Professional, Research, and Teaching Profile of Manuel Sierra Castañer

I. Executive Summary

This report details the extensive and multifaceted professional, research, and teaching career of Professor Manuel Sierra Castañer. Born in 1970 and educated entirely at the Universidad Politécnica de Madrid (UPM), where he obtained degrees in Telecommunication Engineering (1994) and a PhD in Telecommunication Engineering (2000), he has built a distinguished career culminating, to date, in his position as Full Professor since 2017 and Director (Dean) of the Higher Technical School of Telecommunication Engineers (ETSIT) at UPM since May 2021.[1]

His research profile focuses primarily on the design of planar antennas and, most notably, on antenna measurement systems and techniques, an area where he is an international reference.[3] He leads the prestigious Antenna Testing and Homologation Laboratory (LEHA-UPM), one of the few university laboratories with ISO 17025 accreditation, recognized for its high precision in characterizing antennas for critical applications such as European Space Agency (ESA) space missions, defense, and advanced communications.[6] His pioneering research in post-processing techniques, single-cut near-field to far-field (NF-FF) transformations, and phaseless measurements has earned him the highest recognitions from the main professional societies in his field: the grade of IEEE Fellow (2025) and the Distinguished Achievement Award (2024) from the Antenna Measurement Techniques Association (AMTA), being the first Spaniard to receive the latter distinction.[6]

As an educator, he has taught at all university levels for nearly three decades, supervising numerous doctoral theses and projects.[2] His commitment to specialized training is evident through his fundamental and continuous role in the European School of Antennas (ESoA) since its foundation, where he has coordinated and taught antenna measurement courses in multiple international locations.[3]

His leadership extends beyond academia, having held key management positions at UPM, including Director of Development Cooperation and Relations with Latin America for a decade (2010-2020).[1] He has held high-responsibility roles in international societies such as EurAAP (Vice-President, 2019-2021) and AMTA (European Liaison, 2015-2020).[1] Furthermore, he demonstrates a deep and sustained commitment to development cooperation, currently presiding over the EHAS Foundation (Hispano-American Health Foundation) and having previously chaired Ingeniería Sin Fronteras (Engineers Without Borders).[10]

Overall, Professor Sierra Castañer presents an exceptional profile that integrates internationally recognized cutting-edge research, strategic institutional leadership, dedication to high-level training, and a firm commitment to applying technology for social benefit.

II. Biographical and Educational Background

Manuel Sierra Castañer was born in Zaragoza, Spain, in 1970.[1] His higher education took place entirely at the Universidad Politécnica de Madrid (UPM), one of Spain's leading technical institutions. In 1994, he obtained the degree of Telecommunication Engineer from UPM.[1] This degree laid the foundation for his deep technical knowledge in the field of telecommunications.

After a two years period working as RF-engineer in Airtel Móvil, a telecommunications company in Spain, he undertook doctoral studies in 1997, culminating in 2000 with the award of a PhD in Telecommunication Engineering, also from UPM.[1] His doctoral work consolidated his research specialization, particularly in the area of antennas and associated systems.

This consistent and prolonged affiliation with UPM, from his undergraduate studies through his doctorate and subsequent academic and management career, suggests a deep integration and knowledge of the institution. Having completed all his higher education at UPM provided him with a solid foundation and familiarity with the university's culture, structure, and strategic objectives, which has likely been a relevant factor in his subsequent rise to significant leadership positions within it, such as the directorship of ETSIT.[1]

III. Professional and Academic Career

After completing his engineering studies, Manuel Sierra Castañer's professional career began with a foray into the industrial sector. Between 1995 and 1997, he worked for the mobile phone company Airtel (later Vodafone Spain).[3] This early experience in a leading telecommunications company provided him with a practical perspective on commercial applications and real-world technological challenges, valuable background before his full transition to academia.

In 1997, he began his academic career as an assistant professor at the Universidad Alfonso X "El Sabio".[3] A year later, in 1998, he joined the Universidad Politécnica de Madrid (UPM), where he has spent most of his career.[3] Within UPM, he progressed through the various stages of the academic ladder, successively holding positions as Research Assistant, Assistant Professor, and Associate Professor.[3] This progression demonstrates continuous consolidation and recognition within the academic structure of UPM.

The culminating milestone of his academic career came in September 2017, when he achieved the rank of Full Professor at UPM.[1] This is the highest academic level in the Spanish university system and represents formal recognition of his outstanding research, teaching, and contribution to knowledge. His professorship is attached to the Department of Signals, Systems, and Radiocommunications (SSR) of the prestigious Higher Technical School of Telecommunication Engineers (ETSIT) at UPM.[2]

The combination of initial industry experience (Airtel) with a long and successful academic career at UPM shapes a unique profile. Early exposure to the demands and applications of the private sector may have enriched his subsequent research and teaching approach, bringing a practical component to his theoretical work, an aspect particularly relevant in applied engineering disciplines like telecommunications. This is potentially reflected in his research lines oriented towards advanced communication technologies (5G, satellite) and his later collaborations with industry.[2]

IV. Leadership, Management, and Institutional Service

Professor Sierra Castañer's career is characterized by a notable commitment to university management and leadership in various organizations, both institutionally at UPM and in national and international professional networks and associations.

