Product Guide 2017

FOR THE 700MHZ CLEARANCE



be ready for the upcoming 700MHz clearance



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INTRODUCTION

In November 2014 Ofcom announced its decision to real-locate some of the frequencies used by Freeview to mobile services (5G). A similar process is being carried out across Europe, as spectrum is reassigned to meet a predicted increase in demand for mobile data. As a result, some Freeview channels will need to move to new frequencies. This process is known as 700MHz clearance.

Ofcom has stated that between 140,000 - 270,000 homes may need to either replace or realign their aerial to continue receiving all available channels.

Aerial changes are most likely to be needed where TV services are broadcast in the aerial group C/D (690 to 790MHz), which uses the 700MHz frequency band. Ofcom's recommendation to installers is to replace aerials where signals are currently transmitted in this group with a wideband model.

When a realignment or replacement of the aerial is not sufficient or not possible a filter may be required to prevent interference once new mobile services launch.

The clearance of the 700MHz band began in 2017 and Ofcom has confirmed its aim to release this spectrum in Q2 2020, following a review of progress in August 2017. Around 90 per cent of main transmitters will require some re-engineering for clearance. Almost all of the 1,000 smaller relays in the network are likely to need work also.

As a market leader, Televes has developed a new range of products to deal with the challenge that these changes in the spectrum bring to our industry. The LTE700 range of products benefits from all the experience we adquired with the 800MHz clearance making it the best and most complete range of products for the task in hand.



THE RADIOELECTRIC SPECTRUM

UHF-SPECTRUM

As part of the strategy to create a digital single market, the UHF band, which it is used mainly to the broadcast, will be changed so that the mobile services make more spectrum. In this way, the frequencies in the lower end to 700MHz (470-694 MHz) will continue to be available to the DTT television services, and the 694-790MHz frequencies range, will allocated for the 5G applications and services network.

LTE downlink signals

These are the download signals from the company to the mobile terminal and can be received by DTT aerials.

Depending on the amplification system being used in the installation (broadband amplification programmable amplifiers or single channel amplifiers) a protection ratio can be established for the channel 48 plus the rest of the channels, bearing in mind the small guard interval (1MHz) between LTE and DTT.

Domestic systems will present similar problems, as they are exposed to LTE downlink signals that can reach the amplification, these will normal be broadband and hence more sensitive to interference.

LTE uplink signals

Signals being transmitted from the LTE user terminal that will be received as interfering signals by the receivers integrated in the TV's or the stand alone set top boxes.

Both for domestic and communal system the uplink signals could filter into the distribution system through a poorly screened cable, outlet plate or connector, the interference could even cause pixelization.

TV DTT y Telephony (2020-)

470 MHz	694 MHz	790 MHz 862 MHz
TV DTT	Digital Dividend- I	I Digital Dividend - I

5G AND LTE700

5G is a network which allow a greater connection speed and contents in ultra high quality (UHQ). One of the market main trends is the connected devices evolution to the Internet of Things (IoT). According to various studies, by 2025 are expected about 100.000 millions of devices connected to Internet, implying approximately 15 devices per person in a rural village, and between 50 and 100 devices connected per capita; a conventional LTE network is not prepared to many connections, and this is expected to can be solve with the 5G. The close devices will be able to communicate with each other plainly.

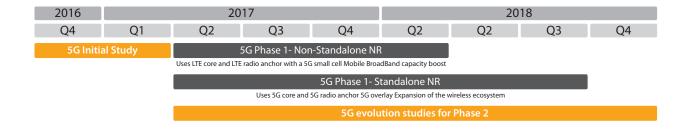
5G, will move the television channels actual frequencies, that will require re-aligning the televisions in all households.

700MHz band (694-790MHz) can cover larger geographic areas with less infrastructure than the frequencies in higher bands.



Before the LTE deployment, Televés has carried out a study and analysis about this new technology implementation will involve.

