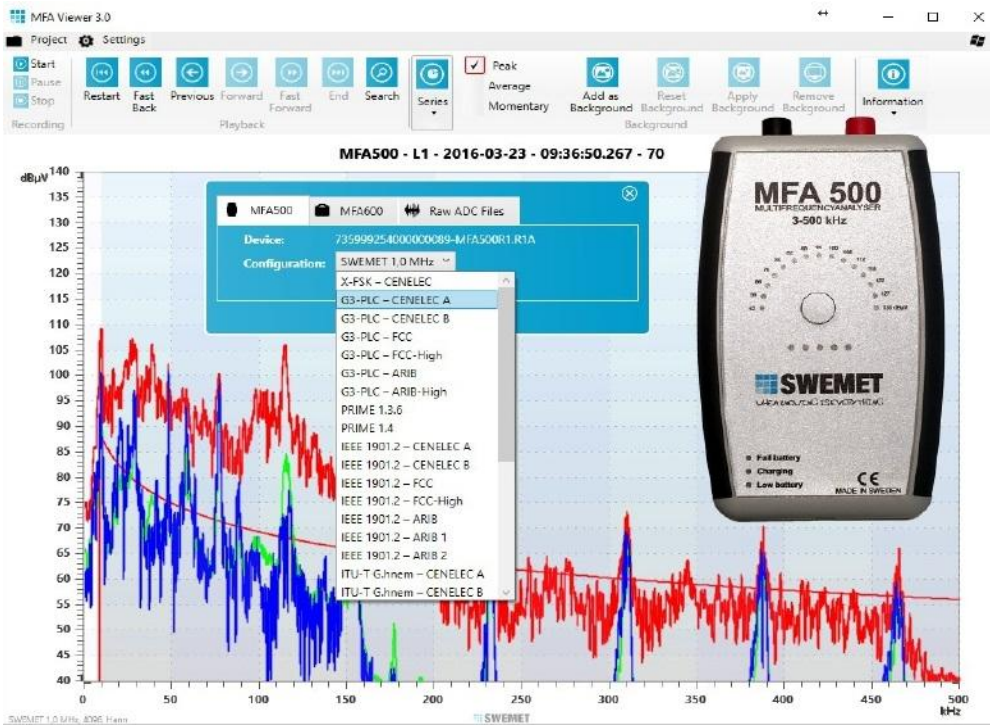


## SWEMET MFA 500



Per la trasmissione **G1** si usa:

Configuration: **X-FSK - CENELEC**

Highlight: **G3-PLC - CENELEC A**

Settings -> Standards -> Choose Standard -> **Cenelec PLC Limits**

X-FSK instead of "Troubleshooting" with G1, ie: 0-150 kHz narrow band signals instead of wide-band signals like G3-PLC even if they are in the same frequencies.

"X" is as in S-FSK or B-FSK, etc....

### X-FSK - CENELEC

G3-PLC - CENELEC A

G3-PLC - CENELEC B

G3-PLC - FCC

G3-PLC - FCC-High

G3-PLC - ARIB

G3-PLC - ARIB-High

PRIME 1.3.6

PRIME 1.4

IEEE 1901.2 - CENELEC A

IEEE 1901.2 - CENELEC B

IEEE 1901.2 - FCC

IEEE 1901.2 - FCC-High

IEEE 1901.2 - ARIB

IEEE 1901.2 - ARIB 1

IEEE 1901.2 - ARIB 2

ITU-T G.hnem - CENELEC A

ITU-T G.hnem - CENELEC B

ITU-T G.hnem - CENELEC CD

ITU-T G.hnem - FCC

ITU-T G.hnem - FCC-1

ITU-T G.hnem - FCC-2

ITU-T G.hnem - ARIB

SWEMET 1.2 MHz

SWEMET 1.0 MHz

SWEMET 800 kHz

ADC - 1.2 MHz

ADC - 1.0 MHz

## PLC Standards

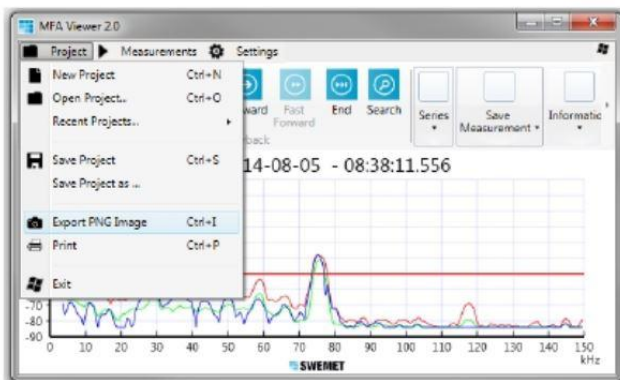
| Standard         | Technology | Frequency band | Bit rate (kbps) |
|------------------|------------|----------------|-----------------|
| G3-PLC           | OFDM       | 36-90.6kHz *   | 5.6-45          |
| PRIME            | OFDM       | 42-89kHz *     | 21.4-128.6      |
| IEEE P1901.2     | OFDM       | 9-500kHz       | 250             |
| ANSI/EIA 709.1,2 | BPSK       | 86, 131kHz     | 3.6-5.4         |
| KNX              | S-FSK 1    | 25-140kHz      | 1.2             |
| IEC61334         | S-FSK      | CENELEC-A      | 2.4             |

