



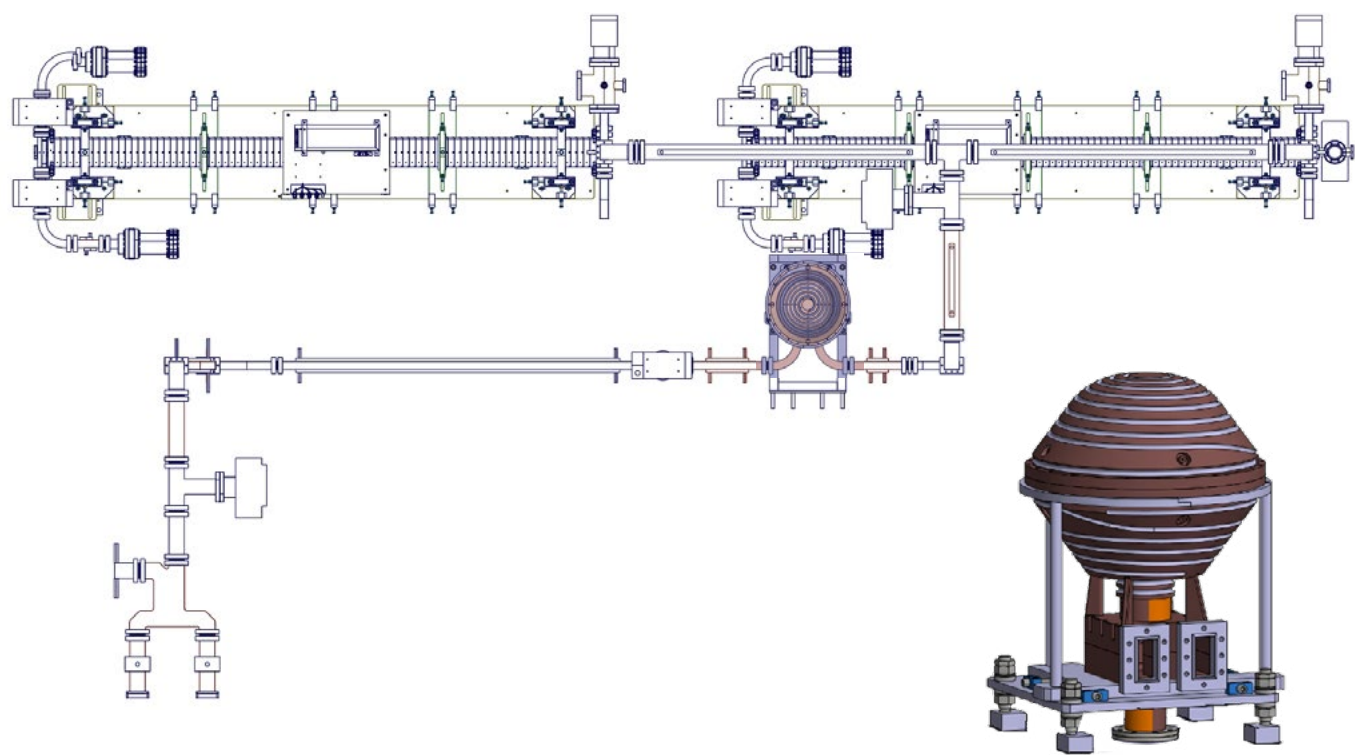
High Power Waveguide Components

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Spherical Pulse Compressor

Compact Single Cavity, High Efficiency Tuneable RF Energy Amplifier



Highlights

Feature	Benefit
OHFC (Oxygen Free High Conductivity Copper) waveguide	Fit to operate in Ultra High Vacuum (UHV) environment
Copper gasket sealing	High Vacuum Rate $<1.3E^{-11}$ [Pa·m³/sec]
316 L Stainless Steel Flanges	Strong and vacuum compatible
Frequency tune: Enable	Compensate for the fabrication errors
RF detune: Enable	Decouple the compressor from the waveguide system
High shunt impedance and Q factor	Higher efficiency

Application

Single spherical cavity is used to store RF energy which is fed to pulse compressor using a compact RF polarizer.

