



Project Acronym: TWEETHER



Horizon 2020 TWEETHER

Travelling wave tube based w-band wireless networks with high data rate distribution, spectrum & energy efficiency

Project no: 644678

Project acronym: TWEETHER

Project title: Travelling wave tube based w-band wireless networks with high data rate distribution, spectrum & energy efficiency

WP7.

Deliverable D7.11: Final Data Management Plan

Due date of deliverable: 30.09.2018

Actual submission date: 29.11.2018

Start date of project: 01.01.2015

Duration: 45 months

Organisation name of lead contractor for this deliverable: Universitat Politecnica de Valencia, Spain

Project Co- funded by the European Commission within the Horizon 2020		
Dissemination level		
PU	Public	X
PP	Restricted to other programme participants (including Commission Services)	
RE	Restricted to a group specified by the consortium (including the Commission Services)	
CO	Confidential, only for members of the consortium (including the Commission Services)	

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EXECUTIVE SUMMARY

The Europe 2020 strategy for a smart, sustainable and inclusive economy underlines the central role of knowledge and innovation for generating economic growth. For that reason, the European Union (EU) strives to improve access to scientific information in order to boost the benefits of public investment in the research funded under the EU Framework Programme for Research and Innovation Horizon 2020 (2014-2020).

According to this strategy, in Horizon 2020 a limited pilot action on open access to research data has been implemented so that participating projects will be required to develop a Data Management Plan (DMP), in which they will specify what data will be open.

This deliverable provides the final version of the DMP elaborated by the TWEETHER project. The purpose of this report is to provide complete, final view including the first DMP version reported in Deliverable D7.3 “Data Management Plan (version 1)” (M6) and the updated DMP reported in D7.5 “Data Management Plan (version 2)” (M18) which included a review of the data sets to be collected, processed or generated inside the project and with more information about the mechanisms used to share or make the publications and the data open. These two deliverables are herein updated including actual data information shared from TWEETHER scientific results, including the on-the-field trial performed in the final phase of the project.

Following the EC requirements regarding to the Pilot on Open Research Data, this document reports the final DMP version from TWEETHER project.

LIST OF ACRONYMS

APC	Author Processing Charges
CC-0	Creative Commons - No copyright reserved
CC-BY	Creative Commons - Attribution
CERN	Center for European Nuclear Research
CSV	Comma-Separated Values
DMP	Data Management Plan
DOI	Digital Object Identifier
EC	European Commission
ESA	European Space Agency
ESTEC	European Space Research and Technology Centre
EU	European Union
GaAs	Gallium Arsenide
HTTP	Hypertext Transfer Protocol
IEEE	Institute of Electrical and Electronics Engineers
IP	Intellectual Property
IPR	Intellectual Property Rights
KPI	Key Performance Indicators
MDIF	Measurement Data Interchange Format
MMICs	Monolithic Microwave Integrated Circuits
MWS	Multimedia Wireless Systems
OA	Open access
OAI-PMH	Open Archive Initiative-Protocol for Metadata Harvesting
OAPA	Open Access Publishing Agreement
OFDMA	Orthogonal Frequency-Division Multiple Access
PDF	Portable Document Format
PRTG	Paessler Router Traffic Grapher
RF	Radio-Frequency
ROM	Read-Only Memory
RSSI	Received Signal Strength Indicator
SCN	Scholarly Collaboration Networks
SME	Small and Medium Enterprise
SNR	Signal-to-Noise Ratio
TWT	Traveling Wave Tube
URL	Uniform Resource Locator

1. INTRODUCTION

In December 2013, the European Commission announced their commitment to open data through the Pilot on Open Research Data, as part of the Horizon 2020 Research and Innovation Programme. The Pilot's aim is to "improve and maximise access to and re-use of research data generated by projects for the benefit of society and the economy".

In the frame of this Pilot on Open Research Data, results of publicly-funded research should be disseminated more broadly and faster, for the benefit of researchers, innovative industry and citizens.

On one hand, Open Access allows not only accelerating discovery process and ease those research results to reach the market (thus meaning a return of public investment), but also avoids a duplication of research efforts thus leading to a better use of public resources and a higher throughput. On the other hand, this Open Access policy is also beneficial for the researchers themselves. Making the research publicly available increases the visibility and scientific impact of the performed research, which is translated into a significantly higher number of citations¹ as well as an increase in the collaboration potential with other institutions in new projects, among others. Additionally, Open Access offers small and medium-sized enterprises (SMEs) access to the latest research for utilisation.

Under H2020, each beneficiary must ensure open access to all peer-reviewed scientific publications relating to its results. These open access requirements are based on a balanced support to both 'Green open access' (immediate or delayed open access that is provided through self-archiving) and 'Gold open access' (immediate open access that is provided by a publisher).

Apart from open access to publications, projects must also aim to deposit the research data needed to validate the results presented in the deposited scientific publications, known as "underlying data". In order to effectively supply this data, projects need to consider at an early stage how they are going to manage and share the data they create or generate.

During the first months of the project, TWEETHER elaborated the first version of the Data Management Plan (DMP) which was reported in Deliverable D7.3, "Data management plan (version 1)", which described how scientific publications and research data generated during the project was going to be stored and made public. In particular, this DMP version addressed the following issues:

- What data will be collected / generated in the course of the project?
- What data will be exploited? What data will be shared/made open?
- What standards will be used / how will metadata be generated?
- How will data be curated / preserved including after project completion

Since the DMP is expected to mature during the project, an updated version was reported in Deliverable D7.5 "Data management plan (version 2)", where a review of the data sets to be collected, processed or generated inside the project was reported, including more information about the mechanisms used to share or make the publications and the data open.

This Deliverable, D7.11 "Final Data Management Plan", describes the final DMP used in the project including complete information on the format and expected data items to be collect from the demonstration and functional evaluation phase in the project, the field trial done at the Universitat Politècnica de València, Spain, in September 2018.

¹ "There is evidence that studies that make their data available do indeed receive more citations than similar studies that do not." Piwowar H. and Vision T.J 2013 "Data reuse and the open data citation advantage" <https://peerj.com/preprints/1.pdf>

2. TWEETHER PROJECT

The TWEETHER project targeted to provide high capacity everywhere by the realisation of a W-band wireless system with a capacity and coverage of 10Gbps/km² for the backhaul and the access markets, considered by operators a key investment opportunity. Such a system, combined with the development of beyond state-of-the-art affordable millimetre wave devices, permits to overcome the economical obstacle that causes the digital divide and will pave the way towards the full deployment of small cells.

This approach merged for the first-time novel approaches in vacuum electron devices, monolithic millimetre wave integrated circuits and networking paradigms to implement a novel transmitter to foster the future wireless communication networks.

In particular, TWEETHER project has developed a novel, compact, low cost and high yield Traveling Wave Tube (TWT) power amplifier to produce 40W output power. This TWT is capable to provide wideband operation and enough output power to distribute the millimetre wave frequency signal over a wide sector with radius longer than 1 km.

