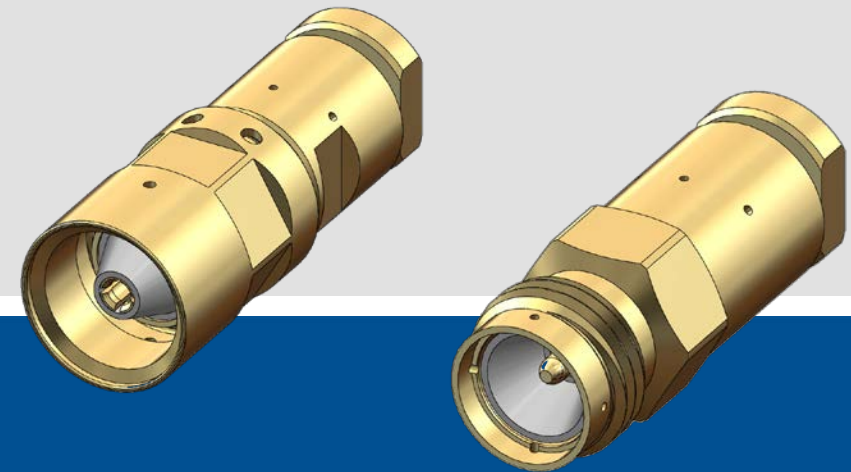
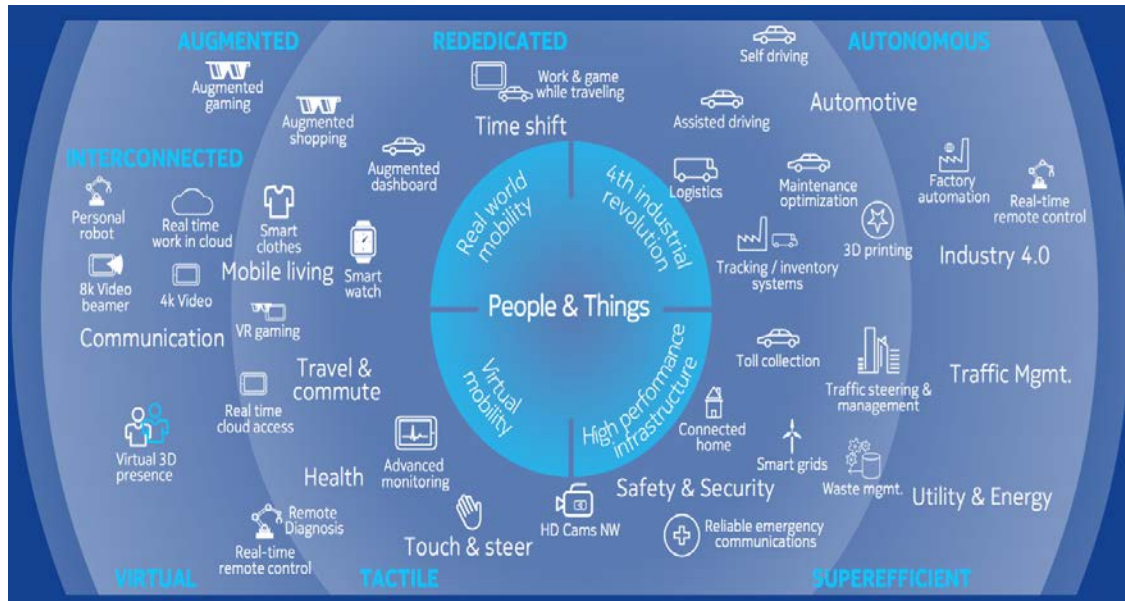


