

INFO Televes®

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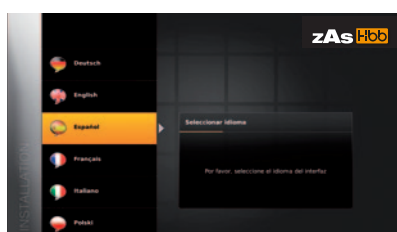


After the MPH fiasco, DTT interactivity was relegated to a mere declaration of intentions.

While DTT was getting consolidation with notable market advancement, internet access was evolving in parallel with the home devices that were making it possible.

Today's DTT would soon be technically obsolete unless new developments beyond digitisation of television programming takes place. Although MPH did not achieve technical and social coexistence between television and other media, we now have the proper technological scenario that can gather both concepts under the internet connection umbrella. This is the main reason why HbbTV (Hybrid Broadcast Broadband Television) has become the standard reference in the new DTT era in which both manufacturers and service providers have taken common ground.

HbbTV (Hybrid broadcast broadband TV) allows a connected TV set to get access to tailor-made and interactive internet services, such as polls,



voting or online bets, for instance. A bridge is established between the audience and the service provider destined to become the new way of television watching. It is easily misleading to think that having an RJ-45 jack on our TV set makes it compatible with HbbTV, or even to think that SmartTV and HbbTV are synonyms.

Both systems are quite different. In Smart TV sets it is the manufacturer who develops an operating system capable of executing apps onto the screen. It is simple to imagine what it could mean that each manufacturer creates its own standard.

HbbTV is intended so that the transmission standard itself becomes the common platform that offers access to the services implemented by the service providers.

To date, many television content providers have launched offers through their HbbTV service. It is Televes' role to develop the set-top box for this niche market that allows integration of TV and internet services, no matter who the manufacturer of the TV set is ■



AND ALSO...



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Marina of Platja d'Aro

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We wish you a Merry Christmas and a Prosperous New Year 2013



TELEVES IN EEBC

UKRAINE, 17-19 OCTOBER



Televes has taken part in the 10th International Fair EEBC-2012 in Kiev, Ukraine, in the fairgrounds of "Kiev Expo Plaza". It is the main commercial meeting of the sector in the country, with great implication of international firms. It is offered in combination with a great array of seminars and conferences where Televes had a chance to share gained experiences with its main distributor in Ukraine, Roks PJSC.

It has become tradition in this fair that Televes DAT HD BOSS aerials and the QSD dishes distribute television signals throughout the fairgrounds, setting the bar for quality standards in the market.

TELEVES IN SCTE CABLE-TEC

ORLANDO, FLORIDA (USA),
17-19 OCTOBER



SCTE Cable-Tec Expo 2012 has become the event of the year for the engineering industry in the United States. In this edition it was estimated that close to 10.000 visitors attended, especially interested in product releases and service launches related to telecoms technologies. The star of the show were the development of efficient networks.

Televes presence was focused in the H-series of field spectrum analysers, where the attention was centered in the new release of the H60 with its larger screen with more resolution and contrast. Visitors were particularly impressed with the new version of Digital Processing that allows for measurements up to 3,3GHz, or remote control of signal readings, amongst other features. Also, Televes presented the release of the H30 handheld meter and all the Fiber Optic distribution elements of the T.OX headend.



FREQUENTLY ASKED QUESTIONS

What is the difference between just an active antenna, and our advanced BOSS-Tech antenna?

EXPERT OPINION

Traditional electronic antennas are simply active antennas; ie, an antenna with an amplifier featuring, in most of the cases, an unacceptable noise figure.

Instead, Televes' antennas equipped with "BOSS-Tech", are not simple active antennas. These antennas feature a built-in smart device that, depending on the facility requirements, can be remotely activated/deactivated. Once activated, the device automatically regulates its gain in order to deliver the best signal quality to the facility.