\* are available in CENELEC-A, ARIB and FCC-band



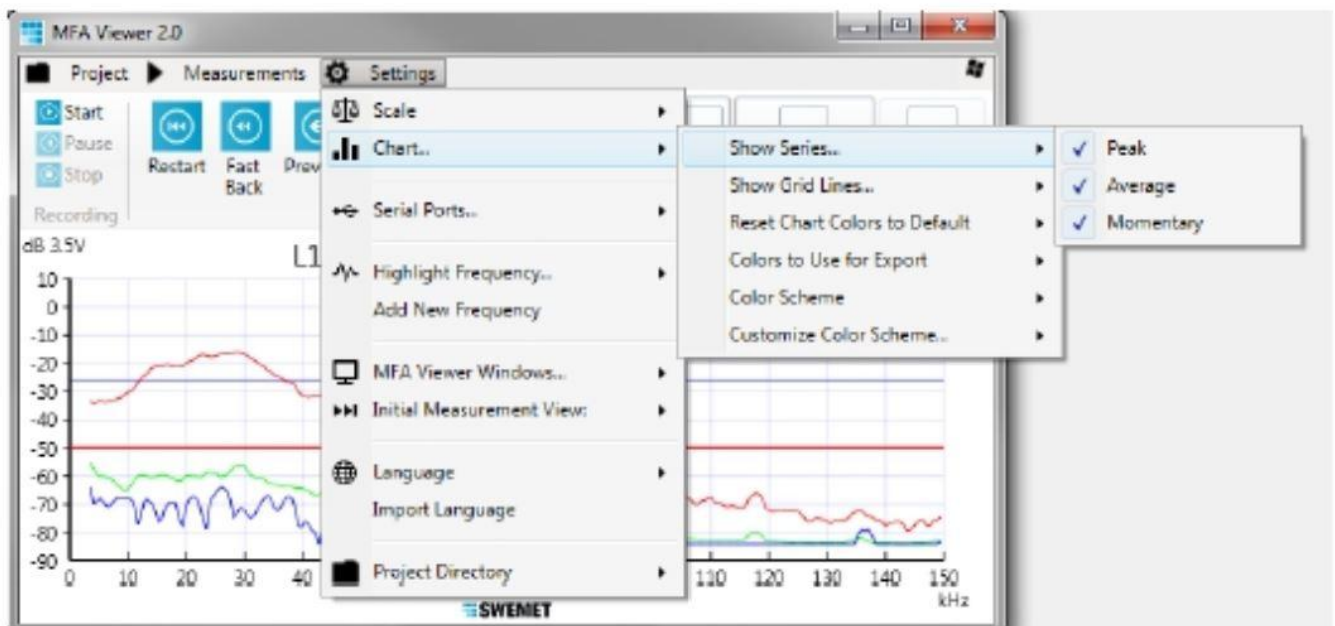
## Export PNG Image

The diagram can be exported as a snap shot image to a PNG image file.



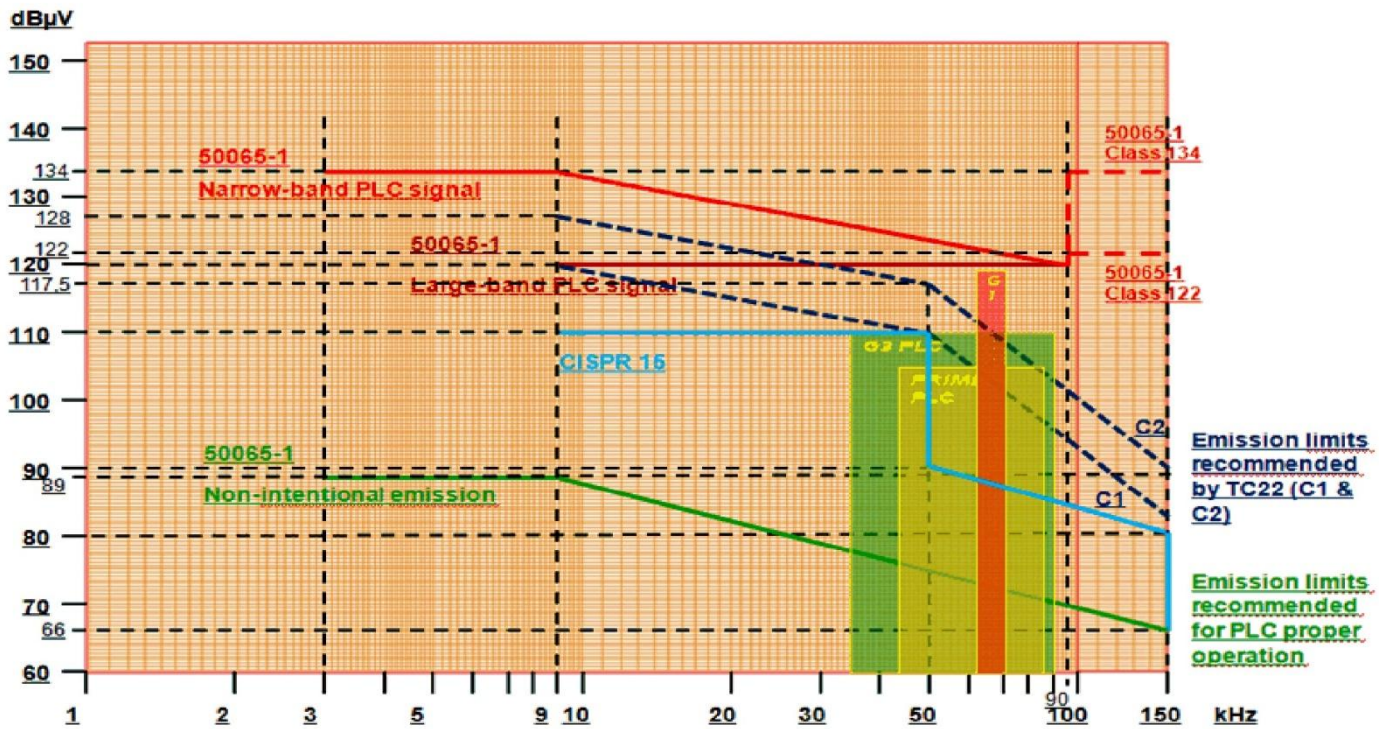
*Image 81: Exporting the diagram as a PNG image*

Clicking on the “Export PNG Image” row opens a Microsoft operating system file dialog so that you can choose the name and location of where to save the image.