Power Sub Miniature (PSM) Interface

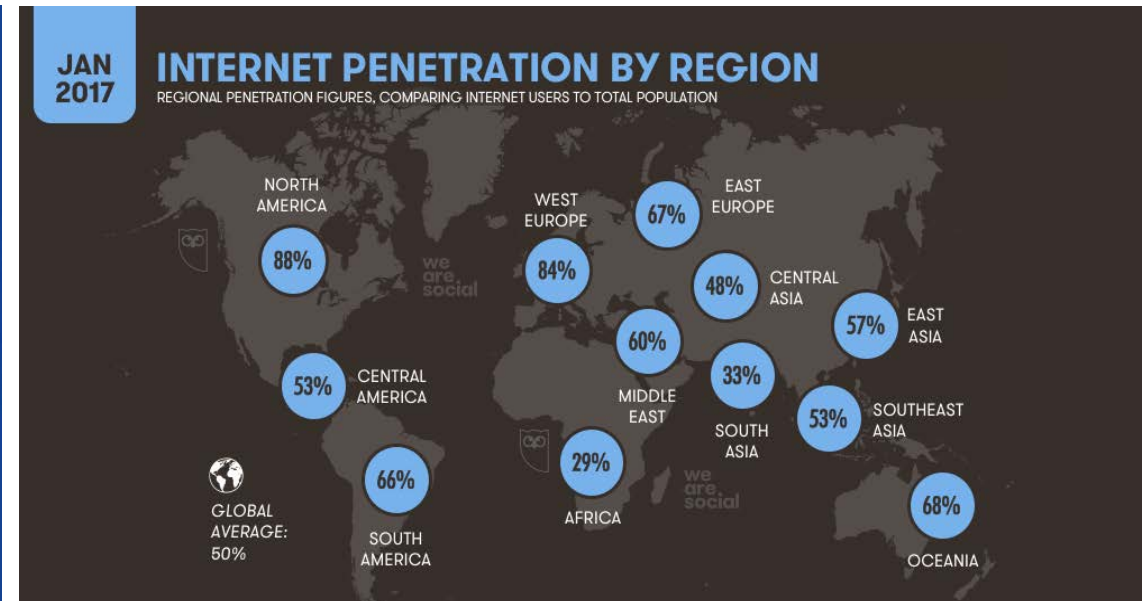


Satellite Manufacturer Market Growth Drivers

5G Internet of Things (IoT)



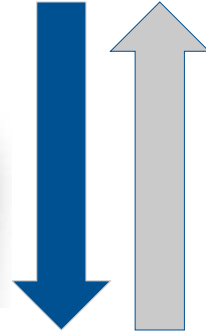
Global Internet Access



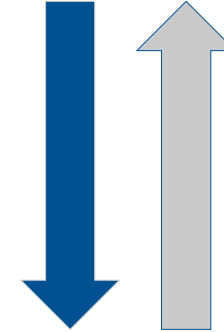
SMA vs. TNC



Weight



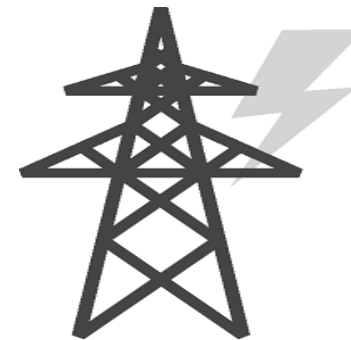
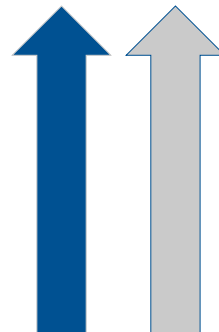
Size



