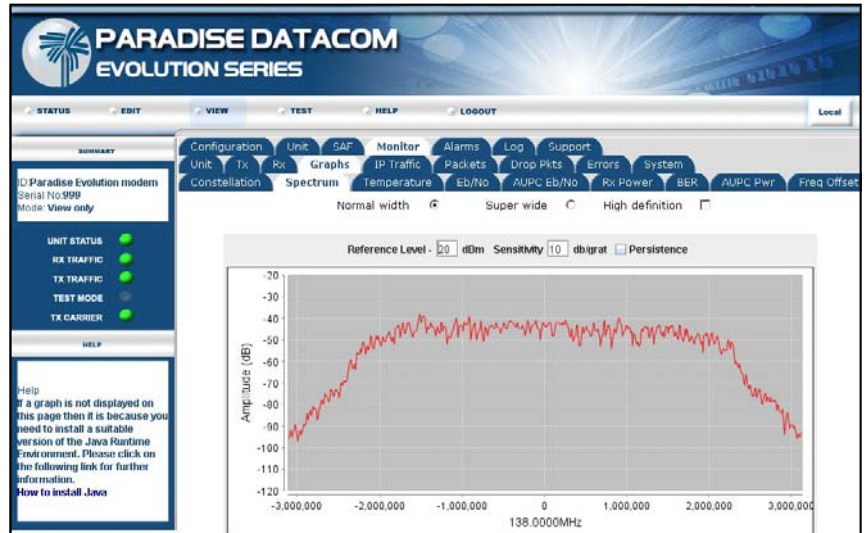


Can be used to detect and capture evidence of:

- ▶ *Interference*
- ▶ *Signal Level Problems*
- ▶ *Distortion*
- ▶ *Intermittent Events*
- ▶ *Rogue Carriers*

Can be used for Antenna Pointing

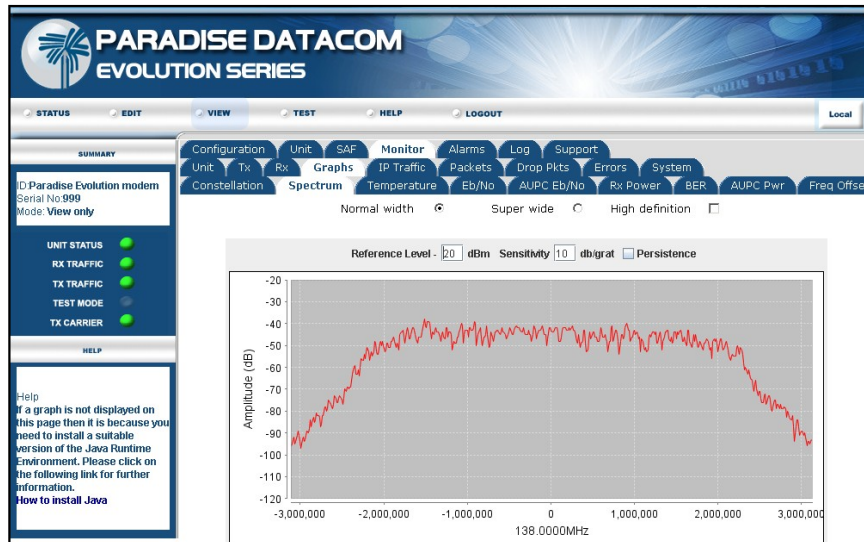
- ▶ *Either using a known carrier, or*
- ▶ *Using a beacon*



