DATA PATTERNS

Specialists in Defence and Aerospace Electronic Systems

Data Patterns (India) Pvt. Ltd.

State of the art design & manufacturing facility Chennai, India

Company Overview

DATA PATTERNS

- Technology based Product Company.
- Products for Defence, Aerospace applications in Air, Land, Surface, Underwater and Space.
- Recognized as a leader of High Technology and Reliable Electronic Systems with broad spectrum capabilities.
- Expertise in the Product Life Cycle from Conceptualization to Life cycle support with established Processes and Quality Assurance Checklists.
- More than 1000+ building blocks and 60+ System/sub-system products
- Team of 700 Young talent backed with experienced team
- State of the art infrastructure to cater present and future expansion with Industrial licenses for Defence products.
- Certified for National and International Standards:
  (AS9100D, ISO 9001:2015, ISO/IEC 27001:2013)

Domains

Over 35 years of experience in Design & Development of Defence and Aerospace Electronics



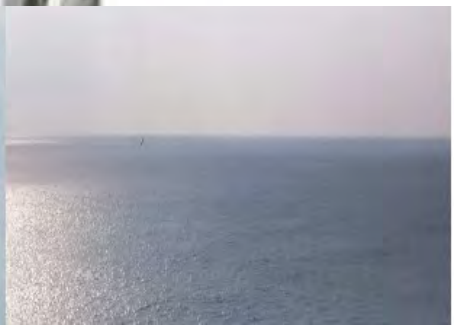


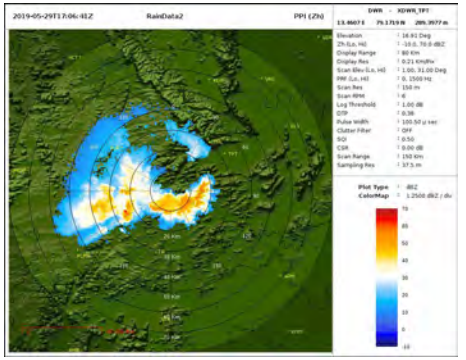

- Avionics
- Radars
- Electronics Warfare
- Missile Electronics
- Laser & Optics
- Communication
- Seekers
- Satellite / Launch Vehicles
- Automatic Testing
- COTS / MOTS

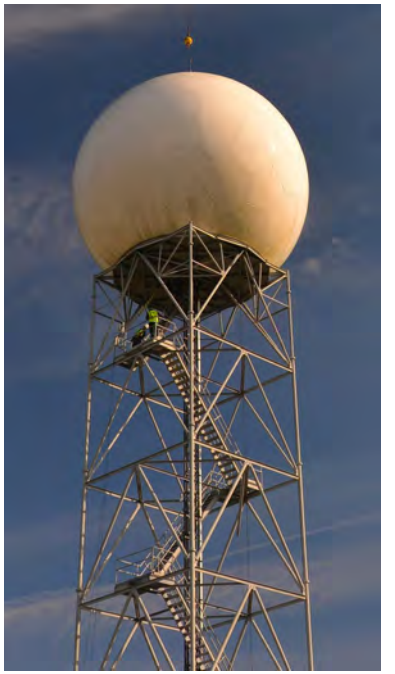
Radars

DATA PATTERNS

- Phased Array Tracking Radars
- Surveillance Radars
- Wind Profile Radar
- Doppler Weather Radar







Radars

Precision Approach Radar (PAR) – X band Phased Array

Designed in India by Data Patterns

Contract Awarded by MoD in 2019 for 9 Radars is currently under execution

Long Range Surveillance Radar

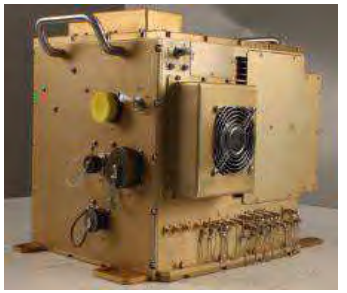
DATA PATTERNS

Phased Array Antenna for LRDE-DRDO's Ashwini LLT Radar

Dual Channel Transceiver Module (DTRM)

