

# Spectrum Overview

Complete End to End Communications Solutions Provider.

## Introduction

Spectrum Communications, established in 2003 with the aim of providing Transmission Solutions based on Microwave Radio and Optical Systems and to be a leading System Integrator providing complete IT and Telecom Solutions to Network Operators, Mobile Operators and Internet Service Providers (ISPs) in the Middle East and Africa Region. In addition to its core product of Microwave Radios and Optical Systems, the company has partnerships with other well known organization's to complete its portfolio for a solution to Network Operators.

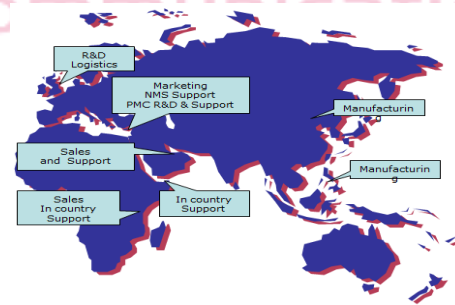
Our Vision is ... To Excel in Providing **Innovative Solutions** to Network Operators and Services Providers in the Middle East and Africa Region...

Spectrum Communications is managed by a team of Telecommunication Professionals with more than 40 years combined experience in all aspects of Networking Solutions by providing World Class Products and Services to its esteemed clients.

## Our Activities and Locations

Spectrum Communications has an extensive Sales and Support Structure addressing the Middle East and African Markets with State of the Art Products and Services. The offices are located in a number of places each complementing the other to deliver a complete solution.

Spectrum Communications offers Service from Concept to Implementation including Network Design, Network Planning, Supply and Implementation of Equipment and provision of complete After Sales Services. We can handle any type of Telecom and IT related Project under one roof. The company has number of offices located in the UK, UAE, Lebanon and Malawi with support capabilities. Further support capability is extended through partnerships with subcontractor companies in countries such as Saudi Arabia, Afghanistan, Kuwait, Tanzania, Burundi, etc. The objective of the offices is to be closer to our customers to provide better Customer Service.



## Our Partnerships

Strategic Partnerships are established with OrbComm and Global Secure Solutions to enable Spectrum to add a portfolio of Asset Tracking and Management Capabilities. Direct access to Satellites and ability to integrate within the 3G/4G mobile networks presents a unique solution that meets demands from various organizations.



## Some of our Customers

Spectrum Communications has a broad customer base in many countries across the region. All the customers are either Mobile Operators or ISPs operators where Spectrum has provided significant solutions. Countries include: Saudi Arabia, Kuwait, Yemen, United Arab Emirates, Afghanistan, Somalia, Syria, Tunisia, Malawi, Tanzania, Jordan, Burundi, Sierra Leone, The Gambia, etc.



## Our Products and Solutions

Spectrum Communications supports complete Turnkey and Semi-Turnkey Solutions. Products and Services fall into 3 distinct groups. We provide complete planning, Installation, Support and Training Services across all the 3 groups.

- **Transmission and Telecom** consisting of Point to Point and Point to Multipoint Digital Microwave Radios, Packet, Hybrid, PDH and SDH Add/Drop Multiplexers, Installation Accessories including centralized open interface Management System.
- **Power Solution and Fuel Management System Cell Sites** consisting of Alternative Power Sources such as Solar Panels, Batteries, Site and Fuel Management System, Rectifiers and Standby Batteries.
- **Bandwidth Optimization System** to enable operators to reduce Bandwidth across their network.
- **Tracking System.** We have partnered with global organization offering such services to bring complete solution to our customers.
- **Tower and Accessories** to complement our solution

## Digital Microwave Radio Systems

Complete Transmission Connectivity for any Type of Traffic in the Mobile Network, Fixed Line Network and Internet Services Provider Network.

