AMIKO Multitracker 2

DVB COMBO METER

User`s Manual

Please refer to the following notes before use.

     • Please read this user manual carefully to be able to safely use and maintain your meter.

     •The technical specifications and operation guides in this manual are subject to changes

     without notice.

     • Before using the first time, please charge the battery for 3 hours.

     •Please use the special adapter for charging attached with the meter, do not use it for

     other product

     • In case of any technical questions, please contact your local dealer.

1. MAIN FEATURES

- Support DVB-S/DVB-S2/DVB-T/DVB-T2/DVB-C
- LNB short-circuit protection and indicator.
- Extremely fast and accurate with high sensitivity.
- 320*240 color LCD display with controllable back light.
- Database editable by user easily.
- Signal lock audible notification: on/off.
- Firmware can be upgraded by USB port.
- Database can be edited on PC and downloaded by USB port.
- Power-supply100-240V/50/60Hz 12V, 1000Am.
- Ultra-long standby, low power consumption.
- Fast charging Li-ion battery can last around 3 hours

DVB-S/S2

- Real time Spectrum-Analyzer and transponder message detected
- Constellation diagram with 8PSK, QPSK, 16APSK, 32APSK.
- Angle calculation of azimuth and elevation.
- Azimuth and elevation measurement.
- Satellite alignment system.
- Power, C/N, BER, Modulation mode display.
- DisEqC1.0, DisEqC1.2 and USALS supported.
- Auto DisEqC identification for DisEqC1.0
- SCR/SCD2 supported.
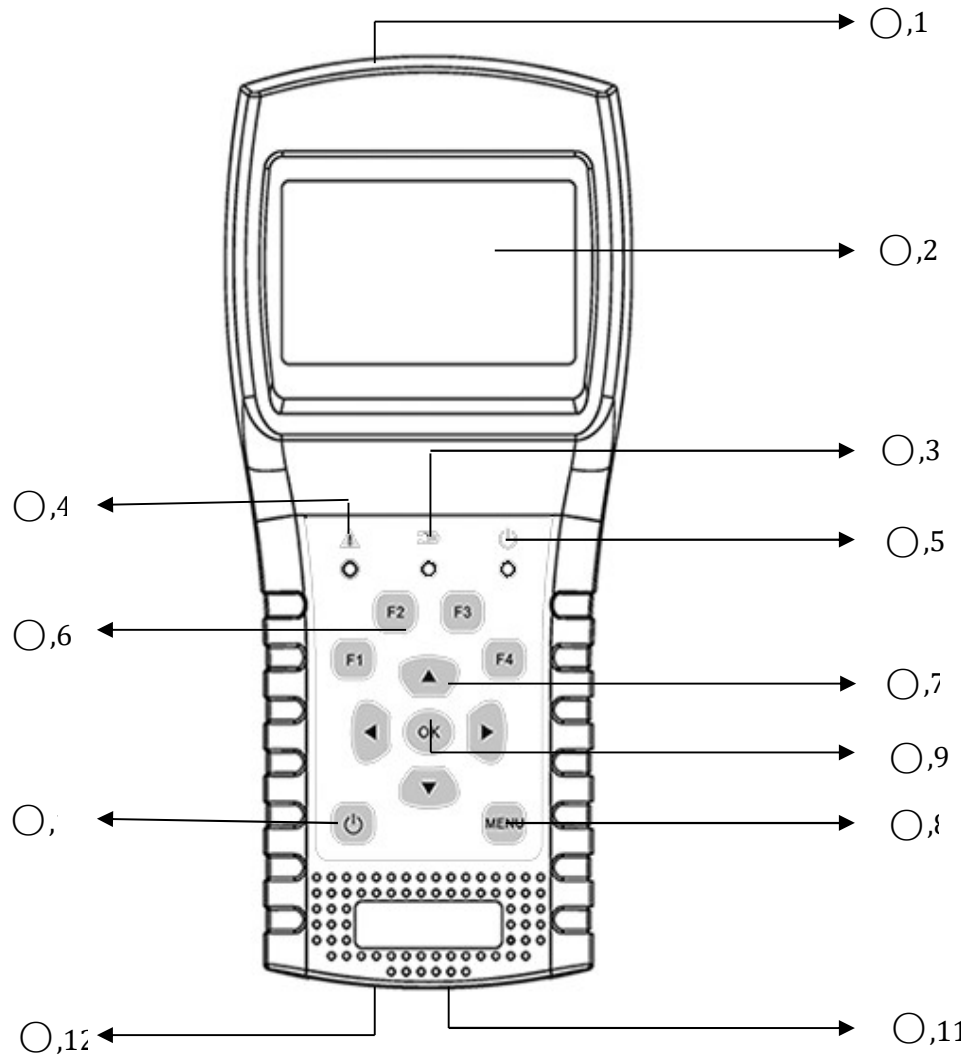- Cable identification for Quattro LNB easily