On the other hand, advanced and high-performance W-band transceiver chipset, enabling the low power operation of the system, has been fabricated. More specifically, this chipset includes various GaAs-based monolithic microwave integrated circuits (MMICs) comprising elements such as power amplifiers, down- and up-converters, low noise amplifier and 8x frequency multiplier.

These novel W-band elements have been integrated by using advanced micro-electronics and micro-mechanics to achieve compact front end modules, which will be assembled and packaged with interfaces and antennas for a field test to be deployed at the campus of the *Universitat Politècnica de Valencia* to demonstrate adequate operation of the breakthrough of the TWEETHER system in the millimetre wave wireless network field.

Therefore, TWEETHER addresses a highly innovative approach, being its more relevant audience, the scientific community working in millimetre wave technology and wireless systems. In addition, due to the strong impact of the system, other expected audience will be the industrial community, standardization bodies working on the W-band and on definition of Multimedia Wireless Systems (MWS), and potential users such as telecom operators. In this way, defining an appropriate open data strategy will help increase the visibility of the performed research inside the scientific community and the industrial ecosystem, on one hand, and will ensure proper management of the intellectual property, on the other hand.

3. CONSIDERATIONS FOR PUBLIC INFORMATION

The H2020's open access policy pursues that the information generated by the projects participating in the programme is made publicly available. However, as stated in EC guidelines on Data Management in H2020², *“As an exception, the beneficiaries do not have to ensure open access to specific parts of their research data if the achievement of the action's main objective, as described in Annex I, would be jeopardised by making those specific parts of the research data openly accessible. In this case, the data management plan must contain the reasons for not giving access.”*

In agreement with this, TWEETHER consortium can decide what information is made public according to aspects as potential conflicts against commercialization, IPR protection of the knowledge generated (by patents or other forms of protection), market position risk for the companies

² EC document: “Guidelines on Data Management in Horizon 2020” – versión 1.0 – 11 December, 2013

in the consortium, or any other risk that would impede to achieve the project objectives and expected outcome.

TWEETHER project is pioneering research that is of key importance to the electronic and telecommunication industry. Effective exploitation of the research results depends on the proper management of intellectual property. Therefore, the TWEETHER consortium follows the following strategy (Figure 1): if the research findings result in a ground-breaking innovation, the members of the consortium will consider two forms of protection: to withhold the data for internal use or to apply for a patent in order to commercially exploit the invention and have in return financial gain. In latter case, publications will be therefore delayed until the patent filing. On the contrary, if the technology developments are not going to be withheld or patented, the results will be published for knowledge sharing purposes.

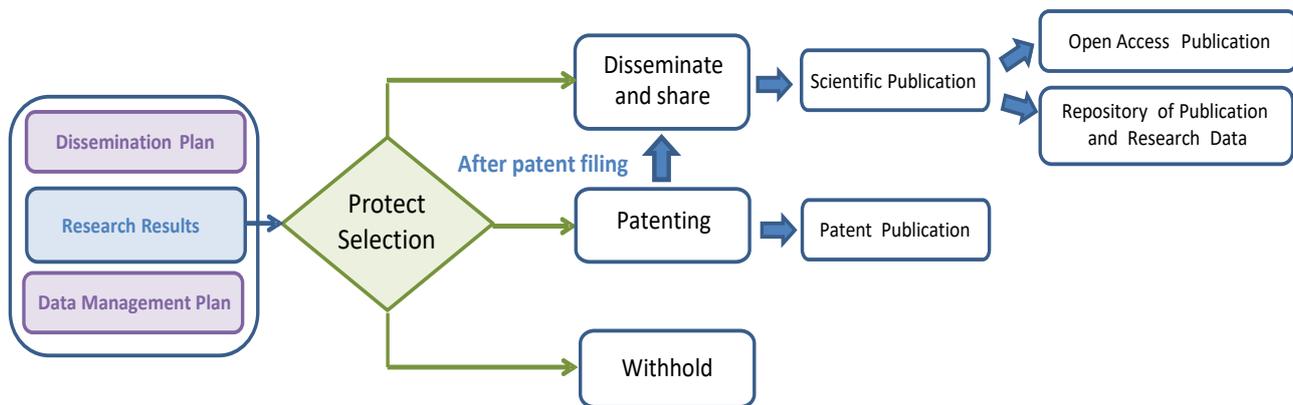


Figure 1. Process for determining which information is to be made public (from EC’s document “Guidelines on Open Access to Scientific Publications and Research Data in Horizon 2020 – v1.0 – 11 December 2013”)

4. OPEN ACCESS TO PUBLICATIONS

The first aspect to be considered in the DMP is related to the open access (OA) to the publications generated within the TWEETHER project, meaning that any peer-reviewed scientific publication made within the context of the project will be available online to any user at no charge. This aspect is mandatory for new projects in the Horizon 2020 programme (article 29.2 of the Model Grant Agreement).

The two ways considered by the EC to comply with this requirement are:

- Self-archiving / ‘green’ OA: In this option, the beneficiaries deposit the final peer-reviewed manuscript in a repository of their choice. In this case, they must ensure open access to the publication within a maximum of six months (twelve months for publications in the social sciences and humanities).
- Open access publishing / ‘gold’ OA: In this option, researchers publish their results in open access journals, or in journals that sell subscriptions and also offer the possibility of making individual articles openly accessible via the payment of author processing charges (APCs) (hybrid journals). Again, open access via the chosen repository must be ensured upon publication.

Publications arising from the TWEETHER project will be deposited in a repository (‘green’ OA) and, whenever possible, the option ‘gold’ OA will be used in order to provide the widest dissemination of the published results.

With respect to the ‘green’ OA option it should be mentioned that most publishers allow to deposit a copy of the article in a repository, sometimes with a period of restricted access (embargo)³.

In Horizon 2020, the embargo period imposed by the publisher must be shorter than 6 months (or 12 months for social sciences and humanities). This embargo period will be therefore taken into account by the TWEETHER consortium to choose the open access modality for the fulfilment of the open access obligations established by the EC.

Additionally, according to the EC recommendation, whenever possible the TWEETHER consortium will retain the ownership of the copyright for their work through the use of a ‘License to Publish’, which is a publishing agreement between author and publisher. With this agreement, authors can retain copyright and the right to deposit the article in an Open Access repository, while providing the publisher with the necessary rights to publish the article. Additionally, to ensure that others can be granted further rights for the use and reuse the work, the TWEETHER consortium may ask the publisher to release the work under a Creative Commons license, preferably CC-0 or CC-BY.

Besides these two facts (retaining the ownership of the publication and embargo period), the TWEETHER consortium has considered the relevance of the journal where to publish, measured by means of the “impact factor” (IF). Table 1 below provide a list of the journals by TWEETHER partners and relevant information about the open access policy of IEEE.

Table 1. Publications from TWEETHER consortium and publisher OA policy.