Leadership at ETSIT-UPM and Associated Roles:

Since May 2021, he has held the position of Director (Dean) of the Higher Technical School of Telecommunication Engineers (ETSIT) at UPM.[1] This position represents one of the highest responsibility roles within UPM, leading one of its most emblematic and prestigious engineering schools.

As Director of ETSIT, he automatically assumes other relevant positions: he is President of the Board of Trustees of Fundetel (Foundation for the Promotion of Development and Technological Innovation in Telecommunications), President of CODITEL (Conference of Directors of Telecommunications Engineering Schools), and President of the Ángel Barbero Foundation.[10] These roles expand his sphere of influence beyond ETSIT, connecting him with sector-specific foundations and national coordination bodies.

Institutional Positions at UPM:

Prior to his appointment as Director, he accumulated significant management experience within UPM. His work over a decade leading the university's cooperation policies stands out: he was Director of Development Cooperation (Vice-Rectorate for International Relations) from October 2010 to 2016, and subsequently Area Director for Latin America and Development Cooperation from 2016 to December

2020.[1] During this period, he also represented Spanish universities on the Development Cooperation Council of Spain starting in June 2014.[15]

At the departmental level, he was Secretary of the Department of Signals, Systems, and Radiocommunications (SSR) between 2007 and 2010.[10] He has also led the Radiation Group, a key research group within his department, since 2019.[2]

His participation in university governance includes having been an elected member of the UPM Governing Council between 2016 and 2021, and subsequently an ex-officio member as School Director.[10] Since 2023, he chairs the UPM Statutes and Regulations Commission, a crucial role in defining the university's internal regulations.[10] Additionally, he has been a member of the Research Center for Information Processing and Telecommunications (IPTC) at UPM since January 2016.[2]

Leadership in International Networks and Organizations:

His influence extends significantly into the international arena. He held the Vice-Presidency of the European Association on Antennas and Propagation (EurAAP), the main European association in his field, during the 2019-2021 term.[1] Previously, he was a member of the EurAAP Board of Directors from 2016 to 2021 [3] and acted as EurAAP Ambassador between June 2023 and May 2024.[10]

In the Antenna Measurement Techniques Association (AMTA), a world-leading organization in antenna measurement primarily based in the US, he served as the European Liaison on its Board of Directors between 2015 and late 2019 [6], facilitating the connection between AMTA and the European community.

Since 2021, he chairs the "Academic & Scientific Board" of the EELISA network (European Engineering Learning Innovation and Science Alliance), an important alliance of European universities focused on engineering education.[10]

In the field of development cooperation, he has chaired the EHAS Foundation (Hispano-American Health Link) since 2020, an entity of which UPM is a trustee and which applies ICT to improve health in isolated areas.[10] Previously, he was a member of the EHAS Board of Trustees (2005-2007) [13]. Also, he was President of the NGO Ingeniería Sin Fronteras – Asociación para el Desarrollo (Engineers Without Borders - Association for Development) (2003-2007).[10]

The diverse leadership roles held by Professor Sierra Castañer are not isolated compartments but appear interconnected and mutually reinforcing. His technical leadership, evidenced by directing the Radiation Group and the LEHA-UPM laboratory [2], underpins his credibility and recognition in professional societies like EurAAP and AMTA.[1] His experience in managing research and complex scientific infrastructures informs his ability to lead a school like ETSIT.[1] In turn, his long track record in directing UPM's cooperation efforts[1] logically connects with his presidency

of the EHAS Foundation.[10] This synergy between domains suggests a strategic approach to capitalizing on his experience and knowledge, amplifying his impact across different spheres of influence.

The consistent progression towards top leadership positions in multiple organizations (UPM, EurAAP, EHAS, CODITEL, EELISA) is noteworthy. Having reached the roles of Dean, President, or Vice-President in such diverse entities indicates a widely recognized leadership capacity among his peers, as well as an ability to effectively navigate complex organizational structures and achieve consensus.[1]

V. Research Profile: Experience, Contributions, and Infrastructure

Professor Sierra Castañer's research activity is extensive and focuses primarily on applied electromagnetism, with special emphasis on the design and, above all, the measurement of antennas.

A. Main Research Areas:

His research covers a broad spectrum within the field of antennas and propagation:

- **Antenna Design:** He has worked extensively on planar antennas [3], including specific designs such as reflectarrays[3], radial line slot arrays (RLSA) [3], slot array antennas [22], and transmit-arrays.[22] A significant part of his work has been oriented towards specific applications such as satellite communications in various bands (Ku, Ka, X) [3], next-generation mobile communication systems (5G/6G) [2], millimeter-wave (mm-Wave) antennas [2], and automotive antennas.[3]
- **Electromagnetism:** He possesses a solid foundation in general electromagnetism, which underpins his work in antennas and propagation.[22]
- **Antenna Measurement Systems and Techniques:** This area constitutes one of the fundamental and most recognized pillars of his research.[4] His contributions cover near-field measurements (spherical, cylindrical), development and improvement of algorithms for near-field to far-field transformation (NF-FF)[6], advanced techniques such as single-cut transformations [6], phaseless measurement methodologies [6], post-processing techniques to improve accuracy and extract additional information from measurements [6], diagnostic techniques to identify error sources [22], multi-probe measurement systems [24], the use of Software Defined Radio (SDR) in measurement systems [24], definition of intercomparison campaigns for antenna measurements laboratories, and uncertainty analysis in measurements.[26]
- **Related Technologies:** His work has also incorporated advanced technologies such as gap waveguide for millimeter-wave applications[3], additive manufacturing (3D printing) for RF components and antennas [3], Butler matrices

for antenna feed networks [3], phase shifters for beam control [19], and Terahertz (THz) technology for sensing applications.[2]

