CURRICULUM VITAE OF

DR KAM WENG TAM, PhD, CENG, FIET

PROFESSOR

DIRECTOR OF CENTRE FOR SCIENCE AND ENGINEERING PROMOTION OF UNIVERSITY OF MACAU

LIAISON FOR STEM COOPERATION BETWEEN UNIVERSITY OF MACAU AND CIÊNCIA VIVA - PORTUGAL

IEEE STEM AMBASSADOR

ASSOCIATE EDITOR OF IEEE JOURNAL OF RFID

2023

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1. BIOGRAPHY

Kam Weng TAM was born in Macao in 1969. He received the BSc degree in Electrical and Electronics Engineering from University of Macau in 1993, the joint PhD degree in Electrical and Electronics

Engineering from Technical University of Lisbon and University of Macau in 2000. From July 2000 to June 2005, he was an Assistant Professor, from July 2005 to August 2011, an Associate Professor of the Department of Electrical and Electronics Engineering, University of Macau. He was promoted to Professor in September 2011 and appointed as Interim Head of Department of Electrical and Computer Engineering and; Director of Government Relations and Industry Liaison of Faculty of Science and Technology, University of Macau in March and September 2012 respectively. From September 2013 to August 2014, he served as both Head of Department of Electrical and Computer Engineering and; Associate Dean (Research and Graduate Studies) of Faculty of Science and Technology. He is currently Associate Dean (Research and Graduate Studies) of Faculty of Science and Technology. From July 2000 to December 2001, he was appointed by University of Macau as the Director of Instituto de Engenharia de Sistemas e Computadores (INESC) – Macau. In 2001, under the support of University of Macau, he co-founded the first microelectronic design house namely – Chipidea Microelectrónica (Macau) where he also served as General Manager till 2003. In 2008, he helped his MSc students to establish the First UHF RFID company in Macao.

Professor Tam's research interests have been on microwave circuits, radio frequency identification (RFID), smart antennas, wireless sensors and monolithic microwave integrated circuits (MMICs). He has published 2 book chapters, 3 patents, over 50 journal papers, more than 170 conference papers and government reports. He graduated 5 PhD, 21 MSc and 36 Final Year Project students. Professor Tam received the Young Scholar Award of University of Macau in 2001, IEICE Communications Society Distinguished Contributions Award in 2009, Third Class Prize of Technological Invention Award of Macao Science and Technology Awards in 2012. In 2017, he and his students won the IEEE Mega Challenge Champion awarded by CRFID. Professor Tam's applied research of wireless communication has been well recognized and used by public in Macao. He has led more than 20 applied research projects which were mainly supported by Science and Technology Development Fund of Macao Government (FDCT), Bureau of Telecommunications Regulation of Macao

Government (DSRT) and Research Committee of University of Macau. Latest applied research results include TV service for Macao, UHF RFID library automation system of FDCT and; Wireless Broadband System "WiFi GO" of DSRT. These systems are now used by Macao citizen and visitors. In addition to his RF/microwave contributions in filter size miniaturization and reconfigurable/flexible filter design, using solid state ultraviolet detector, Professor Tam and his team have invented a pioneering wireless flame sensor enabling effective fire safety applications and an US patent is granted.

Professor Tam is an IEEE Senior member and affiliated with the Microwave Theory and Techniques Society (MTT-S) and; Antennas and Propagation Society (AP-S). Since 2015, he has been associated with IEEE Council on RFID (CRFID) and serves as Adcom member and; associate editor of IEEE Journal of RFID. He is now Vice-President of CRFID for conference since January 2018. In October 2014, he was elected as Fellow of The Institute of Engineering and Technology. He was founder of IEEE Macau AP/MTT Joint Chapter in 2010 and also serves as Chair in 2011 - 2012. Professor Tam was in the organizing committees of more than 20 international and local conferences. He is the reviewer of 3 IEEE and 6 peer-reviewed international journals. He has been technical consultant of DSRT for Macao's telecommunication policy since 2006 and was chief investigator of a serious 6-hour network outage incident affecting 0.5 million Macao residents' wireless communications including voice and data. From November 2013 to December 2014, because of the concession contract of the terrestrial subscription TV service signed prior to the transfer of sovereignty of Macao in 1999, the disputes between relevant concession operator and multiple public antenna companies have been long lasted for years. On June 6, 2013, based on the judicial ruling of Court of Second Instance, the public antenna companies must cease to retransmit unauthorized TV programs. Serving principal investigator, a project titled

"Research on TV Services in Macao" was invited by government for future Macao TV development in November 2013 and project budget granted was around 700K USD. This research is about the study of the future structure and management models of TV service market based upon Macao's current situation, and work on technical solutions, government regulations, laws, TV market system analysis, public opinion survey, etc. The result of this study led to a creation of Basic TV channels company and versatile TV broadcasting mechanism to serve all half million Macao residents since April 2014. In addition to his international professional services, he initiated the science and engineering promotion program titled "Wireless Technology Study Summer Camp" aiming at educating youth high school students through the focused wireless technology area in Macao in 2008. More than 100 students from 30 high schools were trained. Further, invited by government, he designed the first Talent Program for all local high schools targeting the elevation of Macao Youth development for internal award competitions like Intel Competition. Professor Tam has been the faculty in charge of 7 BSc and 3 MSc courses of the department, 1 General Education Course for non-engineering students. He designed and lectured the first microwave circuit course for undergraduate students as well as the first computational electromagnetic course for postgraduate students. In recent years, his final-year project and graduate students received more than 25 awards in local, national and international paper competitions. In particular, his final-year project students received the IEEE MTT-S Undergraduate Scholarships in 2002 and 2003 respectively, the first-ever Distinguished Prize Winner Award in the 2005 Challenge Cup, the most prestigious university student competition in China. His graduate students were awardees of Best Student Paper of

International Symposium on Antennas and Propagation in 2010; nominee of Graduate Fellowship of IEEE MTT-S in 2011. Currently, he has been supervising 1 post-Doc Fellow, 6 PhD, 6 Masters and 2 Final Year Project students.

