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ASM02

Digital Signal Meter for Satellite & Terrestrial with DSCR Mode & Data Logging

User Guide

Important Safety Notice

Thank you for purchasing this Antiference signal analyser product. Please read the following instructions carefully, retain for future reference and read the following safety considerations:

1. Do not place any items on the device
2. Ensure no liquids are on or near the device as splashes may damage the unit
3. For cleaning, use a damp cloth only without solvents
4. Do not attempt to open the case as there is a danger of electric shock
5. Repairs should be carried out by a qualified technician
6. Keep the protective jacket in place while using the meter
7. Store the meter in the carry case when not in use to protect the screen from damage
8. Use only the supplied power supply as 3rd party products may damage the product

Table of Contents

1. Introduction

The Antiference ASM02 is an advanced signal analyser for satellite and terrestrial signals. It features an 8.9 inch touch screen display and simple to use menu system. It supports DVB-S/S2/DVB-T/T2/DVB-C/C2, **DAB/DAB+.** Also included is a DSCR mode for analysis of SKY Q systems and a data logging function allowing the user to download logs to a USB drive and view in an Excel spreadsheet. Supplied in a protective holder and carry case, this meter is ideal for use in the field for professional installers.

2. Features

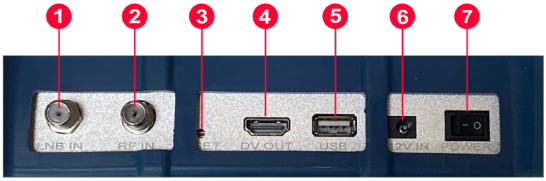
- 8.9 inch touch screen display
- Supports DVB-S/S2/DVB-T/T2/DVB-C/C2, **DAB/DAB+**
- Video decoding: MPEG- 1, MPEG-2, MPEG-4, H.263, H.264, HVEC/H.265(up to 4K@60fps), AVS, VC-1, VP8, MVC
- Audio decoding: MPEG-1, MPEG-2, ISO/IEC 13818-3 LAYER I&II
- Measurement values MER, dbµV, VBER, CBER, LBER
- LNB & RF short circuit protection
- Signal lock audible notification
- Data log function
- USB interface for data log download & firmware updates
- HDMI output
- LED flashlight
- Li-ion battery 5000mAh@7.4V with fast charging function
- OSD with multi-languages
- Internal storage
- Protective case
- Power supply 100-240V/50/60Hz 12V 2000mA

3. Package contents

1. ASM02 Signal Meter
2. 12V 2000mA Mains Charger with 3 Pin UK Plug
3. 12V In-Car Charger
4. Soft Carry Case
5. Rubber/Plastic ASM02 Protective Jacket
6. F Connector Adaptors
7. 4 Point Shoulder Strap

4. Front & Top Panel Layouts

4.1. Top Panel Description



1. Satellite LNB Input
2. Terrestrial RF Input
3. Reset Button
4. HDMI Output
5. USB Interface
6. 12V DC Input
7. On/off Switch

4. Front & Top Panel Layouts (cont)

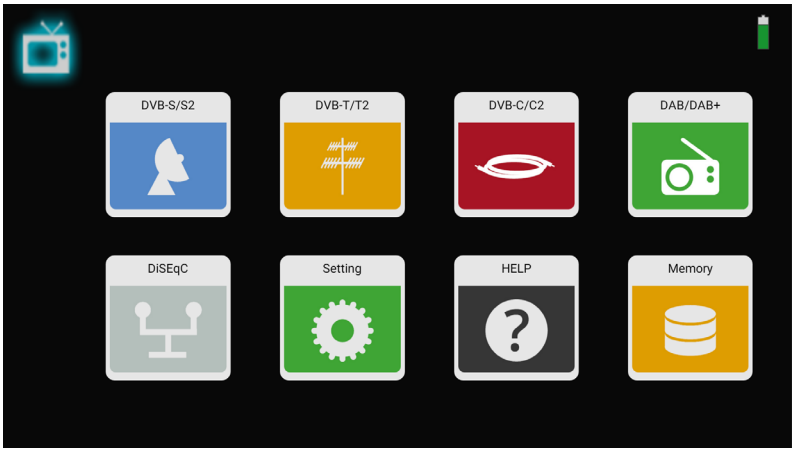
4.2. Front Panel Description

1. Green LED. When lit, indicates 13V is enabled in DVB-S/S2 mode
2. Green LED. When lit, indicates 18V is enabled in DVB-S/S2 mode
3. Green LED. When lit, indicates 22KHz tone is enabled in DVB-S/S2 mode
4. Green LED. When lit, indicates 5V DC power is enabled in DVB-T mode
5. Green LED. When lit, indicates 12V DC power in is enabled in DVB-T mode
6. Charging Indicator LED. Red when charging, blue when charged
7. Red LED. Lit to indicate a short on the LNB or RF input
8. Power Indicator LED. Green when on.
9. Mode button to toggle between TV mode and measurement
10. LED/flashlight on/off control button.
11. Increase volume
12. Decrease volume
13. Menu button
14. Exit menu button
15. Search function. Press to scan for channel in measurement mode
16. Store button. Press to save screen shots
17. Hotkey F1
18. Hotkey F2
19. Hotkey F3
20. Hotkey F4
21. Info button

5. Main Menu

When the ASM02 has booted, the main menu will appear. To navigate to the sub-menu's, simply tap the icon of the mode you wish to operate and the menu for that function will appear.

To return to the previous menu, press [EXIT]



6. DVB-S/S2 Mode

6.1. Measurement Menu

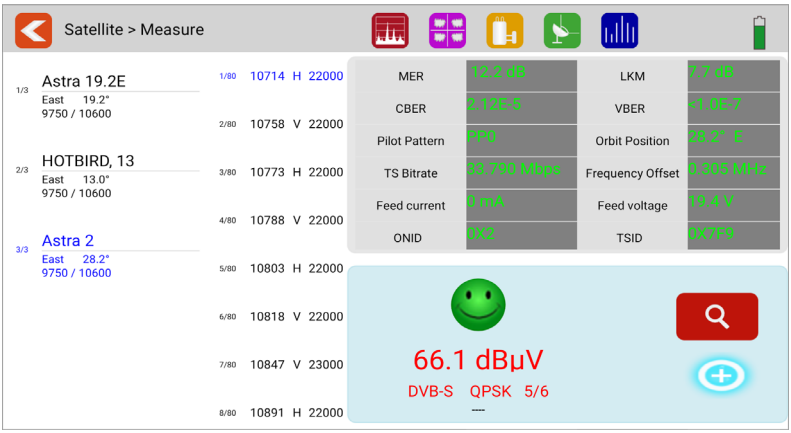
Tap DVB-S/S2 icon to enter the satellite measurement menu. This menu shows all the analysis of the incoming satellite signal. The available satellite channel plans are listed down the left hand side of the screen and the measurement details on the right. Select the satellite required from the list to begin.

