9600 W TVFM POUT (4,8 kWrms ATSC 3.0 / 4,8 kW FM)

CHANNEL6-9.6 kW

COMPACT AIR COOLED

HOT PLUG-IN POWER SUPPLY/PSU

MULTI-PLATFORM

MULTI INPUT

HIGH EFFICIENCY

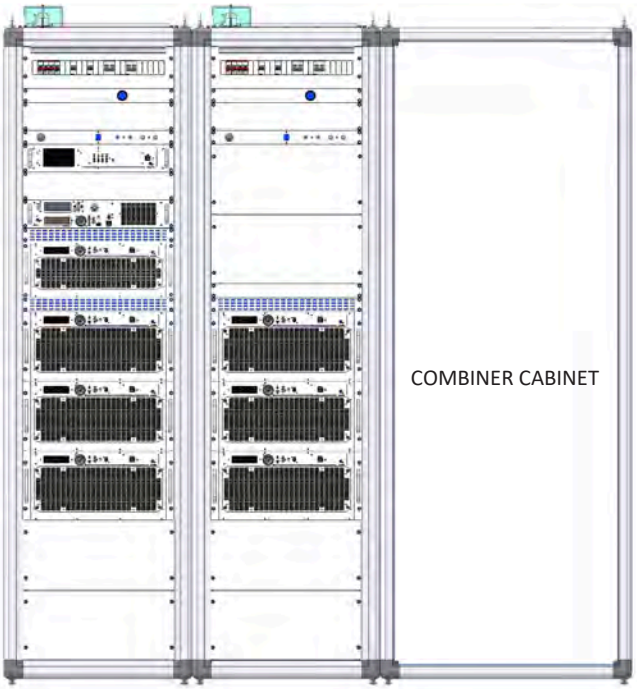
DYNAMIC RDS

MULTI-STANDARD
ATSC 3.0 / FM

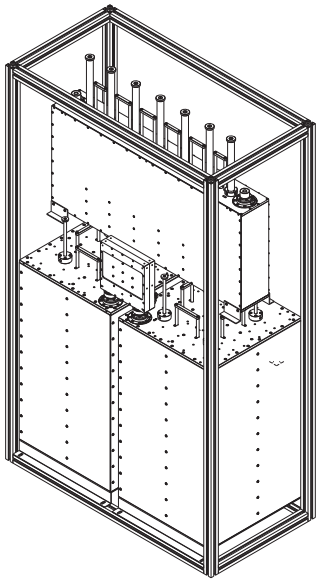
AIR COOLED

GPS

MONITORING
SNMP, WEB BASED GUI,



COMBINER CABINET



The complete supply includes a unique combination system, custom designed to tailor the exquisite balance of this peculiar SYES **CHANNEL6** TVFM transmitter, contributing to assure compliance to the channel limitations.

We can provide the gateway / scheduler / encoder configuration for your 3.0 ch6 Franken-FMs station.

- ☐ Multi-standard: ATSC3.0 + FM (Channel 6 and 87.70 or 87.75)
- ☐ Automatic digital static or adaptive Linear and Non-Linear Pre-correction Power
- ☐ Amplifiers with triple redundant Hot Plug-in power supplies
- ☐ Temperature-controlled fans for better efficiency and cooling system performance
- ☐ Inputs: 2x IP ATSC 3.0 + L&R, MPX, AES-EBU and MPX over IP audio inputs
- ☐ USB input to fast save/load configurations
- ☐ Built-in GPS for SFN application
- ☐ Friendly web browser GUI, no need of plug-in or apps.

SYES

HYBRID TV/FM TRANSMITTER

The Digital FM hybrid solution / CHANNEL6 is a revolutionary low power air-cooled ATSC 3.0 AND FM Transmitter on Channel 6.

It is equipped with an ATSC 3.0 modulator, FM digital processing FPGA based modulator and TV/FM Low VHF state-of- the-art amplifiers characterized by high-power density and excellent signal quality granting optimal parameters such as shoulders attenuation and MER.