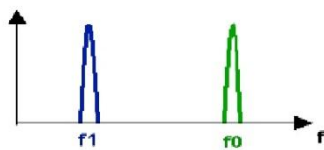


*Image 128: Show series settings*





### PLC S-FSK



**PLC today**

2,4 kbps  
Single Carrier

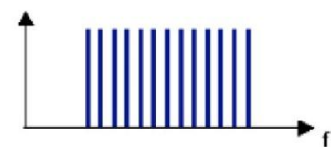
### PLC OFDM 36 carriers



**G3**

35 kbps  
36 Muc Carrier  
IPv6

### PLC OFDM 97 carriers



**Prime**

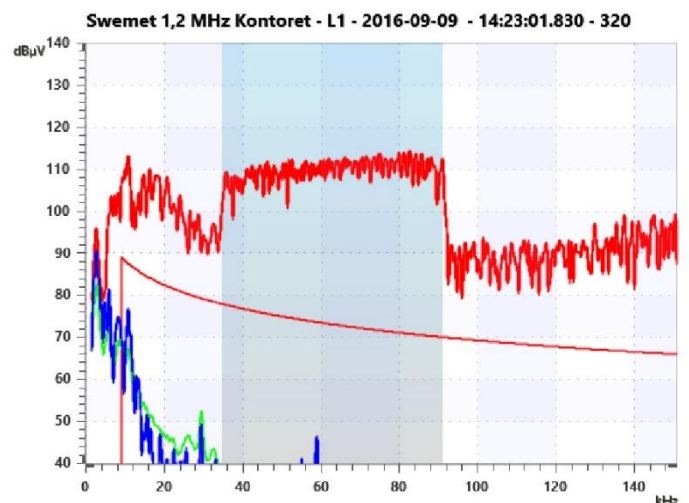
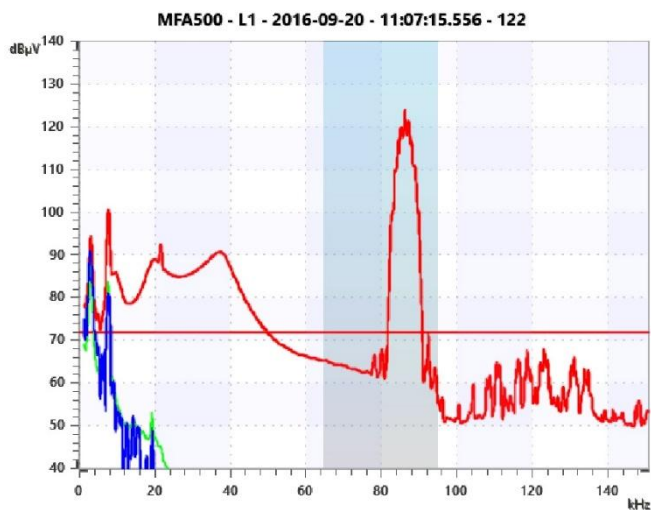
128 kbps  
97 Muc Carrier  
IPv4

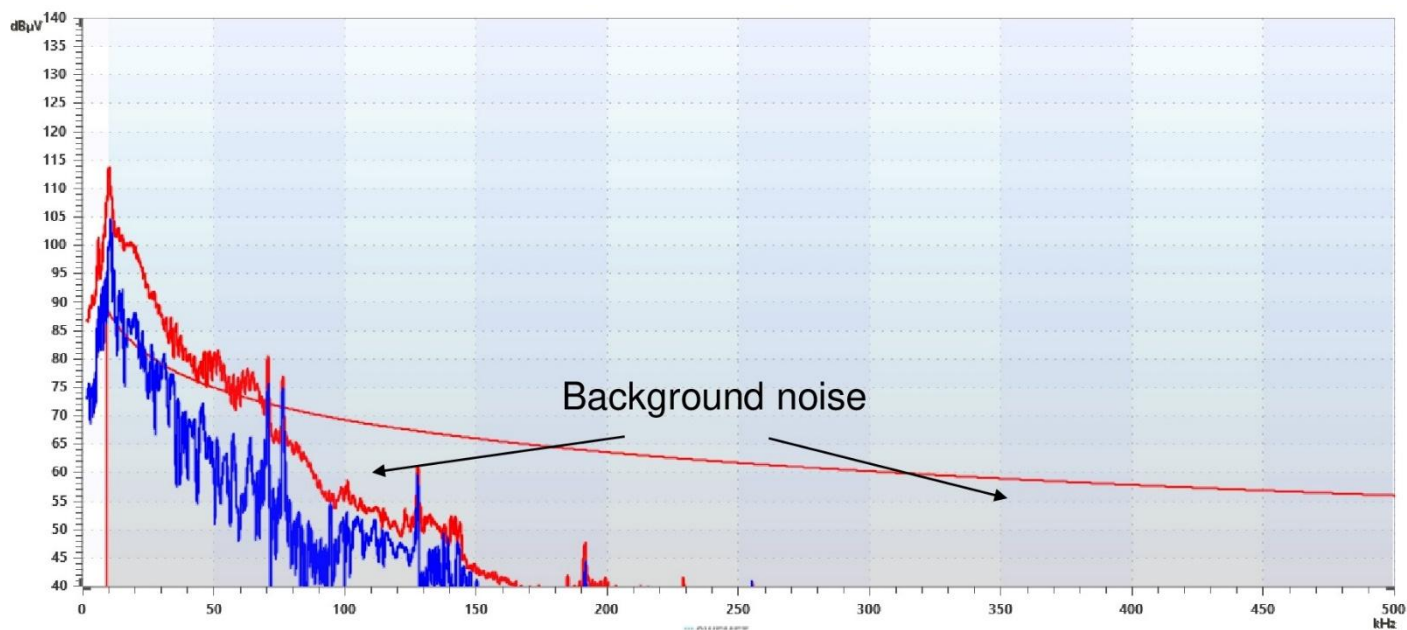
## S-FSK

(Spread Frequency Shift Keying)

