



**PLANAR** – Multifunkční měřící přístroj  
a monitoring zpětných směrů

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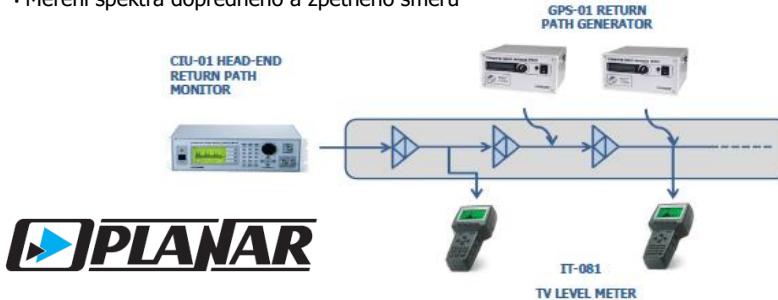
**PLANAR - měřící servisní technika  
a monitoring zpětných směrů**



## CATV zpětný směr – dohled a nastavení

Jednoduchý systém pro nastavení a dohled nad zpětným směrem CATV sítě :

- Kontrola frekvenčního spektra a nastavení zpětného směru CATV
- Měření spektra dopředného a zpětného směru



Všechna měření je možno zobrazit na řídící jednotce CIU-01, která je umístněna na HS. Následnou kontrolu úrovně výstupního signálu generátoru lze provádět analyzérem IT-081 v kterémkoliv bodě sítě.

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## CIU-01 Head-end Return Path Monitor

### SPECIFICATIONS:

Frequency range of the return path measuring, MHz	5-65
Frequency range of the forward path measuring, MHz	46-865
Terminal type	BNC
Input impedance, Ohm	75
Internal attenuator, dB	0, 20, 40 (auto)
Return loss, dB, not less	16
Input measuring range, dBuV	40-126
Resolution, dB	0,1
Accuracy, dB	±2

### Transmitter

Frequency range, MHz	400-500
Level range, dBuV	60-120
Terminal type	BNC
Output impedance, Ohm	75



### Return path analysis set characteristics

Time of new pilot-signals finding out, sec, less than	60
Spectrum measuring time, sec, less than	15
Quantity of active GPS-01s	up to 8



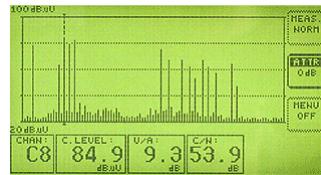
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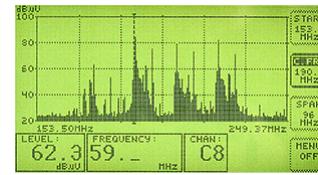


## CIU-01 Head-end Return Path Monitor

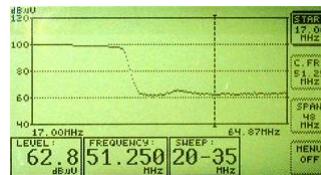
The measuring of carriers in a forward path.



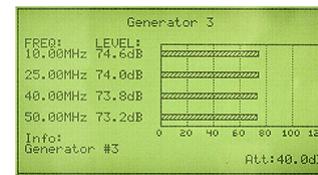
The measuring of spectrum in a forward path.



The measuring of frequency response function of a return path.



The measuring of pilot-signals levels.



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## GPS-01 Return Path Pilot Generator

### SPECIFICATIONS:

Terminal type	BNC
Input impedance, Ohm	75
Frequency range, MHz	5-65
Frequency resolution, kHz	125
Synthesized frequency accuracy, kHz	±10
Return loss, dB	>18
Level range, dBmV	72-118
Level resolution, dB	0,75
Level setting accuracy, dB	±0,5
Output level stability, dB	±0,25
Non-harmonic level in unmodulated mode, dB	-60
Spurious AM of output signal in frequency steady state, %	<0,6
Warming up time, min, less than	10



### Power supply

Battery	built in rechargeable, SLA, 12V/1,2 Ah
Battery life, hours	>5
Mains	220±22V/50-60Hz