2. EDUCATIONAL QUALIFICATION

- PhD in Engenharia Electrotécnia e de Computadores no Instituto Superior Técnico de Universidade Técnica de Lisboa (2002)
- PhD in Electrical and Electronics Engineering of University of Macau (2000)
- BSc in Electrical and Electronics Engineering of University of Macau (1993)

3. PROFESSIONAL EXPERIENCE

- Director of Centre for Science and Engineering Promotion of Faculty of Science and Technology of University of Macau (2018 - Present)
- Associate Dean (Research ad Graduate Studies) of Faculty of Science and Technology (September 2013 – 2020)
- Head of Department of Electrical and Computer Engineering (September 2013 – August 2014)
- Interim Head of Department of Electrical and Computer Engineering (September 2012 – August 2013)
- Director of Government Relations and Industry Liaison (March 2012 - August 2013)
- Professor of Department of Electrical and Computer Engineering, University of Macau (September 2011 – Present)
- Associate Professor of Department of Electrical and Electronics Engineering, University of Macau (July 2005 – August 2011)
- General Manager of Chipidea Microelectrónica (Macau) (2001 – 2003)
- Co-Founder of Chipidea Microelectrónica (Macau) (2001- 2003)
- Director of INESC-Macau (July 2000 – 2001)
- Assistant Professor of Department of Electrical and Electronics Engineering, University of Macau (July 2000 – June 2005)
- Visiting Research Assistant of Instituto de Telecomunicações in Lisbon, Portugal (1997-1999)
- Visiting Research Assistant of Microwave and Radar Group at Polytechnic University of Madrid, Spain (1996)

- Visiting Research Assistant of Mobile Communication Center at Instituto de Engenharia de Sistemas e Computadores (INESC) in Lisbon, Portugal (1993-1996)

4. HONORS AND AWARDS

- Honors and Awards
  1. IEEE STEM Ambassador (2021 - Present)
  2. Second Class Prize of Science and Technology Progress Award of Macao Science and Technology Awards of Macao SAR Government (2020)
  3. Third Class Prize of Science and Technology Progress Award of Macao Science and Technology Awards of Macao SAR Government (2020)
  4. Ted Williams Award of the Association for Automatic Identification and Mobility – AIM Global (2020)
  5. Champion of IEEE Mega Challenge 2017 by IEEE Council on RFID (2017)
  6. Visiting Professor Scholarship funded by European Union and Warsaw University of Technology (2015)
  7. Fellow of The Institute of Engineering and Technology (2014)
  8. Third Class Prize of Technological Invention Award of Macao Science and Technology Awards of Macao SAR Government (2012)
  9. IEICE Communications Society Distinguished Contributions Award (2009)
  10. University of Macau Young Scholar Award of (2001)
  11. More than 20 Student Awards Supervised in IEEE (2000 - Present)

5. EXAMPLE STEM TRAININGS AND ACTIVITIES CHAIRED

- University of Macau STEM 40 sponsored by Bank of China (Macau Branch) (2021 – 2022)
- IEEE STEM 4.0 (2021 - Present)
- 2020 Macao Smart Streetlight Challenge sponsored by CEM (2020)
- Collaboration of UM and Ciência Viva - Portugal (2019)
- Talent Program of Science and Technology Development Fund of Macao SAR Government (2015 - 2019)
- University of Macau Science and Engineering Summer Camp sponsored by FDCT (2008 - Present)
- More than 20 International STEM Conferences; Workshops and Competitions (2010 - Present)

6. UNIVERSITY TEACHING

- Accreditation (Practical Teaching, Laboratory, Safety, Industrial Cooperation Aspects) of 3 Engineering Programs of Faculty of Science and Technology (2010 - 2020) – **First Time Accreditation for Macao Engineering Programs**

- Department of Electrical and Computer Engineering (2011 – Present)

Course Proposal and Preparation of Undergraduate Courses

1. Fundamental Electronics
2. Applied Electronics
3. RF and Microwave Techniques for Wireless Systems
4. Microwave and Millimeter Wave System Design
5. Introduction to Wireless Sensing Network
6. Cellular Communication Network Design and Optimization
7. Introduction to Wireless Technology for Digital Game

- Design of Web Courses in UMMoodle
  1. ELEC321 – Applied Electronics III (2008 - Present)
  2. ELEC440 – Telecommunication Electronics (2008 - Present)
  3. IMSE006 – Active Network Theory (2008 - Present)
  4. IMSE008 – Advanced Topics in Simulation (2008 - Present)

- General Education Course (2013 – Present)
  1. Electricity and Life – This course is mainly for non-engineering students from Faculty of Business Administration, Faculty of Education and Faculty of Law and so forth, Prof Tam designed a vivid content for these students by movies related, hands-on experiments and; so forth. This course has already attracted more than 600 or so students yearly in the past 5 years being one of most favorite general education courses of university.

- 3+2 BSc and MSc Degrees Cooperation between University of Macau and University of Lisbon (2017 - Present)
  1. Promotor of joint BSc and MSc degree cooperation between two departments of Electrical and Computer Engineering in two universities, being 3-year undergraduate study in Macau and 2-year Master study in Lisbon.

