

# Techno Design Engineering Company Presentation

**Television and FM  
Digital Terrestrial Broadcasting Equipment**

**Design and System Integration  
Broadcasting-Defence-Industrial,Scientific&Medical**



# Group Organization

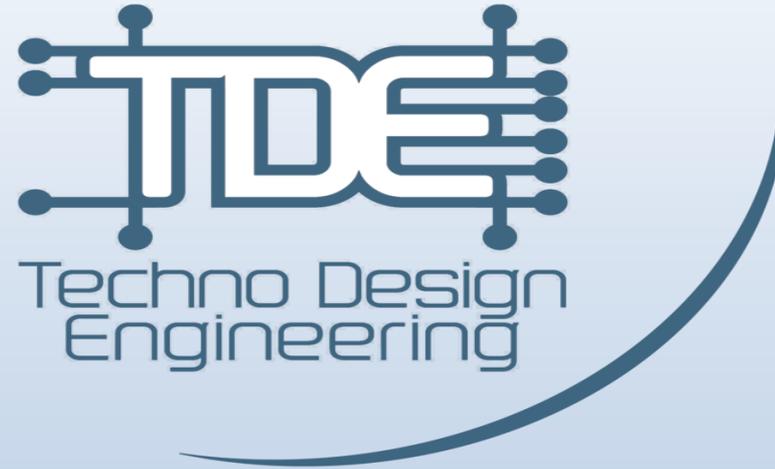
The head office of **TDE** is located in Fiano Romano (Rome). The premises can accommodate **design, industrialization, testing for a Broadcasting and I.S.M. applications**



# Quality Certification



TDE is certified according to the following standards :  
**ISO 9001, CSQ Management System Certification,  
IQNet and SOA**



**Industrial, Scientific and Military Solutions**  
Designing, Prototyping, Manufacturing and  
After Sales Services

# Techno Design Engineering

- Techno Design Engineering is an Italian company specialized in the design and production of **High Power Solid State RF and Microwave equipments** for ISM applications (1 MHz – 3 GHz).
- Due to the huge experience of its team, TDE is today a High-Tech Company able to quickly **develop custom products** according to customer specifications for operations in a hard environment.

# Typical Applications

## **INDUSTRIAL**

- MICROWAVE MATERIAL HEATING
- RF WELDING
- INDUCTIVE HEATING
- DEFROSTING SYSTEMS
- TISSUE DRYING
- RF LIGHTING
- SOLID STATE OWENS

## **MILITARY**

- MOBILE COMMUNICATIONS JAMMERS
- HF AND VHF FIELD COMMUNICATION
- RADIO LINKS

## **SCIENTIFIC**

- PLASMA GENERATORS
- PARTICLE ACCELERATORS
- LABORATORY INSTRUMENTATION

## **MEDICAL**

- MICROWAVE ABLATION
- STERILIZATION
- DIATHERMIA

# Some of our products

## TDE1K0HF

*2-30MHz 1000W CW power amplifier*

### General Description

TDE1K0HF is a power amplifier which works in AB class and is able to cover the band 2÷30 MHz. TDE1K0HF is air cooled and installed into a 4U mechanical frame. TDE1K0HF is fully self-protected against:

- Over – Voltage
- Over – Current
- Temperature
- Abnormal VSWR
- Over – Drive

TDE1K0HF allows to monitor the main working parameters of the amplifier by the LCD display or by RS485 communication protocol. Other communication protocols (Web -SNMP – GPIB) are available as options.



### Performance Summary

Parameter	Min.	Typ.	Max.	Units
Power	800	1000		W
Frequency Range	2		30	MHz
Gain	60			dB
Input Return Loss	-15			dB
Voltage Range	180		264	V <sub>ac</sub>
Efficiency	30			%
Harmonics Content	-10			dB <sub>c</sub>

# TDE500VS

30-500MHz 500W CW power amplifier

## General Description

TDE500VS is a power amplifier which works in AB class and is able to cover the band 30÷500 MHz. TDE500VS is air cooled and installed into a 4U mechanical frame. TDE500VS is fully self-protected against:

- Over – Voltage
- Over – Current
- Temperature
- Abnormal VSWR
- Over – Drive

TDE500VS allows to monitor the main working parameters of the amplifier by the LCD display or by RS485 communication protocol. Other communication protocols (Web -SNMP – GPIB) are available as options.



