

# **Method of Transmitter Characterization for 800MBaud PAM12 System**

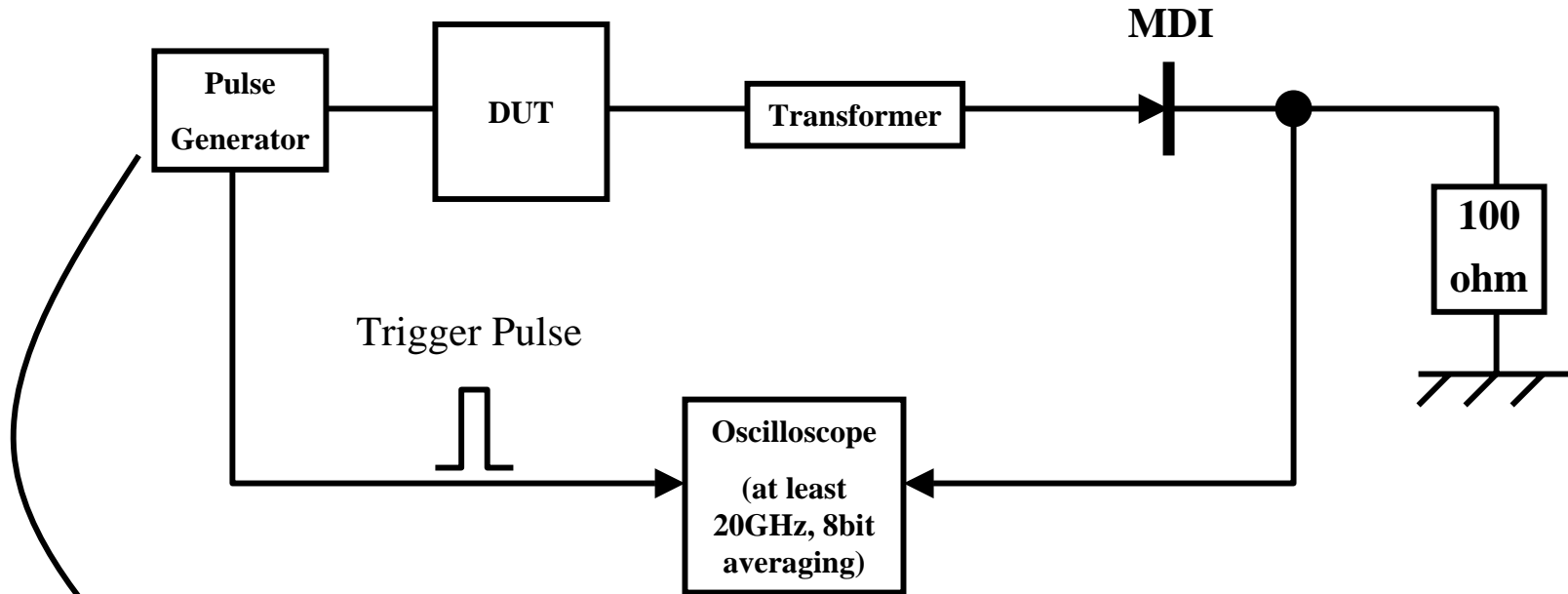
**IEEE P802.3an Task Force**

**San Antonio, November 2004**

**Hiroshi Takatori, Albert Vareljian**

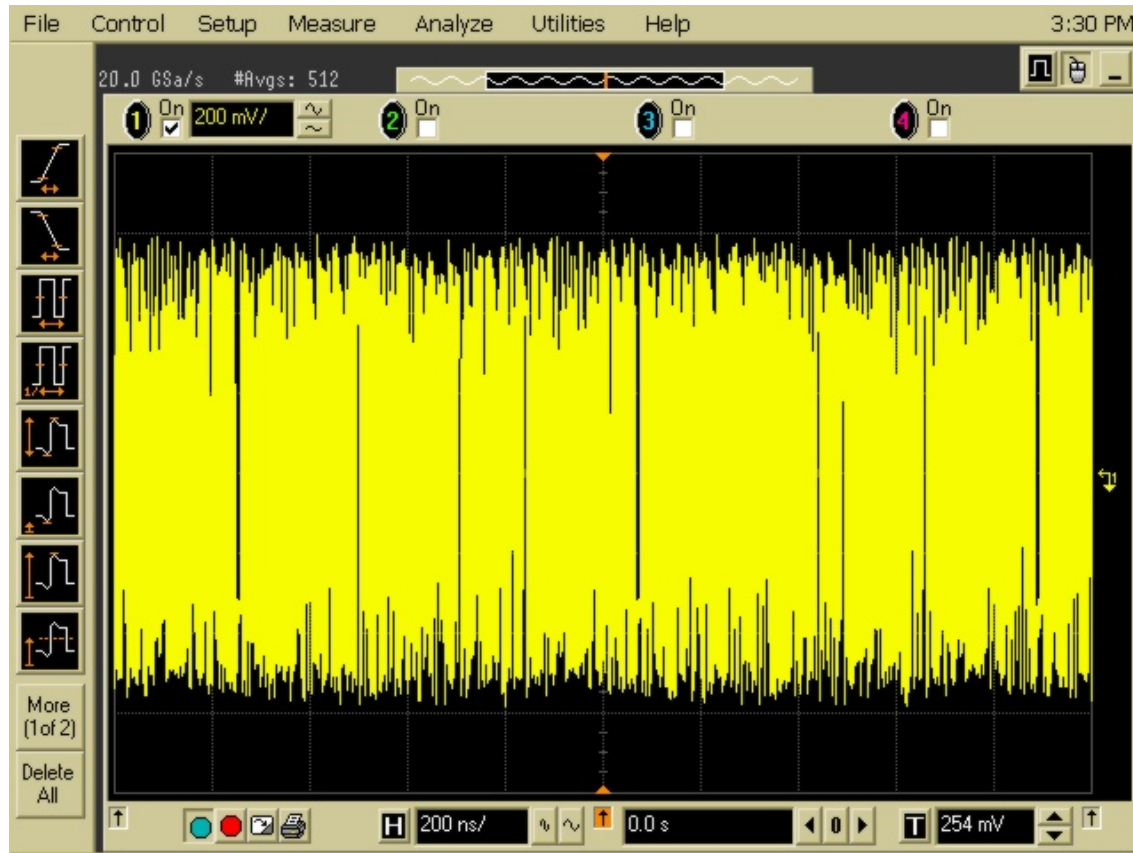
**KeyEye Communications**

# Measurement Set-up



**Repetitive Pattern (Alternative ones and random pattern)  
( +M and -M alternate pattern) for 10240 symbols followed by  
(all-symbol random pattern) for 40960 symbols**