The amplifiers are equipped with 3x redundant Hot Plug-in power supplies each, assuring the maximum reliability and the easiest maintenance.

TVFM
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TECHNICAL SPECIFICATIONS	
RF OUTPUT	
Output power*	• 9600 W COFDM ATSC 3.0 + FM • 4800 Wrms COFDM ATSC 3.0 • 4800 W FM
Spurious / Harmonics	EN 302-296-2
Shoulders/MER	Typical: >48dB/>38dB
Connector	3 1/8", other available
Bandwidth	Channel 6 + 87.7/87.75FM
Frequency stability (sensitivity?)	1 Hz
Final Stage	LDMOS latest technology
GENERAL	
Mechanical	
Composition (Main components in one rack 44U)	• 1x Hybrid PCM Exciter (TV and FM modulators) • 6x SLIM5 TV Amplifier • 1x SLIM4 FM Amplifier • 1x Tx control logic
Dimensions (W x H x D)	2x1400 x 2168 x 1222 mm (Standard cabinets layout*) *: The 2 cabinets (TV/FM and RF combiner can be placed in different positions to accommodate station layouts)
Weight	Transmitter cabinet: 460 kg (1020 lb) - Combining cabinet: 200 kg (440 lb)
Cooling	
Cooling System	Dual blower per exciter and and each amplifier. Air top cabinet extractor.
Environmental	
Relative humidity	95% max. (non-condensing)
Operation temperature range	0° to 50°C
Storage temperature range	-20° to 70°C
Max. installation altitude	4.600 m a.s.l.
Power supply & Safety	
Voltage	208/ 400 Vac (three phase) ±20% @ 47 to 63 H2 (auto range
Power Supply	p.s.) power factor > 0.98 3x Power supplies In hot plug-in configuration each amplifier.
Safety /EMC	EN 60215 (IEC 21S), EN301-489-53, FCC-73, IS09001-2010.
	RED 2014/53/UE, RoHS 2002/93/EC

*: Power outputs are subject to change due to out-of-band regulations and the required shoulder attenuation / MER, voltage, channel of operation and type of RF output filter.

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HYBRID TV/FM TRANSMITTER

TV DTV MODULATIONS	
ATSC 3.0	
Standard	ATSC 3.0: A/322:2017, A/324:2018 (STL)
Inputs ***	2xTSoIP 10/100/1000 RJ45.
FFT Size	8K, 16K and 32K
Code rate	15 – 2/15 to 13/15
Guard interval	from 192 to 4864 (32 K FFT)
Constellation	QPSK. 16QAM. 64QAM. 256QAM up to 4096 QAM
DIGITAL ADAPTIVE PRECORRECTION	
Type	Linear / non linear; selectable
Clipping	12 dB
Operation mode	Continuous / Automatic (tnggering: time/shoulder level)
Precorrection status	Running/Stopped
PAPR	Provided
FM SPECIFICATIONS	
Working bandwidth:	87,70 - 87.75
Frequency stability:	• < ± 1 Hz when 10 MHz ext. Reference absent (with No modulation). • < ± 0,1 Hz in presence of 10 MHz ext. Reference (with No modulation). • In absence of the 10MHz external reference the modulator automatically swap to the internal one.
Harmonics Attenuation:	≥ 50dB
Frequency Deviation:	ΔF ± 75 KHz ... ± 100 KHz (max.).
MPX Input:	band 40 Hz ... 100 KHz impedance > 2KΩ o 600Ω Input level adjustable from -12dBu up to +12dBu @ 0,1 dB steps (Sensitivity tunable by web pages)
MONO Input: (L input is the default input, it can be set by the web pages on L or R input)	40 Hz ... 15 KHz impedance > 2KΩ o 600Ω pre-emphasis 0/50/75µs, input adjustable on the L or R input (locally or remotely). Level from -12dBu ... up to +12dBu @ 0,1 dB steps (Sensitivity tunable by web pages).
AUDIO AUX Input:	from 21 KHz ... up to 100 KHz with adjustable input -12 dB. 3dB @ 0,1 dB steps for a Δf ± 10 KHz (Sensitivity tunable by web pages).
L and R Inputs:	Built-in stereo encoder. impedance > 2KΩ o 600Ω pre- emphasis 0/50/75 µs (locally or remotely). Input level from -12dBu up to+12dBu @ 0,1 dB steps for Δf ± 75 KHz. Clipper Δf: Clipper profile: OFF – normal – hard -ideal (remotely by the web pages).
Audio/ AUX over IP	GBE input / SFP connector on rear panel