Publisher	Journal	Impact factor	Author charges (for OA)	Comments about open access
Institute of Electrical and Electronics Engineers (IEEE)	IEEE Transaction on Vehicular Technology	4.32	\$1,950	A paid open access option is available for these journals. If funding rules apply, authors may post Author's post-print version in funder's designated repository. Publisher's version/PDF cannot be used.
	IEEE Transaction on Wireless Communications	5.88		
	IEEE Electron Device Letters	2.528		
	IEEE Transactions on Microwave Theory and Techniques	3.176		

From Table 1, IEEE journals allow an open access modality and the author’s post-print version can be deposited in a repository. This is in line with the Horizon 2020 requirements.

IEEE policy on Open Access establishes that, upon submission to the corresponding IEEE publication authors may share or post their submitted version of the article (also known as the preprint or author version) in the following ways:

- On the author’s personal website or their employer’s website
- On institutional or funder websites if required
- In the author’s own classroom use
- On Scholarly Collaboration Networks (SCNs) that are signatories to the International Association of Scientific, Technical, and Medical Publishers’ Sharing Principles

³ <http://www.sherpa.ac.uk/romeo/>

In this case, the following text should be included on the first page of the submitted article, posted in any of the above outlets: “This work has been submitted to the IEEE for possible publication. Copyright may be transferred without notice, after which this version may no longer be accessible.”

Once the article is accepted by IEEE, if the paper was previously posted (preprint) on **author’s personal website, author’s employer’s website, arXiv.org**, or the funder’s repository, then it should be replaced the submitted version with the accepted version adding the IEEE copyright notice (© 20XX IEEE). When the article is published, the posted version should be updated with a full citation to the original IEEE publication, including DOI. For the funder’s repository, a 24 months embargo must be enforced. The posted article must be removed from any other third-party.

If the article is not published under an open access license (OA fee) and use the standard IEEE Copyright Form the author may not post the final published article online, but may:

- Share copies of the final published article for individual personal use
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- Use in their own thesis or dissertation, provided that certain requirements are met

Note that any third-party reuse requires permission from the publisher, IEEE.

For articles that are published open access under the IEEE Open Access Publishing Agreement (OAPA) the author may post the final published article on:

- Their personal website and their employer’s website
- Institutional or funder websites as required
- Third-party reuse requires permission from IEEE.

In any case. all the publications will acknowledge the project funding. This acknowledgment must be included also in the metadata of the generated information, since it allows to maximise the discoverability of publications and to ensure the acknowledgment of EU funding. The terms to be included in the metadata are:

- "European Union (EU)" and "Horizon 2020"
- the name of the action, acronym and the grant number
- the publication date, length of embargo period if applicable, and a persistent identifier (e.g DOI, Handle)

Finally, in the Model Grant Agreement, “scientific publications” mean primarily journal articles. Whenever possible, TWEETHER will provide access to other types of scientific publications such as conference papers, presentations, public deliverables, etc.

4.1. Access to peer-reviewed scientific publication

An important objective of TWEETHER is the dissemination of its research results to the scientific community, targeting the scientific journals, conferences or workshops with the highest impact. Indeed, several peer-reviewed scientific papers have been presented so far in relevant international conferences. These publications are or will be available online, as required by the EC:

Journal papers

- C. Paoloni, F. Magne, F. André, J. Willebois, Q.T. Le, X. Begaud, G. Ulisse, V. Krozer, R. Letizia, R. Llorente, M. Marilier, A. Ramirez, R. Zimmerman, “W-band Point to Multipoint Transmission Hub and Terminals for High Capacity Wireless Networks”, submitted on 15th October to IEEE

Transactions on Microwave Theory and Techniques, special issue on 5G Hardware and System Technologies. In review, to be published if accepted on June 2019.

In review. IEEE Open Access fee will be paid upon acceptance.

- G. Ulisse and V. Krozer, "W-Band Traveling Wave Tube Amplifier Based on Planar Slow Wave Structure", IEEE Electron Device Letters, vol. 38, no. 1, January 2017.

Open Access: <https://ieeexplore.ieee.org/document/7742417>

- J. Shi, L. L. Yang, Q. Ni, "Novel Intercell Interference Mitigation Algorithms for Multicell OFDMA Systems with Limited Base Station Cooperation," in publication in IEEE Transactions on Vehicular Technology, vol. PP, no.99, pp.1-16, 2016.

Open Access: <https://eprints.soton.ac.uk/391331/1/tvt-yang-2542182-proof.pdf>

- J. Shi, Lu Lv, Q. Ni, H. Pervaiz, and C. Paoloni., "Modeling and Analysis of Point-to-Multipoint Millimeter-Wave Backhaul Networks" under final revision round in IEEE Transactions on Wireless Communications.

Open access: http://eprints.lancs.ac.uk/128927/1/FINAL_VERSION.pdf.

Conference papers

- 1) Shrestha, J. Moll, A. Raemer, M. Hrobak, V. Krozer, "20 GHz Clock Frequency ROM-Less Direct Digital Synthesizer Comprising Unique Phase Control Unit in 0.25 μm SiGe Technology", European Microwave Conference (EuMC), Madrid, Spain, September 2018.
- 2) C. Paoloni, F. Magne, F. Andre, J. Willebois, Q.T. Le, X. Begeaud, G. Ulisse, V. Krozer, R. Letizia, M. Marilier, A. Ramirez, R. Zimmerman, "Transmission Hub and Terminals for Point to Multipoint W-band TWEETHER System", European Conference on Networks and Communications 2018 (EUCNC 2018), Ljubljana, Slovenia, June 2018.
Open Access: http://eprints.lancs.ac.uk/126591/1/Trasmission_Hub_.pdf
- 3) M. Mbeutcha, G. Ulisse, V. Krozer "Millimeter-Wave Imaging Radar System Design Based on Detailed System Radar Simulation Tool ", 22nd International Microwave and Radar Conference (MIKON), Poznan, Poland, May 2018.
- 4) F. Andre, T. L. Quang, G. Ulisse, V. Krozer, R. Letizia, R. Zimmerman, C. Paoloni, "W-band TWT for High Capacity Transmission Hub for Small Cell Backhaul", 2018 IEEE International Vacuum Electronics Conference (IVEC), Monterey, USA, April 2018.
- 5) S. Mathisen, R. Basu, L.R.Billa, J. Gates, N.P. Rennison, R. Letizia, C. Paoloni, "Low Cost Fabrication for W-band Slow Wave Structures for Wireless Communication Travelling Wave Tubes", IVEC2018, Monterey, USA, April 2018.
Open Access: http://eprints.lancs.ac.uk/125214/1/IVEC2018_W_band_SWS_Paper_Final.pdf
- 6) F. Magne, A. Ramirez, C. Paoloni, "Millimeter Wave Point to Multipoint for Affordable High Capacity Backhaul of Dense Cell Networks", Workshop on Economics and Adoption of Millimeter Wave Technology in Future Networks of the IEEE Wireless Communications and Networking Conference (IEEE WCNC), Barcelona, Spain, April 2018.
- 7) Open Access: Link will be available
- 8) G. Ulisse, V. Krozer, "Planar slow wave structures for millimeter-wave vacuum electron devices", 47th European Microwave Conference (EuMC), Nuremberg, Germany, October 2017.

