
IEEE P802.15
Wireless Personal Area Networks

Project	IEEE P802.15 Working Group for Wireless Personal Area Networks (WPANs)		
Title	Minutes of the conference call on the channel model		
Date Submitted	[4 May 2006]		
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Re:	[Minutes of the conference call – TG3c Channel Model Subgroup]		
Abstract	[]		
Purpose	[]		
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Date

The 44th conference call was held at the times listed below.

Los Angeles	May 1	Monday	8:00 PM
Boston	May 1	Monday	11:00 PM
Moscow	May 2	Tuesday	7:00 AM
Seoul, Tokyo	May 2	Tuesday	Noon
Canberra	May 2	Tuesday	1:00 PM

Participants

1	Alexei Davydov
2	Zhiguo Lai
3	Alexander Maltsev
4	Abbie Mathew
5	Tony Pollock
6	Hirokazu Sawada
7	Kamran Sayrafian
8	Su-Khiong Yong

Issues Discussed & Action Items

- a) Alexander gave a brief update on the proposal he submitted last week. Refer to [APPENDIX-A](#) for more details. Discussions that followed were on the following issues.
- i. Can ray tracing resolve the ambiguity relating to the angular information?
 - ii. In order to use ray tracing, one needs to know the environment, surface roughness, reflection coefficients, etc. Are such parameters available?
 - iii. There was agreement that the time related parameters can be extracted, but not on the angular information.
 - iv. Overlapping and non-overlapping clusters in time-angle domain were defined. Thereafter, the discussion was on using ray tracing to compute the time and angle of each non-overlapping cluster. Two clusters, one for the 'front' and the other from the 'back' would have different time of arrival. If such clusters could be separated, then the angle of arrival could be estimated.

It was decided that for the discussion to be more productive, Alexander and Alexei would their thoughts. Future discussion will be through the Reflector.

- b) Lai gave his presentation – refer to document number [15-06-0216] which is on the server. The group suggested that more measurements are required, particularly from a transmitter with omni antenna (linear) to a receiver with directional antenna (linear polarization). The objective is to show the advantage offered by a narrow circular polarized beam. The group suggested that the results could be submitted before the San Diego meeting.

Next Conference Call

The next conference call will be at the following times.

Los Angeles	May 9, Tuesday	8:00 PM
Boston	May 9, Tuesday	11:00 PM
London	May 10, Wednesday	2:00 AM
Seoul, Tokyo	May 10, Wednesday	10:00 AM
Canberra	May 10, Wednesday	11:00 AM

The dial-in phone number and the access code are +(641) 985-8000 and 657719# respectively.

Agenda

This will be a brief meeting in which we will plan for the Jacksonville meeting.

APPENDIX – AStatement on the ambiguity in the IMST data:

We agree that IMST data sources have ambiguity relating to the angular information.

We will be able to remove this ambiguity explicitly for two positions when two dimensional measurements are available.

For other positions we can only evaluate the real angle of arrival for clusters by exploiting some simplified geometry-based ray-tracing model.

But I would like to remind that our Channel Model Subgroup is going to create a Statistical Channel model. I hope everybody from our team agree with this. The Statistical Channel model should provide good approximate description of the real wireless channel for indoor environment.

The majority of the subgroup are sure that the Statistical Channel model should be based on Saleh-Valenzuela (S-V) Model with Angle-of-Arrival extension. Our goal now to extract and estimate all needed parameters (distributions) for this Statistical Channel Model for all environments.

Let's review main needed parameters:

1. cluster arrival rate (cluster distribution in time domain)
2. ray arrival rate (statistics of rays inside a cluster)
3. cluster decay factor
4. ray decay factor
5. ray AoA distribution inside of a cluster (type of distribution and main parameter-standard deviation)
6. time and angle statistical dependence for rays inside of cluster (if needed)
7. cluster AoA distribution (type of distribution and main parameter standard deviation)
8. time and angle statistical dependence for clusters

It is obvious that for all these parameters except the last two the ambiguity in IMST data sources is not essential.

Moreover, we will be able to use all IMST data for estimation of the parameters of two last distribution functions **if the type of these functions will be determined from NACT data explicitly.**

In this case we will be able to estimate needed parameters of the distribution functions (in ##7, 8) from INST data simply taking into account the angle ambiguity.