Specifications

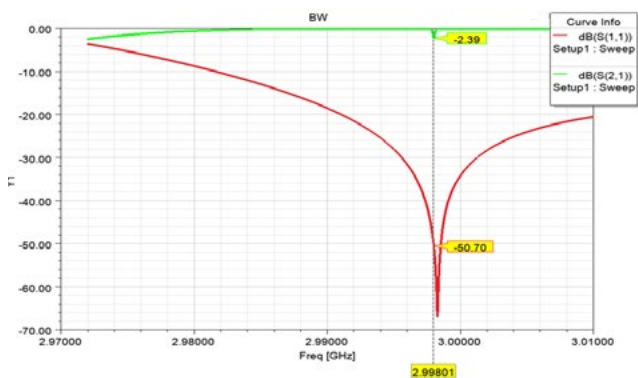
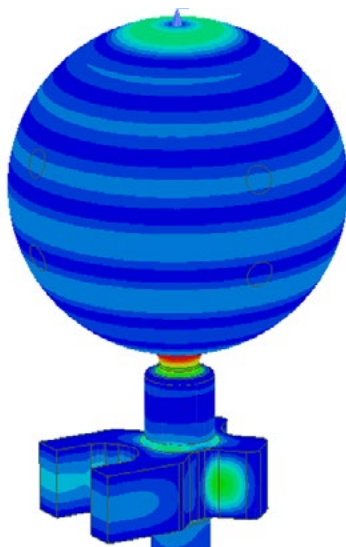
Parameter	Value
Operating Temperature	33 ±0.5 C
Operating frequency	2998.01 MHz
Quality factor	>140,000
Coupling coefficient	7
Cavity Mode	TE _m 13
Max Peak Power	400 MW
Pulse length	1μs
Repetition Rate	60 Hz
Max. Average RF Power	≈23 kW

Technical Support

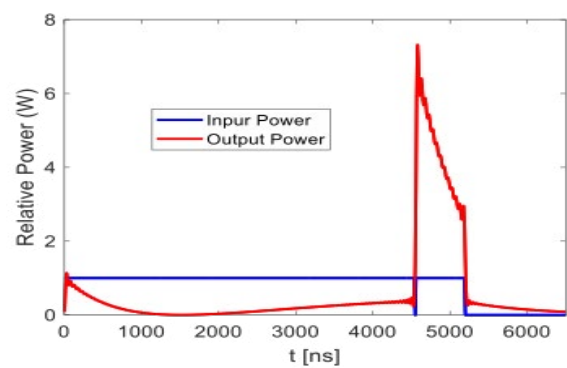
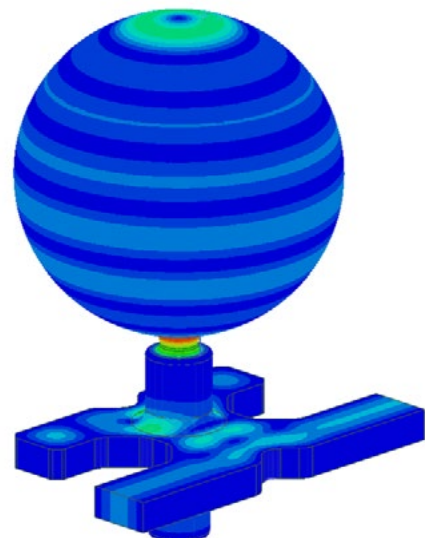
- Design and manufacturing
- Low power testing and reports
- Conditioning, high power testing and reports
- Complete engineering support for customization and installation