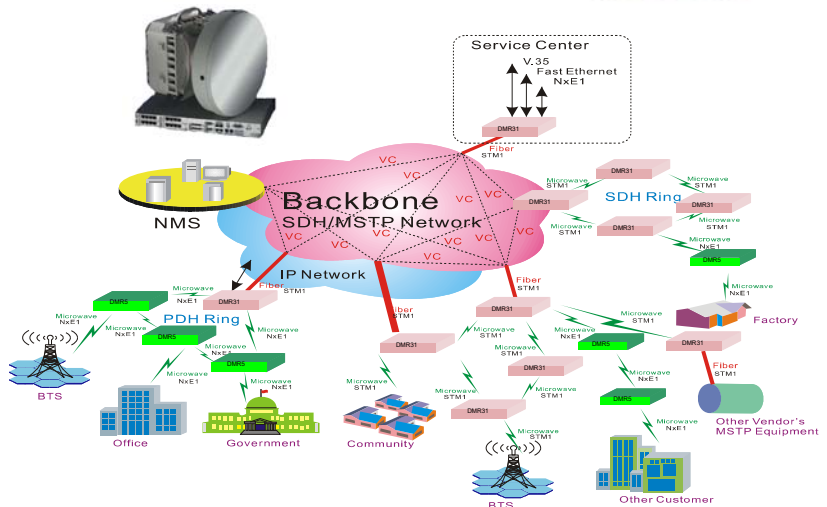
Our Microwave Radios are available in the Licenced and Unlicensed Frequency Bands supporting a number of Technologies such as PDH, SDH, Native IP Packet for use in any type of Network and supporting Point to Point and Point to MultiPoint Network Architectures. Data Speed of upto 1.2G is supported by our radios.



The Microwave Radios and its Network Management Systems are compliant to all relevant International Standards. This means that our solution can fit into a current operating network and in greenfield networks and sites.

### Applications

- Mobile Transport Access and Backhaul
- Fixed Line Network Expansions
- Internet Service Provider Network Access and Backhaul



## IP Packet, SDH, PDH, Optical Transport and DACs

Carrier-class Optical Transport Systems provided in a number of form factors to suit any network requirements supporting E1, Ethernet IP, STM-1/STM-4/STM-16 SDH/MSPP. The platform is designed for application in the network backhaul, metro and access networks to facilitate the efficient transport of traditional



TDM and emerging data traffic for service providers.

Complete Digital Mapping is supported from DS0 to VC12 to VC4, making the systems ideal for use in any type of network. Ethernet Over SDH capabilities are fully exploited to ensure maximum and efficient network utilization

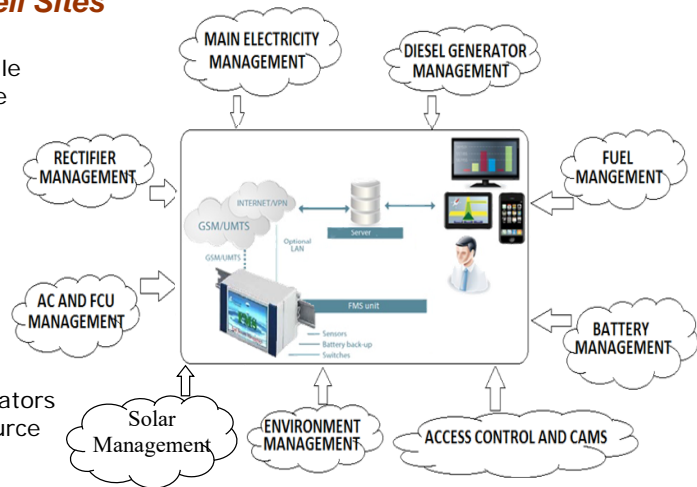


Primary Multiplexer to support sub-E1 level traffic such as voice, serial and IP data provide user level input to the network at E1 and IP level.

## Site and Fuel Management System for Cell Sites

The solution designed by Spectrum is used by Mobile Network Operators at 2G, 3G and 4G Cell sites. The solution consists of Power Management System and Alternative Power Source such as Solar Panels and is ideal for placement in remote locations and at sites where there is no commercial power. The solution helps Network Operators maintain service in low ARPU areas and reduce OPEX.

