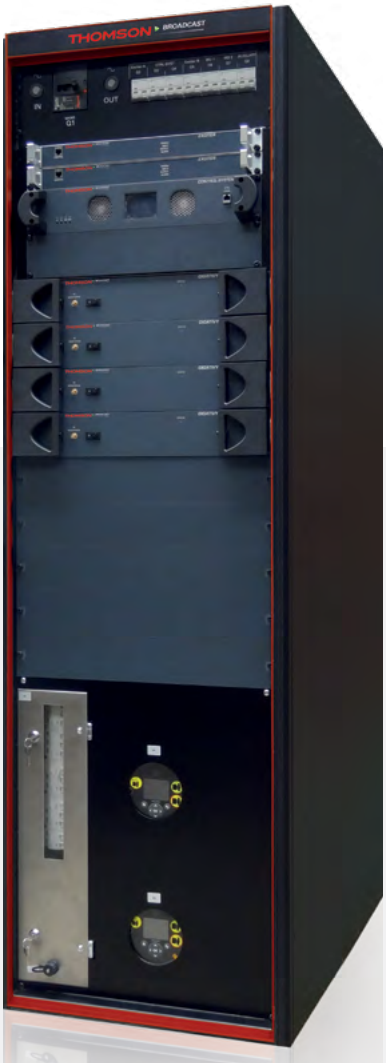
DIGITAL
TELEVISION
SOLUTIONS

THOMSON
BROADCAST

GIGATIVY

COST EFFICIENT HIGH-POWER TV TRANSMITTER



For a smooth digital migration with low operating costs

LIQUID COOLED

FROM 6 kW
TO 18 kW

ATSC 1.0 / ATSC 3.0 - DVB-T / DVB-T2 - ISDB-T

www.thomson-broadcast.com

PHENIXYA

THOMSON BROADCAST'S DNA

Thomson Broadcast solutions are recommended for the next generation standard migration.

Backed by more than 60 years experience in transmission systems and hundreds of systems deployed all around the world, **Thomson Broadcast** has paved the way for smooth and cost-efficient digital switchover -DSO- to benefit from the digital dividend, offering higher quality content and generate potentially greater income.

Thomson Broadcast solutions are recommended for the next generation standard migration.

Thomson Broadcast is the right partner for transmission turn-key systems. From the very beginning of the migration project, **Thomson Broadcast** can assist governments, ministries or broadcasters in the current analog and digital network diagnosis, in the technical and technological choices, in coverage studies and most importantly, in financial engineering.

Thanks to undeniably gained valuable experience in operational deployments, **Thomson Broadcast** offers a full range of end-to-end professional services to ensure global compatibility and continuous television signal availability.

WE PROVIDE COMPLETE TELEVISION SOLUTIONS

PROJECT SUPPORT

Consulting services / Financial engineering / Project management / Coverage studies / Site surveys / Energy & system engineering

PRODUCTS

Complete TV transmitter range / All digital standards, High-medium & low-power range, RF auxiliaries / Head-ends / Antennas & masts / Network management system

SERVICES

Installation / Commissioning / Training / Service Level Agreement (SLA)

THOMSON BROADCAST

GIGATIVY : BENEFITS

Global interoperability is a crucial factor of success in any network deployment. As part of its long-standing history, **Thomson Broadcast** is optimizing its digital systems with flexible Gigativy transmitters and a smart integration of best in class technologies, from the headend, satellite downlink, receiver-decoder to the antenna and mast.

Thomson Broadcast guarantees the complete system interoperability and quality of services, from the site survey to the commissioning, passing through the installation and the training.

For UHD video & immersive sound

Latest digital standards have been developed to be more efficient and flexible for fixed and mobile TV. New H265 or coming H266 video with enhanced compression mode allow to transmit 4K and 8K for fixed and mobile receivers. With the support of the latest digital standards, **Thomson Broadcast** offers a unique viewer experience benefiting from detailed and realistic TV images ever seen with High Dynamic Range (HDR) capabilities and immersive audio sound.