E-Plane Version

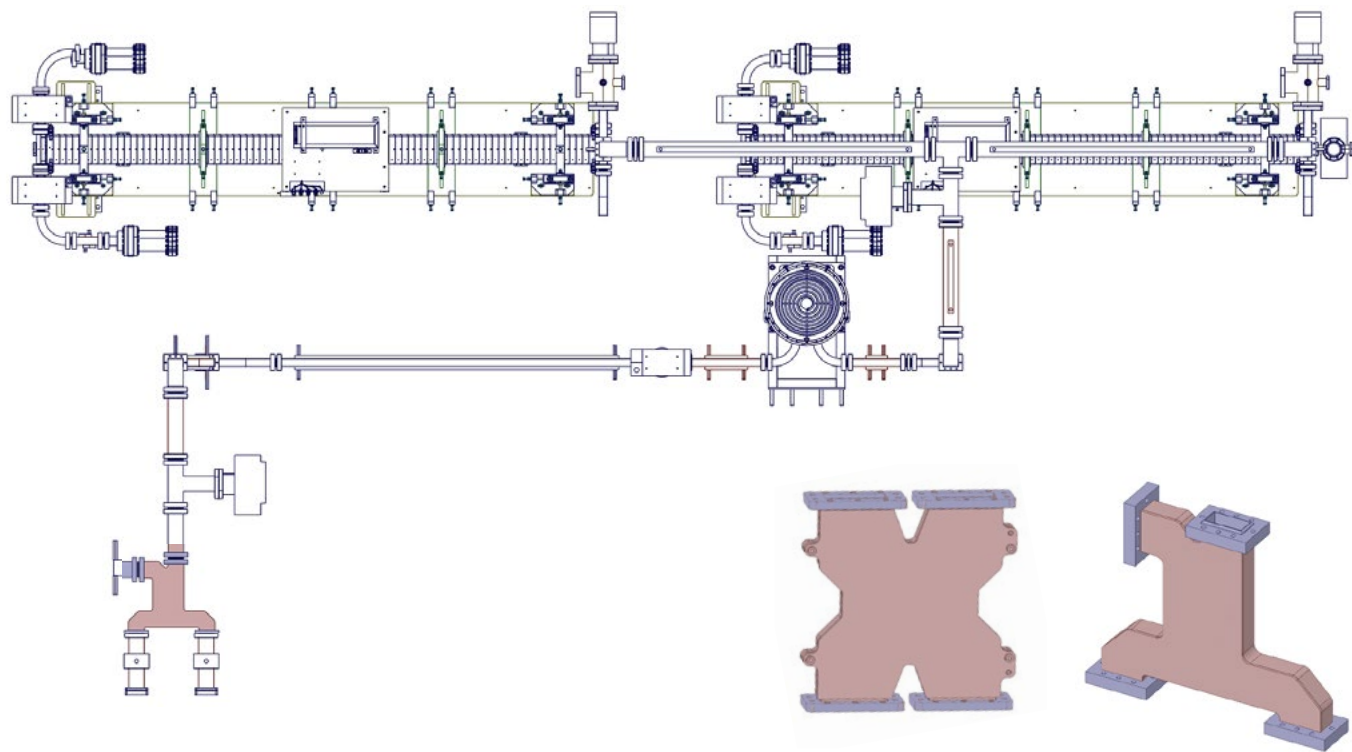


H-Plane Version



Compact 3-dB Hybrids

Compact, stub free, high power



Highlights

Feature	Benefit
OHFC (Oxygen Free High Conductivity Copper) waveguide	Fit to operate in Ultra High Vacuum (UHV) environment
Copper gasket sealing	High Vacuum Rate <1.3E-11[Pa-m³/sec]
316 L Stainless Steel Flanges	Strong and vacuum compatible
Stub free design	Low chances of arcing

Application

Compact UHV compatible design available in many variants to according to the need of waveguide layout. Optimized for high power operation at high repetition rate. The power at the input