C. Paoloni, F. Magne, F. André, X. Begaud, V. Krozer, M. Marilier, A. Ramírez, J.R. Ruiz, R. Vilar, R. Zimmerman, "TWEETHER Future Generation W-band Backhaul and Access Network Technology", 26th European Conference on Networks and Communications (EuCNC 2017), Oulu, Finland, June 2017.

Open Access:

http://eprints.lancs.ac.uk/86088/1/TWEETHER_Future_Generation_W_band_Backhaul_and_Access_NetworkTechnology.pdf

9) G. Ulisse, V. Krozer, "Investigation of a Planar Metamaterial Slow Wave Structure for Traveling Wave Tube Applications", 18th International Vacuum Electronics Conference (IVEC 2017), London, United Kingdom, April 2017.

10) F. André, S. Kohler, V. Krozer, Q.T. Le, R. Letizia, C. Paoloni, A. Sabaawi, G. Ulisse, R. Zimmerman, "Fabrication of W-band TWT for 5G small cells backhaul", 18th International Vacuum Electronics Conference (IVEC 2017), London, United Kingdom April 2017.

Open Access:

http://eprints.lancs.ac.uk/86085/1/Fabrication_of_W_band_TWT_for_5g_small_cells_backhaul.pdf

11) C. Paoloni, F. André, V. Krozer, R. Zimmermann, Q.T. Le, R. Letizia, S. Kohler, A. Sabaawi, G. Ulisse, "Folded wave guide TWT for 92 – 95 GHz band outdoor wireless frontend", Workshop on Microwave Technology and Techniques (MTT), ESA/ESTEC, The Netherlands, April 2017.

Open Access: http://eprints.lancs.ac.uk/89688/1/Draft_ESA_final.pdf

12) J.E. González, X. Begaud, B. Huyart, Q. T. Le, R. Zimmermann, F. Magne 'Millimeter Wave Antennas for Backhaul Networks', 11th European Conference on Antennas and Propagation (EuCAP 2017), Paris, France, March 2017.

13) C. Paoloni, F. Magne, F. André, X. Begaud, J. da Silva, V. Krozer, M. Marilier, A. Ramírez, R. Vilar, R. Zimmerman, "TWEETHER project for W-band wireless networks", 9th IEEE UK-Europe-China Workshop on mm-Waves and THz Technologies (UCMMT2016, Qingdao, China), September 2016.

Open Access: http://eprints.lancs.ac.uk/81351/4/TWEETHER_UCMMT2016_new.pdf

14) Jia Shi, Qiang Ni, C. Paoloni and F. Magne, "Efficient Interference Mitigation in mmWave Backhaul Network for High Data Rate 5G Wireless Communications", 12th International Conference on Wireless Communications, Networking and Mobile Computing (WiCOM'2016), Xi'an, China, September 2016.

Open Access: http://eprints.lancs.ac.uk/83549/1/WiCOM_paper.pdf

15) C. Paoloni, F. André, S. Kohler, V. Krozer, Q.T. Le, R. Letizia, A. Sabaawi, G. Ulisse, R. Zimmerman, "A Traveling Wave Tube for 92 – 95 GHz band wireless applications", 41st International Conference on Infrared, Millimeter and Terahertz Waves (IRMMW-THz 2016), Copenhagen, Denmark, September 2016.

Open Access: Link will be available

16) C. Paoloni, F. Magne, F. André, V. Krozer, M. Marilier, A. Ramírez, R. Vilar, R. Zimmerman, "W-band point to multipoint system for small cells backhaul", in the Special Session "Millimeter-waves as a key enabling technology for 5G: Status of the pre-development

activities and way forward”, 25th European Conference on Networks and Communications (EuCNC 2016), Athens, Greece, June 2016.

Open Access: Link will be available

- 17) C. Paoloni, F. Magne, F. André, V. Krozer, R. Letizia, M. Marilier, A. Ramírez, M. Rocchi, R. Vilar, R. Zimmerman, “Millimeter Wave Wireless System Based on Point to Multipoint Transmissions”, 25th European Conference on Networks and Communications (EuCNC 2016), Athens, Greece, June 2016.

Open Access: <http://eprints.lancs.ac.uk/85850/1/07561014.pdf>

- 18) C. Paoloni, R. Letizia, F. André, S. Kohler, F. Magne, M. Rocchi, M. Marilier, R. Zimmerman, V. Krozer, G. Ulisse, A. Ramirez, R. Vilar, "W-band TWTs for New Generation High Capacity Wireless Networks", 17th International Vacuum Electronics Conference (IVEC 2016), Monterey, US, April 2016.

Open Access: http://eprints.lancs.ac.uk/84542/1/p_521.pdf

- 19) C. Paoloni, “W-band access and backhaul for high capacity wireless networks”, Layer 123 Packet Microwave & Mobile Backhaul 2015, London, United Kingdom, September 2015.

- 20) C. Paoloni, R. Letizia, Q. Ni, F. André, I. Burciu, F. Magne, M. Rocchi, M. Marilier, R. Zimmerman, V. Krozer, A. Ramirez, R. Vilar, “Scenarios and Use Cases in Tweether: W-band for Internet Everywhere”, 24th European Conference on Networks and Communications, Paris, France, June 2015.

Open Access: <https://riunet.upv.es/bitstream/handle/10251/62274/Vilar%20Mateo,%20R.%20-%20Scenario%20and%20use%20cases%20in%20.pdf?sequence=4>

- 21) C. Paoloni, R. Letizia, F. Napoli, Q. Ni, A. Rennie, F. André, K. Pham, F. Magne, I. Burciu, M. Rocchi, M. Marilier, R. Zimmerman, V. Krozer, A. Ramirez, R. Vilar, "Horizon 2020 TWEETHER project for W-band high data rate communications", 16th International Vacuum Electronics Conference (IVEC 2015), Beijing, China, April 2015.

Open Access: <https://doi.org/10.1109/IVEC.2015.7223770>

Apart from the open access to the scientific papers detailed above, TWEETHER has provided access to other type of documents such as public deliverables and presentations given in scientific and industrial workshops through the project website (<https://tweether.eu/public-deliverables>), where full-text is available for the publications marked as “Public” in the Grant Agreement. Moreover, all public information and associated dataset have been made available in the ZENODO repository set-up at the project start (<https://zenodo.org/search?page=1&size=20&q=tweether>).

In addition, a workshop on Millimetre-wave Technologies for High-Speed Broadband Wireless Networks was organized in the frame of TWEETHER. The presentations of this workshop are available on the project website: <https://tweether.eu/workshop/agenda.php>

5. RESEARCH DATA

The scientific and technical results of TWEETHER project are expected to be of maximum interest for the scientific community. Through the duration of the project, once the relevant protections (e.g. IPR) are secured, TWEETHER partners may disseminate (subject to their legitimate interests) the obtained results and knowledge to the relevant scientific communities through contributions in journals and international conferences in the field of wireless communications and millimetre-wave technology.