As a result of I+D+i teamwork of the market leading company, Televés has developed a complete range of products designed explicitly for minimize the potential interference LTE700 on the DTT services. All this products bear the seal LTE700 Ready.



CURRENT PROPOSED 700 MHZ CLEARANCE TIMETABLE

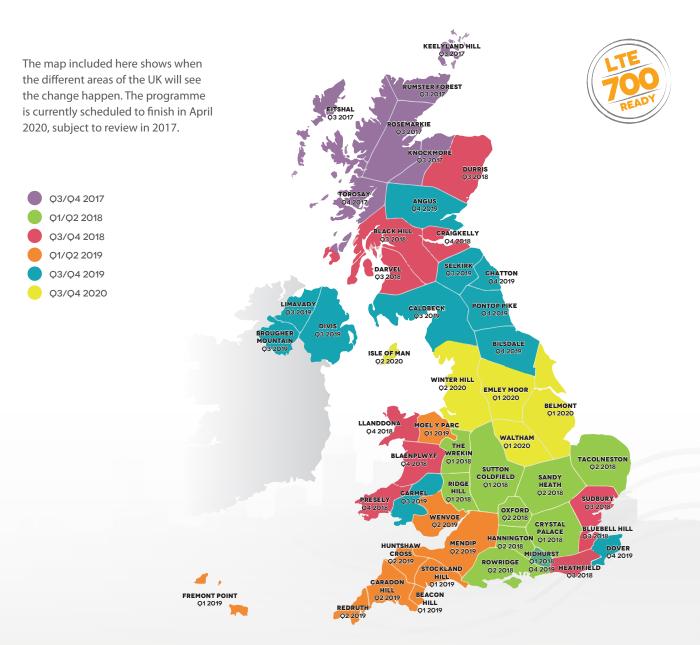


ROLL-OUT PLAN SIMPLIFIED OVERVIEW

The path initiated with the deployment of the first Digital Dividend will take a step further with the development of the 700MHz clearance a process which will establish the technical conditions for the allocation of the 700 MHz band (channels 48 - 60) in the EU to continue increasing the advanced mobile phone services and mobile Internet.

Televes has started developing a complete range of products specifically designed to reject the LTE interference over DTT services, now up to channel 48. All these products will carry Televes' LTE700 Ready stamp.





INTELLIGENT BOSS ANTENNAS

Improved thanks to the TForce Technology

Televés goes beyond the silicon era into the new era in electronic component design with the new technology TForce development, which was create to design, manufacture and set MMIC components (Monolithic Microwave Integrated Circuits). This components offer a unconditional stability for a wide range of frequencies, in addition to a high linearity and a low noise.

TForce is based on the manufacturing of gallium arsenide (GaAs), which provides products with functionalities that are difficult to match.



BOSS system with TForce

A SINGLE AND UNIVERSAL CAPTURING SYSTEM

The BOSS Tech sytem featured in the DAT BOSS antenna, automatically controls the level of the received signal (either very high or very low) in order to always ensure an optimal output level.

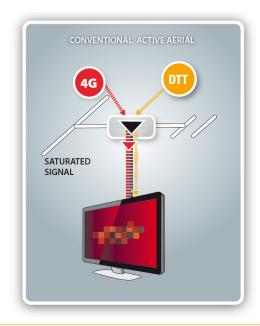
A BOSS creation with a TForce technology is a extraordinary landmark in the dynamic range optimization, which allow the coverage range increase in the DTT installations.

Active antennas can cause saturation problems after receive LTE/4G signal, being useless in the actual scenario of the DTT and in the future of the LTE/5G.

The BOSS-Tech will regulate its gain to avoid saturation and lead to the television the best signal quality possible. Thus, it allows to the installer and final user not to worry about the received signal level. Even the deactivation option its power will ensure the signal integrity in extreme cases.