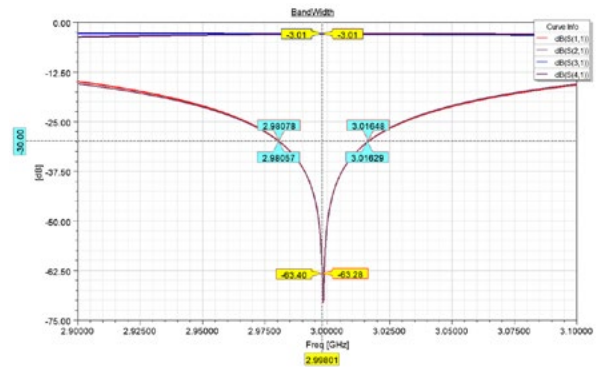
port is divided into half and delivered at the output ports with the phase difference of 90 degrees.

Specifications

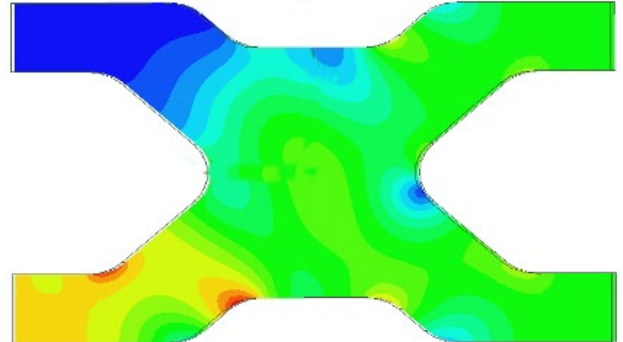
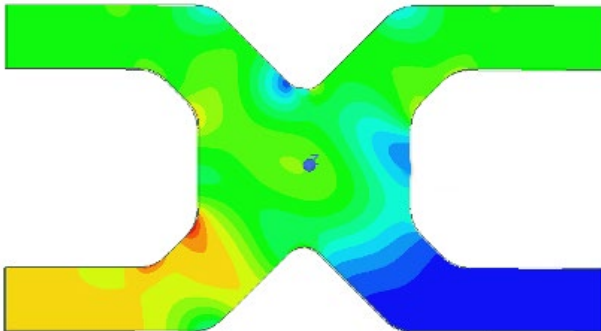
Parameter	Value
Operating frequency	2998.01 MHz
Bandwidth @ -30 dB	75 MHz
VSWR	<1.01
Pulse length	5μs
Repetition rate	60 Hz
Max peak power	200 MW
Max average RF power	≈20 W

Technical Support

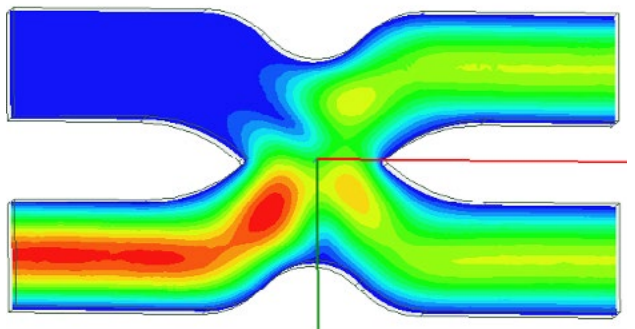
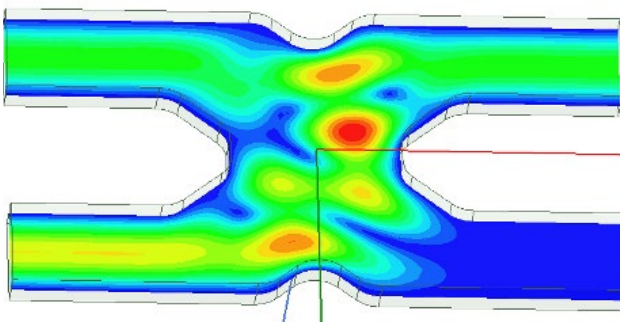
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E-Plane Variants

