

Spectrum Analyser with AGC-output
for manual and automatical fieldstrength
depending alignment of antennas

SpectraMizer I

(SpectrumAnalyser & Signal-Optimizer)



002/0605



**-EQUIPMENT-GESELLSCHAFT für INTERN.
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20 minutes to Airport Frankfurt • 20 minutes to Frankfurt City

SpectraMizer I

This device delivers the matching AGC-analogue-signal for manual and automatical alignment of antennas, which is depending on the electrical field strength.

Everything is preset as well for the "locating" as for the "tracking" of satellites and other "mobile" HF-signals.

The device serves as a competitive alternative for expensive broadcast HF-receivers. But it has some more going for it:

Selectively the whole satellite, a certain transponder or a special frequency can be drawn on to produce the AGC-signal. Additionally the active bandwidth can be changed, respectively confined!

These features make sure – especially when tracking inclined orbit satellites – that the correct satellite is located and hold.

On the illuminated and clearly arranged display all dialogues for installation and operating are held, but you will as well find a visualisation of position, performance and frequencies by aid of an x – y-axes-system. Parallel to the display of the frequency spectrum there is additional information given by alphanumerical overlays. All desired settings can precisely be realised by using a four-key entering device.

Firmware-updates can be loaded in using a RS232C-computer-interface.



Technical details:

Analogue output:	AGC (AutomaticGainControl)	Resolution bandwidth (RBW):	2 MHZ to 200 KHZ
Exit hub:	2 x BNC (front & backside)	Detection:	quasi peak value detection
Power output level:	positive DC 0.5 to 3.5 V	Measuring principle:	Homodyne/direct blender
Input frequency:	950 - 2150 MHZ		
Input hub/- impedance:	F-hub / 75 Ohm	Power supply:	AC 238V/ 100mA
Measuring range:	Low: 20/30 - 80 dBuV		via low heat device socket
Measuring range:	High: 50 - 110 dBuV	Serial interface:	RS 232 (DS9)
Measuring tolerance:	max. +/- 10dB/DIV		
Amplitude resolution:	2-5-10dB/DIV	Housing:	19"-Rack with 1 HU (Depth 180 mm)
Measuring tolerance:	max. +/- 3 dB	Weight:	1.6 kg
Frequency tolerance:	max. +/- 3 x 10E-6	Operating temperature range:	0 to +45 °C
Interference suppression:	min. - 35 dBc	Storage temperature range:	- 10 to + 50 °C
LO-converter-frequency range:	2150- 6338 MHZ		
LO-converter-storage places:	4 (editable)		
Frequency deviation:	100 - 50 - 20 - 10 - 5 - 2 - 1 - 0 MHZ		

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Usage considering as example: Eutelsat 13; East – vertical polarity - lower band



Whole spectrum
Centre frequency 11.300 GHZ
80 dBuV – L 10 dB – 100 MHz/DIV



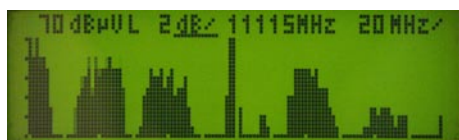
Spectrum zoomed to 50 MHz
Centre frequency 11.115 GHZ
(This is the analogue BBC-transponder)



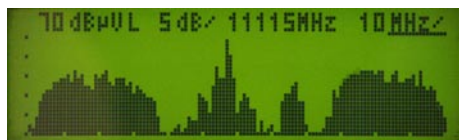
Spectrum zoomed to 20 MHz
Centre frequency 11.115 GHZ



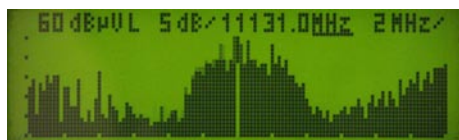
Spectrum zoomed to 20 MHz
Centre frequency 11.115 GHZ
but values changed to 70dBuV and to 5 dB



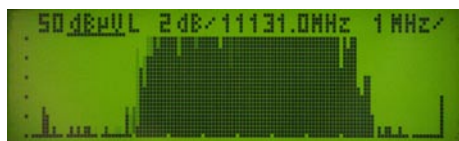
Spectrum zoomed to 20 MHz
Centre frequency 11.115 GHZ 5 dB
but values changed to 70dBuV and to 2 dB



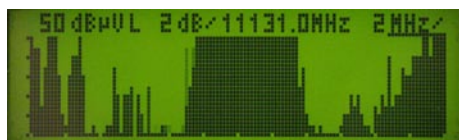
Spectrum zoomed to 10 MHz
Centre frequency 11.115 GHZ 5 dB
(The small transponder on the right besides the marker is the digital BBC Prime Europe 5,632 3/4 - 11. 131 GHZ)



Spectrum zoomed to 2 MHz
Central frequency 11.131 GHZ 60 dBuV
(BBC uses the same transponder for digital and analogue transmission)



Spectrum zoomed to 1 MHz
Central frequency 11,131 GHZ 50 dBuV
2 dB



Spectrum zoomed to 2 MHz
Central frequency 11,131 GHZ



Spectrum zoomed to 0 MHz
Central frequency 11,131 GHZ
with diverse settings

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Usage considering as example:

Eutelsat W3A 7.0° East

Polarity: horizontal

displayed band

11038 – 11158 MHz



Here the EBU feeds/channels can be seen precisely:

11052 MHz

11070 MHz

11079 MHz

11096 MHz

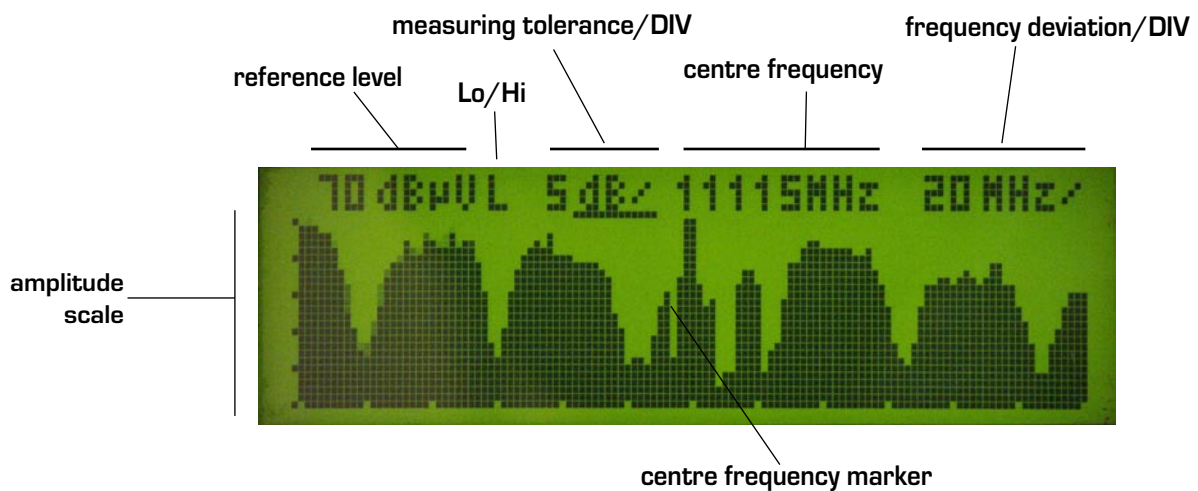
11106 MHz

11126 MHz

11154 MHz

You can also observe how certain feeds are switched on and switched off.

Display Layout:



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Display Layout:

Reference level:

The displayed value represents the highest displayable level (**peak level**).

Measuring ranges (DX-MODE off):

Low (L): 20/30 - 80 dBuV (RBW 0.2/ 2 MHz)
High (H): 50 - 110 dBuV (RBW 0.2/ 2 MHz)

In **DX-Mode** the basic noise level will of course decrease.

Amplitude resolution/sections:

Within the selected display range the **amplitude resolution** can be chosen in **10, 5 or 2dB/DIV-steps**. A corresponding scaling is to be seen on the left side.

Centre frequency:

When selecting this point of menu, you will first see a marker, whose position can be changed on its frequency axis by means of the „+/-“ keys; then the respective marker frequency is displayed. Thus the exact frequency of an unknown signal can be assigned very elegantly. Being confirmed by pressing the **“Enter”**-key, the marker frequency will become the new centre frequency.

Frequency deviation/DIV:

A frequency-scale is displayed on the zero-line. The distance between the dividing marks (**DIV**) defines the respective frequency deviation. The frequency deviation can be varied in to **100, 50, 20 10, 5, 2 1 or 0 MHz/DIV**-steps, starting from the centre frequency, which is set at the time. Thus this area can be zoomed as to the frequencies; this i.e. **makes easier the exact analysis of narrowband frequencies**. The resolution bandwidth will be adjusted automatically corresponding to the selected resolution:

Frequency deviation/DIV > 20 MHz: RBW = 2.0MHz

Frequency deviation/DIV < 10 MHz: RBW = 0,2MHz

Level value correction:

The level value for direct reading is correct, when the carrier bandwidth under consideration is smaller than (<) the resolution bandwidth (RBW).

With signals of higher bandwidth, for example FM-modulation (**analogue SAT-TV**) or **QPSK (DVB-S)** an additional correcting value has to be added:

Correcting value= $10 \times \log(\text{RBW: carrier bandwidth})$

- With FM-signals the **system bandwidth corresponds to the carrier bandwidth**, e.g. ASTRA: 27 MHz]
- With QSPK-signals the following approximatively applies:
Carrier bandwidth = symbol rate: 1.6 [e.g. 27,500MS/s : 1.6 = 17,18 MHz]

Assignment of in- and outputs:

Backside of housing



Additionally you will find an AGC-output (BNC) for direct connection of a voltmeter on the front wall.

Operating keys on the front side:

The 4 entering keys are mounted onto the right alongside of the display, providing the following functions:

Double arrow key	=	select menu item
+ and - keys	=	move cursor and change parameters
Enter	=	i nput - confirmation