7. SUPERVISION

- 10 PhD Graduates of Electrical and Electronics Engineering
- 24 MSc Graduates of Electrical and Electronics Engineering
- 36 BSc Graduates of Electrical and Electronics Engineering of University of Macau and Technical University of Lisbon

- PhD Graduates of Electrical and Electronics Engineering

1. Cheng Teng, “Theory and Design of Microwave Angular Displacement Sensors Based on Multi-Mode Cross-Shaped Resonator with Symmetric and Asymmetric Via” (Jun 2023)
2. Chi-Hou Chio, “Theory and Design of Highly Sensitive Microwave Angular-Displacement Sensors based on Transversal Signal Interference Principle” (Apr 2023)
3. Hongxu Zhu, “Highly Sensitive Angular Displacement Sensors Based on Microwave Impedance Transformers” (February 2021)
4. XiaoKun Bi “Design of Single- and Dual-Wideband Bandpass Filters with Reconfigurable Bandwidths Based on Cross-Shaped Resonator” (January 2019)
5. Wenhai Zhang, “Theory of Complementary Source and Its Application to Circularly Polarized Antenna Design with Advanced Beam and Polarization Functionalities” (2018, now Associate Professor of Soochow University)
6. Li Yang, “Analysis and Design of Microstrip-to-Microstrip Vertical Transition and Their Multilayered Bandpass Filter Applications” (December 2017)
7. Zheng Shi, “Analysis of HARQ-IR over Time Correlated Fading Channels” (June 2017, now Assistant Professor at Jinan University in Zhuhai)
8. Pedro Cheong, “Theory and Demonstration of Non-Linear Communication System with Harmonic Diversity” (November 2014, now Assistant Professor of University of Macau)
9. Choi Wai Wa, “Microwave Miniaturization Techniques and Their Applications to QuasiElliptic Bandpass Filters” (July 2008, now Associate Professor of University of Macau)
10. Ting Sio Weng, “Multiple-bandgap Defected Ground Structure and Its Applications for Highly Selective Microwave Bandpass Filters” (July 2008, now Section Head of Administration of University of Macau)

- MSc Graduates of Electrical and Electronics Engineering

1. Angel
2. Xin Chen, “Moving Object Detection Based on Passive Radar for Smart City” (2017)
3. Wenyang Li, “A Chipless RFID Tag Based on Cross-Shaped Resonator for Simultaneous Identification and Sensing” (2017)
4. Mengyang Ni, “Design of Bandpass Filter Based on Cross-Shaped Slotline Resonators” (2017)

5. Likang Wang, “Design of Ultra-wideband Bandpass Filter with Reconfigurable Bandwidth and Notch Using Microstrip and Slotline Structure” (2017)
6. Yan Zhang, “Dressed Superconducting Cavity System with Microwave Resonators” (2016)
7. Teng Cheng, “Design of Microstrip Cross-Shaped Bandpass Filters with Reconfigurable Bandwidth and Notch for Wideband and Ultra-Wideband Applications” (2016)
8. Daniel Pedro Osorio de Sousa Piscarreta, “Study of Ultra Wideband Modulated Gaussian Pulse and Its Application to Nondestructive and Contactless Characterization of Materials” (January 2014)
9. Ou Binkai, “Design of a mobile RFID Reader System with Closely Placed Array and Its Application to Segway Vehicle” (August 2013)
10. Yang Li, “Design of Integrated Differential Dual-Band Bandpass Filter-Antenna Module” (February 2013), Co-supervisor
11. Leong Chon Chio, “Tunable Defected Ground Structure and Its Applications to Simultaneous Reconfigurable Communication and Partial Discharge Detection” (March 2011)
12. Lv Tingshan, “A Microstrip Square-Loop Dual-Mode Balun-Bandpass Filter with Simultaneous Size Reduction and Spurious Response Suppression” (October 2009)
13. Hong Sio Ian, “The Microstrip Parallel Coupled-line Bandpass Filter with Simultaneous Dual-Band Response and Bandwidth Enhancement” (August 2009)
14. Chiang Ka Hing, “Assessment of Mobile Communication Safety and Its Compact Wideband Microstrip Antenna Design” (November 2007, co-founder of the first UHF RFID Design House in Macau)
15. Chiang Chun Pong, “Design of Quasi-Elliptic Microstrip Bandpass Filter using Terminated Anti-Parallel Coupled-line Structure” (November 2007, co-founder of the first UHF RFID Design House in Macau)
16. Ho Ka Meng, “Study of Defected Ground Structure and Its Application for Microstrip Bandpass Filter Design” (July 2006)
17. Fok Si Weng, “Low Loss Microstrip Dual-Mode Bandpass Filter Design with Simultaneous Size Reduction and Spurious Response Suppression” (July 2005)
18. Pedro Cheong, “Miniaturized Parallel Coupled-Line Bandpass Filter with Spurious Response Suppression” (July 2005)

19. Pang Hoi Kai, “Compact Stepped Impedance Resonator Interdigital Bandpass Filters with Wide Rejection Band” (July 2005)
20. Sun Kin Keong, “Design of Miniaturized Microstrip Dual-Mode Bandpass Filter with Spurious Response Suppression” (October 2004)
21. Chiang Kuok Vai, “Noise Analysis of Microwave Lumped and Transversal Filter” (June 2004)
22. Chang Ka Fai, “Design of Miniaturized Cross-Coupled Microstrip Filter with Spurious Response Suppression” (June 2004, Design Engineer in TSMC in Taiwan)

- BSc Graduates of Electrical and Electronics Engineering of University of Macau and Technical University of Lisbon

