



# SIN 398

Issue 1.2

April 2015

## Suppliers' Information Note

*For The BT Network*

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### **Microconnect Distributed Antennas Service & Interface Description**

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## 1. Introduction

This Suppliers' Information Note (SIN) describes the BT Microconnect Distributed Antennas service. The service is an area coverage proposition intended to form a transmission link in the RF access network of Operators in the mobile and radio sector.

**Please note that the BT Microconnect Distributed Antennas service is no longer available for new supply. An Ofcom exemption is in place for existing contracts.**

## 2. Service Outline

### 2.1 General

The BT Microconnect Distributed Antennas service is addressed at the mobile and radio coverage market in Dense Urban Areas. An array of small, low power, antennae is used to facilitate the desired coverage and performance, equal to or better than a traditional macrocellular site. The radio basestation equipment is located in a central location and connected to the antennae by fibre optical cable.

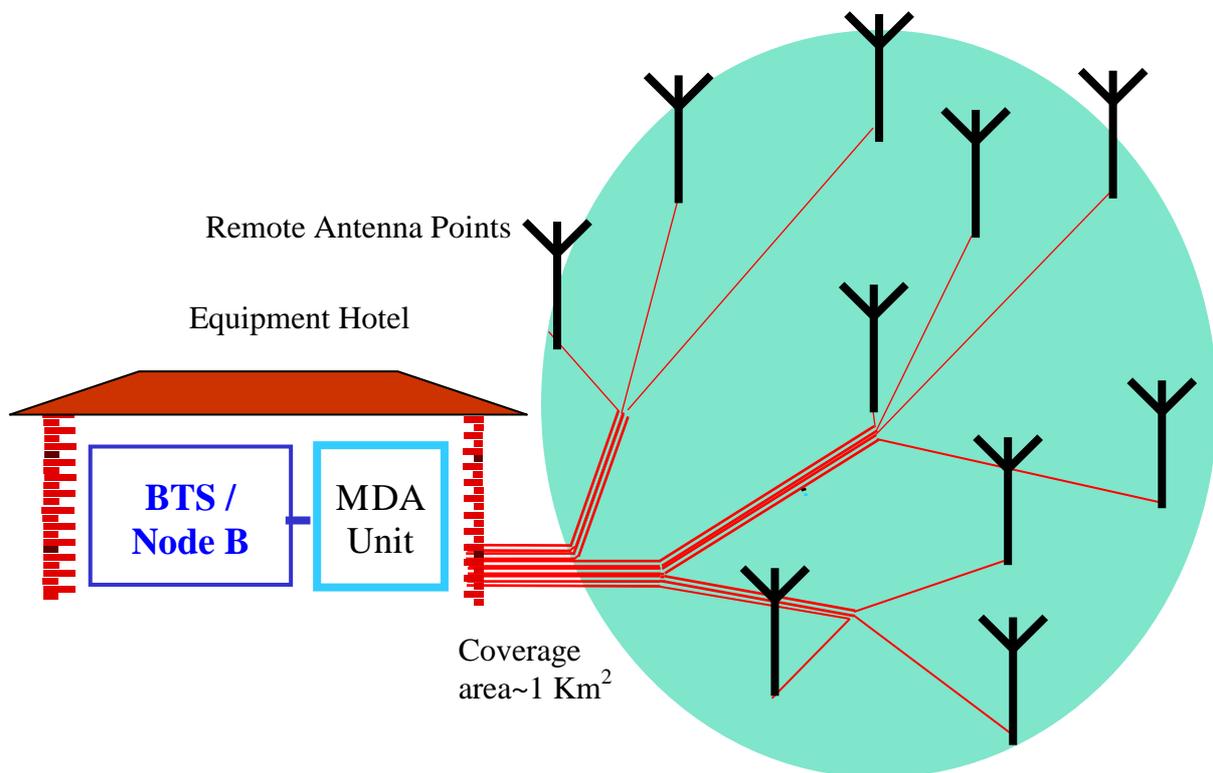


Figure 1

Outline of the BT Microconnect Distributed Antennas Concept.

The Microconnect Distributed Antennas service is designed to allow the Operators to provide their customers with a 64kbit uplink / 384kbit downlink service. The infrastructure can be shared between multiple Operators.