Deliverable D7.11

Apart from the open access to publication explained in the previous section, the Open Research Data Pilot also applies to two types of data⁴:

- The data, including associated metadata, needed to validate the results presented in scientific publications (underlying data);
- Other data, including associated metadata, as specified and within the deadlines laid down in a data management plan, to be developed by the project. In other words, beneficiaries will be able to choose which data, additionally to the data underlying publications, they make available in open access mode.

According to this requirement, the underlying data related to the scientific publications will be made publicly available (See Section 8). This will allow that other researchers can make use of that information to validate the results, thus being a starting point for their investigations, as expected by the EC through its open access policy. But, in order to be aligned with the protection policy and strategy described, the data sets will be analysed on a case by case basis before making them open with the objective to not jeopardize exploitation or commercialization purposes. As a result, the publication of research data will be mainly followed by those partners involved in the scientific development of the project (i.e., academic and research partners), while those partners focused on the “development” of the technology will limit the publication of information due to strategic/organizational reasons (commercial exploitation).

In the first version of the DMP the project consortium provided an explanation of the different types of data sets to be generated in TWEETHER. Examples of these data are the specifications of the TWEETHER system and the services it supports, the datasheets and performances of the technological developments of the project, the field trial results with the KPIs (Key Performance Indicators) used to evaluate the system performances, among others.

As the nature and extent of these data sets can be evolved during the project, the objective of this deliverable is to review the data sets identified so far to determine if they should be modified/updated or if new data sets should be included. In particular, it has been included a data set related to the measurements on the W-band chipsets (see Section 8). The rest of the data sets are still relevant.

5.1. Access to research data

According to the requirement of providing access to the data needed to validate the results presented in the scientific publications (i.e., underlying data), and key research results have been made available through the Zenodo portal (www.zenodo.com) and, additionally, through the Lancaster University institutional repository (<http://www.research.lancs.ac.uk/portal/>) in some cases.

Zenodo is a result from the OpenAIRE project commissioned by the EC to support their Open Data policy by providing a catch-all repository for EC funded research. It was launched in May 2013.

The following key research data has been made publicly available in the repository:

- Results of the W-band TWT gain and output power simulated using MAGIC 3D Particle in Cell Simulators. These results were presented in the IVEC 2016 paper (Deliverable D7.10).

⁴ EC document: “Guidelines on Open Access to Scientific Publications and Research Data in Horizon 2020” – version 1.0 – 11 December, 2013

Gain and output power of Traveling Wave Tube at W-band
<i>Claudio Paoloni, Rosa Letizia, Frédéric André, Sophie Kohler, François Magne, Marc Rocchi, Marc Marilier, Ralph Zimmerman, Viktor Krozer, Giacomo Ulisse, Antonio Ramirez, Ruth Vilar</i>
Results of the W-band TWT gain and output power simulated by using MAGIC 3D Particle in Cell Simulators. These results correspond to Figure 2 in the paper "W-band TWTs for New Generation High Capacity Wireless Networks", 17 th International Vacuum Electronics Conference.
Zenodo link: https://zenodo.org/record/57266#.W9SqKqcrx0s
DOI link: http://doi.org/10.5281/zenodo.57266

- Underlying data corresponding to the paper “TWEETHER Future Generation W-band Backhaul and Access Network Technology” presented in the EUCNC 2017.

TWEETHER Future Generation W-band Backhaul and Access Network Technology
<i>Claudio Paoloni, François Magne, Frédéric André, Xavier Begaud, Viktor Krozer, Marc Marilier, Antonio Ramirez, José Raimundo Ruiz Carrasco, Ruth Vilar, Ralph Zimmerman</i>
Datasets from Figure 6(a) and (b) showing the lens antenna simulated by 3D simulator in the paper presented at EUCNC 2017. Data from Figure 8 is also included. These data are measured by a Vector Network Analyser on chips on wafer.
Zenodo link: https://zenodo.org/record/1042528#.W9SqCqcrx0s
DOI link: http://doi.org/10.5281/zenodo.1042528

- Results of the W-band TWT datasets reporting the dispersion of the folded waveguide, beam line and output power of the paper "Fabrication of W-band TWT for 5G small cells backhaul" presented in IVEC 2017.

Fabrication of W-band TWT for 5G small cells backhaul
<i>Frédéric André, Sophie Kohler, Viktor Krozer, Quang Trung Le, Rosa Letiz, Claudio Paoloni, Ahmed Sabaaw, Giacomo Ulisse and Ralph Zimmerman</i>
Datasets of the Dispersion of the folded waveguide and beam line (Fig 1) and output power (Fig 2) of the paper "Fabrication of W-band TWT for 5G small cells backhaul" in IVEC 2017.
Both MAGIC3D and CST- Particle StudioS were used for particle in cell simulations of the whole amplifier. Both the simulators confirmed more than 40W on the full band 92 – 95 GHz. The simulations included the couplers and the RF windows. Specific simulations for the design of the electron optics, the windows and the collector were performed.
Zenodo link: https://zenodo.org/record/1623601#.W_6emi1DI5Y
DOI link: https://doi.org/10.5281/zenodo.1623601

- Underlying data corresponding to the paper: "Folded wave guide TWT for 92 – 95 GHz band outdoor wireless frontend", ESA/ESTEC, April 2017.

Folded wave guide TWT for 92 – 95 GHz band outdoor wireless frontend
<i>Claudio Paoloni, Frédéric André, Sophie Kohler, Viktor Krozer, Quang Trung Le, Rosa Letizia, Ahmed Sabaawi, Giacomo Ulisse, Ralph Zimmerman</i>
The dataset includes data shown in Figure 3 from the conference paper “Folded wave guide TWT for 92 – 95 GHz band outdoor wireless frontend”, shown in the Workshop on Microwave Technology and Techniques (MTT), ESA/ESTEC, The Netherlands, April 2017.
Zenodo link: https://zenodo.org/record/1628635#.W_6weC1DI5Y
DOI link: https://doi.org/10.5281/zenodo.1628635

- Underlying data corresponding to the paper: "W-Band Traveling Wave Tube Amplifier Based on Planar Slow Wave Structure", IEEE Electron Device Letters, January 2017.

W-Band Traveling Wave Tube Amplifier Based on Planar Slow Wave Structure
<i>Giacomo Ulisse, Viktor Krozer</i>
Underlying data corresponding to Figures 2a, 2b, and Figure 5 in the journal paper "W-Band Traveling Wave Tube Amplifier Based on Planar Slow Wave Structure", IEEE Electron Device Letters, vol. 38, no. 1, January 2017.
Zenodo link: https://zenodo.org/record/1631397#.W_6x8C1DI5Y
DOI link: https://doi.org/10.5281/zenodo.1631397

- Underlying data corresponding to the paper: "Millimeter Wave Point to Multipoint for Affordable High Capacity Backhaul of Dense Cell Networks" (IEEE WCNC 2018).

