

Selective power meter

Selective power meter SVM-1MS is intended for measurements in E-GSM900, P-GSM900, DCS1800 and UMTS standards. SVM-type meters are available on order in wideband configuration 50-2200MHz. Firmware can be specified by customer.

Features:

- Compact case
- Wide frequency range up to 2170MHz
- Good dynamics up to 110dB
- Two RBWs 250kHz and 4.6MHz
- Large built-in LCD
- Internal 4-cell charger



Product description:

Selective power meter SVM-1MS operates in 880-960MHz/1710-1880MHz/1920-2170MHz ranges. Very compact, portable, easy in control, ready to work during 8 hours SVM-1MS is indispensable measuring instrument for wide range of mobile communication applications.

SVM-1MS allows measurements of radio-signals with dynamics up to 110dB, using internal attenuator and precisely designed RF-chains. Analyzing frequency can be adjusted with 200kHz step in GSM900/DCS1800 standards and with 5MHz step in UMTS. Bandwidth of measurement is automatically fixed at 250kHz in GSM900/DCS1800 and at 4.6MHz in UMTS frequency ranges. "Offset" option gives possibility to read results directly from power meter display, without additional calculations after measurement. At start-up SVM-1MS takes initial configuration from state (number 1) saved into internal EEPROM. Built-in battery level indicator shows remaining power of 4xAA-type elements.

User interface:

Buttons:

ON/OFF - switching device ON and OFF

EXIT - select digit position for channel changing or exit from function mode

FUNC - activation of function mode or switching in series between settings of function mode

UP - tuning of channel/sub-band in measurement mode or tuning selected parameter in function mode

DOWN - tuning of channel/sub-band in measurement mode or tuning selected parameter in function mode

Connectors and indication:

LCD - 16x2 alphanumeric display for indication of all main parameters of SVM-1MS

Green LED - active in case of normal operation in accumulator charging progress

Red Led - active in case of some fault accumulator charging situation, like broken battery

RF input - input connector for measuring RF power

DC input - 2.1mm accumulator charger input for external adapter +8.5...+9.5V/1.5A

NB! Using external adapter please see that positive side of 2.1mm DC-conductor is in center (inner conductor). Begin charging only, if battery level indicator will show "1" or less.

USB - not used, reserved for future applications

Settings and properties:

- In case of need, batteries/accumulators can be replaced: unscrew case and replace batteries/accumulators.
- To set input attenuator, offset, power save mode, save or recall state push button FUNC.
- To set desired channel or sub-band select with button EXIT digit/symbol position and increase/decrease number using buttons UP or DOWN.
- Measuring, it cannot be forgotten, that maximum input power is +20dBm with 30dB input attenuator. Giving higher level the device can be damaged.
- Offset tuning step is 1dB in range -100dB to 100dB



- Switching the device on, initial configuration is recalled from state number 1. Using function mode settings state 1 can be changed and saved in "SAVE STATE" section.
- To enter into function mode push FUNC. Repeat FUNC pushing until desired setting will be found.
- To exit from function mode push EXIT and wait one second.
- To save desired configuration into one from 5 possible states, push FUNC, select "SAVE STATE N", with button UP select appropriate state number N and push DOWN. If procedure successfully completed, in lower left corner of LCD it must be seen "DONE". Channel number for each sub-band, attenuator, offset and power save mode values are saved into internal EEPROM.
- To recall desired configuration one from 6 possible states, push FUNC, select "RECALL STATE N", with button UP select appropriate state number N and push DOWN. If procedure successfully completed, in lower left corner of LCD it must be seen "DONE". State "DFL" is factory configuration.
- In power save mode device does only one power measurement during approximately 5 seconds, thanks to what power consumption can be notably reduced. If save mode is switched off, the device does fast measurements (approximately 3 times per second), but battery life is shorter.
- Built-in battery level indicator shows (right lower corner of LCD) remaining power of 4xAA-type elements. If level is equal with 6.0V (or above) the indicator will show 9. In case of low level (~4.1V or less) value is 0. SVM-1MS will be automatically switched off when battery level is below +4.1V. Built-in charger allows external charging/powering with any kind of network adapter +8.5...+9.5V/1.5A.