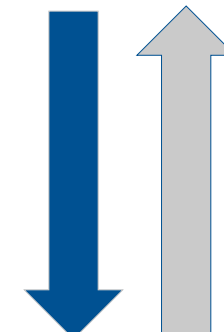
 SMA
 TNC



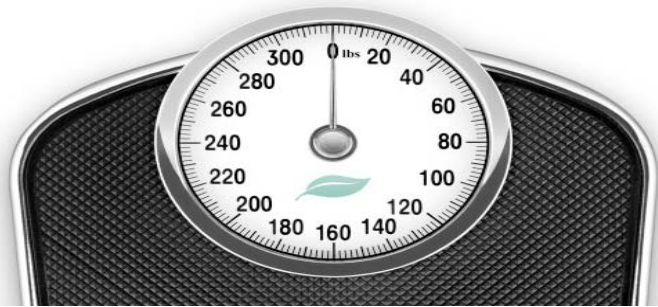
Performance



Power Handling



Power Sub Miniature (PSM) Interface



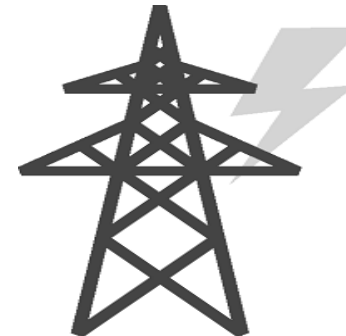
Weight



Size

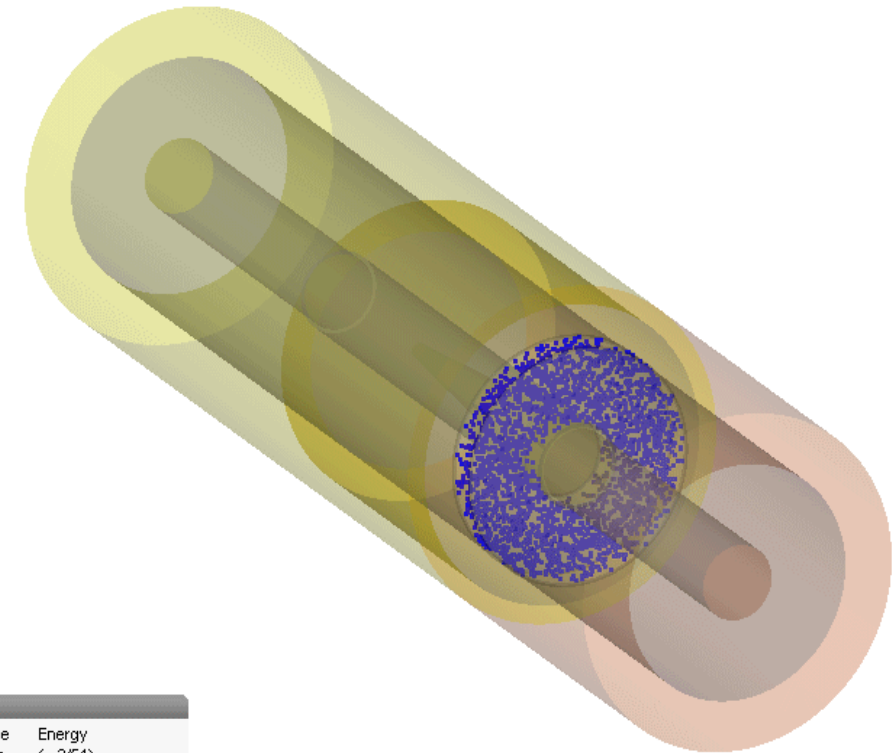
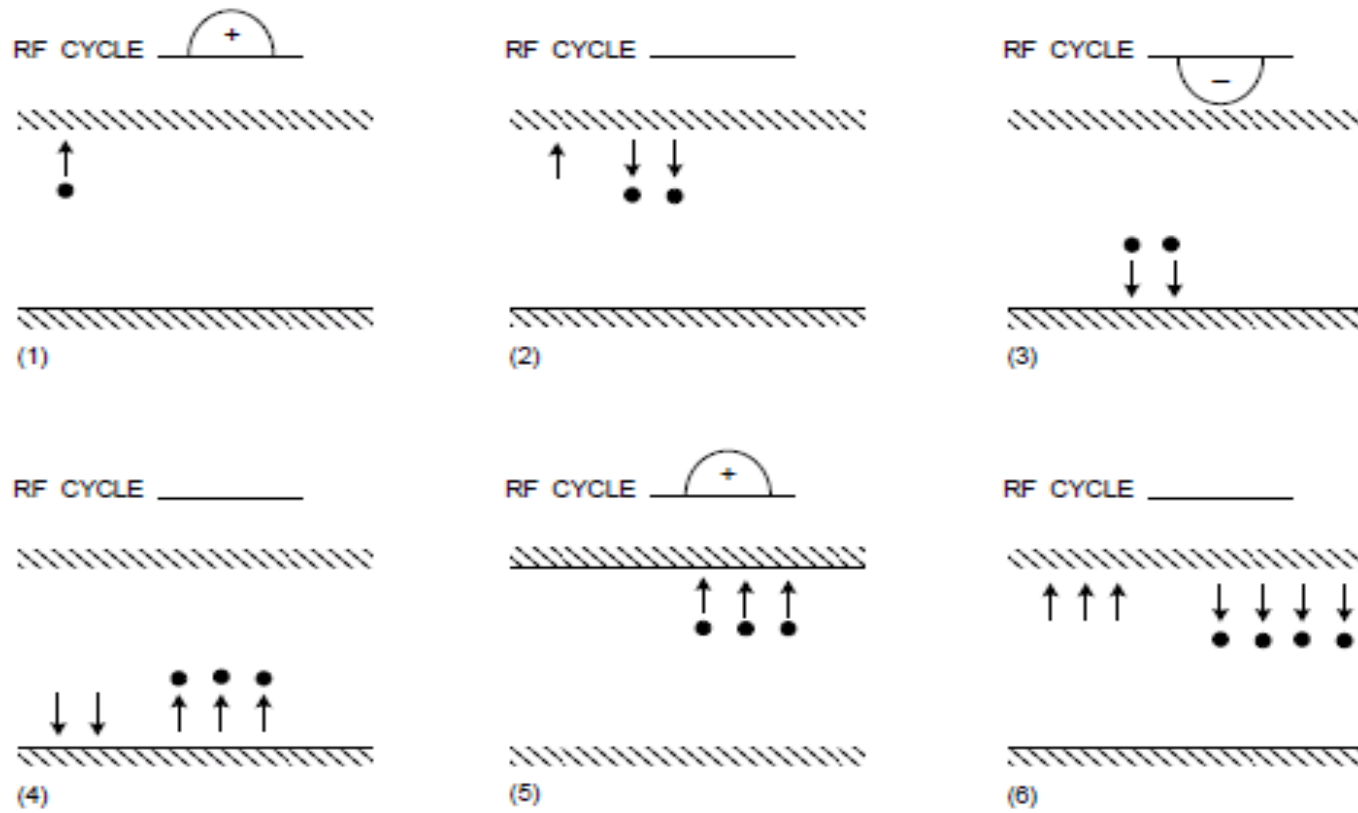


