



Sub-THz Mesh Backhaul Channel Data

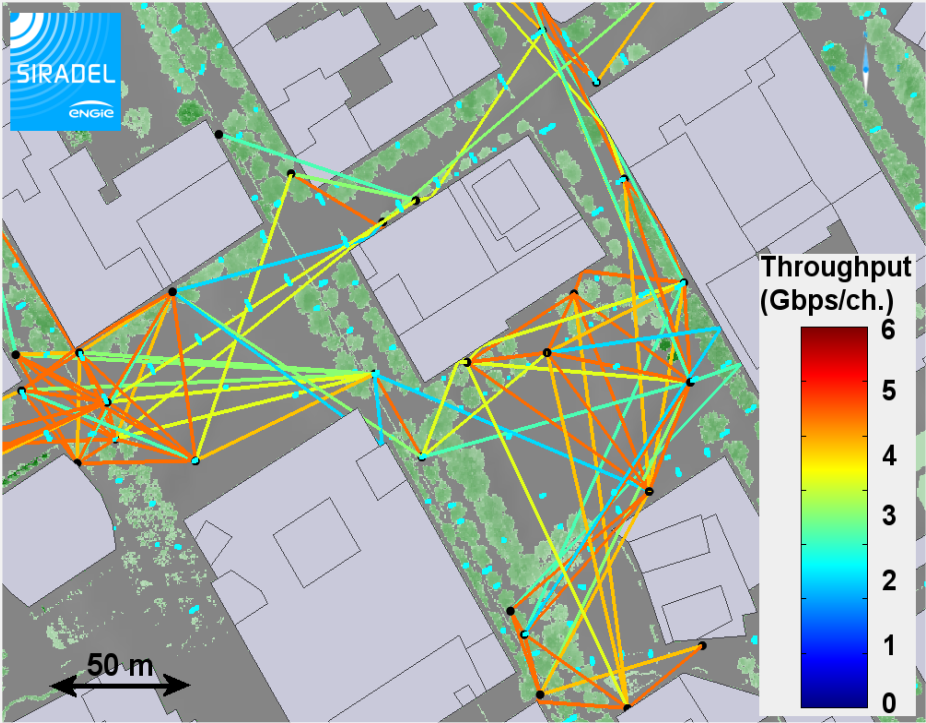
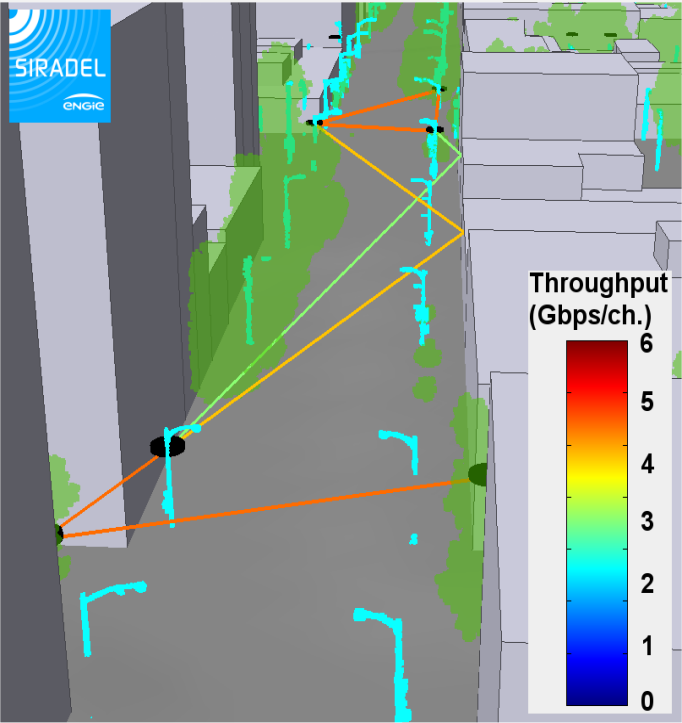
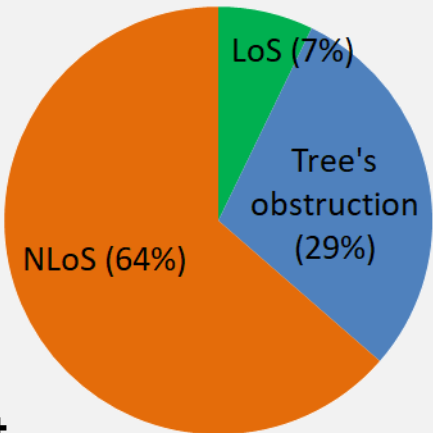
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V1.0