Array Group Receiver Unit (AGRU)

Dual Channel Receiver



Central Unit

Power Supply Module

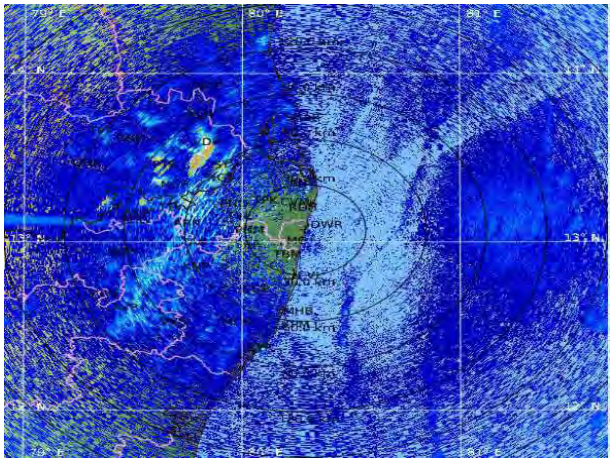
Radars

X Band Coastal Surveillance Radar

Wind Profiler Radar for CUSAT

Doppler Weather Radar - Upgrade

DATA PATTERNS



- Dual Polarimetric DWR
- X Band (9.3 to 9.4 GHz) SSPA
- RF / IF receivers
- Digital Receivers
- Modern Signal & Data processing
- Configurable S/w for 24/7 local and remote operation
- 3D & 2D Visualization of weather products with Geo Map overlays
- Base data Storage
- Op. Temp : -20 to 50 Deg C

C-Band Doppler Weather Radar (DWR)

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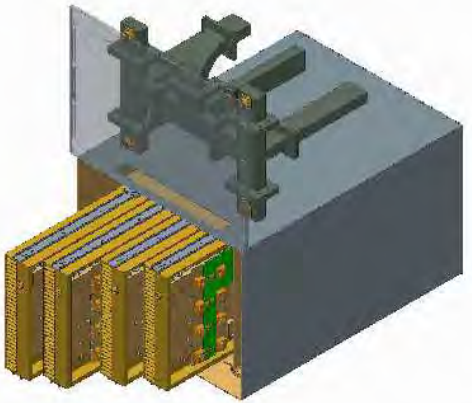
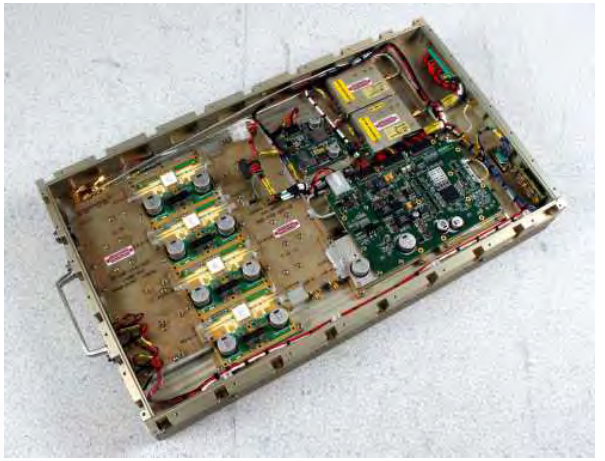
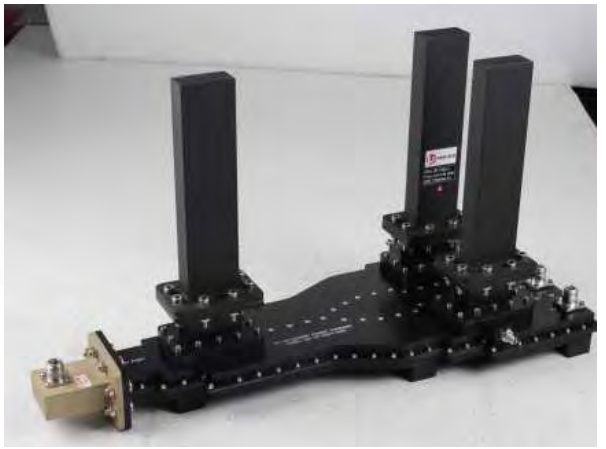
SYSTEM OVERVIEW





