GSM INTERFERENCES

Demodulation identifies the location

Andreas Voigt – 15 APRIL 2015

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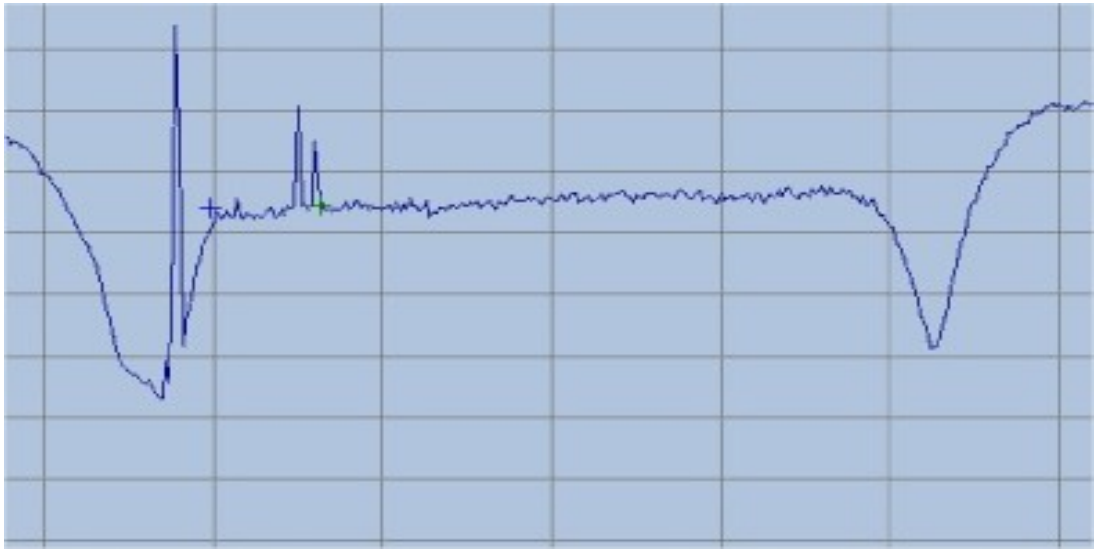
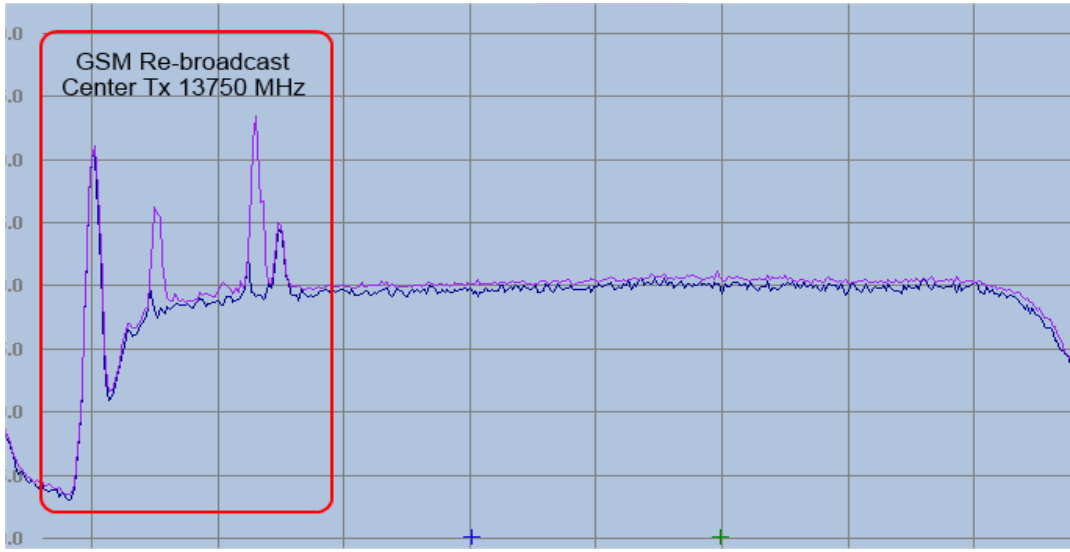
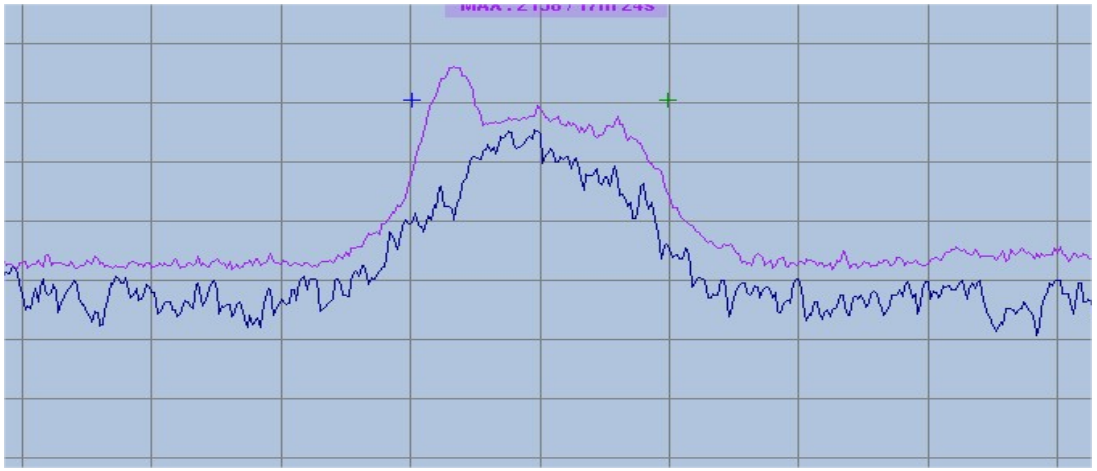
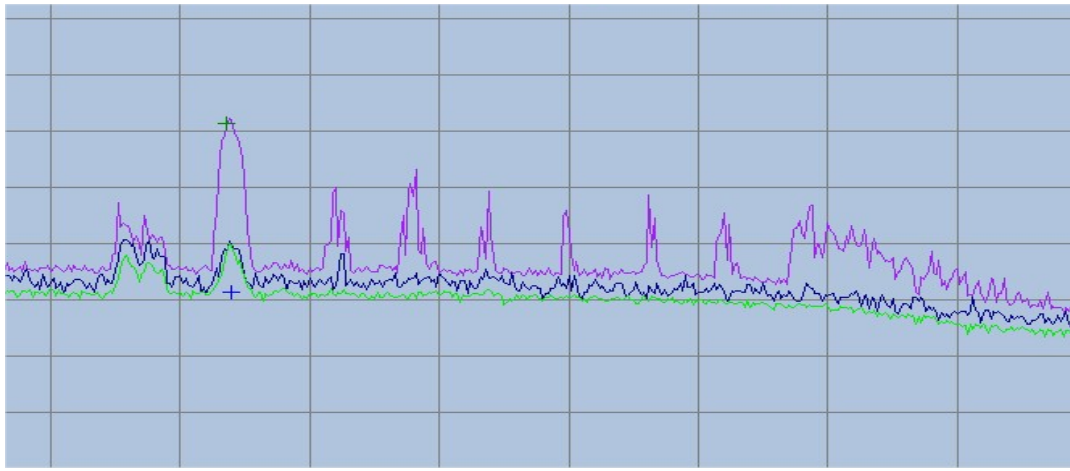
HE SITUATION