Once the satellite is selected, choose the transponder required from the next column by tapping the frequency value. Scroll to see additional transponders not in view.

Tap and hold the transponder value to enter manual edit mode. Pop up window will appear.

6. DVB-S/S2 Mode

6.1. Measurement Menu (cont)



Explanation of Functions in DVB-S/S2 Mode

Tap the [BACK] icon to return to the main menu

Tap the [SPECTRUM] icon to enter spectrum mode

Tap the [CONSTELLATION] icon to enter constellation mode

Tap the [DISH SETUP] icon to enter the dish setup menu

Tap the [ANGLE SETTING] icon to view the angle calculation menu

Tap the [TRANSPONDER] icon to enter the transponder control menu

Tap the [ZOOM] icon to enter the zoom menu

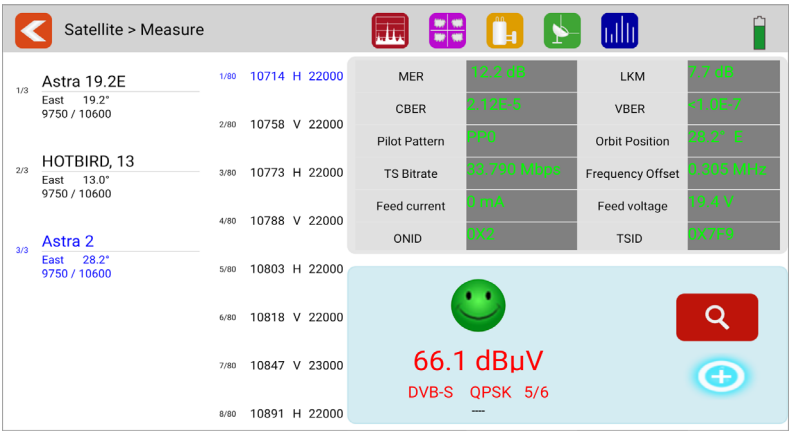
This icon indicates a signal lock

This icon indicates a signal no lock

Tap this icon to start a pop-up channel scan

6. DVB-S/S2 Mode

6.1. Measurement Menu (cont)



Explanation of Elements

MER	-	Modulation error ratio value
LKM	-	Link margin test results
CBER	-	CBER test results
LBER	-	LBER test results
Pilot Pattern	-	The pilot pattern of signal value
Orbit Position	-	The orbit position of the TS in the NIT table
TS Bit rate	-	The bit rate of the input TS
Freq Offset	-	The offset value of the setting frequency and input signal
Feed Current	-	The feed current of the LNB port
Feed Voltage	-	The feed voltage of the LNB port
ONID	-	The Original Network ID of the input transport stream
TSID	-	The Transport Stream identification of the input stream
66.1dBµV	-	The power level of the input signal
DVB-S QPSK 5/6	-	DVB type, demodulation type & FEC value

Hot Key Function in DVB-S/S2 Mode

Dish Set Up

TP Control

Mute

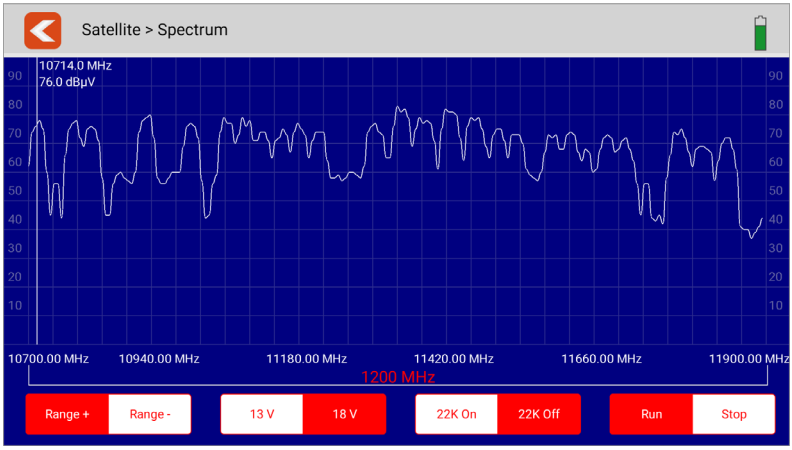
Help


Tap this icon or press [EXIT] to return to the previous menu

6. DVB-S/S2 Mode

6.2. Spectrum

The ASM02 can display live spectrum from 950MHz to 2150MHz covering legacy satellite analysis and limited wideband frequencies.



Functions in Spectrum Mode

- Tap the spectrum chart to see more detail including the centre of the frequency and power level
- To return to the previous menu, press [EXIT]
- Tap [RANGE] segment to set the frequency scan range
- To set the LNB voltage output tap [13V/18V] segment
- Toggle 22kHz tone on and off by tapping the [22K ON/OFF] segment
- Start or stop the spectrum run process by tapping the [RUN/STOP] segment
- Tap and hold on the screen for fine setting of frequency

Hot Key Function in Spectrum Mode

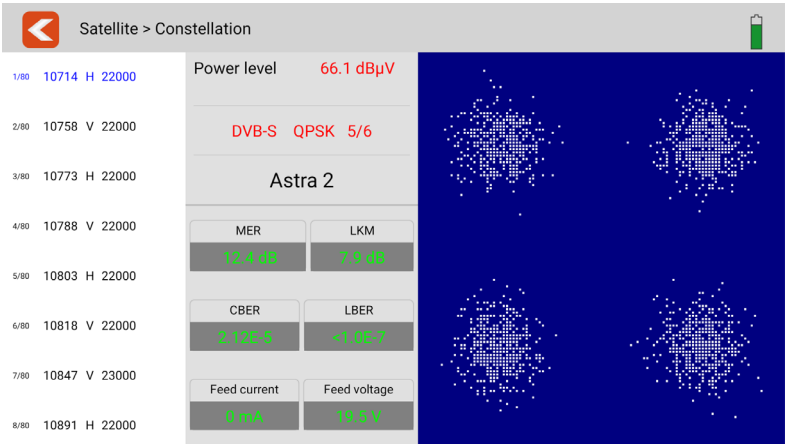
F1	F2	F3	F4	i
LO band	22K on/off	13V/18V	Mute	Help

Tap this icon or press [EXIT] to return to the previous menu

6. DVB-S/S2 Mode

6.3. Constellation

This menu shows the constellation chart of the live stream. The transponder list is shown on the left hand side of the screen. Touch a transponder in the list to switch to it.