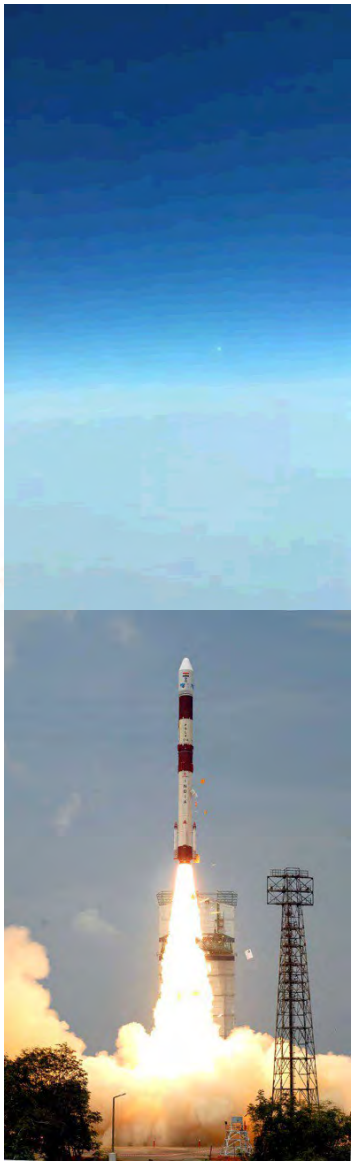


C-Band Weather Radar under installation in Mumbai

Tracking Radar Upgrades

Data Patterns has implemented Tracking Radars of upto 3000Km Range

TERLS Tracking Radar



C Band Radar Upgrade at SHAR

PCMC Radar Upgrade at SHAR

Electronic Warfare Systems

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- COMINT (Communication Intelligence)
- Communication ECM
- SIGINT (Signals Intelligence)
- Radar Electronic Counter Measure

Electronic Warfare Systems

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- **ESM Systems**

  - 20MHz to 6000MHz Spectrum
    - VHF/UHF Wide Band Fast Scan Receiver
    - VHF/UHF Monitoring Receiver

- **ECM Systems**

  - 1.5MHz to 30MHz
    - HF Search and Monitoring Receiver
    - HF Search & Monitoring Receiver with Exciter

  - 20MHz to 6000MHz
    - VHF/UHF Search and Monitoring Receiver
    - HF Search & Monitoring Receiver with Exciter

  - 20MHz to 500MHz
    - Solid State 500W Power Amplifier with FSU

Electronic Warfare Systems

Wide Band Signal Processing Unit

Real Time Monitoring Receiver Unit

Jammer Power Amplifier

Heliborne Direction Finder

V/UHF Monitoring Receiver

V/UHF Search Receiver

(COMINT/ELINT/ESM/ECM)

SIGINT

DATA PATTERNS

Digital Direction Finder (ELINIT Receiver)

- 0.5 to 18 GHz
- Open Standard Modular design
- High Performance SBC with Octal Processing cores
- FPGA based Pulse Processing
- High Speed Multibit Digitizer
- Built in storage
- Built in GPS receiver (with external antenna connectivity)
- Compact design suitable for various platforms
- Mil 810F, 461E, DO 254

DRDO
DEFENCE R&D ORGANISATION
MINISTRY OF DEFENCE

Radar Electronic Counter Measure

DATA PATTERNS

Airborne Radar Warning Receiver – Next Gen.

- Multi bit Wide Band RWR
- Modular Open architecture design
- 1 to 18 GHz wide open detection
- Effective detection of Pulse on Pulse.
- 100% POI.
- Detects multiple emitters simultaneously (pulse on pulse / pulse on CW).
- Instantaneous 360 deg coverage
- Wave forms : Long pulses (Pulse Compressed) & LPI threats
- Detection in the presence of strong CW signals.
- Compact design for various platforms
- Mil 810F, 461E, DO 254

DRDO
DEFENCE R&D ORGANISATION
MINISTRY OF DEFENCE

Avionics

DATA PATTERNS

Platforms: Fixed & Rotary Wings, Missiles & UAC.