Global energy efficiency

Transmitter energy savings comes in addition to the optimization of transmission station consumption Thomson Broadcast offers in overall System design.

Lowest operating cost

Maximized power density for highest output power with minimized maintenance operations.

Modular design

High scalability and great adaptability to every network, station, and environmental conditions.

Easy operation with outstanding performances

Continuous signal availability, unrivalled performances and maximum network control and management.

GIGATIVY : PRODUCT DATA SHEET

Leading-edge transmission station energy efficiency

While Capital Expenditure costs -CAPEX- for global networks are reduced, Operational Expenditure -OPEX- may surpass CAPEX costs after 5 years of operation. With transmitters networks deployed for an average 20-year lifecycle, minimizing operating cost is crucial.

Thomson Broadcast has been developing GreenPower solutions for more than 10 years now, focusing on the overall energy efficiency of transmission stations, transmitters, and investment in renewable energy solutions for off-grid sites.

Our **Gigativy** solution, implements the latest generation and version of 50-V LDMOS transistor technology in Doherty operation mode for up to 40% efficiency, combined with managed peak-to-average power ratio (PAPR) and MISO technologies, allowing for increased power for maximum coverage, all while maintaining exemplary RF performance. The parallel amplification architecture ensures complete amplifier redundancy for continuous signal availability.

Power supply voltage is also optimized to adjust to the required output power while operating at the optimal point by software control.

As part of a system, the liquid cooling units have been redesigned with attention to the heat exchanger equipped with EC motors and adjustable fans for greater savings.

Lowest operating cost

With **Gigativy** the best power density is achieved, with up to 18kW in a single cabinet with 12 power amplifiers i. e.

Gigativy benefits from more than 30 years of solid-state installed transmitter design. It combines high efficiency, leading-edge performances, and easy maintenance. The simple, modular and module easy-access design contributes to lower maintenance costs. Most of the modules and the power supply of the control system are hot pluggable and may be replaced in less than 3 minutes without any downtimes.

The use of standard power supply units referenced for main telecom applications guarantees its market availability without any downtimes.

Maintenance procedures are simplified, easily achieved by a single person with little to no technical skills and no fine tuning is required after module exchanges or channel changes thanks to true broadband amplifier design, modular structure and DAP features. Great care has been taken to limit the weight of the field replaceable modules. The in-house patented Fully Isolated Coupling System (FICS) of amplifiers feature a very low loss design associated to a patented high isolation design enabling hot-swappable amplifier design during transmission without any downtime and risk. By design balance loads of the FICS and the FICS itself are compact and easy of access by the rear door. By design amplifiers are directly connected into the FICS avoiding risks of use of RF cables..

Moreover, to enhance the serviceability of medium-power Megativy II and high-power **Gigativy** ranges share the same control systems and exciters. This leads to fewer overall spare parts, a great ease in the training of the maintenance staff, and a straightforward repair policy.

Modular design

Several transmitters configurations

Single Drive (SD)

Dual Drive (DD)

Passive Reserve (PR)

N+1

Up to 18kW in a single cabinet

Based on a 1500W amplifier, Gigativy transmitters are easily scalable to fit about numerous power requirements.

Cooling system adaptable to any station and environmental conditions

A very efficient cooling system has been developed with high dissipating capacity, low-noise level and maximum safety.