Explanation of Elements

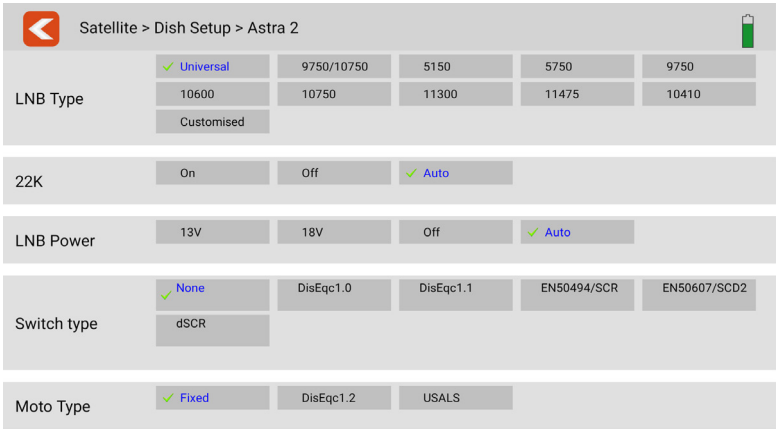
Power level	- The power level of the input signal
Astra 2	- Current satellite name
DVB-S QPSK 5/6	- DVB type, demodulation type & FEC value
CNR	- Carrier to noise ratio
LKM	- Link margin test results
CBER	- CBER test results
LBER	- LBER test results
Feed Current	- The feed current of the LNB port
Feed Voltage	- The feed voltage of the LNB port

Tap this icon or press [EXIT] to return to the previous menu

6. DVB-S/S2 Mode

6.4. Dish Setup

The dish setup menu allows the manual configuration of various parameters including LNB type, power, tone & switch type.



Explanation of Elements

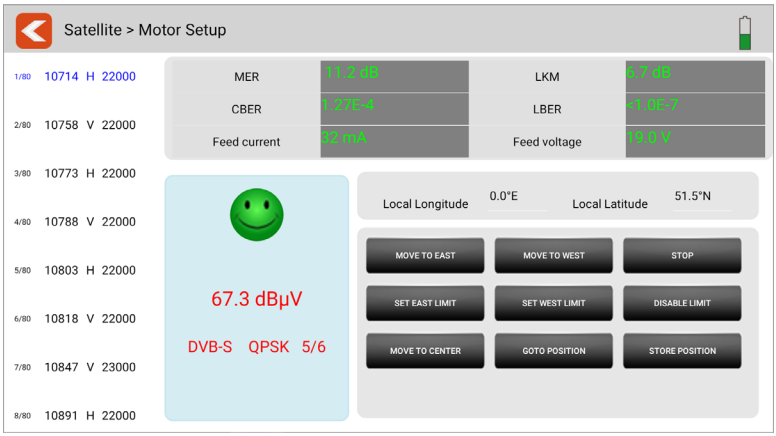
LNB Type	- Tap desired value to set. The edit pop up window allows the setting of the local oscillator value if required
22K	- Tap to adjust the 22KHz tone status
LNB Power	- Tap to set the LNB voltage
Switch Type	- Tap 'NONE' to disable all switch types. Tap DiSEqC 1.0 or 1.1 to select DiSEqC option. Adjust port selection via pop up. Tap SCR or DSCR options and user band selection via pop up window
Motor Type	- Tap to select motor type

Tap this icon or press [EXIT] to return to the previous menu

6. DVB-S/S2 Mode

6.5. Motor Settings

The motor setting menu allows changes to be made to a motorised satellite system. A dish can be controlled in this menu as part of the set up process.



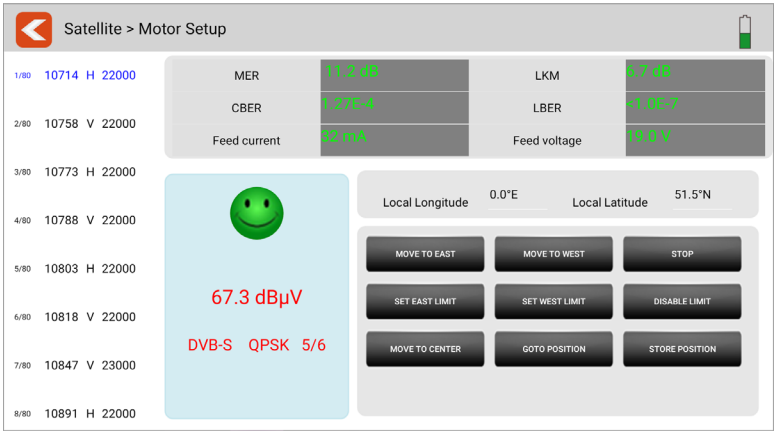
Explanation of Elements

67.3 dBµV	- The power level of the input signal
DVBS QPSK 5/6	- DVB type, demodulation type & FEC value
MER	- Modulation error ratio value
LKM	- Link margin test results
CBER	- CBER test results
LBER	- LBER test results
Feed Current	- The feed current of the LNB port
Feed Voltage	- The feed voltage of the LNB port
Local Longitude	- Testing local longitude. Tap value to edit
Local Latitude	- Testing local latitude. Tap value to edit

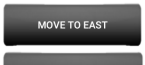
Tap this icon or press [EXIT] to return to the previous menu