## 2.2 Components of the Microconnect Distributed Antennas service

The Microconnect Distributed Antennas system can be considered in four parts:

- DAS (Distributed Antenna System) Master unit
- BT access network optical fibre
- Remote Radio over Fibre (RoF) Unit (Remote Antennae Points)
- Supervisory and Management facilities

The DAS Master Units are located in a radio equipment 'hotel' provided by BT and typically located in a Telephone Exchange building. The connection between the Master and Remote units is provide by using existing BT Access network optical fibre and ducting. The 'hotel' provides a range of facilities:

- DAS Master Units
- Access network Optical Fibre termination
- Secure accommodation for the Operators' radio equipment
- Power and air conditioning

The Remote Antennae Points are positioned throughout the specified coverage area to provide the RF performance required. The remote antennae points are comprised of three parts

- RoF Electronics
- Antennae and feeder
- Cabinet / antennae support structure

The Microconnect Distributed Antennas service provides network management and supervisory facilities to allow monitoring of the status of the master and remote units from BT's general network management centres.

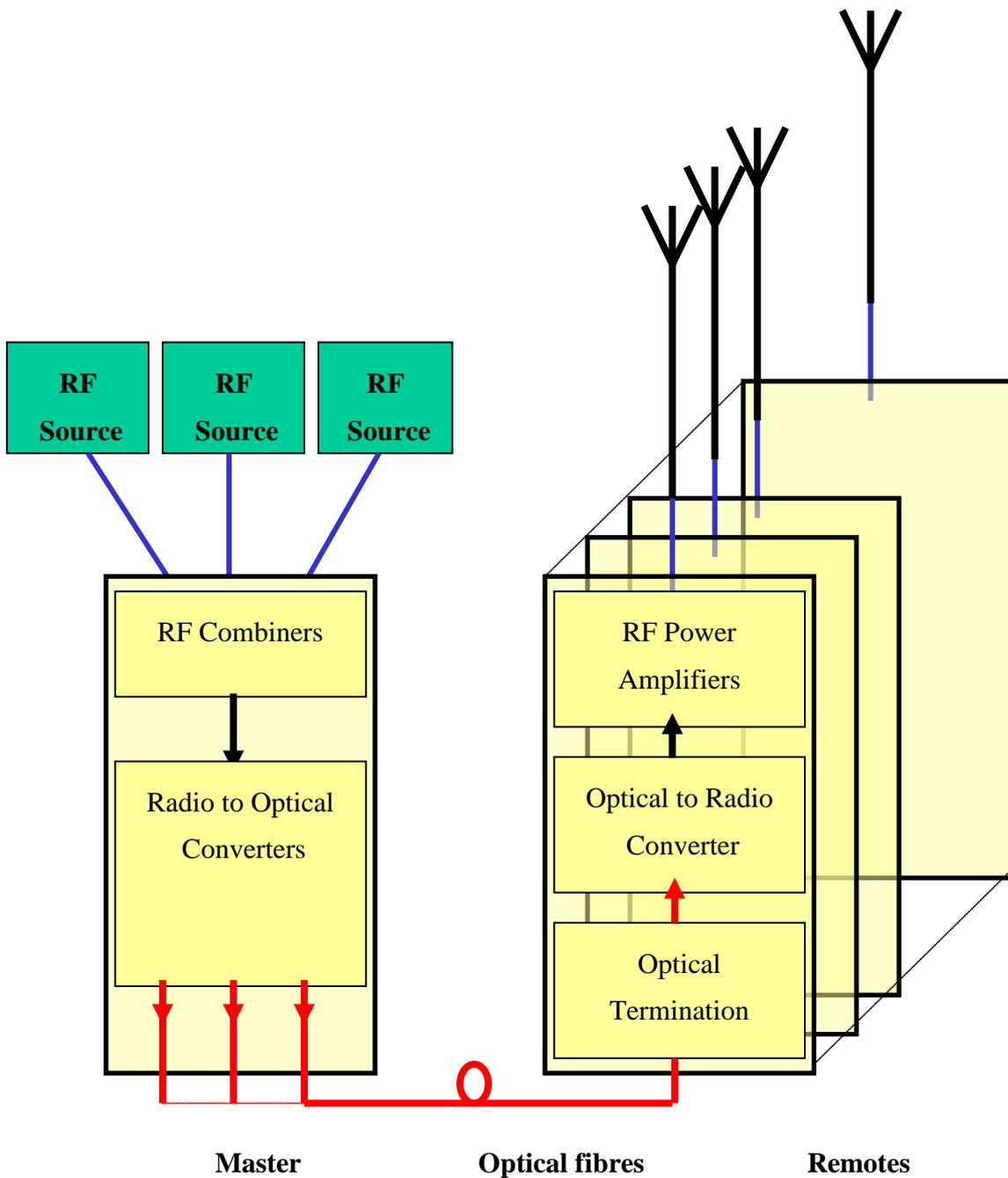


Figure 2 – Basic MDA RoF Schematic

Multiple RF signals combined and then broadcast from a number of remote antennae  
(Receive path not shown)

## **2.3 Service Parameters**

### **2.3.1 Antennae Coverage**

The antennae will drive the customer signals up to 200m, or less, depending on the environmental interference and the signal strength input to the system.