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## IT-08 Univerzální měřící analyzér

IT-08 je multifunkční kompaktní a lehký přístroj (0,6kg)

- možnost připojení přes RS-232 sériové rozhraní a firmware update.
- napájení ze sítě nebo pomocí standardních AA NiMH akumulátorů

**MB-08** základní ovládací jednotka s grafickým LCD displejem, napájení (z baterií nebo sítového adaptéru).

**MC-08x** zasouvací moduly dle typu měření, volitelně dodávané se základnou.



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## IT-08x přehled

1. IT-081 TV Level Meter
2. IT-082 Digital Satelite Meter
3. IT-084 TDR Cable Reflectometer
4. IT-086 Optical Power Meter
5. IT-087 Digital TV QAM Signal Analyzer
6. IT-088 Digital TV COFDM Signal Analyzer
7. IT-089 Light Source

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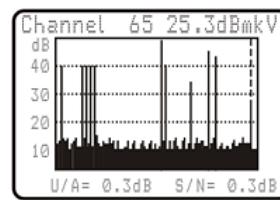


## IT-081 TV Level Meter

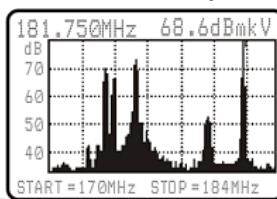
**SPECIFICATIONS**

tuning range	5 to 900 MHz
resolution	125 kHz
channel plan	B/G General, D/K, M/N AIR, M/N CATV
audio subcarrier, selective	4,5/ 5,5/ 6,0/ 6,5 MHz
attenuator	20, 40 dB (automatic mode)
return loss	>14 dB (att - 0dB) or >18dB (20, 40 dB)
level measurement range	30 – 90 dBµV (input attenuator is off); 50 – 110 dBµV (20 dB input attenuator is on); 50 – 110 dBµV (20 dB input attenuator is on)

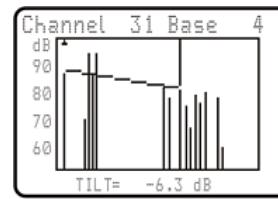
SCAN measuring mode



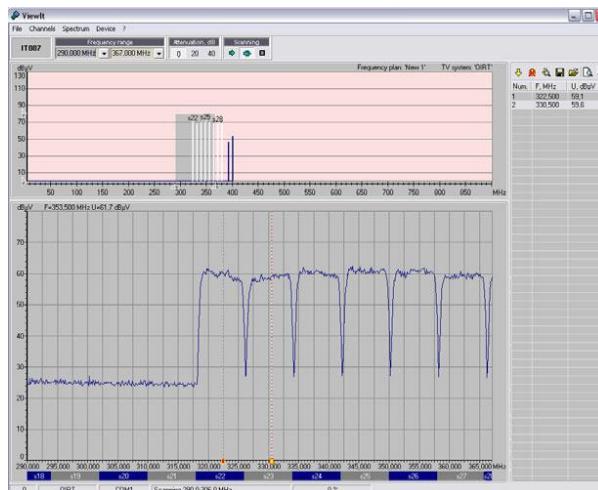
SPECTRUM measuring mode



TITL measuring mode



## PC Software ViewIt



## IT-082 Digital Satellite Meter

Main menu

tuning range	950 to 2150 MHz
resolution	500 kHz
input impedance within operating frequency range	75Ω
input signal modulation	QPSK
symbol rate	1...45 MSps
FEC	1/2, 2/3, 3/4, 5/6, 7/8
LNB frequency error	±10 MHz
MER measurement range	4...15 dB
BER measurement range prior to Viterbi decoder	1.0E-1...1.0E-7
BER measurement range after Viterbi decoder	1.0E-3...1.0E-8
attenuator	20, 40 dB (automatic mode)
level measurement range	40 - 120 dBµV
accuracy	±2,5 dB

