

# APPLICATION NOTE

## Interfacing G.703 Satellite Modem Running at 34.368 Mbps to Cisco HSSI Routers

### Using The Metrodata FM4900 Manageable HSSI DSU

Satellite Division



#### Application Summary

Whilst the 8.448Mbps speed is often used in Video and Broadcast networks, it is also widely used in ISP Backbones and Corporate Data Networks. Use of this speed over Satellite can present a problem when you come to interface the G.703 modem to your Data or IP network.

This is because there is no 8.448Mbps interface on Cisco or other Routers. Instead in the main they have opted for the High Speed Serial Interface or HSSI. This presents a connectivity problem if you do have a G.703 Satellite Modulator or Demodulator, and a HSSI interfaced Router.

One of the first companies to acknowledge this problem was Intelsat, and back in **1994** Metrodata developed the first 8.448Mbps HSSI/G.703 Converter which we called the FM4850. This was developed because at the time there were no HSSI Modems, and Cisco had developed this new flexible HSSI interface and Intelsat wanted to test it.

Subsequently Metrodata were included in the Intelsat Document:

*ITLAN-003 – “Asymmetrical Internet Services via INTELSAT”.*

Since then we have also developed further HSSI/G.703 Converters at 34.368Mbps (FM4900) and 44.736Mbps (FM4950).



## About the FM4900

There is no G.703 8.448Mbps Router Interface, and therefore to deliver a data service at 8.448Mbps a HSSI Router Interface must be used. The Metrodata FM4850 E2 HSSI DSU provides a cost-effective solution to connect an Router HSSI interface to an G.703 8.448Mbps Satellite Modem.

## Application

Whilst HSSI Satellite Modems have advantages such as flexibility of data rate and Asymmetric Clocking, they also have disadvantages. In particular the line driving distance of HSSI is affected by the data rate. The greater the rate the less distance the HSSI cable can be run (maximum – 10 Metres). Those who could use G.703 Modems instead, because they wanted to locate the Router remotely from the Modems within the Earthstation.

Also some 8.448Mbps Satellite Modems do not have HSSI Interfaces, and instead have G.703, RS422 or equivalents.

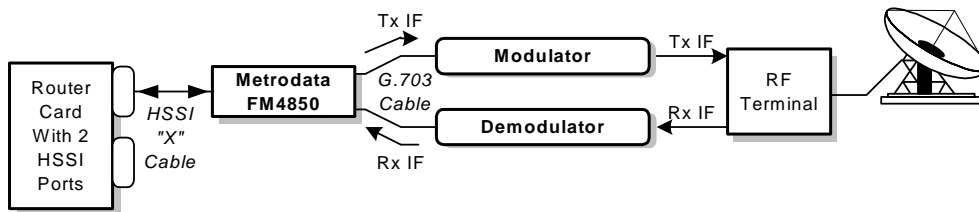


Figure1. Connecting to the Router

## Network Topology

As can be seen in Figure 1 above, the physical configuration of the network is relatively simple. The RF signal is received from the satellite network, by the Demodulator. The G.703 Rx port on the Demodulator is then connected to the FM4850 Rx Port using a standard G.703 cable. The Tx Port on the FM4850 is then connected to the Modulator Tx Port using a standard G.703 cable.

The HSSI Router Interface and the FM4850 HSSI interface are then connected using a straight HSSI cable. Both the Satellite Modem and the Metrodata FM4850 operate as DCE devices. The HSSI Router is a DTE device, and therefore a straight HSSI cable is required between the HSSI Router and the FM4850.

## Contact Us

- Email: [sales@metrodata.co.uk](mailto:sales@metrodata.co.uk)
- Tel: +44 (0)1784 744 700
- Fax: +44 (0)1784 744 730
- Or visit the Satellite website at [www.metrodata.co.uk/satellite](http://www.metrodata.co.uk/satellite)

## Ordering Information

| Power Supply          | 100 – 250 VAC | -48V DC   |
|-----------------------|---------------|-----------|
| G.703 Modem Interface | 80-05-014     | 80-21-014 |
| LM1100 SNMP Enabler*  | 14-02-139     | 14-02-139 |

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