## Performance Summary

Parameter	Min.	Typ.	Max.	Units
Power	450	500		W
Frequency Range	30		500	MHz
Gain	57			dB
Input Return Loss	-15			dB
Voltage Range	180		264	V <sub>ac</sub>
Efficiency	30			%
Harmonics Content	-13			dB <sub>c</sub>

# TDE500US

500-1000MHz 500W CW power amplifier

## General Description

TDE500US is a power amplifier which works in AB class and is able to cover the band 500÷1000 MHz. TDE500US is air cooled and installed into a 4U mechanical frame. TDE500US is fully self-protected against:

- Over – Voltage
- Over – Current
- Temperature
- Abnormal VSWR
- Over – Drive

TDE500US allows to monitor the main working parameters of the amplifier by the LCD display or by RS485 communication protocol. Other communication protocols (Web -SNMP – GPIB) are available as options.



## Performance Summary

Parameter	Min.	Typ.	Max.	Units
Power	450	500		W
Frequency Range	500		1000	MHz
Gain	57			dB
Input Return Loss	-15			dB
Voltage Range	180		264	V <sub>ac</sub>
Efficiency	30			%
Harmonics Content	-25			dB <sub>c</sub>

# TDE2500HF

*2-30 MHz 2500W CW power generator*

## General Description

TDE2500HF is a power generator which works in AB class and is able to cover the band 2÷30 MHz. TDE2500HF is liquid cooled and installed into a 3U mechanical frame.

TDE2500HF is fully self-protected against:

- Over – Voltage
- Over – Current
- Temperature
- Abnormal VSWR

TDE2500HF allows to monitor the main working parameters of the amplifier by the LCD display or by RS485 communication protocol. TDE2500HF supports WEB INTERFACE and ModBus protocol.



## Performance Summary

Parameter	Min.	Typ.	Max.	Units
Power	2250	2500		W
Frequency Range	2		30	MHz
Efficiency	40			%
Harmonics Content	-10			dB <sub>c</sub>
Voltage Range		380		V <sub>ac</sub>

