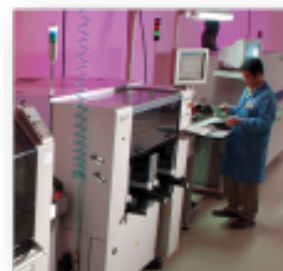
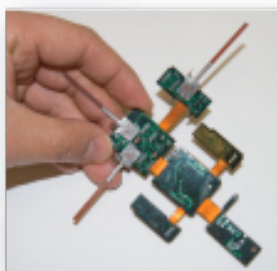




A PRESENTATION ON
CIREXX
INTERNATIONAL

SEAMLESS INTEGRATION

DESIGN + FABRICATION + ASSEMBLY



UL 94-VO
ISO 9001-2000

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Corporate Overview

- **Founded in 1980 with 2013 Revenue of \$20,000.00**
- **One MFG site with over 35,000 sq. ft. of manufacturing space**
- **Over 130 employees. Average tenure 24 years**
- **Servicing the defense, aerospace, medical, industrial, clean technology, mobile & telecom markets : About 485 customers make up our entire revenue stream**
- **World-class PCB and PCBA MFG: Prototype to medium volume box build manufacturing and test capabilities**



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CORE COMPETENCIES

QUICK TURN AROUND:

- **35 years of Quick Turn Manufacturing Experience**
- **24 hour turn Available: Flex / Rigid / Assembly**

DESIGN / FABRICATION / ASSEMBLY:

- **All Disciplines Under One Roof**
- **Seamless Integration: **Design / Fabrication / Assembly****

HIGH TECHNOLOGY:

- **Flex / Rigid-Flex**
- **Blind / Buried Vias**
- **Stacked Vias / CB100 / Non-Conductive Fill**
- **High Layer Count: Rigid and Rigid-Flex**



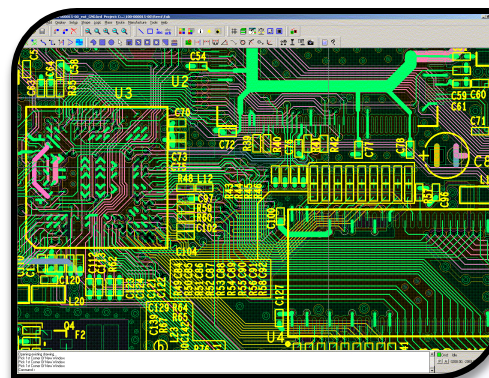
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IN HOUSE DESIGN CAPABILITIES

- **Multilayer PCB's**
- **Analog / Digital / RF 20+GHz**
- **Mixed Technologies Design**
- **Blind / Buried / Stacked Vias**
- **Controlled Impedance**
- **Differential Pairs / Matched Net Lengths**
- **DFM / DFT and ICT Design**
- **Documentation Creation**
- **Military Applications**
- **Seamless Design Process Thru Assembly**



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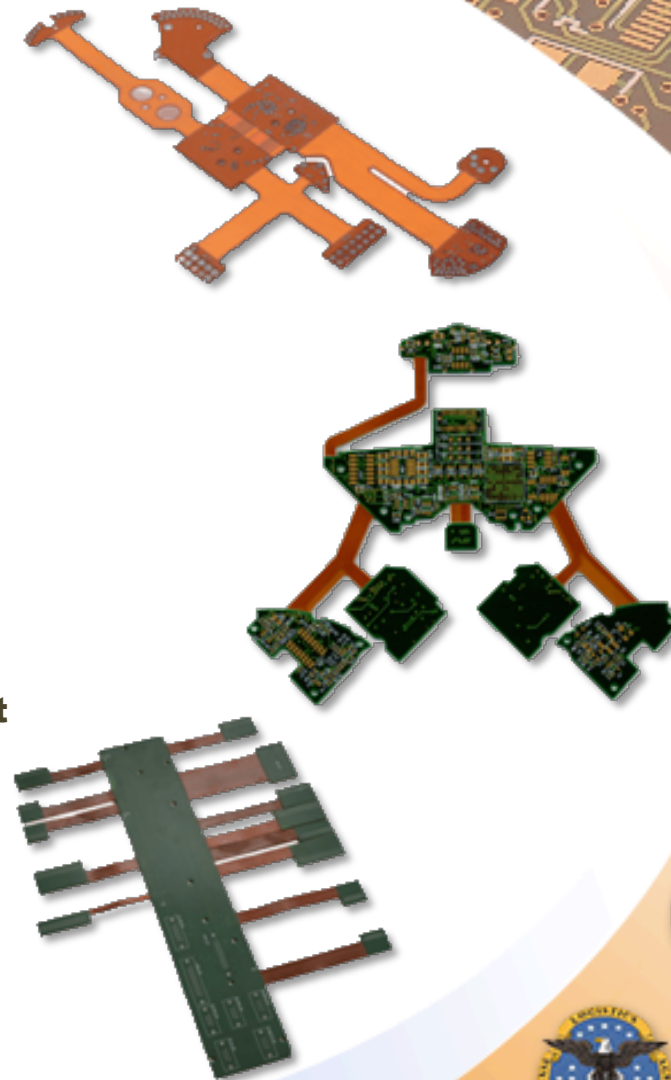
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PCB FABRICATION CAPABILITIES