B. Relevant Research Projects and Funding:

He has demonstrated a sustained ability to lead and participate in research projects funded through competitive calls. He has been Principal Investigator (PI) for UPM in various European Union and national projects [11],and has directed numerous research projects throughout his career.[3] He has also led research and development contracts with companies and other entities.[11]

Among the specific projects mentioned in the documentation are initiatives focused on key technologies for the future of communications and sensing:

Table V.B.1: Summary of Key Research Projects

Project Acronym / Title	Role (PI/Participant)	Funding Entity / Program	Period (if available)	Main Focus Area	Source(s)
FUTURE-RADIO (Systems and radio technology for high-capacity terrestrial and space communications in a hyperconnected future)	PI (UPM)	State Plan (TEC2017-85529-C3-1-R) / MINECO AEI	2017 - 2020	Radio technologies for future communications (possibly 5G/6G, satellite)	[2]
TERASENSE (Terahertz Technology for Information Acquisition Applications using Electromagnetic Sensors)	Participant	(Not specified)	(Not specified)	THz technology for electromagnetic sensing	[2]

ENABLING-5G	PI (UPM)	State Plan (TEC2014-55735-C3-1-R) / MINECO AEI	2014-2017	Enabling technologies for 5G	2
5G FABLAB (RF Laboratory for manufacturing and prototyping of advanced 5G and 6G technologies)	Participant	Strategic Action Economy and Digital Society (AEESD) / MINETUR (TSI-100103-2015-15)	2016	RF infrastructure for 5G/6G prototyping	2
5G+ Lab (RF Laboratory for research and development in advanced 5G and 6G technologies)	Participant	UNICO R&D 6G 2023 / Ministry of Economic Affairs and Digital Transformation (TSI-064100-2023-11)	2023	RF infrastructure for R&D in 5G+/6G	2
Development of radiating systems technologies and reconfigurable RF subsystems for future mmWaves and 6G networks	Participant	Ministry of Economic Affairs and Digital Transformation (TSI-063000-2021-84)	2021	Reconfigurable radiating systems and RF for mmWaves/6G	2
Feasibility study for characterization of electromagnetic sensors at submillimeter	Participant	Ministry of Economic Affairs and Digital Transformation (TSI-	2021	Feasibility of sub-mm/THz sensor characterization	2

and terahertz frequencies		063000-2021-83)			
Submillimeter Wave Validation Standard ((sub)mm-VAST) Antenna	PI (at UPM) Together with EOS	ESA Contract No 4000133733/21/NL/CT	2021-2023	Submillimeter reflector antenna	2
Development of New Electrical Materials for Mobile Telefony Antennas (2G/3G/4G/5G)	PI at UPM	(Spain Government (CDTI- IDI-20210198)	2021-2023	New Materials for radomes	3
ARAICSANT (Architecture of Intelligent Aerial Repeaters for	Participant	(Contract with Company)	2017	Secure communications with UAVs	3
3DGuide: New Efficient production methods for 94 GHz (W-band) waveguide antennas	PI (at UPM) Together with CSEM and TTI-Norte	European Comission. Clean Sky 2. JTI-CS2-2019-CfP10-SYS-01-17	2020-2022	Millimeter wave slot antennas	3
Several (6) Contracts with Microwave Vision Group	PI	(Contract with company)	2013-2023	Antenna Measurement Techniques	2

This table illustrates Professor Sierra Castañer's ability to attract funding from various sources (Spanish ministries, implicit European programs, industrial contracts) and address highly current and technologically relevant research topics, from satellite communications to 5G/6G networks and THz waves. The evolution of the projects also reflects an adaptation to new technological frontiers.

C. Leadership of the LEHA-UPM Laboratory:

A crucial facet of his research profile is his leadership of the Antenna Testing and Homologation Laboratory (LEHA-UPM) at ETSIT.[6] He has been associated with the laboratory since 2000, initially responsible for the quality system and software development.[10] He served as the laboratory's Quality Director from 2010, the year it achieved the prestigious accreditation according to the ISO/IEC 17025 standard, and since 2023 he holds the position of Scientific Director.[10]

The ISO 17025 accreditation is a key differentiator, certifying the technical competence, impartiality, and consistent operation of the laboratory.[6] This makes LEHA-UPM one of the few university laboratories internationally with this recognition in the field of antenna measurement, which is essential for carrying out work for space agencies, the defense industry, and other sectors with high requirements for quality and reliability.