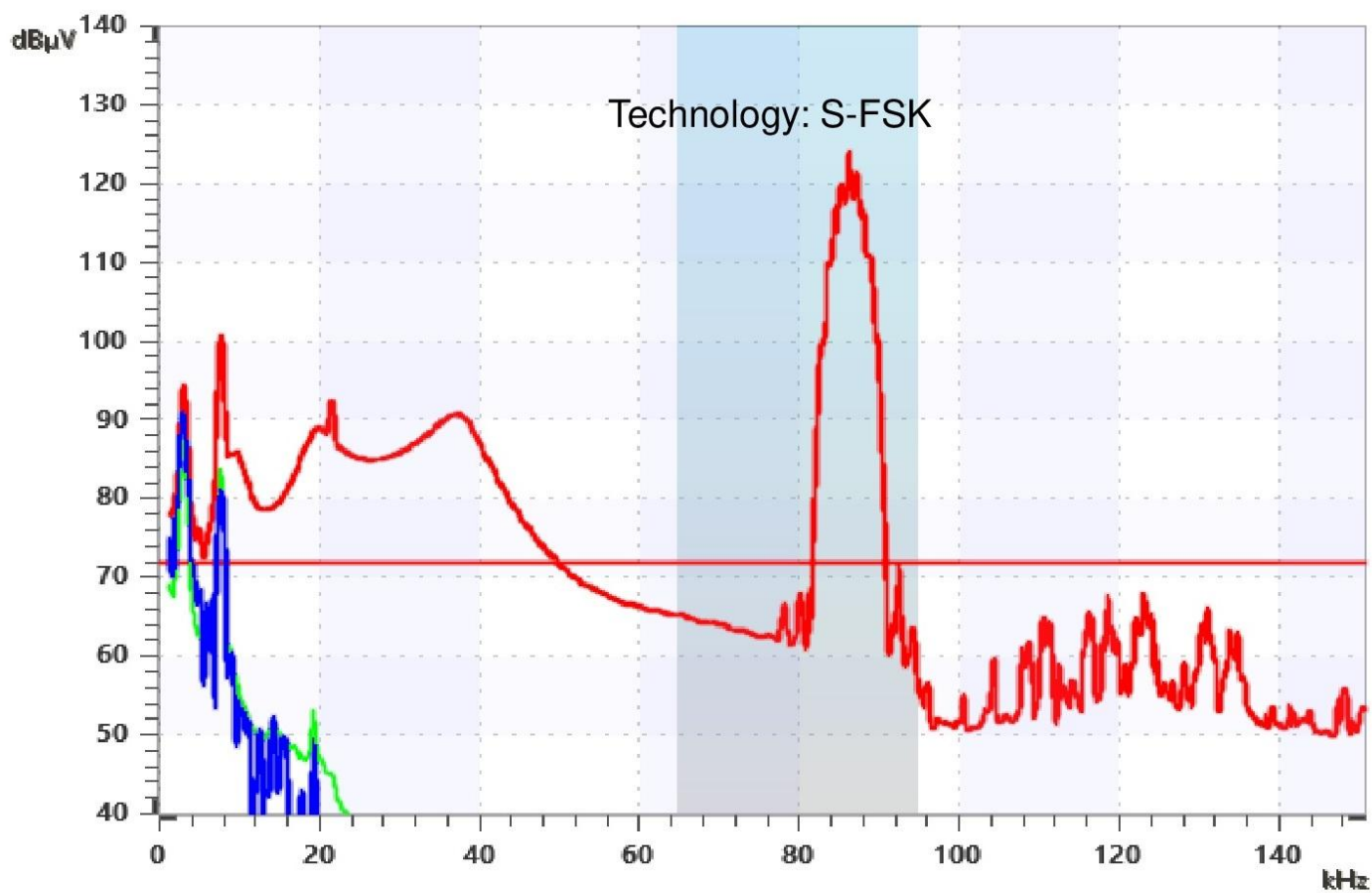
## OFDM

(Orthogonal frequency-division multiplexing)