FLEX / RIGID-FLEX:

- **24 Hour Turnaround (available)**
- **Standard Lead Times – 15 Days**
- **1 – 22 Layers**
- **2 Mil Lines / 2 Mil Spaces**
- **Front End CAM: Orbotech Genflex 2014**
- **Controlled Impedance – Calculation & Test**
- **Unsupported Leads – Dual Access**
- **Bookbinding – Loose-Leaf Designs**
- **Adhesive-less Constructions**
- **Blind & Buried Vias**
- **Kapton & Non-Kapton Constructions**



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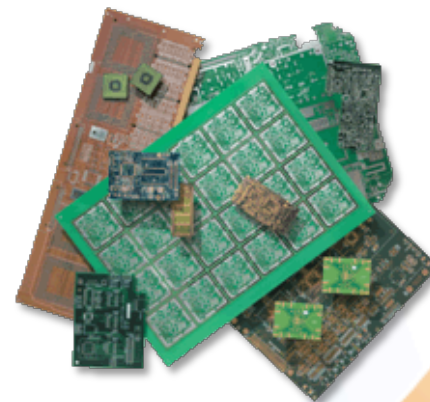
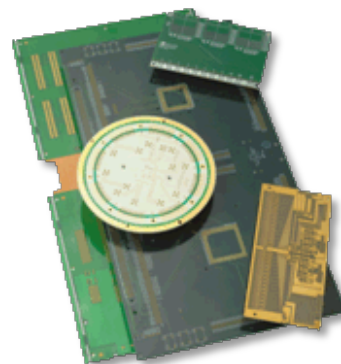
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PCB FABRICATION CAPABILITIES

FR-4 / RF-HYBRIDS:

- **24 Hour Turnaround / Standard Lead time : 10 Days**
- **1-30 Layers**
- **3 / 3 Mil Lines & Spaces**
- **RoHs Materials / Pb Free**
- **Isola® / Nelco® / Rogers® / Arlon® / Taconic®**
- **Controlled Impedance / Differential Impedance**
- **Polar® Calculation / TDR Testing**
- **4 / 6 mil hole**
- **Micro Vias / Down To 3 Mil**
- **Blind / Buried Vias / Stacked Vias / Sequential Lam**
- **All Surface Plating Finishes**



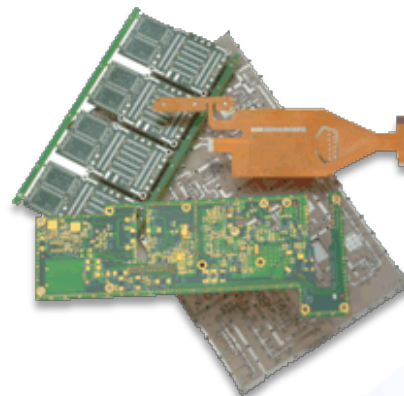
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ENGINEERING SUPPORT

- **Mechanical Samples**
- **In House Layout Services**
- **Design Review For Mfg**
- **Impedance Modeling**
- **Material Call Outs / Constructions**
- **Cost Review**



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OUR CUSTOMERS INCLUDE

Honeywell



Raytheon

ORTHROP GRUMMAN



JPL



iRobot



BAE SYSTEMS

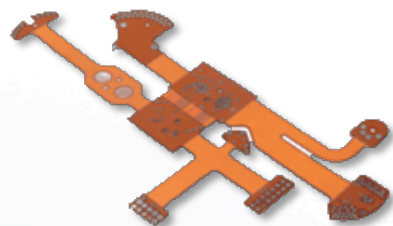


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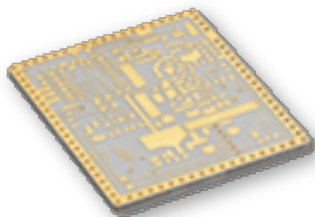
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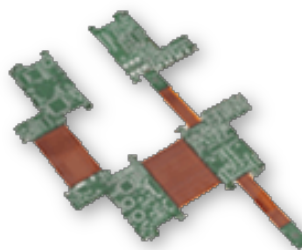
PRODUCT OVERVIEW



