



TRC 3600

ADVANCED MULTIMODE MULTISERVICE DIGITAL HF RADIO

> **A digital radio**
  - **Digital ciphered voice**
  - **High speed modem**
  - **Software programmable**

> **Field proven tactical transmission modes**
  - **Fast Automatic Link Establisment**
  - **Intelligent Frequency Hopping**

> **A complete communication system**
  - **Frequency and Key Management System**
  - **E-mail, File transfer, fax, etc.**

> **Innovative NVIS communications “on the move”**

THALES

TRC 3600

SYSTEME 3000
SKYHOPPER®2
SKYMASTER

A COMPLETE HF FAMILY

The TRC 3600 can easily be integrated into a large variety of 20 W (TRC 3610), 125 (TRC 3630) and 400 W (TRC 3640) stations. Extremely compact and lightweight configurations can be custom tailored to support various operational requirements.
Based on power amplifiers with embedded proximity filters (option) and frequency agile antenna tuning units wideband hopping capable (2 MHz), the vehicular stations offer all the advanced modes and services provided by the TRC 3600.
The new 125 W NVIS antenna configuration offers complete vehicle mobility and full coverage, without the notorious skip zone problems found in HF.

▲ Voice and remote control using the TRC 9750A

▲ Data transmission using a ruggedized PC

▲ Hummer with NVIS antenna

▼ TRC 3630 (125 W)

▲ TRC 3600 (20 W)

FIELD PROVEN TRANSMISSION MODES

The **SKYMASTER** mode of the TRC 3600 offers a full range of services enabling simple and reliable use of the HF band: automatic link establishment with optimal choice of frequency, power and data rate for the type of service selected (voice, data, etc.).
The design of this mode has been optimized to fulfill the requirements specific to tactical operations: quick and reliable transmission of information even in a highly disturbed radio-electrical environment. ***(Fig.1)***

Capitalizing in its long and unique experience in HF frequency hopping techniques, the **SKYHOPPER® 2** mode marries automatic hop band selection with intelligent frequency hopping, thus achieving on the field unparalled quality and reliability performances. ***(Fig.2)***

Furthermore, optimized FH synchronization procedures enable to offer first class operational services, such as fast Turn-Around-Time (< 1 s), multiple selective call or burst alert message transmissions.

DIGITAL TECHNOLOGY

Thanks to its digital advanced technology, the TRC 3600 offers new embedded services: secure high data rate and digital voice transmissions.

It integrates a high data rate, multiwaveform, single tone modem (from 75 to 5400 bps) and a vocoder (800 - 2400 bps) associated to a high security digital COMSEC chip.

▲ HF/VHF communication node with the TRC 1731A multiservice terminal: E-mail, remote control, routing.

The performances of the modem, the use of powerful error correction codes (RS-BCH, convolutional, selective block ARQ) and the use of (frequency, power, data rate) real time adaptive procedures enable to offer reliable HF links even on a severely degraded ionospheric path.

The links are automatically optimized in real time according to the possibilities of the HF channel.

They can also be relayed from/to VHF PR4G networks.

SKYMASTER ►

The new technologies implemented in the SYTEME 3000 enable to offer with the TRC 3600 significant evolutions without the need to redesign the equipment. Simple retrofit by software downloading from a PC will enable to integrate future fonctions such as the MIL-STD-188-141A (option).

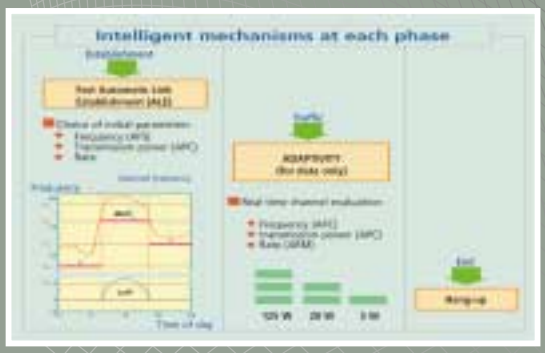

Fig.1

A TRI-SERVICE INTEROPERABILITY SOLUTION

In addition to the tactical transmissions modes, the SYSTEME 3000 meets the interoperability requirements. These needs can be, in particular, an interoperability with the infrastructure HF stations using the ALE MIL - STD - 188 - 141 A or thanks to the STANAGs 4481 and 4285 a compatibility in data transmissions with, for instance, the surface vessels.