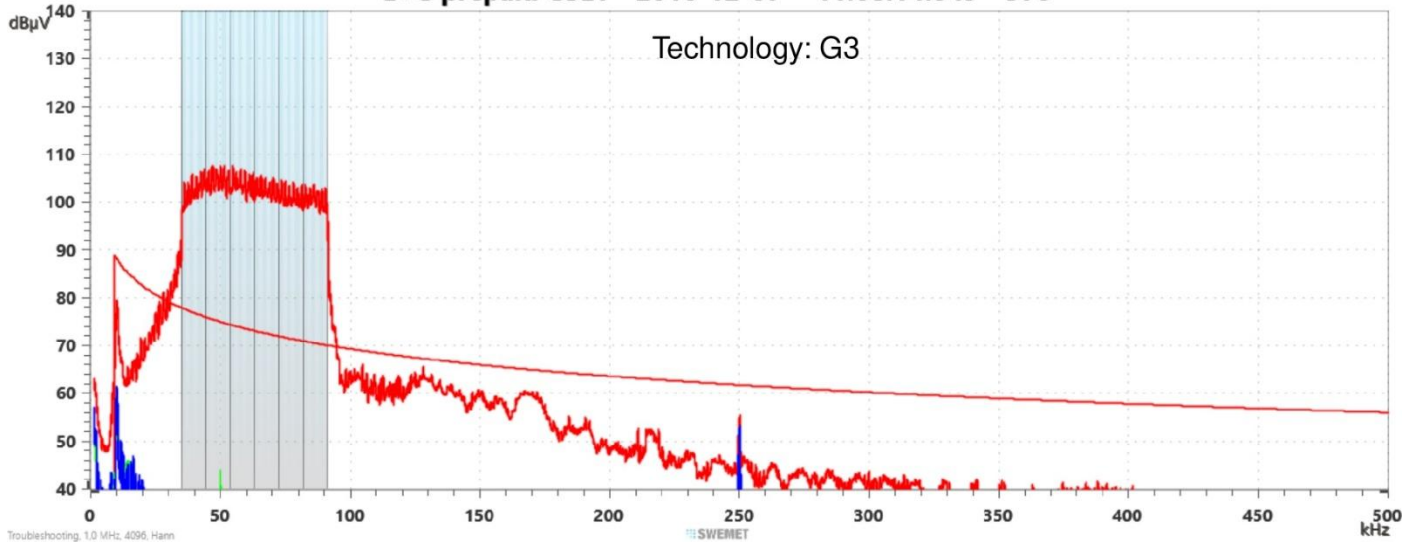
## Your PLC signals



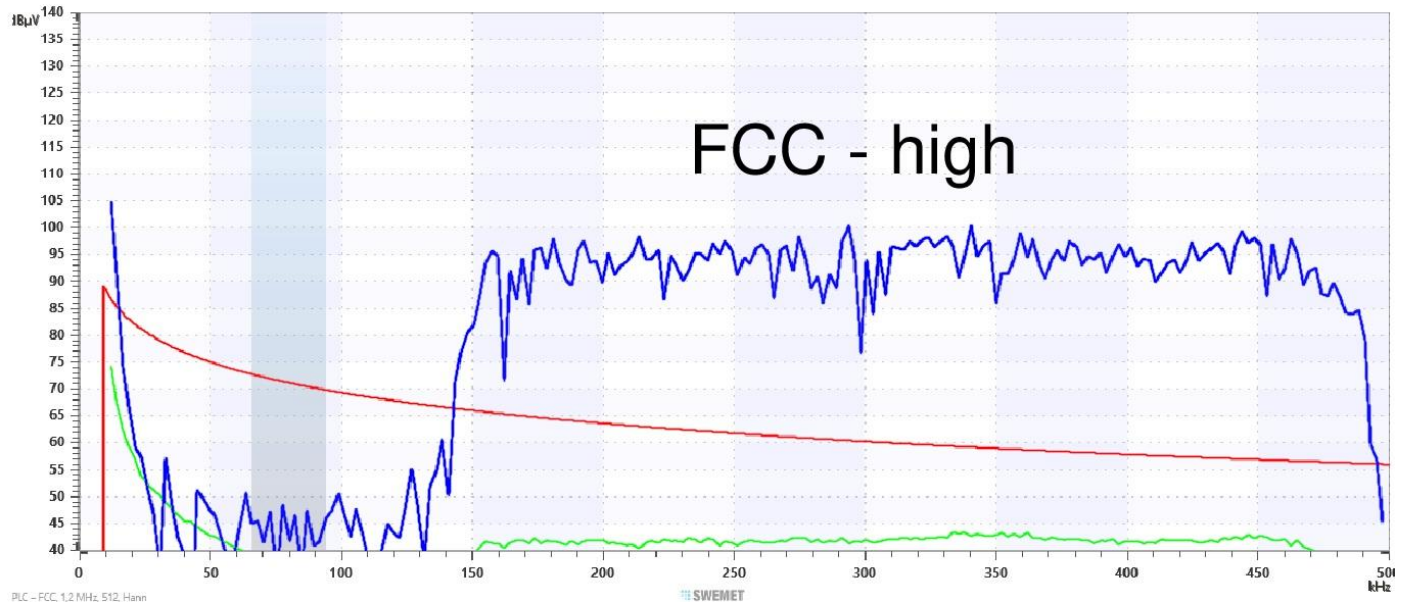


# Your PLC signals

L+G prepaid G3L1 - 2016-12-07 - 11:08:14.049 - 970

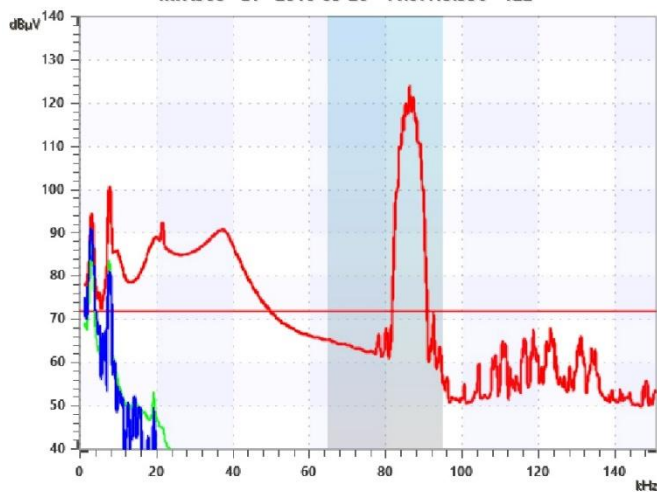


