Minutes of the Conference Call

Date

The 19th conference call was held on June 7, 2005, at 8 PM EST.

Participants

1 Gary Baldwin
2 Bruce Bosco
3 Shahriar Emami
4 Abbie Mathew
5 Tony Pollock
6 Alireza Seyedi

Issues Discussed

(1) The subgroup discussed the action items from last week.

(2) Concern was expressed on the lack of measured data and impact this will have on adhering to the September deadline. There is urgency on understanding what parameters must be captured and type of measurements required to develop the channel model. Most of the action items listed below is driven by this urgency.

Action Items

(1) Bruce to advise when the measured data will be released to this subgroup.

(2) Shahriar to review document number 05/255 which follows page 2. The simulation is based on the paper titled *Analysis of 60 GHz Band Indoor Wireless Channels with Channel Configurations*.[1]

(3) Abbie to email a list of papers that have been reviewed. The objective here is to select appropriate papers and contact the authors for measured data.

(4) Su-Khiong will provide a document that describes kind of measurements required to develop a channel model.

(5) Members are encouraged to read a document titled *MEDIAN 60 GHz Wideband Indoor Radio Channel Measurements and Model*.[1]

(6) Prior to the Cairns meeting, this subgroup started to discuss parameters required for the SV model – refer to the table on the following page. At that time, this subgroup was leaning towards the SV model. The other issue that came up was the need to capture AOA.

[1] A copy can be emailed to you upon request.

L	Number of clusters
Λ	Inter cluster arrival rate
λ	Ray arrival rate
Γ	Inter cluster decay factor
γ	Ray decay factor

Next Conference Calls

The next meeting will be held at the times listed below. The dial-in number is (641) 985-8000 and the access code is 657719#.

US Eastern Standard Time	8.00 PM, June 13 - Monday
US Mountain Time	5.00 PM, June 13 – Monday
US Pacific Time	5.00 PM, June 13 – Monday
Japan/South Korea Time	9.00 AM, June 14 – Tuesday
South Australia Time	9.30 AM, June 14 – Tuesday

Project: IEEE P802.15 Working Group for Wireless Personal Area Networks (WPANs)

Submission Title: [60 GHz Channel Modeling Simulation Work for Indoor Environment]
Date Submitted: [May 2005]
Source: [Shahriar Emami and Abbie Mathew and Zhiguo Lai]
Company [Freescale Semiconductor, Inc, Newlans and University of Massachusetts]
Address [Freescale Semiconductor, Inc. 6100 Broken Sound Pkwy., N.W. Suite 1
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Abstract: [Summarizes 60 GHz channel modeling simulation work]

Purpose: [To update task group on channel modeling simulation work]

Typical office Environment

- J.H. Park et. al provide S-V channel model parameters:

Sampling frequency = 200 MHz

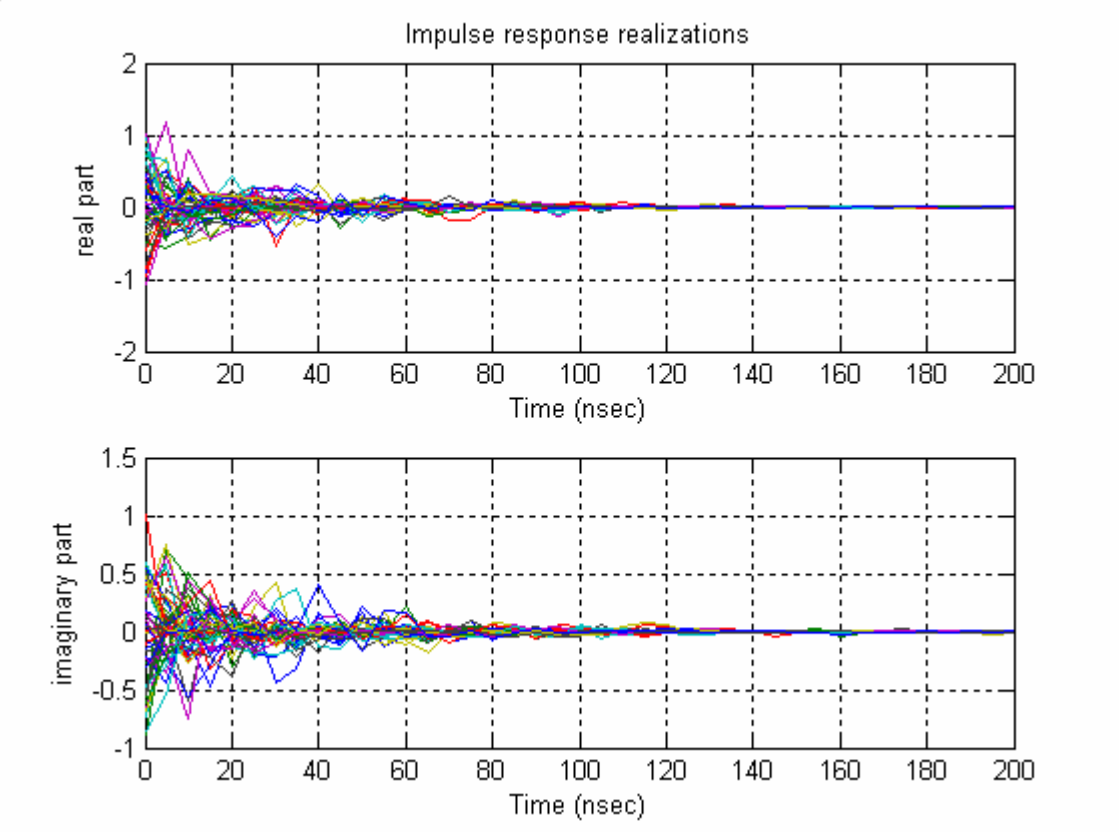
Mean time between clusters: 75 ns

Mean time between rays: 5 ns

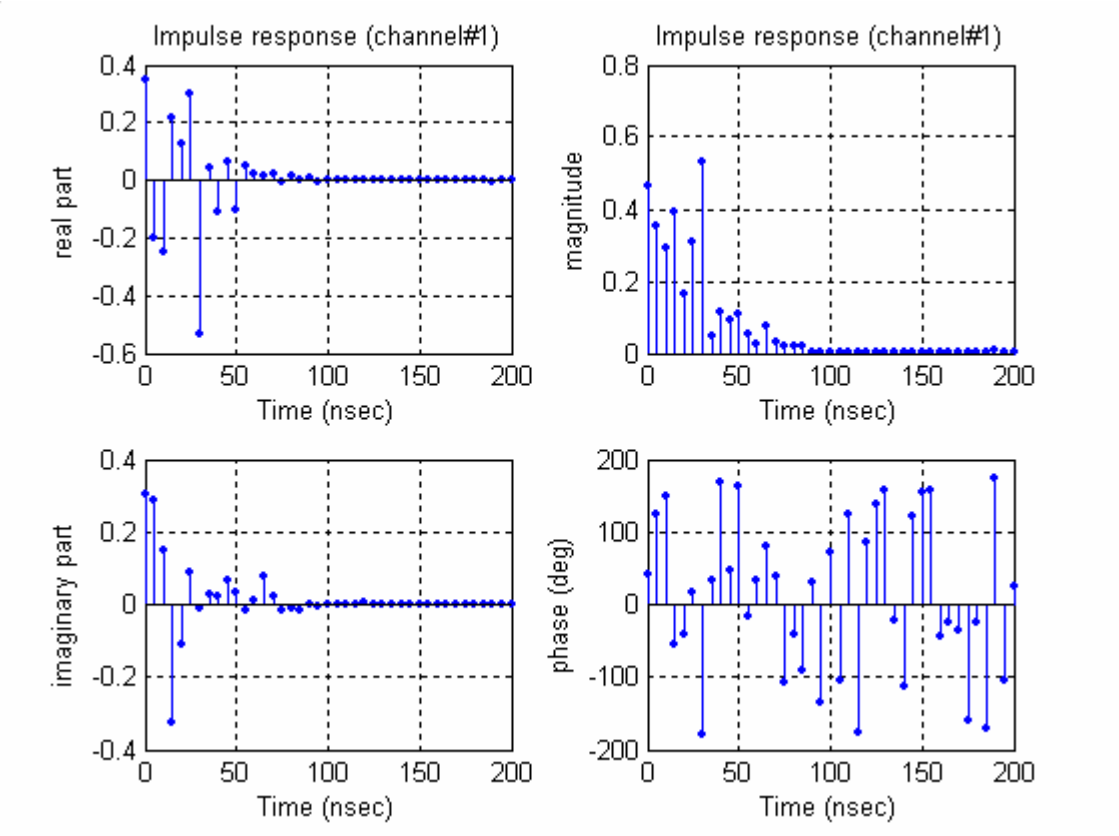
