ANAMET - A progress report

by

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ABSTRACT

This paper presents a review of activities for ANAMET - NPL's Automatic Network Analyser Technology club. The accompanying text is based on reproductions of the viewfoils used during the presentation.

Viewfoil No 1: ANAMET - What is it?

! An interest group for organisations and people involved in RF and microwave measurements (mostly on ANAs)

! A rapid exchange of state-of-the-art technology information via; meetings, newsletters, technical publications etc

! Approximately 50 member organisations (mostly UK, but elsewhere too)

! Launched in 1993 and coordinated by NPL

Viewfoil No 2: ANAMET - Core activities

! **Meetings** - two per year, at a variety of venues (members' premises)

! **Newsletters** - two per year. Currently at issue 6.

! **Technical Notes** (called ANALyse) - continuous publication. Currently printing number 16.

! **Measurement comparisons** - as decided by the membership. Currently about to start exercise number 5.
Viewfoil No 3: ANAMET - Breakdown of membership

By region:

70% of membership in the UK

20% of membership in the rest of Europe

10% of membership outside Europe

By activity:

45% principally calibration and testing facilities

55% others (manufacturing industry, R and D, academe etc)

Viewfoil No 4: ANAMET - Some current areas of investigation

! Coaxial connectors
   - dial gauge evaluations
   - effects of discontinuities
   - specification tolerances

! Coax-to-waveguide adaptors
   - characterisation techniques
   - measurement comparison exercise

! Measurement errors and uncertainties for ANAs

! Data analysis techniques - averaging and scatter assessments

Viewfoil No 5: ANAMET - measurement comparisons (to date)

! VSWR for type-N terminations (50 ohm), 1 GHz to 18 GHz

! Complex s-parameters for GPC-3.5 attenuators, 1 GHz to 26.5 GHz

! Complex reflection and transmission coefficients in X-band waveguide, 8.2 GHz to 12.4 GHz

! Complex reflection coefficient for type-N terminations (50 ohm), 100 kHz to 1 GHz

! Complex s-parameters for waveguide-to-coax adaptors, X-band to type N, 8.2 GHz to 12.4 GHz
Viewfoil No 6: ANAMET - Members meetings

First: University of Leeds, November 1993
Second: Hewlett-Packard, Winnersh, May 1994
Third: NPL, at DRA Malvern, October 1994
Fourth: EEV Ltd, Chelmsford, April 1995
Fifth: Malvern Winter Gardens, November 1995
Sixth: SESC, DRA Aquila, Bromley, 24 May 1996

Viewfoil No 7: ANAlyse Technical Notes

1 Using the memory to extract the ripple on an HP8510C
2 Using the memory to extract the ripple on an HP8510C. Part 2 ! Why it works
3 A study of the electrical compatibility of mechanically mateable coaxial lines
4 Definitions of some of the terms in common use with ANAs
5 Time domain measurements using a reflection analyzer
6 "A comedy of errors!" or "That's not what I mean by `mean'"
7 Making a good estimate of a measurand
8 Assessing the quality of an estimated value
9 The uncertainty of a single measurement!
10 Services Electrical Standards Centre ANAMET-941 observations
11 The type N measurement comparison exercise ! Some additional measured results using different equipment.
12 Characteristic impedance of (X-band) waveguide - what it is?
13 New words for new ideas - A look at some of the terminology recommended for expressing measurement uncertainty
14 How much variation should we expect from coaxial connector dial gauge measurements?

15 Making a good estimate of a vector quantity

Viewfoil No 8: ANAMET - Publications

N M Ridler and G D Jones, "ANAMET comparison of type-N VSWR measurements", *20th ARMMS Conf Digest*, University of Nottingham, March 1994.


Viewfoil No 9: ANAMET - Summary

ANAMET has rapidly become the information exchange mechanism for people and organisations involved in network measurements at RF, microwave and millimetre-wave frequencies.

Sustained growth of both membership and scope of activities have been of increasing benefit to its members.

Measurement comparisons have improved the quality, and understanding, of participants' measurements and benefitted generally the measurements community.

ANAMET will continue to provide support to the interests and activities of its membership and will respond to subsequent changes of interest, for example, due to advancements in technology.