Televes' antennas with BOSS-TECH are not active aerials but intelligent







INTELLIGENT BOSS ANTENNAS

DAT Series



IF THE DATA BOSS CAN'T RECEIVE IT, NOTHING CAN.

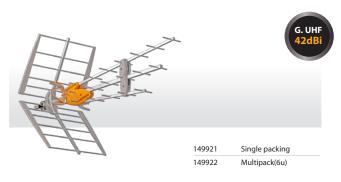
Unique and universal terrestrial television signals capture system, which is defined because it has a HIGH DYNAMIC RANGE. It allow you to receive high-quality TV in a variety of critical situations, from areas where signals are very weak to installations with high reception level.

- ► A MORE STABLE RECEPTION: it supports signal variations or fading with no effect on the TV installation.
- VERY HIGH GAIN: TForce increases the gain of the antenna by 13dB (42dBi in intelligent mode).
- ▶ DTT COVERAGE ENHANCEMENT: up to 27% higher than older models.

- ▶ OPTIMAL C/N: thanks to a noise figure of only 1.2dB that respects the received signal quality.
- ▶ ROBUST AND DURABLE: fixing system made from zamak (robust) and antenna built in high quality aluminium (stainless).
- ► FULLY SHIELDED JUNCTION BOX: it protects the BOSS system against impulse noise, and it is grounded to a full protection against electric shocks.
- LTE700 Ready: They incorporate filtering as of 48 channel.

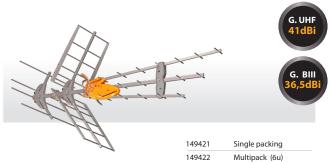
DAT BOSS:

THE FIRST INTELLIGENT ANTENNA



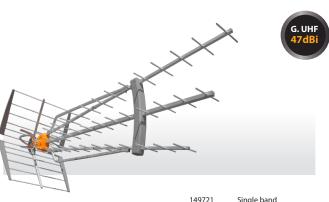
DAT BOSS MIX:

COMBINED ANTENNA FOR UHF BAND RECEPTION.I



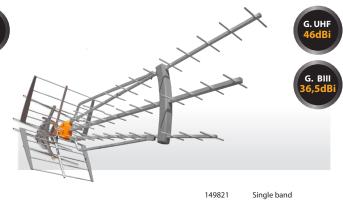
DAT BOSS LR:

LONG RANGE UHF ANTENNA FOR EXTREME RECEPTION CONDITIONS



DAT BOSS MIX LR:

COMBINED LONG RANGE UHF AND BIII ANTENNA FOR EXTREME RECEPTION CONDITIONS.



INTELLIGENT BOSS ANTENNAS

DINOVA BOSS

Low visual impact antenna, aesthetic and discreet, it integrates a improved Boss with TForce technology. All the advantages of a perfect TV reception are also possible on special locations as facades, historical buildings, emblematic properties, and on balconies.

- ► HIGH WEATHERABILITY: Its casing built in PE improve its resistance to wear on the outside and UV radiations.
- ▶ REINFORCED WITH GLASS FIBER: Fixing system made from this material (Fiberglass), increase its resistance to corrosion and flexibility, considerably reducing the weight.
- ▶ **VERY HIGH GAIN:** TForce technology provide to the BOSS a 10dB increase (34dBi in intelligent way).
- VERTICAL AND HORIZONTAL: Easy installation for both polarizations.
- LTE700 Ready: They incorporate filtering as of channel 48.



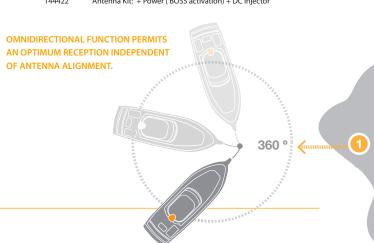
OMNINOVA BOSS

Antenna, which does not need to be aligned, incorporates a improved BOSS with TForce technology. Its reception capacity in 360° (omnidirectional) in concert with its new intelligence, are the perfect combination to offer the best TV reception without worrying about signal level and antenna location. It is, therefore, the ideal aerial for DTT static reception in mobile installations (caravans, boats...) that stay for a short period of time.