# TDE1K25IS

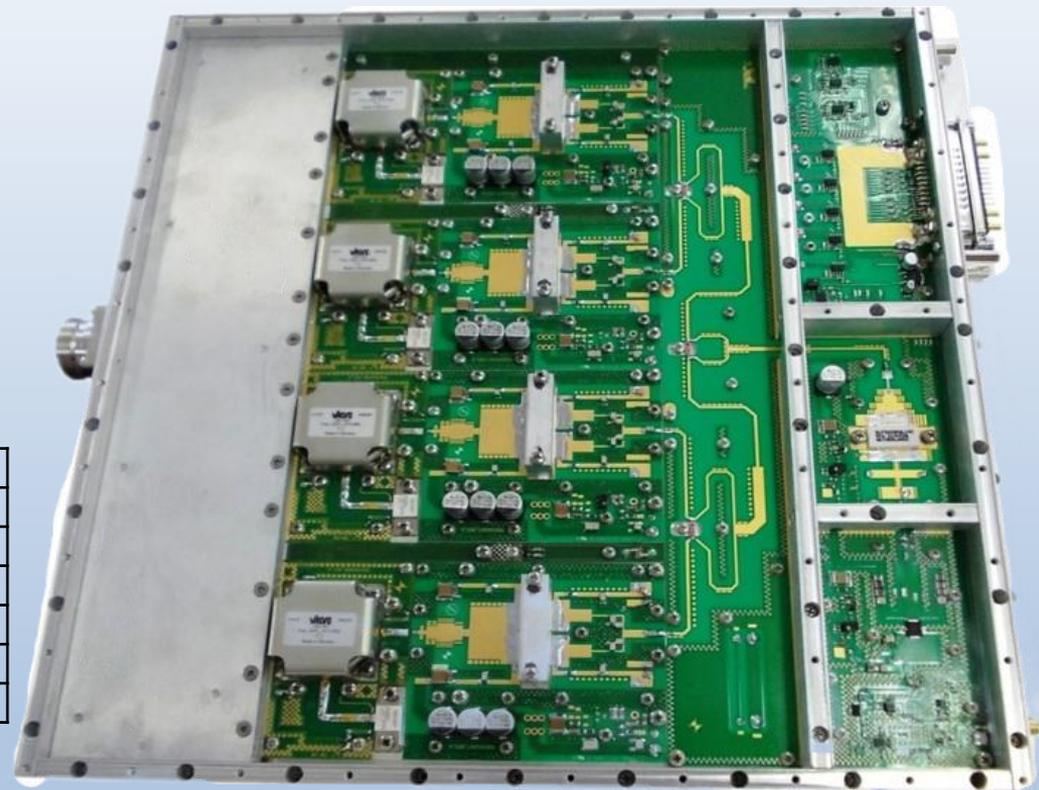
2400-2500 MHz 1250W CW RF AMPLIFIER

## General Description

TDE1K25IS is a liquid cooled RF power amplifier which is able to cover the band 2400÷2500 MHz.

## Performance Summary

Parameter	Min.	Typ.	Max.	Units
Saturated Output Power	1250			W
Frequency Range	2400		2500	MHz
Power Gain @ 1250W	61			dB
Harmonics Content	-25			dB <sub>c</sub>
Voltage Range		32		Vdc
Efficiency	45			%



# TDE1K0UI

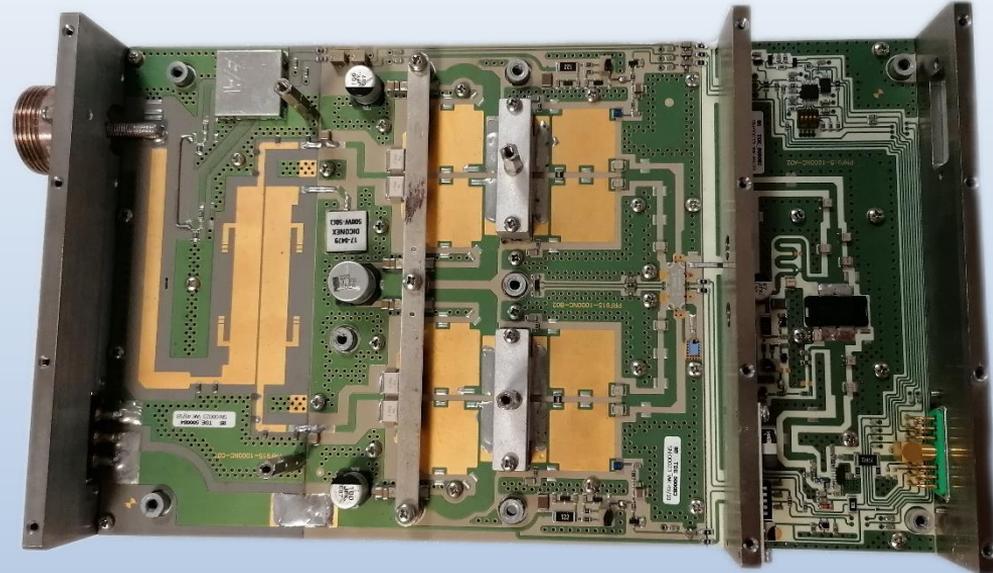
900-930 MHz 1000W CW RF AMPLIFIER

## General Description

TDE1K0UI is a RF power amplifier which is able to cover the band 900÷930 MHz.

## Performance Summary

Parameter	Min.	Typ.	Max.	Units
Saturated Output Power	1000			W
Frequency Range	900		930	MHz
Power Gain @ 1000W	47			dB
Harmonics Content	-20			dB <sub>c</sub>
Voltage Range		50		Vdc
Efficiency	43			%



# TDE800VHF

174-178 MHz 2X800W CW RF AMPLIFIER

## General Description

TDE800VHF is a liquid cooled RF power amplifier which is able to cover the band 174÷178 MHz.

## Performance Summary

Parameter	Min.	Typ.	Max.	Units
Saturated Output Power	800			W
Frequency Range	174		178	MHz
Power Gain @ 800W	24			dB
Harmonics Content	-45			dB <sub>c</sub>
Voltage Range		48		Vdc
Efficiency	65			%
VSWR Handling		∞		



# TDE100BBI

30-530 MHz 100W RF BRICK

## General Description

TDE100BBI is a broadband RF power amplifier which works in AB class and is able to cover the band 30÷530 MHz.

