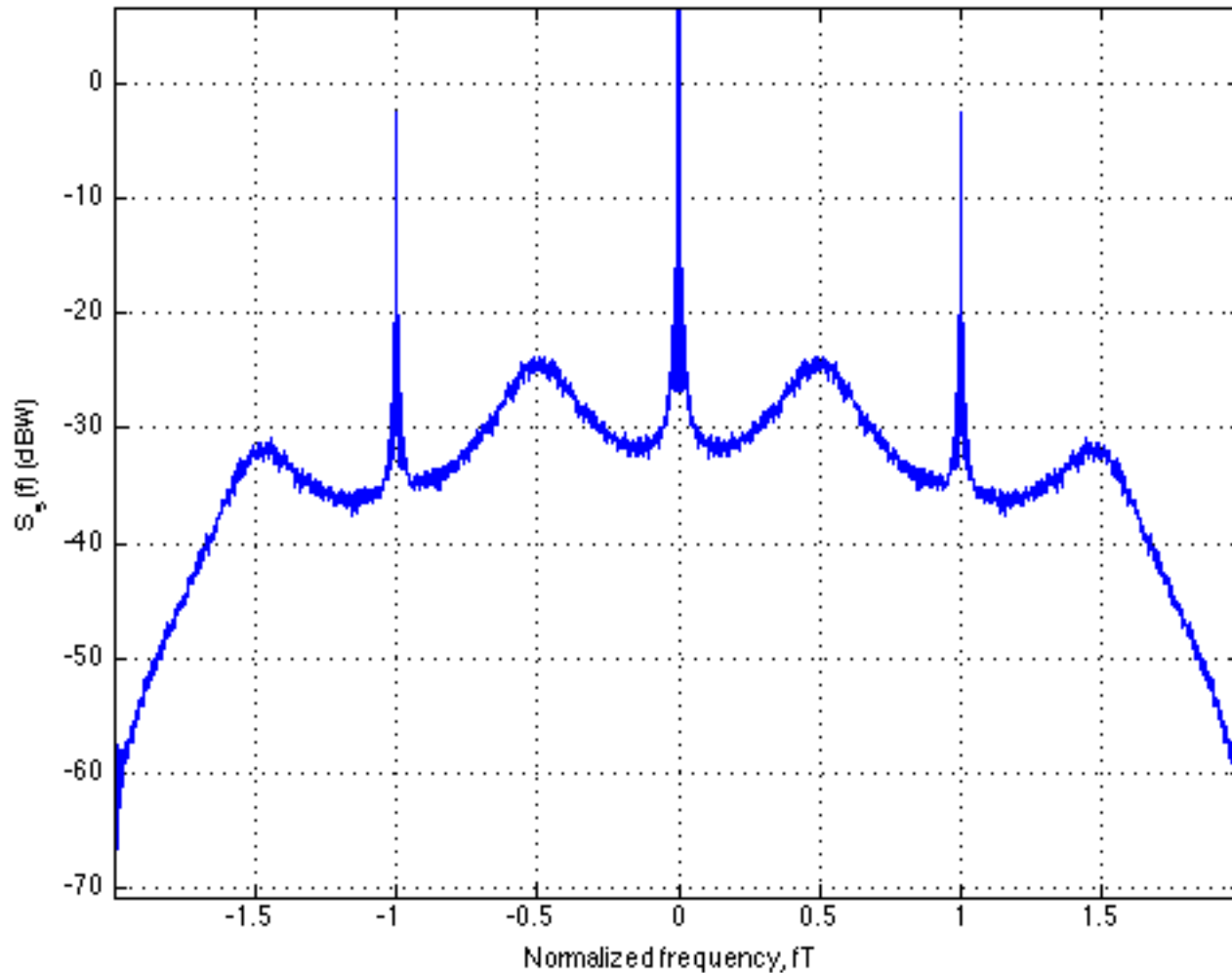
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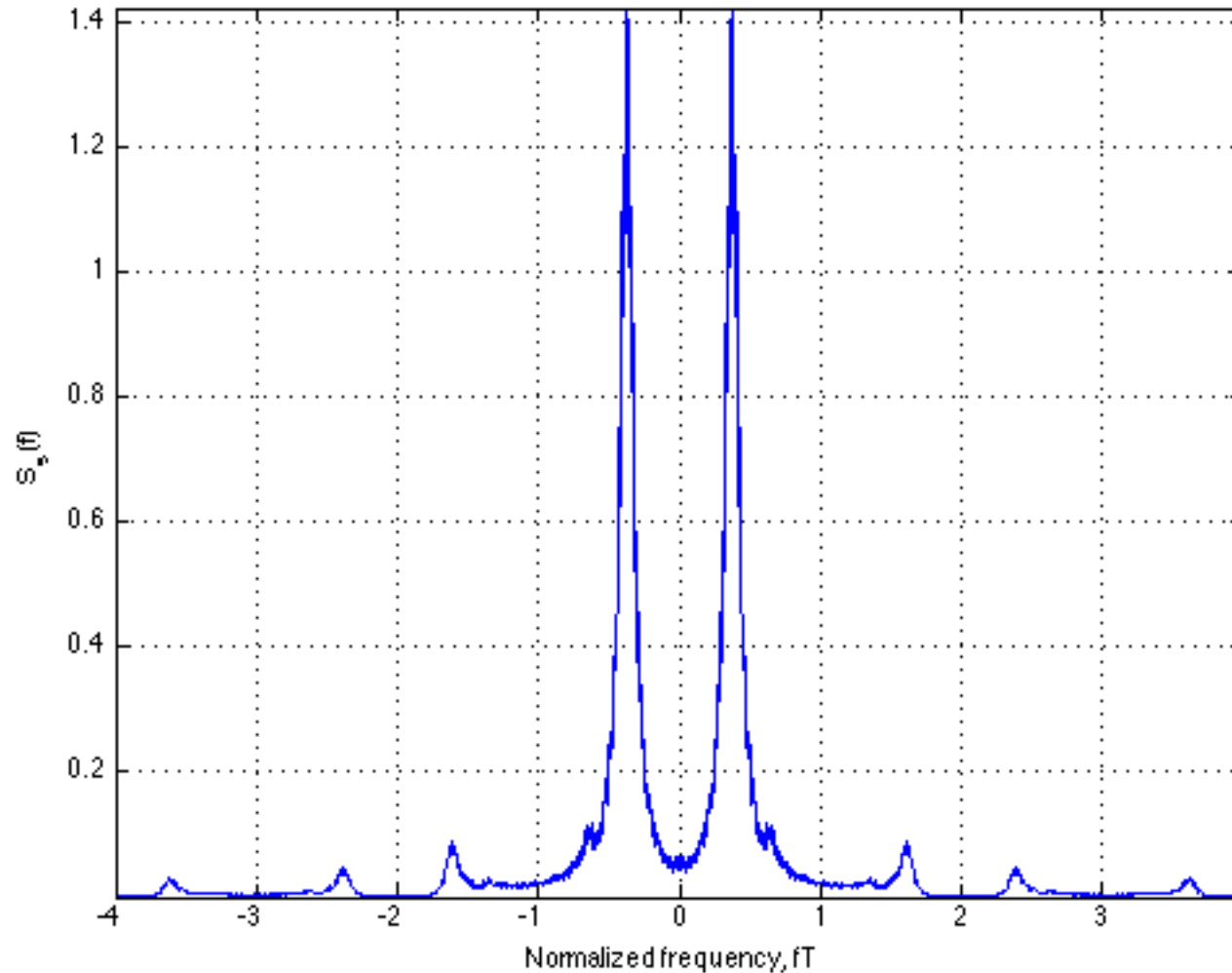
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EE 