- OMNIDIRECTIONAL: Easy installation because it does not need to be aligned.
- ► HIGH WEATHER ABILITY: Its casing built in PE improve its resistance to wear on the outside and UV radiations.
- ▶ VERY HIGH GAIN: TForce technology provide to the BOSS a 10dB increase (40dBi in intelligent way).
- ► IMPROVED MECHANICS: The base section integrates a fixing component compatible with masts diameter of 30mm
- LTE700 Ready: They incorporate filtering as of 48 channel.



144422 Antenna Kit: + Power (BOSS activation) + DC injector





PASSIVE ANTENNAS

V Zenit and V Zenit Mix

This antenna with a "V" type structure allows it to achieve an excellent compromise between size and gain.

- ▶ ROBUST AND DURABLE: Fixing system made from zamak (robust) and antenna built in high quality aluminium (stainless).
- FULLY SHIELDED JUNCTION BOX: It protects the BOSS system against impulse noise, and it is grounded to a full protection against electric shocks.
- LTE700 Ready: They incorporate filtering as of 48 chan-



149221 Single Packing 149222 Multipack (10u.)

MIX Version incorporates a dipole and specific reflectors for BII reception (channels 5-12).





PANNEL ANTENNA

Antenna designed for those cases where the TV signal comes from several directions. It is composed of 4 dipoles in a vertical pattern, separated in such a way that join them effects, bringing a antenna of average gain and a good bandwidth.

- ▶ ROBUST AND DURABLE: fixing system made from zamak (robust) and antenna built in high quality aluminium (stainless).
- FULLY SHIELDED JUNCTION BOX: it protects the BOSS system against impulse noise, and it is grounded to a full protection against electric shocks.
- LTE700 Ready: It incorporates filtering as of 48 channel.



108320

Embalaje individual

FILTERING

LTE700 FILTERS

This filters are adapted to the 700MHz clearance, so the signal is filtered as of the 694MHz (channel 48).

They are characterised by have a high reliability and stability of parameters, being stable to the temperature and humidity changes. Minimum insertion losses, guaranteeing that the outputs parameters are barely modified.

They are classified according to the rejection of the spectrum band (medium, high...). Moreover, their two different formats permit their adaptation depending on the installation location.

MEDIUM REJECTION FILTER



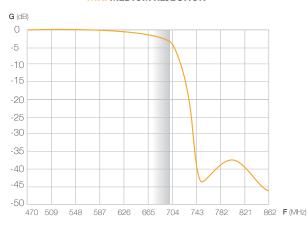
- **4**03201
- Signal filtered as of the 694MHz with a attenuation greater than 20dB.
- Indoor installation.
- ► Connection system with "F" connector

HIGH REJECTION FILTER

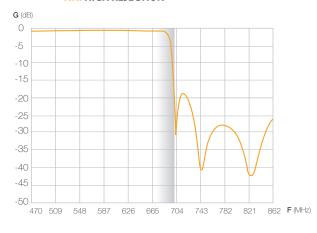


- **4**05202
- Signal filtered as of the 694MHz with a attenuation greater than 25dB.
- Outdoor installation.
- ► EasyF connection system: A fast and reliable system, that reduces the time of installation in a 50% and it does not require extra connectors (Built-in-System).

