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For contributions to traceability in precision high-frequency electromagnetic measurements

Nick M. Ridler received his B.Sc. degree in physics from King's College, University of London, United Kingdom, in 1981. He is currently a principal research scientist at the United Kingdom National Physical Laboratory (NPL) in the Division of Time, Quantum, and Electromagnetics. From 1981 to 1988 he worked for GEC Ltd, London, as an electronics engineer involved in the development of high-frequency measurement techniques to support new product developments. From 1988 to 1997 he worked at the Royal Signals and Radar Establishment (RSRE), Malvern, as a senior engineer involved in the development of national measurement standards for radio-frequency and microwave applications. He has published more than 100 journal and conference papers in the area of high-frequency electromagnetic measurement and related topics. He has twice been the recipient of the IEE Measurement Prize (1995 and 2005) and holds six Best Paper Awards from international conferences. He is the immediate past president of the Automatic RF Techniques Group (ARFTG); emeritus chair of the IEEE MTT-11 "Microwave Measurements" Technical Committee; chair of IEEE standard Working Group P1785 "Waveguide for Millimeter and Submillimeter Wavelengths"; vice-chair of IEEE Standard Working Group P287 "Precision Coaxial Connectors at RF, Microwave, and Millimeter-wave Frequencies"; vice-chair of the MTT-S Standards Coordinating Committee; and a member of the IEEE MTT-4 "Terahertz Technology and Applications" Technical Committee.

Among Mr. Ridler's significant accomplishments in the field of high-frequency precision measurements are the establishment of the United Kingdom's primary national standard impedance measurement systems at RF, microwave, and millimeter-wave frequencies [1]. He was responsible for introducing the world's first national standard capability to provide measurement traceability at frequencies above 110 GHz [2]. He also developed strategies to enable the evaluation and expression of uncertainty in complex-valued measurands (S-parameters, etc.) [3], [4], in line with international recommendations from the International Organization for Standardization (ISO). Finally, he has taken a lead role in the development of international (IEEE) document standards—in 2008, he founded the IEEE Standard Working Group P1785: "Waveguides for Millimeter and Submillimeter Wavelengths" and has chaired this group up to the present day. This has resulted in the release of one IEEE standard [5] with more due in the coming few years.

References

[1] N. M. Ridler and A. G. Morgan, "New primary reference standard for vector network analyser calibration at millimetre wavelengths in coaxial line," *Meas. Sci. Technol.*, vol. 19, no. 6, p. 065103, 2008.

[2] R. G. Clarke, R. D. Pollard, N. M. Ridler, M. J. Salter, and A. Wilson, "Traceability to national standards for s-parameter measurements of waveguide devices from 110 GHz to 170 GHz," in *Proc. 73rd ARFTG Microwave Measurement Conf.*, Boston, MA, June 2009, pp. 127–136.

[3] N. M. Ridler and M. J. Salter, "An approach to the treatment of uncertainty in complex S-parameter measurements," *Metrologia*, vol. 39, no. 3, pp. 295–302, June 2002.

[4] N. M. Ridler and M. J. Salter, "A generalised approach to the propagation of uncertainty in complex S-parameter measurements," in *Proc. 64th ARFTG Microwave Measurement Conf.*, Orlando, FL, Dec. 2004, pp. 1–14.

[5] *IEEE Standard for Rectangular Metallic Waveguides and Their Interfaces for Frequencies of 110 GHz and Above—Part 1: Frequency Bands and Waveguide Dimensions*, IEEE Standard 1785.1, 2012.