Emanuele Cardillo

Curriculum Vitae

26/09/2025

Birth date	28/11/1987
City of birth	Messina
Gender	Male
Address	Department of Engineering, University of Messina – Italy. Contrada di Dio - S. Agata, 98166 - Messina
Telephone	+39 0906765388
E-mail	ecardillo@unime.it
Website	https://unime.unifind.cineca.it/resource/person/30960

Education

- **PhD**, "Microwave radars for short-range applications: from the transistor characterization to the system development", University Mediterranea of Reggio Calabria. May 2018.
- **Italian Engineering License** – Sez. A – Information Engineering. Jul. 2015.
- **M.S.** in Electronic Engineering, University of Messina. Nov. 2013.
- **B.S.** in Electronic Engineering, University of Messina. Nov. 2010.

Academic Employment

- **Senior Assistant Professor**, Department of Engineering, University of Messina. Sept. 2023- Present. This is a tenure-track position leading to an Associate Professorship, effective from September 2026.
- **Junior Assistant Professor**, Department of Engineering, University of Messina. Oct. 2021- Aug. 2023.
- **Research Fellow**, Department of Engineering, University of Messina: "Design, development and test of short-range microwave radar systems for monitoring, diagnostics and surveillance applications". 23/06/2020- 30/09/2021.
- **Contract Researcher**, Department of Engineering, University of Messina: "Characterization of electronic devices by means of noise measurements". 15/02/2019-14/02/2020.
- **Contract Researcher**, Department of Engineering, University of Messina: "Electrical and noise measurement on advanced electronic devices". 01/02/2018-31/01/2019.

National Scientific Qualification

- National Scientific Qualification for **Associate Professor** in Electronics Engineering. Sept. 2022.

Other appointments

- **Consultant** to Italspazio S.r.l. - CT (Italy): Design of a 2-18 GHz Down Converter for spatial applications (Cubesat)". 18/03/2021-17/06/2021.
- **Consultant** to SmartMe.IO - Messina (Italy): board design with GPS/GNSS, Bluetooth, GSM/GPRS and interfaces, memory, power and battery charger management, A/D conversion, and sensors. 20/05/2019-31/05/2019.
- **Contract Researcher** at the Department of Engineering, University of Messina: " Design and development of microwave circuits". 26/05/2014-15/10/2014.
- **Contract Researcher** at the Department of Engineering, University of Messina: " Design and development of microwave circuits". 10/01/2015-09/06/2015.
- **Electronics engineer** to C.G.T. S.r.l. – PA (Italy). Hardware and software services on surveying instruments (GNSS, laser and optical measurements). Co-management of the electronics laboratory. 25/11/2010 - 02/11/2014.
- **Teaching assistant (IT: cultore della materia)** to Microwave Electronics course, BS degree in Electronics and Informatics Engineering, University of Messina. 01/10/2019-30/09/2022.
- **Teaching assistant (IT: cultore della materia)** to the Wireless Technologies course, M.S. degree in Engineering and Computer Science, University of Messina. 2015/2016-2017/2018.
- **Tutoring** of Physics for engineers at the University of Messina. 02/05/2017-26/10/2017.

Teaching activities

Month/Year	Course name	Level
Feb-Jun 2025	Principles and Applications of Microwave Electronics I (72 hr)	Graduate
Set-Dec 2024	Principles and Applications of Microwave Electronics II (48 hr)	Graduate
Apr-Jun 2024	Digital Electronics (18 hr)	Addressed to high-school teachers
Feb-Jun 2024	Principles and Applications of Microwave Electronics I (72 hr)	Graduate
Set-Dec 2023	Principles and Applications of Microwave Electronics II (48 hr)	Graduate
Feb-Jun 2023	Principles and Applications of Microwave Electronics I (72 hr)	Graduate
Set-Dec 2022	Principles and Applications of Microwave Electronics II (48 hr)	Graduate
Feb-Jun 2022	Principles and Applications of Microwave Electronics I (48 hr)	Graduate
Feb-Jun 2022	Programmable Logic Devices (48 hr)	Undergraduate

Service at the University of Messina

- Organizer of the first Engineering Recruiting Day with more than 30 companies and 500 participants. 22nd May, 2025.
- Member of the Quality Insurance Commission for the master's degree course in Electronics Engineering. 2024-present.

- Member of the PhD in Engineering Board. 2024-present.
- Head of the Microwave Electronics Laboratory (ELEMIC). 2022-present.
- Head of the Microwave Educational Electronics Laboratory (EDUMIC). 2022-present.
- Delegate of the Head of the Engineering Department for the Students' Job Placement Activities. 2021-present.
- Representative of the M.S. Electronics Engineering Degree Course for the Students' Placement Activities. 2021-present.
- Faculty advisor for the Zancle E-Drive (ZED) electrical and autonomous racing team at the SAE competition. 2020/2023.

Research grants

- **Scientific Coordinator** of University of Messina Unit and Co-PI of the MUR PRIN project "Contactless And ReliAble Movement invEstigation with miLLimeter-waves rAdars (CARAMELLA)". Managed budget: € 142.985,00 (tot. budget: € 285.970,00). 2023-2025.
- **Recipient** of the FFABR-UNIME call. Managed budget: € 1.500,00. 2022.
- **Activity Leader** for the activity: "Design and development of microwave short-range compact radar systems" in the PON project "Innovative technologies for the sea control, monitoring and safety (TETI)". Available budget: € 140.144,00. 2021-2024.
- **Activity Leader** for the activity: Study of materials and technologies for the electromagnetic shielding", in the MISE-PON project "Development of systems and innovative processes for highly advanced technologies aimed at the production of eco-friendly vessels with high shielding effectiveness and low magnetic signature (DAS PHANTOMSHIFFE)". Available budget: € 168.276,00. 2021-2024.