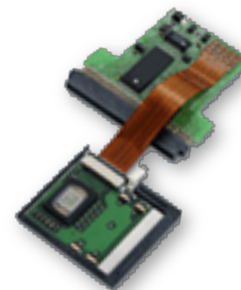
**8 Layer Rigid-Flex with
Non-Kapton Build**



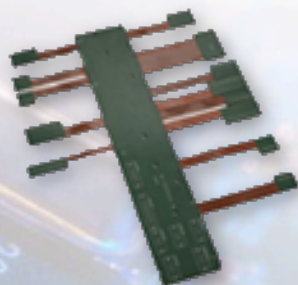
Mixed Dielectrics/Hybrid



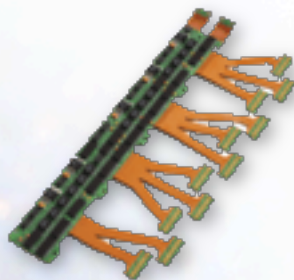
**6-Layer Rigid Flex
Control Impedance**



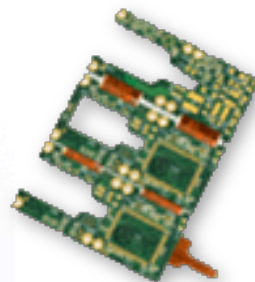
**D/S Flex/ Laser Rout/ Ziff
Connector**



22 Layer Rigid-Flex



**8 Layer Rigid-Flex
Assembled**



**4 Layer Rigid-Flex with
Micro-BGA**



10 Layer Rigid-Flex



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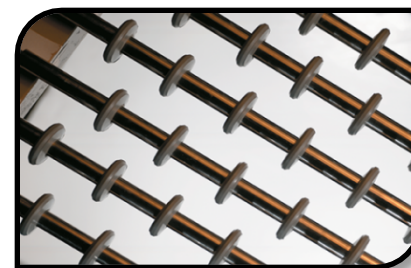
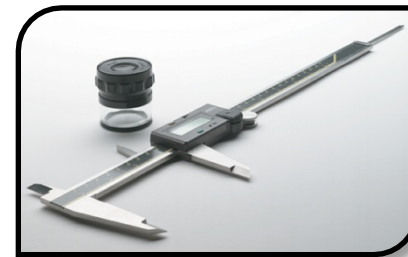
TOLERANCES

ROUT & MECHANICAL DRILL:

- **Rout +/- 5 mil Standard +/- 3 mil On Special Request**
- **Inside Radius 15 mil**
- **Minimum Slot Width 21 mil**
- **10 mil From Cp To The Edge Of The Board**
- **Drill Positioning +/- 2 mil**

DESIGN / ARTWORK / PROCESS:

- **2 mil Trace 2 mil Space**
- **7.5 mil Internal Drill to Cp**
- **4 mil Pad Over FHS**
- **2.5 mil Solder mask Clearance Over PAD Size**
- **Lamination:**
 - **+ / - 8% Board Thickness**
 - **+ / - 3 mil Layer To Layer Registration**
- **Etch Tolerance + / - .8 mil**



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IN HOUSE ASSEMBLY

- **24 turn to 5 day turnaround**
- **Prototyping & Medium-Volume**
- **2 Philips Assembleon SMT Lines**
- **Rigid-Flex / Flex Assembly**
- **Rework / Hand Cabling / Jumper**
- **BOM Rework / Engineering Help**
- **SMT + Thru Hole**
- **Water Soluble Process**
- **Aqueous Cleaning**
- **Component Sizes Down To .01005**



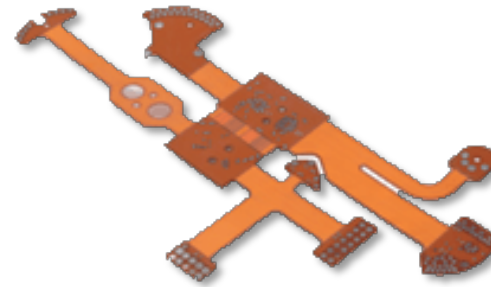
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REVERSE ENGINEERING / OBSOLESCENCE'S MITIGATION

- **Reverse Engineering**
- **Net list Creation**
- **Form Factor and Functionality**
- **Application Engineering**
- **Design for Manufacturability / Cost Review**



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CERTIFICATIONS

- ISO Registration Number: **ISO 9001:2008 A7838**
- Underwriters Laboratories Certified / Registered

MILITARY:

- MIL-PRF-31032
- MIL-PRF-50884
- MIL-PRF-55110
- CAGE Code – **4MEG7**
- ITAR – **M21544**
- AS9100 C**

ASSOCIATION CONNECTING ELECTRONICS INDUSTRIES:

- IPC

VALOR COMPUTERIZED SYSTEMS:

- ODB++ Data Exchange Format Certification

ASSEMBLY CERTIFIED:

- J-Std-001 ES Certified Technicians

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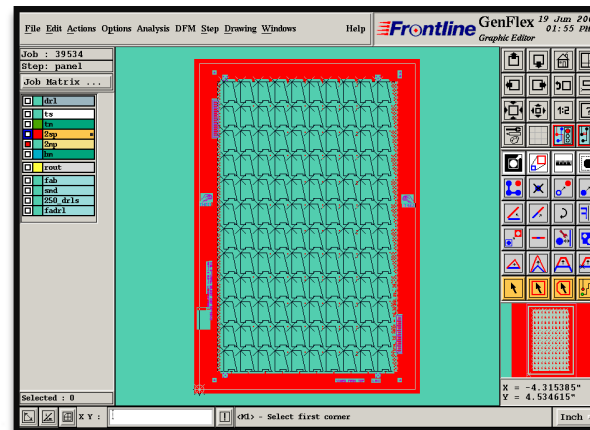


TECHNOLOGY IMPROVEMENTS

ENGINEERING:

Orbotech Genflex 2014

**Front-End CAM Suite specializing in
High Techonology PCB's– 13 Full
Seats**



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TECHNOLOGY IMPROVEMENTS

FABRICATION:

- **Direct Imaging by MASKLESS**

Quick-turn and Superior Imaging



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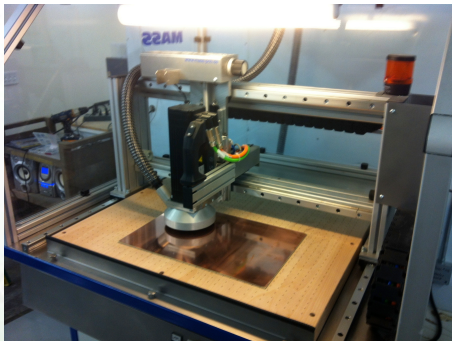
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TECHNOLOGY IMPROVEMENTS

FABRICATION:

- **Via Fill Equipment—IN HOUSE**
Conductive and Non Conductive

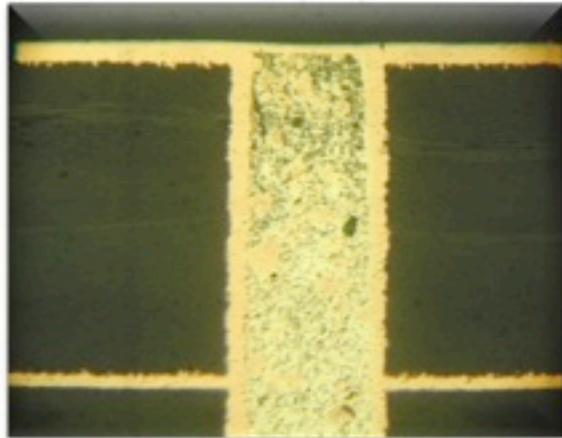


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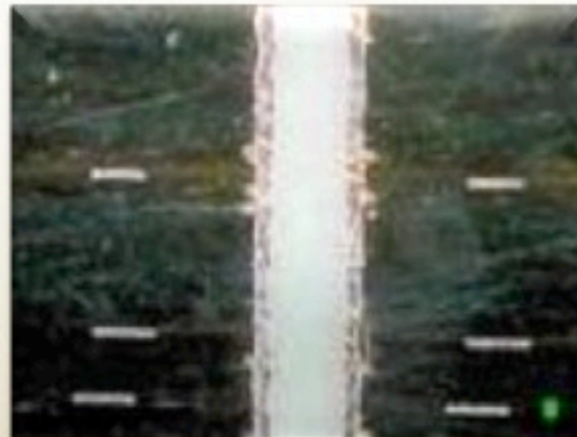
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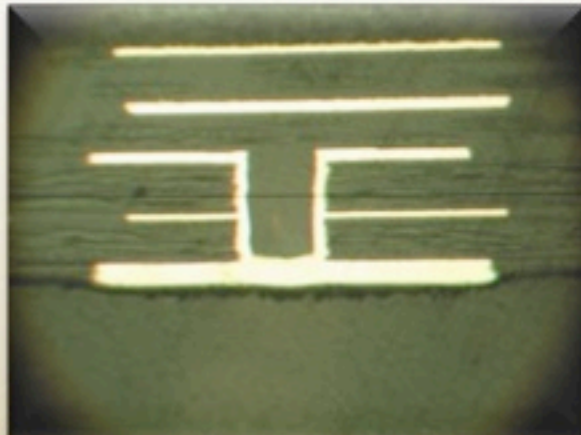
CONDUCTIVE