260: RFID Systems
Robert Morelos-Zaragoza
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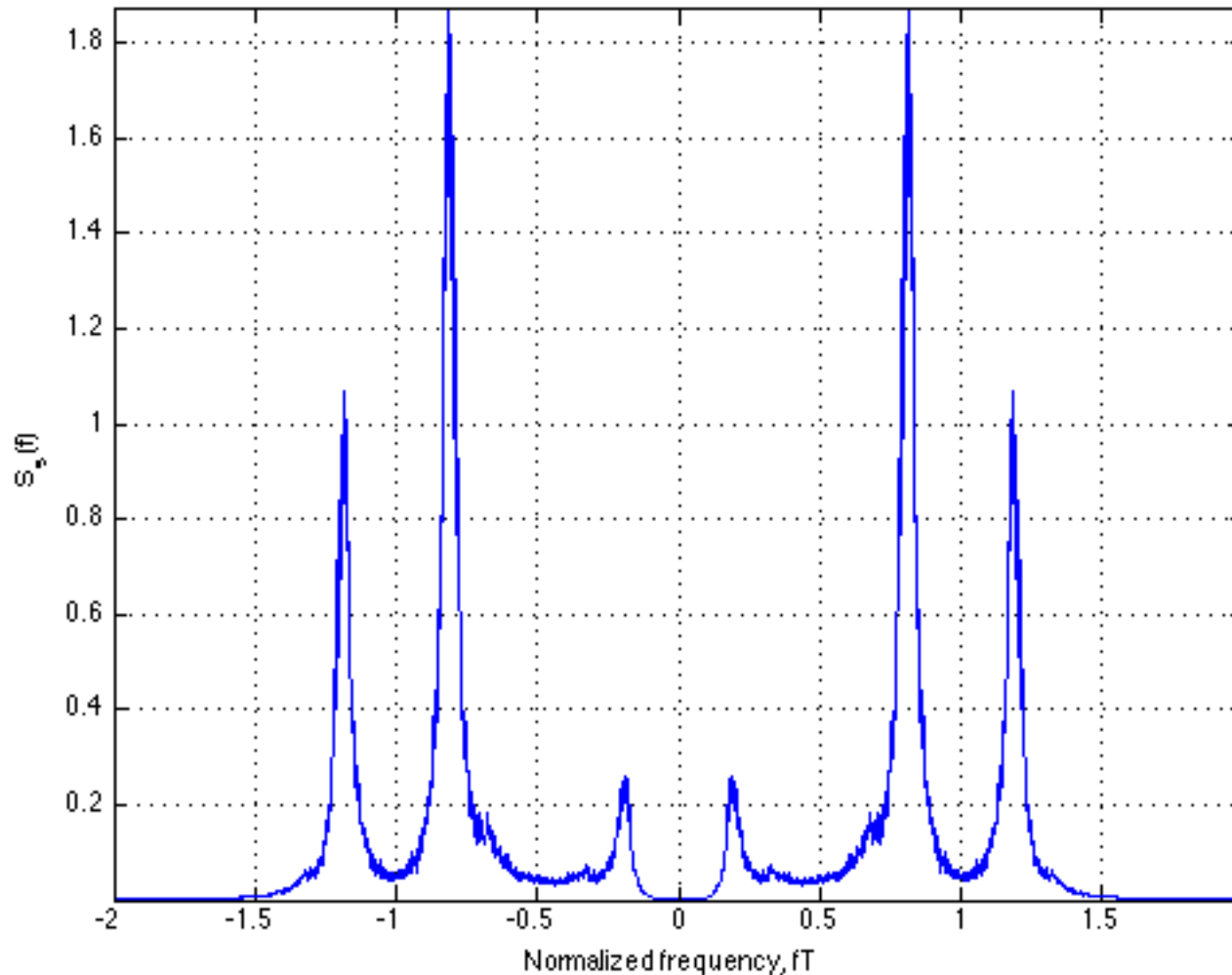