Prediction of 1800+ links in a dense urban environment with high vegetation density (San Jose) – Max range 200 meters

134 lampposts used as virtual sub-THz device positions. A 25 dBi antenna gain at both terminals is considered and aligned towards the strongest ray path of the link.



Power budget

Frequency band	150 GHz
Signal BW	1 GHz
Tx power/ch.	1 W
Tx antenna	25.0 dBi
Rx antenna	25.0 dBi
Th. noise floor	-84.0 dBm
Noise figure	10.0 dB
Rx sensibility	-98.2 dBm
Implement. loss	3.0 dB
Rain	12.5 mm/h

[1] G. Gougeon, Y. Corre, M. Z. Aslam, S. Bicaïs and J. Doré, "Assessment of sub-THz Mesh Backhaul Capabilities from Realistic Modelling at the PHY Layer," 2020 14th European Conference on Antennas and Propagation (EuCAP), 2020, pp. 1-5, doi: 10.23919/EuCAP48036.2020.9135258.

Simulation data

Data are stored in a Matlab file including a sparse 134x134 cell matrix in which each row/column corresponds to a lamppost

134x134 cell

	1	2	3	4	5	6	7	8
1	[]	[]	[]	[]	[]	[]	[]	[]
2	1x1 struct	[]	[]	[]	[]	[]	[]	[]
3	1x1 struct	1x1 struct	[]	[]	[]	[]	[]	[]
4	1x1 struct	1x1 struct	1x1 struct	[]	[]	[]	[]	[]
5	1x1 struct	[]	[]	1x1 struct	[]	[]	[]	[]
6	1x1 struct	1x1 struct	1x1 struct	1x1 struct	1x1 struct	[]	[]	[]
7	1x1 struct	1x1 struct	1x1 struct	1x1 struct	1x1 struct	1x1 struct	[]	[]
8	1x1 struct	[]	1x1 struct	1x1 struct	1x1 struct	1x1 struct	1x1 struct	[]
9	1x1 struct	1x1 struct	1x1 struct	1x1 struct	1x1 struct	1x1 struct	1x1 struct	1x1 struct

Empty cells are links which are not predicted:

the link distance is greater than 200 meters

the reciprocal link is predicted and can be found in the corresponding cell

Each cell contains the following data:

- The two lampposts coordinates
- The link length in meters
- The type of obstruction
 - LoS
 - NLoS (building obstruction)
 - OLoS (tree's obstruction)
- The ray path characteristics
 - Angles of departure and angles of arrival in degrees
 - Delays in ns
 - Ray strenghts in dBm
- The total received power in dBm
- The SNR in dB
- The peak throughput in Gbps/channel obtained with the P-QAM modulation under medium phase noise

data{8, 1}

Field	Value
lamppost1	1x1 struct
lamppost2	1x1 struct
length	58.5860
obstruction	'NLoS'
received_power_spectrum	[-215.0528 -127.9960 -135.9886 -68.7586 -272.4150]
delay_spectrum	[344.9841 304.7118 309.2796 284.5895 747.4360]
horizontal_emitting_angle_spectrum	[359.9644 100.2928 24.5801 21.6800 87.4274]
horizontal_arrival_angle_spectrum	[179.9642 96.7898 208.3292 91.7993 173.3449]
vertical_emitting_angle_spectrum	[50.9879 0 0 0 11.5691]
vertical_arrival_angle_spectrum	[76.2912 0 0 0 72.4121]
received_power	-68.7586
snr	5.2186
peak_throughput	0.8960



For any question, please contact us

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