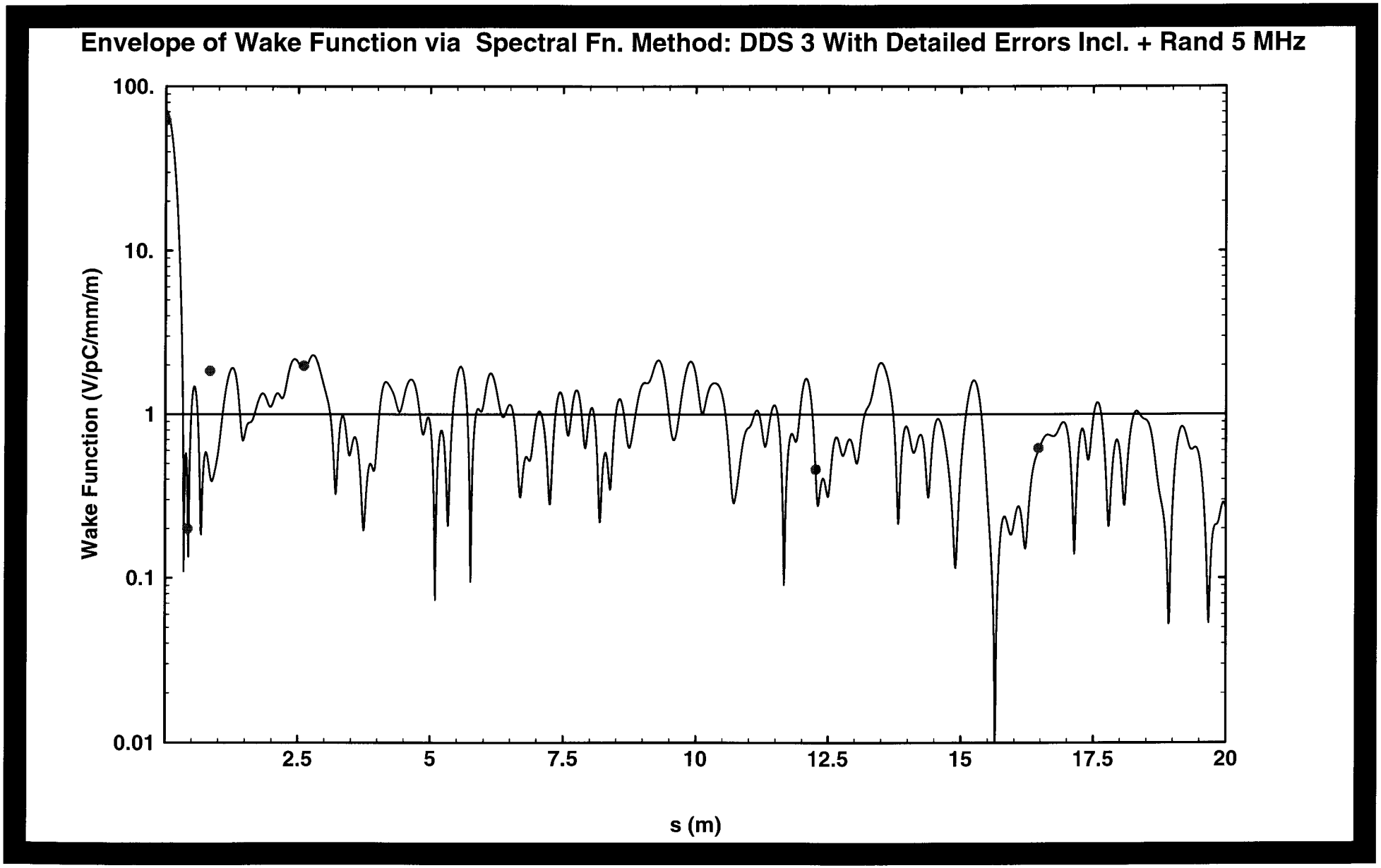
Modeling of DDS3 ASSET '98 Results: Wakefields and Structure Alignment

R.M. Jones

Spectral Function Calculation of DDS 3 ASSET XWake Including a Normal Distribution of Errors (Dots Indicate X-Wake ASSET '98 Data)



Roger M. Jones, N. M. Kroll, R.H. Miller, J. Wang, G. Stupakov & T. Raubenheimer(1-99)