## Performance Summary

Parameter	Min.	Typ.	Max.	Units
Saturated Output Power	100			W
Frequency Range	30		530	MHz
Power Gain @ 100W	50			dB
Harmonics Content	-12			dB <sub>c</sub>
Voltage Range		28		Vdc
Efficiency	50			%



# TDE500UCA

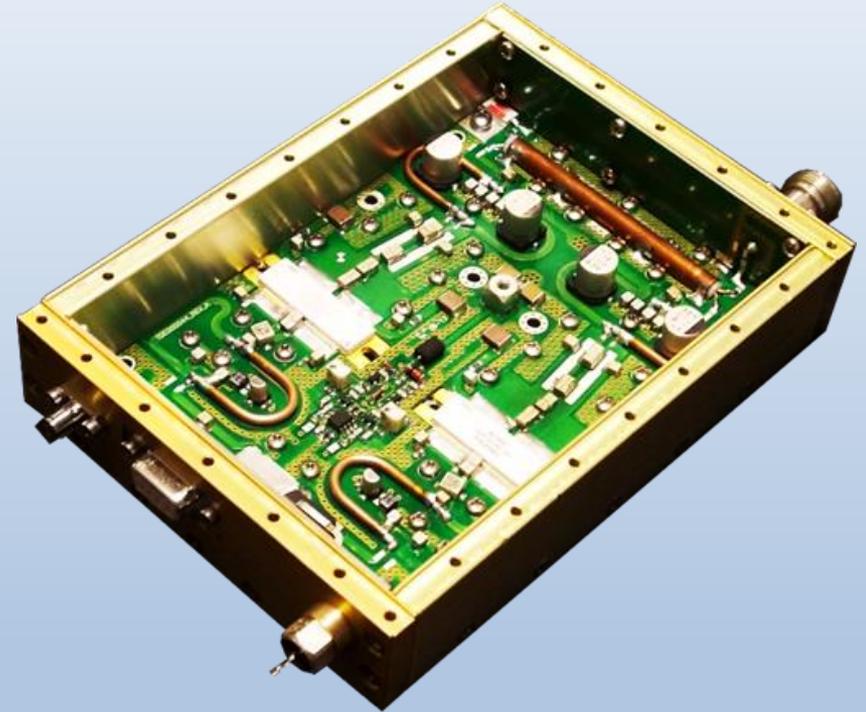
*500-1000 MHz 500W RF BRICK*

## General Description

TDE500UCA is a broadband RF power amplifier which works in AB class and is able to cover the band 500÷1000 MHz.

## Performance Summary

Parameter	Min.	Typ.	Max.	Units
Saturated Output Power		500		W
Frequency Range	500		1000	MHz
Power Gain @ 500W	15			dB
Harmonics Content	-30			dB <sub>c</sub>
Voltage Range		50		Vdc
Efficiency	35			%