Honors and Awards

- Best Student paper Award in IEEE Sensors Journal from the IEEE Sensors Council – Italian Chapter. 2017-2018.
- IEEE Microwave Theory and Techniques (MTT-S) award from the IEEE MTT-S/AP-S Chapter for Central and Southern Italy. 2018.
- Best Conference Paper Award - 2nd classified at the IEEE International Workshop on Metrology for Industry 4.0 & IoT. 2021.

Honors and Awards of Advisees

- 2024 Radio Wireless Week: Student Sponsorship Initiative program (Dr. Luigi Ferro).

Professional activities

IEEE societies

- IEEE Sensors Council Italy Chapter Vice-Chair for the two-year period 2025/2026.

- TC chair of the IEEE Sensors Council Italy Chapter TC “Microwave and Millimeter-Wave Radar Sensors”. 27/10/2020-present.
- TC member: IEEE MTT-28: Biological Effects and Medical Applications of RF and Microwaves. 2024-present

Other societies

- MC board and UniME Representative: Microwave Engineering Center for Space Application (MECSA). 15/09/2023-present.
- Proponent member of the Interuniversity Mediterranean Center for “Quantum Technologies”.

Society Affiliation/Membership

- European Microwave Association (EuMA). 2025-present.
- Microwave Engineering Center for Space Applications (MECSA). 2020-present.
- Sensors Council Italy Chapter. 2018-present.
- IEEE Microwave Theory and Technology Society (MTT-S) Member. 2015-present.
- IEEE Senior Member 2024-present. IEEE Member 2018-2023. IEEE Student Member. 2015-2017.
- Italian Society of Electronics (SIE). 2016-present.

Contributions to IEEE European Public Policy Committee (EPPC)

- Contributor for the EPPC position statement on "Intelligent, Connected and Autonomous Vehicles (ICAVs)". 2020-2023.

Editorial activity

- IEEE Transaction of Microwave Theory and Technology (T-MTT), Special Issue “Latest Advances on Contactless Radar-Based Physiological Sensors and Their Applications” with profs. O. Boric-Lubecke, V. Lubecke, C.-T. M. Wu, S. Md. M. Islam. 2024.
- MDPI Remote Sensing, Special Issue “Doppler Radar: Methods, Challenges, and Applications” with prof. Ashish Kumar Singh. 2023-2024.
- MDPI Electronics, Special Issue “Microwave and Millimeter-Wave Radar Electronics for Contactless Sensing Applications” with prof. Changzhi Li. 2022-2024.

Technical Program Committee Member

- International Microwave Symposium (IMS). 2025-present.
- European Microwave Week (EuMW). 2024-present.
- International Conference on Radar, Antenna, Microwave, Electronics, and Telecommunications (ICRAMET). 2022-present.
- Radio and Wireless Week (RWW). 2021-present. Vice-Chair for WiSNet - Wireless Sensor Networks, Communication and Artificial Intelligence subcommittee from RWW 2024.

- Mediterranean Microwave Symposium (MMS) 2022.

Workshop/conference organization and activities

- Executive Committee Member and Awards Committee Chair for the IEEE International Microwave Biomedical Conference, Rende (Italy), 26-29/04/2026.
- Organizing committee and Sponsors and exhibitions Chair of the "27th International Conference on Noise and Fluctuations (ICNF-2025)". Taormina (Italy), 17-20/06/2025.
- Organizing committee and Sponsors and exhibitions Chair of the "54th Meeting Società Italiana di Elettronica". Noto (Italy), 6-8/09/2023.
- Organizing committee of the: "IEEE International Workshop on Integrated Nonlinear Microwave and Millimeter-wave Circuits (INMMiC)", Taormina (Italy), 01-02/10/2015.
- Student Design Competition "SDC8 - Radar for Noncontact Vital Sign Sensing" at the IEEE MTT-S International Microwave Symposium (IMS). 2024 Washington (US).
- Student Design Competition "SDC8 - Radar for Noncontact Vital Sign Sensing" at the IEEE MTT-S International Microwave Symposium (IMS). 2023 San Diego (US).

Others

- Reviewer of the Latvian Council of Science for the funding proposals of the Fundamental and Applied Research Projects 2024.
- Reviewer of the Poland National Science Center for funding proposals evaluation. 2021

Mentoring of staff and researchers

- **Ph.D. Student** Alessandro Ficarra: Design and verification of mmWave antenna modules in high-density packages for large scale production. 2024-2027.
- **Research Fellow** Fabrizio Lorenzo Carcione: "Development of compact microwave and millimeter-wave radars for movement analysis.". Jan. 2024-Jun.2025.
- **Ph.D. Student** Luigi Ferro in the field of portable microwave and millimeter-wave radars. 2023-2025.
- **Contract researcher** Fabrizio Lorenzo Carcione: "Development of measurement systems to evaluate the shielding effectiveness of materials for EM shielded vessels". Feb.-Dic. 2023.
- **Contract researcher** Luigi Ferro: "Development of compact microwave and mm-wave radar systems for the sea short-range monitoring and safety". Mar. 2022-Feb. 2023.

Mentoring of students

Current

M.S.: Aldo Fonseca "Detection of millimetric displacements with VNA". Marco Gitto "Measurement of multiple target movements with Doppler radar". Alessandro Pollino "Advanced microwave radar

occupancy sensor". Giuseppe Nania "Detection of vital signs with Doppler radar". Mario Ricosta: "Microwave Doppler Radars for the detection and analysis of micro-Doppler signature".

B.S: Rachele Bellinvia: "Microwave filter design by using reconfigurable blocks".