Pulse Interval Encoding (PIE)



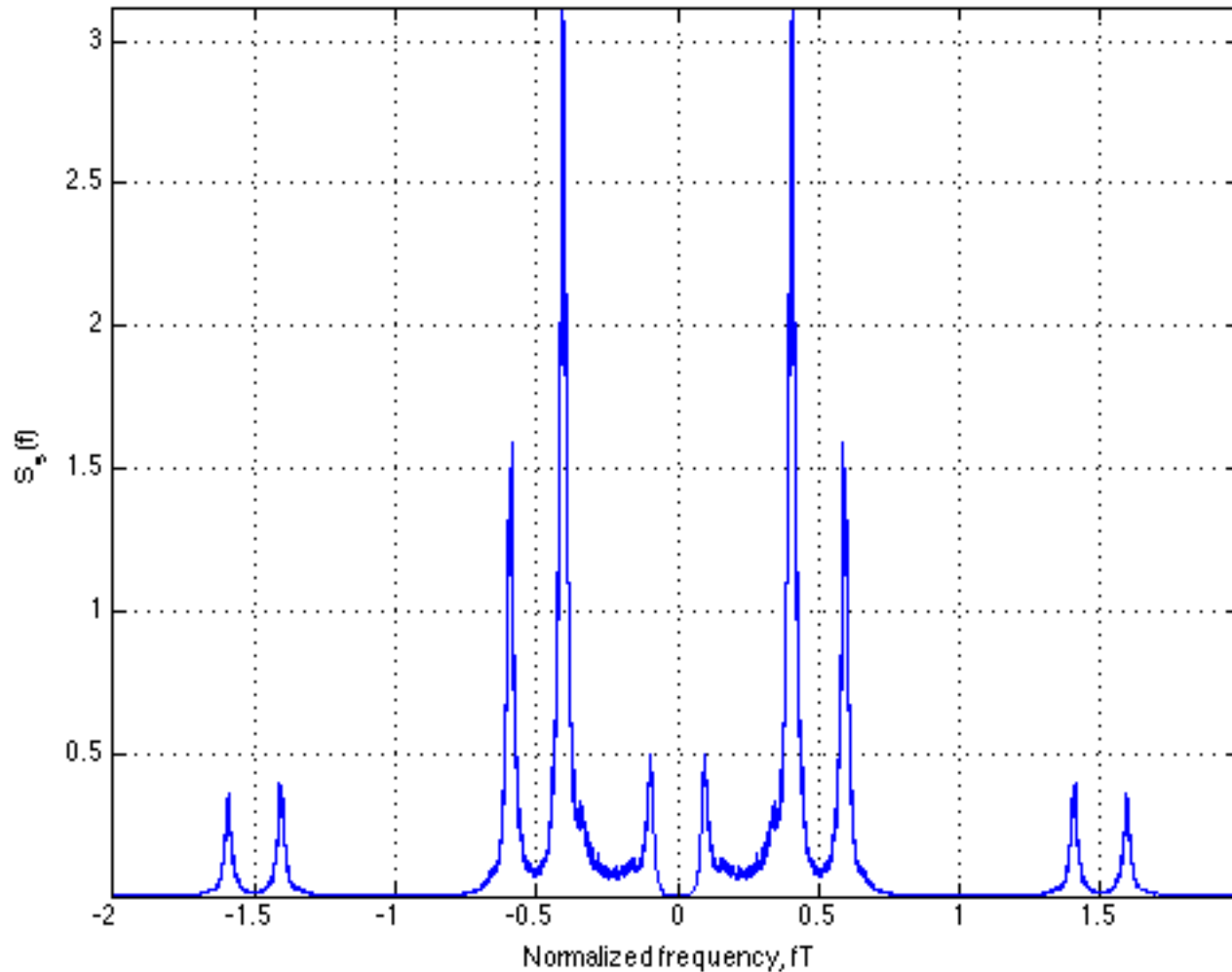
Miller encoding (polar)



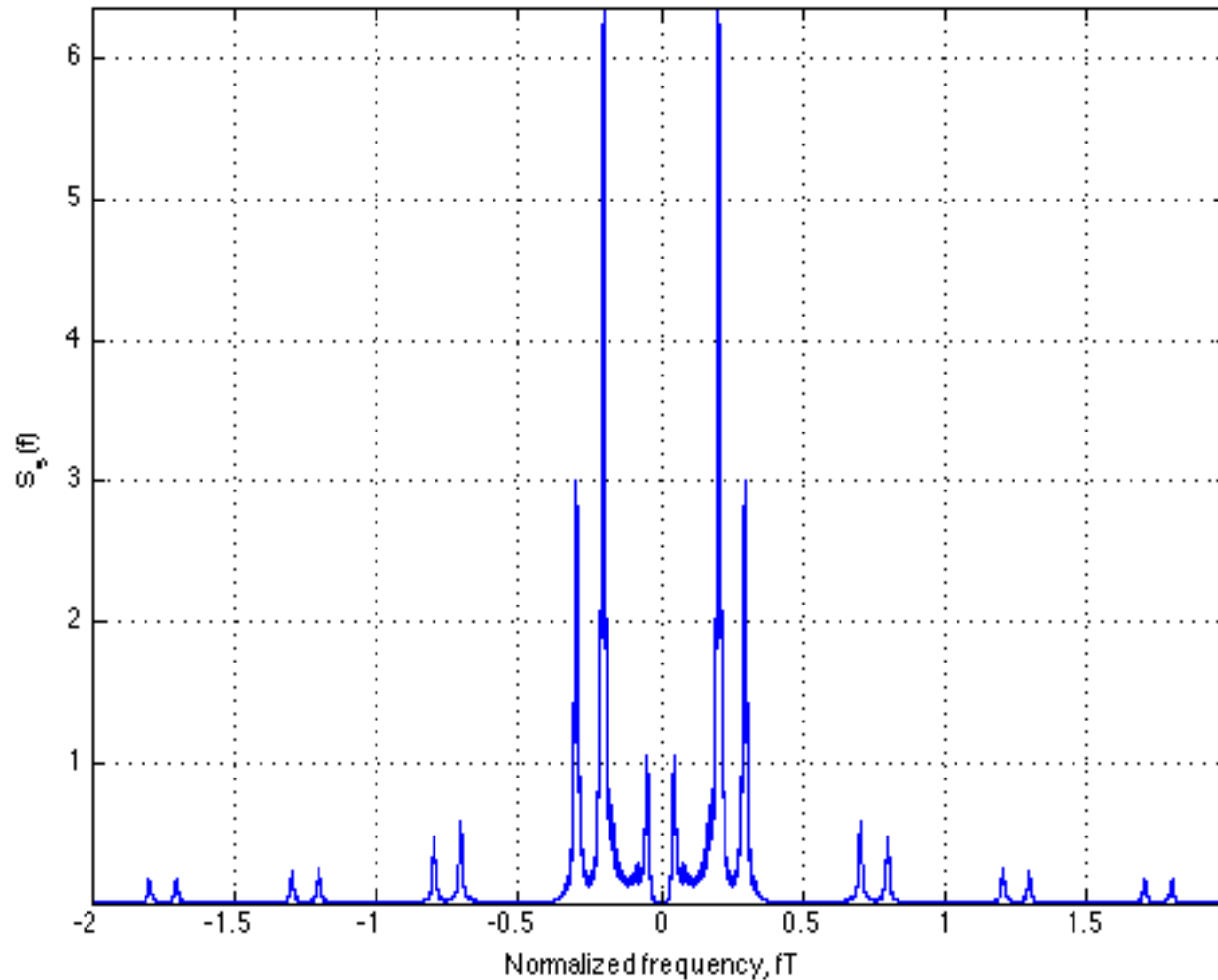
Miller subcarrier $M=2$ (polar)