## FCC - high



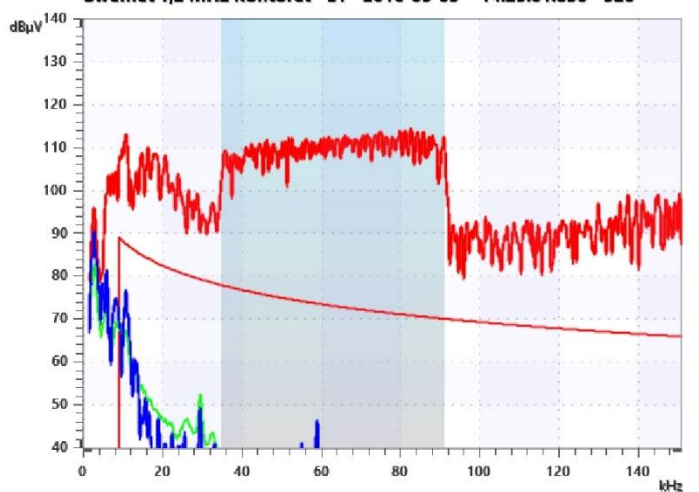
## S-FSK

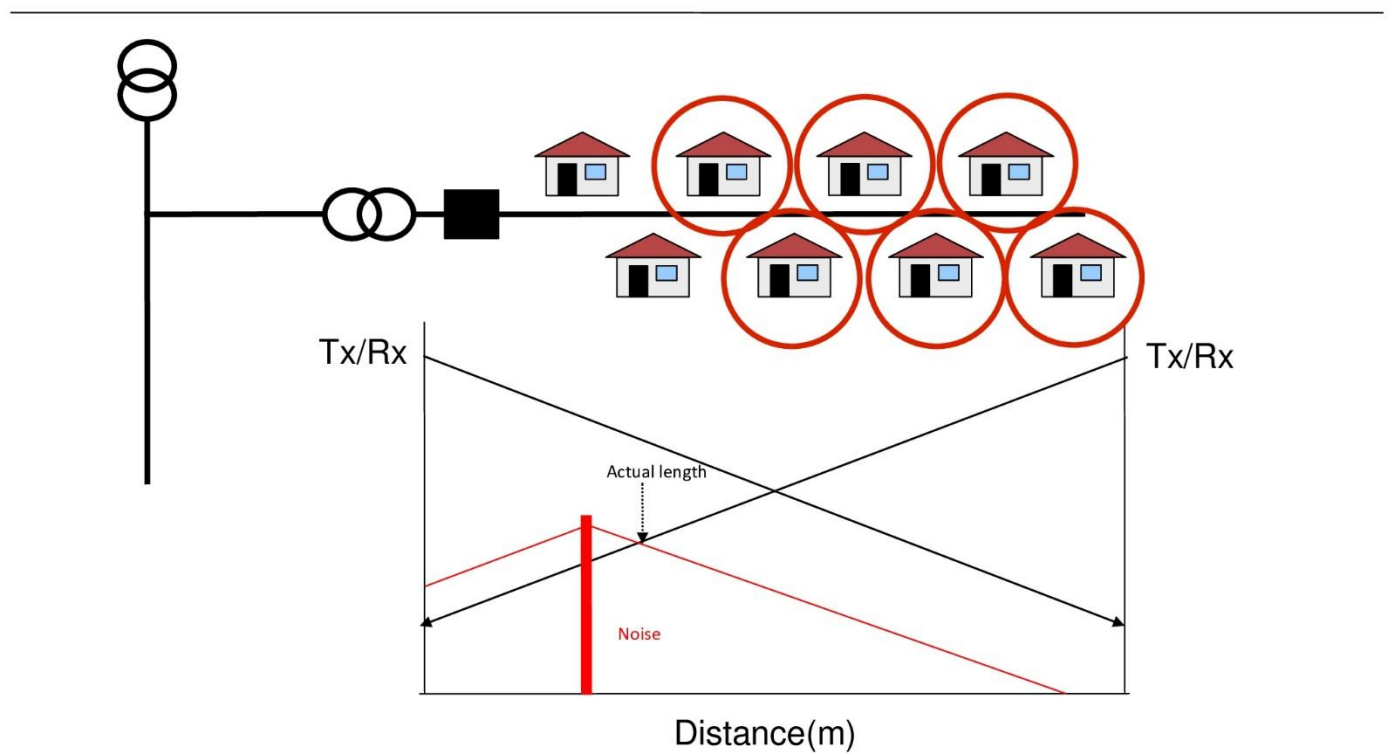
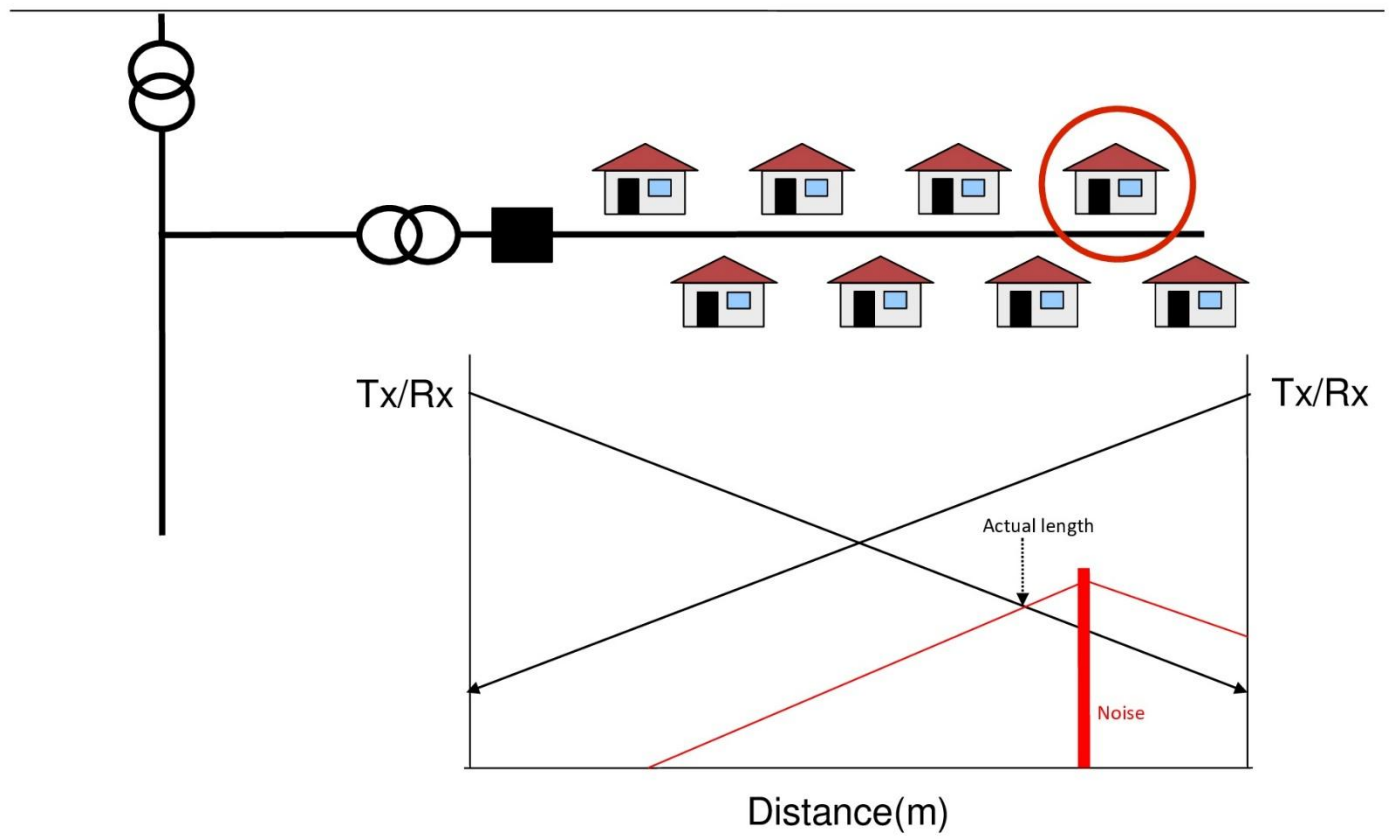
MFA500 - L1 - 2016-09-20 - 11:07:15.556 - 122