Cluster decay constant: 20 ns

Ray decay constant: 9 ns

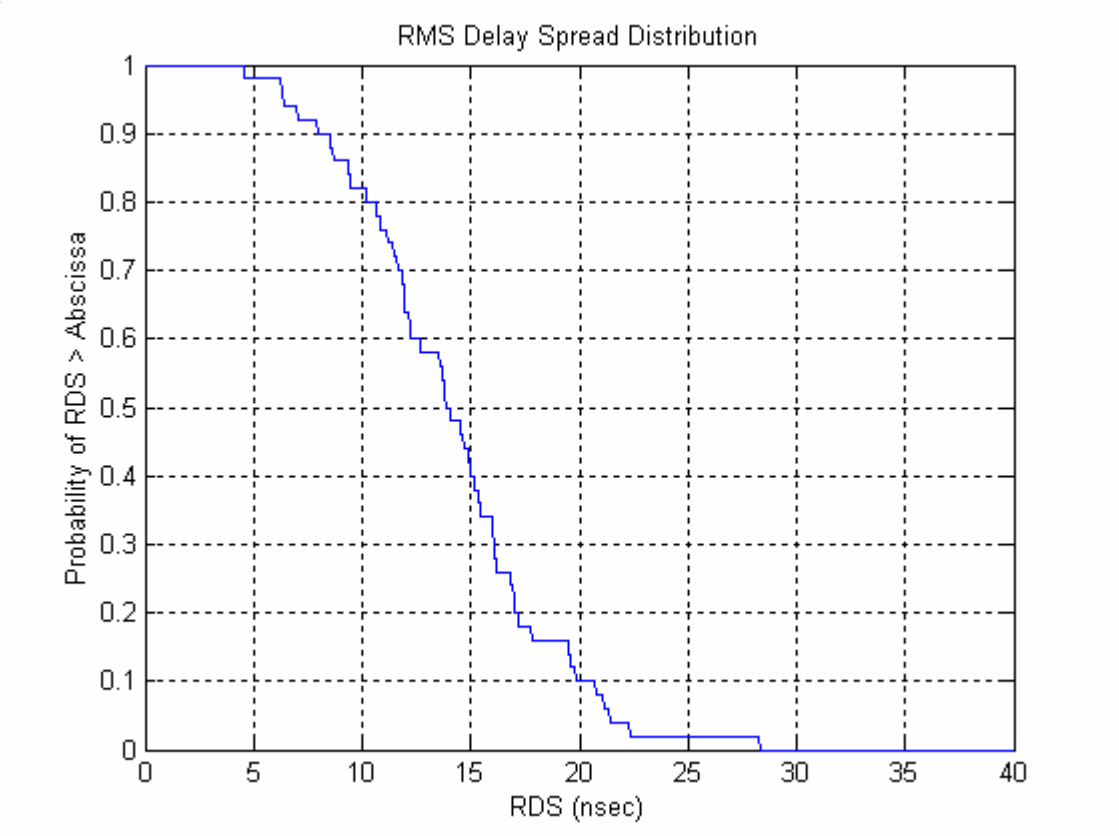
Realizations



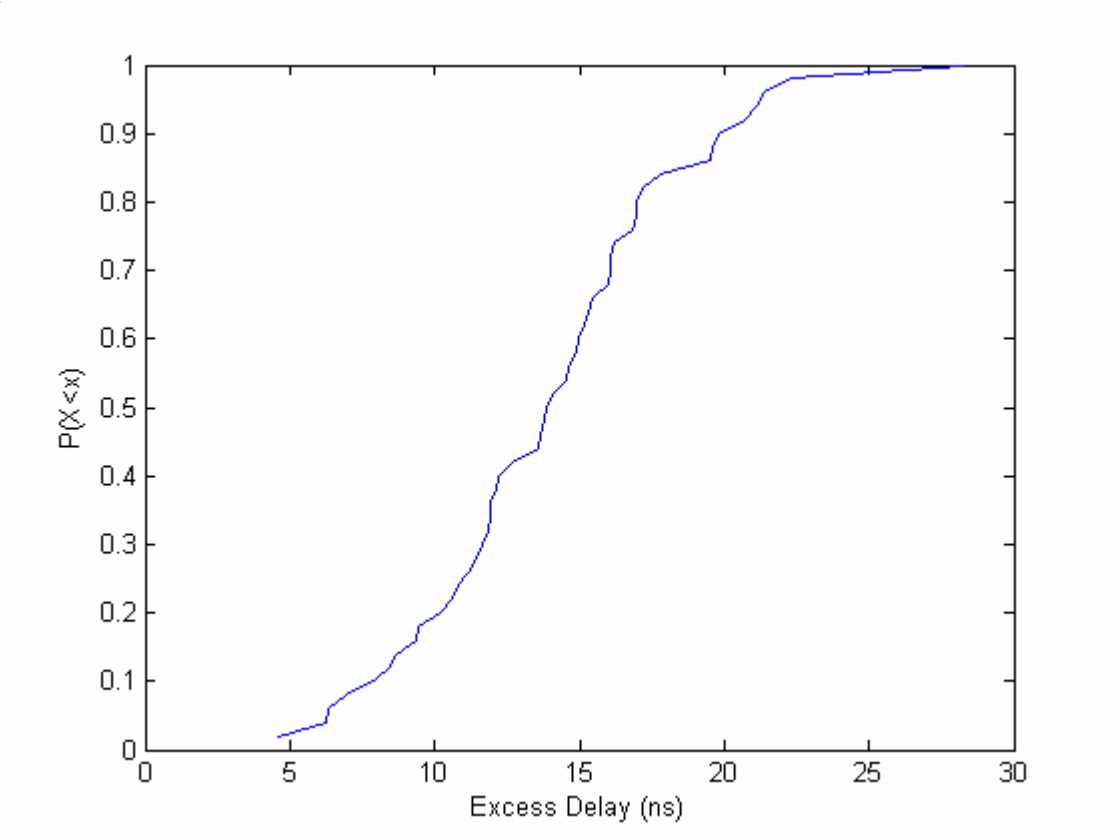
CIR


Impulse response (channel#1)
real part
Time (nsec)
Impulse response (channel#1)
magnitude
Time (nsec)
imaginary part
Time (nsec)
phase (deg)
Time (nsec)