1. Chan Yuk-Kuen and Chu-Hong Lam, “UHF RFID-Assisted Identification and Positioning for the Quadrotor Slung-Payload” (2022/2023)
2. Lai Chi Kit and Chio Chi-Seng, “Microwave Displacement Sensors for IOT Applications”
3. Kuan Wai-Son “Wireless Imaging of Underground Cable Using UWB” (2017/2018)
4. Wan Kei-Chon and Lei Kin-Wang, “Indoor Positioning and Occupancy Rate Estimation Based on FM Radio and Zigbee Communication for Smart Facilities Control” (2016/2017)
5. Li Changhe, “Non-Destructive Measurement of Underground Cable of Smart Grid Using Ultra-Wide Band (UWB) Radar” (2015/2016)
6. Xiao Ying Hao and Lei Tin Seng, “An Indirect Controlled Phased Source Phased Array with Phase Error Correction” (2009/2010)
7. Lei Hou Fai and Lai Kuong In, “An Energy Harvesting Wireless Sensor Network for Forest Fire Detection” (2009/2010)
8. Qui Yao Quan and Lam Sam Ngai, “RFID Based Multi-sensing Platform for Partial Discharge Detection” (2009/2010)
9. Daniel Piscarreta, “Non-Destructive Material Characterization Using Compact Microstrip Resonator Probe” (2004/2005)
10. Chan Chio Nang, Su Guang Yi and Tam Un Leng, “Design and Analysis of 2.4 GHz Rectenna for Wireless Power Transmission” (2004/2005)
11. Anibal Gomes da Silva, “WLAN Based Interactive Tourist Information Communicator” at Technical University of Lisbon (2004/2005)

12. Fok Si Weng and Hong Sio Ian, “Intelligent Remote Metering System” (2002/2003)
13. Lam Ching Yee, Lei Ka In and Wong Kun Hou, “Artificial Neural Network Based Face Recognition System” (2002/2003)
14. Pang Hoi Kai, “Wireless In-Shoe Multisensory Monitoring System – MONIMED” (2002/2003)
15. Chiang Chun Pong and Lei Ka Pou, “Wireless Multimedia Field (WMF) Management System” (2001/2002)
16. Chan Weng Chi, “Intelligent Vechicle Access Control System Using Bluetooth” (2001/2002)
17. Sin Sai Weng and Lai Keng Chong, “Linearization Technique of CMOS MMIC Power Amplifier” (2000/2001)
18. Sun Kin Keong and Ho Ka Wa, “Internet Over DECT (i-DECT)” (2000/2001)
19. Osvaldino Domingos Agues, “Acoustic Tube Modeling Of Vocal Tract” (2000/2001)
20. Chiang Kuok Vai, Chiang Ka Hing and Lam Kin Fei, “MMICs Active Inductor” (1999/2000)
21. Ho Ka Meng, Ip Chi Kan and Lou Ka Man, “Vessel Monitoring using GPS/GSM/GIS” (1999/2000)
22. Pedro Cheong and Chang Ka Fai, “Linear Predictive Modeling for Speech Recognition” (1999/2000)

8. RESEARCH INTEREST

- RF/Microwave Circuits
- Antennas
- Radio Frequency Identification
- RF/Microwave Sensors

9. MAJOR SERVICE EXAMPLES AT UNIVERSITY

- Transition of Zhuhai UM Science & Technology Research Institute (ZUMRI)

  In view of Commission of Audit of the Macao Special Administrative Region comments on establishment of ZUMRI in Zhuhai in 2015, Dr Tam was in charge of this research institute legal and operation transition from independent organization in Zhuhai, China to internal entity of University of Macau. This transition included the optimization of management of National Science Foundation of China projects; temporary office installation; research institute relocation to Hengqin Island and; account operation followed both legal regime and so forth. This work was supervised

by Vice-Rector (Research) of University of Macau and was highly praised by an appreciation letter of university in 2018.

- Campus Relocation

  Dr Tam was in charge of Faculty of Science and Technology (FST) relocation to new campus in 2013 and 2014. The relocation of 63 laboratories of FST including relevant wet and dry laboratories from Department of Civil & Environmental Engineering, Department of Computer & Information Science, Department of Electrical & Computer Engineering, Department of Electromechanical Engineering, Department of Mathematics and Institute of Applied Physics & Materials Engineering to the new campus was completed in the summer of 2014. Its execution lasted from April to August 2014. Together with newly established laboratories in FST building E11 in new campus, there are totally 67 laboratories with an increase of area from 5,390m^2 to 9,831m^2. Following the mass relocation schedule of the University, 99 offices of FST were moved to the new campus from 8th to 10th July 2014.

- More than 20 Committee Panel Chairs and Members including Assistant Professor/Associate Professor/Full Professor Promotion

10. MAJOR COMMUNITY SERVICE EXAMPLES

- Science and Engineering Promotion Cooperation between University of Macau and Science and Development Fund of Macao SAR Government (FDCT)

  In order to strengthen the youth science and engineering promotion in Macao, a Memorandum Of Understanding (MOU) between FDCT and UM has been established in July 2015. Jointly optimizing the usage of UM new campus resources such as laboratories, space, equipment, professional guidance and so forth, followed this MOU, FST sets out to establish the Centre for Science and Engineering Promotion supporting initiatives of Open Science and Technology Promotion Collaboration Network; Open Access to Centre for Science and Engineering Promotion; Workshops and Seminars for High School Students; Workshops and Seminars for High School Teachers; Youth Minilabs and; Young Research Explorers' Club. In early of 2018, the above centre construction was completed under Prof Tam supervision and was in use in late of 2018.