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OW DOES IT HAPPEN?

Equipment failure

- ➔ **L-Band retransmission of terrestrial signals**
- ➔ **Connectors or Cables got broken**
- ➔ **GSM signal from base stations is inserted into the transmission system**
  - → **From Base stations: 920 – 960 MHz**
  - → **Translates with a 13050 MHz BUC: 13970 – 14010 MHz**
  - → **Translates with a 12800 MHz BUC: 13750 – 13760 MHz**
  - → **Translates with a 15450 MHz BUC: 14500 – 14490 MHz**

SM DEMODULATION

- **Demodulation of the GSM channel gives:**

  - ➔ **Country code**
  - ➔ **Network code**
  - ➔ **Cell ID number**

- **This information is sufficient for**

  - ➔ **Datamining on Internet for transmission sites to receive LAT LONG information**
  - ➔ **Escalation to country's regulatory office for site identification**

  - ➔ **Data base search for installed VSATs and stations in the vicinity**
  - ➔ **Visual check on internet maps**

RESENT DRAWBACKS

- **Demodulation issues**

  - ➔ **Traffic channels in use do not carry network information**
  - ➔ **Only GSM beacons carry this**

  - ➔ **Relatively high C/N level needed to demodulate**
    - → **higher than 9 dB C+N/N of the**

- **This results in many cases not being possible to be analysed while knowin that it is a GSM retransmission**

  - ➔ **Customers complain from 0.5 to 1 dB C+N/N interference value on**

UTURE DEVELOPMENTS

Version 2 coming!

- ➔ **Use of DSP calculus**
- ➔ **Decrease of required C/N level envisaged**
  - → **laboratory environments reach down to 2 dB C+N/N of GSM interference value**

Development of other tools

- ➔ **Integration of GSM demodulation in the VERISAT system**
- ➔ **Integration of GSM demodulation as standard tool in measurement systems**

HANK YOU!

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