MR: MEDIUM REJECTION



HR: HIGH REJECTION



REF.403201 REF. 405202



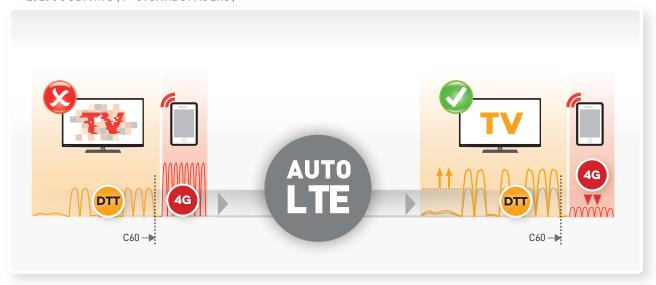
FILTERING

AUTO-LTE FILTERING

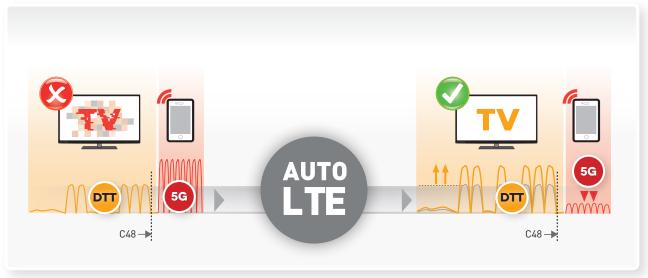
Auto-LTE filtering is taken into many LTE700 amplification products of Televés. It automatically detects and identifies the LTE signal type that interferes in the device, and it commutes the internal filter to adapt it to the landscape (first or second Digital Dividend: LTE790 / LTE 700 Ready).

Thus, this functionality provides the versatility of maintain the perfect installation every LTE situation, it allows a single device before, during and after the period of transition.

LTE790 SETTING (1ST DIGITAL DIVIDEND)



LTE700 SETTING (2° DIGITAL DIVIDEND)



AMPLIFICATION

NANOKOM RANGE: MAST AMPLIFICATION

This mast amplifier, amplify a signal originating in a UHF antenna (30dB) and it mixes it with other TV signals: VHF and satellite (IF). It incorporates a switch that allows the pass of the current from the output to the UHF input for the activation of the BOSS. Also it allows the pass towards IF input for the alimentation of the LNB.

- ▶ AUTO-LTE filter: Its filter between first and second Digital Dividend commutes automatically.
- ▶ USOS (User Selectable Output Signal). The user adjusts the required output level and the device will adapt dynamically to the changing received signal.
- Ultra compact (90x80x38mm)
- EasyF connection type: Reliable and secure system that allows a fast and simple connection without connectors.
- Very low noise figure: It ensures a quality amplification.



▲ 561620

REF.	DESCRIPTION
561620	NanoKom Mast Amplifier 3i/1o "EasyF":
	UHF[dc]-VHFmix-FImix[dc] G 30- (-1) - (-2)dB

DOMESTIC AMPLIFIERS

With a discreet design and a measured size, this domestic amplifier is distinguished by its output high power in VHF and UHF.

- **Low consumption:** Integrated and efficient power supply.
- Connection is made via "F" or "CEI" connectors. (according to ref.).
- ► TV Output: Output with lower gain for direct connection to a television (according to ref.).
- Manual gain regulation, protected by a hinged lid.



Ref.	Total Outputs No	TV output	Connectors	Gain (dB)	Preamplifiers alim./BOSS	Regulation	LTE filter
552120	2	X	CEI	22	X	Manual	LTE700
552220	3	✓	F	20 (12@TV)	X	Manual	LTE700
545720	3	✓	CEI	20 (12@TV)	✓	Manual	LTE700
545802	3	✓	F	20 (12@TV)	✓	USOS	AUTO 790/700
545901	3	✓	F	20 (12@TV)	✓	USOS	AUTO 790/700

AUTOMATIC DOMESTIC AMPLIFIER

Within the range, this amplifier incorporate two additional advantages, such as the AUTO-LTE filtering and the USOS system (User Selectable Output Signal).





AMPLIFICATION

AVANT 9 PRO SAT: PROGRAMMABLE HEADEND AMPLIFIER

The Avant 9 unit is a programmable multi-band amplifier, which main mission is to achieve a **programmable amplification and balance** of different RF input signals.