DVB-T/T2

- Power, VBER, SNR and CBER display.
- Spectrum analyzer
- SCOPE Display
- Channel Auto Scan

DVB-C

- DVB-C(QAM) : Power, CBER, PBER, SNR and Symbol Rate display
- Spectrum analyzer
- Tilt Display

2. BUTTONS AND INDICATORS

1. **LNB INPUT:**   Signal input port, connects directly to antenna using coaxial cable.

2. **LCD Screen:**   Show menus and parameters.

3. **Charge Light:**

    Red: the battery is being charged.

    Blue: the battery is full.

4. **Warn Light:**   Flash if LNB is short connected

5. **Working Light:**

    Green: the meter is in working status

6. **Function Keys:**

    F1: Turn on/off the screen display

F2: Enable/disable deep when pressing keys

F3: Enter to TP control menu in Satellite Measure menu

F4: Enter to Auto DiSEqC function in Satellite Measure menu

7. **Navigation Keys:**

◀ / ▶ : Move focus or change value.

▲ / ▼ : Move focus or change value

8. **MENU:** Go into main menu or exit from the current menu

9. **OK:** Confirm

10. **⏻ :** Turn the meter on/off, press and hold for 2 seconds to power on the meter.

11. **Charging:** Connect with the charger cord for charging the equipment.

12. **Reset:** Reset the meter

3. HOW TO MEASURE

Power on the meter, select the system to measure or select system setting to set parameters for the device in the HOME menu.

In all menus, press [▲ / ▼] button to navigate, press [◀ / ▶] button to change the value of focused item, press [OK] button to confirm your select, edit value or enter a list to select a wanted item, press [MENU] button to enter or exit menus.

How to measure satellite signal:

1. Connect the signal cable to F-Type, Female jack.
2. Enter Satellite submenu.
3. Calculate the elevation and azimuth according to your local position in Calculate Angels menu. Set or adjust your dish to the right position.
4. Set the LNB parameters according to your field environment in LNB Setting menu. Make sure all the things are correct.
5. Enter to Satellite Measure menu, select the correct satellite and a normal transponder to check the signal is locked or not.

According to all the output values, such as strength, quality, CNR and power level, you can accurate your dish to get the best quality signal. And also you can analyzer the signal in Spectrum Chart menu and Constellation menu to help you to learn the locked signal well. User can edit the satellite position and transponder in Satellite Edit menu.

How to measure terrestrial signal:

1. Connect the signal cable to IEC-Type, Female jack first.
2. Make sure set Antenna Power to ON in System Setting menu if your antenna needs power supply.

3.   Analyze the signal in Terrestrial Measure menu.

4.   Analyze the scope in Scope menu and the spectrum in Spectrum Chart menu.

How to measure cable signal:

1.   Connect the signal cable to IEC-Type, Female jack first.

2.   Analyze the signal in cable Measure menu.

3.   Analyze the TILT in TILT menu and the spectrum in Spectrum Chart menu.

Please refer below descriptions if you want to learn all functions.

4. HOME MENU

The meter will enter this menu first during power on. Press
[▲ / ▼] to switch items or [OK] to enter submenus.

Satellite:	Submenu for DVB-S/S2 system.
Terrestrial:	Submenu for DVB-T/T2 system.
Cable TV:	Submenu for DVB-C system.
System Setting:	Submenu for system parameters setting. Such as language, auto power off and so on.

5. SATELLITE

The submenu for DVB-S/S2 functions. User can read the parameters of the live signal, analyze the spectrum chart, get the constellation chart, calculate the angles for a special satellite or edit the parameters of satellites.

