



PRODUCT DATA

Distributed Antenna System (DAS)

RED-M'S DISTRIBUTED ANTENNA SYSTEMS (DAS) PROVIDE SEAMLESS IN-BUILDING CONNECTIVITY FOR VOICE AND DATA APPLICATIONS OVER CELLULAR AND PMR



USING A MOBILE PHONE IN TODAY'S OFFICE BUILDINGS CAN MEAN MOVING AROUND UNTIL YOU GET A GOOD SIGNAL. EVEN PMR SYSTEMS USED BY SECURITY AND MAINTENANCE STAFF CAN SUFFER FROM A LACK OF IN-BUILDING COVERAGE. A DISTRIBUTED ANTENNA SYSTEM (DAS) FROM RED-M WILL ENABLE IN-BUILDING CONNECTIVITY TO CELLULAR AND PMR NETWORKS, PROVIDING HIGH QUALITY AND SEAMLESS VOICE AND DATA COMMUNICATION.

FREEDOM THROUGH MOBILITY

Red-M's Distributed Antenna System (DAS) provides in-building wireless coverage which can be used to support voice and data applications over radio technologies, such as PMR, cellular (2G & 3G), TETRA and WiMAX for single or multiple service providers.

Red-M's DAS provides excellent coverage compared with either the installation of a single indoor antenna or relying on building penetration from a mobile network's macro cell.

DAS provides the benefit of good quality coverage where you want it with no loss of signal, allowing the seamless use of voice and data applications throughout the building.

DESIGN APPROACH

Any DAS solution needs to be designed to meet the following needs:

- **Coverage** to define exactly where wireless access is needed

- **Capacity** to plan performance around the users and application needs
- **Security** to prevent risks and problems
- **Quality** of design to meet the required levels of service

Red-M has a long and successful track record in the design and implementation of DAS.

The design approach can use a Passive Feeder System, an Active Distribution System, or a combination of both:

- **Passive Feeder Systems** used for smaller developments - where the cell or repeater output is split between antennas
- **Active Distribution Systems** used for larger developments - where the cell or repeater output is delivered via fibre optic or active twisted pair distribution from a Master Unit to a number of active antenna units

Where coverage is required for either multiple cellular operators or multiple

technologies, then an Active Antenna System is generally used.

END TO END SOLUTION

Red-M provides a complete end to end solution that can be adapted for specific requirements. The full suite of Red-M's services cover:

- **RF Site Survey** to determine the characteristics of the site
- **Existing Coverage Survey** to determine the precise coverage provided by each network operator in the development
- **Detailed RF Design Document** to show the locations of antennas and the coverage provided
- **Complete Equipment Specification** for the cellular and/or PMR system
- **Complete Build Specification** with CAD drawings
- **On-Site Installation** and commissioning of the system
- **Ongoing maintenance** of the system to a tailored Service Level Agreement

SURVEY

Red-M's survey consists of two key elements to understand and define the project scope and needs.

- **Implementation Survey** – a site meeting and walk through to identify site specific requirements
- **RF Survey** – for data gathering on site propagation and in-band interference

The resulting data is integrated to create a DAS design solution which will best meet operational requirements.

RED-M DESIGN PROCESS

Red-M's detailed design process accounts for all aspects of the customer requirements including radio equipment and build constraints.

Using "best-in-class" design methodologies, Red-M provides cost effective, fully optimised solutions to deliver exactly what's required.

With its unrivalled Radio Frequency (RF) expertise, Red-M uses its patented **MbP™** (Measurement-based-Prediction) algorithms.

These form the basis of Red-M's specialist **Red-Predict™** indoor RF planning.

Using these tools along with Red-M's tried and tested design methodology ensures an efficient 'right first time' solution...from simple to very complex design tasks.

IMPLEMENTATION

For any DAS implementation, Red-M prepares a detailed schedule of works to ensure a smooth installation with minimum disruption.

There are two stages to implementation:

- **Mobilisation** - in the form of an on-site meeting which covers scheduling, logistical, access and health and safety issues
- **On-site works** - where a dedicated Red-M project manager oversees the works on site day-to-day

HEALTH AND SAFETY

Red-M fully understands the need to ensure any DAS is fully compliant with regulations.

Red-M will ensure all indoor antennas are "touch safe" and compliant with health and safety guidelines.

Where the DAS is to be installed in a public access area, Red-M's extensive experience of Health & Safety issues and regulations in a public environment ensures that the project moves to completion without incident.

With Red-M's unparalleled expertise of implementing Health and Safety policies and procedures for wireless technologies you can be sure that the tangible benefits of wireless solutions are delivered whilst addressing any concerns individuals may have regarding wireless radiation levels, safety and security.

COMMISSION AND HANDOVER

Red-M's tried and tested methodologies ensure project integrity and, as part of the commissioning process, two final stages are undertaken prior to handover:

- **Post-implementation audit** - proves the installation against the defined performance criteria
- **Site completion inspection** - ensures you are satisfied with the implementation

At handover Red-M provide detailed documentation containing installation inventory, system drawings, configuration settings, test and compliance certificates and a photographic record for your files.

REPORTING AND DEVELOPMENT

Red-M can provide ongoing operation and maintenance of the DAS solution.

Management reporting can also be supplied to help you best manage your usage and Red-M can work with you to further develop the DAS in line with the growing business needs.

If required, it is also possible to upgrade an existing DAS to carry other radio technologies

SUPPORT AND MAINTENANCE

Red-M provides a range of maintenance services for DAS, offering both Reactive Maintenance and Proactive Monitoring.

Remote monitoring and diagnostics can be provided for active system elements using advanced system management tools.

Independent of equipment vendors and technologies, Red-M enables organisations to fully realise the benefits of wireless systems by delivering high quality solutions through an integrated five step cycle of best practice:

1. CONSULTING

Defining exactly how, when and where wireless will be used.

2. AUDIT

Understanding what is happening and developing a design baseline.

3. DESIGN

Optimum wireless performance from a design that works right, first time.

4. IMPLEMENT

A non-disruptive installation using best-of-breed technologies.

5. MANAGE

Maintaining a healthy network that continues to meet your needs.



CORPORATE OFFICES

Graylands, Langhurstwood Road, Horsham, West Sussex, RH12 4QD, UK
t: +44 (0) 1403 211100 f: +44 (0) 1403 248597

For more information visit www.red-m.com or email info@red-m.com

DOC.REF: IMP-DAS 1008:3

Red-M

when wireless matters™