Smiths Interconnect (SINT), Microwave products

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No Licence Required
Smiths Interconnect (SINT) Microwave passive components

- Facilities are based in Dundee, Scotland (TRAK), Northampton, Mass. (Millitech), Stuart, Florida (EMCT) & Salisbury, Maryland (Lorch) each specialising in the design & production of passive components and/or sub-systems for the commercial and institutional established reliability community.

- Currently, Space products and variations are introduced at a rate of 1 per week and increasingly these are as a result of our passive component product roadmaps.
  1. Very high power waveguide isolators, circulators, transition, hybrids and test couplers etc.
  2. Q & V-band: focused on in house capability to support development, test & screening
  3. Integrated signal combining & splitting: realised in stripline/coax and waveguide
  4. Accessible solutions for GEO and “new space”; constellation applications

New in the past 12 months: Ku-Band termination, S-Band circulator, Ku-Band TNC load, isolated combiner and Ka-band test coupler
Space roadmap features

- “Space” is attracting **significant** internal investment & senior management attention within SINT. The roadmap features provides direction and alignment within the business. It also features

- **Force multiplier:** Building on the capabilities of the 4 sites in the SINT family

- **Accessibility:** Focused on developing and qualifying suites of broader band products. Potentially lower costs e.g. using, where appropriate, SINT LCM. IITAR free

- **Simplification:** e.g. no precious metal plating and no tuning e.g. broader band in preference to ultimate performance

- **Capability**
  All testing and screening undertaken using **internal** capabilities

- **Scale:**
  The ability to industrialise from GEO to constellation volumes are being addressed

- **Structure:**
  A methodology to approach the next products, bands etc. e.g. E & W-Bands

**New in the past 12 months:** Integrated functionality and structure, C-Band circulator, K-Band filtered iso-adapter, miniature SMA isolators, 15dB coupler
Roadmap focus 2: QV Band passive components

- SINT is investing in products and crucially, in screening capability, for GEO & constellation payloads (e.g. a 250W Q-Band RF test source and an expanded TVAC facility in Dundee).

- **Q-Band: WR22:** (but also non standard WR)
  - Low Loss Isolators (37.5-42.5 GHz) *Heritage*
  - Full band 2W terminations (30.0-50.0 GHz) *Heritage*
  - 3dB hybrids (37.5-40.0 GHz) *Heritage*
  - 2.92 and 2.4mm transitions (37.5-42.5 GHz) *Qual ’n / Dev’t*
  - Isolated combiners/splitters (37.0-40.0 GHz) *Qualified*
  - High power Circulators and remote loads *Development*
  - Signal combination and band filtering *Development*

- **V-Band: WR19:** (but also non standard WR)
  - Low Power Isolators (47–52 GHz) *Heritage*
  - Full band terminations (40-60 GHz) *Heritage*
  - Signal splitting and combining *Development **
  - “1.8mm” transitions (47–54 GHz) *Development **

- This feeds into the integration arm of the roadmap

* Development underway and qualification expected to be completed by Q2 FY 2019
** development planned to commence within the coming 6m
Roadmap 2 example: WR19 low power isolator

- LNA/Receiver application.
- Novel, tuneless internal structure
- No precious metal plating – passivated Aluminum
- Performance achieved over a 100C operating window
- Qualified and flown 2017
Development: Integration, & Power – SPACE NXT©

SPACE NXT© is SINT’s demonstration of its commitment to the space industry. It is an initiative to fund capability and the development and qualification of a range of next generation products including many of those featured in the roadmap.

**Integrated microwave assemblies**
- Manifolds in K and Ka-Bands
- Low cost Q-Band isolated/filtered combiners
- Isolating combiners & splitters

**High Power Passive products**
- 400W CW, WR112 circulator, remote termination, hybrid and test coupler – in qualification
- 300W CW, WR75 circulator and remote termination and hybrid - qualified
- 200W CW, WR51 & 100W Q-Band circulator and remote termination,– in development

*S-Band 6 channel phase and delay matched isolated splitter*