Completed

M.S.: Stellario Libro: "Development of microwave compact radar systems for the short-range monitoring and the sea-safety". Ielo Gabriele: "Design of Ka-Band Frequency Converter Subsystem for CubeSat Missions". Ficarra Alessandro: "Antenna Design and Calibration techniques for mmWave Applications". Stefania Anzalone: "Design of microwave filters in planar technology". Cusmà Piccione Cristian: "Radar micro-Doppler signature classification through machine learning algorithms". Daniele Fasanella Masci: "On Board Efficient Technical Solutions Combining Digital Beamforming and Digital Processing for Microwave VHTS Application". Carcione Fabrizio: "Design, fabrication and test of a measurement chamber for the EM shielding test of materials in the microwave range. Luigi Ferro: "Interferometric radar techniques for the detection of millimetric displacements". Angela Cisto: "mmWave radars for static and moving targets monitoring". Fabio Aloisio: "Design and analysis of Energy Harvesting circuits". Stefano Gitto: "Effect of laser exposure on microwave HEMTs". Giancarlo Felicia: "Analysis and simulation of a vectorial reflectometer". Daniele Sorbo: "The EM compatibility: analysis and measurements on electrical and electronics systems".

B.S: Giovanni Ilacqua: "Design of an FPGA control system for multilevel elevators". Claudia Rizzo: "EM simulation of a microwave directional coupler". Alessandro Pollino: "Design of a Wilkinson divider by using reconfigurable blocks". Emilia Currò: "Analysis and design of a numeric oscillator on FPGA". Marco Gitto: "Technologies for CubeSat communications". Pirrone Giacomo: "AESA radars for avionic applications". Pullia Marco Antonio: "Terahertz electronics of the development of 6G technology". Panarello Daniele: "Development of an FPGA AD platform". Francesco Bertè: "Study and simulation of a Ku-band 4-outputs Wilkinson power divider". Marco Brigandì: "Microwave Doppler Radar Doppler for the real-time measurement of a moving target speed". Russo Matteo: "New opportunities in the aerospace sector: CubeSat nanosatellites". Vitaliano Bolognino: "Study of a SIW microwave power divider". Ilenia Ficili: "Microwave Radar for the autonomous driving". Daniele Fasanella Masci: "mmWave Radar for the detection of stationary and moving radars. Giovanni Donato: "Microwave radar systems for metereological applications". Mario Ricosta: "Analysis of circuits for compact microwave radars". Michele Zappavigna: "Design and simulation of a 2.4 GHz energy harvesting circuit". Stefania Anzalone: "Design and simulation of a K-band Doppler radar". Salvatore Bellinvia: "Analysis and design of a patch antenna for microwave applications". Emanuela Valenti: "Design and simulation of a planar Wilkinson divider". Luigi Ferro: "Design and simulation of an S-band FMCW radar". Vincenzo Pelleriti: "K-band radar board measurement". Martina Ruvolo: "EM analysis of microwave SIW structures". Marco Trifiletti: "EM analysis of the performance of an X-band LNA amplifier". Santi Spadaro: "Effects of laser exposure on an HMIC LNA". Daniele Volpintesta: "Design and simulation of a short-range radar system". Valeria Lukaj: "mmWave measurement of GaAs pHEMTs". Claudia Calascione: "Measurement of micro-radar for microwave applications". Ilenia Santamaria: "EMC measurements for conducted emissions". Stefano Busacca: "Design and simulation of a pulsed Doppler radar".

PhD thesis reviewer

- “Sensors and electronic systems for structural and energy monitoring”, University of l’Aquila - L’Aquila – Italy. PhD student: dr. Romina Paolucci, Supervisor: prof. Giuseppe Ferri. 2022/2023.
- “Design and development of custom wearable systems for respiratory and joint motion monitoring”, Università Campus Biomedico - Roma - Italy. PhD student: dr. Joshua Di Tocco, Supervisor: prof. Emiliano Schena. 2022/2023.
- “FMCW Radars For Automotive Applications”, Università di Modena e Reggio Emilia-Modena/Reggio Emilia – Italy. PhD student: dr. Giorgio Guerzoni, Supervisor: prof. Giorgio Vitetta. 2022/2023.

Main research interests

- RF/microwave/millimeter-wave electronics, portable radars for physiological sensing, microwave measurements, circuit design and realization, satellite subsystems and antennas.

Bibliometric Indexes (first publication year: 2015)

- ORCID-ID: 0000-0002-2678-6529.
- Scopus: n. of publications, n. of citations, h-index: 69, 849, 18. Scopus ID: 56986002100.
- ISI Web of Science: n. of publications, n. of citations, h-index: 67, 603, 15. WoS ID: Y-9437-2019.

Peer review activity

- IEEE - Transactions on Microwave Theory and Technology
- IEEE - Microwave and Wireless Technology Letters
- IEEE - Sensors Journal
- IEEE - Transactions on Instrumentation and Measurement
- IEEE - Microwave Magazine
- IEEE - Transactions on Nanotechnology
- IEEE - Journal of Electromagnetics, RF, and Microwaves in Medicine and Biology
- IEEE - Transactions on Biomedical Engineering
- IEEE - Transactions on Biomedical Circuits and Systems
- IEEE - Journal of Microwaves
- IEEE - Sensors Letters
- IET - Microwaves, Antennas & Propagation
- IET - Electronics Letters
- IET - Signal Processing
- IET - Communications
- IOP Publishing Ltd. - Journal of Micromechanics and Microengineering
- IOP Publishing Ltd. - Semiconductor Science and Technology
- IOP Publishing Ltd. - Physica Scripta
- Elsevier – Measurement
- MDPI - Electronics
- MDPI - Applied Sciences
- MDPI - Micromachines
- MDPI - Remote Sensing
- MDPI - Inventions

- MDPI - Journal of Marine Science and Engineering
- MDPI - Journal of Sensor and Actuator Networks
- Springer Nature - Scientific Reports
- Springer Nature - Universal Access in the Information Society
- Wiley - Magnetic Resonance Imaging

Patents

- National patent (Italy): "Sistema di rilevamento di movimenti". N.: 102022000010118. Inventors: Emanuele Cardillo, Gaia Sapienza, Alina Caddemi. 2022.