The laboratory is recognized for its ability to perform high-precision characterizations of antennas and systems for demanding applications, such as satellite communications, European Space Agency (ESA) space missions, defense applications, and advanced personal communication systems.[6] Having measured antennas for various European space missions underscores the capability of the laboratory and, by extension, of Professor Sierra Castañer's leadership, to handle complex and high-impact technological measurement campaigns.[10]

Although a competent researcher in antenna design, his most outstanding and frequently internationally recognized contributions lie in the field of *antenna measurement techniques*. The prestigious AMTA Distinguished Achievement Award explicitly mentions his pioneering work in measurements (post-processing, single-cut NF-FF, phaseless measurements) as the main merit.[6] His leadership in the EurAAP Measurements Working Group [3], his role as AMTA's European liaison [6], his extensive teaching work in ESoA focused on measurements [6], and the direction of the ISO 17025 accredited LEHA laboratory [6] reinforce the idea that measurement science is a central pillar of his career and reputation. The citation for his IEEE Fellow grade also highlights his contributions to measurement techniques.[10] His publications equally reflect this emphasis, with numerous works dedicated to advanced measurement methodologies.[19]

His research demonstrates a clear ability to connect the theoretical foundations of measurement techniques with their application to cutting-edge systems. He develops and improves fundamental algorithms (NF-FF transformations, phaseless techniques) [6], but also applies them to characterize complex antennas intended for technologically advanced fields such as 5G/6G [2], satellite communications [3], and THz systems.[2] Often, these works involve advanced manufacturing technologies

like 3D printing [3] and innovative components like gap waveguides.[3] Projects like FUTURE-RADIO, TERASENSE, or 5G FABLAB [2] and publications on specific antenna designs [3] evidence this bridge between the fundamental science of measurement and applied antenna engineering. The work of LEHA-UPM for ESA and satellite applications [6] is concrete proof of this capacity to address problems of high technological complexity.

VI. Scientific Output and Impact

Professor Sierra Castañer's scientific output is notable in terms of volume, impact, and quality, encompassing various forms of knowledge dissemination.

A. Publication Record:

- **Volume:** He is a prolific author, with figures varying slightly depending on the source and query date, but consistently indicating high productivity. More than 250 total scientific contributions (journals and conferences) are mentioned.[11] Earlier biographies cited over 40 articles in scientific journals.[3] He has authored more than 6 book chapters and several teaching or research books.[11] He is a co-author of books such as "Modern Automotive Antenna Measurements" [4] and chapters in works like "Post-processing Techniques in Antenna Measurement".[27] Profiles in databases like ORCID list 110 or 172 works [19], while the UPM scientific portal records 195 documents in Web of Science (WoS) and 234 in Scopus as of April 2025.[2] These discrepancies are common due to differences in coverage and update frequency of each database, but all point to a very substantial scientific output.
- **Impact and Metrics:** His work has received considerable attention from the research community, as reflected in bibliometric indicators. As of April 2025, he had accumulated 1700 citations in WoS (h-index of 20) and 1999 citations in Scopus (h-index of 21).[2] His Google Scholar profile exceeded 3000 citations with an h-index of 26 in March 2025.[10] These numbers indicate significant influence and recognition within his research field.
- **Quality:** A significant proportion of his publications are in high-impact journals, ranked in the top quartiles (Q1) or deciles (D1) of their respective areas.[2] He has published in highly prestigious journals in electrical engineering and telecommunications, such as: *IEEE Transactions on Antennas and Propagation (TAP)*, *IEEE Transactions on Microwave Theory and Techniques (TMTT)*, *IEEE Access*, *IET Microwaves, Antennas & Propagation*, *Sensors*, *IEEE Antennas and Wireless Propagation Letters (AWPL)*, and *IEEE Antennas and Propagation Magazine (AP-M)*.[3] Consistently publishing in these highly demanding forums is an indicator of the quality and relevance of his research.
- **Collaboration:** His work is characterized by a broad network of collaboration, both national and international. The lists of co-authors on platforms like Google

Scholar [22] and ORCID [19] are extensive and include renowned researchers from institutions worldwide, such as Lars J. Foged (Microwave Vision Group), Jiro Hirokawa and Makoto Ando (Tokyo Institute of Technology), Olav Breinbjerg (DTU), among others. This collaboration network facilitates the exchange of ideas and the development of larger-scale joint projects.

Table VI.A.1: Summary of Publication Metrics (according to sources and dates indicated)

Database	No. Documents	Citations	h-index	Report Date	Source(s)
WoS	195	1700	20	April 2025	[2]
Scopus	234	1999	21	April 2025	[2]
Google Scholar	>329	>3000	26	March 2025	[10]
Europe PMC	3	2	1	April 2025	[2]
Dialnet	24	1	1	April 2025	[2]

Note: Google Scholar figures are often higher due to broader coverage of document types.

B. Relevant Works and Recognitions:

Beyond quantitative metrics, several specific works have received important recognition, highlighting their impact:

- **IEEE APS Schelkunoff Best Paper Award (2007):** Awarded by the IEEE Antennas and Propagation Society for the article “Dual-Polarization Dual-Coverage Reflectarray for Space Applications,” published in *IEEE Transactions on Antennas and Propagation*.[3] This is one of the most prestigious awards in the field, recognizing excellence in the society's flagship journal.
- **IEICE Transactions on Communications Best Paper Award (2015):** Received for the article “Design of mm-Wave RLSAs with Lossy Waveguides by Slot Coupling Control Techniques”.[10] This recognition comes from one of Japan's

most important professional engineering societies.