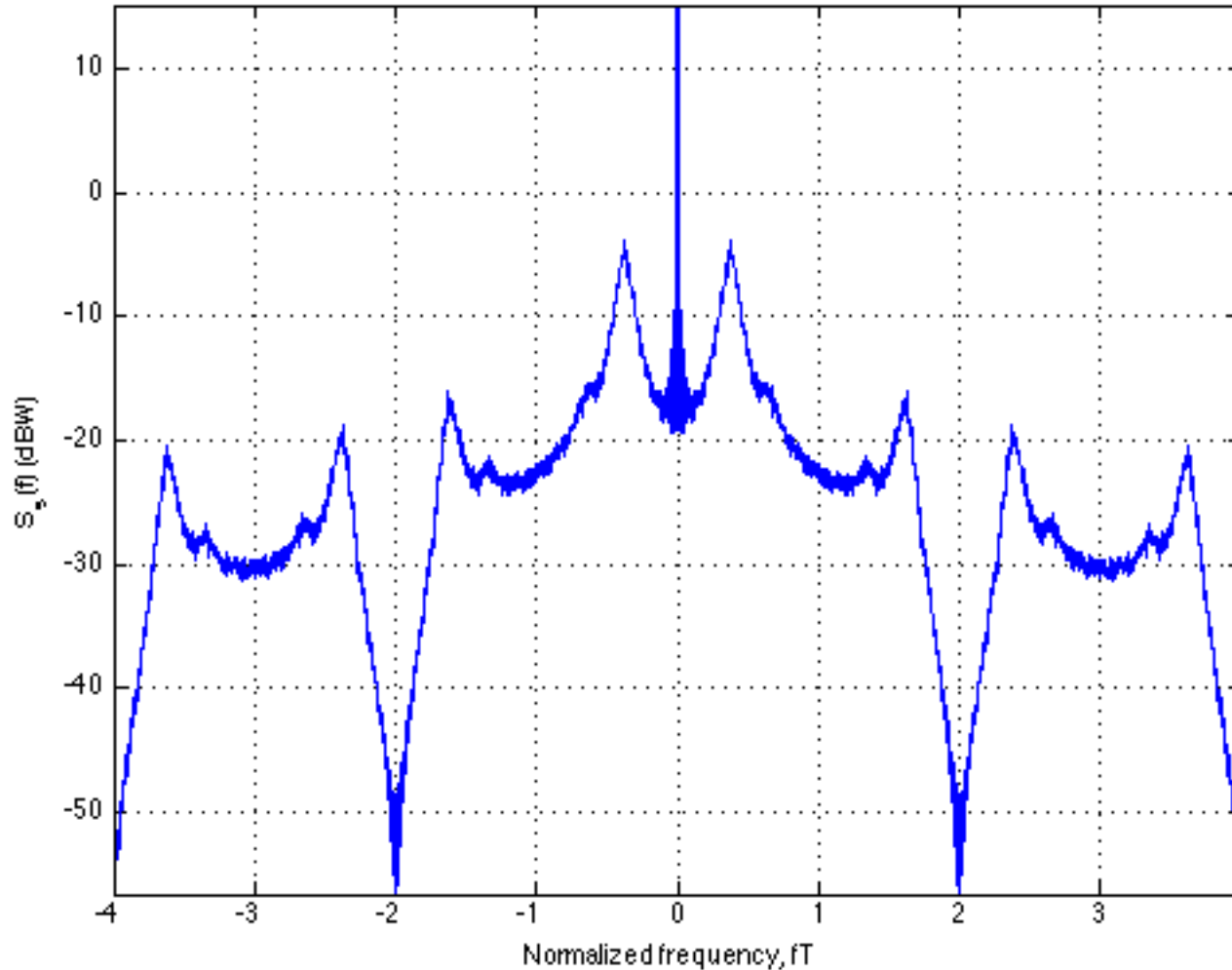
Miller subcarrier M=4 (polar)



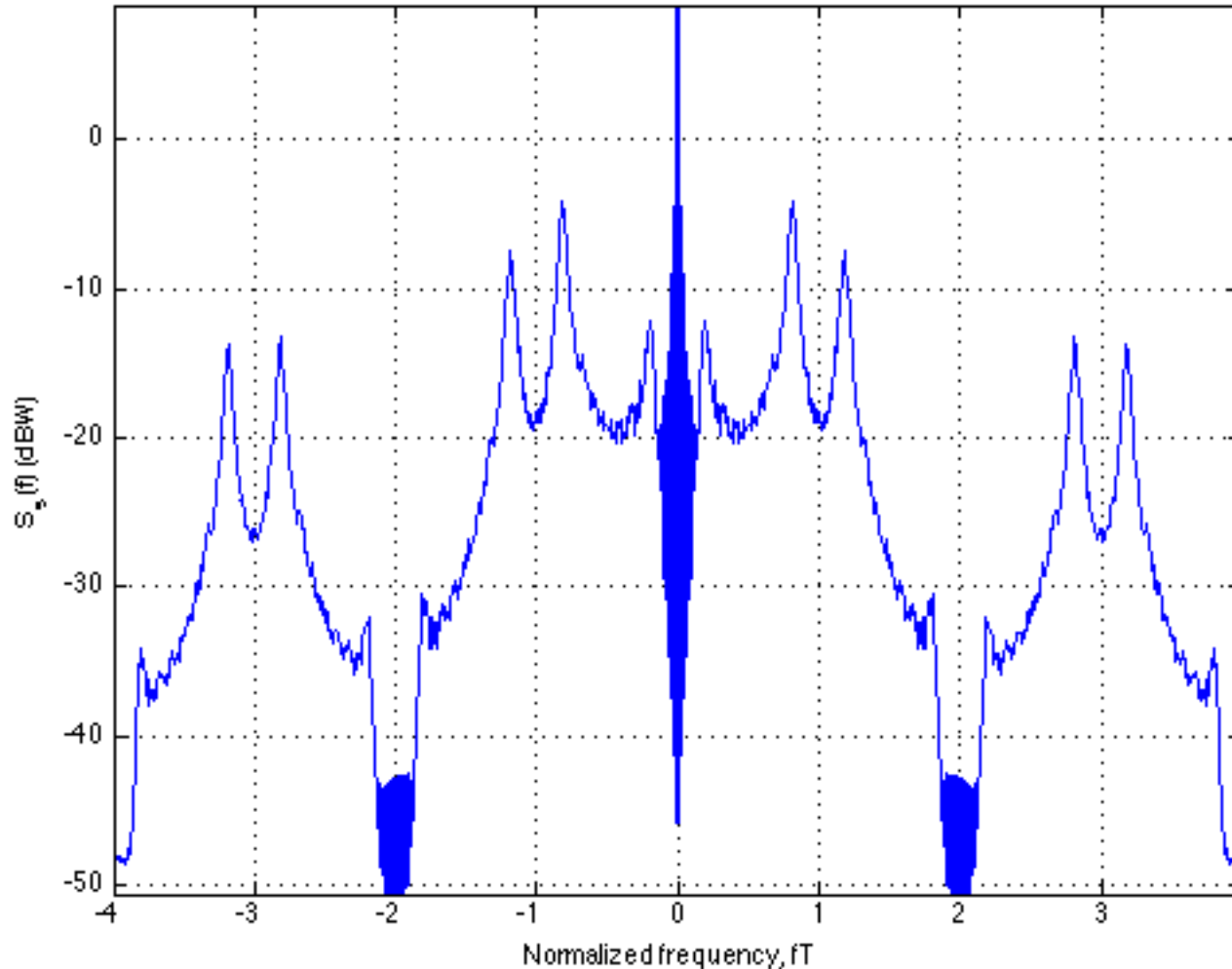
Miller subcarrier $M=8$ (polar)



