3GPP TSG-RAN WG1 Meeting #95
Spokane, US, November 12 – 16, 2018

Tdoc R1-1813337

Agenda Item: 7.2.11.
Source: NTT DOCOMO, INC
Title: On accuracy of InH path loss model of 38.901 for factory scenario
Document for: Discussion, Decision

On accuracy of InH path loss model of 38.901 for factory scenario

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Background

- Channel model for indoor industrial scenarios is discussed.
- InH model of TR. 38.901 is starting point of SI.
- Measurement was performed in our lab which is not factory but has relatively large size and height.
- In this contribution, InH model of TR. 38.901 is evaluated using the measurement data.

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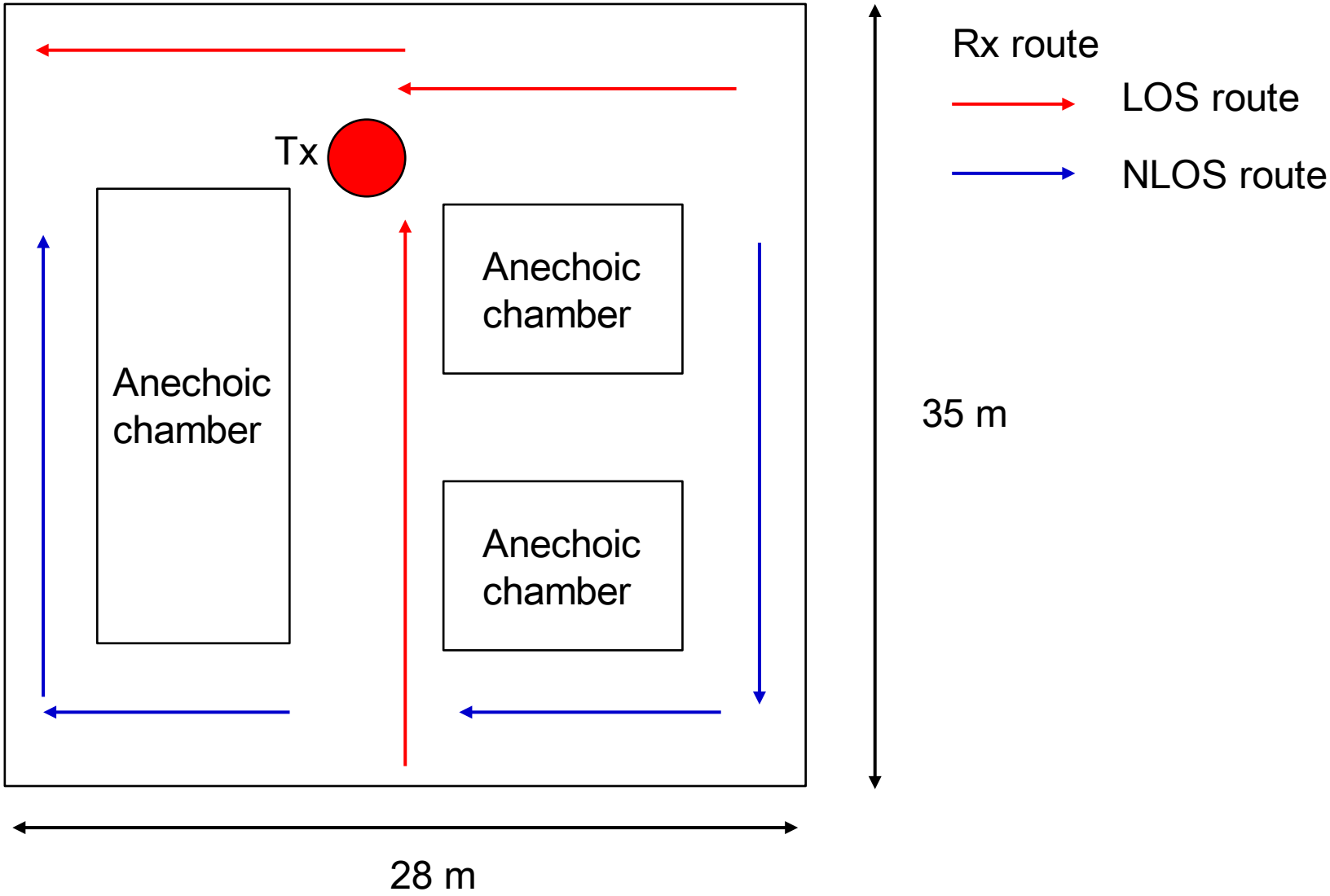
Measurement site and route