- **Contribution to IEEE Standards:** He has actively participated in the development of international standards that define best practices in antenna measurement. He was a co-author and responsible for sections in the standard "IEEE Recommended Practice for Near-Field Antenna Measurements" (IEEE Std 1720-2012) [10] and participated in the 2021 revision of the "IEEE Recommended Practice for Antenna Measurements".[10] Contributing to these standards represents a direct and lasting impact on how industry and academia conduct measurements globally.

The impact of his scientific production, therefore, goes beyond citations and h-index. It includes prestigious awards for specific high-impact articles [3], fundamental contributions to industry standards [10], and the authorship of influential books and chapters.[4] While bibliometric metrics reflect the attention received by his work, these other elements demonstrate exceptional quality recognized by his peers and an influence that shapes the practices of the entire field. This multifaceted academic production indicates a deeper and more diverse impact than mere citations might suggest.

Table VI.B.1: Selected High-Impact Scientific Contributions

Contribution Type	Title / Identifier	Recognition / Key Significance	Year	Source(s)
Journal Article	"Dual-Polarization Dual-Coverage Reflectarray for Space Applications" (IEEE TAP)	IEEE APS Schelkunoff Best Paper Award	2007	[3]
Journal Article	"Design of mm-Wave RLSAs with Lossy Waveguides by Slot Coupling Control Techniques"	IEICE Transactions on Communications Best Paper Award	2015	[10]

Standard	IEEE Std 1720-2012 (Recommended Practice for Near-Field Antenna Measurements).	Co-author / Contributor to key standard in near-field measurements	2012	[10]
Standard	IEEE Std. 149-2021) Recommended Practice for Antenna Measurements (Revision 2021)	Participation in updating fundamental standard in antenna measurements	2021	[10]
Book	Modern Automotive Antenna Measurements (Artech House)	Co-author of specialized book in an emerging application area (automotive measurements)	2022	[4]
Book	"Post-processing Techniques in Antenna Measurement" (SciTech)	Co-author (Fists author) of the specialized book on advanced post-processing techniques in measurements	2024	[27]

VII. Teaching, Mentoring, and Educational Leadership

The teaching and training aspect for new researchers is an essential and highly developed component of Professor Sierra Castañer's career.

A. University Teaching:

His teaching experience is very broad, beginning in 1997 at the Universidad Alfonso X "El Sabio" and continuing uninterruptedly at UPM since 1998.[10] He has taught at practically all university educational levels (bachelor's, master's, doctorate) for nearly 28 years.[10] He has been a professor and coordinator for various courses throughout this time.[11]

Currently (according to CV dated March 2025), he teaches the following courses at UPM [10]:

- In the Bachelor's Degree in Telecommunication Technologies and Services Engineering (GITST): "Radiation and Propagation" and the elective course "Engineering in Development Cooperation". Teaching material co-developed for "Radiation and Propagation" is also used in other universities like UGR.[28]
- In the Master's Degree in Telecommunication Engineering (MUIT) and the Master's Degree in Mobile Communications (MUTSC): "Radiofrequency Measurement Laboratory".
- He also participates in two interuniversity master's programs with the Complutense University of Madrid (UCM): the Master's in Disaster Management (teaching "Technologies in Response and Recovery") and the Master's in Strategies and Technologies for Development (teaching "ICTs for Development").

Previously, he taught elective courses at ETSIT such as "Fundamentals of Development Cooperation" and "Telecommunication Engineering in Development" since 2000.[13] His teaching work has left a mark on his students; for example, Tamara Salmerón, top of her class and COIT/AEIT award winner, cites him as a key figure who inspired her vocation for antennas.[29]

B. Student Supervision and Mentoring:

He has supervised a considerable number of student research projects. The most updated figure indicates he has supervised 9 doctoral theses (one co-supervised) in the areas of antenna design and measurement, and is currently supervising a tenth thesis.[10] It is noteworthy that 7 of the 9 completed theses obtained the International Doctorate distinction.10

In addition to doctoral theses, he has supervised more than 25 Master's Final Projects (TFM) or equivalents and Bachelor's Final Projects (TFG). His students have received various awards at national and international conferences for the work carried out under his supervision.[10]

C. Participation in the European School of Antennas (ESoA):

His commitment to high-level specialized training in antennas is particularly evident through his intense and continuous involvement in the European School of Antennas (ESoA). He is a founding member of ESoA [6] and has been part of its Board of Directors representing UPM since 2006.[3]

His role in ESoA has been exceptionally active, especially in disseminating knowledge about antenna measurement. He has coordinated and taught the "Antenna Measurement" course numerous times: in Madrid (2005, 2006, 2008,

2012, 2016, and planned for 2025), in Paris (at Microwave Vision Industries facilities, 2010 and 2014), online (2021), and in Anzio, Italy (Microwave Vision Italia, 2023).[10]

Furthermore, he has coordinated shorter international versions of this course in locations outside Europe, such as Beijing (2014, 2016), Shanghai (2014, 2016), and Kuala Lumpur (2023).[6]

He has also academically coordinated other ESoA courses, such as "Combination of simulation and measurement in antenna design" (in Paris, Dassault Systèmes, 2017, 2020, 2024) and has been a professor for the course "Antenna measurement in millimeter and submillimeter waves" taught repeatedly at Aalto University in Espoo (Helsinki) from 2007 to 2025.[10]

This deep and sustained dedication to ESoA, going far beyond typical university teaching obligations, underscores his strong belief in the importance of specialized training and the exchange of advanced knowledge in his field. It positions him as a key international figure in training new generations of specialists in antenna measurement.