SKYHOPPER 2 ►

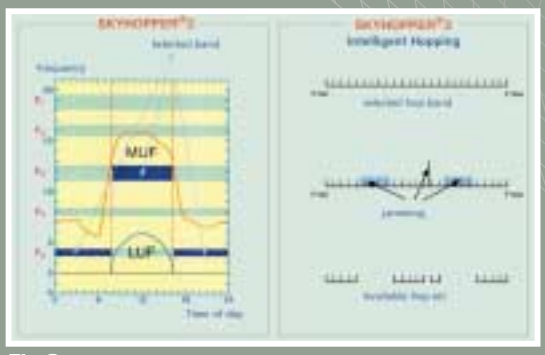

Fig.2

A COMPLETE COMMUNICATION SYSTEM

Associated to peripherals and advanced PC based software, the TRC 3600 is the basis of a complete communication system. ***(Fig.3)***

This system offer a wide range of services:
E-mail transmission based on COTS software, file transfer, Group 3 or digital fax transmission, still image transmission, tactical message transmission gateway and routing to other networks (VHF, GSM, PSTN, LAN, FON, etc.).

It includes a frequency and key management system. This system ensures generation, duplication and field distribution of the HF initial parameters as well as the VHF PR4G initial parameters.

PSTN/HF/VHF automatic connection ►

Fig.3

TRC 3600

SYSTEM INTEGRATION

Thanks to its associated terminals, the radio becomes the heart of a complete communication system which enables:

> Transmission of E-mail, files, fax (G3), images, Situation Awareness messages
> Connection to the PSTN, PR4G, LAN, and GSM networks
> Automatic routing
> Remote Control (Smart Handset, RCU,TDT, PC)
> Frequency and Key Management

PERIPHERALS / ANCILLARIES

A wide range of peripherals and ancillaries enables to tailor varied operational configurations:

> Peripherals/ancillaries common with PR4G
- Multiservice terminal TRC 1731A
- Tactical Wireless Terminal (IBF 125)
- Tactical Data Terminal (TRC 9710A)
- Intercom system (SOTAS)
- Remote Control Unit (TRC 9730), Smart Handset (TRC 9750A)
- Fill-Gun (TRC 9724), Frequency and Key Duplication (FKCU)
- Handset, Loudspeaker, Headset
- Batteries and Battery chargers, lithium pack, solar panel, AC power supply units, Power Converter

> HF specific peripherals / ancillaries
- Antennas optimized for wideband FH and ALE (whip, dipole, field wire, NVIS)
- Carrying Harness...

Tactical Data Terminal ►
TRC 9710A

▲ Remote Control Unit TRC 9730

▲ Smart Handset TRC 9750A

◄ Tactical Wireless Terminal IBF 125

TECHNICAL SPECIFICATIONS

Frequency Band	1.5 to 30 MHz, 100 Hz step, 10 Hz step Clarifier	
Number of Presets	100 in fixed frequency, 30 in ALE or FH mode, Scanning	
Transmission	Nominal Power Reduced Power	20 W PEP and average 1 W or 5 W
Reception	Sensitivity in SSB J3E: Intermediate Frequency:	0.65 µV for (S+B)/B ≥ 10 dB attenuation ≥ 70 dB
Fixed Frequency Mode	Simplex compatible STANAG 4203 Half-duplex (dual frequency)	
Fast Automatic Link Establishment (FAST ALE)	Link Set-Up duration: 5s for the first frequency (ALE list: 8 frequencies) Simplex or Half-duplex (Dual Frequency) Late Entry Selective Call: multiple, 99 individual addresses Frequency, Power and Data Rate Management	
Intelligent Frequency Hopping (FH)	Automatic or Manual Hop Band selection (up to 5) Automatic Selection of usable frequencies Hop Speed Synchronisation type Time of Net Operates without GPS or rough TOD Turn Around Time ≤ 1 sec Late Entry Multiple Selective Call	Voice: 10 hops/s Data: 20 hops/s
Embedded Modems	Robust 8 FSK Modulation: 375 bps uncoded, 100bps user data rate High Data Rate Single Tone Modem 2, 4 or 8 PSK: FEC mode, max 5400 bps uncoded, ARQ mode, max 4875 bps user data rate Coding techniques: Reed Solomon, convolutional, interleaving (mode depending)	
Digital Voice	Digital Voice 800 bps STANAG 4479 with or without interleaving 2400 bps STANAG 4198	
Burst Alert Messages	ALE and FH modes Transmission of alert messages with Sender ID	
Interoperability (option TRC 3600A)	STANAG 4481 / 4285 STANAG 5000 DCS 100 (KG 84C), KY99 MIL-STD-188-141A	
Physical Characteristics	Weight: Volume:	≤ 4 kg ≤ 3.7 liters
Power Supply	14.4 V, Ni/Cd, Lithium or Li-Ion Protection against reverse polarity	
Environmental Characteristics	Tested according to MIL-STD-810E	
Climatic and mechanical	Operating Temperature: Immersion:	- 40 to + 70° C 1m during 2 hours
EMC	Tested according to MIL STD 461C	

THALES

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