5.1 SATELLITE MEASURE

The device will show the strength and quality of the live signal. And also BER, CNR, modulator type, FEC and power level

- **S2-Q-4/5:**   The modulator type, FEC and DVB system of the signal.

- **036.0°E Eutelsat 36:**   The current satellite. Press [◀ / ▶] to switch between satellites and press [OK] to enter satellite list to select satellite. Press [OK] button to select the focused satellite and press [MENU] to exit

from edit menu. All the other parameters on the menu will be refreshed according to the selected satellite.

- **12322/V/27500:**   The current transponder. Press [◀ / ▶] to switch between transponders and press [OK] to enter edit. Press [◀ / ▶] to move curse and [▲ / ▼] to change value of each focused item in edit menu.

- **9750-10600:**   The LNB type. Press [◀ / ▶] to switch between LNB types and press [OK] to enter list to select type.

- **22K:**   The 22k parameter. Press [◀ / ▶] button to switch between Auto, Off and On.

- **13V:**   The power parameter of the LNB. Press [◀ / ▶] button to switch between Auto, Off,   13v and 18v.

- **Lock :**   The lock status.
- **CNR:**   The CNR value of signal.
- **PWR:**   The power level of signal.
- **BER:**   The BER value of signal.
- **Str:**   The strength of signal.
- **Qlt:**   The quality value of signal.

5.2 LNB SETTING

All the LNB parameters are set in this menu. Such as LNB type, LNB power, 22k, Diseqc type and motor type.
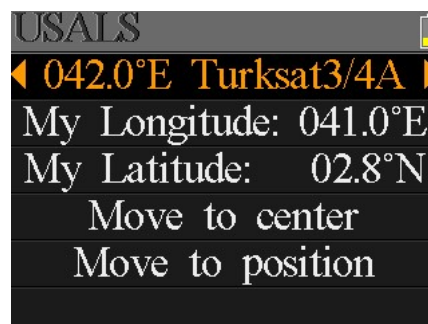

- **042.0°E Turksat3/4A:** The current satellite. Press [◀ / ▶] to switch between satellites and   press [OK] to enter   satellite list to select satellite. Press [OK] button to select the   focused satellite and press [MENU] to exit from edit   menu. All the other parameters   on the menu will be refreshed according to the selected satellite.

- **11096/H/30000:**   The current transponder. Press [◀ / ▶] to switch between transponders and   press [OK] to enter edit.   Press [◀ / ▶]

to move curse and [▲ / ▼] to change value of each focused item in edit menu.

- **UNIVERSAL:** The LNB type. Press [◀ / ▶] to switch between LNB types and press [OK] to enter list to select type.

- **22K:** The 22k parameter. Press [◀ / ▶] button to switch between Auto, Off and On.

- **Pwr:** The power parameter of the LNB. Press [◀ / ▶] button to switch between Auto, Off, 13v and 18v.

- **None:** The Diseqc port setting for Diseqc 1.0 and 1.1. Press [◀ / ▶] button to switch between ports or press [OK] button to select port in the list.

- **Fixed:** Set the motor type. Press [◀ / ▶] to switch between Fixed, USALS and Diseqc 1.2.


5.2.1 USALS Setting:

Press [OK] to enter USALS SETUP menu on Position Type if the type sets to USALS parameters

- **042.0°E Turksat3/4A:** The current satellite. Press [◀ / ▶] to switch between satellites and press [OK] to enter satellite list to select satellite. Press [OK] button to select the focused satellite and press [MENU] to exit from edit menu. All the other parameters on the menu will be refreshed according to the selected satellite.

- **My Longitude:** The longitude of local. Press [OK] to enter edit mode, then press [▲ / ▼] to change the value and [◀ / ▶] to move curse. Press [OK] again to exit edit mode

- **My Latitude:** The latitude of local. Press [OK] to enter edit mode, then press [▲ / ▼] to change the value and [◀ / ▶] to move curse. Press [OK] again to exit edit mode

- **Move to center:** Press [OK] to move the dish to central position.