D. Pedagogical Recognition:

His teaching work has been formally recognized through the Spanish evaluation system. He holds 4 five-year teaching periods (quinquenios docentes) [2], which certify periods of five years of positively evaluated teaching. Additionally, he has undergone the "Docentia" teaching quality assessment three times (2010, 2017, and 2022), achieving the highest rating on all occasions, largely driven by positive student feedback in surveys.[10]

A notable aspect of his teaching profile is the active integration of his commitment to development cooperation into his educational offerings. Teaching specific courses like "Engineering in Development Cooperation" [10], "Fundamentals of Development Cooperation" [13], or "ICTs for Development" [10], as well as supervising projects in this area [13] and participating in committees for related master's programs[13], demonstrate a conscious effort to connect his experience in cooperation (leadership in UPM's Cooperation Directorate and EHAS) with his educational role. This creates a coherent narrative between his different activities and offers students a perspective on using engineering for social benefit.

VIII. Prestigious Awards and Honors

The excellence of Professor Sierra Castañer's career has been recognized with some of the most prestigious awards and honors nationally and internationally in his field.

- **AMTA Distinguished Achievement Award (2024):** This is the highest award given by the Antenna Measurement Techniques Association (AMTA). It was

granted in recognition of a career that exemplifies and promotes the association's goals, specifically highlighting his pioneering technical-scientific contributions to antenna measurement techniques (including post-processing, single-cut NF-FF transformations, and innovations in phaseless measurements), his technical leadership at the helm of the LEHA-UPM laboratory, his academic excellence in supervision and teaching, his educational contributions through ESoA, his international and industry collaborations, and his continued support for AMTA.[6] This is the first time this distinction has been awarded to a Spanish researcher.[7] The award ceremony was scheduled for October 2024 in Cincinnati, Ohio.[8]

- **IEEE Fellow (Grade effective in 2025):** He has been elevated to the grade of Fellow by the Institute of Electrical and Electronics Engineers (IEEE), proposed by the Antenna & Propagation Society (AP-S). This recognition is granted for his contributions to antenna measurement techniques and the design of planar antennas.[10] The IEEE Fellow grade is a highly selective distinction, limited annually to no more than 0.1% of voting members, and recognizes an outstanding record of achievements in IEEE fields of interest.[10]
- **AMTA Edmond S. Gillespie Fellow (2019):** Prior to receiving the Distinguished Achievement Award, he was recognized as a Fellow by AMTA in 2019 for his technical and scientific contributions to antenna measurement.[1] The Fellow grade is a prerequisite for eligibility for the Distinguished Achievement Award.
- **IEEE APS Schelkunoff Best Paper Award (2007):** Already mentioned in the scientific output section, this award recognizes the exceptional quality of his paper on dual-polarization, dual-coverage reflectarrays published in *IEEE Transactions on Antennas and Propagation*.[3]
- **IEICE Best Paper Award (2015):** Also detailed previously, this award from the Japanese society IEICE recognizes his work on the design of RLSA antennas in millimeter waves.[10]
- **National Research, Teaching, and Transfer Merits:** He holds formal recognition from the Spanish system through 4 research periods (sexenios), 4 teaching periods (quinquenios), and 1 transfer period (sexenio).[2] These merits confirm sustained productivity and impact, positively evaluated through rigorous national processes.

Receiving top honors from both AMTA (Distinguished Achievement Award, Fellow) and IEEE (Fellow, Schelkunoff Prize) is particularly significant. AMTA is the world's leading organization specifically for antenna measurement [6], while the IEEE AP-S is the main global society in the broader field of antennas and propagation. Achieving Fellow grade in both [1], receiving AMTA's highest award [6], and an award for one of IEEE's best papers [3] underscores his exceptional international status and influence, validated by the two most important professional communities in his area of

specialization. This dual validation by key field organizations is a powerful indicator of his impact and leadership.

Table VIII.1: Main Awards and Honors

Award / Honor	Awarding Body	Year Received / Effective	Significance / Note	Source(s)
Distinguished Achievement Award	AMTA (Antenna Measurement Techniques Assoc.)	2024	Highest honor from AMTA. First time for a Spaniard. Recognizes career contributions in antenna measurement.	6
Fellow	IEEE (Inst. of Electrical & Electronics Eng.)	2025	Highest grade of IEEE membership (<0.1% annually). For contributions to antenna measurement and planar antennas.	10
Edmond S. Gillespie Fellow	AMTA	2019	AMTA Fellow grade for technical and scientific contributions to antenna measurement.	1
Schelkunoff Prize Paper Award	IEEE Antennas and Propagation Society (AP-S)	2007	Award for the best paper published in IEEE Transactions on Antennas and Propagation.	3

Best Paper Award	IEICE (Inst. of Electronics, Info. & Comm. Eng.)	2015	Award for the best paper in IEICE Transactions on Communications.	[10]
Research Sexenios (4)	National Evaluation System (Spain)	(Last eval. 2021)	Recognition of 6-year periods of quality research activity.	[2]
Teaching Quinquenios (4)	National Evaluation System (Spain)	(Last eval. 2021)	Recognition of 5-year periods of quality teaching activity.	[2]
Transfer Sexenio (1)	National Evaluation System (Spain)	(Eval. 2019)	Recognition of a 6-year period of quality knowledge transfer activity.	[2]

IX. Professional Affiliations and International Service

Professor Sierra Castañer maintains very active and high-level participation in the main professional organizations in his field, as well as notable international projection through various activities.

