



FM Transmitter



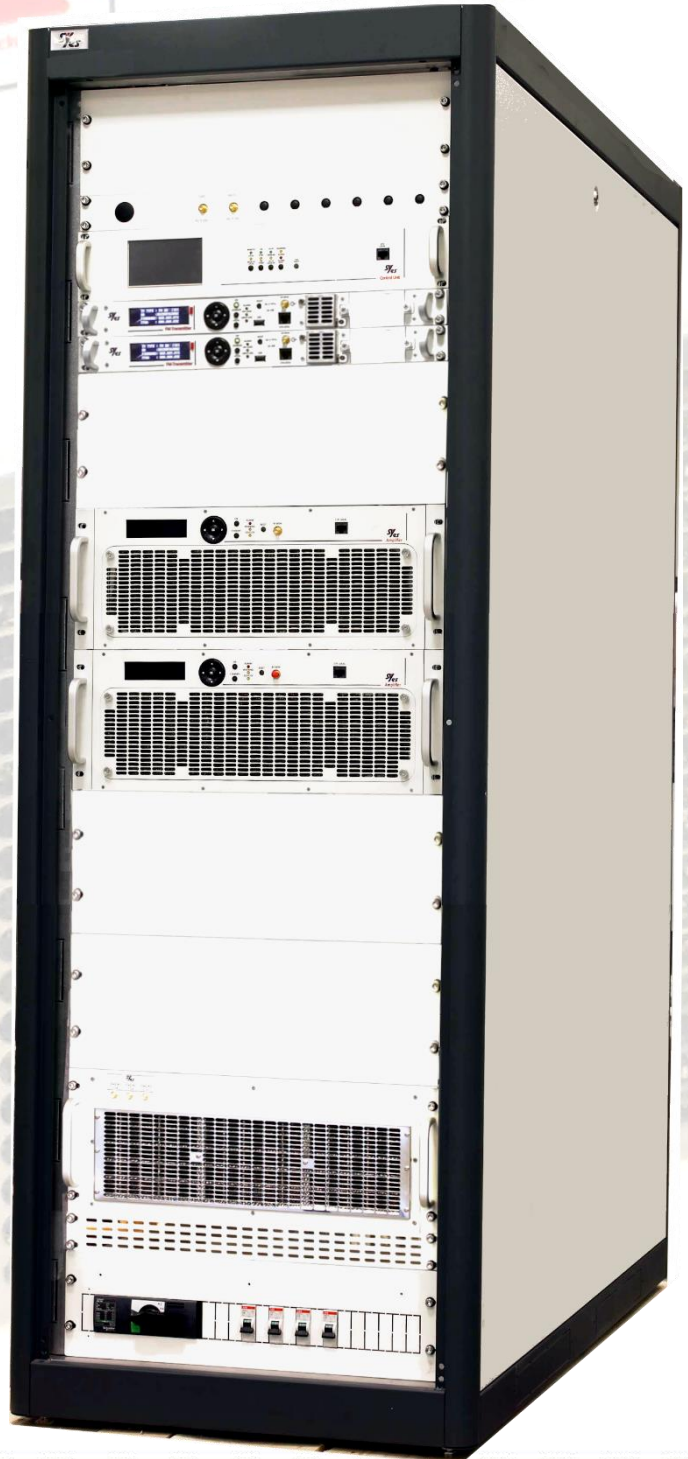
FM TRANSMITTER

SLIM4-02/FM

Up to 10000W rms FM transmitter in a compact solution made by one/two drivers in redundancy driver and two 5000W amplifiers, air cooled in 26/36U cabinet

General features

- ⊗ Compact: 10 kW FM transmitter air cooled in a single cabinets
- ⊗ Works all the FM band without retuning
- ⊗ Single and dual driver configuration
- ⊗ Modular and compact design in 44U rack cabinet
- ⊗ FPGA processor based technology
- ⊗ Intrinsically redundant for high reliability:
 - ⊗ 2 independent amplifier modules
 - ⊗ 2+1 PS each
- ⊗ Hot pluggable power supply
- ⊗ State of the art design with digital modulator
- ⊗ Overall efficiency more than 70%.
- ⊗ Supports analogue, digital, MPX, AES EBU inputs
- ⊗ Supports IP input
- ⊗ RDS coding embedded with dynamic RDS coder
- ⊗ Ultra High signal to noise ratio
- ⊗ Excellent low distortion
- ⊗ User friendly GUI
- ⊗ Remote control via serial port, SNMP, web pages, GSM/UMTS/GPRS, TLS-TLC



Successfully manufactures broadcasting equipment since over 30 years.