Millimeter Wave Point to Multipoint for Affordable High Capacity Backhaul of Dense Cell Networks
<i>Francois Magne, Antonio Ramirez, Claudio Paoloni</i>
Datasets corresponding to underlying data shown in Figure 3, Figure 6, Figure 7, Figure 8 and Figure 9 in the paper “Millimeter Wave Point to Multipoint for Affordable High Capacity Backhaul of Dense Cell Networks”, Workshop on Economics and Adoption of Millimeter Wave Technology in Future Networks of the IEEE Wireless Communications and Networking Conference (IEEE WCNC), Barcelona, Spain, April 2018.
Zenodo link: https://zenodo.org/record/1635593#.W_6ymi1DI5Y
DOI link: https://doi.org/10.5281/zenodo.1635593

- Underlying data corresponding to the paper: "Planar slow wave structures for millimeter-wave vacuum electron devices", 47th European Microwave Conference (EuMC).

Planar slow wave structures for millimeter-wave vacuum electron devices
<i>Giacomo Ulisse, Viktor Krozer</i>
Datasets corresponding to Figure 2, Figure 3, Figure 5 and Figure 6 from the conference paper "Planar slow wave structures for millimeter-wave vacuum electron devices", 47th European Microwave Conference (EuMC), Nuremberg, Germany, October 2017.
Zenodo link: https://zenodo.org/record/1630703#.W_6gLi1D15Y
DOI link: https://doi.org/10.5281/zenodo.1630703

- Results from the final Field-Trial on September 2018 implemented in the Campus of the Universitat Politècnica de València. These published results include detailed performance data that **is published with restrictions**, i.e. each data access request must be granted by TWEETHER Coordinator. The information published include the data collected from the following IP addresses (from Deliverable D6.6, “Performance evaluation in the small-scale field trial”) gathered during the period from September 29th to October 3rd:

IP address	Device
10.128.4.211	MK-MASTER-1
10.128.4.212	MK-SLAVE-1
10.128.4.221	MK-MASTER-2
10.128.4.222	MK-SLAVE-2
10.128.4.231	MK-MASTER-3
10.128.4.232	MK-SLAVE-3

Each file includes the daily records of one or several parameters collected every 60 seconds.

Parameter in the filename	
RSSI60	Every minute, the 60 values for the RSSI of the previous minute are registered in this file in order to be processed.
SNR60	Every minute, the 60 values for the SNR of the previous minute are registered in this file in order to be processed.
RSSIandSNR	Minimum, Maximum and Mean values for RSSI and SNR calculated from RSSI60 and SNR60
RXCCQ	Client Connection Quality of the Wlan interface. Indicator of the efficiency of the wireless transmission. 100% would indicate that no frames are lost.

Example: file `2018-09-30_10.128.4.211_RSSIandSNRgood.csv`

```
time;RSSImean;RSSImin;RSSImax;SNRmean;SNRmin;SNRmax;
00:00:04;-63.96;-64;-63;41.04;41;42;
00:01:03;-63.26;-64;-63;41.72;41;42;
00:02:04;-58.05;-64;-55;46.95;41;50;
00:03:04;-63.94;-64;-63;41.06;41;42;
00:04:04;-63.93;-64;-63;41.07;41;42;
00:05:04;-63.98;-64;-63;41.02;41;42;
```

00:06:04;-63.96;-64;-63;41.04;41;42;
00:07:04;-63.94;-64;-63;41.06;41;42;
00:08:04;-63.96;-64;-63;41.06;41;42;

H2020 TWEETHER Field Trial Results (Data files)
<i>Antonio Ramirez</i>
W-Band transmission performance data collected during September 29th to October 3 rd .
ZIP file containing the CSV files of the different parameters captured during TWEETHER Field Trial (21/09/2018 to 04/10/2018).
Zenodo link: https://zenodo.org/record/1478518#.W-FtG9VKiM8 (October 2018)
DOI link: http://doi.org/10.5281/zenodo.1478518

6. METADATA

Metadata refers to “data about data”, i.e., it is the information that describes the data that is being published with sufficient context or instructions to be intelligible for other users. Metadata must allow a proper organization, search and access to the generated information and can be used to identify and locate the data via a web browser or web-based catalogue.

Two types of metadata will be considered within the frame of the TWEETHER project: that corresponding to the project publications, and that corresponding to the published research data.

With respect to the metadata related to scientific publications, as described in Section 4, they include the title, the authors, publication date, funding institution (EU H2020), grant number, persistent identifier (e.g DOI, Handle), etc. Figure 2 shows an example of metadata used for the scientific paper presented at the EuCNC2015.

Files in this item



Name: EUCNC2015 - final.pdf
Size: 2.708Mb
Format: PDF
Description: Versión editorial

Request a copy of the document



Name: Vilar Mateo, R. - ...
Size: 389.1Kb
Format: PDF
Description: Versión del autor

Open/Preview

Item Metadata

Title: Scenarios and Use Cases in Tweether: W-band for Internet Everywhere

Author: [Paolini, Claudio](#), [Letizia, Rosa Ni](#), [Qiang, André](#), [Frédéric Burciu](#), [Ioan Magne](#), [François Rocchi](#), [Marc Marillier](#), [Marc Zimmerman](#), [Ralph Krozer](#), [Viktor Ramirez](#), [Antonio Vilar Mateo](#), [Ruth](#)

UPV Unit: [Universitat Politècnica de València](#). [Instituto Universitario de Tecnología Nanofotónica](#) - [Institut Universitari de Tecnologia Nanofotónica](#)

Issued date: 2015-06-29

Abstract: —Millimeter waves offer a promising solution to the data congestion that is fast overwhelming the actual network capacity. While the V- band (57-64GHz) and E-band (71-76GHz and 81-86 GHz) are widely targeted for Point ...[+]

Subjects: [Millimetre-wave](#) | [Point to Multi-Point Wireless networks](#) | [5G](#) | [Small Cells](#) | [Travelling Wave Tube \(TWT\)](#) | [Backhaul](#) | [Capacity density](#)

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ISSN: 978-1-4673-7358-6

Publisher: Institute of Electrical and Electronics Engineers (IEEE)

Project ID: info:eu-repo/grantAgreement/EC/H2020/644678

Sponsorship: European Union's Horizon 2020 - 644678.

xmlui.dri2xhtml.METS-1.0.type: [Capítulo de libro](#)

This item appears in the following Collection(s)

- [OpenAIRE \(Open Access Infrastructure for Research in Europe\)](#) [355]
- [Artículos, conferencias, monografías](#) [7789]

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Figure 2. Metadata used for the scientific paper presented at the EuCNC2015

In the context of data management, metadata will form a subset of data documentation that will explain the purpose, origin, description, time reference, creator, access conditions and terms of use of a data collection.