- Engineering Service

  1. Consultant of 2G/3G/4G/5G Radiation Safety of Bureau of Telecommunications Regulation of Macao SAR Government (2006 – Present)
  2. Consultant of RFID Library Automation of The Science and Technology Development Fund of Macao SAR Government (2009 - Present)
  3. Consultant of 2G/3G Radiation Safety of Institute for Tourism Studies of Macao SAR Government (2007)
  4. Consultant of Smart Energy Use of Office for the Development of the Energy Sector of Macao SAR Government (2007)

- High School Outreach
  1. Founder of Talent Program of Macau Science and Development Fund (2013 - Present)
  2. Faculty in charge of Wireless Technology Study Summer Camp (2008 - Present)
  3. Invited speaker of Science Seminar of Communication Museum (2010)
  4. Founder of Wireless Technology Study Summer Camp (2008)
- High School Committee Work
  1. Council Member of The Workers' Children High School (2010 - Present)
  2. Honorary Adviser of the Alumni Association of The Workers' Children High School (2001 - Present)

11. INTERNATIONAL PROFESSIONAL SERVICES

- Committee Work
  1. Director of AIM-Asia (2020 - Present)
  2. Vice-President of IEEE CRFID (2018 - 2020)
  3. Independent Expert Reviewer of Horizon 2020 Program of European Commission (2016 - present)
  4. Member of AdCom of IEEE CRFID (2015 - Present)
  5. Chair of Academic Panel of IEEE CRFID (2016 - Present)
  6. Founder of World's Second Chapter of IEEE CRFID (2016)
  7. Chair of IEEE Macau AP/MTT Joint Chapter (2010 - 2012)
  8. Founder of IEEE Macau AP/MTT Joint Chapter (2010)
  9. Invited Writer of Editorial Board of IEEE Microwave Magazine (2010 – Present)
  10. Member of International Steering Committee of International Symposium on Antennas and Propagation of Communication Society of Institute of Electronics, Information and Communication Engineers (IEICE) (2009 - Present)
  11. Vice Chair of IEEE Macau CAS/COM Chapter (2005 - 2008)
  12. Interim Secretary for the formation of the IEEE Macau Section (2003-2004)
- Conference Organization
  1. General Chair of IEEE RFID-TA 2018 organized by CRFID
  2. Technical Program Co-Chair of IEEE RFID-TA 2017 organized by CRFID
  3. Technical Program Co-Chair of IEEE RFID-TA 2016 organized by CRFID
  4. Invited Speaker of IEEE MIKON 2016
  5. Session Chair of IEEE MIKON 2016
  6. Member of Technical Program Review Committee of 2016 IEEE MTT-S International Conference on Numerical Electromagnetic and Multiphysics Modeling and Optimization for RF, Microwave and Terahertz Applications (NEMO2016)
  7. Chair of Sharing Session of E-Sign Seminar in January 25, 2016 organized by Macao Post 2016

8. Co-Chair of International Workshop on Emerging Technologies towards Heterogeneous Wireless Networks and 5G Communications (2014)
9. Member of Organization Committee of International Conference on System Science and Engineering (2011)
10. Member of International Advisory Committee of International Symposium on Antennas and Propagation (2011)
11. General Chair of International Symposium on Antennas and Propagation (2010)
12. Chair of Macau RFID Forum (2010)
13. Chair of IEEE AP-S Chapter Chair Meeting (2010)
14. Vice Chairman of Cross Strait Tri-Regional Radio Science and Wireless Technology Conference (2009)
15. Chair of IEICE Technical Meeting on Antennas and Propagation (2009)
16. Chair of Wireless Communication Seminar Series (2006-2009)
17. Chair of Macau Session of Asia-Pacific Microwave Conference (2008)
18. Vice Chair of Asia-Pacific Microwave Conference (2008)
19. Co-Chair of Technical Program of IEEE MTT-S International Microwave Workshop Series on Art of Miniaturizing RF and Microwave Passive Components (2008)
20. Chair of The IEEE (HK/Macau) AP/MTT Postgraduate Conference (2008)
21. Chair of RFIC Seminar Series (2008)
22. General Secretary of Cross Strait Tri-Regional Radio Science and Wireless Technology Conference (2006)
23. Member of Technical Program Committee of TENCON (2006)
24. Member of the Advisory Committee of Cross Strait Tri-Regional Radio Science and Wireless Technology Conference (2005)
25. Registration Committee Chair of The ISCM International Conference on Chinese Medicine & Pre-Conference Symposium on Evidence-Based Chinese Medicine" (2005)
26. Member of Technical Committee of National Conference of Microwave Technologies (2005)
27. Finance Committee Chair of IEEJ International Analog VLSI Workshop (2004)
28. Technical Program Co-Chair of The IEEE (HK/Macau) AP/MTT Postgraduate Conference (2004)
29. MTT Judge of The IEEE HK AP/MTT/LEOS Postgraduate Conference (2003)

- Journal Editorial and Reviewer
  1. Associate Editor of IEEE Journal of RFID
  2. IEEE Transactions on Microwave Theory and Techniques
  3. IEEE Microwave and Wireless Components Letters
  4. IEEE Antennas and Wireless Propagation Letters
  5. IET Microwaves, Antennas & Propagation
  6. IEICE Electronics Express

7. Journal of Electromagnetic Waves and Applications
8. Radio Science
9. Hong Kong Institute of Engineers Transactions
10. Chinese Medicine

- Cooperation Agreement
  1. Promoter of 3+2 degree cooperation agreement between University of Macau and University of Lisbon (2016 - 2018)
  2. Promoter of cooperation agreement between Celfinet – Consultoria em Telecomunica ções, Lda and University of Macau (2008)
  3. Promoter of cooperation agreement between City University of Hong Kong and University of Macau (2007)
  4. Promoter of cooperation agreement between Chipidea Microelectronics and University of Macau (2001)
- Research Fund Reviewer
  1. The Research Grants Council of Hong Kong (2005 - 2008)

