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Traditional and New Applications in EPI**

Microwave Link Planning and Improved Availability and Reliability

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The ever increasing take up of fibre optic telecommunication links has seen an increasing reluctance of customers accepting services over microwave radio. This reluctance seemingly stems from a misconstrued view that microwave radio unreliable: prone to adverse weather effects (particularly rain) and interference. The increasing use unlicensed ISM radio links, particularly by the Information Technology (IT) fraternity, has added to the mistrust of microwave radio, irrespective of whether they make use of licenced spectrum or not.

Microwave radio remains and will continue to remain an integral part of telecommunications service provisioning; consequently, the correct understanding, appreciation, design and engineering of microwave radio links is of vital importance.

This paper looks at the design and engineering of fit for purpose microwave radio links, taking into consideration radio frequency selection, antenna sizing, diversity and modulation schemes, with an intension of optimizing availability and reliability of the link, for support of both mission critical and IT services.

Diversity schemes refer to methods that may be employed by microwave radio link planners to improve the reliability and availability of and in some cases counter the effects of fading. The most frequently used schemes include:

- frequency diversity, and
- space diversity.

The use of adaptive modulation and the trade-off between bandwidth and availability will also be discussed.

Finally, although strictly speaking, equipment redundancy (hot standby) is not a diversity scheme, since it does not result in diversity gain, the merits of equipment redundancy, with respect to increasing reliability and availability, will also be presented.