International conferences as a speaker

[1] E. Cardillo, R. Cananzi, L. Ferro, C., Li, P. Vita, and P. Vita, "Detection of space debris through compact X band FMCW radar," *IEEE International Conference on Advanced Technologies, Systems and Services in Telecommunications (TELSIKS),* pp. 126-129, Niš, Serbia, Oct. 2023.

[2] E. Cardillo, G. Sapienza, L. Ferro, C. Li, and A. Caddemi, "Radar Assistive System for People with Neurodegenerative Disorders Through Head Motion and Eyes Blinking Detection," accepted for publication at the *International Microwave Symposium (IMS)*, San Diego, CA, USA, Jun. 2023.

[3] E. Cardillo, L. Ferro, and C. Li, "Microwave and millimeter-wave radar circuits for the next generation contact-less in-cabin detection," *Asia Pacific Microwave Conference*, Yokohama, Japan., Nov. 2022.

[4] E. Cardillo, C. Li, and A. Caddemi, "Heating, ventilation, and air conditioning control by range-Doppler and micro-Doppler radar sensor," *European Radar Conferenc*e, London, U.K., pp. 4, Apr. 2022.

[5] E. Cardillo, C. Li, and A. Caddemi, "Radar-based monitoring of the worker activities by exploiting range-Doppler and micro-Doppler signatures" *IEEE International Workshop on Metrology for Industry 4.0 and IoT*, Rome, Italy, pp. 412-416, Jun. 2021.

[6] E. Cardillo, G. Sapienza, C. Li, and A. Caddemi, "Head motion and eyes blinking detection: a mm-wave radar for assisting people with neurodegenerative disorders," *European Microwave Conference*, Ultrecht, The Netherland, pp. 925-928 Jan. 2021.

[7] E. Cardillo, C. Li, and A. Caddemi, "Empowering blind people mobility: a millimeter-wave radar cane," *IEEE International Workshop on Metrology for Industry 4.0 and IoT*, Rome, Italy, Jun. 2020.

[8] A. Caddemi, and E. Cardillo, "Automotive anti-abandon systems: a millimeter-wave radar sensor for the detection of child presence," *IEEE International Conference on Advanced Technologies, Systems and Services in Telecommunications (TELSIKS)*, Niš, Serbia, Oct. 2019.

[9] A. Caddemi, and E. Cardillo, "A laser beam for boosting the power added efficiency of an X-band GaN MMIC amplifier," *IEEE International Conference on Advanced Technologies, Systems and Services in Telecommunications (TELSIKS)*, Niš, Serbia, Oct. 2019.

[10] E. Cardillo, and A. Caddemi, "Feasibility study to preserve the health of an Industry 4.0 worker: a radar system for monitoring the sitting-time*," IEEE International Workshop on Metrology for Industry 4.0 and IoT*, Jun. 2019.

[11] E. Cardillo and A. Caddemi, "A virtual test-bench for noise figure measurements of mismatched devices," *IEEE International Workshop on Metrology for Aerospace*, Jun. 2018.

[12] A. Caddemi, E. Cardillo, and G. Crupi, "HEMT Sensitivity to Optical Radiation: Distinguishing Microwave Noise Aspect," *The 12th International Symposium on SiO2 Advanced Dielectrics and Related Devices*, pp. 52-53, Jun. 2018 (Keynote speaker).

[13] A. Caddemi and E. Cardillo, "Optical control of gain amplifiers at microwave frequencies," *Computing and Electromagnetics International Workshop (CEM)*, Barcelona, Spain, pp. 51-52, Jun. 2017.

[14] A. Caddemi and E. Cardillo, "A study on dynamic threshold for the crosstalk reduction in frequency-modulated radars," *Computing and Electromagnetics International Workshop (CEM)*, Barcelona, Spain, pp. 29-30, Jun. 2017.

[15] V. Di Mattia, A. Caddemi, E. Cardillo, G. Manfredi, A. De Leo, P. Russo, L. Scalise, and G. Cerri, "A Feasibility Study of a Compact Radar System for Autonomous Walking of Blind People," *2016 IEEE 2nd International Forum on Research and Technologies for Society and Industry Leveraging a better tomorrow (RTSI)*, Bologna, Italy Sept. 2016, 3 p.

[16] E. Cardillo and A. Caddemi, "Flexible CAD methodology for UWB filter with a tailored notch," *IEEE Mediterranean Microwave Symposium (MMS)*, Lecce, Italy, Dec. 2015.

[17] N. Boukortt, A. Caddemi, E. Cardillo, G. Crupi, B. Hadri, and S. Patanè, "Inverse Modeling of an AlGaAs/GaAs HEMT from DC and Microwave Measurements Illumination," *IEEE International Conference on Advanced Technologies, Systems and Services in Telecommunications (TELSIKS)*, Niš, Serbia, Oct. 2015.

[18] A. Caddemi, E. Cardillo, G. Crupi, and G. Salvo, “Performance Analysis of a Microwave Low-Noise Amplifier under Laser Illumination,” *IEEE International Conference on Advanced Technologies, Systems and Services in Telecommunications (TELSIKS)*, Niš, Serbia, Oct. 2015.

[19] A. Meazza, G. Sivverini, A. Colzani, M. Fumagalli, A. Traversa, and E. Cardillo, “A New Methodology to Estimate E-band pHemt Linearity Optimum Load from Low Microwave Frequency Load Pull Measurements” *IEEE International Workshop on Integrated Nonlinear Microwave and Millimeter-wave Circuits (INMMiC)*, Taormina, Italy, 3 p., Oct. 2015.

Books

[1] *E. Cardillo*, C. Li, "Portable Microwave and mmWave Radars for Contactless Healthcare," *River Publishers Series in Electronics for Biotechnology and Medicine*. Dec. 2024. ISBN: 9788770047524 e-ISBN: 9788770047517.