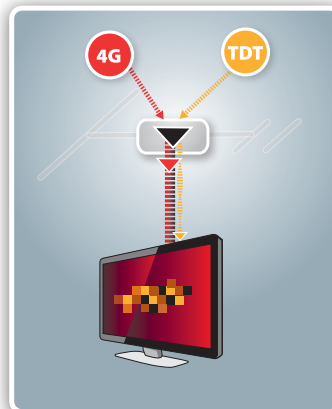
The standard active antennas can cause problems that make them unusable in the current scenario of DTT, but even more in the future implementation of the LTE/4G.

While an active antenna will saturate receiving signals LTE/4G, the "Boss-Tech" device regulates automatically its gain to avoid saturation. This has been measured in several broadcasting tests where were transmitted both DTT and 4G signals in adjacent channels, and then receiving them by means of antennas Boss-Tech.

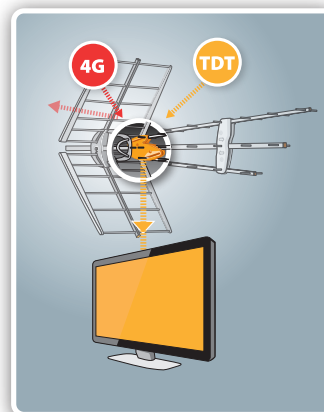
But there is even more, the option of turning OFF its powering, will ensure the signal integrity in those cases of extremely high levels.

The system "Boss-Tech" allows the installer and the end user, not be worried about the reception signal level, thus solving those problems caused by level settings or signal variations that may occur during the life of the installation.

Traditional antenna active



Antenna with BOSS-Tech



Therefore, installing an antenna Televes with "Boss-Tech" ensures continuity in the quality of service and the correct operation of the installation, even with the presence of signals LTE/4G.

YOUR PICTURES



Radiation protection

In case anyone had doubts about the shielding of our antennas, this picture confirms that there is no safer antenna for the family than a Televes one.



Talking about...

Cable Certification Center

Interview with: David Borges,
head of production and manager of the Cable Certification Center



"The quality of the coaxial cable is the key element in the mitigation of the technical challenges that arise from the LTE"

The deployment of LTE/4G networks open up a new scene that affects not only the way users connect to internet to enjoy content in mobility, but also all planned frequencies to be utilised for telecommunications services, for instance those allotted for DTT. Just as David Borges points out "the mobile telephony repeaters that will be deployed for LTE/4G will potentially become a source of interference for signals that share the band and are adjacent to them in frequencies. Hence, it is vital to have high quality coaxial cable in the distribution of television services in the building and homes, to offer good shielding and rejection to potential invasion of upload mobile service signals from user devices".

The LTE era has already commenced. Is the equipment related to capturing and distributing DTT signals ready for the new conditions?

Although the sector is well aware of the necessity to adapt the aerial and distribution equipment to secure the television signal from potential LTE interference, we believe that not enough attention has been drawn to the role of the passive elements, such as the coaxial cable and the connectors, as they are the elements where upload mobile frequencies can introduce interference in

the television network in the building.

How do you control the quality of the coaxial cable?

We know that the quality of the cable must be applied to each and every element that conforms it. We control up to eight parameters in the production process to achieve a cable of maximum quality. It is a process that, now more than ever, must be valued because it is the guarantee the professional installer seeks when offering television services to end users.

What advantages against interference does the Televes coaxial cable offer?

Televes T100 cables are copper, instead of copper plated steel, which have better performance in DC and the transport of the signal in high and low frequencies. We undergo cable tests in conditions of up to 40 degrees celcius and relative humidities of up to 93% during 21 days. In that scenario the attenuation does not fluctuate more than 5%, versus up to 70% as shown in lesser quality products.

Besides, the mesh in the T100 cable is interlocked with 16 groups of thread and 8 threads of copper per group, each thread being just 0,11 mm in diameter and a covered area of 73%. This parameter is one of the most influential in the quality of the shielding.

What other guarantees can Televes offer the professional installers and the end users?

Special attention is placed to the outer co-

ver. It is marked with indelible ink along the the length of the cable and we test assurance that it is homogenous and symmetric to protect against external aggression.

What tests are conducted during the production process?