12. RESEARCH PROJECTS

- International Project
  1. European Union approved project "Mobile and Ubiquitous Digital Video" (Co-PI, USD1,163,700), (2006)
  2. Portuguese government funded project "POTSAT-Portuguese Satellite Transmitter" (Technical Team Member), (1998)
  3. Portuguese government funded project "Lisbon International Airport ILS System Radio Interference Testing" (Technical Team Member), (1998)
  4. European Union funded project "MONICAP – Continuous Fishing Satellite Monitoring System" (Technical Team Member), (1993 - 1996)
  5. Portuguese government funded project "XTran-GPS based vehicle tracking system" (Technical Team Member), (1993 - 1996)
  6. Portuguese government funded project "Inmarsat-M" (Technical Team Member), (1995)
- Local Project
  1. The Science and Technology Development Fund funded project "Research on the Detection of Heavy Metal Content of Traditional Chinese Medicine Decoction Based on Microwave Sensing and Its Industrialization" (PI, USD 99,388), (May 2022- May 2024)
  2. The Science and Technology Development Fund funded project "Research on Multi-Mode Resonance (MMR) Structure for Advanced UHF RFID Tag and Reader and; Its Industrial Applications" (PI, USD 93,301), (Aug 2021- Aug 2023)

3. Laxcen Technology Inc. funding project “Research and Development on UHF RFID Wireless Sensing System for Motion Monitoring” (PI, 62,117) (July 2020 – December 2021)
4. Macao Post of Macao SAR Government funded project “Research Project on Non-Ionizing Radiation Safety in Macao” (PI, USD 61,962) (August 2020 – January 2021)
5. University of Macau Research Committee funded project “Research on Tunable Notch and Bandwidth Multi-mode Resonator based Integrated Flexible Decoupled Filter-Antenna for 5G Mobile Communication” (PI, USD) (Jan 2020 – Dec 2022).
6. The Science and Technology Development Fund funded project “Simulation of Electromagnetic Effects on Human using Parallel Finite Element Method” (PI, USD46,588) (April 2017 – April 2019)
7. Jesic Ltd funded project “UHF RFID Liquid Sensor Using Multi-layer Antenna Structure and Its Applications to Elderly Care” (PI, USD17,950), (2016)
8. Omniwaves Ltd funded project “Research on GPS satellite Antenna” (PI, USD12,300), (2016)
9. Bureau of Telecommunication Regulation funded project “Research on 4G LTE Mobile Communications in Macao” (PI, USD49,230), (2014)
10. University of Macau Research Committee funded project “Novel Radiofrequency Identification System based on Nonlinear Harmonic Communication Technique” (PI, USD 134,025), (Jan 2017 – Dec 2019)
11. Bureau of Telecommunication Regulation funded project “Study on Service-based Pricing Model for Underground Telecommunication Ducts in Macao” (PI, USD19,103), (2014)
12. The Science and Technology Development Fund funded project “Terahertz Wireless Front-end System using ZnTe-based Thin Film Structures for Multi-Gb/s Communications” (PI, USD293,590), (2014 –2017)
13. Bureau of Telecommunication Regulation funded project “Research on TV Services in Macao” (PI, USD702,615), (Nov. 2013 – Dec. 2014)
14. Bureau of Telecommunication Regulation funded project “Study of Underground Telecommunication Duct Detection in Macao” (PI, USD59,936), (Nov. 2013 – Sept. 2014)
15. Bureau of Telecommunication Regulation funded project “Radiation Safety Evaluation for Indoor/Outdoor 2G/3G Mobile Base Stations & Public Wi-Fi Hotspots in Macao” (PI, USD 61,496) (September 2012 – July 2013)
16. The Science and Technology Development Fund funded project “Miniaturized and Multi-Functional Switched Beam Antenna Arrays for UHF RFID” (PI, USD416,120), (2012 –2014)
17. The Science and Technology Development Fund funded project “Wireless partial discharge detectors for on-line monitoring of high voltage facilities” (PI, USD55,680), (Jan. 2012 – Dec. 2012)
18. Bureau of Telecommunication Regulation funded project “Investigation assistance to Bureau of Telecommunications Regulation (DSRT) for CTM’s network interruption on 6 February 2012” (PI, USD12,000), (Jan. 2012 – Dec. 2012)

19. Bureau of Telecommunication Regulation funded project “Study of the needs of mobile communications operating on Light Rapid Transit (LRT) system in Macao” (PI, USD62,000), (2011 – 2012)
20. The Science and Technology Development Fund funded project “Wireless Partial Discharge Detectors for On-line Monitoring of High Voltage Facilities” (PI, USD55,657) (September 2011 – July 2013)
21. Bureau of Telecommunication Regulation funded project “Study of mobile communication service billing in Macao” (PI, USD62,000), (2011 – 2012)
22. The Science and Technology Development Fund funded project “ZnMgS based UV flame detectors for fire-safety applications” (PI, USD488,210), (2009 - 2011)
23. The Science and Technology Development Fund funded project “Multi-layer multi-conductor transmission line and its applications to differential microwave circuits” (Co-PI, USD151,882), (2010 - 2011)
24. Bureau of Telecommunication Regulation funded project “Study of RFID systems – standards, applications & measurements in Macao” (PI, USD62,000), (2009 – 2010)
25. The Science and Technology Development Fund funded project “RFID automatic circulation system for FDCT library” (PI, USD62,000), (2009 – 2010)
26. The Science and Technology Development Fund funded project “Wireless technology study summer camp” (PI, USD19,612), (2010)
27. University of Macau Research Committee funded project “Miniaturization techniques for microwave tunable circuits” (Co-PI, USD20,880), 2009
28. Bureau of Telecommunication Regulation funded project “Study of wireless local area network (WLAN) usage and security in Macao” (PI, USD61,337), (2008 – 2009)
29. The Science and Technology Development Fund funded project “Wireless technology study summer camp” (PI, USD23,366), (2009)
30. University of Macau Research Committee funded project “Electromagnetic exposure research on WLAN net-wireless” (PI, USD47,975), (2008)
31. University of Macau Research Committee funded project “Design of a miniaturized broadband RFID passive tag antenna” (PI, USD58,416), (2008)
32. Bureau of Telecommunication Regulation funded project “Radiation safety study for 2G & 3G mobile telecommunication base stations in Macao” (PI, USD58,100), (2007 – 2008)
33. Bureau of Telecommunication Regulation funded project “Indoor radiation evaluation and safety standard study for mobile telecommunication handset” (PI, USD28,710), (2007 – 2008)
34. The Science and Technology Development Fund funded project “An integrated phased antenna array using indirect controllable phase technique” (PI, USD435,000), (2007 – 2008)
35. The Science and Technology Development Fund funded project “Wireless technology study summer camp” (PI, USD13,460), (2008)