Publication List

[2] L. Ferro, C. Li, E. Cardillo, “Design Considerations for a 120 GHz MIMO Sparse Radar Array based on SISO Integrated Circuits,” *Sensors*, vol. 25, no. 18: 5622, Sept. 2025, doi: 10.3390/s25185622.

[3] G. Scandurra, E. Cardillo, L. Ferro, G. Giusi, C. Ciofi, “On the instrumentation for current noise measurements in low impedance devices,” *International Conference on Noise and Fluctuations (ICNF)*, Taormina, Italy, 17-20/06/2025.

[4] L. Ferro, G. Scandurra, C. Ciofi, and E. Cardillo, "An Insight into the Displacement Evaluation during Real-Time Radar Measurements," *IEEE Sensors Journal*, vol. 25, no. 17, pp. 32651-32658, Sept. 2025, doi: 10.1109/JSEN.2025.3594433.

[5] P. Brasiliano, F. L. Carcione, G. Pavei, E. Cardillo, and E. Bergamini, "Radar-Based Deep Learning for Gait Smoothness Estimation: A Feasibility Study," *IEEE Medical Measurements & Applications (MeMeA)*, Chania, Greece, 2025, pp. 1-6, doi: 10.1109/MeMeA65319.2025.11068038.

[6] L. Ferro, and E. Cardillo, “Frequency Shift in Microwave Circuits Manufactured with Circuit Board Plotters: Case Study of a Parallel Coupled Lines Filter,” *Electronics*, vol. 13, no. 15: 3100, doi:10.3390/electronics13153100.

[7] E. Cardillo, L. Ferro, and F. L. Carcione, “An insight on the microwave circulator theory,” *IEEE Access,* vol. 12, pp. 92164-92168, Jul. 2024, doi: 10.1109/ACCESS.2024.3421943.

[8] E. Cardillo, F. L. Carcione, L. Ferro, E. Piperopoulos, E. Mastronardo, G. Scandurra, and C. Ciofi, “Development of a simple setup to measure the shielding effectiveness at microwave frequencies,” *Sensors*, vol. 24, no. 12: 3741, Jun. 2024, doi: 10.3390/s24123741, Jan. 2024.

[9] C. Ciofi, G. Scandurra, G. Giusi, L. Ferro, and E. Cardillo, “A simple, portable, two channels correlation spectrum analyzer for low frequency noise measurements” *IEEE International Instrumentation and Measurement Technology Conference (I2MTC)*, pp. 1-6, Glasgow, UK, May 2024, doi: 10.1109/I2MTC60896.2024.10561212.

[10] L. Ferro, C. Li, G. Scandurra, C. Ciofi, and E. Cardillo, “Beneficial Effects of Self-Motion for the Continuous Phase Analysis of ac-Coupled Doppler Radars,” *Electronics*, vol. 13, no. 772, Feb. 2024, doi: 10.3390/electronics13040772.

[11] L. Ferro G. Scandurra, C. Li, and E. Cardillo, “Robust Doppler displacement measurement resolving the uncertainty during target stationary moment,” *IEEE Radio & Wireless Week (RWW2024)*, San Antonio, TX, USA, Jan. 2024, pp. 57-60, doi: 10.1109/WiSNeT59910.2024.

[12] E. Cardillo, L. Ferro, G. Sapienza, and C. Li, “Reliable eye-blinking detection with millimeter-wave radar glasses,” *IEEE Transactions on Microwave Theory and Techniques*, vol. 72, no. 1, pp. 771-779, Jan. 2024, doi: 10.1109/TMTT.2023.3329707.

[13] E. Cardillo, L. Ferro, and D. V. Q. Rodrigues, “Exploiting millimeter-wave radars to enable accurate gesture recognition for the metaverse environment,” *Lecture Notes in Electrical Engineering*, pp. 110-115, Nov. 2023, doi: 10.1007/978-3-031-48711-8_13.

[14] E. Cardillo, R. Cananzi, L. Ferro, C., Li, P. Vita, and P. Vita, “Detection of space debris through compact X band FMCW radar,” *IEEE International Conference on Advanced Technologies, Systems and Services in Telecommunications (TELSIKS)*, pp. 126-129, Niš, Serbia, Oct. 2023, doi: 10.1109/TELSIKS57806.2023.10316106.

[15] G. Scandurra, C. Ciofi, E. Cardillo, and L. Ferro, “Portable impedance meter for focused impedance applications,” *International Workshop on Impedance Spectroscopy (IWIS)*, Chemnitz, Germany, pp.73-38, Sept. 2023, doi: 10.1109/IWIS61214.2023.10302766.

[16] E. Cardillo, F. Tavella, C. Ampelli, “Microstrip Copper Nanowires Antenna Array for Connected Microwave Liquid Sensors,” *Sensors*, vol. 23, Issue 3750, Apr. 2023. DOI: 10.3390/s23073750.

[17] E. Cardillo, G. Sapienza, L. Ferro, C. Li, and A. Caddemi, “Radar Assistive System for People with Neurodegenerative Disorders Through Head Motion and Eyes Blinking Detection,” *IEEE/MTT-S International Microwave Symposium (IMS),* pp. 979-982, San Diego, CA, USA, Jun. 2023, doi: 10.1109/IMS37964.2023.10187979.

[18] E. Cardillo, L. Ferro, and C. Li, “Microwave and millimeter-wave radar circuits for the next generation contact-less in-cabin detection,” *Asia Pacific Microwave Conference (APMC)*, Yokohama, Japan., pp. 231-233, Nov. 2022. DOI: 10.23919/APMC55665.2022.9999764.

[19] E. Cardillo, R. Cananzi, and P. Vita, “Wideband Versatile Receiver for CubeSat Microwave Front-Ends”, *Sensors*, vol. 22, Issue 9004, Nov. 2022. DOI: 10.3390/s22229004 Oct. 2022.

[20] E. Cardillo, L. Ferro, C. Li, and A. Caddemi, “Microwave radars for automotive in-cabin detection,” *Lecture Notes in Electrical Engineering*, pp 75–80, Feb. 2023.