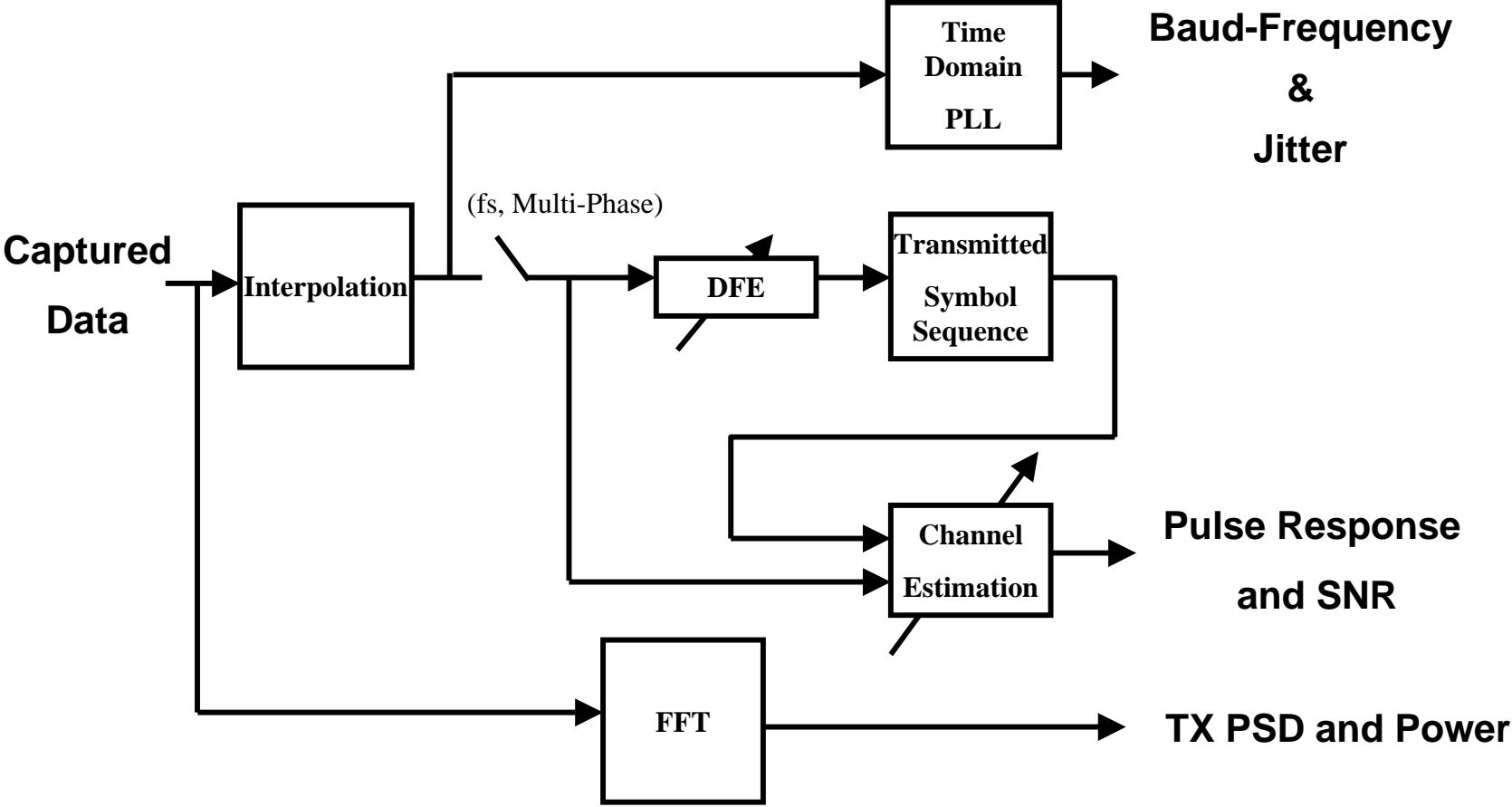
# Capturing Wave Form



**800M Baud**

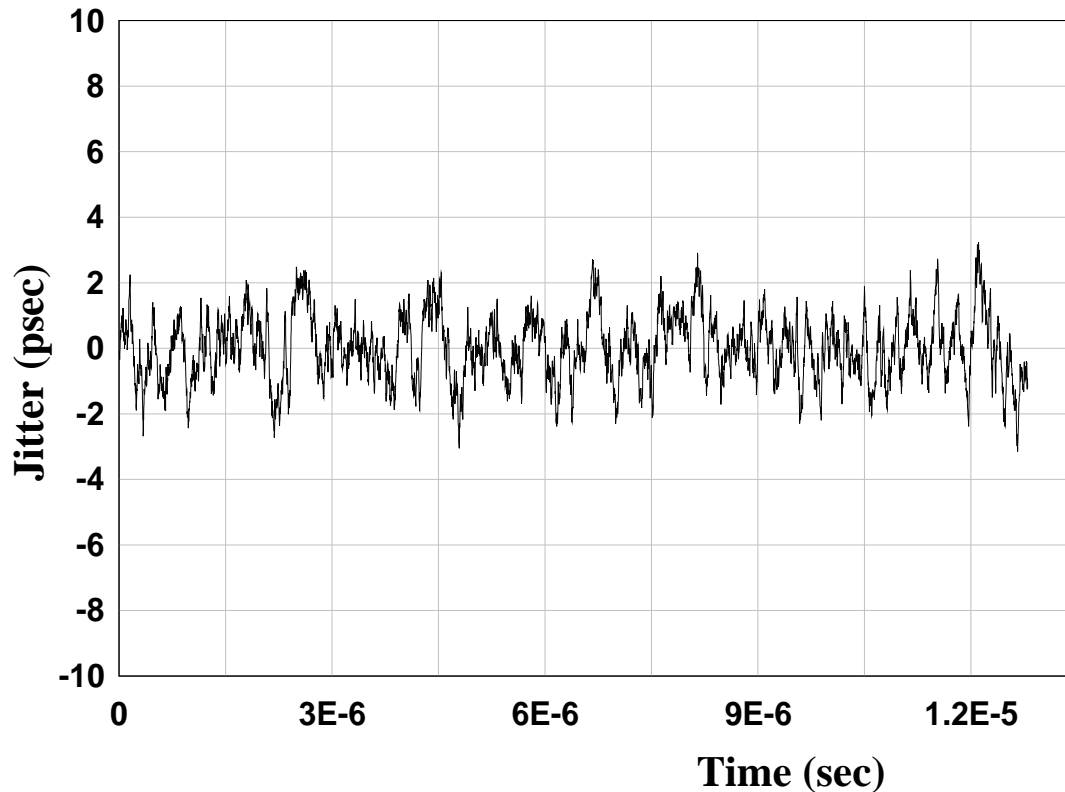
**Sampled at 20GHz**  
**Captured single trigger**  
**or**  
**Averaged without**  
**sinc interpolation**