- **Move to position:** Press [OK] to confirm to move to setting position

5.2.2 Diseqc 1.2 Setting:

Press [OK] to enter Diseqc 1.2 setting menu on Position Type if the type sets to Diseqc 1.2
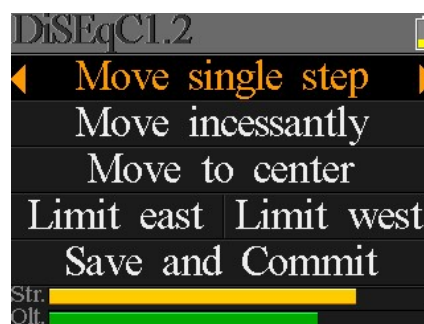
- **Move single step:**   Move the motor by step. Press [◀ / ▶] to move to west or east

- **Move incessantly:**   Move the motor incessantly. Press [◀ / ▶] to move to west or east

- **Move to centre:**   Press [OK] to move to centre point

- **Limit east:**   Set the move limit to east

- **Limit west:**   Set the move limit to west

- **Save and Commit:**   Press [OK] to save current position

- **Str.:**   The strength of signal

- **Qlt.:**   The quality of signal

5.3 EDIT SATELLITE

The parameters of satellite, such as Orbit Position and Transponder can be edit in this menu. All the satellites will be listed in this menu.

Press [▲ / ▼] buttons to move curse in list and press [OK] button to edit.

Press [OK] button to edit the name or the orbit position of current satellite in the dialog. And then press [◀ / ▶] to move curse and [▲ / ▼] to change value of each focused item in edit menu.

Press [▲ / ▼] button to switch between satellite and transponder list.

Press [F3] to add new transponder. Press [F4] to enter delete dialog, press [OK] to confirm to delete or press [MENU] to cancel. And press [OK] button to edit selected transponder. And then press [◀ / ▶] to move curse and [▲ / ▼] to change value of each focused item in edit menu.

5.4. SPECTRUM CHART

This menu will show the spectrum chart of setting frequency range on current cable line. Press [▲/▼] to switch curser focus between Start Frequency, LNB Type, End Frequency, LNB Power/22K and Current Frequency Mark.
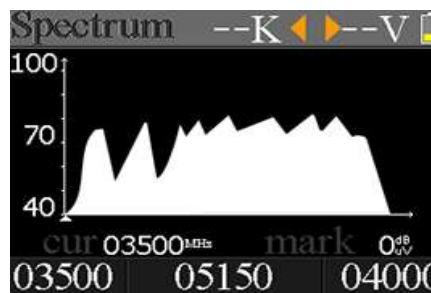
- **--K:** Show the 22k status. -–K: 22k off; 22k: 22k on

- **--V:** Show the RF power output status. The values are: 13V, 18V and OFF(--V)

- **40~70~100:** The range of power level. And the range is 0 ~ 100

- **▲:** The current frequency curse, press [◀ / ▶] to set the current frequency.

- **03500:** The start frequency of the spectrum chart. Press [OK] to edit it.

- **mark:** The power level value of current frequency

- **04000:** The end frequency of the spectrum chart. Press [OK] to edit it.

- **cur:** The current frequency

- **05150:** The current LNB type mode.

Press [◀ / ▶] to switch between LNB types.

Press [OK] button to check whether the current frequency can be locked or not. A dialog will show the locked transponder once it locks.

5.5. CONSTELLATION

Move the curse to Constellation icon and press OK to select satellite and transponder for constellation analyzer. See the figure below:

- **042.0°E Turksat3/4A:** The current satellite. Press [◀ / ▶] to switch between satellites and press [OK] to enter satellite list to select satellite. Press [OK] button to select the focused satellite and press [MENU] to exit from edit menu. All the other parameters on the menu will be refreshed according to the selected satellite.

- **11096/H/30000:** The current transponder, press [◀ / ▶] to switch between transponders

- **Constellation:**   Press [OK] to start and show the constellation
- **Str:**   The strength of signal
- **Qlt:**   The quality of signal

Right is the constellation menu:

The CNR, Power level and constellation chart will be showed on the menu. Press [OK] to refresh.
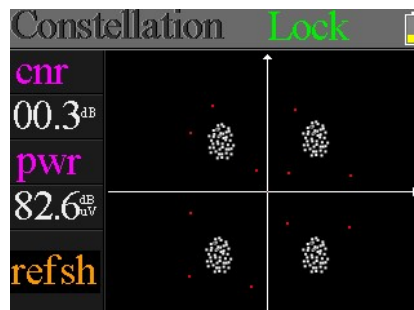