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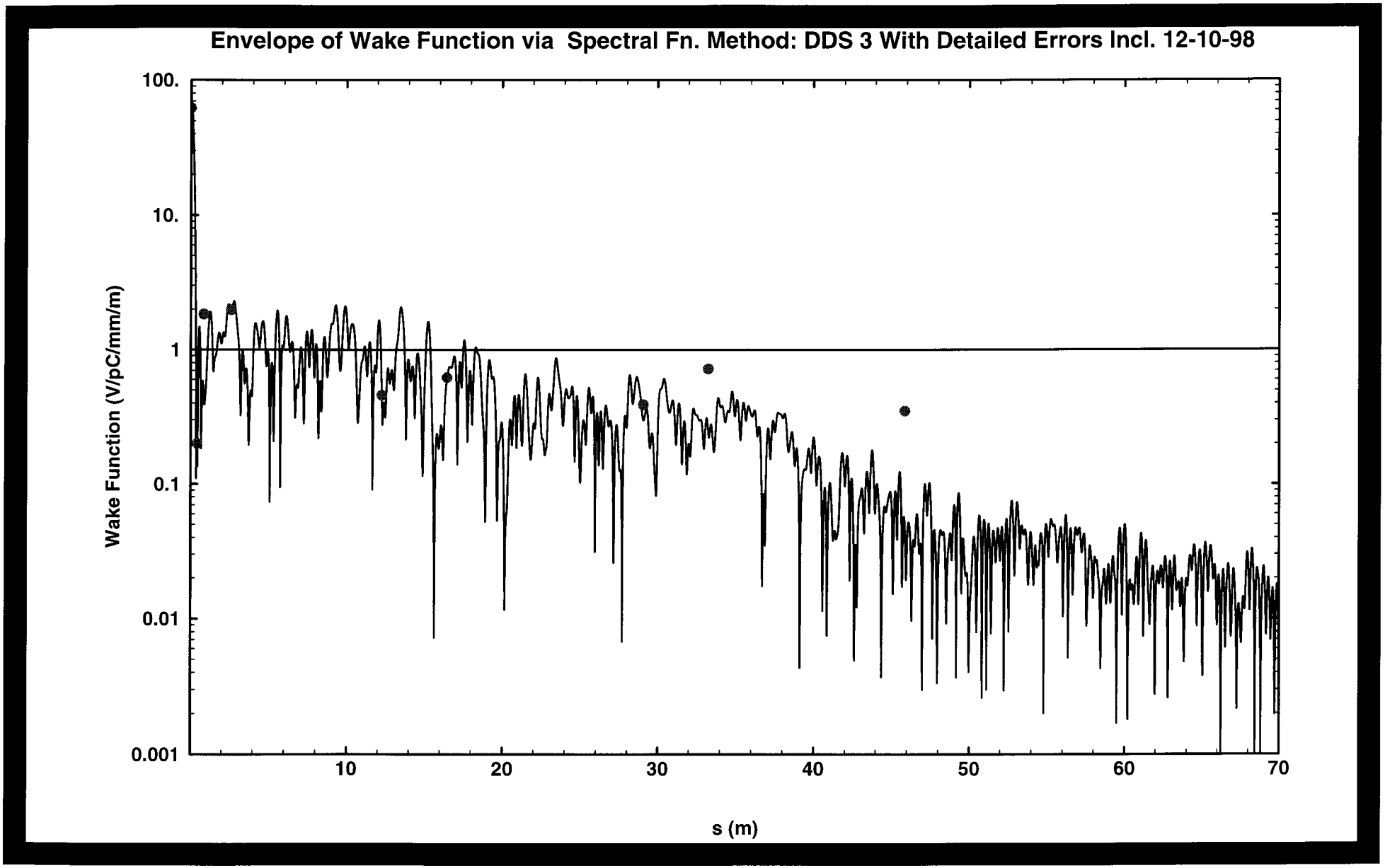

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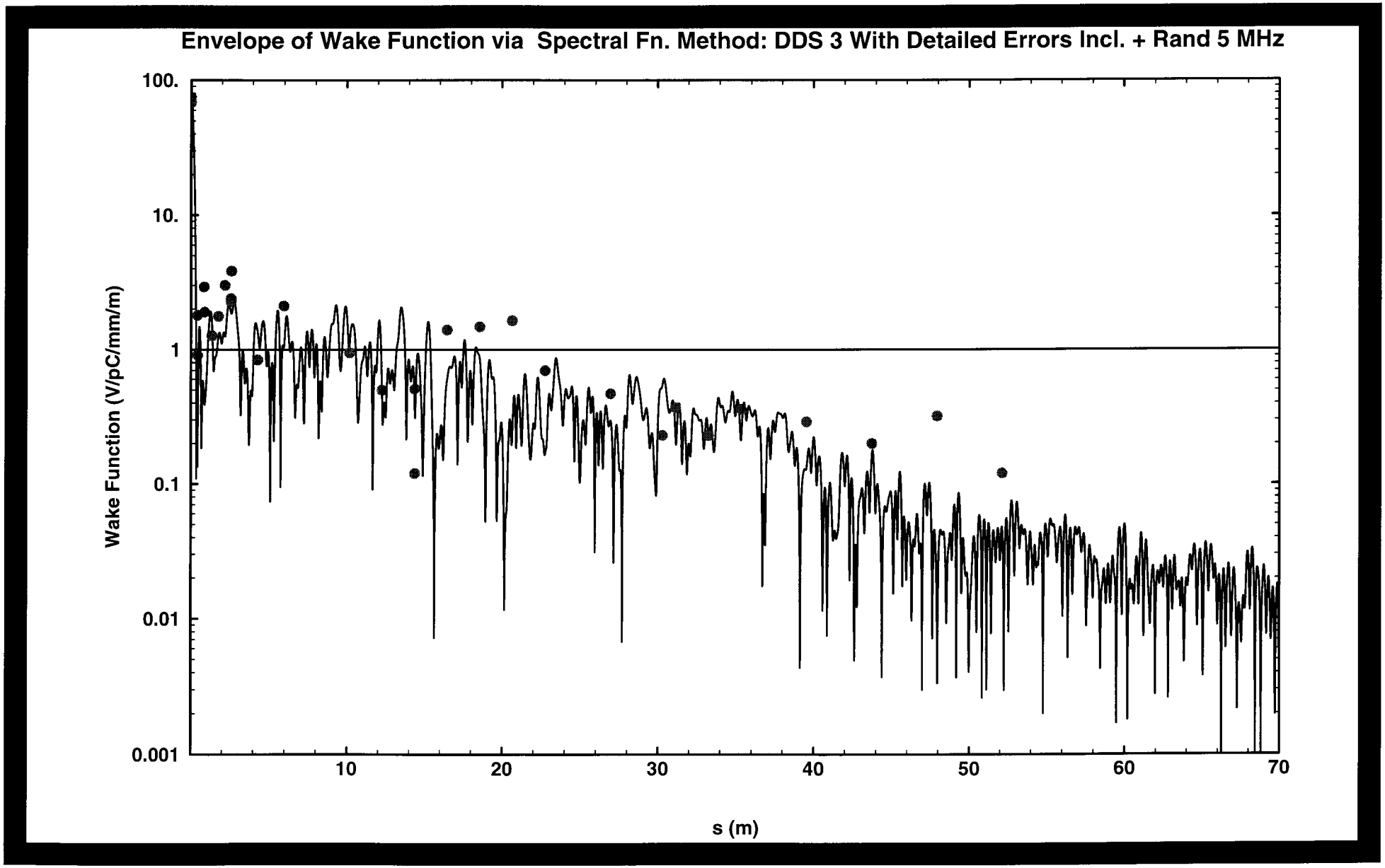
Spectral Function Calculation of DDS 3 ASSET Y Wake Including a Normal Distribution of Errors (Dots Indicate Y-Wake ASSET '98 Data)