Performance



Power Handling

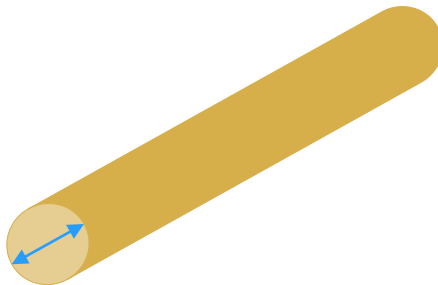
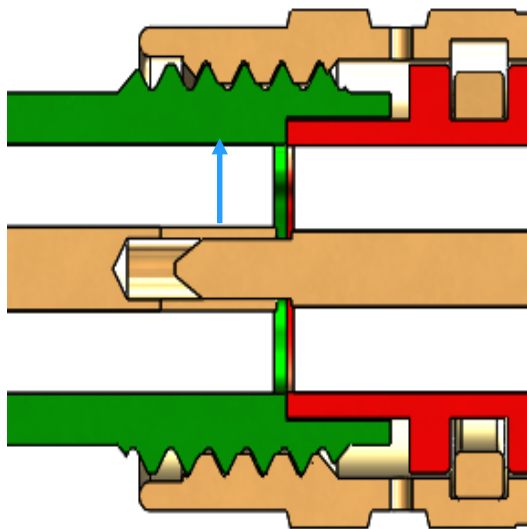
Multipaction and Corona Breakdown



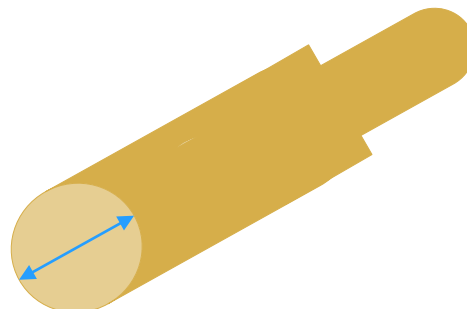
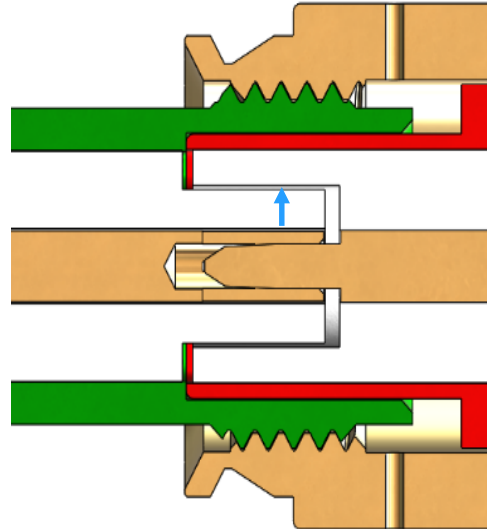
Plotype	Energy
Sample	(2/54)
Time	1.001e-001 ns
Particles	5000