5.6 ANGLE CALCULATION

The elevation and azimuth of the antenna will be calculated according to the customized longitude and latitude or the selected city. Press [OK] to enter edit mode on My Longitude or My Latitude if Customized is selected. And press [◀ / ▶] to switch the focused item and press　[▲ / ▼] to change values for each item under edit mode. Please see below figure:

○,1. The current elevation simulated by meter

○,2. The right elevation calculated by meter

○,3. The current azimuth simulated by meter

○,4. The right azimuth calculated by meter
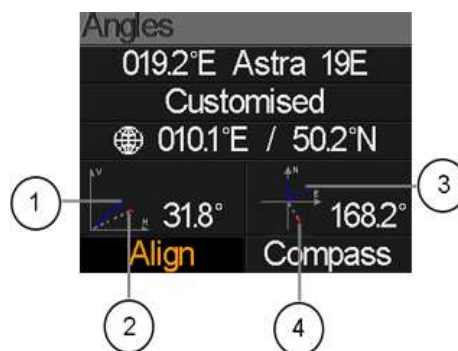
User need to adjust the attitude of the meter according to the simulated results until the current simulated values very close to the right ones. As close as possible. Then the BLUE lines will turn GREEN. Belowing is the graph for meter during adjust.
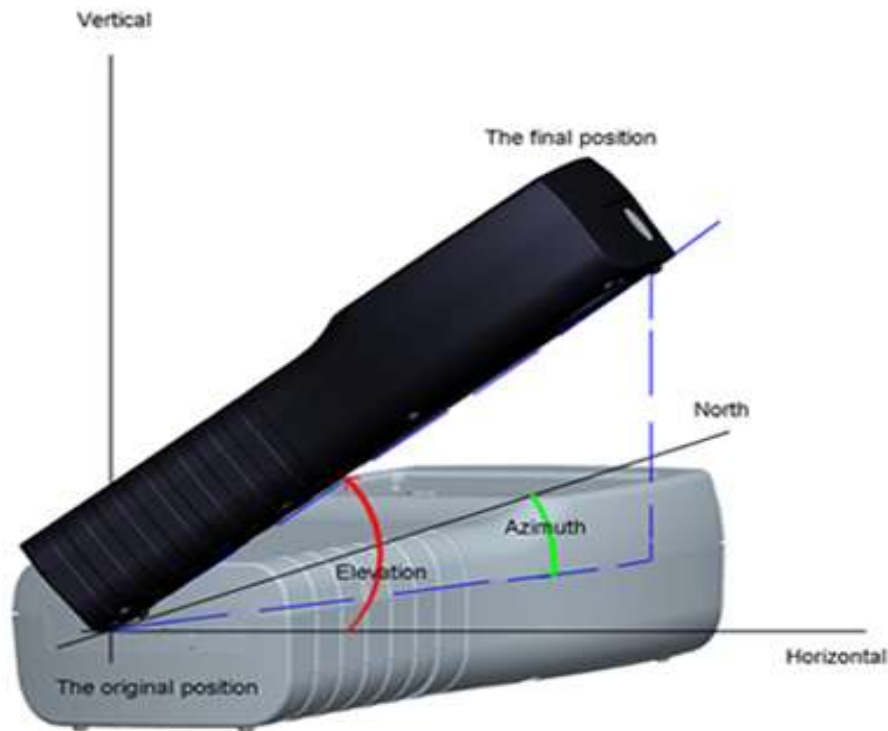
Select Align and press [OK] to goto alignation menu. User can simulate the antenna right position more directly on this menu. And the menu as folowing screen shot.