# TDE500BBV

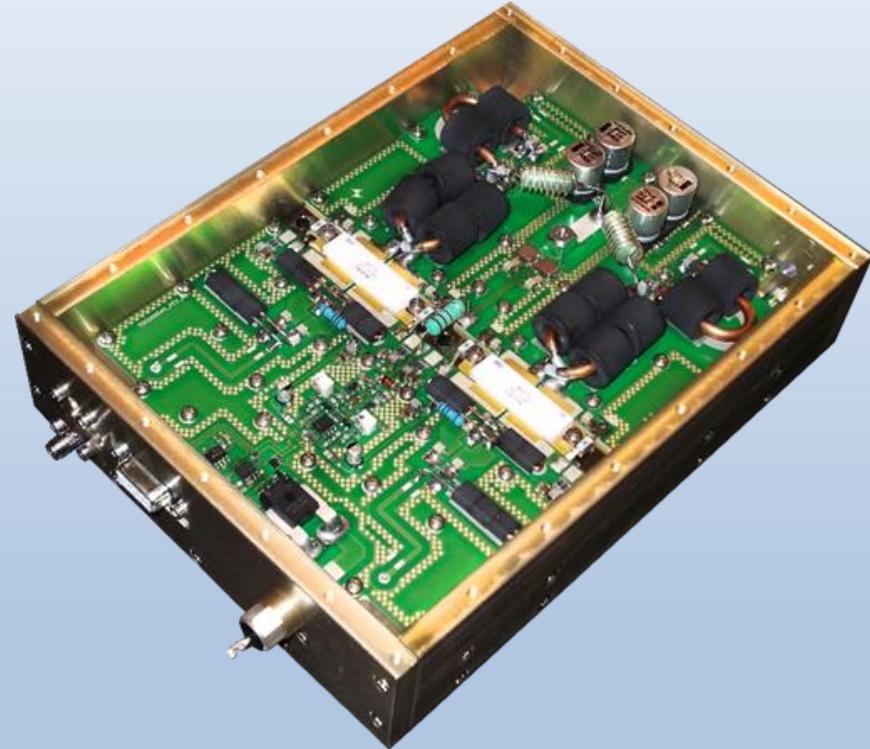
*30-530 MHz 500W RF BRICK*

## General Description

TDE500BBV is a broadband RF power amplifier which works in AB class and is able to cover the band 30÷530 MHz.

## Performance Summary

Parameter	Min.	Typ.	Max.	Units
Saturated Output Power		500		W
Frequency Range	30		530	MHz
Power Gain @ 500W	19			dB
Harmonics Content	-20			dB <sub>c</sub>
Voltage Range		50		Vdc
Efficiency	40			%



# TDE1K0IS

2400-2500 MHz 1000W CW RF POWER GENERATOR

## General Description

TDE1K0IS is an air cooled RF compact generator which is able to cover the band 2400÷2500 MHz.

## Performance Summary

Parameter	Min.	Typ.	Max.	Units
Saturated Output Power	1000			W
Frequency Range	2400		2500	MHz
Harmonics Content	-25			dB <sub>c</sub>
Voltage Range	180		264	Vac
Efficiency	40			%



# TDE500IS

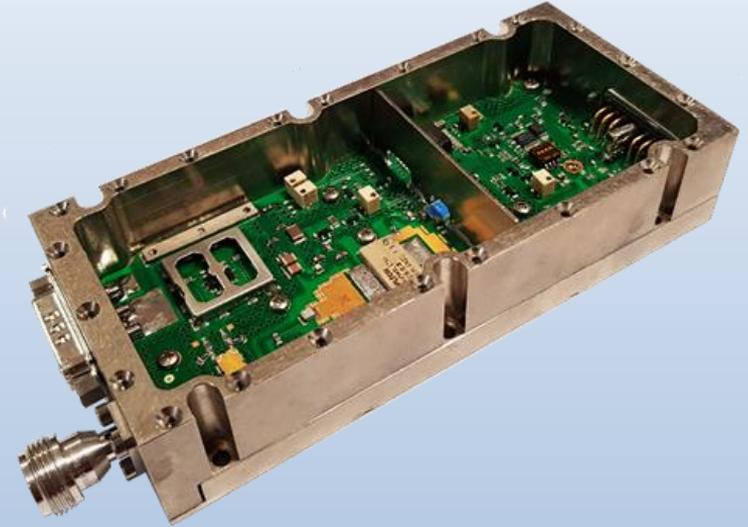
*2400-2500 MHz 500W CW MEDIUM POWER RF GENERATOR*

## General Description

TDE500IS is a RF power generator which is able to cover the band 2400÷2500 MHz.

## Performance Summary

Parameter	Min.	Typ.	Max.	Units
Saturated Output Power		500		W
Frequency Range	2400		2500	MHz
Harmonics Content	-25			dB <sub>c</sub>
Voltage Range		32		Vdc
Efficiency	45			%