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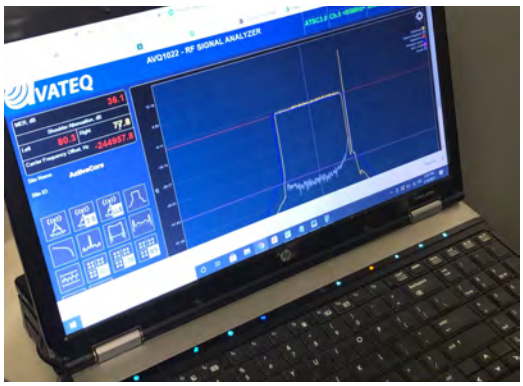
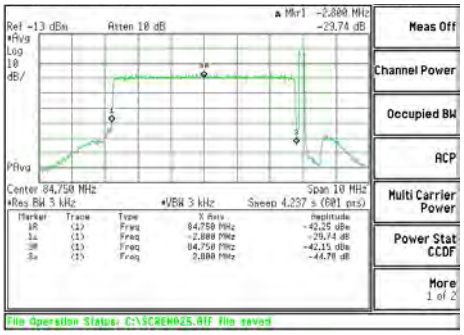
AES3/EBU Input:	Impedance 110 ohm. Sensitivity from 0dBFs up to – 24dBFs @ 0.1 dB steps
RDS Input:	Built-in dynamic RDS encoder
MONO/RDS:	Available
FM INPUT FEATURES	
Max. Deviation:	From 50 up to 100 kHz @ 1 KHz steps
Delay time:	Alarm activation in case of modulation signal missing From 10 up to 120 s @ 1 s steps
Threshold:	Alarm activation in case of modulation signal missing From – 20 up to -50 dBr @ 1 dB steps
Modulation signal missing alarm:	On all input signal
Static Delay:	Between input and output signals From 0 to 900 µs @ 0.1 µs steps
STEREO OUTPUT SPECIFICATIONS with L/R and MPX input	
Amplitude/frequency:	<< 0.1 dB (40 Hz – 100 KHz)
Total Harmonic Distortion +Noise:	(Measured with Δf ± 75 kHz) 0.03% @ 400Hz
AM Noise: (MPX Input)	≤ - 60dB ref. amplitude modulation 100% of the carrier
Synchronous AM: (MPX Input)	With f = 400 Hz and Δf ± 75 KHz ≤ - 50 dB ref. amplitude modulation 100% of the carrier.
S/N:	Stereo/mono > 80 dB (f=400 Hz with Δf ± 75 kHz)
Linear Crosstalk: (L/R Input)	< - 72 dB (40 Hz - 15 kHz) (Measured with Δf ± 75 kHz)
CLOCK AND SYNCHRONIZATION	
Interna clock	OCXO single oven or dual oven (optional)
External 10 MHz reference	BNC (F). Impedance: 50 ohm / high (selectable). Level: -5 to +10 dBm
External 1pps reference	BNC (F). Impedance: 50 ohm / high (selectable)
SFN	SFN resolution 1100 ns SFN configurable delay ±500 ms
Stability	time: max ±10-7 /year - temperature: max ±2.5 10-8 (-20°C to +70 °C)
MONITORING	
LC Display	Local operation through LCD display and keyboard located on the front panel
Front RJ-45	Local operation through a Web Server Graphical User Interface, Remote
	Network management (via SNMP)
Rear RJ-45	Local operation through a Web Server Graphical User Interface, Remote Network management (via SNMP)
GUI	Web Server Graphical User Interface xHTML based
SNMP	V2c / V3 provided



On field measurement.



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