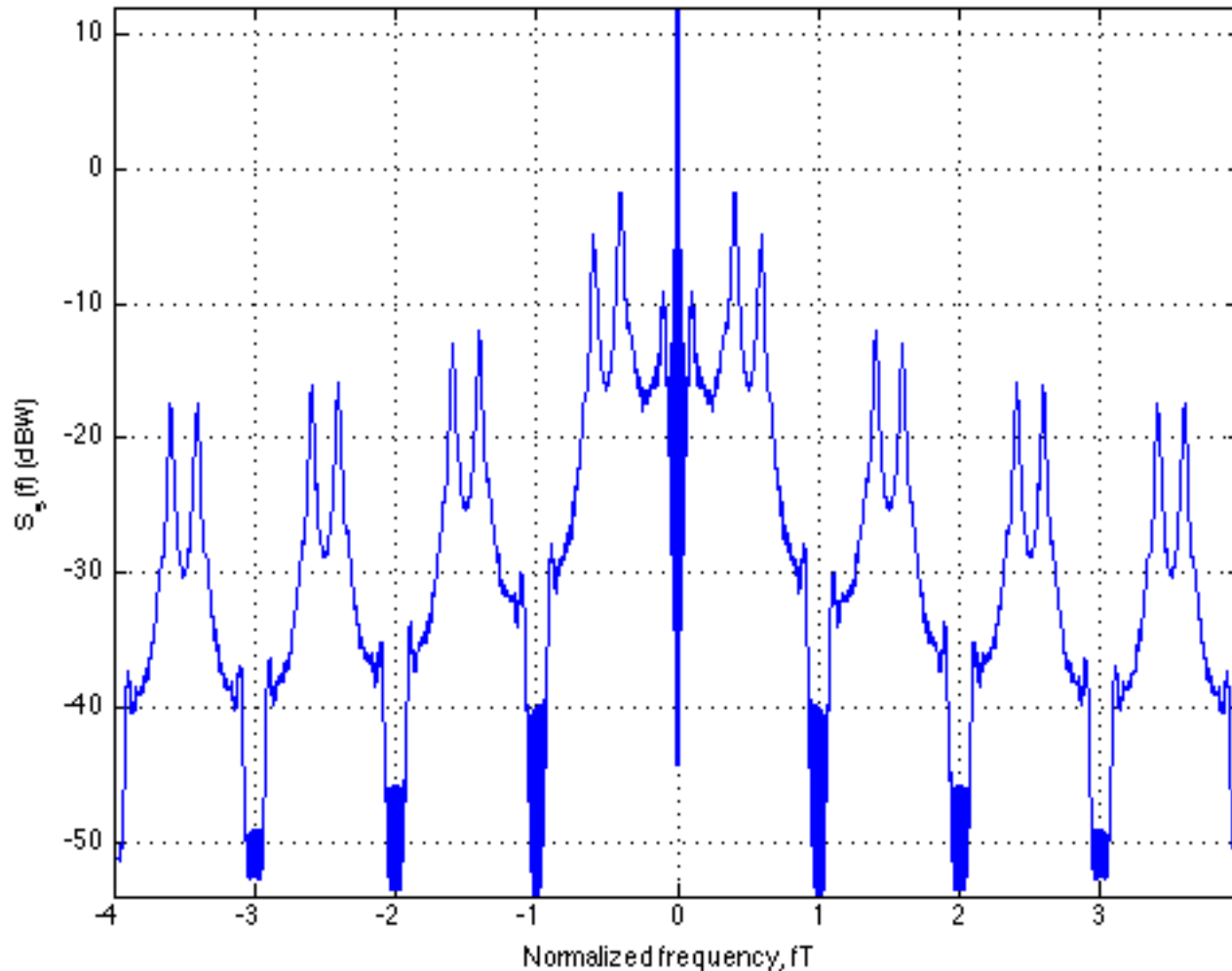
Miller encoding (unipolar)



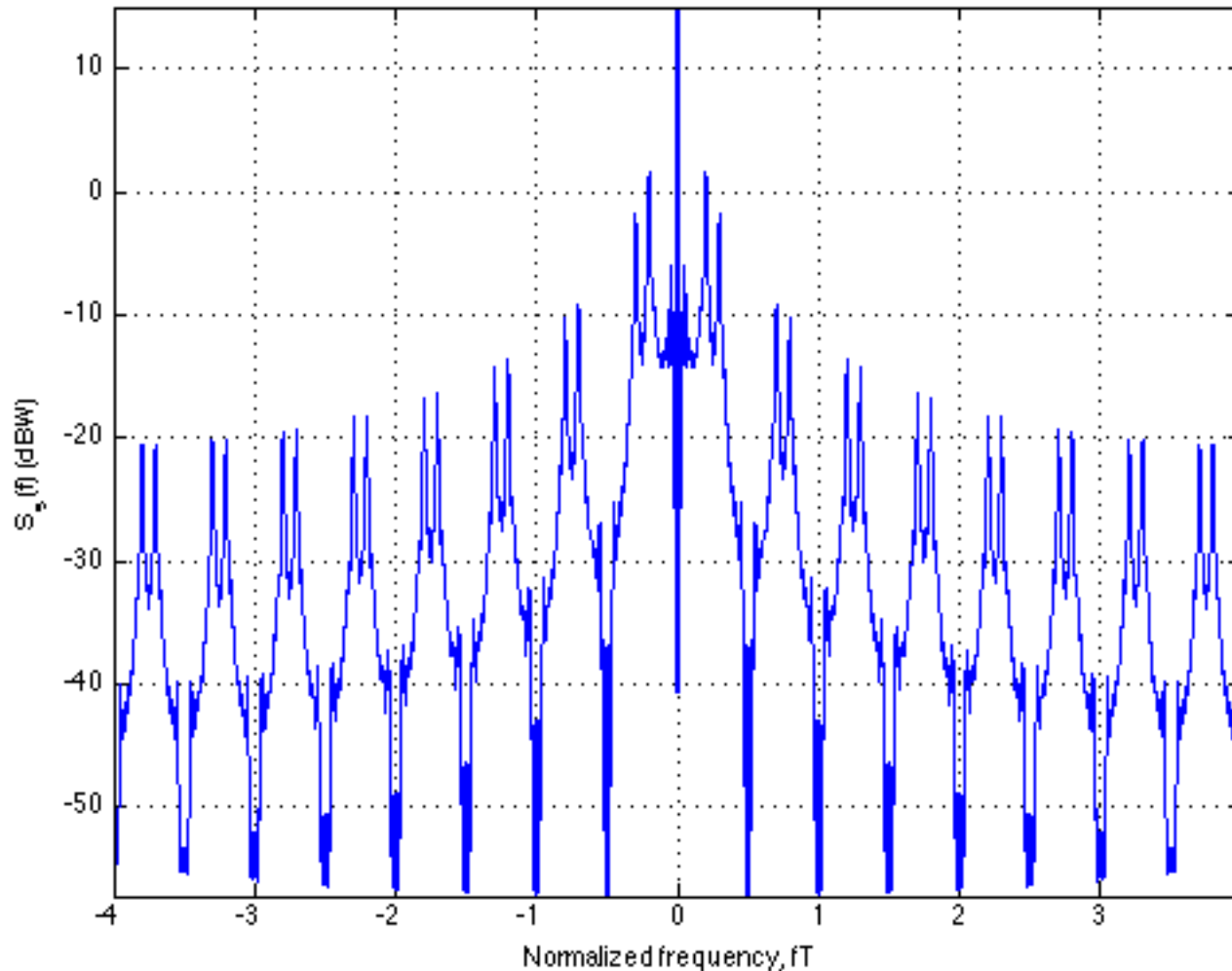
Miller subcarrier M=2 (unipolar)



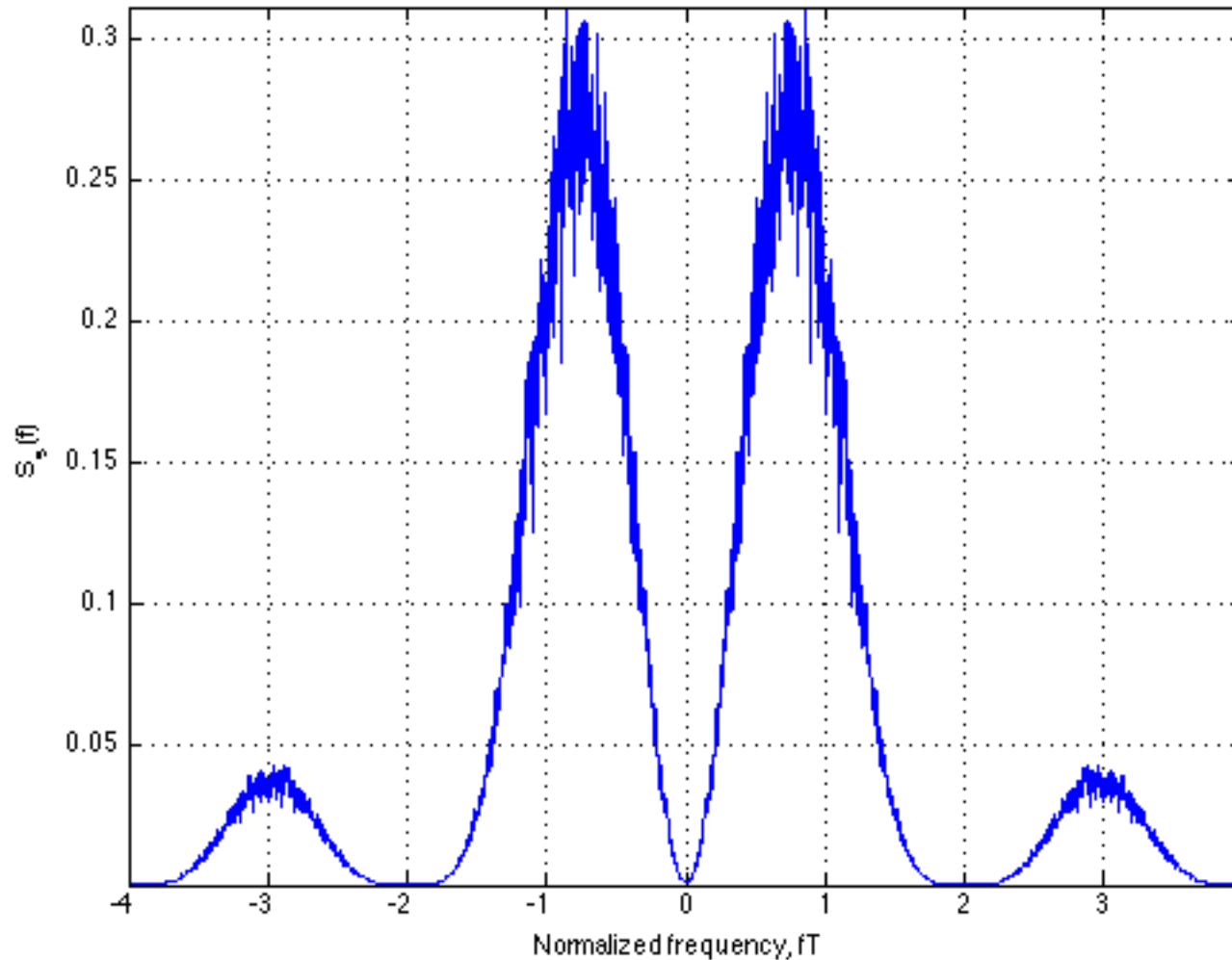