LAYOUT (36 RU solution Dual Driver)

Cabinet top:
-IN/OUT Connections
(Standard solution, different available)
-Cooling fan /extractor (OPT)

Probe panel with emergency button

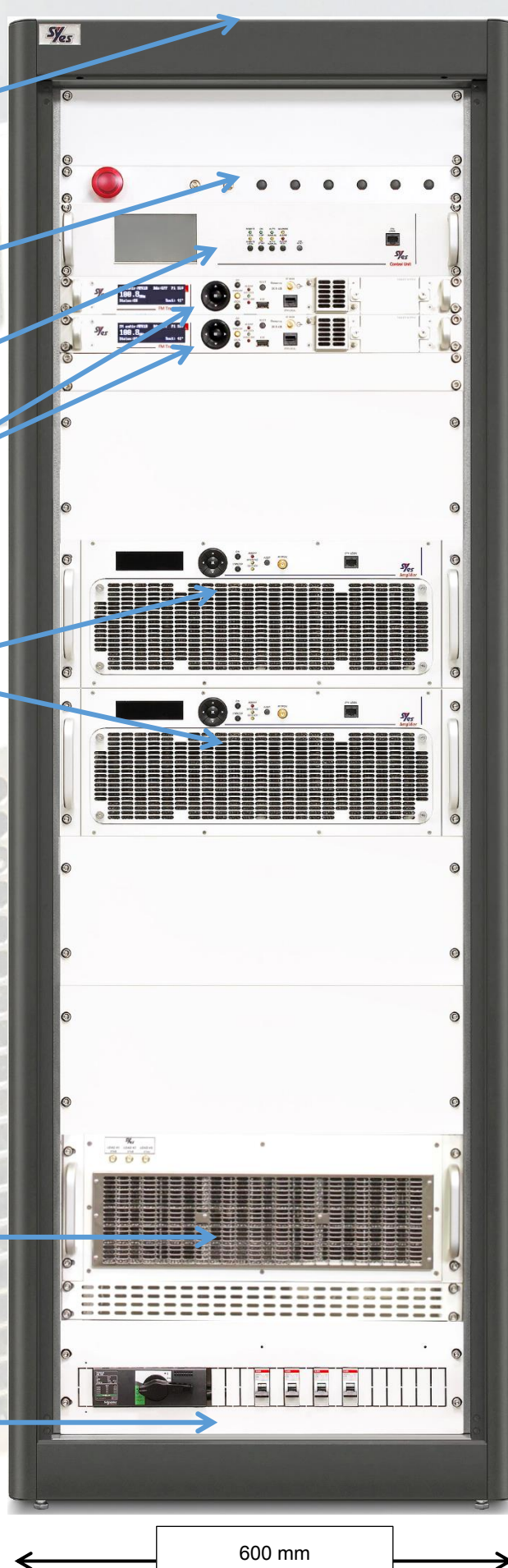
Transmitter control logic
SyES model UCA

Transmitter exciter/driver
SyES model PCM
(dual driver solution)

Transmitter RF amplifier
SyES model SLIM4

Transmitter Unbalance load
with forced air cooling (other available)