\*performing the measurements of level and parameters of a satellite signal  
 \*viewing a spectrum RF at the input meter  
 \*viewing a constellation diagram  
 \*viewing the list of transponder channels  
 \*viewing and changing the satellite directory by the meter

Satellite dish alignment

EutelsatW4 TR004 L  
 TF:12270MHz IF:1670MHz  
 LNB\_ERR:1.23MHz  
 TF:12270MHz  
 45.6 dBuV

Spectrum analyzer

Dual LNB Dish Alignment Mode

EutelsatW4 TR004 12270MHz 56.7dBuV  
 20 30 40 50 60 70 dB  
 Eurobird3 TR012 11472MHz 67.2dBuV  
 20 30 40 50 60 70 dB

CENT:1500MHz SPAN:100MHz

Reception quality measurement

EutelsatW4 TR004 L  
 MER = 9.1dB  
 PreBER : 1.2E-2  
 PostBER : 5.5E-5  
 PostBER = 5.5E-05

EutelsatW4 TR004 L  
 PreBER : 1.2E-2  
 PostBER : 5.5E-5 PASS  
 MER : 9.1 dB  
 Netw.Name : NTV Plus  
 Orb.Post : 36.0°E

State Channel Save

Constellation diagram

EutelsatW4 TR004 L  
 MER = 9.1dB  
 PreBER : 1.2E-2  
 PostBER : 5.5E-5  
 MER : 8.4dB  
 Mode:x1

List of transponder channels

No	Ch.	Name	S	R	A
1		Movistar24	V	R	+
2		4fun TV	V	R	-
3		Orange Sport	V	R	-
4		Planete	V	R	+
5		MINIMINI	V	R	+
6		PATIO TV	V	R	-

View

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## PC SOFTWARE ItToolsSatellite

ItToolsSatellite

Properties table

#	Name	preBER	postBER	MER, dB	Netw.Name	Obz. Post	Date/Time
1	Eurobird 32	1.4E-02	1.9E-02	11.4	PROFIBER	12.0E-02	21-08-2009 11:38
2	Amstrad	1.4E-02	1.4E-02	11.4	PROFIBER	12.0E-02	21-08-2009 11:38
3	Amstrad	1.4E-02	1.4E-02	11.4	PROFIBER	12.0E-02	21-08-2009 11:38

Measurement mode

Signal level: 59.1 dBuV

Measurement parameters

Symbol rate, MHz: 104.0

FEQ: 104

Symbol rate, MHz: 104.0

LNB frequency offset, MHz: 0.0

preBER: 5.5E-03

postBER: 5.5E-07

MER: 11

Identification

Network name: ITTSat+  
 Obz. position: 01.100E

Save | Import | Export | Done

Channels table, Total: 16 items

#	Channel Name	Obz. Name	Post Status	CS	VIRD	APD
1	ITTSat+ 902	ds-tv	running	yes	103	113
2	ITTSat+ 902	ds-tv	running	yes	106	104
3	ITTSat+ 902	ds-tv	running	yes	104	106
4	POLYB44	ds-tv	running	yes	105	100
5	ITTSat+ 902	ds-tv	running	yes	103	102
6	ITTSat+ 902	ds-tv	running	yes	102	108
7	ITTSat+ 902	ds-tv	running	yes	102	108
8	Musici_FunTV	digital-radio	running	no	-	63.6
9	Musici_FunTV	digital-radio	running	no	-	63.6
10	Musici_Dance	digital-radio	running	no	-	63.0
11	Musici_Sport	digital-radio	running	no	-	63.0
12	Musici_Sport	digital-radio	running	no	-	63.0
13	Musici_Sport	digital-radio	running	no	-	64.2
14	Musici_Oldies	digital-radio	running	no	-	64.2

Constellation diagram

12300 11750 11800 11850 11900 12000 12050 12100 12150 12200 12250 12300 12350 12400 12450 12500 12550 12600 12650 12700 12750 12800 12850 μHz