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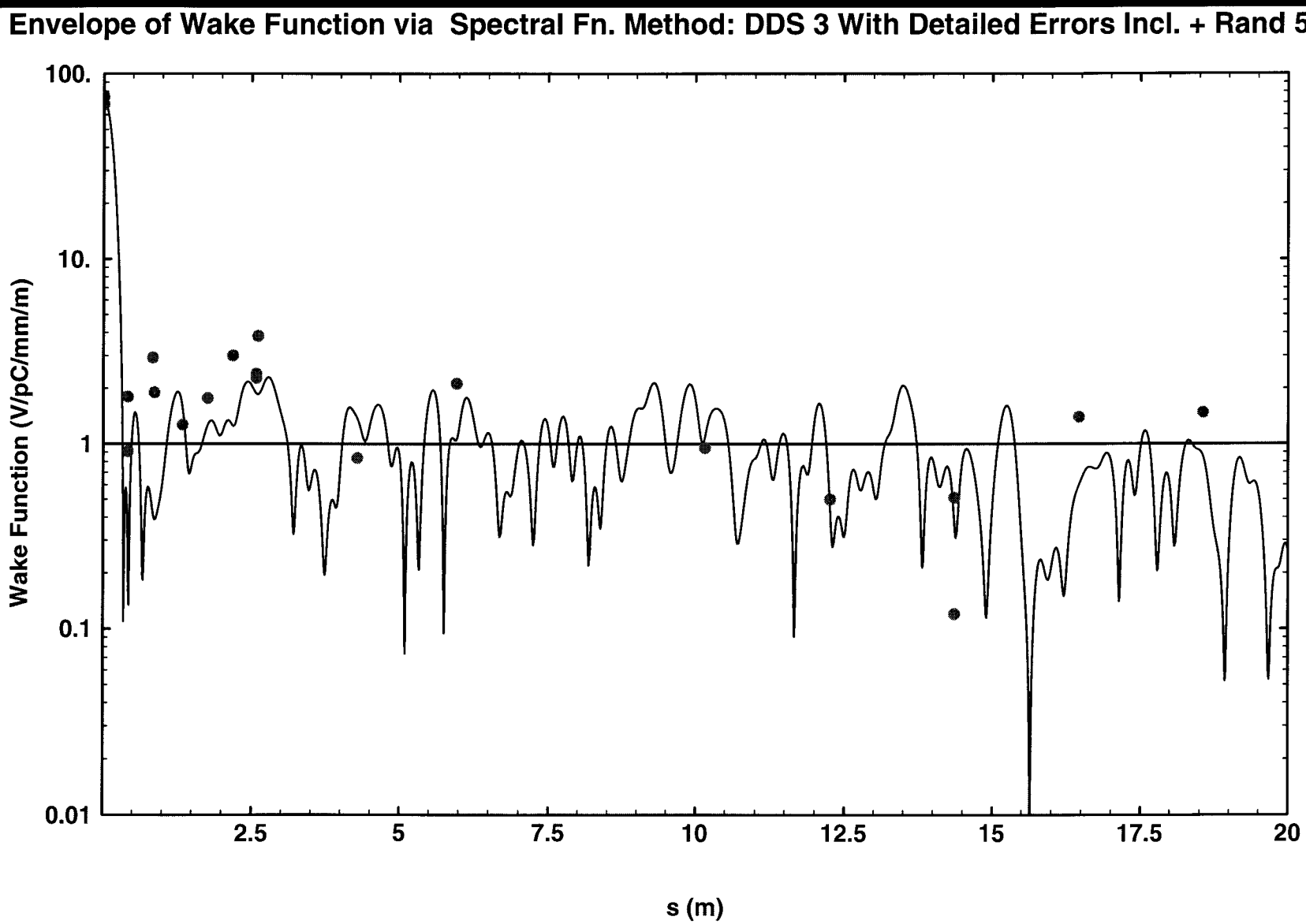
Spectral Function Calculation of DDS 3 ASSET Y Wake Including a Normal Distribution of Errors (Dots Indicate Y-Wake ASSET '98 Data)