Transmitter Power distribution

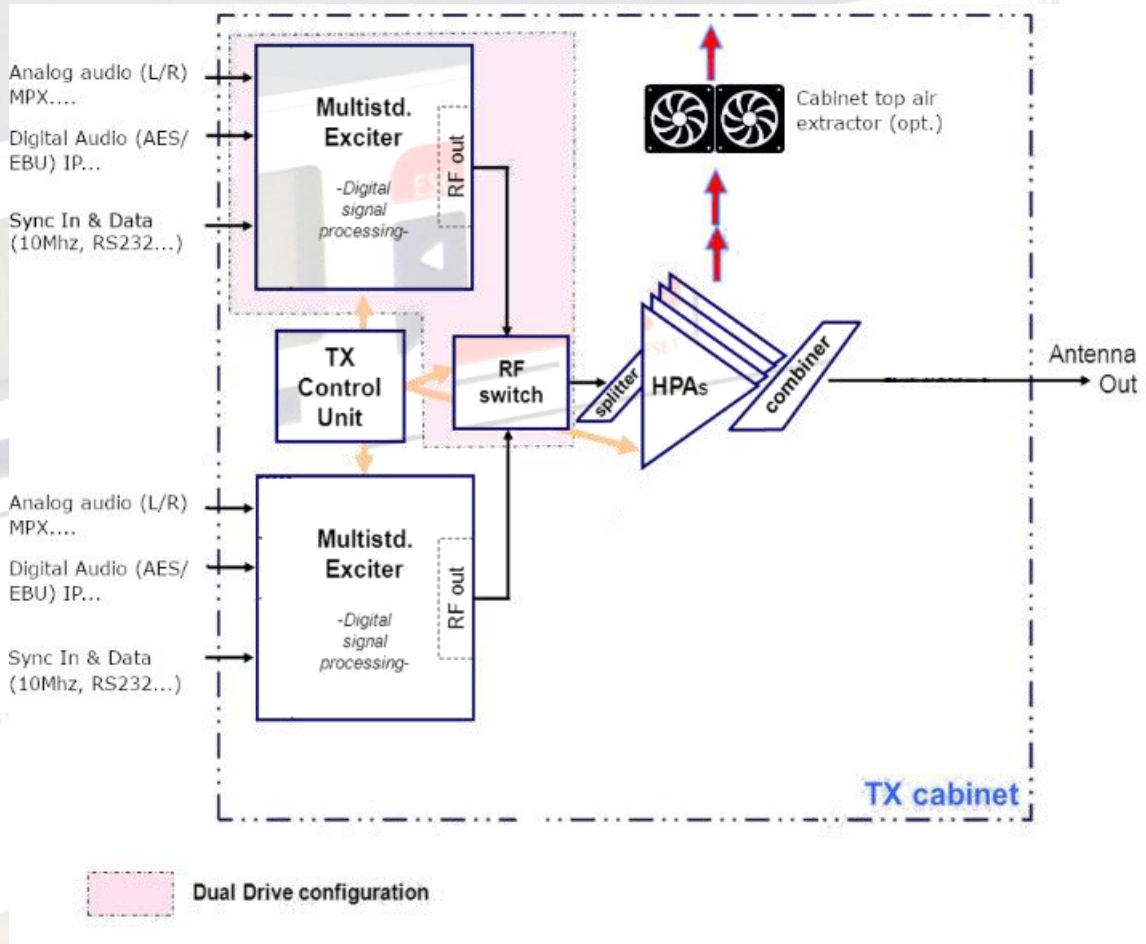


1800 mm

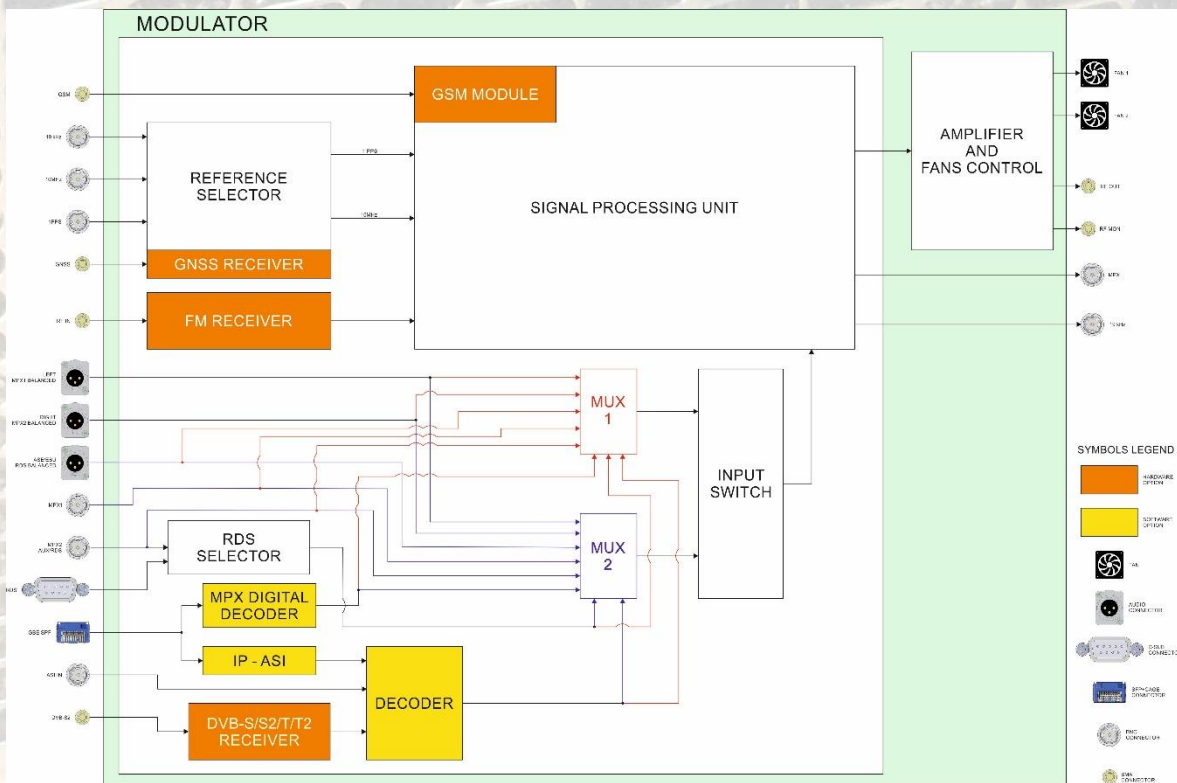
600 mm

1000/1200 mm

BLOCK DIAGRAM



Transmitter Block diagram (optional Low Pass filter can be added before Antenna Out)



OdBm PCM exciter Block diagram

TECHNICAL FEATURES

| | |
|---|---|
| Working bandwidth: | 87,5 ÷ 108 MHz |
| 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 10 MHz external reference the modulator automatically swap to the internal one |
| Output power: | 10kW adjustable |
| Output connector | 1 5/8" EIA, 50 Ohm |
| Harmonics Attenuation: | ≥ 80dB |
| Frequency Deviation: | $\Delta F \pm 75 \text{ KHz} \dots \pm 100 \text{ KHz (max.)}$ |
| Pilot tone | 19kHz |
| MPX Input: | band 40 Hz ... 100 KHz impedance > 2K Ω o 600 Ω Input level adjustable from -12dBu up to +12dBu @ 0,1dB steps (Sensitivity tunable by web pages) |
| MONO Input: <i>(L input is the default input, it can be set by the web pages on L or R input)</i> | 15 Hz ... 15 KHz impedance > 2K Ω or 600 Ω pre-emphasis 0/50/75 μ s, 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 $\Delta f \pm 10 \text{ KHz}$ (Sensitivity tunable by web pages). |
| L and R Inputs: | Built-in stereo encoder. impedance > 2K Ω o 600 Ω pre- emphasis 0/50/75 μ s (locally or remotely). Input level from -12dBu up to +12dBu @ 0,1 dB steps for $\Delta f \pm 75 \text{ KHz}$. Clipper Δf : Clipper profile: OFF – normal – hard -ideal (remotely by the web pages). |
| Audio/ AUX over IP | GBE input / SFP connector on rear panel |
| 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 |
| 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 -50dBr @ 1 dB steps |
| Modulation signal missing alarm: | On all input signal |
| Static Delay: | Between input and output signals From 0 to 900 μ s @ 0.1 μ s steps |