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Measurement parameter

Parameter	Value
Freqeuncy	3.35 GHz, 8.45 GHz, 27.89 GHz
Transmission signal	CW
Tx antenna height	3.0 m
Tx antenna	Sleeve
Rx antenna height	1.5 m
Rx antenna	Sleeve

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TR. 38.901 channel model: InH Office

InH Office of 38.901 is used for following evaluation.

LOS

$$PL_{InH_LOS} = 32.4 + 17.3\log(d_{3D}) + 20\log(f_c)$$

NLOS

$$PL_{InH_NLOS} = max\ (PL_{}_{LOS}, PL'_{InH_NLOS})$$

$$PL'_{InH_NLOS} = 38.3\log(d_{3D}) + 17.3 + 24.9\log(f_c)$$

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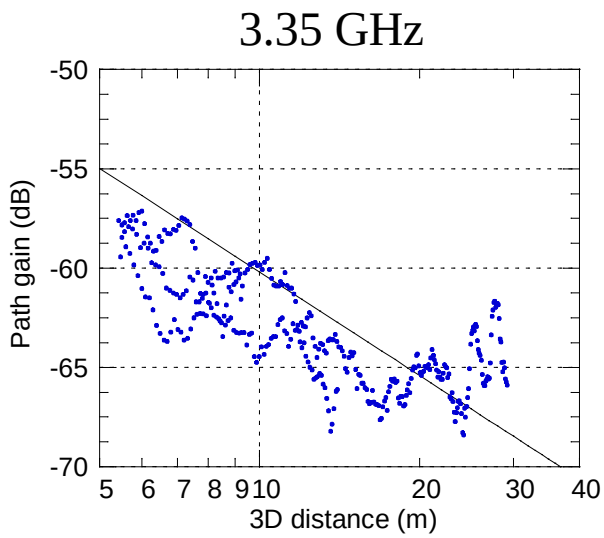
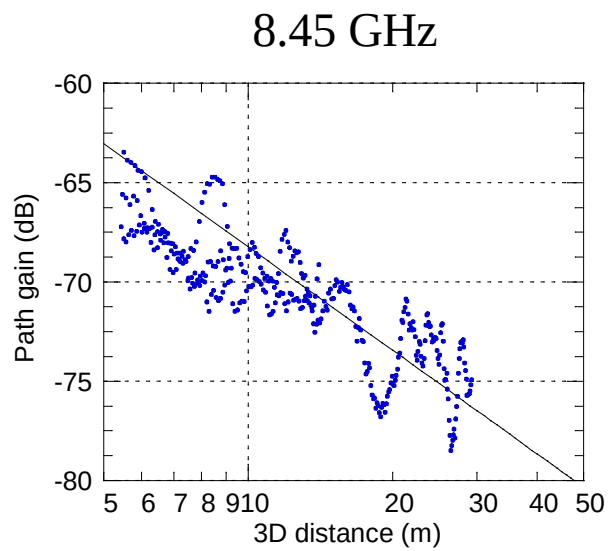
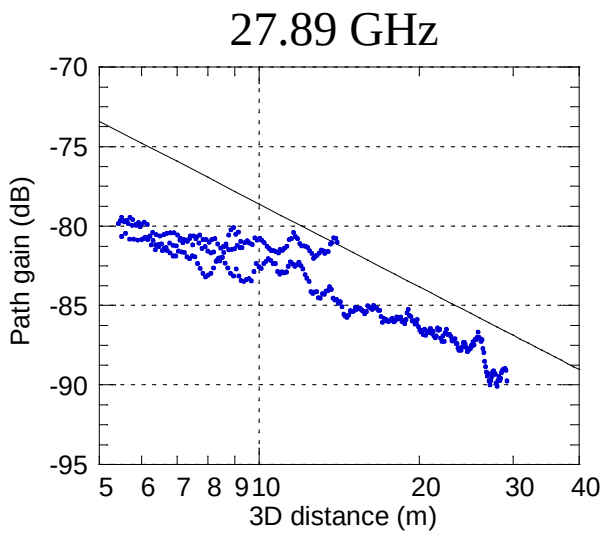
Measurement results (LOS)







InH Office LOS

Measurement

Measurement results are relatively close to InH Office of 38. 901.