User need to adjust the attitude of the meter according BLUE arraw on the screen. The meter will deep and the RED icon turns to GREEN if the RED icon closes to the YELLOW one. It is better to make the two icon overlapping. And also values of azimuth and elevation will refresh on time according to the current position during the whole process.
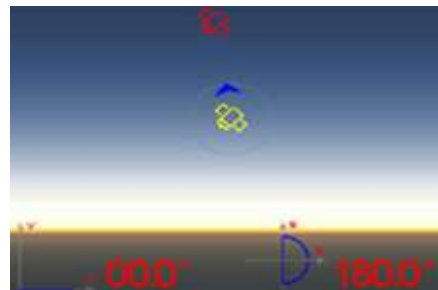
The real of meter must face to the satellite in the sky that user is plan to find.Belowing is the figure of aligment on this menu.
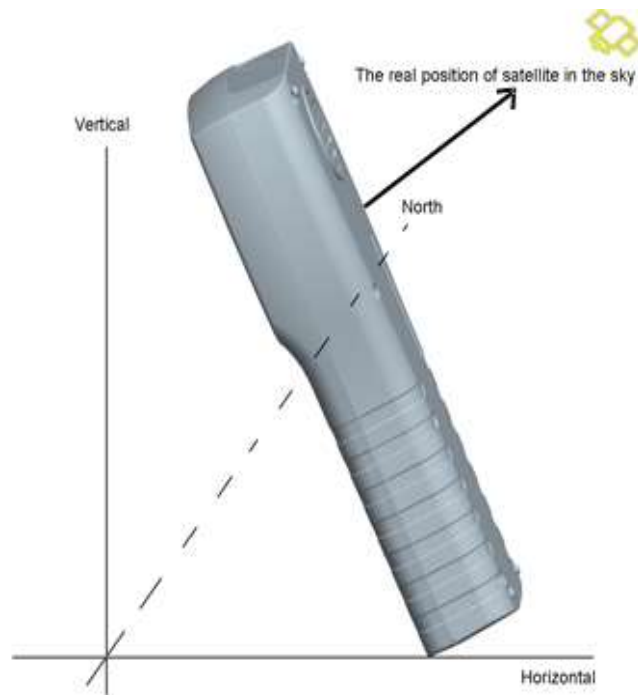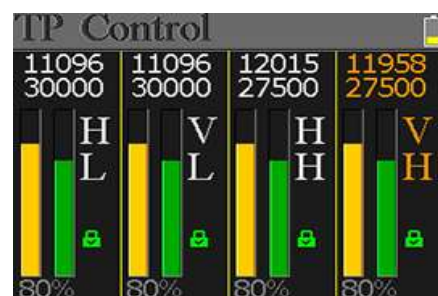
Select Compass and press [OK] to go to compass submenu. And the menu as bellowing figure.

5.7 TP CONTROL

TP Control is short for transponder control. Press [F3] in Satellite Measure menu to enter this menu. It is very easy and useful to check the output status of each port of Quattro LNB . Press [MENU] to exit to Finder menu. Please see the figure on the right side:
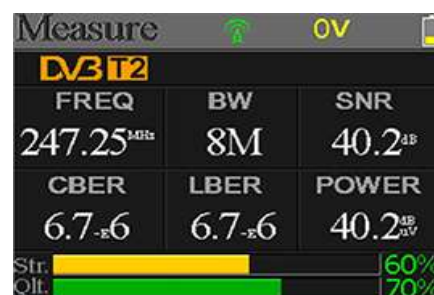
6. TERRESTRIAL

USER CAN MEASURE THE LIVE DVB-T/T2 SIGNAL, ANALYZE THE SPECTRUM, THE SCOPE BETWEEN TRANSPONDERS , AUTO SCAN ALL THE SAVED FREQUENCIES AND LIST ALL THE LOCKED ONES. THERE ARE SIX SUBMENUS: MEASURE, AUTO SCAN, SPECTRUM CHART, SCOPE, RF CHANNEL LIST AND SETTING.

6. 1 TERRESTRIAL MEASURE

The device will show SNR, CBER, VBER, power value, strength and quality of the connected live signal. Please see below for detail.

- 📶:   The lock status. The signal is locking if the icon is green or the color of the icon is red.
- **0V:**   The antenna output voltage. The values are 0V, 13V and 18V.
- **DVB T2:**   The terrestrial system. The values are DVB T and DVB T2. Press [◀ / ▶] to switch them.
- **FREQ:**   The current frequency. Press [◀ / ▶] to change the frequency or [OK] to edit it.
- **BW:**   The bandwidth of the live signal. Press [◀ / ▶] to switch between 6M, 7M and 8M.
- **SNR:**   The signal noise rate value of the live signal.
- **CBER:**   The CBER(BER before FEC) value of the live signal.
- **LBER:**   The LBER(BER after LDPC) value of the live signal.
- **POWER:**   The power level value of the live signal.
- **Str:**   The strength of the live signal in percent.
- **Qlt:**   The quality of the live signal in percent.