Technical specifications:

Parameter	Specification
Frequency sub-bands*	880.2-889.8MHz (EU) 890.0-914.8MHz (PU) 925.2-934.8MHz (ED) 935.0-959.8MHz (PD) 1710.2-1779.8MHz (DU) 1805.2-1879.8MHz (DD) 1922.5-1977.5MHz (WU) 2112.5-2167.5MHz (WD)
Measurement bandwidth*	GSM900/DCS1800: 250kHz UMTS: 4.6MHz
Frequency adjust step	GSM900/DCS1800: 200kHz UMTS: 5MHz
Noise floor (internal input attenuator 0dB)	-90dBm
Maximum input level** (internal input attenuator 30dB)	+20dBm
LO frequency accuracy	±50ppm
LO phase noise	typ. 100dBc/Hz @ 100kHz
Input impedance	50Ω
Built-in input attenuator	0...30dB (step 10dB)
Measurement accuracy (within selected bandwidth, tested at -10dBm)	± 2dB
Operating time (4xAA-type new accumulators 2600mAh, power save mode is on)	> 8 hours
Accumulators	4 pcs., AA-type, NiMH, 1.2V
Battery charging duration (2600mAh NiMH 4xAA)	≈ 3 hours
Battery level indicator	digital, built-in
Digital offset option	built-in
Internal 4-cell charger *** 1000mA, 2.1mm DC-connector for external network adapter	built-in
RF-connector	N-type, female
Dimensions	162 x 60 x 60 mm

Notes:

* on order other sub-bands and bandwidth are available. SVM-type meters are available on order in wideband configuration 50-2200MHz. Firmware can be specified by customer. For more details ask Rantelon.

** in case of input level greater than -15dBm input attenuator is automatically putted to 30dB.

*** **NB!** Using external adapter please see that positive side of 2.1mm DC-connector is in center (inner conductor). In charging progress output voltage of external adapter must be between +8.5...+9.5V/1.5A. Begin charging only, if battery level indicator will show “1” or less.

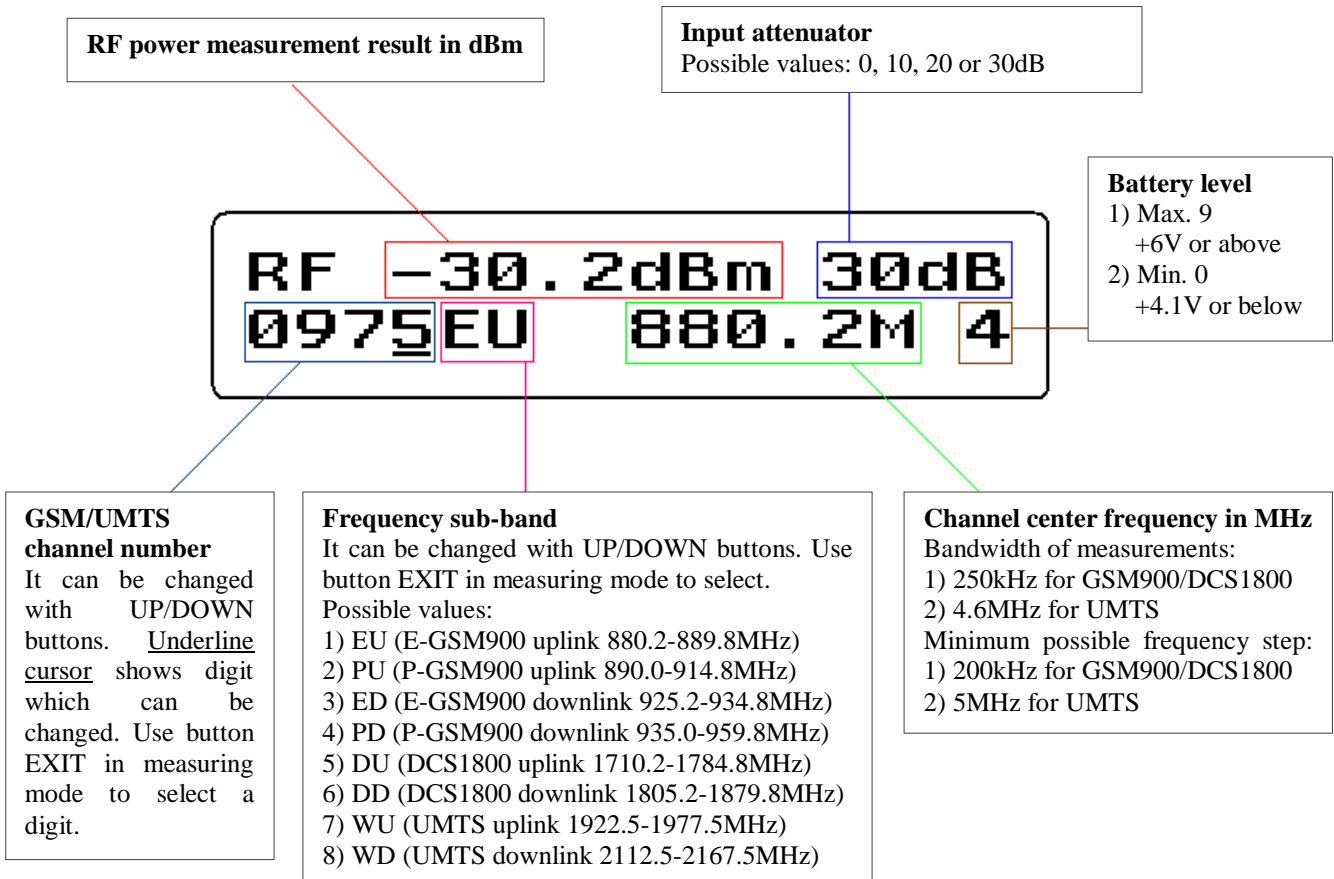
Functional modes and configurations:

Current section describes on examples possible settings and states of SVM-1SM.

Display image example the device is at start-up.



Display image example the device is in measuring mode:



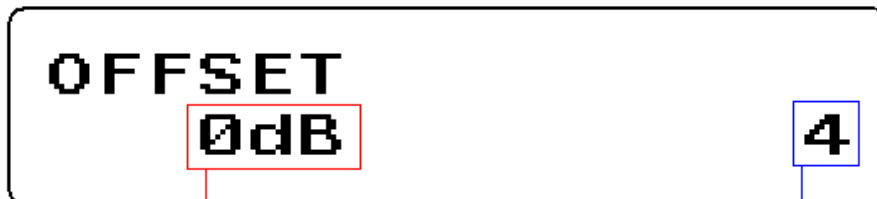
Display image example the device is in function mode (input attenuator setting):



Input attenuator setting
It can be changed with UP/DOWN buttons.
Possible values: 0, 10, 20 or 30dB

Battery level
The value can be a little bit higher thanks to low power consumption of the device in function mode.
1) Max. 9 (+6V or above)
2) Min. 0 (+4.1V or below)

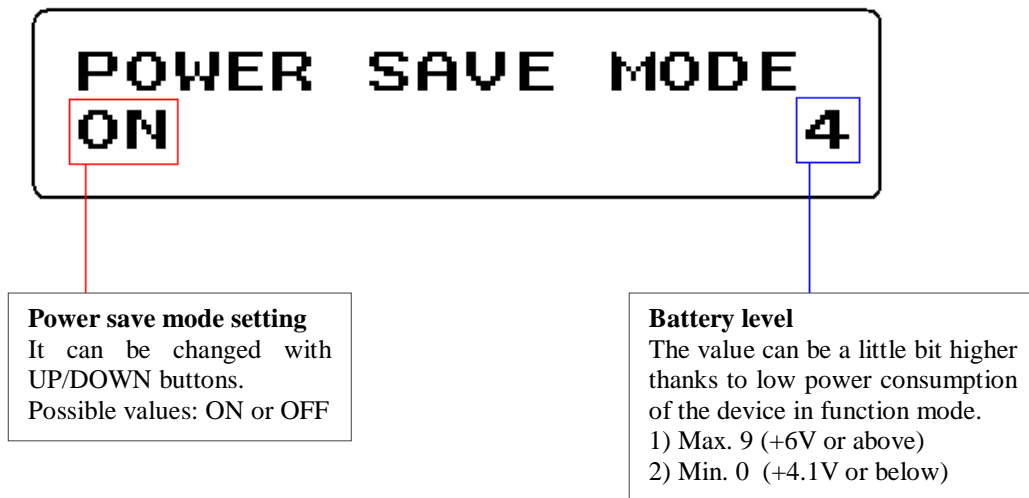
Display image example the device is in function mode (offset setting):