- New size, more compact and lightweight (273 x 203 x 57 mm).
- ▶ AUTO-LTE: automatic band filtering between first and second Digital Dividend.
- Signal level and SNR (Signal to Noise Ratio) monitoring.
- Zamak chassis providing high shielding effectiveness.
- ► Energy-efficient thanks to its low power consumption: up to 25% lower than previous models.



<u>▲</u> 532022

CHOOSE THE PROGRAMMING MODE YOU WISH:



App ASuite for PC or tablet / Android smart phone, via USB connection (OTG Cable included):



The multi-band amplifier configuration is performed in a friendly and intuitive environment. A configuration can be defined and stored, even when not connected to the multi-band amplifier; this configuration can be retrieved later for installation and adjustment.

Furthermore, the application allows the monitoring of channel quality parameters and the generating of an installation report that includes the configuration applied.





Universal programmer (ref. 7234):

The unit is compatible with the programmer, ensuring backwards compatibility.



Automatic programming by means of the "AUTO-PROGRAMMING" button (press and hold) of the multi-band amplifier itself:

Thanks to a tuner that is able to detect DVB-T channels for UHF and VHF inputs, the unit performs an automatic programming of the filters when executing this option, as well as the appropriate tuning to avoid intermodulation.

AMPLIFICATION

T.12 RANGE: SINGLE CHANNEL AMPLIFIERS

THE SINGLE CHANNEL AMPLIFIER IMMUNE TO THE LTE.

This single channel amplification range offer a unbeatable performance on the signal processing, with a frequency settings fine and very easy.

The fact that it is produced on a latest generation robotised line and it is subjected to strict quality controls, this product ensures a reliability and stability for the adaptation for the Digital Dividends without precedent.

- Modular and expandable system.
- Design of enhanced shielding.
- Powering of up to 24 modules, from a PSU.
- ▶ Remote alimentation of Pre-amplifiers.
- High reliability thanks to its manufacture completely robotised.
- Fully compatible with the previous model. (T03).



▲ 508612

REF.	DESCRIPTION
508212	T12 Single Channel Amplifier FM 88108MHz G 35dB Vo 114dB μ V
508712	T12 Single Channel Amplifier Low BS 104174MHz G58dB Vo 125 dB μ V
508312	T12 Single Channel Amplifier BIII 174230MHz G45dB Vo 123dBμV
509912	T12 Single Channel Amplifier DAB 195232MHz G45dB Vo114dBμV
508812	T12 Single Channel Amplifier High BS 230300MHz G 58dB Vo 124dBµV
508912	T12 Single Channel Amplifier HyperBand 302470MHz 58dB Vo 125dBμV
508612	$T12 Single Channel/ Multichannel Amplifier DTT UHF 470862 MHz G 50 dB Vo 125 dB \mu V (up to 7 channels)$
509712	T12 Single Channel Amplifier DTT UHF 470862MHz G 57dB Vo125dBμV auto-adjust
509812	T12 Single Channel Amplifier UHF High Selectivity 470862MHz G 55dB Vo 125dBμV
509512	T12 Single Channel Amplifier UHF High Selectivity 470862MHz G 52dB Vo 121dBμV auto-adjust.
508012	T12 Amplifier IF 9502150MHz G 3550dB Vo 124dBµV
549812	T12 Switch-mode Power Supply Unit 60W 24V-2.5A



DISTRIBUTION

COAXIAL CABLE

With the roll-out of the 5G services, there is the possibility that signals will be transmitted from the mobile (uplink) could filter into the coax distribution network. Coaxial cable should be fully shielded and avoid radiations capture that disrupt the TV signal. In this scenario, the losses are no longer the most important.

Our cables range conform to the new European CPR ("Construction Products Regulation") regulation, that offer a focussed classification on cable performance in case of fire. Safety is paramount and protecting people is not an option, it is our responsibility as manufacturer.