[21] G. Scandurra, E. Cardillo, C. Ciofi, L. Ferro, “UHT milk characterization by electrical impedance spectroscopy,” *Applied Science*, vol. 12, Issue 15, n. 7559, Jul. 2022. DOI: 10.3390/app12157559.

[22] E. Cardillo, and L. Ferro, “Multi-frequency analysis of microwave and millimeter-wave radars for ship collision avoidance,” *IEEE Mediterranean Microwave Symposium (MMS)*, Pizzo Calabro, Italy, pp. 1-4, May 2022. DOI: 10.1109/MMS55062.2022.9825520.

[23] E. Cardillo, R. Cananzi, P. Vita, and A. Caddemi, “Dual-conversion microwave down converter for nanosatellite electronic warfare systems”, *Applied Science*, vol. 12, Issue 3, n. 1524, Feb. 2022. DOI: 10.3390/app12031524.

[24] E. Cardillo, C. Li, and A. Caddemi, “Heating, ventilation, and air conditioning control by range-Doppler and micro-Doppler radar sensor,” *European Radar Conference*, London, U.K., pp.21-24, Apr. 2022. DOI: 10.23919/EuRAD50154.2022.9784461.

[25] E. Cardillo, C. Li, and A. Caddemi, “Millimeter-wave radar cane: a blind people aid with moving human recognition capabilities,” *IEEE Journal of Electromagnetics, RF, and Microwaves in Medicine and Biology*, vol. 6, Issue 2, pp. 204-211, Jun. 2022. DOI: 10.1109/JERM.2021.3117129.

[26] G. Scandurra, A. Arena, E. Cardillo, G. Giusi, and C. Ciofi, “Portable and Highly Versatile Impedance Meter for Very Low Frequency Measurements,” *Applied Science*, vol. 11, Issue 17, Sept. 2021. DOI: doi.org/10.3390/app11178234.

[27] E. Cardillo, G. Scandurra, G. Giusi, C. Ciofi, “A Two Channels DFT Spectrum Analyzer for Fluctuation Enhanced Sensing based on a PC Audio Board,” *Sensors*, vol. 21, Issue 12, n. 4307, Jun. 2021. DOI: 10.3390/s21134307.

[28] E. Cardillo, C. Li, and A. Caddemi, “Embedded heating, ventilation, and air conditioning control systems: from traditional technologies towards radar advanced sensing,” *Review of Scientific Instruments*, vol. 92, Issue 6, 061501, pp. 1-14, Jun. 2021. DOI: 10.1063/5.0044673.

[29] E. Cardillo, C. Li, and A. Caddemi, “Radar-based monitoring of the worker activities by exploiting range-Doppler and micro-Doppler signatures,” *IEEE International Workshop on Metrology for Industry 4.0 and IoT, Rome*, Italy, pp. 412-416, Jun. 2021. DOI: 10.1109/MetroInd4.0IoT51437.2021.9488464.

[30] E. Cardillo, and A. Caddemi, “Radar range-breathing separation for the automatic detection of humans in cluttered environments,” *IEEE Sensor Journal*, vol. 21, Issue 13, pp. 14043-14050, Jul. 2021. DOI: 10.1109/JSEN.2020.3024961.

[31] E. Cardillo, C. Li, and A. Caddemi, “Vital sign detection and radar self-motion cancellation through clutter identification,” *IEEE Transactions on Microwave Theory and Techniques*, vol. 69, Issue 3, pp. 1932-1942, March 2021. DOI: 10.1109/TMTT.2021.3049514.

[32] A. Caddemi, L. Boglione, E. Cardillo, G. Crupi, and Jason Roussos, “Cross-laboratory experimental validation of a tuner-less technique for the microwave noise parameters extraction,” *IEEE Transactions on Microwave Theory and Techniques*, vol. 69, Issue 3, pp. 1733-1739, March 2021. DOI: 10.1109/TMTT.2020.2999780.

[33] G. Scandurra, E. Cardillo, G. Giusi, C. Ciofi, E. Alonso, and R. Giannetti “Portable knee health monitoring system by impedance spectroscopy based on audio-board,” *Electronics*, vol. 10, Issue 4, 460, Feb. 2021. DOI: 10.3390/electronics10040460.

[34] E. Cardillo, G. Sapienza, C. Li, and A. Caddemi, “Head motion and eyes blinking detection: a mm-wave radar for assisting people with neurodegenerative disorders,” *European Microwave Conference*, Ultrecht, The Netherland, pp. 925-928, Jan. 2021. DOI: 10.23919/EuMC48046.2021.9338116.

[35] A. Caddemi, E. Cardillo, and G. Crupi, “Optical Sensitivity of HEMT-based Devices and Low-Noise Amplifiers”, *International Journal of Electronics*, vol. 108, Issue 3, pp. 361-377, 2021. DOI: 0.1080/00207217.2020.1793417.

[36] V. Đorđević, E. Cardillo, Z. Marinković, O. Pronić-Rančić, A. Caddemi, and V. Marković, “Wave approach to the noise modeling of the GaAs HEMT under optical illumination,” *Microwave Review*, vol. 26, Issue 2, pp. 19-25, Dec. 2020.

[37] E. Cardillo, and A. Caddemi, “A review on biomedical MIMO radars for vital sign detection and human localization,” *Electronics*, vol. 9, issue. 9, 1497, Sept. 2020. DOI: 10.3390/electronics9091497.

[38] E. Cardillo, C. Li, and A. Caddemi, “Empowering blind people mobility: a millimeter-wave radar cane,” *IEEE International Workshop on Metrology for Industry 4.0 and IoT,* Rome, Italy, pp. 213-217, Jun. 2020. DOI: 10.1109/MetroInd4.0IoT48571.2020.9138239.