# TDE500UI

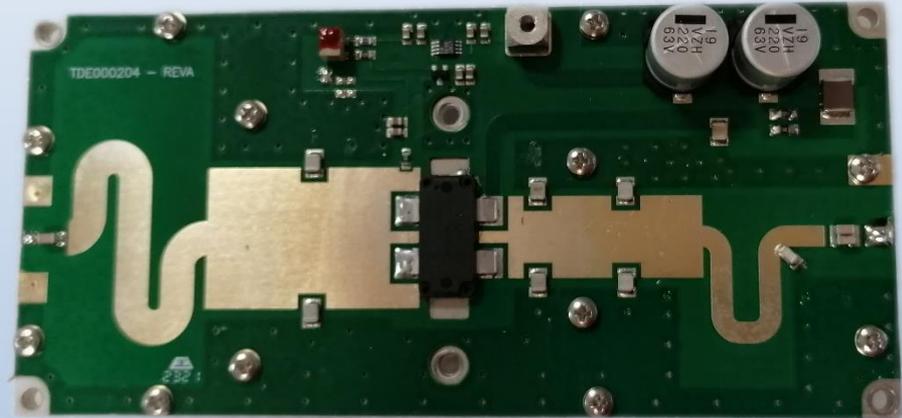
423-443 MHz 500W CW RF AMPLIFIER

## General Description

TDE500UI is a RF amplifier which is able to cover the band 423÷443 MHz.

## Performance Summary

Parameter	Min.	Typ.	Max.	Units
Saturated Output Power		500		W
Frequency Range	423		443	MHz
Harmonics Content	-40			dB <sub>c</sub>
Voltage Range		50		Vdc
Efficiency	70			%



# TDE300HFE

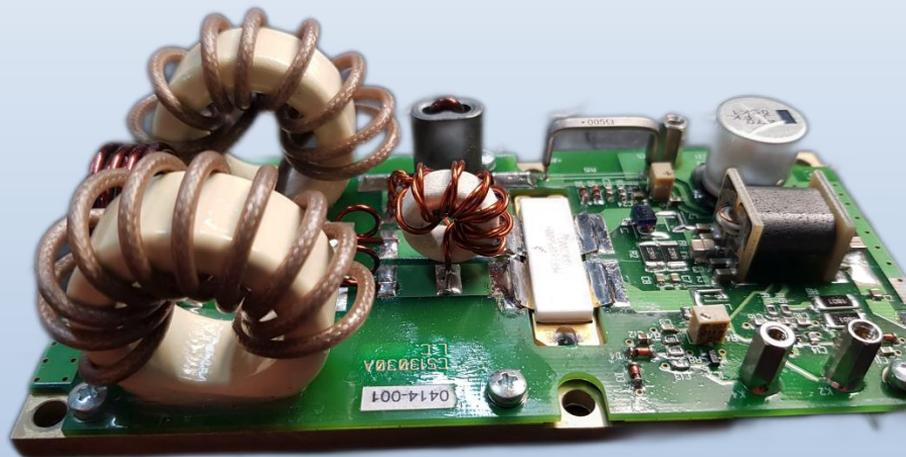
*1.5-30 MHz 300W CW RF AMPLIFIER*

## General Description

TDE300HFE is a RF amplifier which is able to cover the band 1.5÷30 MHz.

## Performance Summary

Parameter	Min.	Typ.	Max.	Units
Saturated Output Power		300		W
Frequency Range	1.5		30	MHz
Harmonics Content	-10			dB <sub>c</sub>
Voltage Range		50		Vdc
Efficiency	50			%



# TDE900UHFD

*470-700 MHz 180W DVB-T/T2 Doherty RF AMPLIFIER*

## General Description

TDE900UHFD is a Doherty RF amplifier which is able to cover the band 470÷700 MHz.

## Performance Summary

Parameter	Min.	Typ.	Max.	Units
DVB-T/T2 Output Power		180		W
Frequency Range	470		700	MHz
Power Gain@ 180W		15		dB
Shoulder Level@ 180W	-37			dB <sub>c</sub>
MER@180W	35			dB
Voltage Range		50		Vdc
Efficiency	46			%



# TDE900UHF

470-700 MHz 150W DVB-T/T2 RF AMPLIFIER

## General Description

TDE900UHFD is a class AB RF amplifier which is able to cover the band 470÷700 MHz.