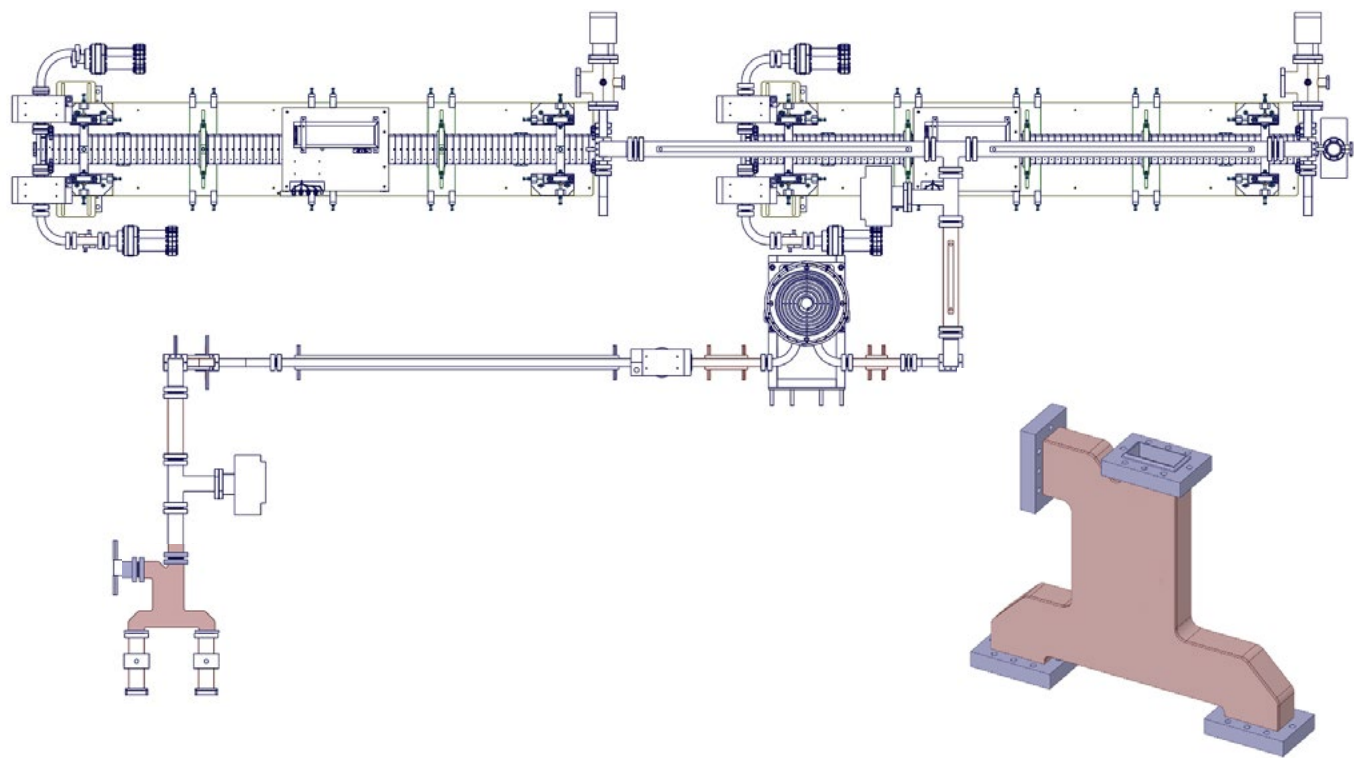


H-Plane Variants



Re-Combiner

Compact, UHV, high power



Highlights

Feature	Benefit
OHFC (Oxygen Free High Conductivity Copper) waveguide	Fit to operate in Ultra High Vacuum (UHV) environment
Copper gasket sealing	High Vacuum Rate <1.3E-11[Pa-m³/sec]
316 L Stainless Steel Flanges	Strong and vacuum compatible

Application

Combines the power from the input ports and deliver the sum on the output port. If both input ports are phase matched then no power goes to the isolation port which is terminated with the

small load to absorb the power in case of mismatched input ports. Designed to combine power for two arms klystron.