- Flight Control Computers
- On-board Computers
- Actual Control Systems
- Data Interface Units
- Radar Exciter Receivers
- Flight Data Recorder
- Identify Friend or Foe (IFF)
- Protocol Converters

Avionics

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Design, Develop, Manufacture & Quality with Certification Agencies.

LAAD Aircraft Cockpit

DATA PATTERNS

Large Area Avionics Display

- 20*8 inch, AMLCD display,
- LED Backlighting
- 2560 x 1024 Pixels
- Redundant Architecture
- Split Screen
- Sunlight Readable
- Wide Viewing Angle
- High Contrast Ratio
- NVIS Compatibility
- 14ms Response time
- Supports upto - 40 deg C
- Automatic Brightness Control
- Built-In Test
- Mil 810, DO 160, DO 254, DO 178

- **Interfaces**
  - ARINC 818, AFDX,
  - STANAG, DVI
  - ARINC 429,
  - Discretes, RS422

Fire Control Systems & Naval Equipment

DATA PATTERNS

Fire Control & Launch Control System

- Single and Salvo missile FCS
- Launch Control Systems
- Platform Stabilization System
- Power source to Missiles
- Servo control system
- Missile Simulators
- Decoy launchers

Platforms

- Ground Mobile : Army - Brahmos
- Shipborne : Navy
- Airborne : Su 30

Missile Launcher

DATA PATTERNS

Data Patterns is the Supplier of Launch and Fire control Systems for Land and Air for Brahmos.

Launch & Fire Control Systems

Fire Control Systems

DATA PATTERNS

ASW System – Indian Navy

Torpedo Launch System

Decoy Launch System

Avionics

DATA PATTERNS

Air Version Launcher for Brahmos on Sukhoi 30

Article PSU

Article Control Unit – Intelligent Unit

Avionics – IFF Systems

Developed along with DRDO with Features to upgrade to "Indian" MK XII(A) with Mode 5

IFF Transponder

Medium Range Interrogator

Medium Range Combined Interrogator Transponder

M-Scan Power Amplifier Unit

Man Pad Interrogator

Light Weight Transponder

Compact Transponder

Control and Display Unit

Built for Fighter Aircraft, UAV, Helicopter, Naval Platforms, Mobile and Land Platforms

Cockpit Displays

DATA PATTERNS

- Complete Glass Cockpit Displays
- Multifunction Displays & Indicators
- Start, Dumb, Redundant

Helicopter Glass Cockpit Display

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Light Utility Helicopter Cockpit Display