## Performance Summary

Parameter	Min.	Typ.	Max.	Units
DVB-T/T2 Output Power		150		W
Frequency Range	470		700	MHz
Power Gain@ 150W		19		dB
Shoulder Level@ 150W	-38			dB <sub>c</sub>
MER@150W	36			dB
Voltage Range		50		Vdc
Efficiency	35			%



# TDE1K5FM

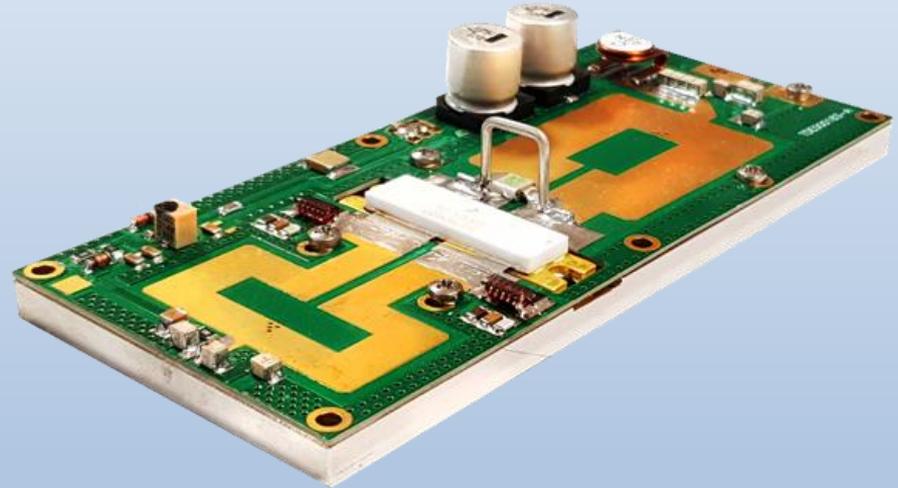
*87.5-108 MHz 1500W FM AMPLIFIER*

## General Description

TDE1K5FM is a class B RF amplifier which is able to cover the band 87.5÷108 MHz.

## Performance Summary

Parameter	Min.	Typ.	Max.	Units
Saturated Output Power	1300			W
Frequency Range	87.5		108	MHz
Saturated Power Gain @ 1500W	-38			dB <sub>c</sub>
Voltage Range		60		Vdc
Efficiency	75			%