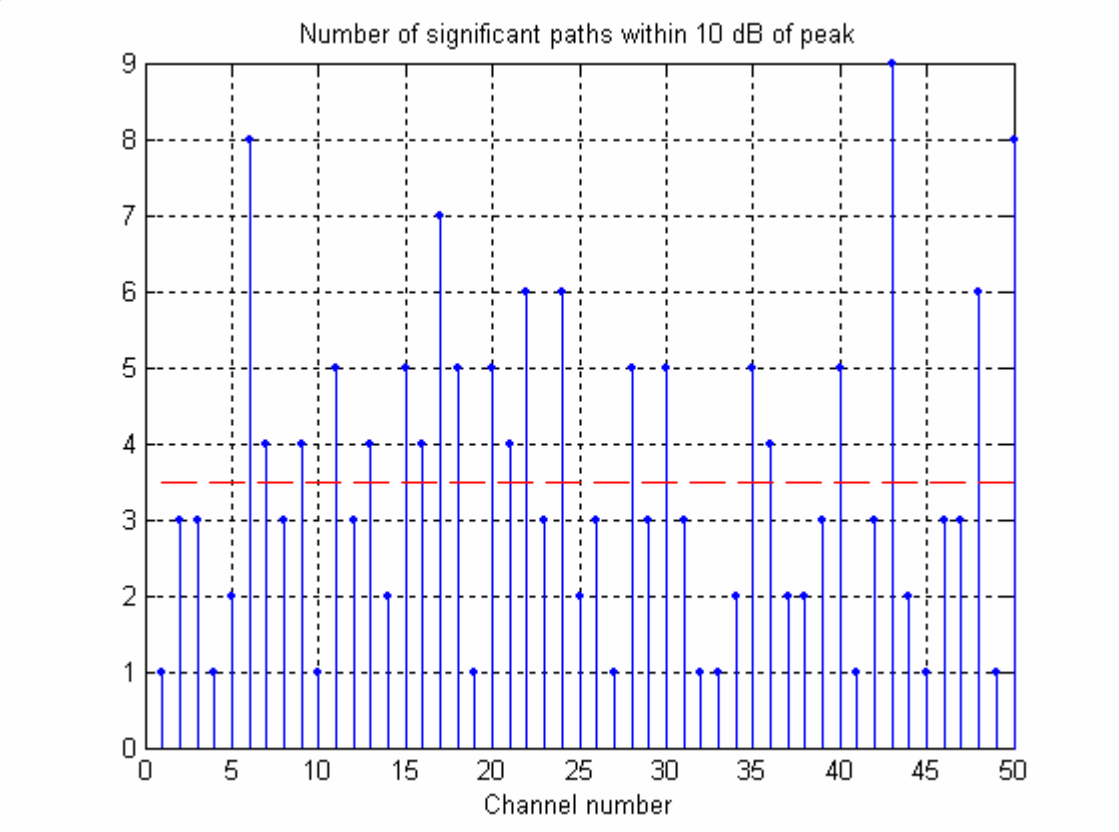
RMS Delay


RMS Delay Spread Distribution
Probability of RDS > Abscissa
RDS (nsec)
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
0
5
10
15
20
25
30
35
40

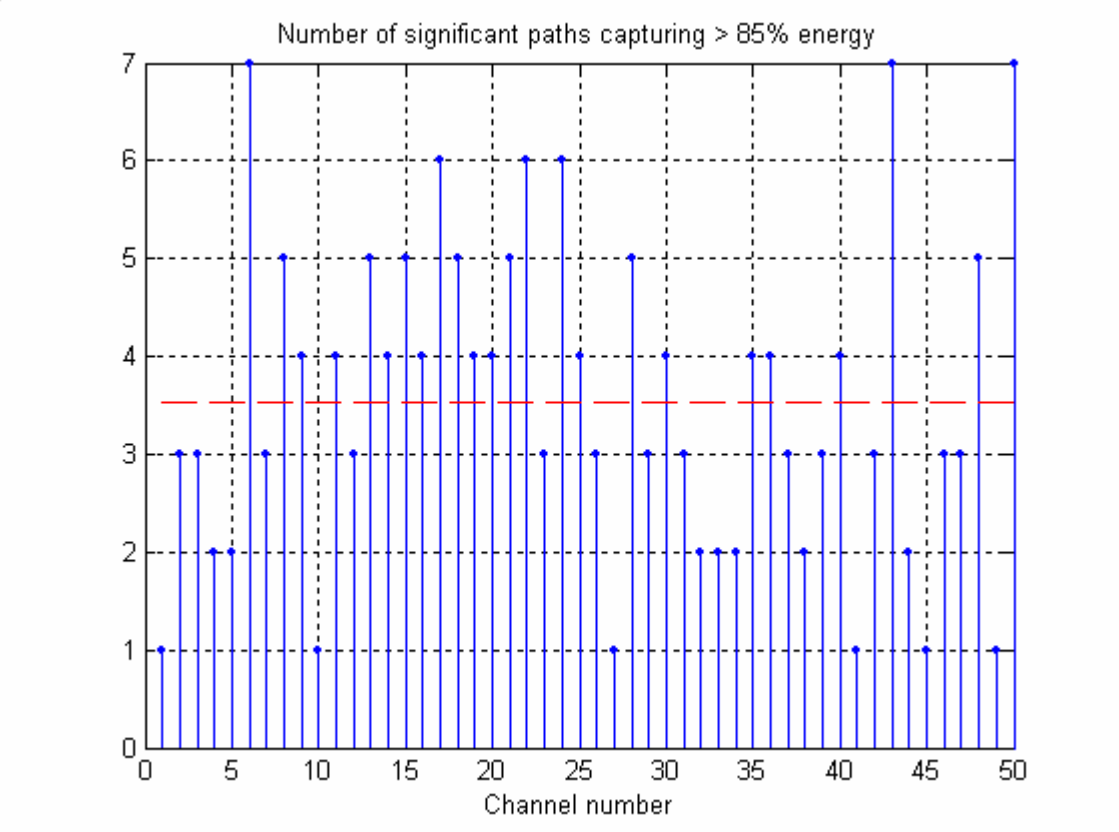
Excess Delay



Significant Paths



Energy Capture



Estimated parameters

- Mean delays: excess delay= 10.1 ns
- RMS delay = 14 ns
- Number of paths: NP_10dB = 3.5
- NP_85% = 3.5

Summary

- Reproduced the model proposed by SAIT Samsumg.
- There are a couple of other studies that use similar parameters.
- Unfortunately there is no parameters available for other environments.