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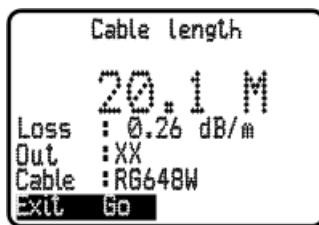
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## IT-084 TDR Cable Reflectometer

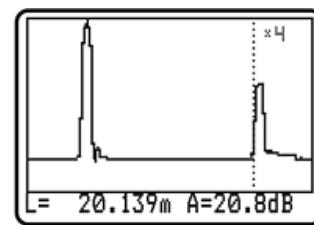
### SPECIFICATIONS:

limiting measurement range	1 – 1600 m
horizontal resolution	0,15*PVF m
measurement ranges	12,5/25/50/100/200/400/800/1600 m
input impedance, selective	50/75 Ohm
duration of test pulse, selected from	7/ 25/ 100/ 500 ns
test pulse voltage with no load at input, no less than	3 V(75 Ohm); 2 V(50 Ohm);

Cable length measurement



Cable probing

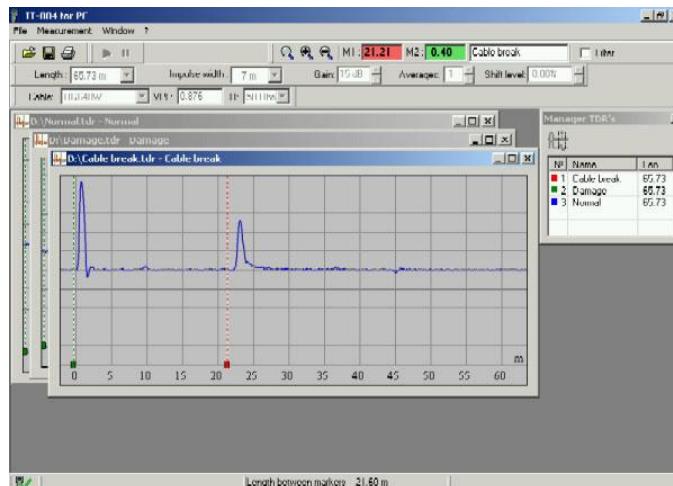


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## PC SOFTWARE It 084



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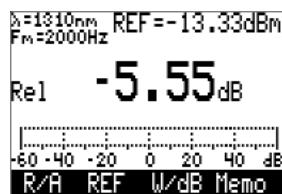


## IT-086 Optical Power Meter

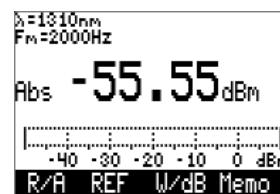
### SPECIFICATIONS:

	IT-086.1	IT-086.2
connector type	FC	changeable (FC, SC)
measurement range, dBm	-60...+8	-50...+20
maximum power level, dBm	10	22
resolution, dB	0.01	
calibrated wavelengths, nm	1310, 1550	
accuracy at 0 dBm level, dB	±0.3	
additional uncertainty due to non-linearity within the measurement range, dB	±0.2	

Relative power measurement mode



Absolute power measurement mode

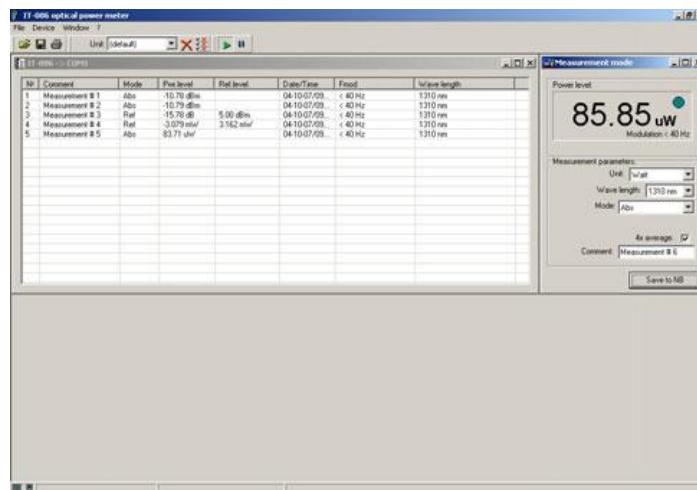


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## IT-087 Digital TV QAM Signal Meter