# Post Processing



# EXAMPLES

## Symbol Frequency and Jitter

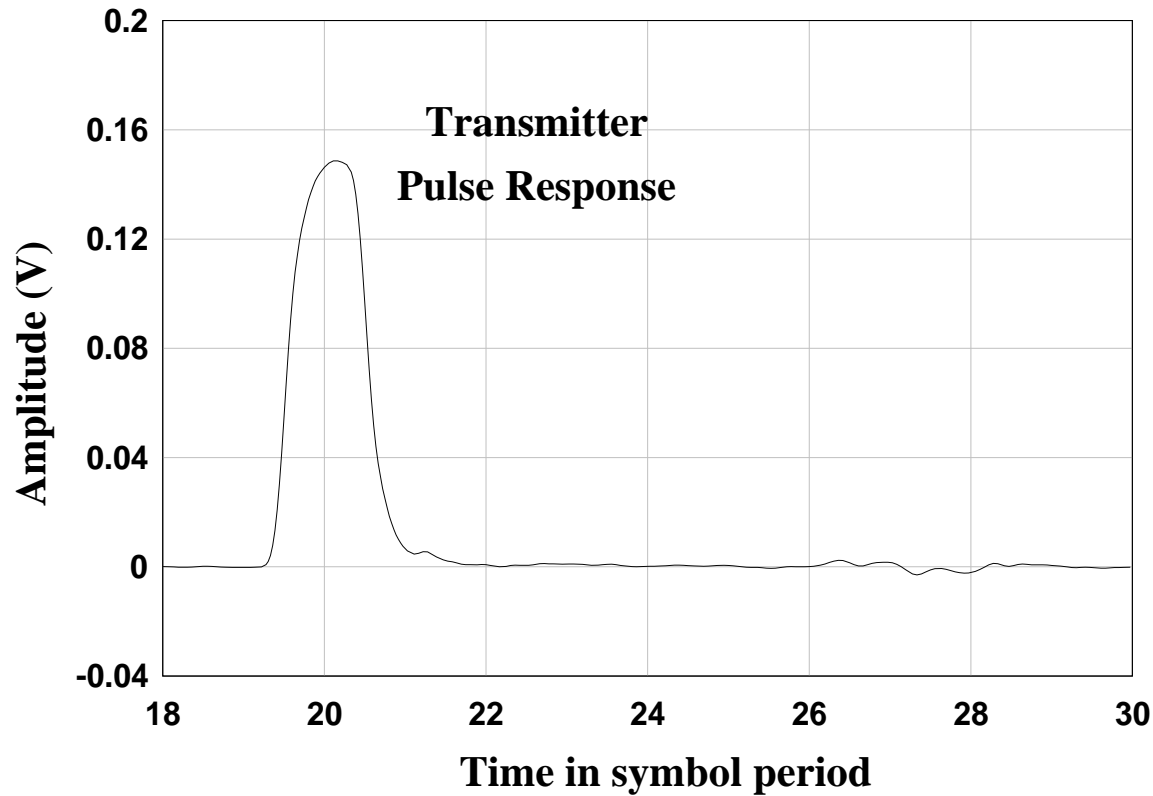


**Symbol Frequency**  
**800.023MHz**  
**(+28.8ppm)**

**Jitter 1.0ps (rms)**  
**for 10240 symbol**  
**time periods**

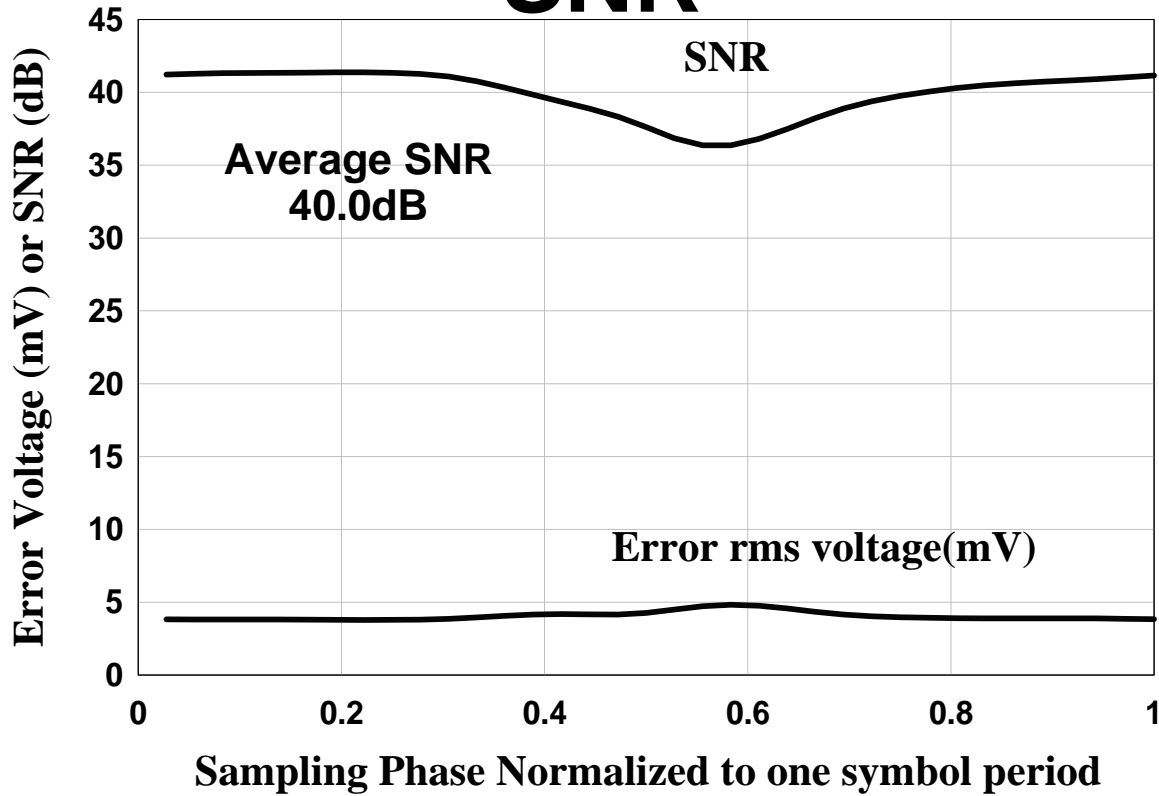
# EXAMPLES

## Pulse Response



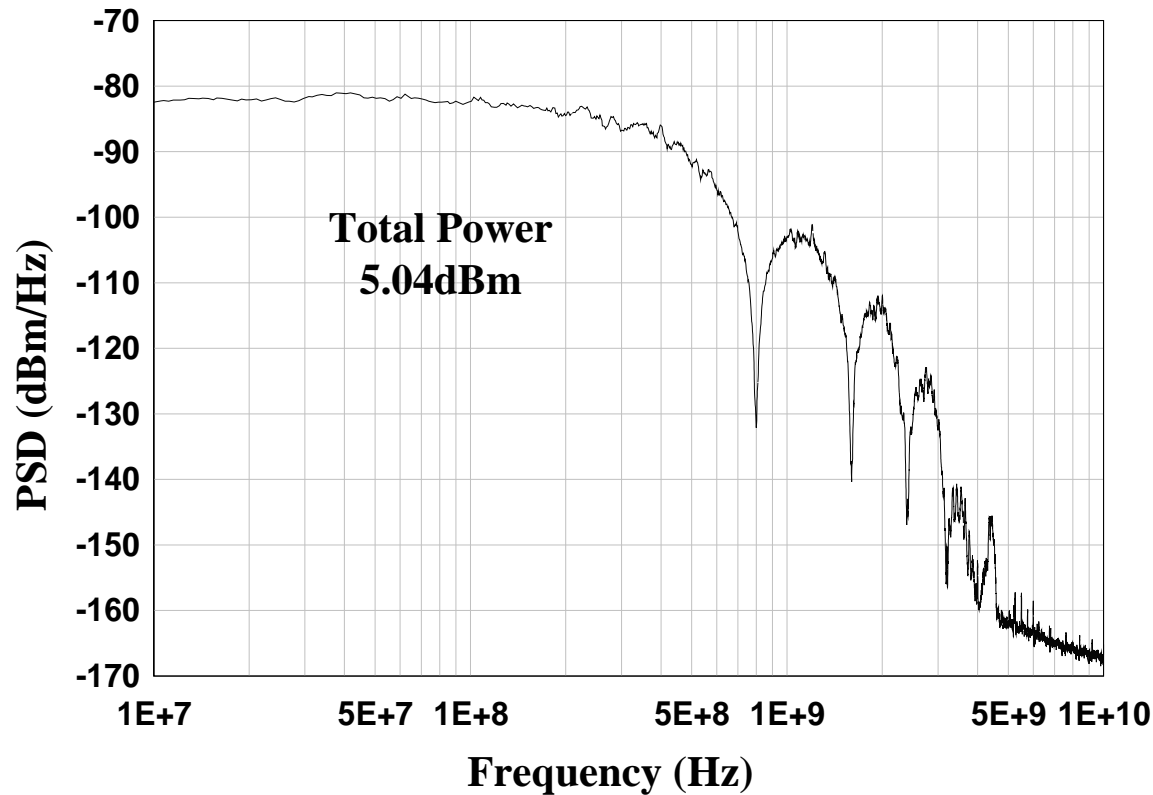
# EXAMPLES

## SNR



# EXAMPLES

## Power Spectrum Density





# Summary

**Characterization method for the 800Mbaud-12PAM system is proposed.**

**It has been demonstrated that major parameters for 10GBase-T transmitter can be characterized**

- Power Spectral Density**
- Total Transmitter Power**
- Time Domain Pulse Response**
- SNR and Error RMS**
- Jitter (Higher than 2MHz)**

**KeyEye proprietary software can be shared with 10GBase-T committee**