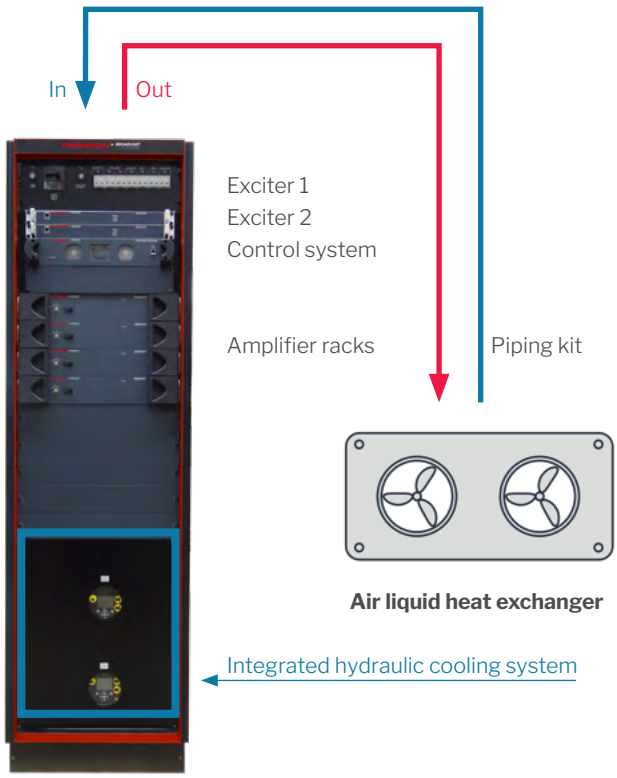
Standard liquid cooling

- -10°C to + 50°C external air temperature
- Liquid distribution by pipes
- Low-noise system
- Fully redundant pump with auto-changeover capability

Reliable and highly leakproof liquid cooling system

- Direct couplings with double shut-off
- No flexible pipe or individual valve required
- Prevents air introduction

Hydraulic cabinets can be either external and independant or can be embedded into the hydraulic cabinet for space saving requirements



Easy operation with outstanding performances

Latest generation of exciter and control system for any standard

The latest exciters have been designed to support all modulation schemes in a highly compact 1U rack.

For the highest performances, it integrates leading-edge FPGA technology and sophisticated Digital Signal Processing (DSP) algorithms.

Leveraging digital modulation technologies, advanced modes i.e. SISO-MISO, multiple PLP and composite T2-base / T2-Lite (option) for DVB standards, are supported. SISO-MISO allows a maximum coverage and a high-quality guarantee. Composite T2-base / T2-Lite, multiple PLP and composite T2-Base & T2 Lite provide high flexibility while adapting specific robustness to broadcasters needs. Within a single channel, UHD, SD, Mobile and Radio Services may be transmitted at the same time using existing infrastructures.

To offer outstanding signal availability, real-time DAP technology compensates the performance variances due to changes in environmental conditions, component aging, and reduction of output power. Optimal RF signal quality and stability are always guaranteed without the need of user intervention. It also allows to run transmitters close to their saturation point by adapting power amplifiers' inherent non-linearities and minimizing the memory effects of the circuitry. High power peaks are corrected by PAPR reduction system and protection clipping for the best possible coverage. Automatic Gain Control (AGC) feature also drives power amplifier stage to automatically adjust output power.

In terms of inputs, the exciters features 2 ASI input streams and 2 IP input streams which can be used for stream redundancy with primary and secondary streams. The exciters integrates T2-MI stream on both ASI and IP inputs, monitored by an intelligent seamless mechanism and management.

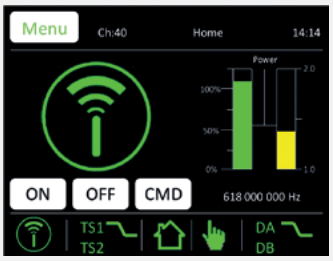
GNSS receiver using GPS and GLONASS systems can be proposed. For monitoring operations, an RJ45 port on the front of the equipment is available for fully IP-controlled solution IP stream. Web server and SNMP agent are also embedded in standard.

The in-house new designed control system manages and monitors operation on the entire transmission chain, switching exciters, amplifiers, and transmitters in case of N+1 configuration, ensuring 7/7 television signal availability. It also monitors the cooling system. Local operation can be achieved on the touch screen or remotely via the Web server.