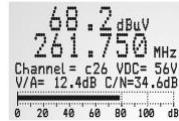
### SPECIFICATIONS:

tuning range	5 to 900 MHz
operating range	45 to 865 MHz
resolution	125 kHz
channel plan	Load from PC
attenuator	20, 40 dB (automatic mode)
return loss	>14 dB (att - 0dB) or >18dB (20, 40 dB)
level measurement range	
• input attenuator is off	30 – 80 dBuV
• 20 dB input attenuator is on	50 – 100 dBuV
• 40 dB input attenuator is on	70 – 120 dBuV
IF bandwidth	230 ± 60 kHz
modulation	QAM16, 32, 64, 128, 256
symbol rate	1.00 – 7,00 Mbps
MER measurement range	21–40 dB (for QAM64)
MER measurement resolution	0,1 dB
BER measurement range	1.0E-2 – 1.0E-8

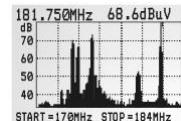
Main menu



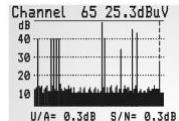
LEVEL measuring mode



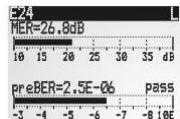
SPECTRUM measuring mode



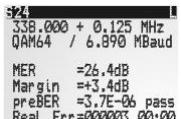
SCAN measuring mode



BER/MER measuring mode (bar-graph)



BER/MER measuring mode (text)



Constellation diagram measuring mode

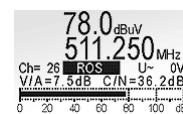


## IT-088 Digital TV COFDM Signal Analyzer

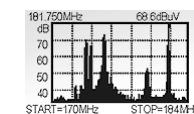
### SPECIFICATIONS:

tuning range	5 to 900 MHz
operating range	45 to 865 MHz
resolution	125 kHz
channel plan	Load from PC
attenuator	20, 40 dB (automatic mode)
amplifier (for DVB-T/H measurement only)	11 dB

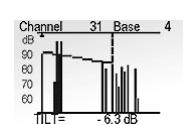
LEVEL measuring mode



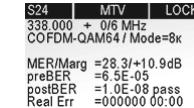
SPECTRUM measuring mode



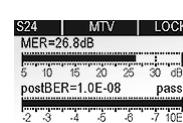
TITLE measuring mode



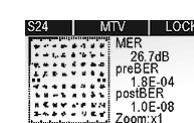
BER/MER measuring mode (text)



BER/MER measuring mode (bar-graph)



Constellation mapping measuring mode



## PC SOFTWARE ViewIt

**Digital measuring window**

Plan: All TV channels Frequency, MHz: 546.000 Channel: 30

Modulation:	Spectrum:	Chan. width, MHz:	Carriers:	Guard interval:	Hierarchy mode:	Code rate (HP):	Code rate (LP):
Auto	Auto	Auto	Auto	Auto	Auto	Auto	Auto
LUDUM-QAM64	norm	8	8k	1/32		3/4	

Synchronization: lock

Gain, dB: 0

MER, dB: 24.9

Noise margin, dB: 5.9

preBER: 3.5E-3

postBER: 1.1E-6

Tune error, MHz: 0.0000

Errors counter: 0

Avg. period: 00:04:11    Reset

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## IT-089 Light Source

**SPECIFICATIONS:**

optical element	FP-LD
wavelength	1310 ±20 nm
spectral width (RMS)	≤5 nm
optical output power range (CW)	-7...+3 dBm
optical output power stability (at 0 dBm)	<ul style="list-style-type: none"> <li>• time stability (15 min) ±0,02</li> <li>• time stability (8h) ±0,1</li> </ul>

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