Smart Cockpit Display

Data Interface Unit

Aircraft Cockpit Display

DATA PATTERNS

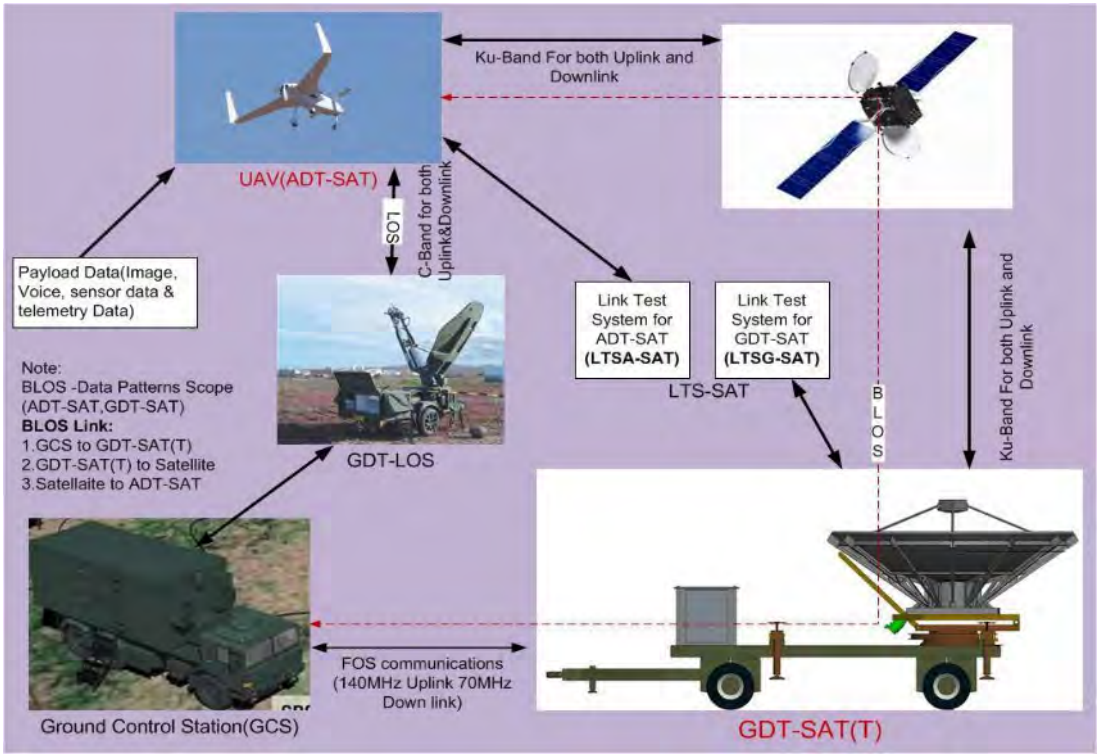
Smart Standby Instrument Display for LCA

Smart Display Unit for IJT

Communication Systems

DATA PATTERNS

Beyond Line of Sight SATCOM Data Link for RUSTOM UAV



Communication Systems

Satellite communication
Airborne Up Down Converter for UAV

DSSS modem

Communication Systems

DATA PATTERNS

Anti Submarine Warfare Equipment

Homing System

- To locate the sonobuoys
- Receives & Processes VHF signals from Sonobuoys
- Displays to the pilot.

Homing Receiver

Antenna Front-end

PWM Waveform Generator

Cockpit Control Unit

Sonobuoy Positioning System

- Positions the Sonobuoy by obtaining signals from the multiple antennas mounted in the aircraft.
- Relative Phase between antennas in the VHF band will be used for the sonobuoy position estimation.
- The estimated angle of arrival with the own position of the aircraft will be used for computing the sonobuoy transmitter location.

Under Water Electronics

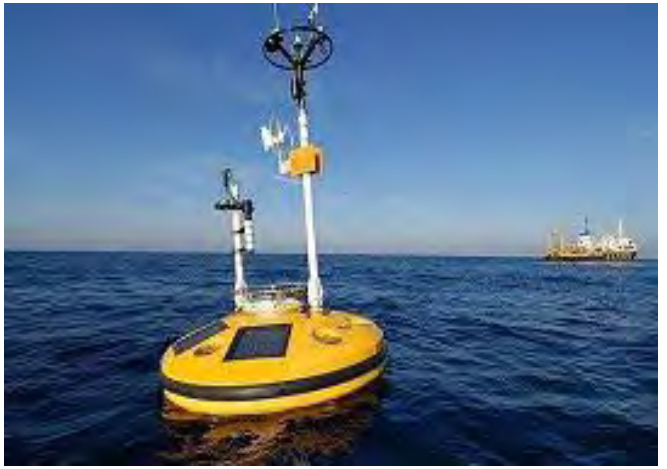
Data Distribution Unit

- Acquires RLG data and distributes to equipment's like Navigation Radar, CCA Radar, and ECDIS etc.
- Interfaces with ship data network.
- Capable of selecting FWD or AFT RLG either manually or automatically.
- Provides high fan out & distributes suitable outputs to various sink equipment's.
- The outputs are available (Repeaters / sink equipment's) in both analog & digital formats
- System also performs the critical job of failure indication and alarm.