Televes offers full trazability of the product. The internal control of each of the production stage generates individual information for each cable reel. That implies exclusive documentation for each of the meters of cable delivered. Total guarantee.

Any other service advantages offered by Televes?

The quality controls are integrated in the production process, both fully developed by our own personnel in our state-of-the-art manufacturing facilities. Maximum availability of stock and immediate delivery to market is an added advantage. The cable center is prepared to modulate its facilities according to the sector's world wide demands, no matter the thickness or type of cable to be served. Flexible manufacturing allows for different serving lengths for the same cable reference ■

Sergio Martín
Communications Manager



**DID YOU
KNOW..?**

....QSD satellite dishes have been awarded in Germany?

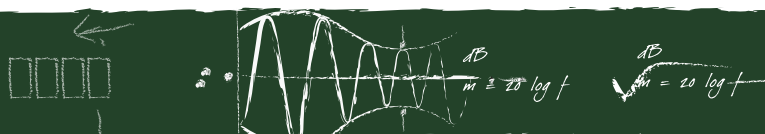
The dish QSD, ref.7902, has been awarded by the prestigious German magazine Satvision as the best satellite dish of the market.

The rigorous test to which it has been subject so certify.

The final ranking was as follows:

1. Televes S85QSD-Z
2. Gibertini OP85SE
3. Schwaiger SPI085PA
4. CityCom CCA 850 / G
5. Technisat Satman 850 Plus





Filtering systems: advantages and disadvantages

Let us have a look to the advantages/disadvantages of the different technologies used to implement filters intended to reject interferent LTE signals.

Among the most used technologies we can mention:

■ **LC:** Using discrete components (L, C) it can be achieved significant rejection to the interferent band, although at the expense of rather high insertion losses for DTT channels in the UHF band. Although these filters are, due to its price, one of the first choices, their higher insertion loss in the range of DTT signals would require a readjustment of the gain of the distribution to compensate these losses.

■ **Ceramic resonators.** The ceramic resonator filters can solve, in part, the problems of insertion loss of the LC filter. However, the choice of quality resonators is crucial to avoid filter drifting with temperature, which can vary considerably both rejection and insertion loss in adjacent DTT channels (59, 60) with the LTE frequency band.

■ **SAW filters.** The Surface Wave Filter (SAW) reaches very high rejections in small frequency ranges, but at the expense of very high insertion losses, which causes that it must be combined with additional electronics (amplification), which results in complexity in their implementation and therefore increasing manufacturing costs.

■ **Cavity filters.** Filtros de cavidad consisten en elementos sintonizables que forman las líneas de transmisión acopladas alojados dentro de cavidades resonantes de metal. These filters achieve a very significant rejection characteristics (typically 25-30 dB or even higher), maintaining a minimum insertion loss (<1 dB in the DTT frequency band, and 2 dB typical loss for channels 59, 60), thanks the high Q (quality factor) of the tunable elements.

Typically, to achieve these characteristics for insertion loss and rejection, these filters are bulky and heavy, so that although in certain documents are cited as a possible solution (LTE Study Summary Filter, DVB Technical Module), had not been

considered their use in MATV solutions, but exclusively in professional solutions or very big facility headends.

This is so because each tunable element is housed in a separate cavity, and it takes a number of cavities to achieve both attenuation and rejection values, required; with the constraint that the guard band between DTT and LTE is only 1 MHz.

What Televes has achieved with its cavity filter (Spanish patent and future European patent extension), is to implement this technology in a small volume (10 cm x 5 cm) and a weight less than 250 grams, which enables it to be

used in both indoors and outdoors. Estos elementos resonantes están separados por una distancia igual a la longitud de onda de trabajo dividida por 4 y han sido diseñados aunando el alcance de las características de rechazo y pérdidas de inserción con su implementación industrial en grandes volúmenes.

To achieve all this, Televes uses what is called microcavities; this is, small cavities housing the resonant elements of high quality factor.