- **IEEE (Institute of Electrical and Electronics Engineers):**
  - Elevated to the grade of **Fellow** (effective in 2025), the highest membership level.[10]
  - Previously held the grade of **Senior Member**.[1]
  - Has actively contributed to **IEEE standards development committees** related to antenna measurement.[6]
- **AMTA (Antenna Measurement Techniques Association):**
  - Recipient of the **Distinguished Achievement Award** in 2024, the association's highest honor.[6]
  - Recognized as a **Fellow** since 2019.[1]
  - Was a member of the **Board of Directors** of AMTA, serving as **European Liaison** between 2015 and 2020.[6] In this role, he actively supported the growth and international standing of AMTA, promoting its activities in

Europe.

- **EurAAP (European Association on Antennas and Propagation):**
  - Held the **Vice-Presidency** of EurAAP during the 2019-2021 term.[1]
  - Was a member of the **Board of Directors** from 2016 to 2021.[3]
  - Acted as **EurAAP Ambassador** between June 2023 and May 2024, giving invited talks and organizing special sessions at international conferences.[10]
  - Led the **EurAAP Working Group 5 "Measurements"** from April 2012 to April 2015.[3]
  - Was **EurAAP Regional Delegate** for Spain, Portugal, and Andorra between 2015 and 2017.[3]
- **Conference Leadership:**
  - Was the **General Chair** of the European Conference on Antennas & Propagation (EuCAP) 2022, held in Madrid.[3] EuCAP is EurAAP's flagship conference and one of the most important in the world in its field.
  - Previously, he had been **Vice-Chair** of the organizing committee for EuCAP in the 2010 and 2015 editions.[10]
  - Has been **Operational Officer of** European Microwave Week in 2018, Madrid, Spain.
- **International Projection and Research Stays:**
  - Undertook research stays during his PhD at prestigious international institutions: **Tokyo Institute of Technology (Tokyo Tech)**, Japan (September-December 1998) and **École Polytechnique Fédérale de Lausanne (EPFL)**, Switzerland (September-December 1999).[3]
  - Later, returned to **Tokyo Tech** as a **Visiting Professor** during the summers of 2012 and 2013, teaching a course on antenna measurement and researching in that topic, with an Erasmus+ grant.[3]
  - Has served as a member of doctoral thesis committees at numerous prestigious international universities (DTU, Aalborg, Tokyo Tech, Polytechnic University of Turin, Télécom Paris, Chalmers, University of Salerno).[10]

His involvement in the main professional societies (IEEE, AMTA, EurAAP) goes far beyond simple membership. It is characterized by active, sustained, and high-level service in leadership roles (board member, vice-president, liaison, working group leader, conference chair) over many years.[1] This demonstrates a significant commitment to the strategic direction of his professional field, fostering international collaboration (as evidenced by his role as AMTA-Europe liaison), and organizing key events for the scientific community (EuCAP). It reflects a dedication to the global scientific community that transcends his own research and institution.

X. Industry Collaboration and Knowledge Transfer

In addition to his outstanding academic and research career, Professor Sierra Castañer has shown an active interest in knowledge transfer and collaboration with the industrial sector.

- **Early Industrial Experience:** As mentioned, he worked at the telecommunications company Airtel between 1995 and 1997 [3], providing him with an initial view of the business world.
- **Founding of Spin-off Company:** In 2010, he was one of the founders of the company **Antenna Systems Solutions (ASYSOL) S.L.** [6], a spin-off likely emerging from the UPM research environment. He was a partner in the company until mid-2011, when he sold his shares.[10] ASYSOL has continued its activity in the sector, later appearing linked to technical sessions at conferences.[26] Creating a spin-off is a direct and significant way to transfer technology and knowledge generated at the university to the market.
- **Industrial Collaboration:**
  - He maintains an ongoing collaboration with **Microwave Vision Group (MVG)** since 2013.[6] MVG is one of the world's leading companies in antenna measurement systems.[22] This collaboration is also evidenced by joint publications, such as a book chapter co-authored with Lars Foged, scientific director of MVG.[27] A sustained collaboration with such a relevant industrial player suggests a bidirectional flow of ideas and potentially joint developments, connecting academic research with industrial needs and capabilities.
  - He has directed various **R&D contracts with companies and entities** [11], indicating regular interaction with the productive sector to solve specific technological problems.
  - He has actively fostered **university-industry partnerships**.[6]
  - The co-authorship of the book "Modern Automotive Antenna Measurements" [4] suggests a commitment to the specific needs of a booming industrial sector like automotive, particularly regarding the integration and measurement of antennas in vehicles.
- **Recognition of Transfer:** His work in this area has been formally recognized with the award of **one transfer sexenio**.[2] This merit, granted after rigorous evaluation in the Spanish system, validates the success of his knowledge and technology transfer activities to society and the productive sector.

There is clear evidence of Professor Sierra Castañer's efforts to translate academic research results into practical applications and commercial developments. The founding of ASYSOL [6] and sustained collaboration with industry leaders like MVG [6] are notable examples. Official validation through the transfer sexenio [2] confirms the relevance of these activities. This transfer component complements his academic

profile, demonstrating the applicability and impact of his work beyond the strictly university sphere.