### **2.3.2 Data Rate**

The service is a technology and protocol neutral scheme that will reflect the input data rate supplied by the customer, subject to the following limitations:

- Target data rate per UMTS RF channel 384kbits downlink / 64kbits uplink with <50% of the available channel (code) power.
- Maximum number of UMTS channels per remote NTE is 4, 5 or 8 depending on the MDA network and equipment configuration.

The data rate per GSM carrier is dependent on the Operator's network configuration and strategy:

- 7 x 13kbit (GSM on the BCH channel)
- 8 x 13kbit (GSM on a TCH channel)

or,

- $n \times m$  kbit (GPRS where  $n$  is 1 to 8 and  $m$  is dependant on the code scheme selected)

### **2.3.3 Automatic Test Facilities**

The system will automatically monitor its own performance and that of the (internal) fibre link. Any faults or alarms will be notified back to the central OMC for handling by BT's fault management systems.

### **2.3.4 Optical Drive Distances**

The system allows customers to remotely site their radio basestation equipment up to 10Km away (fibre distance) from the antennae. (The distance is limited by GSM protocol timing constraints).

### **2.3.5 Station Count**

A single customer Radio basestation can be connected to up to 8 remote antennae.

### **2.3.6 Power Supply**

BT will provide the power supply at the equipment hotel and remote antennae locations.

### 2.3.7 BT Equipment Mounting

The BT DAS Master NTE will be mounted in vertical 19” equivalent racks located next to the Customer Radio basestations in the equipment hotel.

The BT Remote antennae will be mounted in suitable structures at various locations in the coverage area.

## 3. Customer Interface

### 3.1 General

The Network Termination Points (NTP), i.e. the point of connection between the BT Network Terminating Equipment (NTE) and the Customer, are located at:

- The antennae connection point in the equipment hotel, and
- The outer surface of the antennae at the remote point.

### 3.2 Interfaces Standards

The interface at the antennae connection point is presented at the NTE as one 75Ω impedance BNC socket (female) per Operator radio basestation. The interface will comply with either:

- GSM05.05<sup>[1]</sup> Annex E and GSM11.26<sup>[2]</sup>, or
- UMTS TS 25.106<sup>[3]</sup> and UMTS TS 25.143<sup>[4]</sup>

by arrangement.

## 4. Further information

Further information regarding BT’s Microconnect Distributed Antennas service is available using the contact information at <http://www.btplc.com/sinet/>

## 5. References

[1]	GSM05.05	Radio Transmission and Reception
[2]	GSM11.26	GSM Repeater Equipment Specification
[3]	UMTS TS 25.106	UTRA Repeater; Radio transmission and reception
[4]	UMTS TS 25.143	UTRA repeater; Conformance testing

## 6. Abbreviations

3GPP	The 3rd Generation Partnership Project (3GPP)
BCH	Broadcast Channel
BNC	Bayonet-Neill-Concelman
BTS	Base Transceiver Station
DAS	Distributed Antenna System
GSM	Global System for Mobile
GPRS	General Packet Radio Service
IPRs	Intellectual Property Rights
MDA	Microconnect Distributed Antennas (service)
NTE	Network Terminating Equipment
NTP	Network Terminating Point
OMC	Operation and Maintenance Centre
RF	Radio Frequency
RoF	Radio over Fibre
SIN	Suppliers' Information Note
STIN	Suppliers' Trial Information Note
TCH	Traffic Channel
UMTS	Universal Mobile Telecommunications System

## 7. History

STIN 398 Issue 1.0	Oct 2002	Document first published as a Suppliers' Trial Information Note.
SIN 398 Issue 1.0	Sep 2004	Document re-issued as a Suppliers' Information Note. Approval Requirements clause deleted.
SIN 398 Issue 1.1	Feb 2008	Note added that service is no longer available for new supply.
Issue 1.2	April 2015	Change SINet site references from <a href="http://www.sinet.bt.com">http://www.sinet.bt.com</a> to <a href="http://www.btplc.com/sinet/">http://www.btplc.com/sinet/</a>

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