Spectrum Analyser display via Web Browser

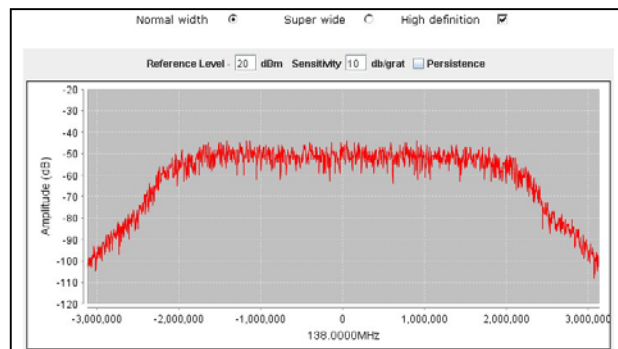
ALL EVOLUTION MODEMS INCLUDE A FREE RECEIVE SPECTRUM ANALYSER FUNCTION

- ▶ Spectrum Analyser may be used whilst carrying and without affecting live traffic through the Modem
- ▶ Spectrum Analyser may be used to monitor the receive carrier at IF or L-band (depending upon Modem version)
- ▶ May be used to monitor just one target signal or a range of signals (wideband up to ± 25 MHz)
- ▶ May be used with the Demodulator unlocked in simple Analyser mode
- ▶ User-selectable Max and Min hold feature (persistence) to capture transient events
- ▶ Simple to use -- autoscale capability on startup sets reference level and display scanwidth, plus user-selectable graph scaling (reference level, and dB/div)
- ▶ User-selectable resolution bandwidth settings, -- just point and click ! (Normal / High Definition modes)
- ▶ Invaluable for capturing interference and intermittent effects on satellite
- ▶ Field proven capabilities -- offers satellite system debug capabilities
- ▶ Can print or save Spectrum Analyser output with just a mouse click
- ▶ Spectrum Analyser content (CSV format) can be emailed **by the Modem** to chosen recipients, either on alarm detection, or on a regular schedule -- this is easily converted to an Excel graph with just 4 mouse clicks
- ▶ All Evolution Series Modems include the Spectrum Analyser feature for free, accessed via web-browser
- ▶ Effectively gives a Spectrum Analyser function in all Modems at all locations -- can debug remote sites from another location **without sending an Engineer to site and with no additional test equipment**

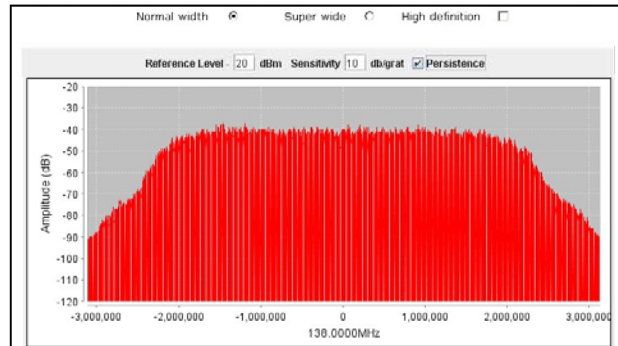


Spectrum Analyser display via Web Browser. Normal bandwidth (default). Automatically scales the display to show just the wanted signal according to Demodulator settings.

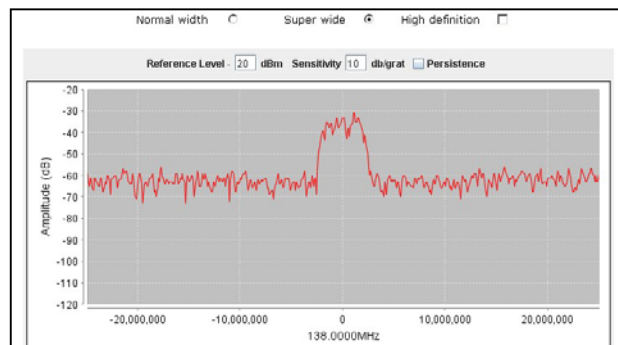
Spectrum Analyser High definition mode. Gives 4 x narrower resolution bandwidth for more detailed examination of the spectral content.



Spectrum Analyser Persistence mode. Captures intermittent or momentary events. Example here shows the display when an intermittent carrier is detected.



Spectrum Analyser Super wide bandwidth. Allows monitoring of the wanted signal plus adjacent carriers.



Case Study

Evolution Modem Spectrum Analyser function solves interference mystery.

The Spectrum Analyser function within the Evolution Modems has been field-proven as a valuable tool for debugging satellite systems. One case in particular involved a GSM link between African countries. After installation of the new service, it was reported that frequent traffic breaks were observed. Initial investigations by the user did not identify the cause of the traffic losses, so Paradise Engineers were asked to assist with identifying and solving the problem.

Paradise Engineers were granted remote access to Modems via the Internet, allowing Engineers in the UK to log into the Modems at both ends of the satellite link in Africa, without actually sending staff to site. Initially, the Modem configurations were verified as correct, and using the Spectrum Analyser function with persistence (the peak hold facility), unwanted signals were detected within the user space segment. Subsequently, the user carriers were temporarily disabled and the unwanted in-band signals were captured by the Modem Spectrum Analyser. The interferer was traced to a Wi-Max antenna in close proximity to the satellite dish and the satellite dish was relocated so as to eliminate this problem.

Paradise Engineers continue to assist users worldwide in providing reliable satellite links using the ability to fully monitor and verify Modem and system performance without the expense, inconvenience and delays involved with sending Engineers to site. The Evolution Series Modems include many advanced features to assist users in performance monitoring, evidencing of Service Levels, and system debugging. In addition to the Spectrum Analyser function, each Modem offers up to 1 month of performance data in graphical form, including Eb/No, BER, Receive Level, Receive Offset Frequency and IP Statistics, available via a Web Browser. A Receive Constellation Monitor is also available, with user-selectable persistence. All graphical data may be emailed by the Modem to user-defined addresses, either on a regular schedule, or triggered by Modem alarm conditions. The Web User Interface of the Modems support access to both “user”s who are allowed to monitor parameters only, and “admin” staff who are allowed to both monitor and control all functions of the Modem. Each login level has password protection. Modems also support SNMP v1 and v2c with SNMP traps.