STEREO OUTPUT SPECIFICATIONS with L/R and MPX INPUT

| | |
|--|---|
| Amplitude/frequency: | < ± 0.1 dB (40 Hz - 100 KHz) (Measured with $\Delta f \pm 75$ kHz) |
| Total Harmonic Distortion +Noise: | 0.03 % @ 400Hz |
| AM Noise: (MPX Input) | ≤ - 60 dB ref. amplitude modulation 100% of the carrier. |
| Synchronous AM: (MPX Input) | With $f = 400$ Hz and $\Delta f \pm 75$ KHz ≤ - 50 dB ref. amplitude modulation 100% of the carrier. |
| S/N: | stereo/mono > 80dB ($f=400$ Hz with $\Delta f \pm 75$ kHz) |
| Linear Crosstalk: (L/R Input) | < - 72 dB (40 Hz - 15 kHz) (Measured with $\Delta f \pm 75$ kHz) |

SYNCHRONIZATION

| | |
|---|---|
| Sync receiver / connector /impedance | Internal / connector type "N" / 50 Ohm |
| Standard | GPS/Glonass |
| Ext ref Input | 1x 10 MHz (connector BNC 75 ohm) 1PPS (connector BNC 75 Ohm) |

CONTROL AND MONITORING

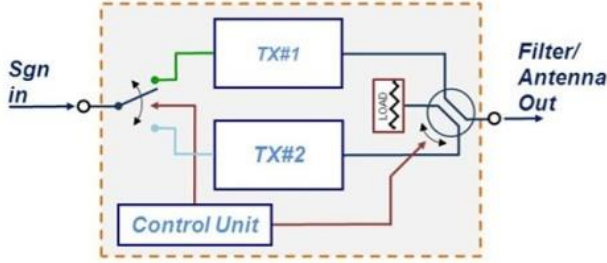
| | |
|---------------|---|
| Local | Graphic display with push buttons |
| Remote | SNMP V2C / web pages/ RS232/ TLS-TLC GSM/UMTS/GPRS as option |

GENERAL SPECIFICATIONS

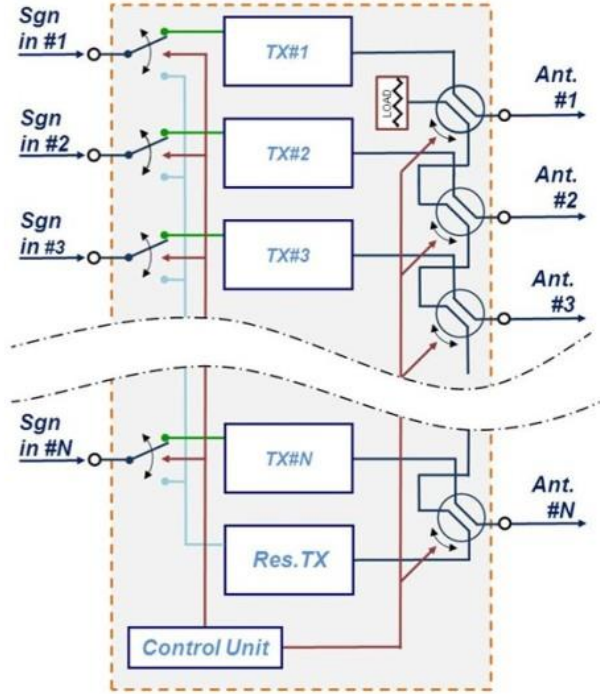
| | |
|--|---|
| Mechanical dimensions | W x H x D: 19" 36U rack cabinet without air extractor 600 mm x 1800 mm (36RU) x 1000mm (other dimensions on request) |
| Weight | 190 kg |
| Power supply | 110 or 230Vac +/-15% Single phase 208 or 400 Vac +/-15% Three phases with neutral, 47÷66 Hz |
| Power consumption at max output power | 14000W (power factor >0.98) |
| Environmental conditions | 4000 m a.s.l. |
| Max altitude | -10÷50°C |
| Working temperature range | 95% @ 35°C non condensing |
| Max relative humidity | |