6.2 AUTO SCAN

The meter will scan all the saved frequencies and show the lock status one by one and will then return to the main menu once scanning is finished. Press [MENU] to abort a scan in progress and return to the main menu.
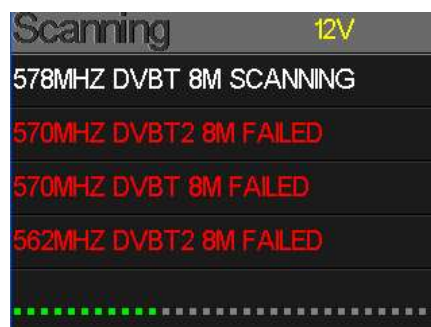
6. 3 SPECTRUM CHART

This menu shows the spectrum chart of the setting frequency range. Please see below screenshot.

Press [▲ / ▼] to switch between cur, S: and E:
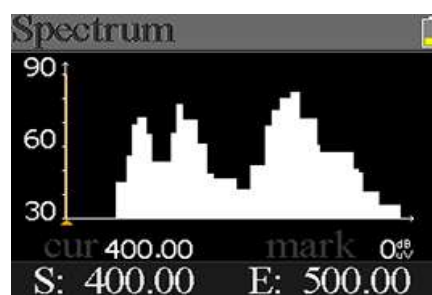
- **30~60~90:**   The range of the level value.
- **▲ :**   The curse of the current frequency. Press [◀ / ▶] to change the value.
- **cur:**   The current selected frequency.
- **mark:**   The power level of the current frequency in the spectrum chart.
- **S:**   The start frequency of the spectrum chart.
- **E:**   The end frequency of the spectrum chart.

6.4 SCOPE

This screen show 6 channels level (dBuV) in one page, use [◀ / ▶] to move focus on channel number and press [OK] change channel number.
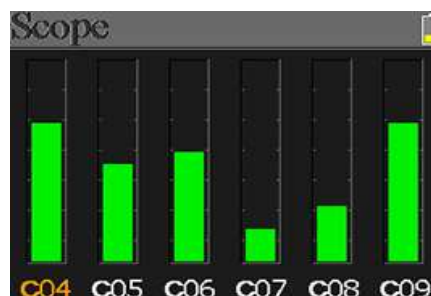
6.5 RF CHANNEL LIST

This menu shows all the locked frequencies during Auto Scan.

6.6 SETTING

User can enable/disable the power supply for antenna. 5V and 12V output are supported. And also user can set to scan DVB-T, DVB-T2 and both of them during Auto Scan.
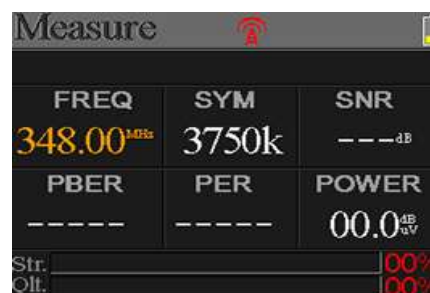
7. CABLE TV

User can measure DVB-C live signal in this submenu. There are total three submenus: Cable Measure, Tilt and Spectrum chart.

7.1 CABLE MEASURE

User can read SNR, PBER, PER, power level, strength and quality of the live signal.

- 📡 : The lock status. The signal is locking if the icon is green otherwise the color of the icon is red.
- **FREQ:** The current frequency. Press [◀ / ▶] to change the value or press [OK] to edit it.
- **SYM:** The symbol rate of the current signal. The device will get it automatically once the signal is locking.
- **SNR:** The signal noise rate value of the live signal.
- **PBER:** The pre-bit error rate of the live signal.
- **PER:** The packet error rate of the live signal.
- **POWER:** The power level value of the live signal.
- **Str:** The strength value of the connected signal.
- **Qlt:** The quality value of the connected signal.

7.2 TILT

This menu shows tilt of three channels` power level.

- **C16,C17, C18:** The channel number. Press [▲ / ▼] to switch between them. Press [▲ / ▼] to change the   channel number and press [OK] to pop out the channel list to select.