PSM Design Features

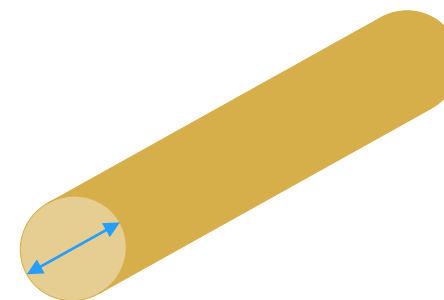
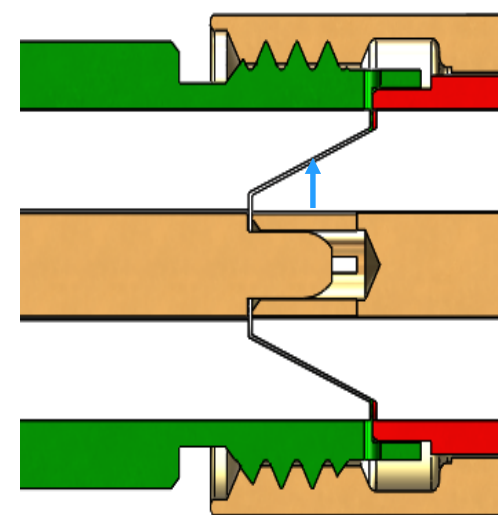
SMA



TNC



PSM



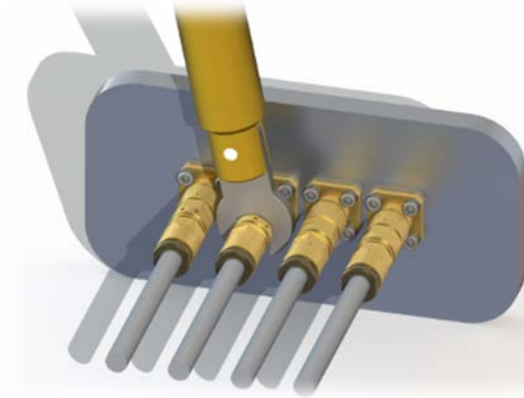
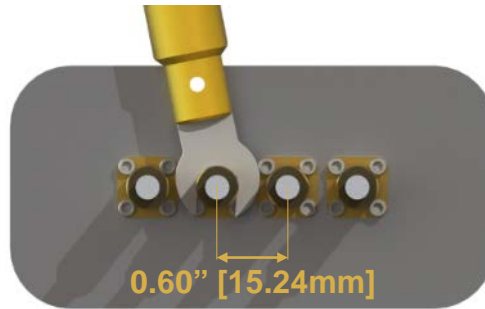
- Cone/Wedge shaped dielectric
- Overlapped dielectric
- Larger coaxial line than SMA
- Uniform coaxial line
- Vent holes

PSM Design Features

PSM



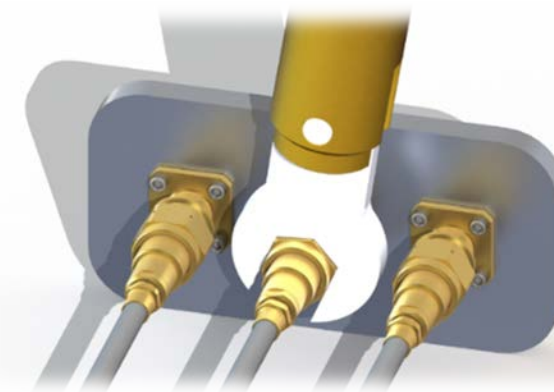
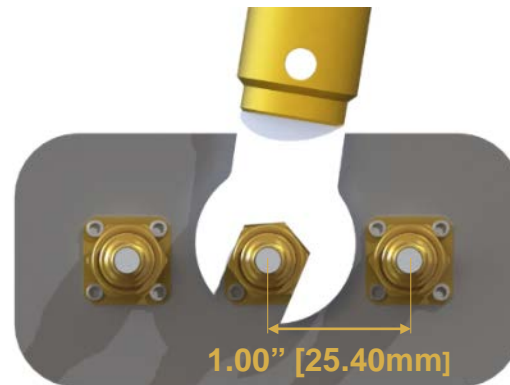
[XX grams]