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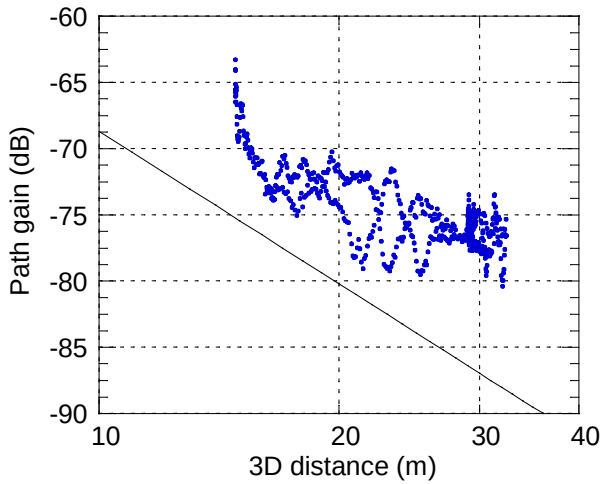
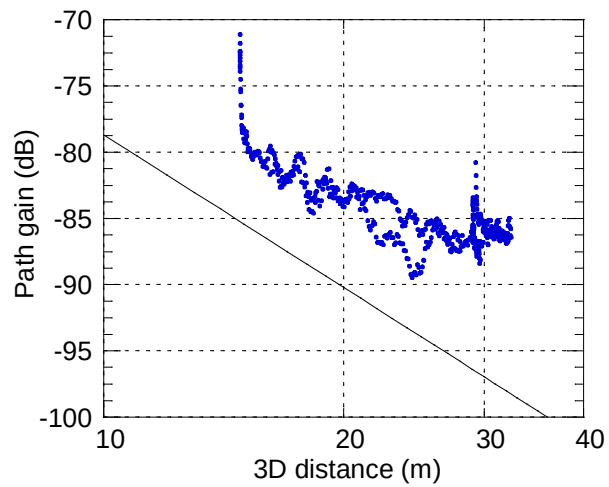
Measurement results (NLOS)

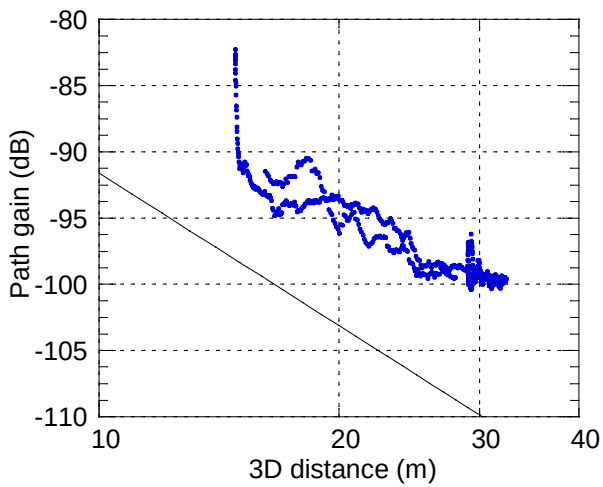
3.35 GHz



8.45 GHz



27.89 GHz



InH Office NLOS

Measurement

Measurement results tend to be larger than InH Office of 38. 901..

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Prediction accuracy (RMSE)

Root Mean Square of prediction error

Prediction error = Measured path gain - path gain of InH Office

RMSE (dB)

	3.35 GHz	8.45 GHz	27.89GHz	All
LOS	2.7	2.1	3.7	2.9
NOS	8.6	9.0	9.6	9.1

Relatively good prediction

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Conclusion

Prediction accuracy of InH Office of 38.901 is evaluated using measurement data.

- In LOS case, measurement results are relatively close to InH Office of 38. 901.
- In NLOS case, measurement results tend to be larger than InH Office of 38. 901.
- Results show relatively good prediction in LOS and NLOS.

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