Microcavities filter also presents an **excellent performance against vibration and temperature**, which constitute the core of the component more suitable for rejecting LTE interfering signals, maintaining the DTT coverage. They also may be used either preventively or as a mitigating element. ■

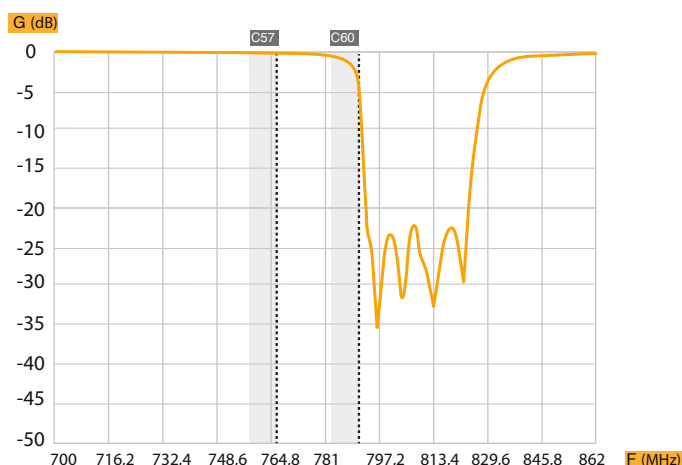
PATENTED



403301

MICRO-CAVITY FILTER ("F" FORMAT)

LTE C60 micro-cavity filter that cuts signals from 782 MHz, with minimum through losses.





Applications of a micro-cavity LTE filter

Undoubtedly, we all know that the signals LTE/4G are just around the corner, occupying the last part of the UHF band.

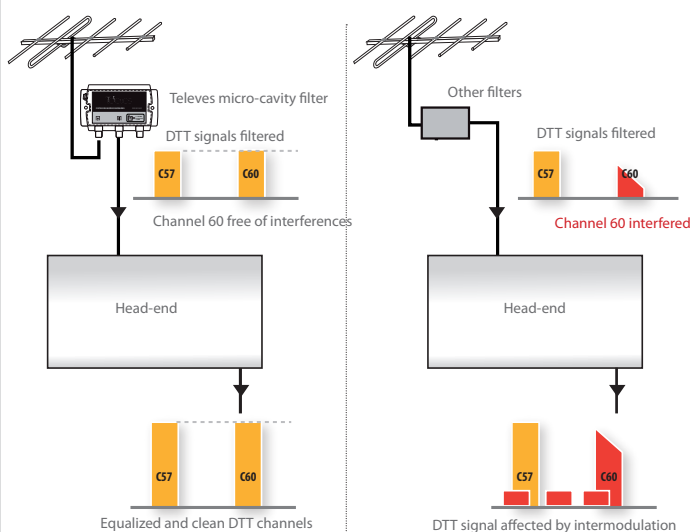
To mitigate interference on the TV channels that are in their vicinity, Televes has developed a range of filters called "LTE". These filters are based on micro-cavity technology, which consists of a series of cavities that are magnetically coupled together; as a consequence, this type of filter confines its magnetic fields in cavities that results in very little coupling losses as well as excellent values of rejection band.

By using these filters the TV channel 60 can be virtually isolated from the LTE/4G Downlink band, with barely 0.5 dB insertion loss for its passband.

Any other type of filter would cause that the headend might not be able to equalize the signals received; usually due to the risk of saturation caused by the rest of signals coming from the antenna. ■



Signal on the antenna: TDT + LTE



TELEVÉS FACILITIES

Platja d'Aro (Girona)

Coaxdata System in the marina of Platja d'Aro (Girona)

In an area of 33 luxury apartments in Platja d'Aro, it is wondered about what would be the best way to establish a data network.

Due to the size of the facility, its complexity and security reasons, the WiFi solution was quickly discarded. Instead, the CoaxData system was chosen for its simplicity and excellent coverage and performance.

The installation in each apartment consists of a CoaxData adapter (ref 7689) and a filter (ref 7654) for the isolation between TV and Data bands.

Another CoaxData adapter serves as a master beside the router of the operator. The installation was performed by Technilan, installer in Palafrugell. ■



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