6. DVB-S/S2 Mode

6.5. Motor Settings (cont)



DiSEqC Command Buttons



Tap to send MOVE TO EAST command

Tap to send MOVE TO WEST command

Tap to send STOP MOVING command

Tap to set the east limit command

Tap to send the west limit command

Tap to send the DISABLE LIMITATION command

Tap to centre the dish position

Tap to send command to saved position

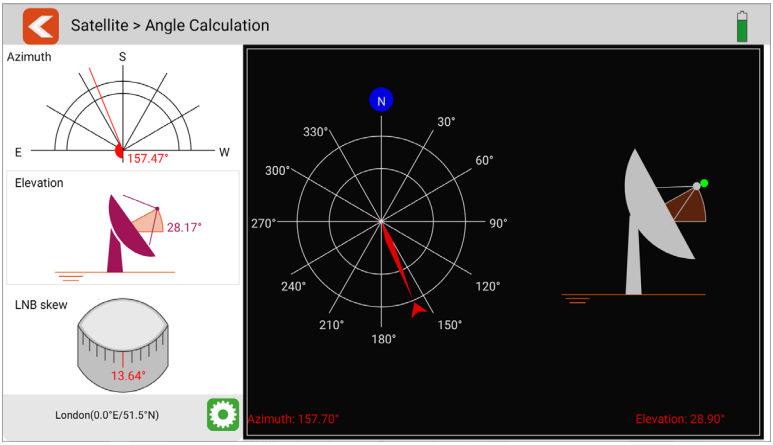
Tap to save position


Tap this icon or press [EXIT] to return to the previous menu

6. DVB-S/S2 Mode

6.6. Angle Calculation

This menu calculates the azimuth & elevation of the satellite dish via the current satellite settings and local position. The ASM02 can monitor the alignment process helping the user to get the dish in the correct position.

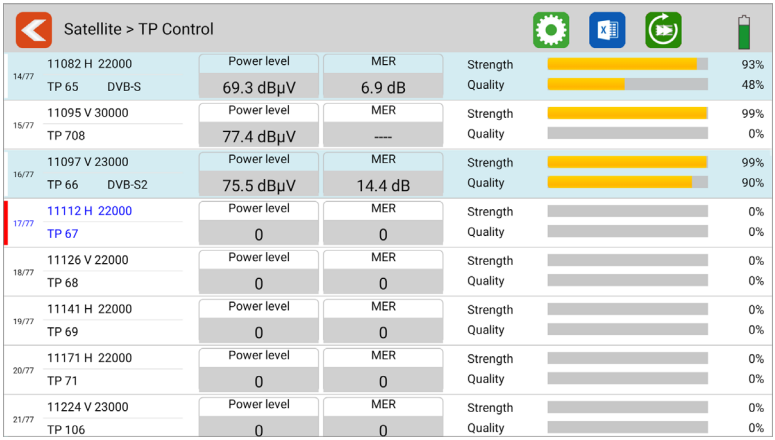


Tap this icon or press [EXIT] to return to the previous menu

6. DVB-S/S2 Mode

6.7. TP Control

Within the transponder (TP) control menu, more detail can be seen on each transponder being received. This includes the frequencies, MER, signal strength & quality in percentages.
In this menu it is possible to create and download a data log of the signals being received by transponder.



Tap this icon to edit the transponder list for this menu. See page 16.

Tap this icon to save the datalog in Excel format. See page 17. This can also be downloaded to a USB drive.

Adjust the speed between normal and fast or pause the scan

Tap this icon or press [EXIT] to return to the previous menu

6. DVB-S/S2 Mode

6.8. TP Control (cont)

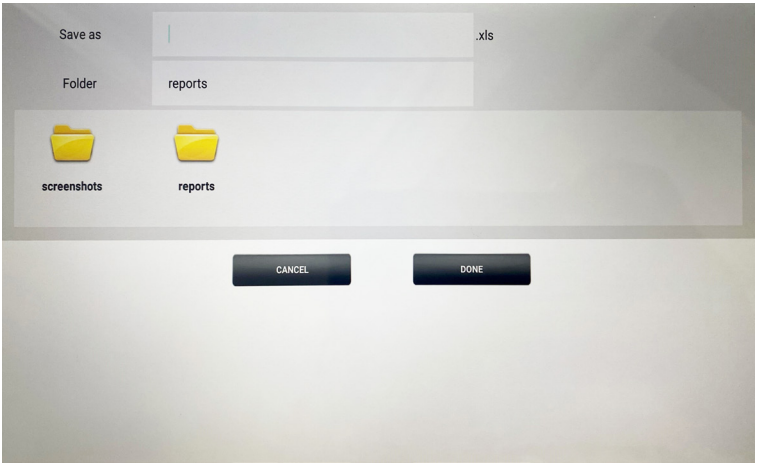
The transponder list can be edited in this menu manually. The top list of transponders are already available in the TP control menu. The bottom list are the rest of the transponders which are not currently available in the TP control menu.
Tap an item to add it to the TP control menu.
When finished, tap DONE to return to the TP control menu.
It is also possible to remove or add all should this be required.

6. DVB-S/S2 Mode

6.9. Datalogging

The ASM02 can save a datalog via the TP control menu. This can be done from the DVB-S mode or DVB-T mode, See page 15 (DVB-S) or page 23 (DVB-T) to view how this process is started. Once the datalog has been saved, this data can be downloaded to a USB drive.

From the TP control menu (DVB-S) or the datalog/scope menu (DVB-T), tap the  icon and the menu below will appear Choose a file name and location for the datalog to be stored and then tap 'done'.

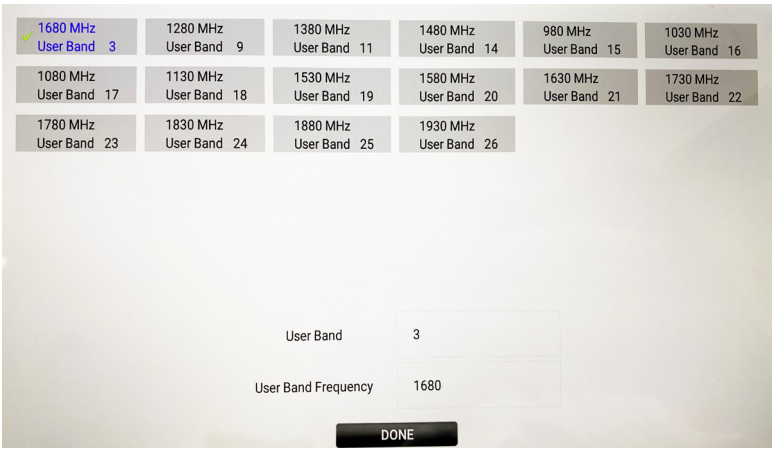


6. DVB-S/S2 Mode

6.10. DSCR Mode

The ASM02 is pre-programmed with the UK DSCR user bands for analysis of DSCR systems. To access this menu, navigate to the DVB-S/S2>dish setup>switch type menu (shown below) and select the user band required.