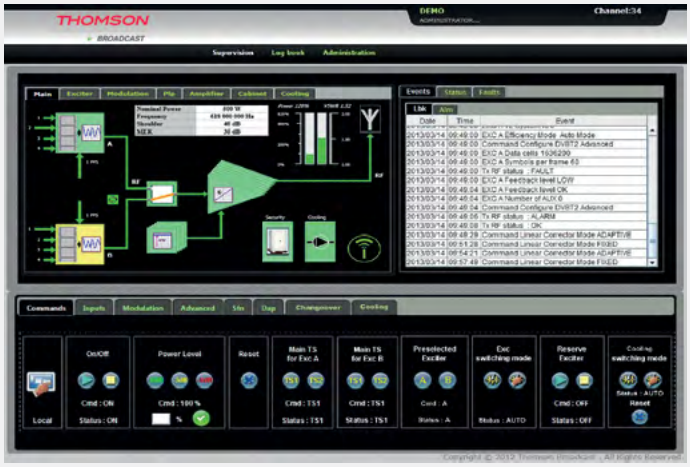
This latest generation of exciters provides an open and adaptive platform ready for any future development.

Intuitive normal and remote control and monitoring

In normal operational conditions, the transmitter system may be intuitively operated directly via the local control touchscreen for advanced control and monitoring. All required information is available through a two to three clicks navigation.



For quick remote monitoring purposes, each Gigativy includes as a standard feature, Web server and SNMP agent to remotely deliver a real-time comprehensive display of the transmitter's status as well as the identification and precise location of any fault. This monitoring interface is also accessible locally via a dedicated RJ45 LAN port. Control and monitoring can be achieved with any standard devices including smartphones, tablets, or personal computer. The web interface has been in-house designed so to interoperate with a complete transmission Network Management System such as the **Thomson Broadcast Manager.**



GIGATIVY : TECHNICAL SPECIFICATIONS

Standards

MODULATION	MODES	CHANNEL BAND-WITH
DVB-T DVB-T2 Dualcast DVB-T/DVB-T2 Composite T2-base and T2-Lite	MISO – MPLP – PAPR- T2- Lite	5/6/7/8 MHz
ISDB-T ISDB-Tb		6/8 MHz
ATSC 1.0 ATSC 3.0	MPLP - PAPR - LDM	6 MHz

Frequency range

UHF band	470 - 700 MHz

Output

Output	**CONNECTORS**	Up to 18kW Rms	3" 1/8 EIA
	CHARACTERISTICS	Shoulder level MER	> 37 dB > 34 dB

Supply voltage

Main power supply	AC PHASES	Three phases : non-floating, neutral, earth
	STANDARD VOLTAGES	380V / 400V + with tolerance of - 15% 480 V with tolerance of +10% and -15%
	FREQUENCY	+ 50 or 60 Hz (± 3 Hz)
	POWER FACTOR AT NOMINAL OPERATION	> 0.95

Separate mains power supply connections for exciter & control system	AC PHASES	Two single phase AC inputs
	STANDARD VOLTAGES	230V+15% / 120V-15%
	CONNECTORS	CEE 22 available on the cabinet roof

Environmental conditions

Guaranteed specifications with VSWR= 1.5:1	
External air temperature	-20° to + 50° C up to 1500 m / 5000 ft.
Derating	5°C per 1000 m / 3000 ft. on max. Temperature
Ambient Air temperature	+ 0° to + 50° C
Maximum altitude	3000 m / 10 000 ft.
Storage temperature	-30° C to + 60° C
Relative humidity	<- 95% without condensation
Acoustic noise	< 65 dB(A) @ 1m / 1.5m height

Local & Remote Control & Monitoring

Locally & remotely	Dry loop
	LCD touchscreen
	Control by push button in case of CPU failure
	HTML5 / CSS3 Web interface
	SNMP V2 interface

Clock & synchronisation

Frequency range	10 MHz	50 Ω	-15 to +15 dBm	BNC female
Timing reference	1 PPS	50 Ω	LVTTL	BNC female
Internal GNSS	GPS, GLONASS	50 Ω	Max sensitivity: -138 dBm	SMA female

THOMSON BROADCAST PHENIXYA

THOMSON
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RÉVOLUTIONNER
L'EXPÉRIENCE DE LA
RADIODIFFUSION

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