

# **EMC-Noise Ad Hoc F2F Meeting: RTPGE EMC Issues and Future Directions**

**Indian Wells, CA  
January 21, 2014**

**Will Bliss, Mehmet Tazebay, Ahmad Chini  
Broadcom Corporation**

# BCI Sine Wave (CM) Test Definition

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- Should we design for fixed max mVpp (f) at RX input, or should we make some function of frequency?
  - mA(f) profile?
  - mV(f) = fcn(freq), what TF shape? (resonances real?)
  - Assume net flat?
- 1mVpp per 1mA rms BCI (includes 6dB margin), so →200mVpp ??
- Must pass 15m, or only need pass 2m?

# Transient Test for Impulse Noise (via capacitive coupling)

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- **Agree on a pulse shape at Rx input.**
  - **One period of sine wave? One period of square wave? Etc.**
  - **Pulse Duration 75nsec?**
- **Max mVpp? (200mV?) Guaranteed time between pulses?**

# TX Definition

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- **DAC or analog only?**
  - **If Analog, then need analog filter for shaping TX spectrum**
  - **Else-if DAC, number of TX FFE taps. Bits of resolution, LPF analog**
- **ENOB and/or SDR of TX**
- **TX maximum launch voltage P-P**
  - **Tolerance (+/- of launch voltage)**

# Channel Modeling

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- **Being asked by OEMs & other cable manufacturers to consider a relaxation for the alien NEXT limit line by 6dB in order to include a class of automotive cables & connectors**
  - **The PHY vendors will do channel capacity & dp-SNR evaluation for this change.**
  - **The goal is to report the results by 2/10/2014**
  - **Then, the group will review the results in order to determine the next steps.**

# RX Default (reference architecture)

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- **RX Input noise floor**
- **Analog RX Filter spec**
  - **Including HPF and LPF Spec**
- **ENOB of ADC w/o full duplex**
- **FFE number of taps**
- **DFE FBF number of taps**

# Analysis Metrics to Share

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## ➤ Analysis Metrics to Share

- ADC scaling equation (w/o full duplex)
- FFE and FBF design equations/process
- Sine wave amplitude at input (as a function of frequency) to achieve BER =  $1e-10$
- Transient pulse performance
- Jitter sensitivity
- w/wo FEC Performance, burst error correction capability & latency

# Baseline Analysis Assumptions (as agreed upon)

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- Use 15m channel model at room temperature for immunity analysis
- Use Sine wave amplitude at input (as a function of frequency) to achieve BER =  $1e-10$
- Use TX, RX guidelines as provided in this document
- Transient pulse definition [TBD]
- PoDL noise component [TBD]