[39] A. Caddemi, E. Cardillo, and G. Crupi, “Equivalent-circuit-based modeling of the scattering and noise parameters for multi-finger GaAs pHEMTs”, *International Journal of Numerical Modelling: Electronic Networks, Devices and Fields*, vol. 33, Issue 3, pp. 1-7, May. 2020. DOI: doi.org/10.1002/jnm.2587.

[40] A. Caddemi, E. Cardillo, S. Patanè, and C. Triolo, “Noise performance of an AlGaN/GaN MMIC low-noise amplifier under laser exposure,” *IET Microwaves, Antennas and Propagation*, Vol. 14, Issue 5, pp. 409-413, Apr. 2020. DOI: 10.1049/iet-map.2019.0776.

[41] L. Boglione, A. Caddemi, E. Cardillo, G. Crupi, and Jason Roussos, “Device noise parameters characterization: towards extraction automation,” 94th ARFTG Microwave Measurement Conference, San Antonio TX, United States, pp. 1-4, Jan. 2020. DOI: 10.1109/ARFTG47584.2020.9071780.

[42] A. Caddemi, E. Cardillo, G. Crupi, L. Boglione, and Jason Roussos, “Microwave linear characterization procedures of on-wafer scaled GaAs pHEMTs for low-noise applications,” *Electronics*, vol. 8, Issue 11, 1365, pp.1-13, Nov. 2019. DOI: 10.3390/electronics8111365.

[43] A. Caddemi and E. Cardillo, “Systematic experimental analysis of an optical sensing microwave low-noise amplifier,” *IET Microwaves, Antennas and propagation,* vol. 13, Issue 15, pp. 2678-2681, Dec. 2019. DOI: 10.1049/iet-map.2019.0163.

[44] E. Cardillo, and A. Caddemi, “Insight on electronic travel aids for visually impaired people: a review on the electromagnetic technology,” *Electronics*, vol. 8, Issue 11, 1281, pp. 1-12, Nov. 2019. DOI: doi.org/10.3390/electronics8111281.

[45] A. Caddemi, and E. Cardillo, “Automotive anti-abandon systems: a millimeter-wave radar sensor for the detection of child presence,” *IEEE International Conference on Advanced Technologies, Systems and Services in Telecommunications (TELSIKS)*, Niš, Serbia, pp. 94-97, Oct. 2019. DOI: 10.1109/TELSIKS46999.2019.9002193.

[46] A. Caddemi, and E. Cardillo, “A laser beam for boosting the power added efficiency of an X-band GaN MMIC amplifier,” *IEEE International Conference on Advanced Technologies, Systems and Services in Telecommunications (TELSIKS)*, Niš, Serbia, pp. 307-310, Oct. 2019. DOI: 10.1109/TELSIKS46999.2019.9002114.

[47] A. Caddemi, E. Cardillo, S. Patanè, and C. Triolo, “Light exposure effects on the dc kink of AlGaN/GaN HEMT's,” *Electronics*, vol. 8, Issue 6, pp. 9, Jun. 2019. DOI: 10.3390/electronics8060698.

[48] E. Cardillo, and A. Caddemi, “Feasibility study to preserve the health of an Industry 4.0 worker: a radar system for monitoring the sitting-time,” *IEEE International Workshop on Metrology for Industry 4.0 and IoT*, pp. 254-258, Naples, Italy, Jun. 2019. DOI: 10.1109/METROI4.2019.8792905.

[49] A. Caddemi and E. Cardillo, “On the microwave noise figure measurement: a virtual approach for mismatched devices,” *Measurement*, vol. 137, pp. 116-121, Apr. 2019. DOI: 10.1016/j.measurement.2019.01.055.

[50] A. Caddemi, E. Cardillo, S. Patanè, and C. Triolo, “An accurate experimental investigation of an optical sensing microwave amplifier,” *IEEE Sensors Journal*, vol. 18, Issue 22, pp. 9214 – 9221, Nov. 2018. DOI: 10.1109/JSEN.2018.2872078.

[51] A. Caddemi and E. Cardillo, “A low-cost smart microwave radar for short range measurements,” *Lecture Notes in Electrical Engineering*, vol. 512, pp. 41-47, Jul. 2018. DOI: 10.1007/978-3-319-93082-4_6.

[52] E. Cardillo and A. Caddemi, "A virtual test-bench for noise figure measurements of mismatched devices," *IEEE International Workshop on Metrology for Aerospace*, Rome, Italy, Jun. 2018. DOI: 10.1109/MetroAeroSpace.2018.8453624.

[53] A. Caddemi, E. Cardillo, and G. Crupi, "HEMT Sensitivity to optical radiation: distinguishing microwave noise aspect," *The 12th International Symposium on SiO2 Advanced Dielectrics and Related Devices*, pp. 52-53, Bari, Italy, Jun. 2018 (Keynote speaker).

[54] A. Caddemi, E. Cardillo, and G. Crupi, "Light activation of noise at microwave frequencies: a study on scaled GaAs HEMT's," *IET Circuits, Devices and Systems*, Vol. 12, Issue 3, pp. 242-248, May. 2018. DOI: 10.1049/iet-cds.2017.0290.

[55] E. Cardillo, V. Di Mattia, G. Manfredi, P. Russo, A. De Leo, A. Caddemi, and G. Cerri, "An electromagnetic sensor prototype to assist visually impaired and blind people in autonomous walking," *IEEE Sensors Journal*, Vol. 18, Issue 6, pp. 2568-2576, Mar. 2018. DOI: 10.1109/JSEN.2018.2795046.

[56] V. Đorđević, E. Cardillo, Z. Marinković, O. Pronić-Rančić, A. Caddemi, and V. Marković, "Wave approach to noise modeling of scaled on-wafer GaAs HEMTs," *IEEE International Conference on Advanced Technologies, Systems and Services in Telecommunications (TELSIKS)*, Niš, Serbia, Oct. 2017. DOI: 10.1109/TELSKS.2017.8246296.