Moreover, in the Cable Certification Centre is performed the individual cable control, ensuring the quality in all manufacturing processes.



A+ Class, triple shielding (TSH): they ensure the increased immunity to interferences thanks to their high shielding efficiency (triple: mesh + 2 films).

Euroclass Eca Cable Benchmark TYPE 100		Refs.	Description	Colour	Packing
	413705		White	Plastic reel	
	413704	Coaxial Cable SK110plus PVC Eca	White	Plastic reel	
	Cable Benchmark	413706	Class A+ Triple Shielded TSH 18VAtC Ø 1.02/4.6/6.70mm	White	Wooden drum
		413707		Black	Wooden drum

A Class, double shielding

Euroclass Eca		Refs.	Description	Colour	Packing
	2127	── Coaxial Cable CXT-1 PVC Fca	White	Plastic reel	
	212701		Black	Cardboard reel	
	212703		White	Wooden drum	
	Cable Benchmark TYPE RG6-SDU	212702	Class // 17 V/(CC.// & 1.00/4.7/0.711111	Black	Wooden drum
		212704		White	Wooden drum

Euroclass Eca: Standard Cables

DISTRIBUTION

"PRO EASYF" CONNECTORS

This professional connectors have a extra shielding film, ensuring a effectiveness in classA+ shielding, , requirement for LTE Ready situations.

Moreover, its EasyF connection system speeds and ensures the fitting, since it does not have threaded or disassembled pieces, and the connection is done by one single screw that guarantee a central conductor pressure very effective.

SIMPLICITY AND QUICK FITTING:

- Single securing screw.
- Easy visual check of the connection.
- Not threaded.
- No loose parts.

SAFE CONNECTION:

- ▶ Saves time and reduces the cost of the installation.
- Assures the reliability of the connection and does not require any future revision.
- If something fails, connectors are not the cause.

ELECTRICALLY PERFECT:

- Automatic manufacturing.
- ► Total protection that minimizes the non desired effect on the DTT reception.
- Perfectly adaptable to the components of the distribution network.
- Due to its performance and quality, it is the connector to be used for the standard and HD DTT.





▲ 413210 CEI male ▲ 413310 CEI female ▲ 413410 Quick F



RECEPTION AND ADAPTATION

T.OX TWIN TRANSMODULATOR / REGENERATOR WITH REMULTIPLEXED

The twin multiplexer distribute in two outputs DVB-T or DVB-C (according to ref.) services from the two DTT input multiplexes, either in DVB-T or DVB-T2 format. The main function is the regeneration of DTT signals and/or input services filtering (ref. 565101) or the DVBT/T2 - QAM transmodulation (ref. 565201).

- Fully configurable TWIN (2-multiplex) output.
- ► Edit the transport stream parameters (TS_id, ON_id and LCN).
- Compatible with **professional CAM** modules/cards.
- Configurable and remote-monitored via CDC.
- Information about the useful rate of the input services and about output channel occupation.
- Content filtering through the elimination of the selected

REF.	DESCRIPCIÓN
565101	T.OX Twin Transmodulator DVBT/T2-COFDM CI (47862MHz) Multiplexer: 2 Channels (DVB-T/T2): 2 Channels (DVB-T)
565201	T.OX Twin Transmodulator DVBT/T2-QAM CI (47862MHz) Multiplexer: 2 Channels (DVB-T/T2): 2 Channels (DVB-T)



▲ 565101

REF. 565101 NPUT DVB-T/T2 Demodul, A Multiplexer CI Interface Demodul, B **Double** REF. 565201 DVB-T/T2 **QAM Modulator** Demodul. A Multiplexer Up Converte CI Interface Demodul, B

HANDHELD METER

HANDHELD METER CUSTOMIZABLE MULTI STANDARD

A **pocket size** meter which allows you to customize upgrade choice with downloadable **software under licence**.