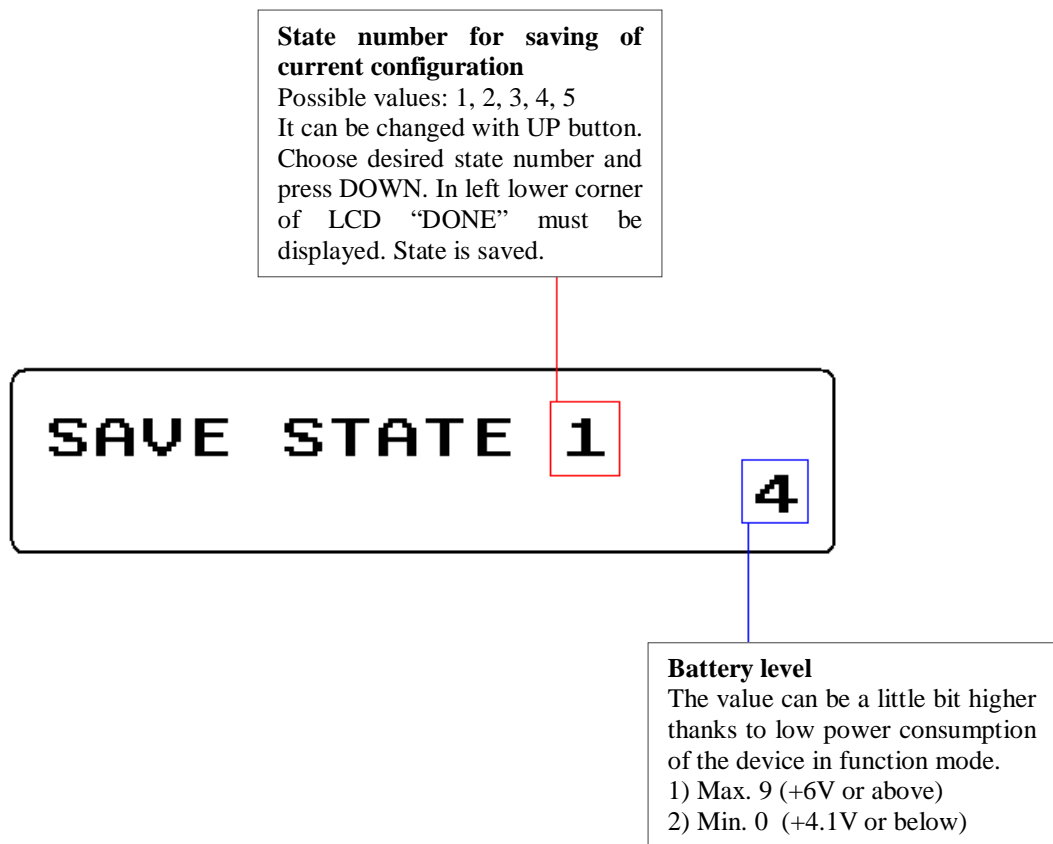
Offset setting
It can be changed with UP/DOWN buttons.
Possible values:
1) Max. 100dB
2) Min. -100dB
Step: 1dB

Battery level
The value can be a little bit higher thanks to low power consumption of the device in function mode.
1) Max. 9 (+6V or above)
2) Min. 0 (+4.1V or below)

Display image example the device is in function mode (power save mode setting):



Display image example the device is in function mode (configuration saving):



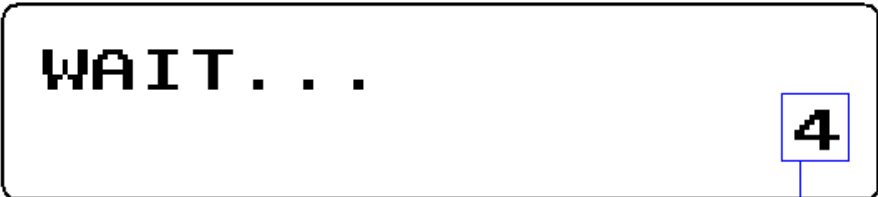
Display image example the device is in function mode (configuration recalling):

State number for recalling of desired configuration
Possible values: 1, 2, 3, 4, 5 or DFL
It can be changed with UP button.
Choose desired state number and press DOWN. In left lower corner of LCD "DONE" must be displayed. State is recalled.
State "DFL" is available for recalling only. In "DFL" factory configuration saved.



Battery level
The value can be a little bit higher thanks to low power consumption of the device in function mode.
1) Max. 9 (+6V or above)
2) Min. 0 (+4.1V or below)

Display image example on exit from function mode:



Battery level
The value can be a little bit higher thanks to low power consumption of the device in function mode.
1) Max. 9 (+6V or above)
2) Min. 0 (+4.1V or below)



Display image example the device is in switching off mode.



Display image example battery level is too low.



When battery level is below +4.1V (indicator shows zero) SVM-1MS will be automatically switched off.