XI. Commitment to Development Cooperation

A distinctive and deeply ingrained feature of Professor Sierra Castañer's career is his sustained commitment to international development cooperation, integrating his technical knowledge with actions of social impact.

- **Leadership Roles in Cooperation at UPM:**
  - For a decade, he led UPM's cooperation initiatives. He was **Director of Development Cooperation** from 2010 to 2016.[1]
  - Subsequently, he assumed the **Area Directorship for Latin America and Development Cooperation** from 2016 to December 2020.[1] These positions involved defining and managing UPM's international cooperation strategy, with a particular focus on Latin America.[16]
  - Within this framework, he came to represent Spanish universities on Spain's **Development Cooperation Council** since 2014 until 2016, and chaired the **Commission of Education for Development** of this Council since 2013 until 2015 .[15]
- **EHAS Foundation (Hispano-American Health Link):**
  - Currently, he is the **President** of the EHAS Foundation, a position he has held since 2020.[10]
  - His connection with EHAS is long-standing, having been a member of its **founding Board of Trustees** from 2005 to 2007.[13]
  - EHAS is a foundation, of which UPM is a trustee, that works to improve healthcare in rural and isolated areas of developing countries through the use of Information and Communication Technologies (ICT).[12] His presidency at EHAS represents a direct convergence between his field of knowledge (telecommunications/ICT) and his vocation for development.
- **Early Involvement in NGOs:**
  - His cooperation activities began in 1999, collaborating with the NGO **Ingeniería Sin Fronteras (ISF - Engineers Without Borders)**.[13]
  - He was particularly involved in awareness-raising and education for development actions within ISF.[13]
  - He eventually presided over **ISF-Spain (Association for Development)** between 2003 and 2007.[10]
- **Academic Integration of Cooperation:**
  - He is member of the UPM Cooperation Group **"Education for Development in ICT" (EDTIC)**.[13]
  - He has taught **specific courses** on development cooperation and telecommunication engineering applied to development at UPM.[10]
  - He has supervised **Final Degree Projects** in the field of cooperation.[13]

- He has served as a member of academic committees for UPM postgraduate programs focused on technology for human development and cooperation.[13]

His involvement in development cooperation is not a peripheral or occasional activity, but a constant throughout his career, deeply integrated into his professional profile. It has evolved from direct collaboration with NGOs [13] and presiding over one of them [10], to strategically leading the cooperation policies of a major technical university like UPM for ten years [1], and presiding over a specialized foundation like EHAS [10], which directly applies the technology of his field to development challenges. Integrating this theme into his teaching [10] and student project supervision [13] closes the loop, consolidating cooperation as a fundamental and coherent axis of his activity. This is not simply "community service," but a parallel professional line of action synergistic with his technical profile, where he uses his engineering background to generate positive social impact.

XII. Synthesis and Conclusion

The detailed analysis of Manuel Sierra Castañer's career reveals a professional profile of exceptional breadth and depth, characterized by excellence in multiple interconnected facets. His career, firmly rooted in the Universidad Politécnica de Madrid from his initial training to his current roles as Full Professor and Director of ETSIT, demonstrates a rare combination of technical leadership, institutional management, international research impact, and social commitment.

As a researcher, he has established himself as a world authority in the field of antennas and, most especially, in antenna measurement techniques and systems. His pioneering work in advanced characterization methodologies (NF-FF, single-cut, phaseless, post-processing) and his leadership of the LEHA-UPM laboratory, accredited under ISO 17025 and a benchmark for critical applications (ESA, defense), have earned him the highest recognitions from his peers globally, including the IEEE Fellow grade and the AMTA Distinguished Achievement Award. His prolific scientific output, published in high-impact forums and with a notable international collaboration network, is complemented by direct contributions to industry standards and the authorship of reference works.

As an educator, his impact extends from regular teaching at all university levels at UPM, where he is positively valued by his students, to high-level specialized training on an international scale through his fundamental and continuous role in the European School of Antennas (ESoA). His dedication to mentoring is reflected in the supervision of numerous doctoral theses and projects, boosting the careers of new generations of researchers.

In the realm of management and leadership, he has demonstrated a remarkable ability to successfully assume and exercise high-responsibility roles. His current position as Director of ETSIT-UPM adds to a previous decade directing the university's international cooperation policies and active participation in university governance. His leadership transcends UPM, having held executive positions in the main professional associations in his field (Vice-President of EurAAP, European Liaison of AMTA) and in European academic networks (Chair of the Academic & Scientific Board of EELISA).

Finally, his commitment to development cooperation is a constant throughout his career, evolving from active participation in NGOs to the presidency of the EHAS Foundation, applying his knowledge in telecommunications to address health challenges in disadvantaged regions. This social dimension is coherently integrated into his teaching and institutional activities.

In conclusion, Manuel Sierra Castañer represents a model of the complete 21st-century academic. His career exemplifies the synergy between frontier research, talent development, strategic institutional leadership, service to the international professional community, and a deep commitment to the social impact of technology. His trajectory, marked by continued excellence and recognition in multiple domains, positions him as a leading figure in telecommunication engineering, higher education, and technological cooperation for development.

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