Choose the standards you're actually going to measure and only pay for the features you need.

H30FLEX the standard you need in a single equipment.

Great measurements performance, including a digital real-time spectrum analyser, constellation and echo diagrams, data-logs...

- ▶ Multi Standard, ready to take measurements on the DVB-S/S2 satellite band and DVB-T/T2 and DVB-C terrestrial band channels.
- Accuracy and speed: Real-time digital processing.
- ► Fast & Automatic channel auto-scan with parameters auto-detection (system scan).
- ► High contrast screen for bright sunlight.





REF.	DESCRIPCIÓN
593301	H30FLEX with DVB-S/S2 and DVB-T
593302	H30FLEX with DVB-S/S2 and DVB-T/T2
593303	H30FLEX with DVB-S/S2 and DVB-C
593304	H30FLEX with DVB-S/S2, DVB-T/T2 and DVB-C
	OPTIONS
593231	DVB-T
593232	DVB-T/T2
593233	DVB-C
593234	dCSS (SCR)

Affordable, high quality measurement equipment

All the functions you need in your hand











RUGGED AND LIGHT-WEIGHT
ABSOLUTE RELIABILITY AND
PROTECTION IN AN EASY TO
CARRY FORMAT



ERGONOMIC HANDHELD DESIGN
USER-FRIENDLY INTERFACE



LONG BATTERY RUNTIME
WITH POWER-SAVING MODES



MADE IN TELEVES
YOUR QUALITY WARRANTY



A PORTABLE METER

A PORTABLE METER FOR PROFESSIONAL USERS

THE POWER OF USER EXPERIENCE





Its high performance and high accuracy makes MOSAIQ6 the perfect tool for network operators, radio frequency technicians and broadcasters.

6 SCREENS IN 1

Thanks to its configurable interface, you choose which widgets (up to 6) you want to simultaneously display in the 8" high resolution screen. Check the installation status at a glance.



A TRUE TOUCH SCREEN

This new interface has been designed and also programmed to take full advantage of a touch screen with touch gestures (tap, double tap, long press, drag, spread or pinch). Only in this way is it possible to operate so easily a meter with so many performances.

ULTRA-FAST SPECTRUM ANALYSER

Due to its rapidity, accuracy, and a full range of features, it is the most obvious result of our real time digital processing engineering.

ERGONOMICS

With a robust design and satisfactory dimensions (220 x 260 x 65mm), this meter offers an optimized shape to maximize the effectiveness of movement. Every menu and button is accessible with one single hand.

ALWAYS READY

A new battery system allows to change the meter's battery during the field work. Don't worry about the load, two batteries give a sufficient operating range for a full work day.

EFFICIENT MANAGEMENT

The MOSAIQ6 cloud repository is available to keep your meter always updated. It also offers the comprehensive management of your meter (or meters), like downloading measurements, managing the channel plans, configuration, etc.

REF.	DESCRIPCIÓN
596101	MOSAIQ6 with F.O.
596111	MOSAIQ6 with Selective F.O.
	OPTIONS
596201	GPS Drive Test
596202	Wifi 5GHz
596203	Analogue Measurements
596204	DAB/DAB+
596205	UHD 4K

MORE INFORMATION:

Standards:
Radio: FM
Terrestrial: DVB-T & DVB-H, DVB-T2 & DVB-T2 Lite, ISDB-T/Tb
Satellite: DVB-S & DVB-S2 (multi-stream), 8PSK & DSS
Cable: DVB-C, QAM (Annex A, B, C)
Fiber-optic interface (also selective version)

RF measurements, continuous spectrum analyser: quality parameters (CBER, MER, VBER), link margin, constellation, echoes, LTE interference detection, waterfall, scan, path delay...

MPEG measurements: Analysis of T2-MI over ASI or IP packets, analysis of TS in real time, view of all services and tables, quality analysis