Redundancy type

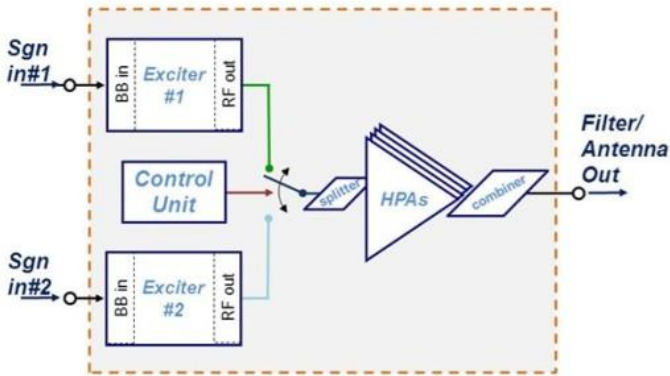
1+1 passive reserve



N+1 passive reserve

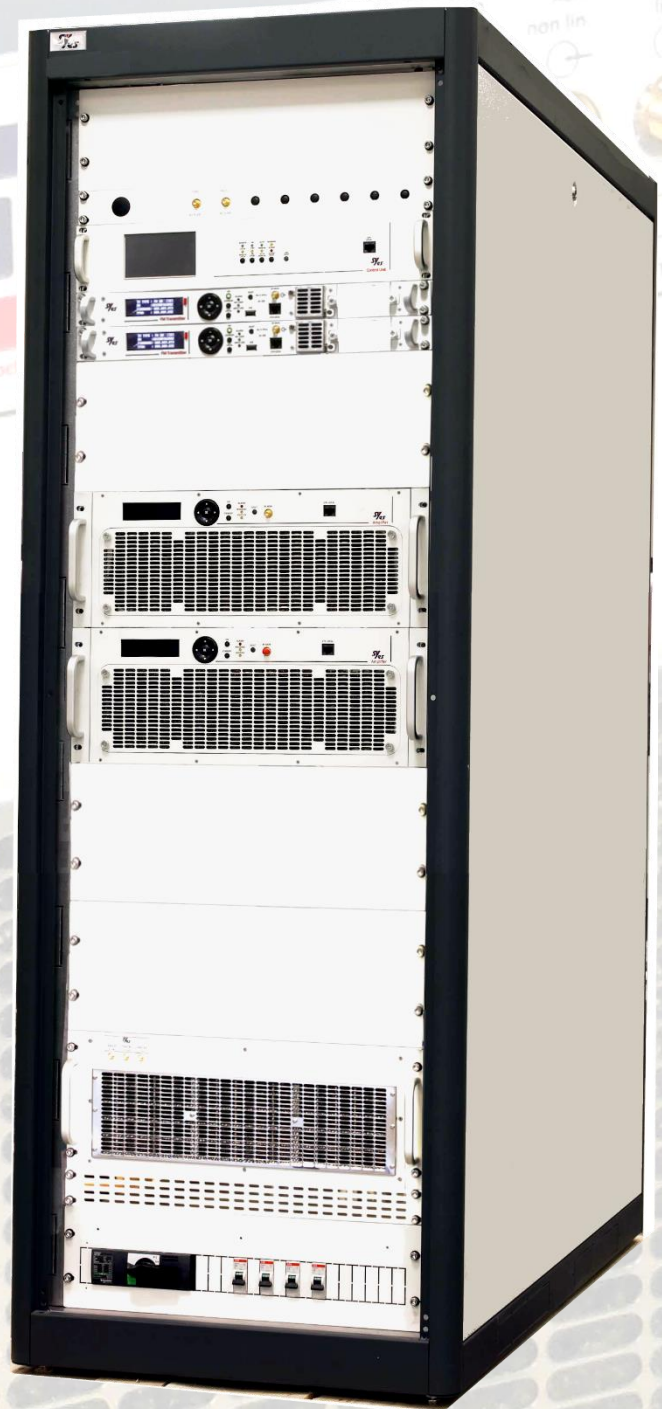


Dual Drive (exciter standby)





Tx in a 26RU rack with internal load



Tx in a 36U rack with forced cooled dummy load

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