TNC



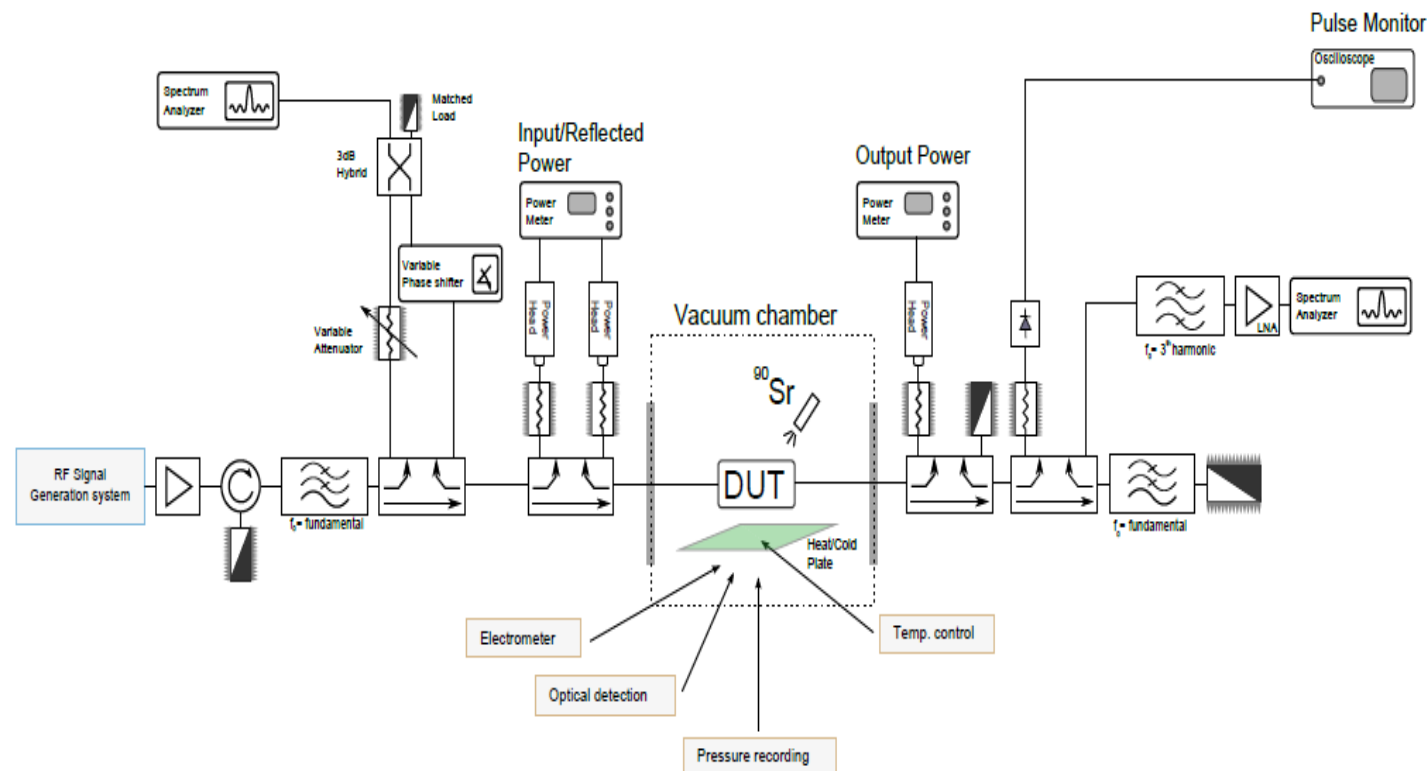
[XX + 50% grams]



Qualification

The interface has successfully completed both MIL-PRF-39012 and ESCC 3402 qualifications.