Underwater Systems

AUPD – Autonomous Underwater Profiling Drifter

- CPU for MET, Tsunami and Wave Buoys
- CPU for Kalpasar Observatory - II
- Autonomous Underwater Profiling Drifter
- OMNI Buoy CPU



Made by Data Patterns for NIOT

Underwater Systems

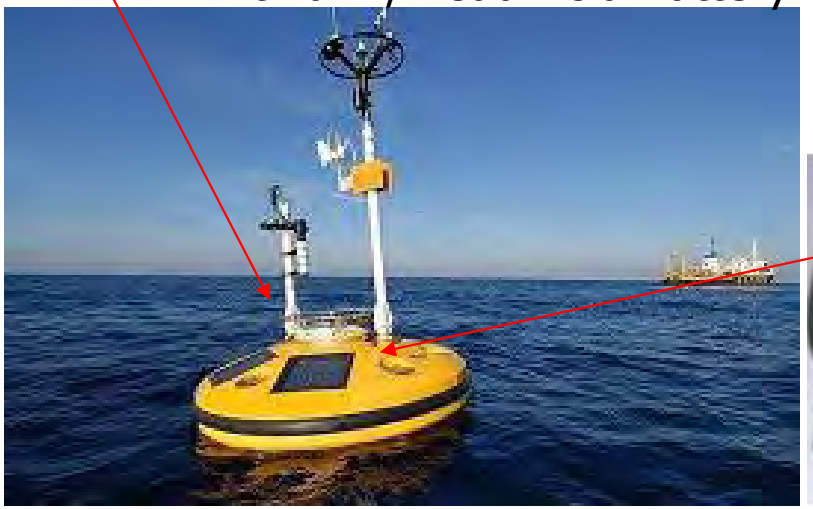
Data Buoy

Measures

- Wind Speed & Direction, Atmospheric Pressure
- Air Temperature, Humidity, Conductivity
- Sea Surface Temperature
- Current Speed & Direction and Wave Parameters.
- Water quality parameters
- Subsurface temperature

Equipped with

- GPS, beacon light & satellite transceiver.
- Lithium / Lead Acid Battery with Solar Charger.



Made by Data Patterns for NIOT

Electro-Optics

DATA PATTERNS

Scan Mirror Test System

IR Guided Missile Tester

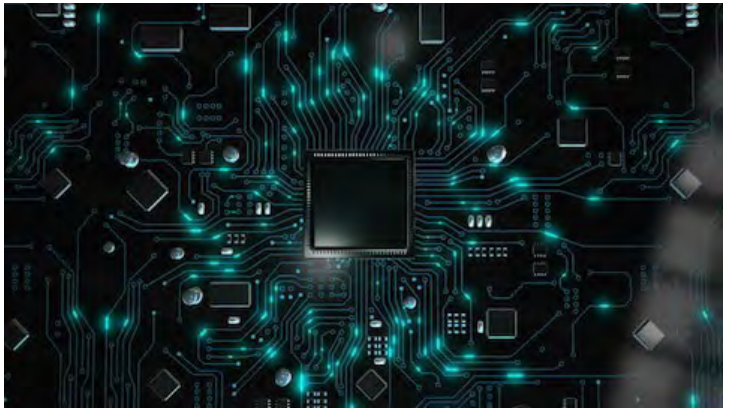
Laser Guided Bomb Kit Testert

Optical Target Locater

Automatic Testing

DATA PATTERNS

- Sea King Integrated Avionics System
- Launch Pad Count Down System
- Missile Checkout System
- Airborne LRU Production Test System
- I and O Level Test System
- Automatic Test Equipment for EW System



Integrated Avionics Testing - Sea King MK42B Helicopter

DATA PATTERNS

Three Independent ATEs
Low Frequency ATE : 27 LRUs
Radio Frequency ATE : 32 LRUs
Tactical Mission Equipment Test Unit (TMETU) : 09 LRUs