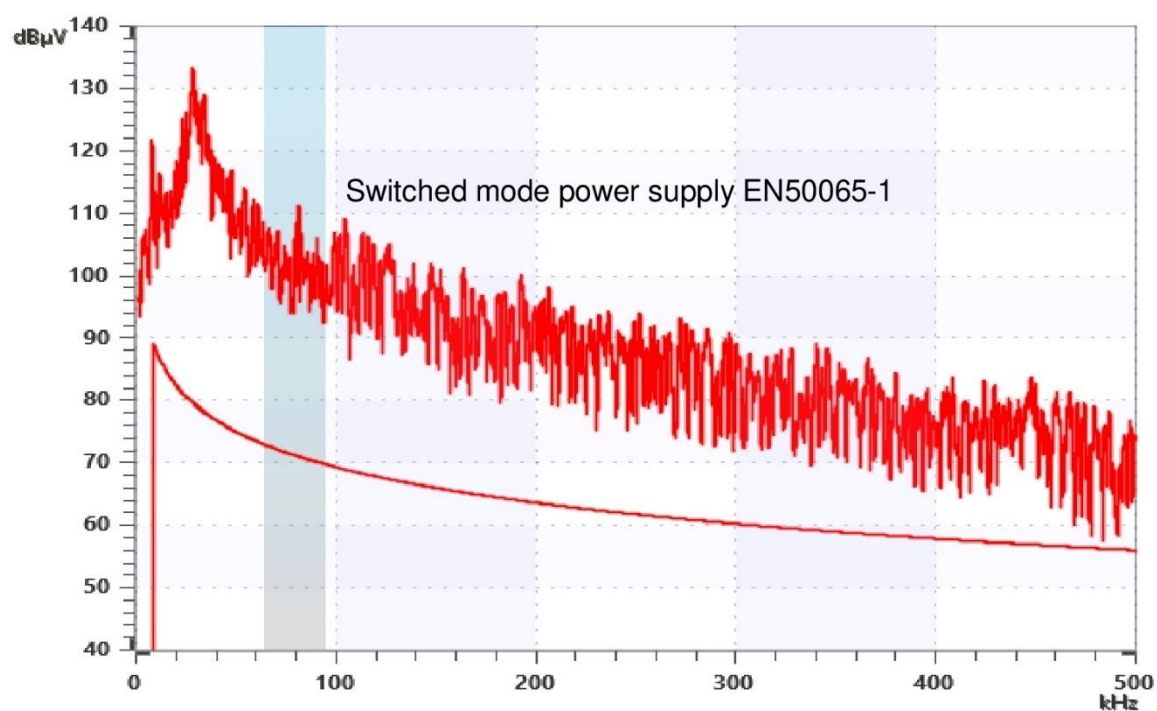
## OFDM

Swemet 1,2 MHz Kontoret - L1 - 2016-09-09 - 14:23:01.830 - 320





# Interference



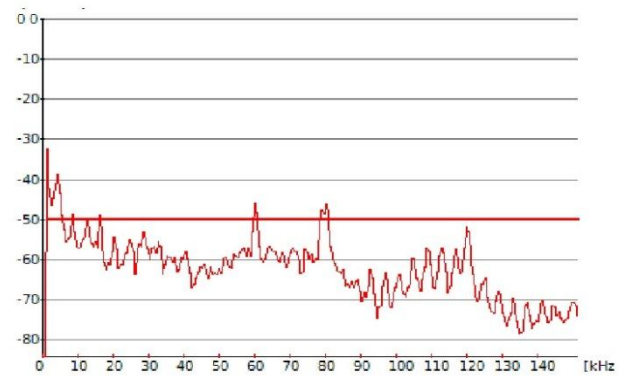
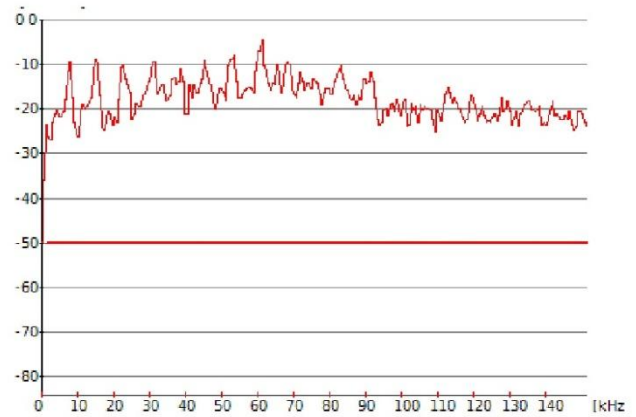
Fabrimex, Top-10 list



