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Title: **Channel Models for HIPERLAN/2 in Different Indoor Scenarios**

Agenda Item:

Document for:

Decision	
Discussion	**X**
Information	**X**

1 Introduction

This document contains a set of indoor channel models for which was decided, at BRAN#8, to be used for HIPERLAN/2 simulations. A tapped delay line type of model, which is basically described in [1], has been chosen. In order to reduce the number of taps needed, the time spacing is non uniform. For shorter delays, a more dense spacing is used. The average power declines exponentially with time. Except for the first tap, which can have a Ricean K factor of 10, all taps have Rayleigh fading statistics (K=0). A classical (Jake's) Doppler spectrum corresponding to a terminal speed of 3 m/s is assumed for all taps.

2 Models

Five models — A, B, C, D and E — have been designed. Model A corresponds to a typical office environment. Model B corresponds to a typical large open space environment with NLOS conditions or an office environment with large delay spread. Models C and E correspond to typical large open space indoor and outdoor environments with large delay spread. Model D corresponds LOS conditions in a large open space indoor or an outdoor environment.

Tap Number	Delay (ns)	Average Relative Power (dB)	Ricean K	Doppler Spectrum
1	0	0.0	0	Class
2	10	-0.9	0	Class
3	20	-1.7	0	Class
4	30	-2.6	0	Class
5	40	-3.5	0	Class
6	50	-4.3	0	Class
7	60	-5.2	0	Class
8	70	-6.1	0	Class
9	80	-6.9	0	Class
10	90	-7.8	0	Class
11	110	-4.7	0	Class
12	140	-7.3	0	Class
13	170	-9.9	0	Class
14	200	-12.5	0	Class
15	240	-13.7	0	Class
16	290	-18.0	0	Class
17	340	-22.4	0	Class
18	390	-26.7	0	Class

Table 1 Model A, corresponding to a typical office environment for NLOS conditions and 50ns average rms delay spread.

Tap Number	Delay (ns)	Average Relative Power (dB)	Ricean K	Doppler Spectrum
1	0	-2.6	0	Class
2	10	-3.0	0	Class
3	20	-3.5	0	Class
4	30	-3.9	0	Class
5	50	0.0	0	Class
6	80	-1.3	0	Class
7	110	-2.6	0	Class
8	140	-3.9	0	Class
9	180	-3.4	0	Class
10	230	-5.6	0	Class
11	280	-7.7	0	Class
12	330	-9.9	0	Class
13	380	-12.1	0	Class
14	430	-14.3	0	Class
15	490	-15.4	0	Class
16	560	-18.4	0	Class
17	640	-20.7	0	Class
18	730	-24.6	0	Class

Table 2 Model B, corresponding to typical large open space and office environments for NLOS conditions and 100ns average rms delay spread.

Tap Number	Delay (ns)	Average Relative Power (dB)	Ricean K	Doppler Spectrum
1	0	-3.3	0	Class
2	10	-3.6	0	Class
3	20	-3.9	0	Class
4	30	-4.2	0	Class
5	50	0.0	0	Class
6	80	-0.9	0	Class
7	110	-1.7	0	Class
8	140	-2.6	0	Class
9	180	-1.5	0	Class
10	230	-3.0	0	Class
11	280	-4.4	0	Class
12	330	-5.9	0	Class
13	400	-5.3	0	Class
14	490	-7.9	0	Class
15	600	-9.4	0	Class
16	730	-13.2	0	Class
17	880	-16.3	0	Class
18	1050	-21.2	0	Class

Table 3 Model C, corresponding to a typical large open space environment for NLOS conditions and 150ns average rms delay spread.

Tap Number	Delay (ns)	Average Relative Power (dB)	Ricean K	Doppler Spectrum
1	0	0.0	10	Class + spike
2	10	-10.0	0	Class
3	20	-10.3	0	Class
4	30	-10.6	0	Class
5	50	-6.4	0	Class
6	80	-7.2	0	Class
7	110	-8.1	0	Class
8	140	-9.0	0	Class
9	180	-7.9	0	Class
10	230	-9.4	0	Class
11	280	-10.8	0	Class
12	330	-12.3	0	Class
13	400	-11.7	0	Class
14	490	-14.3	0	Class
15	600	-15.8	0	Class
16	730	-19.6	0	Class
17	880	-22.7	0	Class
18	1050	-27.6	0	Class

Table 4 Model D, same as model C but for LOS conditions. A 10 dB spike at zero delay has been added resulting in a rms delay spread of about 140ns.

Tap Number	Delay (ns)	Average Relative Power (dB)	Ricean K	Doppler Spectrum
1	0	-4.9	0	Class
2	10	-5.1	0	Class
3	20	-5.2	0	Class
4	40	-0.8	0	Class
5	70	-1.3	0	Class
6	100	-1.9	0	Class
7	140	-0.3	0	Class
8	190	-1.2	0	Class
9	240	-2.1	0	Class
10	320	0.0	0	Class
11	430	-1.9	0	Class
12	560	-2.8	0	Class
13	710	-5.4	0	Class
14	880	-7.3	0	Class
15	1070	-10.6	0	Class
16	1280	-13.4	0	Class
17	1510	-17.4	0	Class
18	1760	-20.9	0	Class

Table 5 Model E, corresponding to a typical large open space environment for NLOS conditions and 250ns average rms delay spread.

References

[1] J. Medbo, ‘‘Radio Wave Propagation Characteristics at 5 GHz with Modeling Suggestions for HIPERLAN/2’’, ETSI BRAN 3ERI074A, Jan. 1998.