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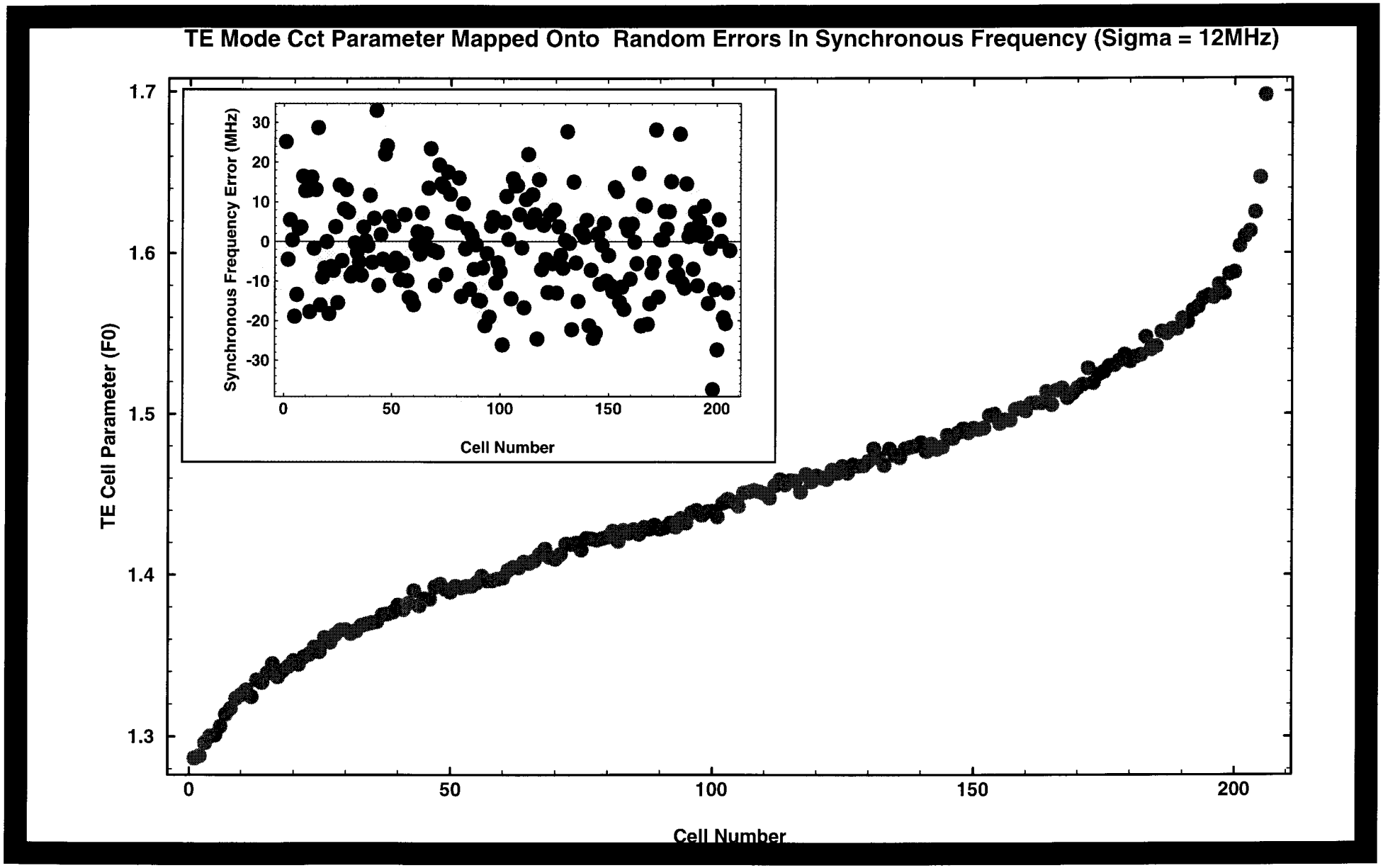
TE Mode Parameter, F0 Including a Normal Distribution of Errors (Shown Inset Is The Error Distribution)



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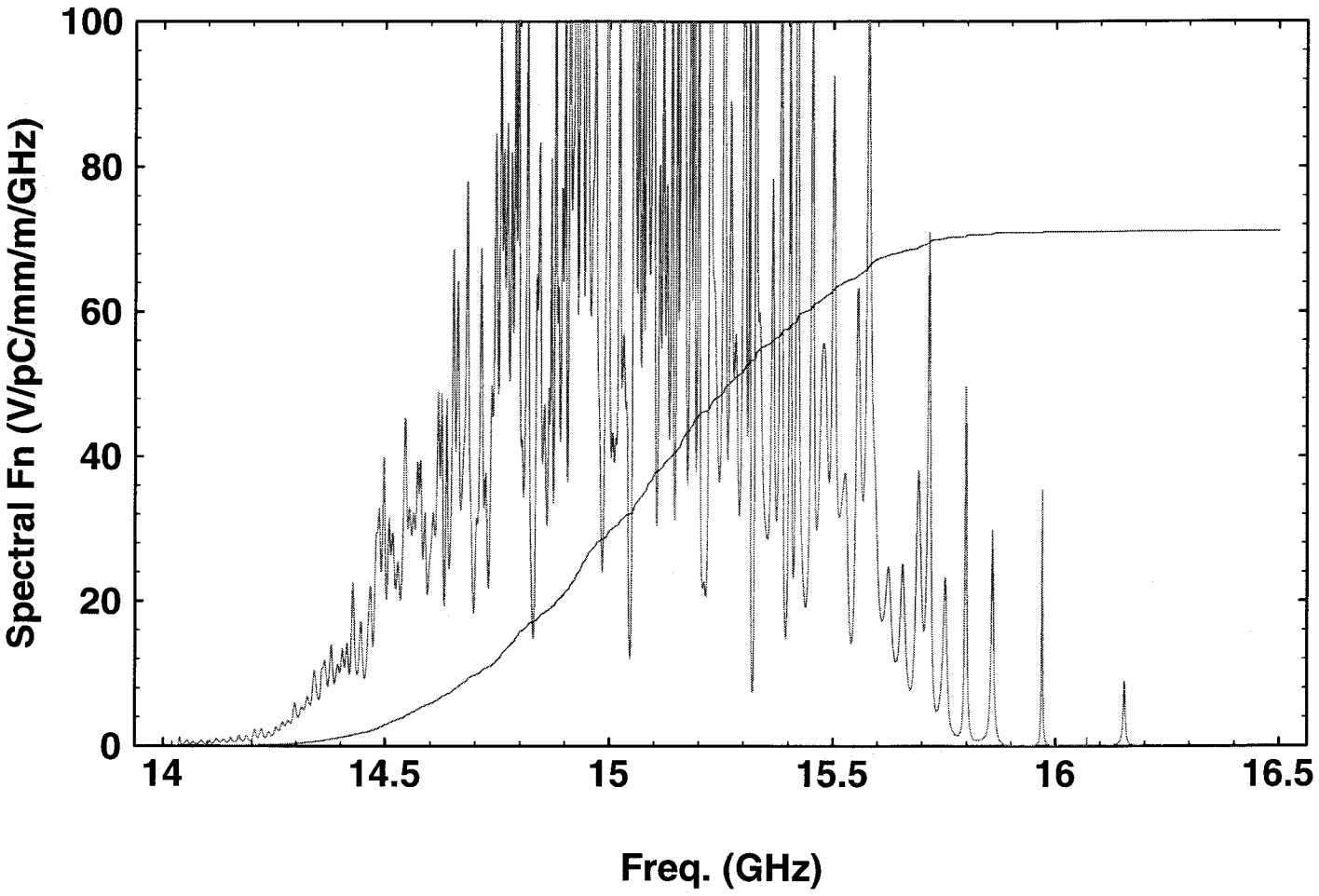
Spectral Function for DDS 3 With Errors Incl.
Normal Distribution of Random Errors with Sigma =12 MHz