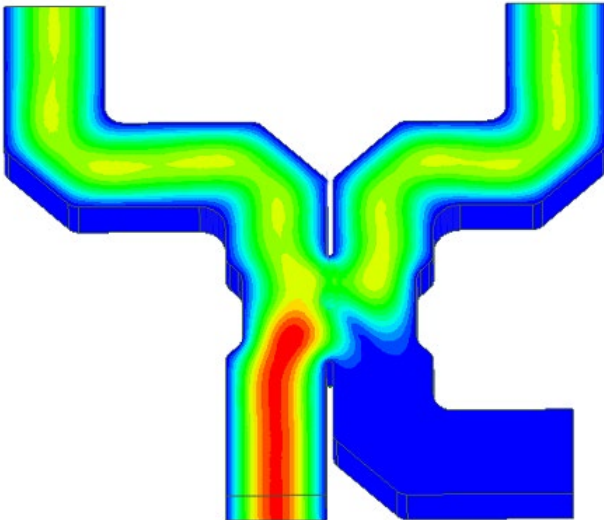
Specifications

Parameter	Value
Operating frequency	2998.01 MHz
Bandwidth @ -30 dB	75 MHz
VSWR	<1.01
Pulse length	5 μ s
Repetition rate	60 Hz
Max peak power	200 MW
Max average RF power	$\approx$ 20 W

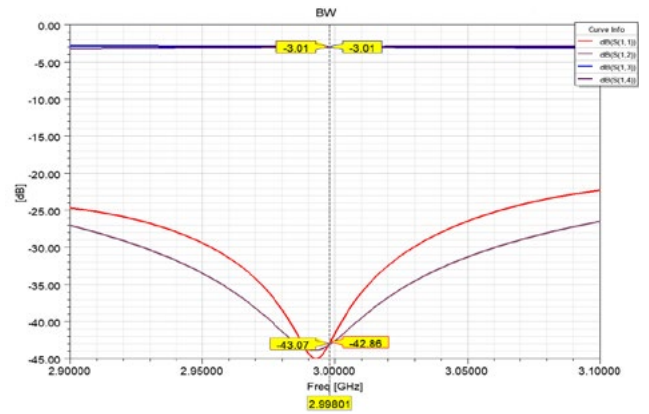
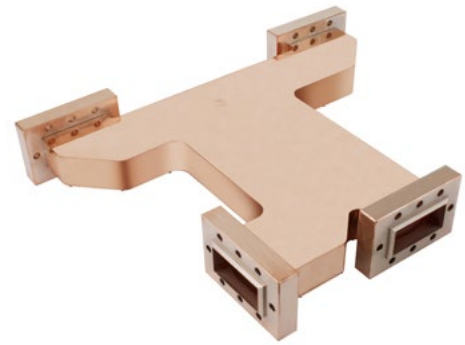
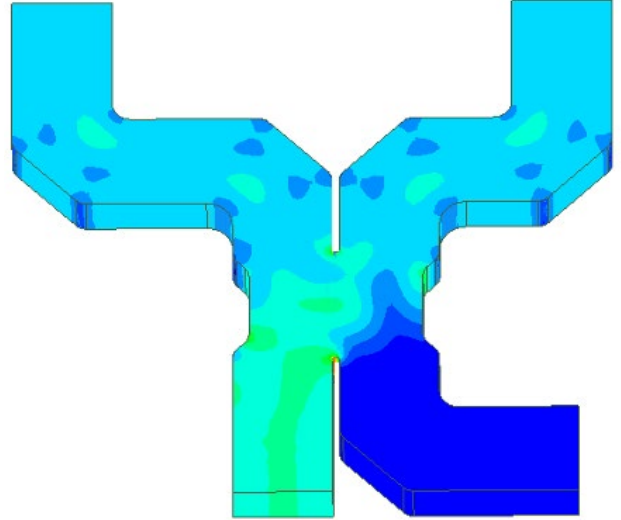
Technical Support