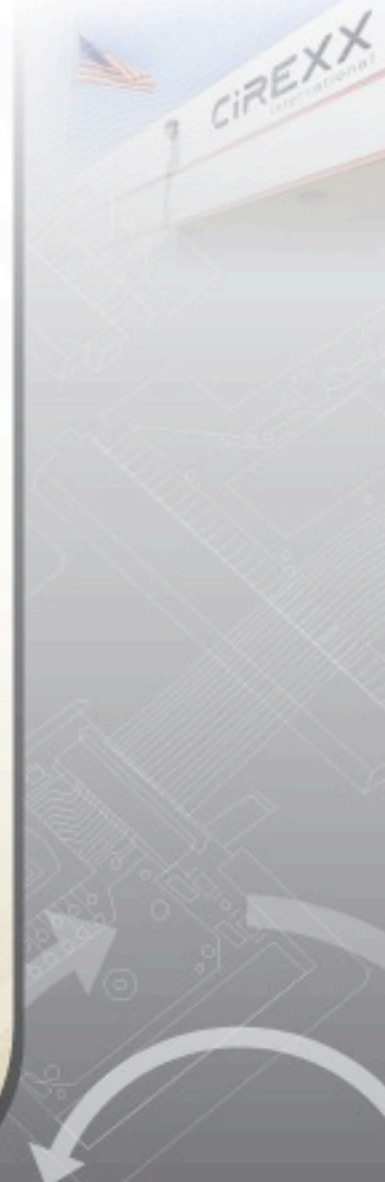
NON CONDUCTIVE



VIA FILL SAMPLE



CiREXX
International



TECHNOLOGY IMPROVEMENTS

FABRICATION:

- ☛ **Laser DRILL and ROUT – IN House**
Better Lead Times!



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TECHNOLOGY IMPROVEMENTS

FABRICATION:

➤ **Direct JET Legend Printer**

ORBOTECH—120 SPRINTER



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TECHNOLOGY IMPROVEMENTS

ASSEMBLY:

- **Assembleon TOPAZ II-X SMT Pick & Place Machine**
- **Assembleon MG-1 SMT Pick & Place Machine**



Assembleon



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TECHNOLOGY IMPROVEMENTS

ASSEMBLY:

- **Glenbrook X-RAY System**
- **X-ray of BGA / 01005**



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SOME CUSTOMER TESTIMONIALS

“ The Cirexx parts met and exceeded the performance of the original vendors Parts, and your delivery was “JIT”! ”



Steve Clark
www.bwxt.com

B&W thebabcock&wilcoxcompany
a McDermott company

Lisa Brooks
www.dropletmeasurement.com



Droplet Measurement Technologies



“ We are so pleased with your Fabrication and Assembly quality. It is a relief to us compared to some of the low quality work we have received elsewhere. ”

“ I want to thank you for building an excellent board. We’ve had serious issue with another PCB company... Cirexx has provided us with a very clean and square 3 mil bond landing bands ”



Alfred Walther
www.teledyne.com

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INCORPORATED

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CUSTOMER TESTIMONIALS

“ We got the boards today and they look and work great. Just wanted to say thanks for the quality work. It was just like two Christmas days in a row. ”

Howard Bell
www.altera.com



“ I must tell you that these boards look good and Frank and his team did a great job of assembly. It was a pleasure to work with you. ”

John Fertig
www.ideinc.com



product design & development

“ I just wanted to thank you for coming through on this last PCB. It's nice to know that we can turn a PCB in a total of 4 if we have to. ”

Tony Eichenlaub
www.edelweiss.com

Edelweiss

Fab and Consigned Assembly

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WHY CIREXX?

Your Company + **CiREXX**
International

EXPERIENCED TEAM : AVG. STAFF TENURE 24 YEARS

ENGINEERING SUPPORT : DFM / FLEX / Rigid-FLEX ENGINEERING SUPPORT

QUICK TURNAROUND : LESS THAN 5 DAY TURN AVAILABLE

SEAMLESS INTEGRATION : DESIGN / FABRICATION / ASSEMBLY/ PRODUCT FULLFILMENT

HIGH TECHNOLOGY : RAPID RESPONSE / PROTO-TYPE TO PROGRAM VOLUME



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