The metadata that best describe the data depends on the nature of the data. For research data generated in TWEETHER, it is difficult to establish a global criteria for all data, since the nature of the initially considered data sets will be different, so that the metadata will be based on a generalised metadata schema as the one used in ZENODO⁵, which includes elements such as:

- Title: free text
- Creator: Last name, first name
- Date
- Contributor: It can provide information referred to the EU funding and to the TWEETHER project itself; mainly, the terms "European Union (EU)" and "Horizon 2020", as well as the name of the action, acronym and the grant number

⁵ <http://invenio-software.org/wiki/Project/OpenAIREplus/DevelopmentRecordMarkup>

- Subject: Choice of keywords and classifications
- Description: Text explaining the content of the data set and other contextual information needed for the correct interpretation of the data.
- Format: Details of the file format
- Resource Type: data set, image, audio, etc.
- Identifier: DOI
- Access rights: closed access, embargoed access, restricted access, open access.

Additionally, a readme.txt file could be used as an established way of accounting for all the files and folders comprising the project and explaining how all the files that make up the data set relate to each other, what format they are in or whether particular files are intended to replace other files, etc.

Based on the comments presented above, Figure 3 shows an example of metadata used in ZENODO for the data uploaded to this platform.

The screenshot shows a Zenodo metadata page for a presentation. The title is "Tweether for Internet everywhere" by Claudio Paoloni. The publication date is 01 October 2015. The DOI is 10.5281/zenodo.31702. The keywords are Millimetre-wave, Wireless networks, small cells, Access, and Backhaul. The presentation is part of the H2020 TWEETHER project. The license is Creative Commons Attribution. The uploader is rutvima, who uploaded it on 01 October 2015. The page also includes a "Preview" button and a "Presentation Open access" tag.

Figure 3. Metadata used in ZENODO for data uploaded to this platform

7. DATA SHARING, ARCHIVING AND PRESERVATION

A repository is the mechanism to be used by the project consortium to make the project results (i.e., publications and scientific data) publicly available and free of charge for any user. According to this, several options are considered/suggested by the EC in the frame of the Horizon 2020 programme to this aim:

- For depositing scientific publications:
 - Institutional repositories of the research institutions (e.g., RiuNet at UPV)
 - Subject-based/thematic repository
 - Centralised repository (e.g., Zenodo repository set up by the OpenAIRE project)
- For depositing generated research data:
 - A research data repository which allows third parties to access, mine, exploit, reproduce and disseminate free of charge
 - Centralised repository (e.g., Zenodo repository set up by the OpenAIRE project)

The academic institutions participating in TWEETHER have available appropriate repositories which in fact are linked to OpenAIRE (<https://www.openaire.eu/participate/deposit/idrepos>):

- **Lancaster University - Lancaster E-Prints**

Type: Publication Repository

Contents: Journal articles, Conference and workshop papers, Theses and dissertations, Books, chapters and sections, Other special item types

Website URL: <http://eprints.lancs.ac.uk/>

Compatibility: OpenAIRE Basic (DRIVER OA)

OAI-PMH URL: <http://eprints.lancs.ac.uk/cgi/oai2>

- **Hochschulschriftenserver - Universität Frankfurt am Main**

Type: Publication Repository

Contents: Journal articles, Conference and workshop papers, Theses and dissertations, Unpublished reports and working papers

Website URL: <http://publikationen.ub.uni-frankfurt.de/>

Compatibility: OpenAIRE Basic (DRIVER OA)

OAI-PMH URL: <http://publikationen.ub.uni-frankfurt.de/oai>

- **Universitat Politècnica de Valencia (UPV) – RiuNet**

Type: Publication Repository

Contents: Journal articles, Conference and workshop papers, Theses and dissertations, Learning Objects, Multimedia and audio, visual materials, Other special item types

Website URL: <http://riunet.upv.es/>

Compatibility: OpenAIRE 2.0+ (DRIVER OA, EC funding)

OAI-PMH URL: <https://riunet.upv.es/oai/driver>, <https://riunet.upv.es/oai/openaire>

The institutional repositories are used to deposit the publications generated by the academic institutions participating in TWEETHER. Indeed, as commented in Section 4.1, the scientific papers published so far are available in the RiuNet repository and in OpenAIRE through the following link: https://www.openaire.eu/search/project?projectId=corda_h2020::546a6950975d78f06a46bc53f2bfc9ef

Note that all these repositories make use of the OAI-PMH protocol (Open Archives Initiative Protocol for Metadata Harvesting), what allows that the content can be properly found by means of the defined metadata. OAI-PMH is a mechanism for interoperability of repositories. Data Providers are repositories that expose structured metadata via OAI-PMH. Service Providers make OAI-PMH service requests to harvest metadata. OAI-PMH is invoked through HTTP.

Apart from these repositories, TWEETHER project also uses the centralised repository ZENODO to ensure the maximum dissemination of the information generated in the project (research publications and data), as this repository is the one recommended by the EC's OpenAIRE initiative in order to unite all the research results arising from EC funded projects.

Indeed, ZENODO⁶ is an easy-to-use and innovative service that enables researchers, EU projects and research institutions to share and showcase multidisciplinary research results (data and publications)

⁶ <http://www.zenodo.org/>

that are not part of existing institutional or subject-based repositories. Namely, ZENODO enables users to:

- easily share the long tail of small data sets in a wide variety of formats, including text, spreadsheets, audio, video, and images across all fields of science
- display and curate research results, get credited by making the research results citable, and integrate them into existing reporting lines to funding agencies like the European Commission
- easily access and reuse shared research results
- define the different licenses and access levels that will be provided

Furthermore, ZENODO assigns a Digital Object Identifier (DOI) to all publicly available uploads, in order to make content easily and uniquely citable and this repository also makes use of the OAI-PMH protocol (Open Archives Initiative Protocol for Metadata Harvesting) to facilitate the content search through the use of defined metadata. This metadata follows the schema defined in INVENIO⁷ (a free software suite enabling to run an own digital library or document repository on the web) and is exported in several standard formats such as MARCXML, Dublin Core and DataCite Metadata Schema according to OpenAIRE Guidelines.

On the other hand, considering ZENODO as the repository, the short- and long-term storage of the research data will be secured since they are stored safely in same cloud infrastructure as research data from CERN's Large Hadron Collider. Furthermore, it uses digital preservation strategies to storage multiple online replicas and to back up the files (Data files and metadata are backed up on a nightly basis).

Therefore, this repository fulfils the main requirements imposed by the EC for data sharing, archiving and preservation of the data generated in TWEETHER. For this reason, a ZENODO community for TWEETHER documents has been created, and can be accessed through the following link: <https://zenodo.org/collection/user-tweether-project>

8. DESCRIPTION OF DATA SETS GENERATED OR COLLECTED

This section provides an explanation of the different types of data sets to be produced in TWEETHER, which has been identified at this stage of the project. As the nature and extent of these data sets can be evolved during the project, in this deliverable a new data set associated with the S-parameters of the W-band chipsets has been identified and included in this section together with the rest of the data sets described in the previous data management plan.

The descriptions of the different data sets, including their reference, file format, the level of access, and metadata and repository to be used (considerations described in Section 6 and 7), are given below.