- Design and manufacturing
- Low power testing and reports
- Conditioning, high power testing and reports
- Complete engineering support for customization and installation

E-Field

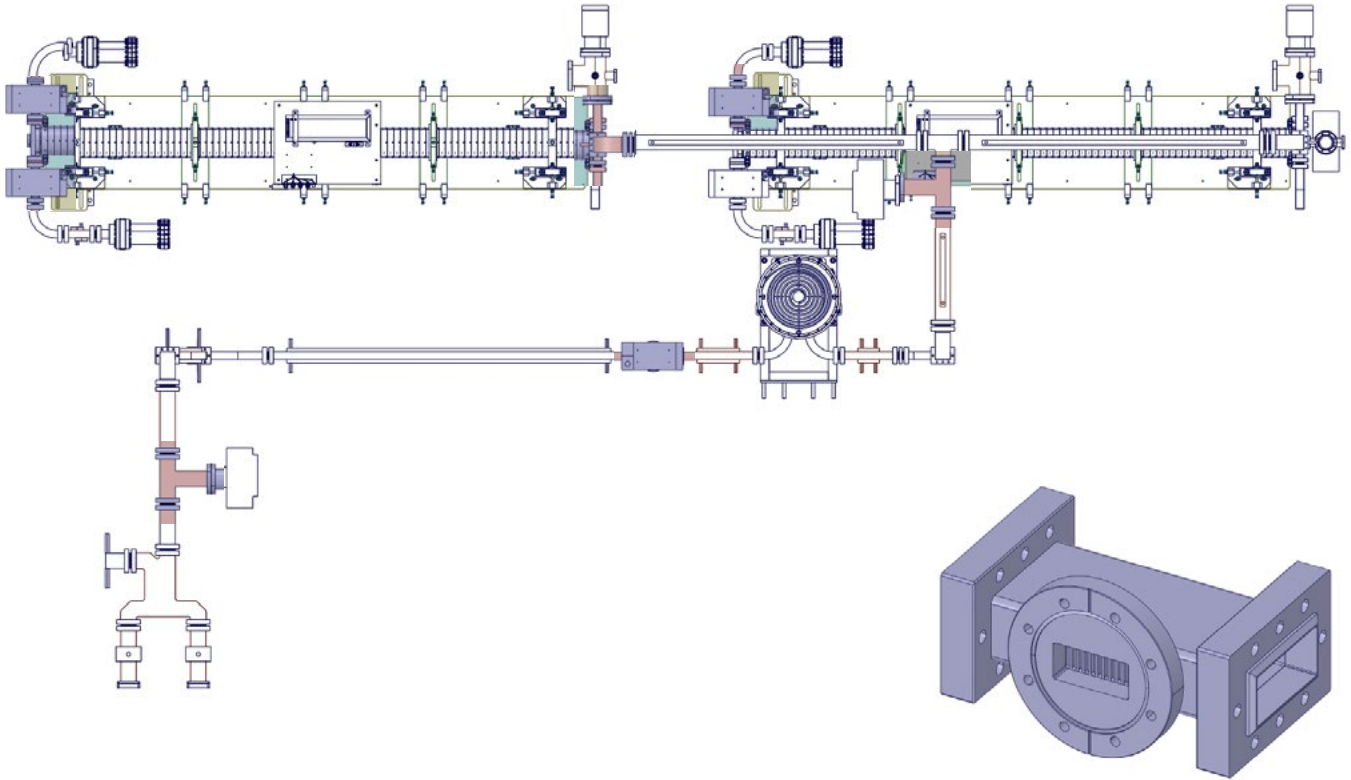


H-Field



Pumping Ports

Compact, UHV, high power



Highlights

Feature	Benefit
OHFC (Oxygen Free High Conductivity Copper) waveguide	Fit to operate in Ultra High Vacuum (UHV) environment
Copper gasket sealing	High Vacuum Rate <1.3E-11[Pa-m³/sec]
316 L Stainless Steel Flanges	Strong and vacuum compatible