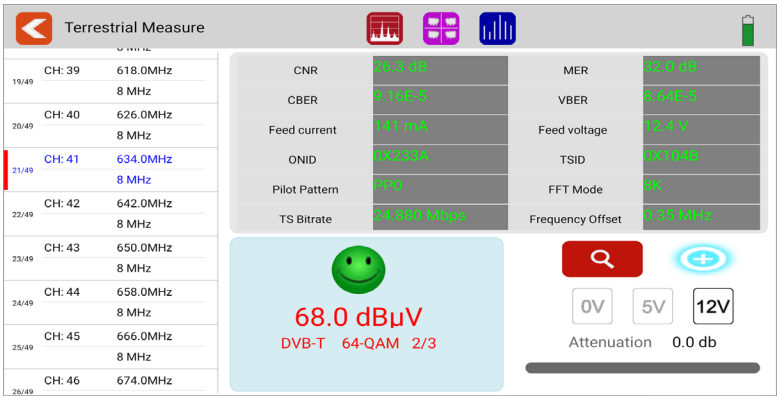
When the DSCR option is selected, the following menu will appear. Select the user band required and then click 'done'.



7. DVB-T/T2 Mode

7.1. Measurement

From the main menu, tap the DVB-T/T2 icon to enter the terrestrial measurement menu. This menu shows all the analysis of the incoming terrestrial signal. The incoming terrestrial frequencies are listed on the left hand side of the screen and the measurement details on the right.
Select the frequency required by tapping to highlight. Tap and hold to toggle pop up window to change parameters such as bandwidth, frequency or system type.



Tap the [BACK] icon to return to the main menu

Tap the [SPECTRUM] icon to enter spectrum mode

Tap the [CONSTELLATION] icon to enter constellation mode

Tap the [SCOPE] icon to enter the scope menu

Tap to zoom

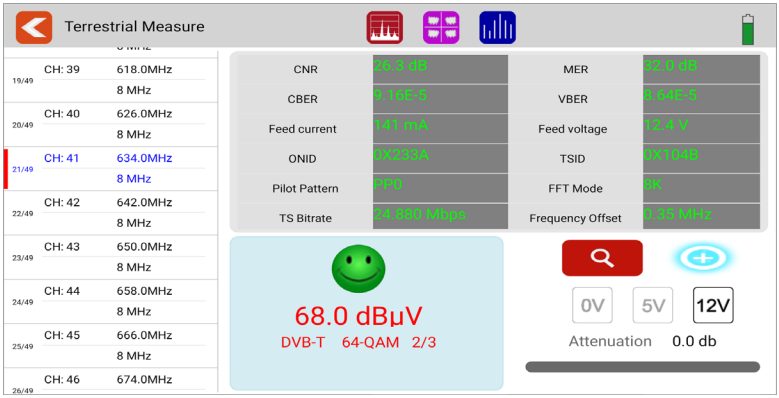
This icon indicates a signal lock

This icon indicates a signal no lock

Tap this icon to start a pop-up channel scan

7. DVB-T/T2 Mode

7.1. Measurement (cont)



Explanation of Elements

MER	-	Modulation error ratio value
CBER	-	CBER test results
LBER	-	LBER test results
Feed Current	-	The feed current of the RF input load
Feed Voltage	-	The feed voltage of the RF input load
ONID	-	The Original Network ID of the input transport stream
TSID	-	The Transport Stream identification of the input stream
Pilot Pattern	-	The pilot pattern value of the signal
FFT Mode	-	The FFT carrier mode
TS Bit rate	-	The bit rate of the incoming transport stream
Frequency Offset	-	The offset value of the live input signal
68.0 dBµV	-	Power level of input signal
DVB-T QPSK 5/6	-	DVB type, demodulation type and FEC value

Hot Key Function in Spectrum Mode

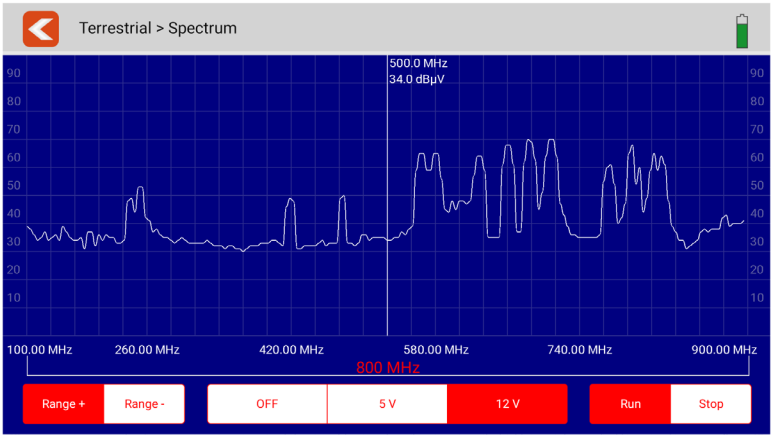
F1	F2	F3	F4	i
Range +	Range -	5V/12V/OFF	Mute	Help

Tap this icon or press [EXIT] to return to the previous menu

7. DVB-T/T2 Mode

7.2. Spectrum

The terrestrial spectrum can scan from 100MHz to 900MHz to show live analysis of the incoming signal.



Functions in Spectrum Mode

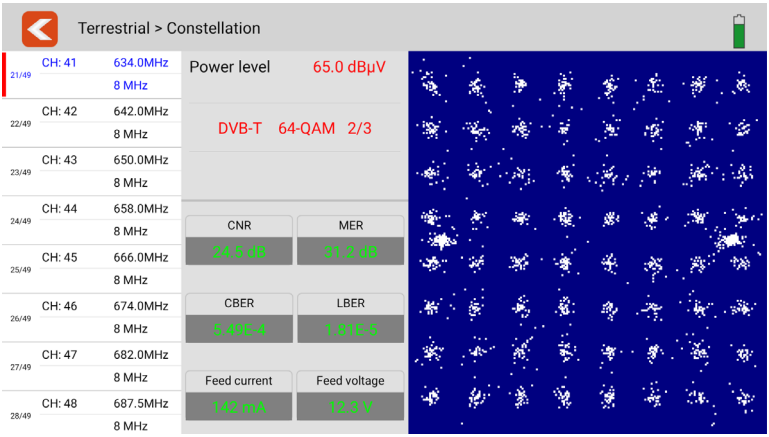
- Tap the spectrum chart to see more detail including the detail of frequency and power level
- To return to the previous menu, press [EXIT]
- Tap [RANGE] segment to set the frequency scan range
- To set the antenna output voltage by tapping the [OFF/5V/12V] segment
- Start or stop the spectrum run process by tapping the [RUN/STOP] segment
- Tap and hold on the screen for fine setting of frequency

Tap this icon or press [EXIT] to return to the previous menu

7. DVB-T/T2 Mode

7.3. Constellation

The constellation menu shows the live transport stream on a constellation chart. the multiplex frequencies are shown on the left hand side of the screen with the detail on the middle and the constellation chart on the right. Tap a frequency to see details.