Miller subcarrier M=4 (unipolar)



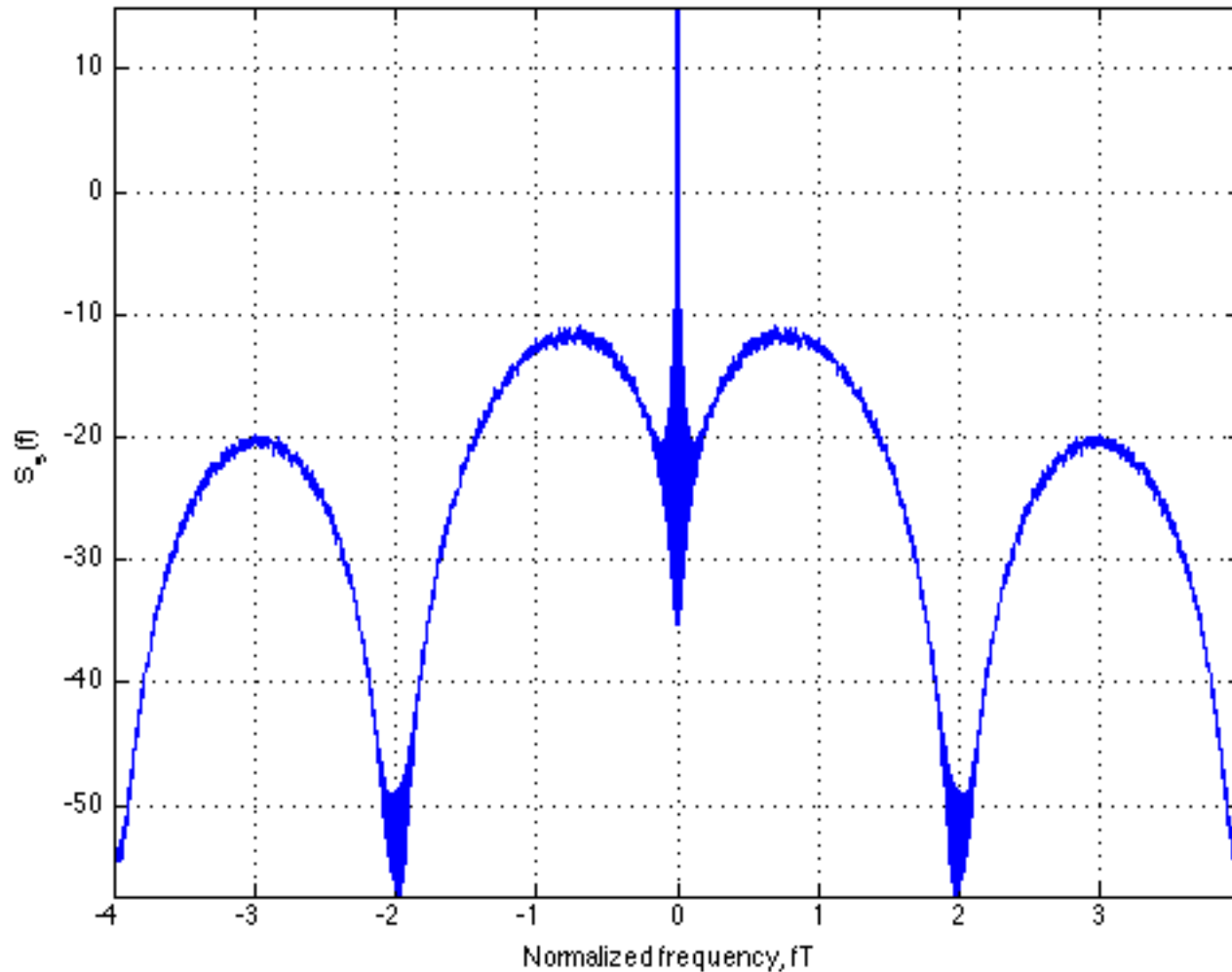
Miller subcarrier M=8 (unipolar)



FM0 encoding (Polar)



FM0 encoding (unipolar)



Notes

- The power spectral density $S_s(f)$ is computed using MATLABTM as follows:
 - A pulse sequence $s(t)$ associated with 256 random bits is generated
 - The autocorrelation $R_s(\tau)$ of $s(t)$ is computed
 - The PSD $S_s(f)$ is computed from $R_s(\tau)$ using the FFT algorithm
 - The average over 100 PSD's is shown in the figures