The solution provides an integrated and remotely managed full power solution combining the existing power sources like: batteries, diesel generators and commercial power with new power source technologies.

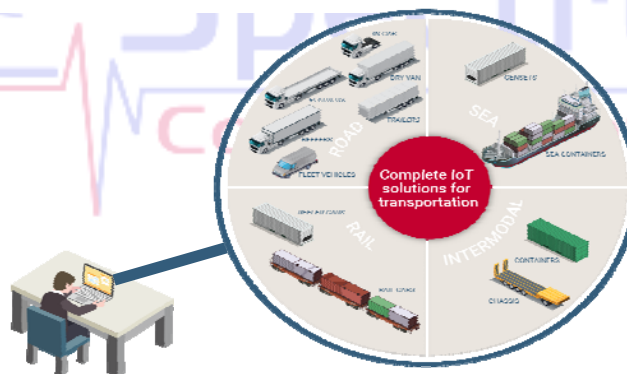


Spectrum provides complete Site Solution consisting of:

- Alternative Power Sources such as 5kw and 10kw Wind Turbines, 250W Solar Panels, Standby Batteries 150AH, 200AH, 800AH, 1000AH.
- Site Management System to monitor and switch between power sources, provide fuel management such as fuel consumption data by generators, site alarms.

## Asset Management System

- Location, Temperature
- Stop / Start, Alerts, Geofence
- Door Open / Close
- Asset Fuel Level Full / Empty
- Engine Running Hours
- Diagnostics / Maintenance
- Arrival / Departure Time
- Dwell Time
- Fuel Tax
- Speed-by-Street
- Driver Hours of Service, Driver Behavior



## Services

**Spectrum's** Engineering Services are designed to support Spectrum's customers to quickly and effectively implement the solution and provide after sales support capabilities to ensure maximum product availability. We can handle Turnkey and Semi Turnkey Projects in any country in the region. Our services include design and consulting, turnkey installation and commissioning.



Our Services in the GSM/ CDMA arena includes:

- RF/LOS Survey, Planning, Design
- Site Engineering & Documentation
- Installation, Testing, Commissioning & Integration
- Complete Tower Installation Service ranging excavation for Civil Works to Tower Assembly
- Customer acceptance and Training

## Other Products

As part of Spectrum's mission ... To Excel in Providing **Innovative Solutions** to Network Operators and Services Providers in the Middle East and Africa Region... We have partnered with a number of manufacturers to provide complete End to End Turnkey solution.

The following products are available from Spectrum to complete our offering for an **Innovative Solution**.

### Network and Media Converters

A full range of converters are available to support numerous applications. The list includes:

- E1 to Ethernet, 4E1 to Ethernet, 8 E1 to Ethernet, 16E1 to Ethernet
- 2E1 or 1E1 + 1 x V.35 or 2 x V.35 to Fibre Optics.
- E3 or DS3 to Fibre Optics
- 4 x E1, 8 x E1, 16 x E1 Optical Multiplexers
- 1E1, 2E1, 4E1, 16E1 TDM over IP Converters.



### Installation Material and Accessories

3 legged and 4 legged Angular or tubular towers ranging from 30M to 80M.

Cables, Jointing Material, Outside Cabinets.

Heat Shrinks and Accessories.

PCM, Feeder, Coaxial, Multi-Pair, CAT5E, all Types of Cables.

All Types of Connectors used in Communications Environment such as BNC, SMB, N Type, RJ11, and RJ45....



### Cabinets

19" Mounting Cabinets and Racks to House Telecommunication and Data Communication Equipment with Glass Doors and Removable Side Panels.

Ranging from 4U, 6U, 9U, 15U, 18U, 24U, 27U, 42U and 47U Wall Mounting and Floor Standing 300mm, 450mm, 600mm and 800mm footprint