# Three Phase Pump



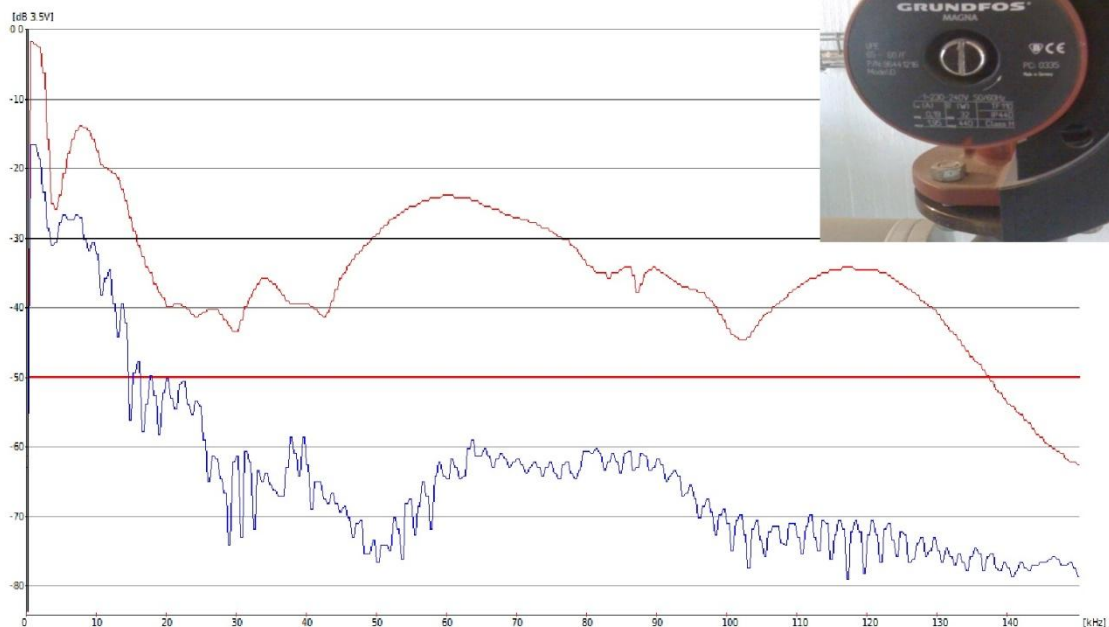
INTERFERENCE



Different manufacturers  
ABB, Danfoss, PowerFlex, Emotron  
INTERFERENCE



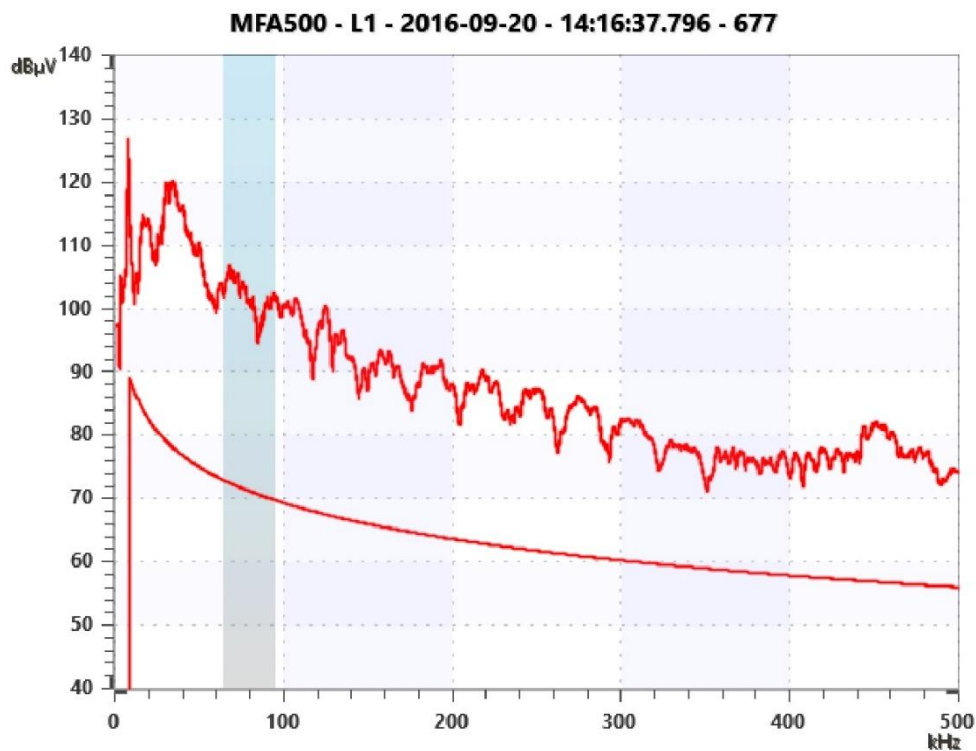
# Frequency controller Fans & Pumps INTERFERENCE



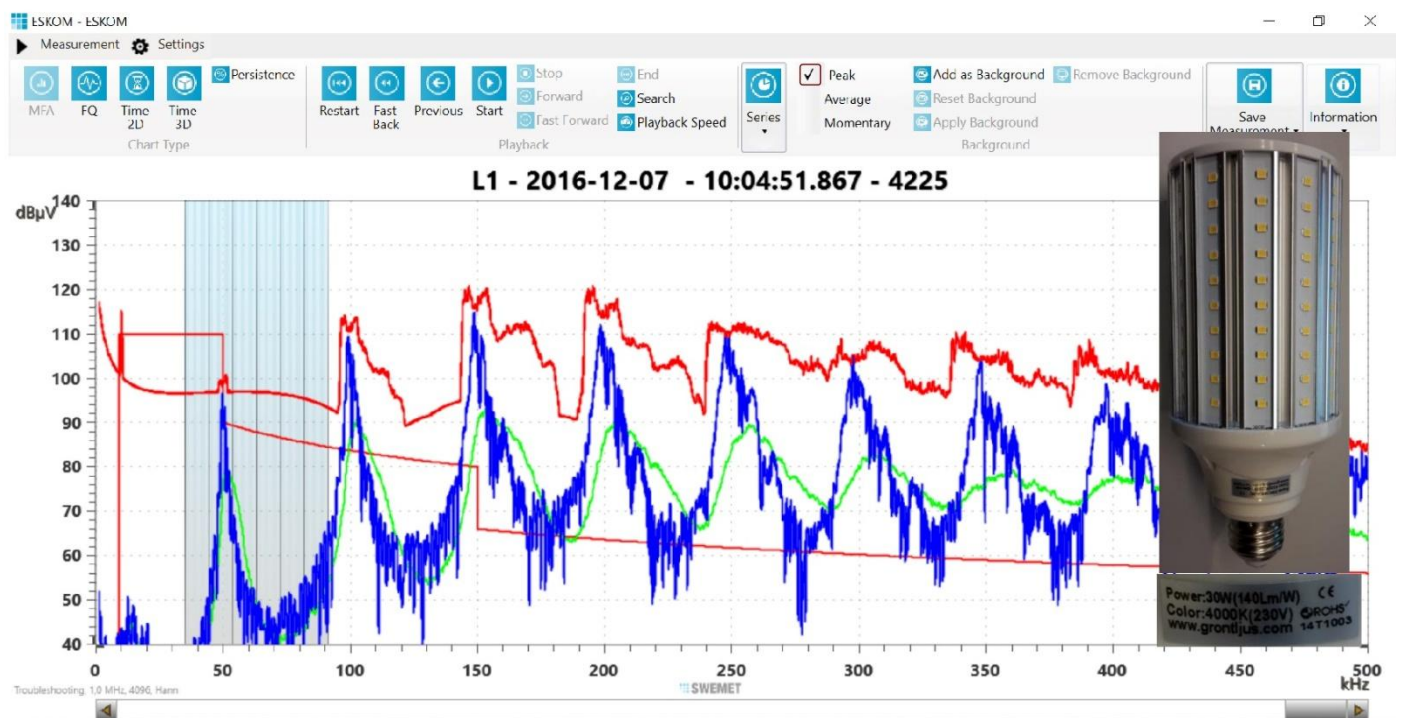
## Lighting products(LED, Low energy lightbulbs)



## Lighting products(LED, Low energy lightbulbs) EN50065-1



IKEA LED lamp



S-FSK get problems when interferences are too close to the PLC signals.



il file **Italian (Italy)-7.mfl** permette di tradurre il software in italiano