[57] E. Cardillo and A. Caddemi, "A novel approach for crosstalk minimization in frequency modulated continuous wave radars," *Electronics Letters*, Vol. 53, Issue 20, pp. 1379-1381, Sept. 2017. DOI: 10.1049/el.2017.2800.

[58] A. Caddemi and E. Cardillo, "Optical control of gain amplifiers at microwave frequencies," *Computing and Electromagnetics International Workshop (CEM)*, Barcelona, Spain, pp. 51-52, Jun. 2017. DOI: 10.1109/CEM.2017.7991882.

[59] A. Caddemi and E. Cardillo, "A study on dynamic threshold for the crosstalk reduction in frequency-modulated radars," *Computing and Electromagnetics International Workshop (CEM)*, Barcelona, Spain, pp. 29-30, Jun. 2017. DOI: 10.1109/CEM.2017.7991871.

[60] A. Caddemi, E. Cardillo, G. Salvo, and S. Patanè, "Microwave effects of UV light exposure of a GaN HEMT: Measurements and model extraction," *Microelectronics Reliability*, Vol. 65, Issue 1, pp. 310-317, Oct. 2016. DOI: 10.1016/j.microrel.2016.08.020.

[61] A. Caddemi and E. Cardillo, "A straight-line equation for the notch tailoring of a microwave extra wideband filter," *Journal of Electromagnetic Waves and Applications*, Vol. 30, Issue 16, Nov. 2016. DOI: 10.1080/09205071.2016.1231090.

[62] V. Di Mattia, G. Manfredi, A. De Leo, P. Russo, L. Scalise, G. Cerri, A. Caddemi, and E. Cardillo "A feasibility study of a compact radar system for autonomous walking of blind people," *2016 IEEE 2nd International Forum on Research and Technologies for Society and Industry Leveraging a better tomorrow (RTSI)*, Bologna, Italy Sept. 2016, 3 p. DOI: 10.1109/RTSI.2016.7740599.

[63] A. Caddemi, E. Cardillo, and G. Crupi, "Comparative analysis of microwave low-noise amplifiers under laser illumination," *Microwave and Optical Technology Letters*, Vol. 58, No. 10, pp. 2437-2443, Oct. 2016. DOI: 10.1002/mop.30066.

[64] N. Boukortt, B. Hadri, S. Patanè, A. Caddemi, G. Crupi, and E. Cardillo, "Electrical characteristic of SOI TG n-FinFET," *Materials for Advanced Metallization (MAM)*, Leuven, Belgium, Mar. 2016.

[65] A. Caddemi, E. Cardillo, and G. Crupi, “Microwave noise parameter modeling of a GaAs HEMT under optical illumination,” *Microwave and Optical Technology Letters*, Vol. 58, No. 1, pp. 151-154, Jan. 2016. DOI: 10.1002/mop.29513.

[66] E. Cardillo and A. Caddemi, “Flexible CAD methodology for UWB filter with a tailored notch,” *IEEE Mediterranean Microwave Symposium (MMS)*, Lecce, Italy, Dec. 2015. DOI: 10.1109/MMS.2015.7375444.

[67] N. Boukortt, A. Caddemi, E. Cardillo, G. Crupi, B. Hadri, and S. Patanè, “Inverse modeling of an AlGaAs/GaAs HEMT from DC and microwave measurements illumination,” *IEEE International Conference on Advanced Technologies, Systems and Services in Telecommunications (TELSIKS)*, Niš, Serbia, Oct. 2015. DOI: 10.1109/TELSKS.2015.7357745.

[68] A. Caddemi, E. Cardillo, G. Crupi, and G. Salvo, “Performance analysis of a microwave low-noise amplifier under laser,” *IEEE International Conference on Advanced Technologies, Systems and Services in Telecommunications (TELSIKS)*, Niš, Serbia, Oct. 2015. DOI: 10.1109/TELSKS.2015.7357744

[69] A. Meazza, G. Sivverini, A. Colzani, M. Fumagalli, A. Traversa, and E. Cardillo, “A new methodology to estimate E-band pHemt linearity optimum load from low microwave frequency load pull measurements” *IEEE International Workshop on Integrated Nonlinear Microwave and Millimeter-wave Circuits (INMMiC)*, Taormina, Italy, 3 p., Oct. 2015. DOI: 10.1109/INMMIC.2015.7330353.

[70] A. Caddemi, E. Cardillo, and G. Tuccari, “Ultra Wide-Band HTS filter for new geodetic VLBI front-ends,” *European VLBI Group for Geodesy and Astronomy (EVGA),* Azores, Portugal, 3 p. May 2015.

[71] D. Aloisio, A. Caddemi, E. Cardillo, “Amplificatore di potenza ibrido compatto in banda X per radar marittimi di nuova generazione” - *VI Convegno SEA-MED*, Messina, Italy, pp. 204 – 208, Jul. 2014.

Books

[72] Emanuele Cardillo, Changzhi Li, "Portable Microwave and mmWave Radars for Contactless Healthcare," in Portable Microwave and mmWave Radars for Contactless Healthcare, River Publishers, 2025. ISBN: 9788770047524.

Editorials

[73] O. Borić-Lubecke, V. Manuel Lubecke, C. -T. Michael Wu, E. Cardillo and S. M. M. Islam, "Guest Editorial Latest Advances on Radar-Based Physiological Sensors and Their Applications," *IEEE Transactions on Microwave Theory and Techniques*, vol. 73, no. 8, pp. 4259-4260, Aug. 2025, doi: 10.1109/TMTT.2025.3592996.

[74] O. Borić-Lubecke, V. Manuel Lubecke, C. -T. Michael Wu, E. Cardillo and S. M. M. Islam, "TMTT CFP Special Issue on Latest Advances on Radar-Based Physiological Sensors and Their Applications," *IEEE Microwave Magazine*, vol. 25, no. 10, pp. 13-13, Oct. 2024, doi: 10.1109/MMM.2024.3451671.