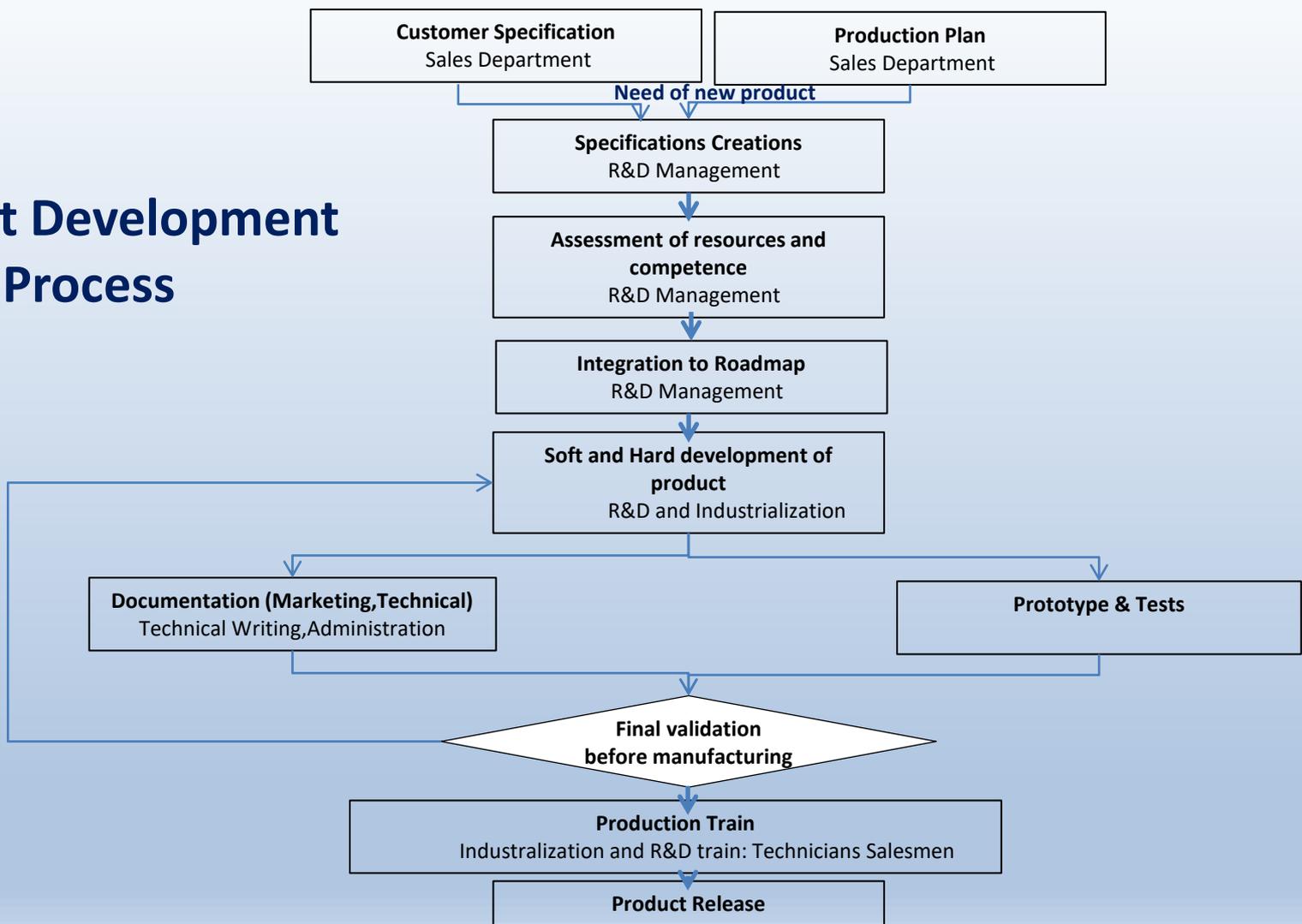
# Process Approach

The Quality of products and services is governed by the implementation of quality policy.

Our company is focused on customer satisfaction .

- Sales process
- Manufacturing process
- After sale services

# Product Development Process



# Suppliers evaluation and selection

For better Quality assurance, TDE suppliers are regularly evaluated, with the help of an indicator, number of late order and a performance evaluation grid. The various criteria of this grid are are: delivery times, flexibility, quality insurance, compliance with specifications and price.

## Controls and Tests

All controls and tests performed during the manufacture and at the final stage are realized on 100% of products amde according to a predefined process.

Any product which does not adhere all of items listed in the output control procedure must be registered in accordance with nonconformity processing procedure.

## Traceability and Identification

The traceability allows us to trace all administrative information and all technical features. All folders and data related to the traceability of finished products are stored indefinitely

# TDE Customer Service and on Field Support

TDE on-field service and customer care is one of the winning aspect of the company.

The after sales service is available 24 hours a day, 7 days a week in order to guarantee the full assistance to the customers.

Each equipment is provided with a technical installation and operation manual providing all the information for the proper working and easy maintenance.

The company has in its warehouse a large stock of spare parts for any quick replacement.

## Main Customers

- RAI WAY
- TIMB (Telecom Italia Broadcasting)
- NEC
- Rohde & Schwarz
- ERT Greece
- SNRT Morocco
- ONT Tunisia
- TRT Turkey
- Rede NGT Brazil
- STB
- ELBIT Israel
- MKS Group USA
- Bosch Group
- GSI
- I.N.F.N.-L.N.S.
- Unox
- Other customer

## Products

- TV and Radio Digital Transmitters air and liquid cooled
- Television Multichannel
- TV and Radio Low, Medium, Gap Filler
- TV and Radio Multichannel N+1 Transmitter / Transposer
- Medium Power Television transmitters
- Medium power FM Transmitters: High power liquid cooled DTV
- ATV Transmitters; refurbishment of old equipment
- FM digital transmitter
- High power liquid cooled DTV Transmitter
- High power liquid cooled DTV Transmitter
- 10/20kW VHF liquid cooled amplifiers
- 2.45 GHz 1kW Liquid cooled high power amplifier
- 100MHz – 1000MHz high power broadband amplifier
- 80 ÷ 120 MHz 1000W High Power Amplifier.
- 1 ÷ 30 MHz 2500W Adaptive High Power Generator
- 8 carrier 2,45GHz RF Generator
- 130 ÷ 250 MHz 500W High Power Amplifier.
- 300 ÷ 440 MHz 1500W High Power Amplifier.
- 2.45 GHz 300W and 1000W High Power Amplifier.

# TDE around the world



# We Thank You For Your Kind Attention

