Electrical & Electronic Equipment
Capabilities- Space

Microwave Components

Antennas

Waveguides

Test Benches

Microwave Subsystems

Slip rings
Cobham Microwave at a glance

### Company
- **2 legal entities:**
  - Chelton Telecom & Microwave
  - Hyper Technologies
- **250 employees**
- **3 locations in France**
- **Turnover 35 M€**

### Markets
- **Space:**
  - Satellite payload
  - Ground based
  - 40 years of Space Heritage on >200 satellites
- **Military and security:**
  - Radars
  - Military communication
- **Industrial, scientific & medical**
Space Capabilities

**Waveguide capabilities:**
- Rigid and flexible Waveguides
- Equipments:
  - Couplers
  - Waveguide to coax adapters
  - Q & V band available
- Complex assembly:
  - Matrix, combiner
  - Complete Payload waveguides

**Filters and duplexers:**
- Ceramic Resonators
- Cavity
- Lumped Elements
- Waveguide

**Power test screening:**
- TVAC
- Corona
- Multipactor

**RF PIN diodes**
**RF Modules**
**Ferrite devices**
**Sub-systems:**
- Complete RFDN assembly
- Duplexer assembly
In house Screening capabilities

Cobham Microwave in-house Space and MIL screening processes:

- Electrical testing,
- Thermal vacuum cycling,
- High power testing,
- Semiconductor testing,
- Life tests (HTRB, PBI,...),
- Die shear tests,
- Pull tests, Gross and fine leakage,
- Vibrations and accelerations test,
- PIND tests (Particle Impact Noise Detection)
## Diodes
### ESA QPL – ESCC 5010

<table>
<thead>
<tr>
<th>Sub-Families</th>
<th>Types</th>
<th>Spec.</th>
<th>Status</th>
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<tbody>
<tr>
<td>Varactors, Multipliers</td>
<td>DH 267, 252, 256, 292, 294</td>
<td>5512/016</td>
<td>Extended</td>
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<tr>
<td>Varactors Tuning</td>
<td>DH 76 XXX</td>
<td>5512/023</td>
<td>Added</td>
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<tr>
<td>PIN, Fast Switching</td>
<td>DH 50151 – DH 50157</td>
<td>5513/031</td>
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<td>DH 50201 – DH 50209</td>
<td>5513/033</td>
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<td>DH 50251 – DH 50256</td>
<td>5513/034</td>
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<td>PIN, Ultra Fast Switching</td>
<td>DH 50033 – DH 50037</td>
<td>5513/032</td>
<td>Qualification</td>
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<td>DH 50052 – DH 50057</td>
<td>5513/036</td>
<td>Renewal in progress</td>
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<td>DH 50071 – DH 50077</td>
<td>5513/037</td>
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<td>DH 50101 – DH 50107</td>
<td>5513/038</td>
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<td>MOS Capacitors</td>
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<td>Added</td>
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*Commercial in Confidence*
Ferrites Activity
Space qualified products

High power

Coaxial TNC Isolator
2 to 4 Ghz
200W
ESA QPL in 2016

Coaxial TNC Isolator
3.4 to 4.8 Ghz
160W
ESA QPL in 2016

Waveguide WR51 Isolator
17 to 22 Ghz
350W
ARTES Project

Low power

Coaxial SMA 2.9 Isolator
27 to 32 Ghz
1W
ESA QPL in 2016

Coaxial SMA 3.5 Isolator
7 to 22 GHz
1w
ESA EPPL in 2012
Ferrites Activity Roadmap

**SMALL COMPONENTS**

MICROSTRIP, SMD

Qualification for Space applications

**COAXIAL & WAVEGUIDE COMPONENTS**

Higher frequencies & Higher power capability
Space Modules Portfolio

**RF Hybrids:**
Up to 18 GHz
- Amplifier (ESA ECI prg*)
- Mixer (ESA ECI prg*)
- Switch
- Power Divider
- 3dB Hybrid Coupler
- Transformer
- Driver
- I & Q Demodulator

**SMD Hybrids:**
Up to 4 GHz
- Mixer
- Impedance Transformer

**Coaxial RF passives:**
Up to 32 GHz
- Power Divider/ Combiner (2, 3, 4, 5... up to 10 ways)
- Directional Coupler
- 3dB Hybrid Coupler
- Multi Hybrid assembly

* : ECI : European Components Initiative
Thank you

See you on our booth &
during our private roadmap

Friday 14h30 - 15h