Data set reference	DS_SP_1
Data set name	TWT_SP_X
Data set description	This data set will comprise the measured or simulated S-parameter results for the TWT structure. It will mainly consist of small-signal calculations of the cold simulations or measurements of the TWT at the respective ports.
File format	Touchstone format

⁷ <http://invenio-software.org/>

Project Acronym: TWEETHER

Standards and metadata	The metadata is based on ZENODO's metadata, including the title, creator, date, contributor, description, keywords, format, resource type, etc. (See Section 6)
Data sharing	This data set will be widely open and will be deposited in the ZENODO repository. To analyse this data CST Software or Magic Software are necessary.
Archiving and preservation	This data set will be archived and preserved in ZENODO (See Section 7)

Data set reference	DS PS 1
Data set name	TWT PS X
Data set description	This data set will comprise results of the power levels at the relevant ports of the TWT structure. They will include the DC bias conditions together with the input and output power at all ports. The results will be either based on measured values or obtained from simulations. It will mainly consist of small-signal calculations of the hot simulations or measurements of the TWT at the respective ports.
File format	MDIF or XPA format
Standards and metadata	The metadata is based on ZENODO's metadata, including the title, creator, date, contributor, description, keywords, format, resource type, etc. (See Section 6)
Data sharing	This data set will be widely open and will be deposited in the ZENODO repository. To analyse this data CST Software or Magic Software are necessary.
Archiving and preservation	This data set will be archived and preserved in ZENODO (See Section 7)

Data set reference	DS_CHIPSET_DS
Data set name	Semi-conductor Radio Chipset Datasheet
Data set description	This dataset contain the datasheet of the III-V semi conductor products used by the 2 radios of the TWEETHER project
File Format	File format is the PDF format
Standards and metadata	The metadata is based on ZENODO's metadata, including the title, creator, date, contributor, description, keywords, format, resource type, etc. (See Section 6)
Data sharing	This data set will be widely open and will be deposited in the ZENODO repository.
Archiving and preservation	This data set will be archived and preserved in ZENODO (See Section 7).

Data set reference	DS_CHIPSET_SP
Data set name	CHIPSET_SP_X
Data set description	This data set will comprise the measured or simulated S-parameter results for the OMMIC chipsets.
File format	Touchstone format

Project Acronym: TWEETHER

Standards and metadata	The metadata is based on ZENODO's metadata, including the title, creator, date, contributor, description, keywords, format, resource type, etc. (See Section 6)
Data sharing	This data set will be widely open and will be deposited in the ZENODO repository provided that this does not jeopardise future exploitation.
Archiving and preservation	Whenever possible, this data set will be archived and preserved in ZENODO (See Section 7).

Data set reference	DS_SYS_1
Data set name	System datasheet
Data set description	System general architecture, network interfaces, system data sheet, sub-assemblies datasheets, range diagrams, photos of equipment. General information useful for potential users. This data set will be suitable for publications in scientific and industrial conferences.
File Format	PDF
Standards and metadata	The metadata is based on ZENODO's metadata, including the title, creator, date, contributor, description, keywords, format, resource type, etc. (See Section 6)
Data sharing	This data set will be widely open and will be deposited in the ZENODO repository.
Archiving and preservation	This data set will be archived and preserved in ZENODO (See Section 7).

Data set reference	DS_SYS_2
Data set name	System Deployments
Data set description	System coverage capabilities. Deployment methods to optimize coverage, frequency re-use process. Scenario graph. General information useful for potential users. This data set will be suitable for publications in scientific and industrial conferences.
File format	PDF
Standards and metadata	The metadata is based on ZENODO's metadata, including the title, creator, date, contributor, description, keywords, format, resource type, etc. (See Section 6)
Data sharing	This data set will be widely open and will be deposited in the ZENODO repository.
Archiving and preservation	This data set will be archived and preserved in ZENODO (See Section 7).

Data set reference	DS_MM-A_1
Data set name	W-band Millimetre Antennas
Data set description	Adaptation S parameters, bandwidth, radiating diagrams: co-polar & cross-polar. Antennas datasheet: graphs and tables. This data set will be suitable for publications in scientific and industrial conferences.
File format	PDF

Project Acronym: TWEETHER

Standards and metadata	The metadata is based on ZENODO's metadata, including the title, creator, date, contributor, description, keywords, format, resource type, etc. (See Section 6)
Data sharing	This data set will be widely open and will be deposited in the ZENODO repository.
Archiving and preservation	This data set will be archived and preserved in ZENODO (See Section 7).

Data set reference	DS_FT_1
Data set name	Field trial description
Data set description	This data set will comprise a description of the wireless network architecture including the hardware, interfaces and services that will be deployed at the UPV campus and used for the field trial. In addition, it will provide information about sites (number of sites and its location), the expected objectives to be achieved and the envisaged scenarios for the system. This information will be interesting for potential users such as telecom operators.
File Format	PDF
Standards and metadata	The metadata is based on ZENODO's metadata, including the title, creator, date, contributor, description, keywords, format, resource type, etc. (See Section 6)
Data sharing	This data set will be widely open (URL access) and a summary of these data will be deposited in the ZENODO repository.
Archiving and preservation	This data set will be archived and preserved in ZENODO (See Section 7).

Data set reference	DS_FT_2
Data set name	Field trial long term KPI measurements
Data set description	This data set will comprise the results of the measurement campaign carried out to evaluate the performance of the field trial deployed at the UPV campus integrating the technology developed in TWEETHER. It will include data obtained from the Network Monitoring System (PRTG software or similar), which collects KPIs from the network elements. Some examples of KPIs are throughput, RSSI (received signal strength indicator) and dropped packets. Those data will be publicly accessible through a URL. This information will be interesting for potential users such as telecom operators.
Standards and metadata	The metadata is based on ZENODO's metadata, including the title, creator, date, contributor, description, keywords, format, resource type, etc. (See Section 6)
Data sharing	This data set will be widely open (URL access) and a summary of these data will be deposited in the ZENODO repository.
Archiving and preservation	This data set will be archived and preserved in ZENODO (See Section 7).

Data set reference	DS_FT_3
Data set name	Field trial bandwidth tests
Data set description	<p>This data set will comprise descriptive information of the bandwidth tests used to evaluate the network at specific times. Those tests will employ a traffic generator software allowing to send and receive traffic between hosts comprising the network and providing a measurement of the maximum available bandwidth and also latency and jitter values.</p> <p>It will mainly consist of a doc-type document with details related to the steps to be followed in this test and the results obtained as well as well as examples of the scripts (or its description) used to obtain those results.</p> <p>This information will be interesting for potential users such as telecom operators.</p>
File format	Word or PDF
Standards and metadata	The metadata is based on ZENODO's metadata, including the title, creator, date, contributor, description, keywords, format, resource type, etc. (See Section 6)
Data sharing	<p>This data set will be widely open and will be deposited in the ZENODO repository.</p> <p>To perform this test, Ipref tool (or similar) is required.</p>
Archiving and preservation	This data set will be archived and preserved in ZENODO (See Section 7).

Apart from the data sets specified that will be made open, other data generated in TWEETHER such as the circuit detailed specifications and realisation, and terminal integration is kept confidential to avoid jeopardising future exploitation.

End of Deliverable D7.11