

ETSI GR ISC 002 V1.1.1 (2025-08)



GROUP REPORT

Integrated Sensing And Communications (ISAC); Channel Modelling, Measurements and Evaluation Methodology

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Contents

Intellectual Property Rights	5
Foreword.....	5
Modal verbs terminology.....	5
Executive summary	5
Introduction	6
1 Scope	7
2 References	7
2.1 Normative references	7
2.2 Informative references.....	7
3 Definition of terms, symbols and abbreviations.....	10
3.1 Terms.....	10
3.2 Symbols.....	10
3.3 Abbreviations	10
4 State-of-the-art ISAC channel modelling approaches	12
4.0 General	12
4.1 Related academic research	12
4.2 IEEE 802.11bf.....	13
4.3 3GPP	14
4.3.1 Existing Channel Models (ETSI TR 138 901).....	14
4.3.2 SA1/SA2.....	16
4.3.3 RAN1.....	16
4.4 Other forums review.....	18
4.4.1 ATIS Next G Alliance	18
4.4.2 ETSI ISG RIS	18
4.4.3 ETSI ISG THz	18
4.4.4 INTERACT Cost Action	18
4.4.5 ITU-R.....	19
5 Proposed ISAC channel modelling approaches	20
5.0 General	20
5.1 Use cases, scenarios and frequency bands.....	20
5.2 RCS Modelling.....	21
5.2.1 Definition.....	21
5.2.2 RCS Model Dependencies	21
5.2.3 RCS Model Boundaries	22
5.2.4 RCS Modelling Approaches	23
5.2.5 Multipoint target modelling	23
5.2.6 Segmented Object Average RCS	24
5.2.7 Number of Object Segments	24
5.2.8 RCS fading model.....	25
5.2.9 Views on RCS incorporation in ETSI TR 138 901.....	26
5.2.10 Electromagnetic based RCS Modelling	27
5.3 Micro-Doppler Modelling	31
5.3.1 Micro-Doppler definition.....	31
5.3.2 Micro-Doppler Dependencies	31
5.3.3 Proposed Modelling	32
5.3.4 Evaluation methodology and feasibility analysis.....	34
5.3.4.1 Simulation on link-level system.....	34
5.3.4.2 Sensing parameters estimation	35
5.3.4.3 Classification of micro-Doppler mode	36
5.4 Micro-deformation channel modelling.....	38
5.4.1 Definition.....	38
5.4.2 Proposed methodology for modelling.....	38

5.4.3	Evaluation methodology and feasibility analysis.....	42
5.4.3.1	Simulation assumption	42
5.4.3.2	Feasibility analysis based on simulation results	43
5.5	Rain Attenuation Modelling	47
5.5.1	Definition.....	47
5.5.2	Rain Attenuation Model Dependencies	47
5.5.3	Rain Attenuation Model Application.....	47
5.5.4	Rain Attenuation Modelling Approaches	48
5.5.5	Results Analysis.....	49
5.5.6	Model Verification.....	50
5.5.7	Proposed Model.....	52
6	Conclusions and recommendations	52
Annex A: Measurement campaigns and emulations for micro-Doppler		54
A.1	Measurement campaign.....	54
A.2	Ray-tracing simulation	56
Annex B: Measurement campaigns for Rain Attenuation		59
B.1	Measurements for Rain Attenuation Modelling.....	59
History		62

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Foreword

This Group Report (GR) has been produced by ETSI Industry Specification Group (ISG) Integrated Sensing And Communications (ISAC).

Modal verbs terminology

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Executive summary

The present document provides an overview of the current state-of-the-art in ISAC channel modelling approaches and summarizes their key limitations.

In addition, the present document provides ISAC channel modelling enhancements, including RCS modelling for complex objects, micro-Doppler modelling for small-scale motion recognition, micro-deformation modelling for structural health monitoring, and rainfall attenuation modelling for power loss caused by precipitation.

Finally, the present document presents conclusions and recommendations for future work addressing required developments for ISAC systems and radio access network architectures, including security, privacy, trustworthiness, and sustainability.

Introduction

There is growing interest in ISAC across the broader research ecosystem, including global standardization bodies, industrial stakeholders, academia, and regional collaborative projects. The present document provides a study on ISAC channel modelling, which can serve as a basis for evaluating the performance of future 6G ISAC solutions.

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1 Scope

The present document outlines the scope as follows:

- Develop advanced ISAC channel models and validation through measurement campaigns and emulations, that can fill the gaps of existing channel models.
 - Validate the models through feasibility analysis and measurement campaign.
 - Identify and describe the corresponding use cases and the potentially suitable frequency bands.
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2 References

2.1 Normative references

Normative references are not applicable in the present document.

2.2 Informative references

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

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The following referenced documents may be useful in implementing an ETSI deliverable or add to the reader's understanding, but are not required for conformance to the present document.

- [i.1] IEEE 802.11-21bf™: "Channel Models for WLAN Sensing Systems".
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