Abstract

The "Bespoke" power sensor calibration system was developed in response to shortcomings of existing procedures. A combination of the right people and equipment (Trident Program) resulted in its inception. The trend is always towards continual improvement in the author's place of work.

This project offered the ideal opportunity of applying a "rigorous" approach to analysing its performance against past records, other systems and higher escalon laboratories.

The field of R.F measurements is a specialist area so explanations of underlying theory, components used in systems and the operation of R.F power measuring test equipment are given.

In R.F. measurements miss-match errors contribute in a random fashion to total uncertainty of measurement. These were not kept to a minimum in existing systems.

Results in spreadsheet form from two available systems are compiled for comparison with those from the "Bespoke" system. Analysis reveals that thermocouple sensors used with the "Bespoke" system provide the least miss-match error.

It is then decided that these are best for standards and they are used to compare the results of past calibrations and those at other laboratories. Significant deviations are noted in the latest trials at higher frequencies. This has lead to the standard being suspected. It had been changed in the last 3 years. A strategy has been devised to over come this.

An I.E.E paper by a renowned expert in the field is reviewed to evaluate the "Power splitter method". The method is already in use commercially. There are considerations of isolation between standard and test sensors to be taken into account. This establishes a need for a more "in depth" study when time permits.

The amount of isolation between test and standard sensor in the "Bespoke" method is indisputable and remains the main reason for its continued use.

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