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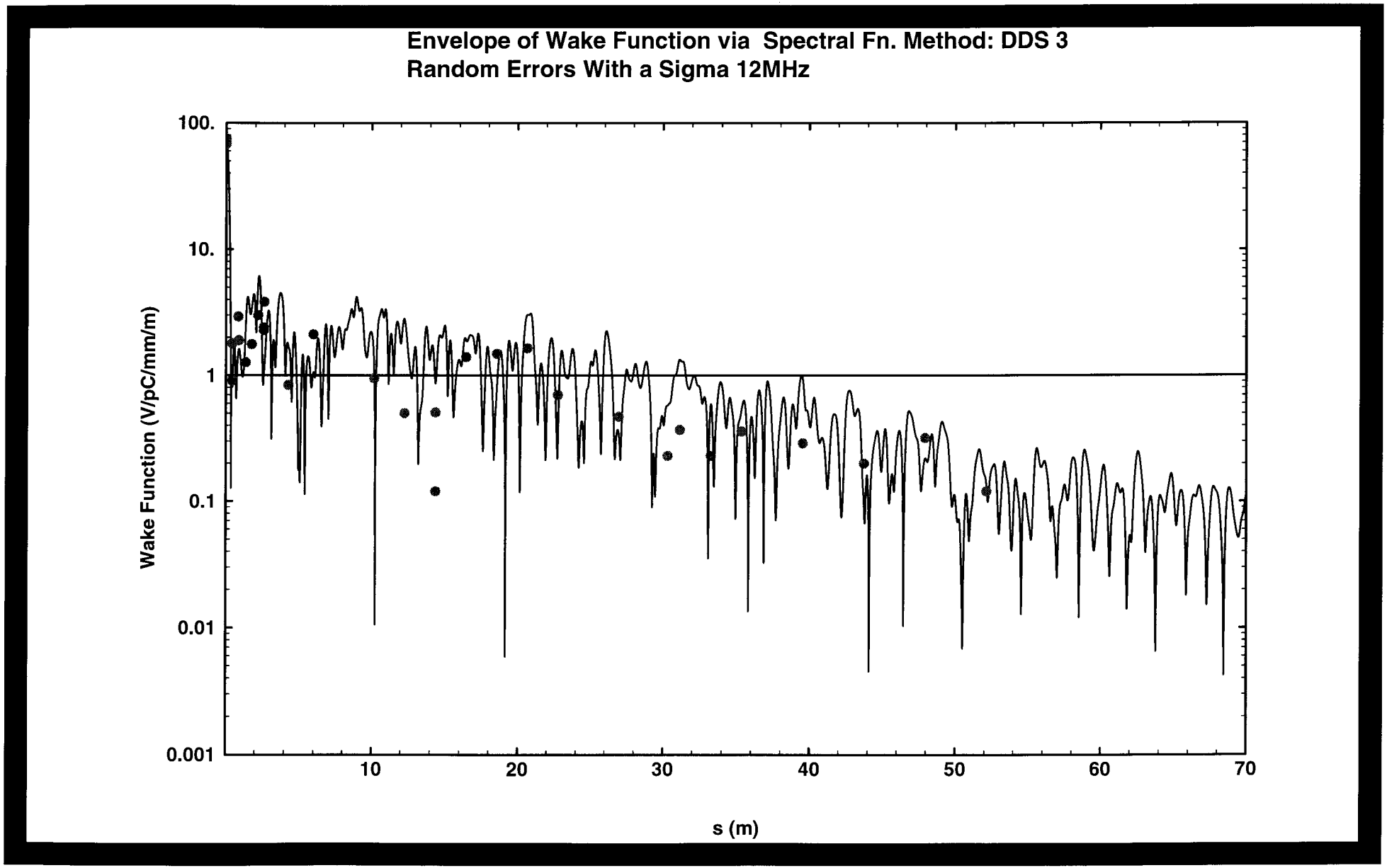
Spectral Function Calculation of DDS 3 ASSET Y Wake Including a Normal Distribution of Errors (Dots Indicate Y-Wake ASSET '98 Data)



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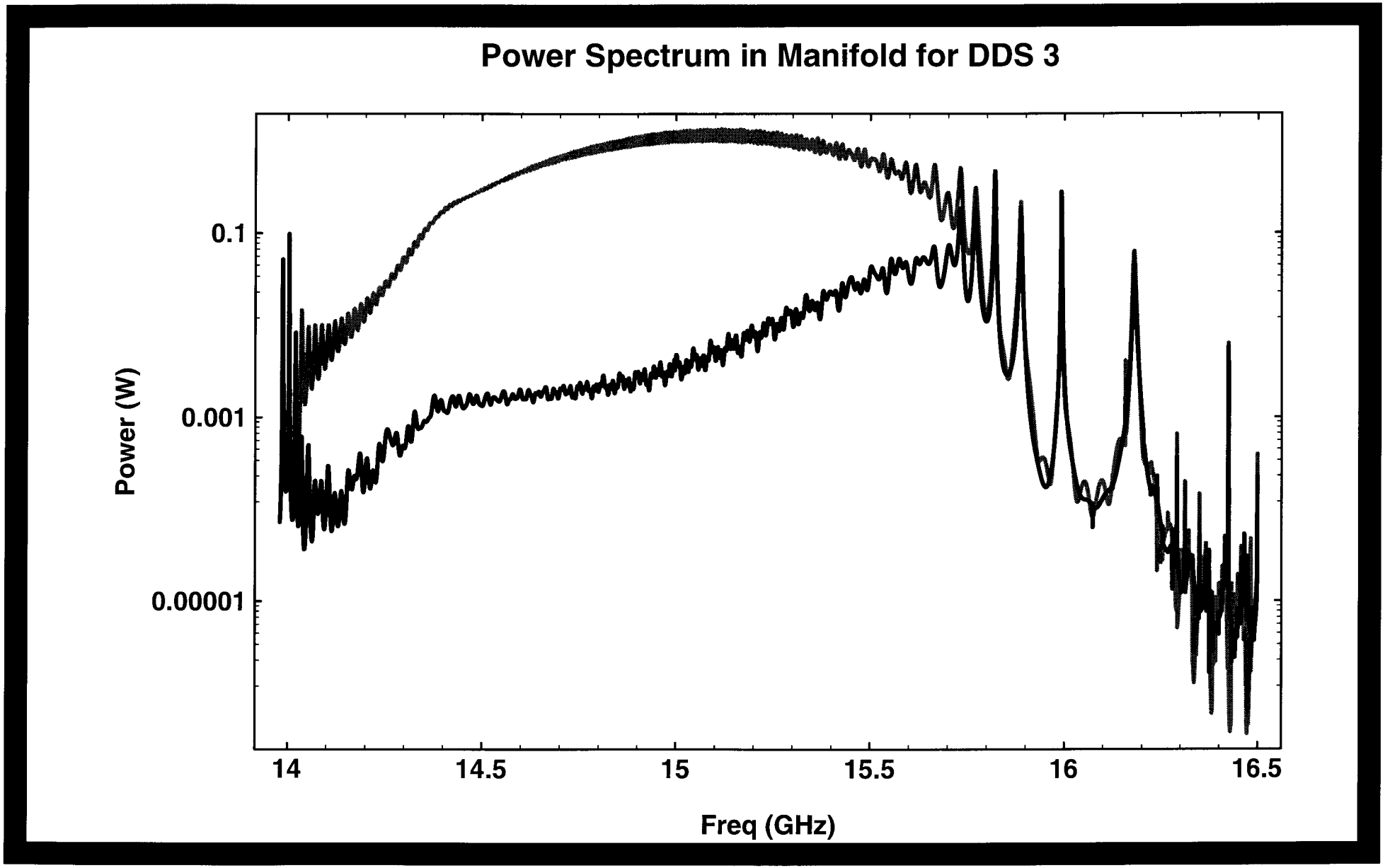