36. University of Macau Research Committee funded project "Electromagnetic radiation monitoring of mobile communication systems" (PI, USD61,647), (2007)
37. Bureau of Telecommunication Regulation funded project "Study on electromagnetic radiation safety of mobile telecommunications base stations in Macao" (PI, USD61,337), (2006 - 2007)
38. Office for the Development of the Energy Sector funded project "Study of taxi utilization in Macao petrol stations" (PI, USD46,329), (2006 - 2007)
39. University of Macau Research Committee funded project "Design and implementation of miniaturized RF/MW bandpass filter with spurious response suppression using defected ground structure" (PI, USD44,645), (2006)
40. University of Macau Research Committee funded project "RF microelectronics for SOC – Elemental analysis and design of the reusable RF transceiver platform" (PI, USD59,410), (2005)
41. Macau government funded project "Macau Blood Bank Management System - SIBAS" (Technical Team Member), (1997 – 2002)
42. Macau government funded project "P. O. Box Automation" (Technical Team Member), (1997 – 2002)
43. Macau government funded project "The Study on the Introduction of Electronic Data Interchange in Macau" (Technical Team Member), (1997)

13. SCIENTIFIC AND APPLIED RESEARCH ACHIEVEMENT EXAMPLES

- Research on TV Services in Macao

  From November 2013 to December 2014, because of the concession contract of the terrestrial subscription TV service signed prior to the transfer of sovereignty of Macao in 1999, the disputes between relevant concession operator and multiple public antenna companies have been long lasted for years. On June 6, 2013, based on the judicial ruling of Court of Second Instance, the public antenna companies must cease to retransmit unauthorized TV programs. Serving principal investigator, a project titled "Research on TV Services in Macao" was invited by government for future Macao TV development in November 2013 and project budget granted was around 700K USD. This research is about the study of the future structure and management models of TV service market based upon Macao's current situation, and work on technical solutions, government regulations, laws, TV market system analysis, public opinion survey, etc. The result of this study led to a creation of Basic TV channels company and versatile TV broadcasting mechanism to serve all half million Macao residents since April 2014.

- UHF RFID Library Automation Technology

  Invited by The Science and Technology Development Fund of Macao SAR Government in 2009, Dr. Tam applied his "Know-How" of RF/Microwave and Smart Antenna to develop the first UHF RFID library automation system in Macao. This system includes not only relevant innovative radio frequency components but also interactive software interface in Chinese and Portuguese. It is now

in public use since 2010. This system was later commercialized by his MSc students' spin-off company that is specialized in RFID.

- WiFi Electromagnetic Exposure Safety and Security

  Invited by Bureau of Telecommunication Regulation of Macao SAR Government in 2008, Dr. Tam applied his "Know-How" of electromagnetic exposure safety and wireless network security to conduct the first comprehensive study and measurement of WiFi network radiation safety and information security in Macao, leading to the establishment of the first public Wireless Broadband System namely "WiFi GO" of Bureau of Telecommunication Regulation of Macao Government in Macao. Since 2010, this system has been providing Macao citizens and visitors with free wireless Internet access (IEEE 802.11 b/g) at selected locations.

14. PUBLICATIONS

- Patent

  [1] US10839305B2 - Multi-band coupling for superconducting qubits based on coplanar cross-shape resonators.

  [2] US 8592935 - MgS solar-blind UV radiation detector.

  [3] CN 106033830 – A wideband vertical transition device.

  [4] CN 106129587 - One kind of low-frequency resonance point of introducing a multi-band monopole antenna cavity-backed.

- Book Chapter

  [1] W. H. Zhang, K. W. Tam and W. J. Lu, "Novel dual-band cavity-backed antenna design and its application to simultaneous RFID communications and partial discharge monitoring of high voltage facilities," *Electromagnetic Nondestructive Evaluation (XX)*, IOS Press, 2017.

  [2] K. W. Tam and P. Vitor, "Vehicle alarm positioning based upon pager/UHF communications and GPS systems," *Part V chapter contribution in Advances in Information Technologies: The business Challenge*, IOS Press, 1997.

- Popular Science Newsletter

  [1] K. W. Tam, W. W. Choi, S. K. Ho, S. W. Ting, P. Cheong and C. C. Leong, *Wireless Technology Study Summer Camp 2010*.

  [2] K. W. Tam, W. W. Choi, S. K. Ho, P. Cheong and C. K. Wong, *Wireless Technology Study Summer Camp 2009*.

  [3] K. W. Tam, W. W. Choi, S. K. Ho, S. W. Ting, P. Cheong, C. K. Wong, *Wireless Technology Study Summer Camp 2008*.

- Popular Science Webpage and Facebook

  [1] K. W. Tam, W. W. Choi, S. K. Ho, S. W. Ting, P. Cheong, C. K. Wong and C. C. Leong, *Wireless Technology Study Summer Camp*.