Explanation of Elements

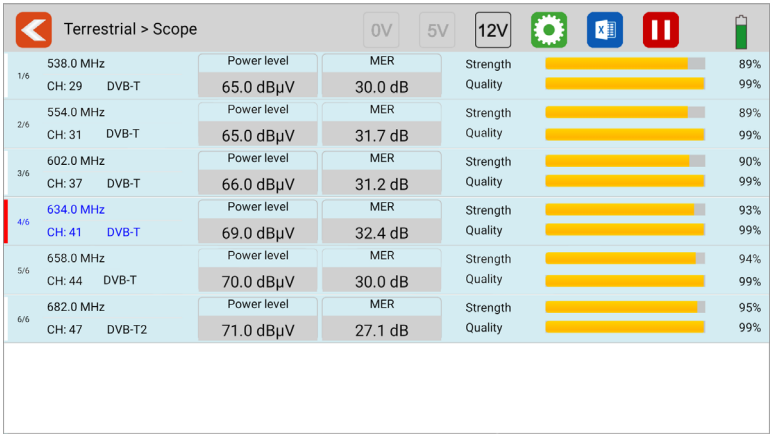
Power level	- The power level of the input signal
DVB-T 64QAM 2/3	- DVB type, demodulation type & FEC value
CNR	- Carrier to noise ratio
CBER	- CBER test results
LBER	- LBER test results
Feed Current	- The feed current of the RF input load
Feed Voltage	- The feed voltage of the RF input load

Tap this icon or press [EXIT] to return to the previous menu

7. DVB-T/T2 Mode

7.4. Scope

The scope menu shows signal lock and the various multiplex incoming signals. This menu shows power level, MER plus signal strength and quality in percentages.
Tap the mux you want to view on the left hand side.



Tap this icon to edit the multiplex list for this menu See page 24.

Tap this icon to save the datalog in Excel format. See page 17. This can also be downloaded to a USB drive.

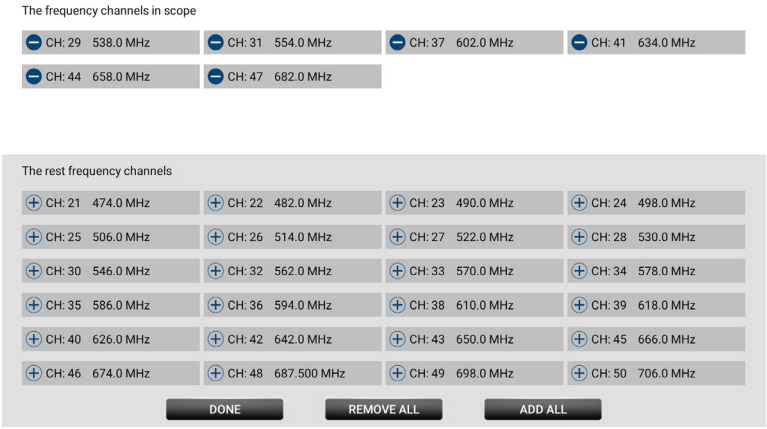
Pause the scan

Tap this icon or press [EXIT] to return to the previous menu

7. DVB-T/T2 Mode

7.5. Datalog

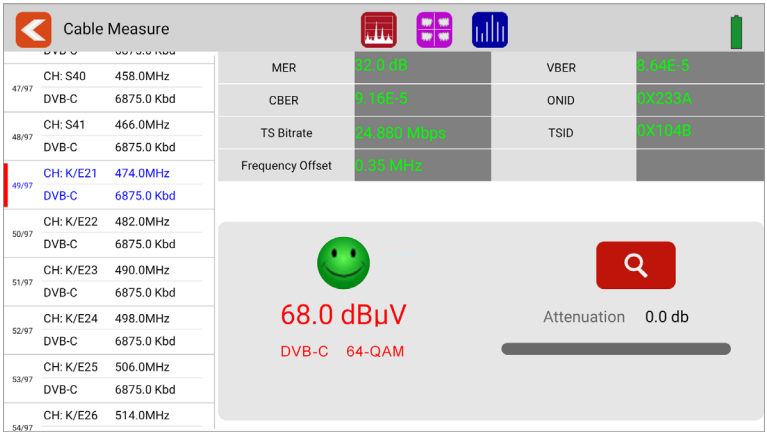
The multiplex list can be edited in this menu manually. The top list of multiplexes are already available in the scope menu. The bottom list are the rest of the multiplexes which are not currently available in the scope menu.
Tap an item to add it to the scope menu.
When finished, tap DONE to return to the scope menu.
It is also possible to remove or add all should this be required.



8. DVB-C Mode

8.1. Measurement

From the main menu, tap the DVB-C icon to enter the cable TV measurement menu. This menu shows all the analysis of the incoming cable TV signal. The incoming frequencies are listed on the left hand side of the screen and the measurement details on the right.
Select the frequency required by tapping to highlight. Tap and hold to toggle pop up window to change parameters such as bandwidth, frequency or system type.