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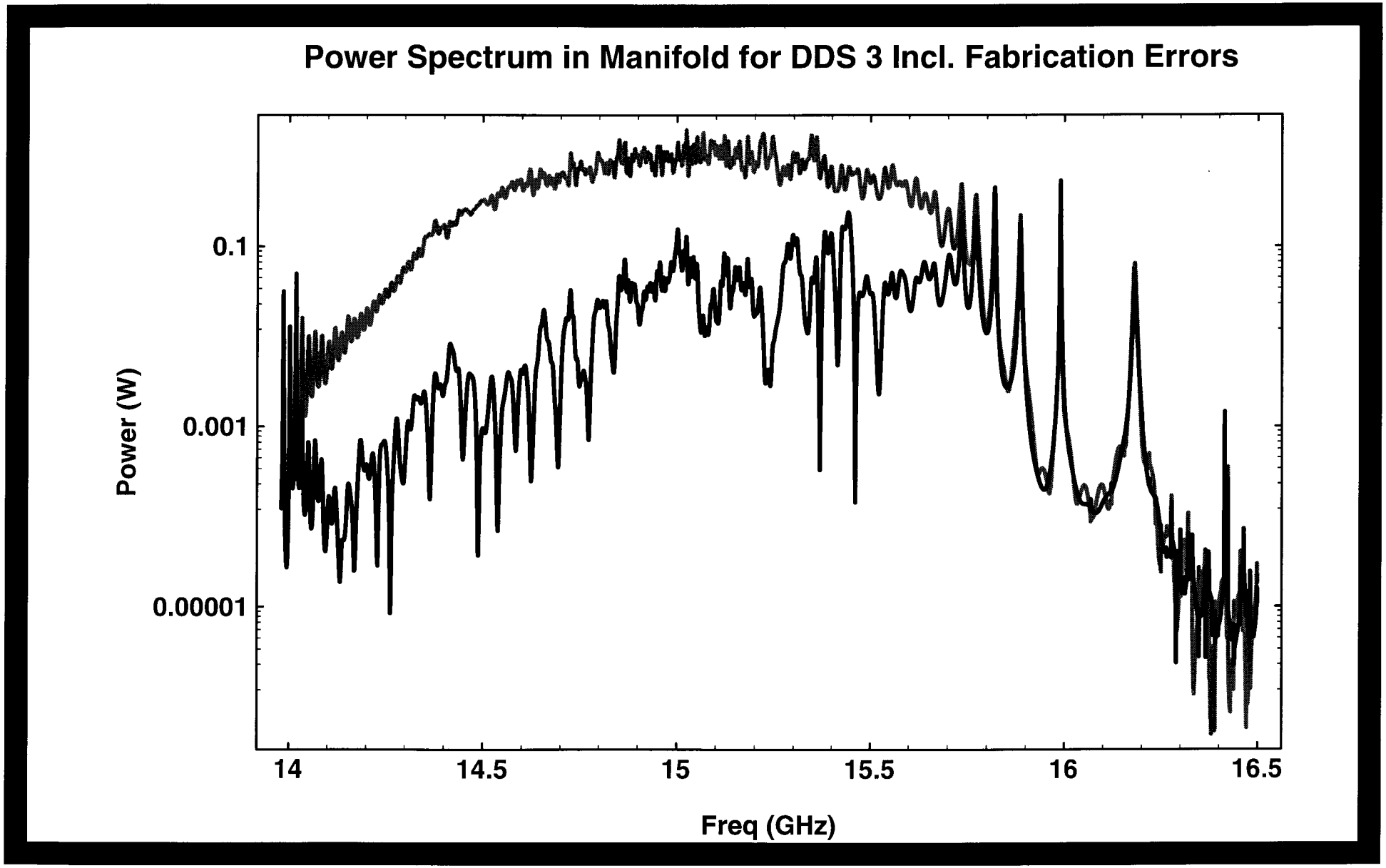