- Government Report

[1] K. W. Tam et al., *Research on TV Services in Macao*, 2015.

[2] K. W. Tam et al., *Study on Underground Telecommunication Duct Detection in Macao*, 2014.

[3] K. W. Tam, *Study of RFID Systems – Standards, Regulations & Applications in Macao*, 2009.

[4] K. W. Tam, *Measurement Report of RFID Systems – Radiation Safety Assessment & Electromagnetic Interference Immunity Testing to Second & Third Generation Mobile Phones*, 2009.

[5] K. W. Tam, *Study of Wireless Local Area Network (WLAN) Usage and Security in Macao – Information Research on the Standards and Security Issues of WLAN*, 2008.

[6] K. W. Tam, *Study of Wireless Local Area Network (WLAN) Usage and Security in Macao – Wardriving and Radiation Assessment of WLAN*, 2008.

[7] K. W. Tam, *Report on Radiation Measurements at Institute for Tourism Studies*, 2007.

[8] K. W. Tam, *Indoor Radiation Evaluation and Safety Standard Study for Mobile Telecommunication Handset – Safety Standard Study for Telecommunication Handset*, 2007.

[9] K. W. Tam, *Indoor Radiation Evaluation and Safety Standard Study for Mobile Telecommunication Handset – Indoor Radiation Evaluation*, 2007.

[10] K. W. Tam, *Radiation Safety Study for 2G & 3G Mobile Telecommunication Base Stations in Macao*, 2007.

[11] K. W. Tam, *Study of Taxi Utilization in Macao Petrol Stations*, 2006.

[12] K. W. Tam, *Study on Electromagnetic Radiation Safety of Mobile Telecommunications Base Stations in Macao – Quick Guide of Geographical Information System Platform*, 2006.

[13] K. W. Tam, *Study on Electromagnetic Radiation Safety of Mobile Telecommunications Base Stations in Macao – Localized Measurements*, 2006.

[14] K. W. Tam, *Study on Electromagnetic Radiation Safety of Mobile Telecommunications Base Stations in Macao – Information Research on Standard, Recommendation and Guideline*, 2006.

- Journal Papers (Recent 10 Papers with more than 200 Publications in Google Scholar)

[1] B. Liu, S.-W. Wong, K.-W. Tam, X. Zhang, and Y. Li, "Multifunctional Orbital Angular Momentum Generator With High-Gain Low-Profile Broadband and Programmable Characteristics," *IEEE Transactions on Antennas and Propagation*, vol. 70, no. 2, pp. 1068–1076, Feb. 2022, doi: 10.1109/TAP.2021.3111214.

[2] C.-H. Chio, K.-W. Tam, and R. Gómez-García, "Filtering Angular Displacement Sensor Based on Transversal Section With Parallel-Coupled-Line Path and U-Shaped Coupled Slotline," *IEEE Sensors J.*, vol. 22, no. 2, pp. 1218–1226, Jan. 2022, doi: 10.1109/JSEN.2021.3133452.

[3] C. Teng, C. H. Chio, K. W. Tam, and P. Y. Lau, "An Angular Displacement Microwave Sensor With 360 °Dynamic Range Using Multi-Mode Resonator," *IEEE Sensors J.*, vol. 21, no. 3, pp. 2899–2907, Feb. 2021, doi: 10.1109/JSEN.2020.3027831.

[4] H.-X. Zhu, P. Cheong, K.-W. Tam, S.-K. Ho, and W.-W. Choi, “An Angular Displacement Sensor Based on Microstrip Wideband Impedance Transformer With Quasi-Chebyshev Frequency Response,” *IEEE Sensors J.*, vol. 20, no. 8, pp. 4200–4206, Apr. 2020, doi: 10.1109/JSEN.2019.2963451.

[5] H.-X. Zhu, P. Cheong, S.-K. Ho, K.-W. Tam, and W.-W. Choi, “Realization of Extremely High and Low Impedance Transforming Ratios Using Cross-Shaped Impedance Transformer,” *IEEE Transactions on Circuits and Systems II: Express Briefs*, vol. 67, no. 7, pp. 1189–1193, Jul. 2020, doi: 10.1109/TCSII.2019.2935499.

[6] C.-H. Chio, R. Gómez-García, L. Yang, K.-W. Tam, W.-W. Choi, and S.-K. Ho, “Directional-coupler-based microwave sensors for differential angular-displacement measurement,” *Int. J. RF Microw. Comput.-Aided Eng.*, vol. n/a, no. n/a, p. e22338, Jun. 2020, doi: 10.1002/mmce.22338.

[7] C.-H. Chio, R. Gómez-García, L. Yang, K.-W. Tam, W.-W. Choi, and S.-K. Ho, “An angular-displacement microwave sensor using an unequal-length-bi-path transversal filtering section,” *IEEE Sensors J.*, vol. 20, no. 2, pp. 715–722, Jan. 2020, doi: 10.1109/JSEN.2019.2943640.

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[9] W. Zhang, Q. Xue, W. Lu, and K. W. Tam, “Theory of complementary source and its application to compact circularly polarized tilted beam antenna,” *Nanjing Xinxi Gongcheng Daxue Xuebao: Journal of Nanjing University of Information Science & Technology*, vol. 11, no. 1, pp. 13–16, 2019, doi: http://dx.doi.org/10.13878/j.enki.jnuist.2019.01.003.

[10] L. Yang *et al.*, “Novel Multilayered Ultra-Broadband Bandpass Filters on High-Impedance Slotline Resonators,” *IEEE Transactions on Microwave Theory and Techniques*, vol. 67, no. 1, pp. 129–139, Jan. 2019, doi: 10.1109/TMTT.2018.2873330.