Tap the [BACK] icon to return to the main menu

Tap the [SPECTRUM] icon to enter spectrum mode

Tap the [CONSTELLATION] icon to enter constellation mode

Tap the [SCOPE] icon to enter the scope menu

Tap to zoom

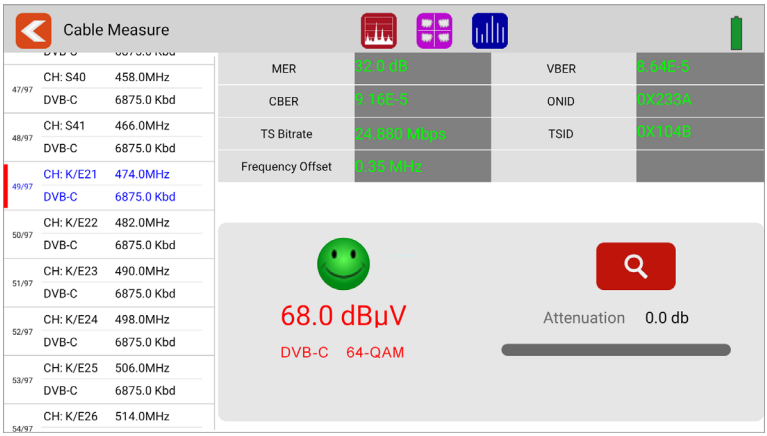
This icon indicates a signal lock

This icon indicates a signal no lock

Tap this icon to start a pop-up channel scan

8. DVB-C Mode

8.1. Measurement (cont)



Explanation of Elements

MER	-	Modulation error ratio value
CBER	-	CBER test results
LBER	-	LBER test results
ONID	-	The Original Network ID of the input transport stream
TSID	-	The Transport Stream identification of the input stream
TS Bit rate	-	The bit rate of the incoming transport stream
Frequency Offset	-	The offset value of the live input signal
68.0 dBµV	-	Power level of input signal
DVB-C X-QAM 5/6	-	DVB type, demodulation type and FEC value

Hot Key Function in Spectrum Mode

F1	F2	F3	F4	i
Range +	Range -	5V/12V/OFF	Mute	Help

Tap this icon or press [EXIT] to return to the previous menu

8. DVB-C Mode

8.2. Spectrum

The cable spectrum can scan from 100MHz to 900MHz to show live analysis of the incoming signal.

Functions in Spectrum Mode

- Tap the spectrum chart to see more detail including the detail of frequency and power level
- To return to the previous menu, press [EXIT]
- Tap [RANGE] segment to set the frequency scan range
- Start or stop the spectrum run process by tapping the [RUN/STOP] segment
- Tap and hold on the screen for fine setting of frequency

Tap this icon or press [EXIT] to return to the previous menu

8. DVB-C Mode

8.3. Constellation

The constellation menu shows the live transport stream on a constellation chart. the channel frequencies are shown on the left hand side of the screen with the detail on the middle and the constellation chart on the right. Tap a frequency to see details.

Explanation of Elements

Power level	- The power level of the input signal
DVB-C 64QAM 2/3	- DVB type, demodulation type & FEC value
CNR	- Carrier to noise ratio
CBER	- CBER test results
LBER	- LBER test results

Tap this icon or press [EXIT] to return to the previous menu

8. DVB-C Mode

8.4. Scope

The scope menu shows signal lock and the various incoming signals. This menu shows power level, MER plus signal strength and quality in percentages.
Tap the mux you want to view on the left hand side.

Tap this icon to edit the multiplex list for this menu See page 24.

Tap this icon to save the datalog in Excel format. See page 17. This can also be downloaded to a USB drive.

Pause the scan

Tap this icon or press [EXIT] to return to the previous menu

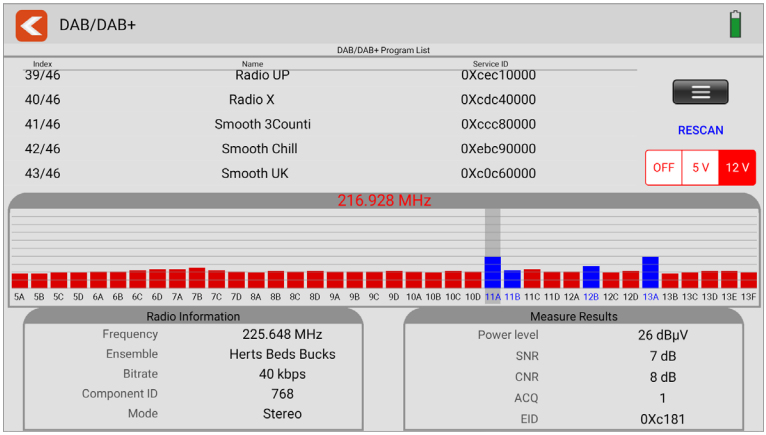
8. DVB-C Mode

8.5. Datalog

The frequency list can be edited in this menu manually. The top list of frequencies are already available in the scope menu. The bottom list are the rest of the frequencies which are not currently available in the scope menu.
Tap an item to add it to the scope menu.
When finished, tap DONE to return to the scope menu.
It is also possible to remove or add all should this be required.

9. DAB/DAB+ Mode

The ASM02 can analyse DAB & DAB+ signals via the DAB menu. From the main menu, tap the DAB/DAB+ tile to navigate to the measurement menu.



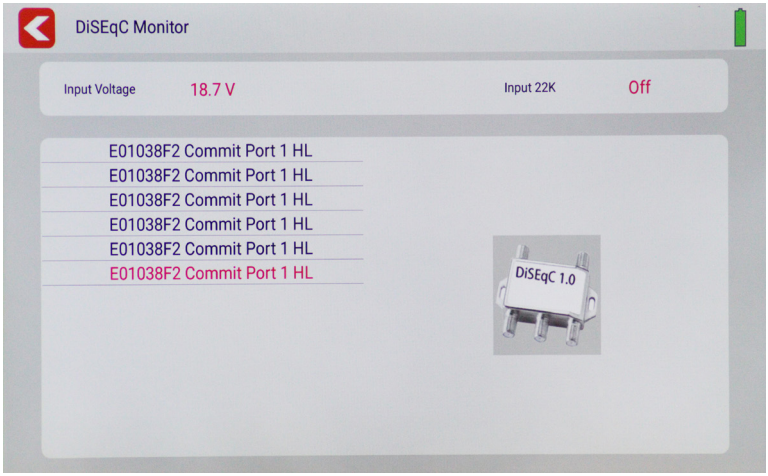
Functions in DAB/DAB+ Mode

- Tap the RESCAN button to re-start a scan on all frequency channels
- Set antenna power output voltage via OFF/5V/12V segment
- Available programs are shown on the top of the screen with colour set to blue when the program is playing.
- Tap the blue bar to play/hear the program

Tap this icon or press [EXIT] to return to the previous menu

10. DiSEqC Monitor

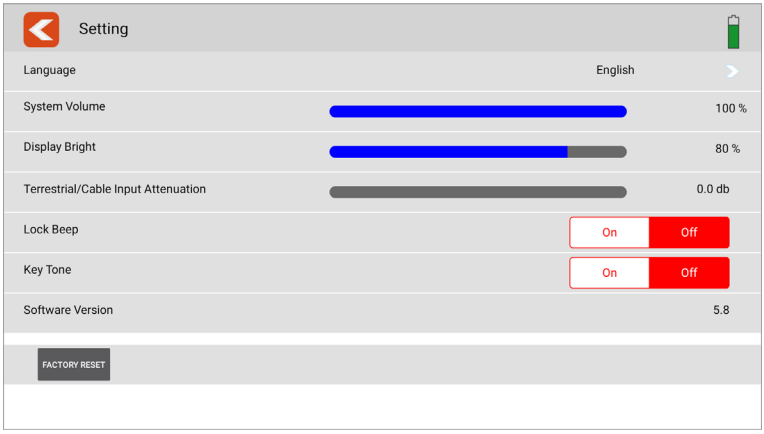
This menu for DiSEqC monitoring can detect DiSEqC commands on the LNB input of the meter. This can be used to fault find DiSEqC issues from another meter or set-top box.