The interface has successfully completed Multipaction / Corona / CW Power Handling Tests (ESA-VSC)



Brief summary of completed tests**	
Corrosion	✓
Durability	✓
DWV	✓
Random & Sine Vibration	✓
Mechanical Shock	✓
Thermal Shock	✓
Corona	✓
RF High Pot	✓
Cable Retention Force	✓
RF Leakage	✓
VSWR / IL	✓

***A qualification test report can be provided upon request*

Qualification

High Power Test Results (provided by ESA-VSC)

High Power Test Results	Frequency	Temperature	RF Power
Multipactor	1 GHz	+22°C	800 W peak
Power Handling (in vacuum)	1 GHz	+60°C	130 W CW
Power Handling (in vacuum)	4 GHz	+60°C	110 W CW
Power Handling (in vacuum)	11.6 GHz	+60°C	100 W CW
Corona	1 GHz	+22°C	100 W CW
Destructive Corona ¹	1 GHz	+22°C	800 W peak (1 hour)
Destructive Multipactor ²	1 GHz	+22°C	1500 W peak

¹ No breakdown was detected at 800 W peak. The maximum RF power capability of the test bed was 800 W peak for corona detection.

² No breakdown was detected at 1500 W peak. The maximum RF power capability of the test bed was 1500 W peak for multipaction detection.

Performance Specification

Environmental data	
Temperature range	-65°C to +160°C (thermal vacuum test)
Thermal shock	MIL-STD-202, Method 107 Condition B
Moisture resistance	MIL-STD-202, Method 106
Corrosion	MIL-STD-202, Method 101 Condition B
Sine vibration	MIL-STD-202, Method 204, 28 g peak
Random vibration	MIL-STD-202, Method 214 Condition K-I, 46.3 g
Shock	MIL-STD-202, Method 213, 12000 g peak
Electrical Data	
Frequency Range	DC – 18 GHz
Return Loss (typical)	1 GHz: 36 dB ; 4 GHz: 31 dB ; 12 GHz: 28 dB ; 18 GHz: 26 dB
Insertion Loss (typical)	0.05 dB
Final specification	150 W CW at 1 GHz 76 W CW at 4 GHz 40 W CW at 12 GHz
Corona Threshold	200 W Peak
PIM performance (2x20W)	-168 dBc (3 rd order power at 1900 MHz)

Product Portfolio

Cable Connectors



11_PSM-50-3/4-1/111_UE



21_PSM-50-3/4-1/111_UE



Can be combined with the following cable types:
Flexible cables: Mini 141 H (32021E), SUCOFLEX 329,
Semi-Rigid cables: 35000 (low loss), EZ 141(MIL-DTL-17)

Adaptors



33_TNC-PSM-50-1/119_UE



31_PSM-PSM-50-1/11-_UE



33_PC35-PSM-50-1/119_UE



33_TNC-PSM-50-1/119_UE

Hermetic



31_PSM-TNC-50-1/111_UE

Surface & Panel Mount



23_PSM-50-0-2/111_UE



96_PSM-50-0-1/111_NE

Suitable Applications



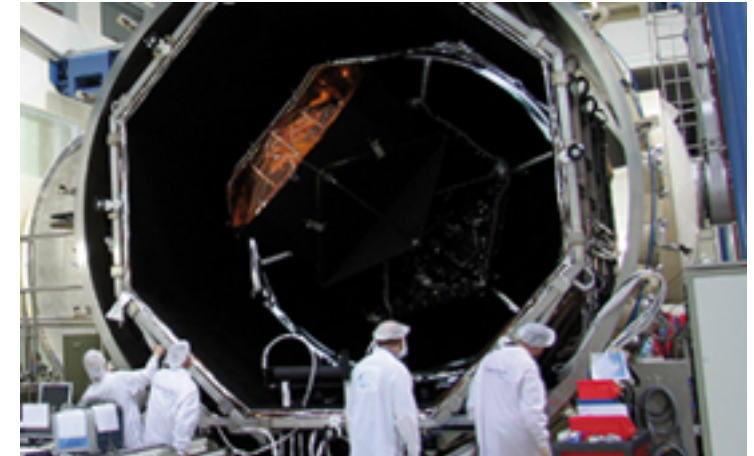
Space Flight

- Payloads
- Power Amplifiers
- Phased Array Antennas
- Traveling-Wave-Tube Amplifiers (TWTAs)



High Altitude Platforms

- Traveling-Wave-Tube Amplifiers (TWTAs)
- Power Amplifiers
- Phased Array Antennas
- Tx Modules and Antenna Connections



TVAC Environments

- Adaptors
- Coaxial-Waveguide Junctions
- Coaxial Microwave Interconnections

Questions?

Hasteen Jobalia
Senior Application Engineer – Space Flight
HUBER+SUHNER Astrolab
hasteen.jobalia@hubersuhner.com