Before

After

Second Launch Pad Count Down System

DATA PATTERNS

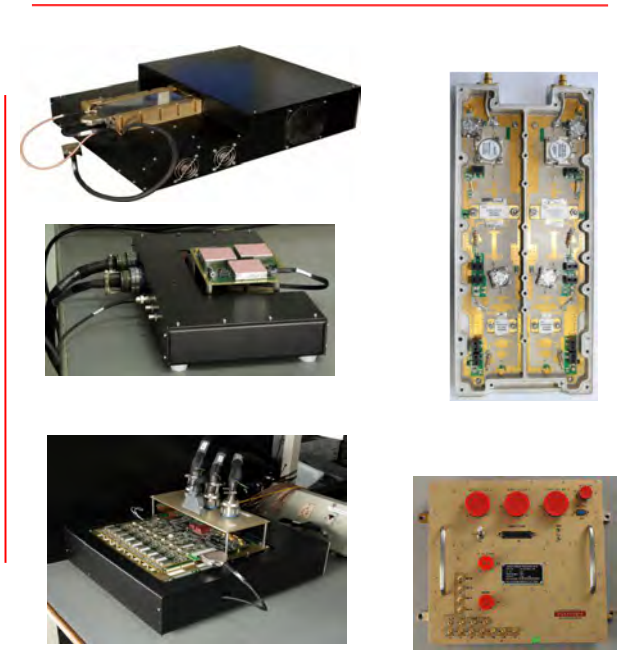
14000 I/O point system Automates the checkout of the launch vehicle at the time of launch

Missile Checkout System

Validates Missile performance when stored at their depots

Airborne LRU Production Test System

SRU level tester for Digital Flight Control Computer



ATE for Radar Components

Ensures maintainability of Equipment by identifying failed parts and also confirming that working systems are meeting tolerance levels

Airborne LRU Production Test System

O Level Tester for IFF

I Level & O Level Tester for PCD

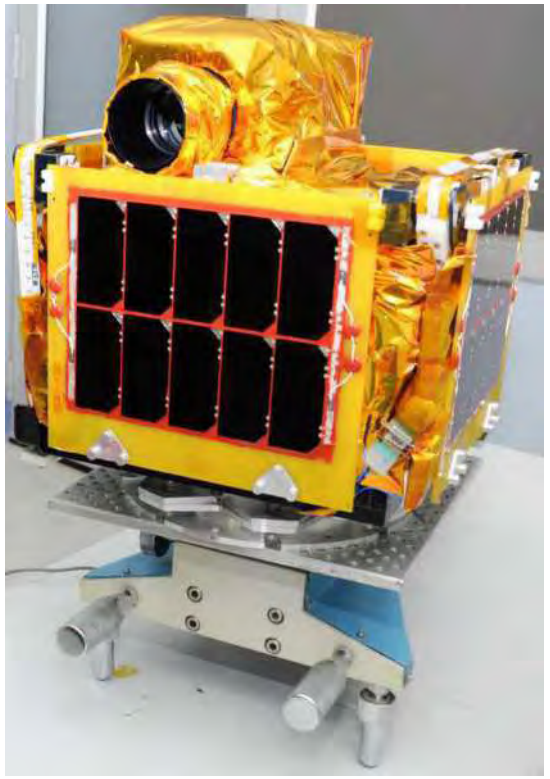
- ESM & ECM test system for V/UHF frequency
- Production level LRU tester for HF Monitoring & Search Receiver
- Compact & Portable
- User friendly Test software GUI

Ensures maintainability of Equipment by identifying failed parts and also confirming that working systems are meeting tolerance levels