11. System Settings

General Settings & Parameters

This menu allows the adjustment of general meter settings such as volume, brightness, attenuation etc and shows the current software version of the device.

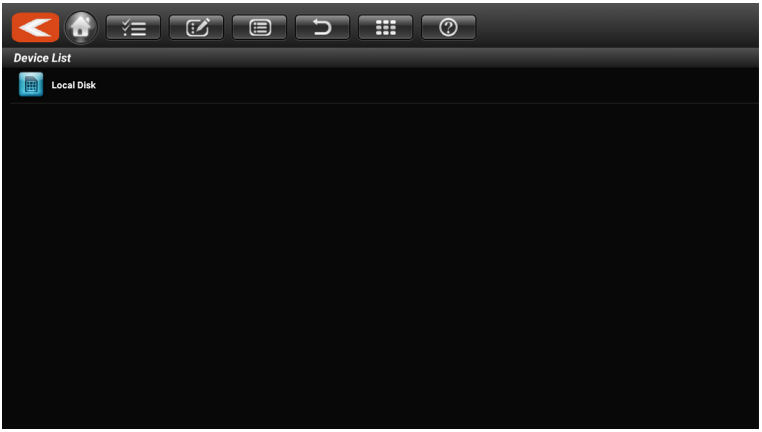


12. Help

From the main menu, tap the 'help' button to access this user guide

13. Memory

From the main menu, tap the 'memory' button to access the saved screenshots of the meter. From this menu, it is possible to edit the name of the screenshot, delete or copy to USB.

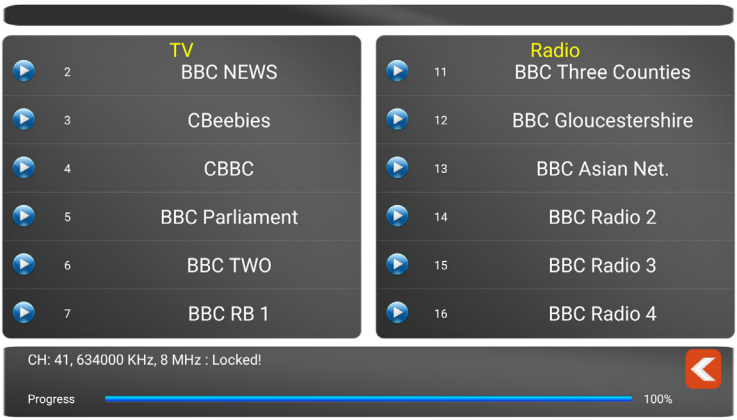


14. LNB/RF Overload

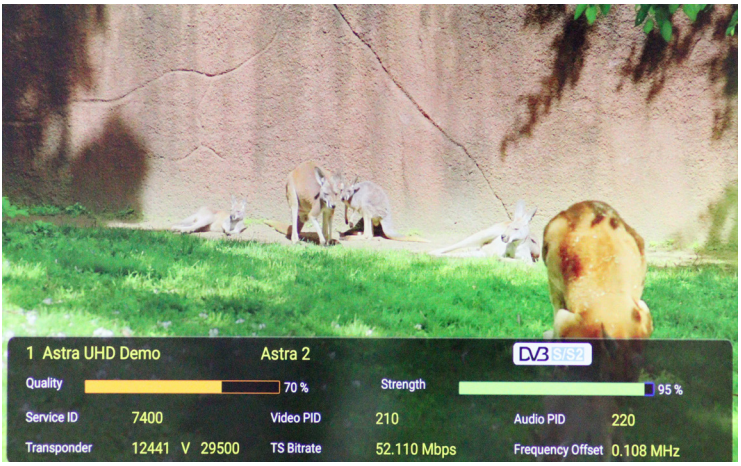
If an LNB or RF overload appears, a dialogue box will appear informing of the short or overload. Check the connections and once complete, tap 'YES' to try and lock signal again

15. Channel Scan & View

From the measurement screen in any mode, click  to perform a channel scan.
Scan options include single channel, all channels or blind scan.
The screen below will appear while the scan is carried out.



Once the scan is complete, the video can be viewed as below. Information on the channel is shown on the info bar below the video.



16. Technical Specifications

DVB-S/S2

Identification	DVB-S	DVB-S2
Frequency Rage	250MHz ~ 2300MHz	
Demodulation	QPSK	QPSK, 8QPSK
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	2~45MSPS	
Input Impedance	75Ω	
Min.level in	35dBuV（noise）	
Max.level in	100dBuV	
LNB Power and Pol	Vertical 13V, Horizontal 18V,300mA	
Bandwidth	C/Ku-band selectable	

DVB-T/T2

Identification	DVB-T	DVB-T2
Frequency Rage	42MHz ~ 1002MHz	
Antenna Power	5V, 12V	
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	16, 32, 64, 128, 256QAM
Bandwidth	6, 7 and 8 MHz	1.7,5, 6,7 and 8 MHz

DVB-C/C2

Identification	DVB-C	DVB-C2
Frequency Rage	42MHz ~ 1002MHz	
Symbol Rate	1.7~7.2	------
Bandwidth	---------	6, 8MHz
Modulation	16, 32, 64, 128, 256QAM	16, 64, 256, 1024, 4096QAM

16. Technical Specifications

17. Declaration of Conformity

We, ANTIFERENCE LIMITED herewith declare that the HDMI extender kit complies with all essential requirements and any other applicable conditions set forth on directive 2014/30/EU.

According to the WEEE (Waste Electrical and Electronic Equipment) EU Directive, do not dispose of this product as household waste or commercial waste. Waste Electrical and Electronic Equipment should be appropriately collected and recycled as requiredby practices established for your country. For information on recycling of this product, please contact your local authorities, your household waste disposal service or the shop where you purchased the product.

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