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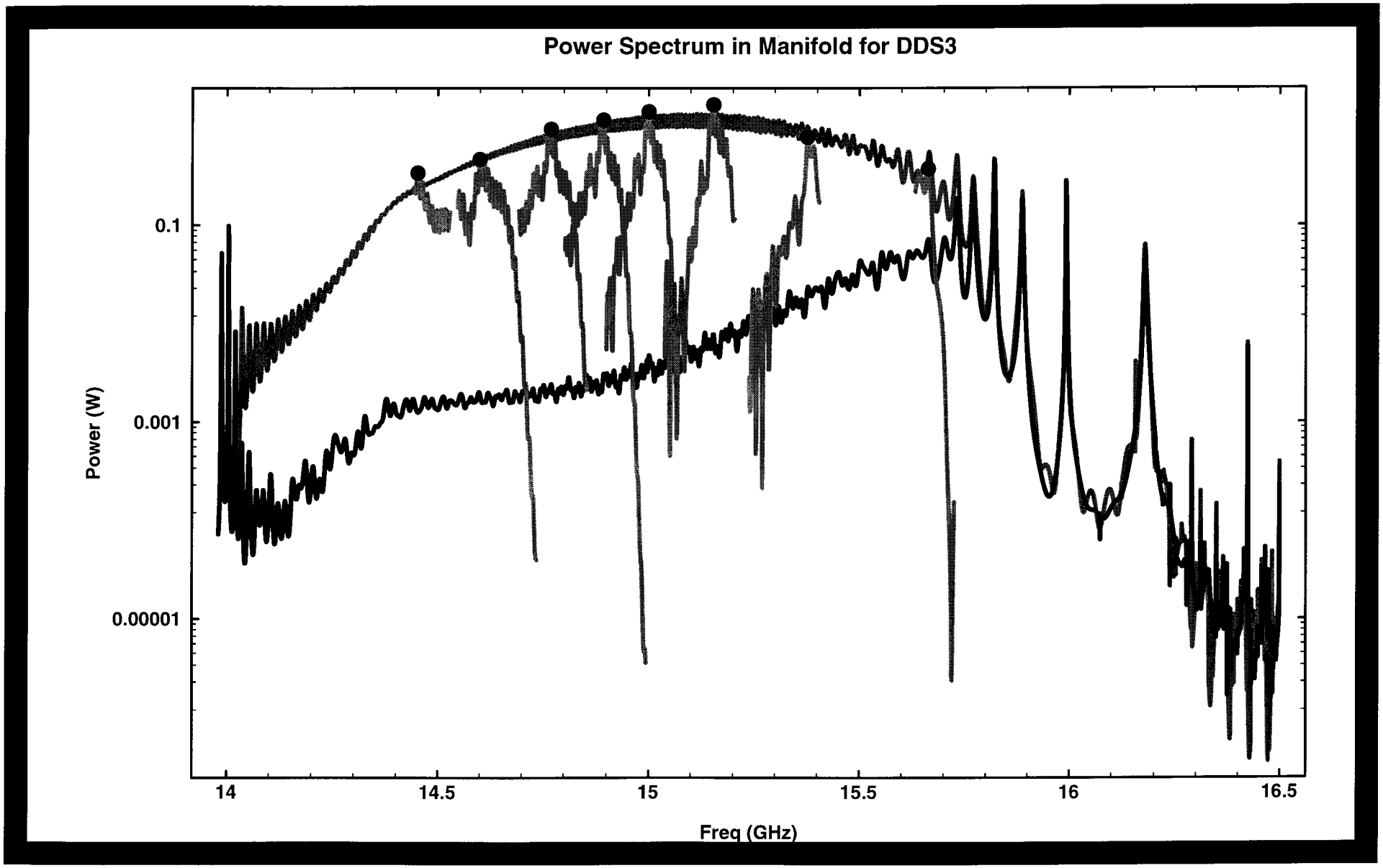

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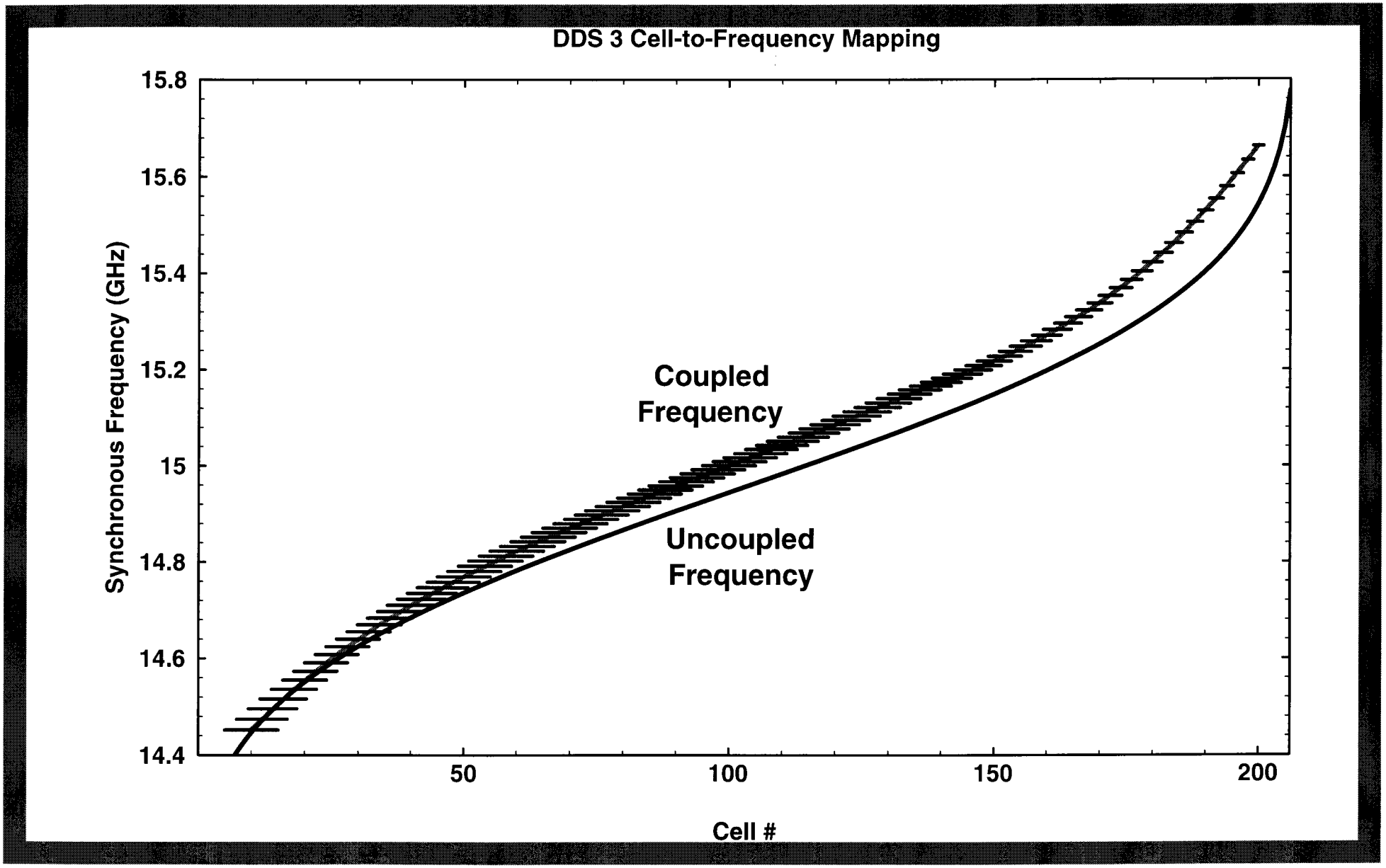