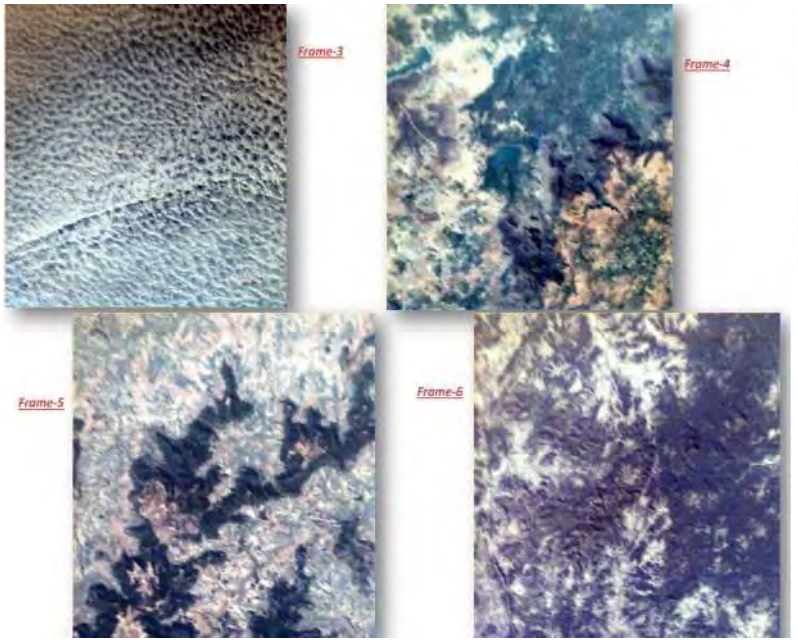
Satellite

DATA PATTERNS

Presently building 2 more Satellites



Images from IN-1C



Complete Ground Station VHF, TTC, Payload receiver, Mission Control Centre,..

Our first Nano Satellite (NUSAT) developed for Noorul University, Nagercoil.

Design and Production facility

DATA PATTERNS

Approved by Indian Defence, ISRO, Europe and US MNCs

EMS Line

Pick and Place

Reflow Oven

Optical Inspection

Electronic Assembly Area

Cabling

Manual Soldering

Quality Control

Under scope Inspection

Automatic Optical Inspection

Ion Contamination Testing

Stereo Microscope Inspection

X-ray Inspection

Design and Production Facility

Space / Defence Certified Cabling Bay

Assembly & System Test Bay

Clean Room

Vibration Table

Thermal Cycling & HALT / HASS

Space Grade Assembly Area

Space Grade Assembly Area realized as per ISRO-ISAC-ST-0142.

CERTIFICATE OF ACCREDITATION

Sl.No: 2017-RFS-003-R00
Date: 29th November 2017

This is to certify that

M/s. Indus Teqsite Pvt Ltd (M/s. Data Patterns India Pvt Ltd)

Plot No. H9, 4th Main Road, SIPCOT IT park, Siruseri, Off Rajiv Gandhi Salai (OMR) Chennai - 603103, India is accredited by ISRO Satellite Centre, Bangalore for the **Automated Reflow Soldering of Electronic Assemblies for Spacecraft application**. This certificate is issued after successful Line Certification, Line Qualification and Product Qualification. Extent of Process is limited to passive chip components viz., resistors, inductors, capacitors and chip diodes.

This certificate is valid up to November 28, 2019.

Reference Documents: (1) Process Identification Document No. DP/PDN/PID/ISAC/PCBASSY/1.01 (2) Qualification Report No. ISRO-ISAC-TR-1429 (3) Test and Evaluation Report No: ISRO-ISAC-GSAT-19-TE-15WRFS-DP-00. (4) Vendor Capability Matrix Report No: RQA-CM-RFS-DP-2017 (5) Certified Operators List No: RQA-COL-RFS-DP-2017

(BHANUMATHY.Y.R) — Group Director, SSQG

(V.VENKATESH) — Group Director, CMIG

Deputy Director, RQA

ISRO SATELLITE CENTRE, BANGALORE

Data Patterns Offers

- 'Make in India' Destination for Electronic systems including Design, Manufacture and Maintenance for both Indian and International Requirements
- Joint Participation in MoD requirements as Prime bidder / as Partner
- Joint development and engineering of new products for your programs and equivalent solutions to manage obsolescence
- Offset opportunities in products, value added services, banking and any other special requirements
- Design/Supply of specific and generic test systems
- MRO, upgrades of your products in India for both existing and new platforms
- Integration and Installation of Systems in Land, Air & Sea Platforms

THANK YOU

Contact Address:

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