14/18

- **FREQ:** The frequency of each channel
- **LEVEL:** The power level of the first channel
- **DELTA1:** The delta of power level to the first channel
- **DELTA 2:** The delta of power level to the first channel

7.3 SPECTRUM CHART

Please refer 5.3 Spectrum Chart.

8. SYSTEM SETTING

- **Beep:** The beep status during pressing keys or when the signal is locking. Press [◄/►] to turn on or turn off beep.
- **Auto Standby:** Set the time for meter to enter standby mode automatically. Press [◄/►] to switch between Off, 10 min, 20 min, 30 min and 60 min.
- **Language:** The language of UI. Press [◄/►] to switch between available languages
- **Factory Reset:** Press [OK] to display a confirm dialog. Then select YES to do a factory reset or select NO to cancel.
- **Hardware Ver:** The version number of hardware.
- **Software Ver:** The version number of software.

9. ACCESSORIES

Power adapter, 2 RF connector, 1 CD for user manual.

10. TROUBLE SHOOTING

1. **Unable to power on:**   Charge the meter about 3 hours until the charge light turn blue.

2. **Warning LED flashing:**   Antenna overload, power off the meter and check the signal cable. After that please power on again.

3. **Hung up:**   Press the reset button to reset the meter.

4. **Can't lock signal:**   Please confirm the signal cable is connected correctly and make sure the antenna power is been set to ON if the antenna needs power supply.

5. **Other questions:**   please contact your dealer

11. TECHNICAL SPECIFICATION

DVBS/S2

Identification	DVB-S		DVB-S2
Demodution	QPSK		QPSK, 8QPSK,16APSK, 32APSK
Code Rate	1/2, 2/3, 3/4, 5/6, 7/8,		1/4, 1/3, 2/5, 1/2, 3/5, 2/3, 3/4, 5/6, 8/9, 9/10,
Symbol Rate	1~45MSPS		
Input frequency	950-2150MHz		
Input Impedance	75Ω		
Min.level in	35dBuV（noise）		
Max.level in	90dBuV		
LNB Power and Pol	Vertical 13V, Horizontal 18V, 300mA		
Bandwidth	C/Ku-band　Selectable		
Edit Satellite	Satellite Name		Maximum support 11 characters in length
	LNB Power		18V, 13V, AUTO, OFF
	LNB Type		Universal, OCS, SINGLE1, SINGLE2, SINGLE3,SINGLE4,SINGLE5 , Customised
	22KHz		AUTO, OFF, ON
	Switch Type		DiSEQC1.0(LNB1~LNB4), DiSEQC1.1(LNB1~LNB16), SCR and SCD2
	Position Type		USALS, DiSEQC1.2
Satellite Finding	Display the signal strength of selected frequency		
Edit TP	Frequency, Symbol Rate, Polarity(950~2150MHz)		
Spectrum Analyzer	Display waveforms of selected frequencies		
Constellation	Constellation with 8PSK, QPSK, 16APSK, 32APSK		

Angle Calculate	Azimuth, Elevation

DVB-T/T2

Identification	DVB-T	DVB-T2
Carriers	2k, 4k, 8k	1k, 2k, 4k, 8k, 8k+E, 16k, 16k+EXT, 32k,32k+EXT
Guard Interval	1/4, 1/8, 1/16, 1/32	1/4, 19/256, 1/8, 19/128, 1/16, 1/32, 1/128
Code Rate	1/2, 2/3, 3/4, 5/6, 7/8	1/2, 3/5, 2/3, 3/4, 4/5, 5/6
Modulation	QPSK,16-QAM,64-QAM	QPSK, 16QAM, 64QAM, 256QAM
Bandwidth	6, 7 and 8 MHz	6,7 and 8 MHz
PLP Mode	-----	Single / Multiple
PLP ID	-----	0-255
Spectrum Analyzer	Display waveforms of selected frequencies	

DVBC

Identification	DVB-C
Frequency range	44MHz ~ 870MHz
Symbol rate	1MS/S ~ 7.9MS/S
QAM mode	16 / 32 / 64 / 128 / 256 QAM
Input RF level range	30dBμV ~ 100dB μV
SNR	20dB ~ 40dB, $\pm$ 2dB
BER	1.0E-3 ~ 1.0E-9