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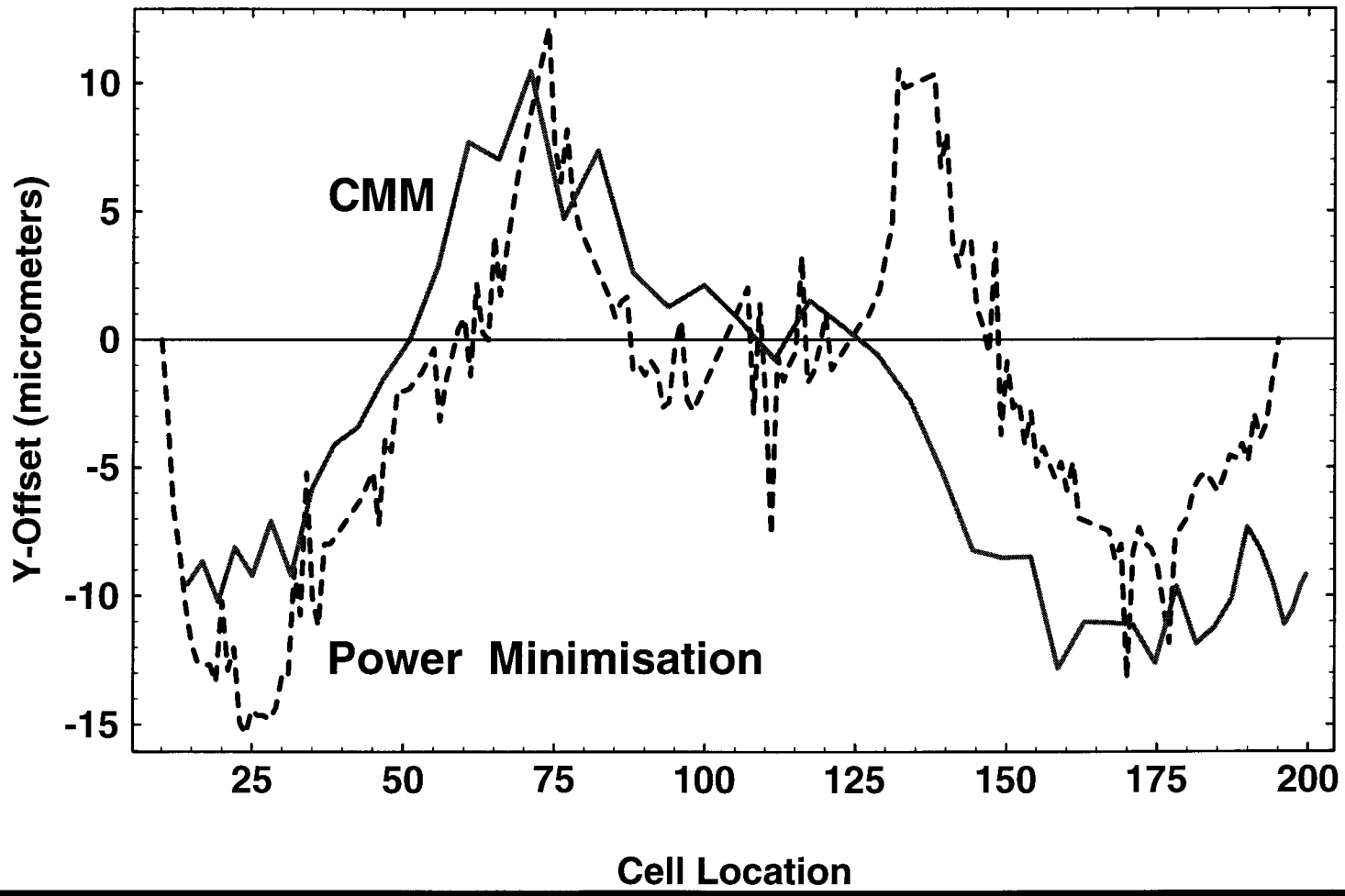
Structure Offset via Minimised Power: Y-Data Frequency Mapped Onto Cell Location



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Conclusions

- DDS3 as designed will damp the wake field such that a Gaussian fall-off in its amplitude occurs. Present structure has fabrication errors that flatten the initial wake so that fall-off is not seen until later (approx 25 m).
- The wake eventually is damped, due not to the detuning, but to the manifold damping

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- **Structure shows marked asymmetry in X and Y wake (X wake data being significantly smaller than Y wake data). This implies the irises are not circular but elliptical.**
- **Beam based structure alignment data may also be affected by the errors in fabrication**
- **Much better QC will be required for further structures in order to damp the wake.**