Application

Compact UHV compatible design available in S and X bands. Optimized for high power operation at high rep. rate. The pumping

ports are available in gridded as well as in plated solutions both of which are optimized for HOMs blocking and effective pumping.

Specifications

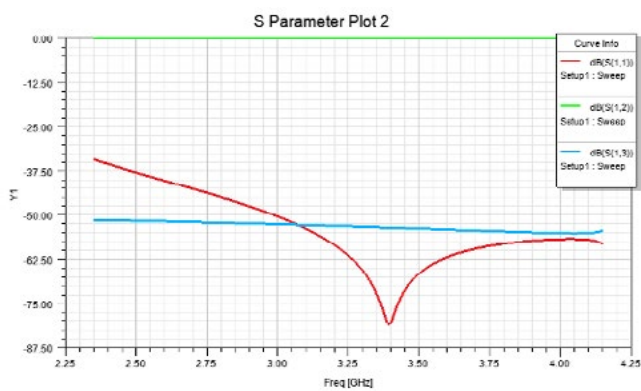
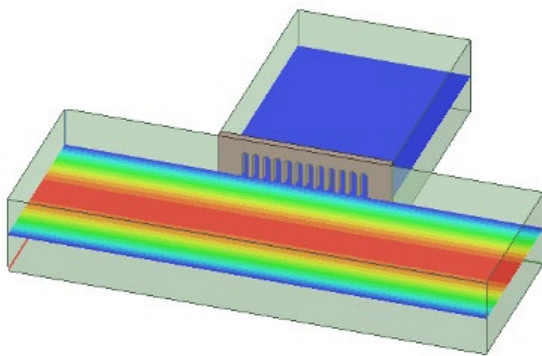
Parameter	Value
Operating frequency	2998.01 MHz
Bandwidth @ -30 dB	100 MHz
VSWR	<1.01

Technical Support

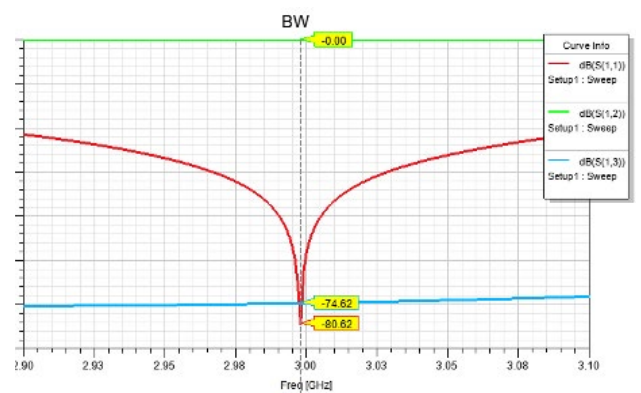
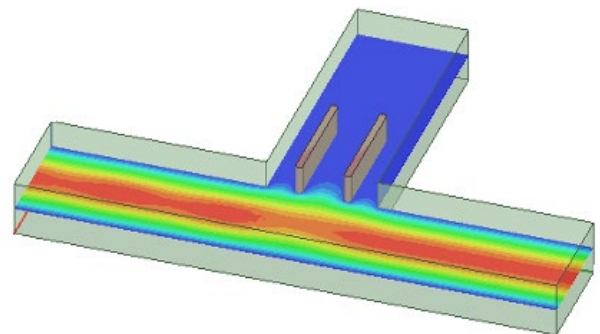
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Gridded Solution

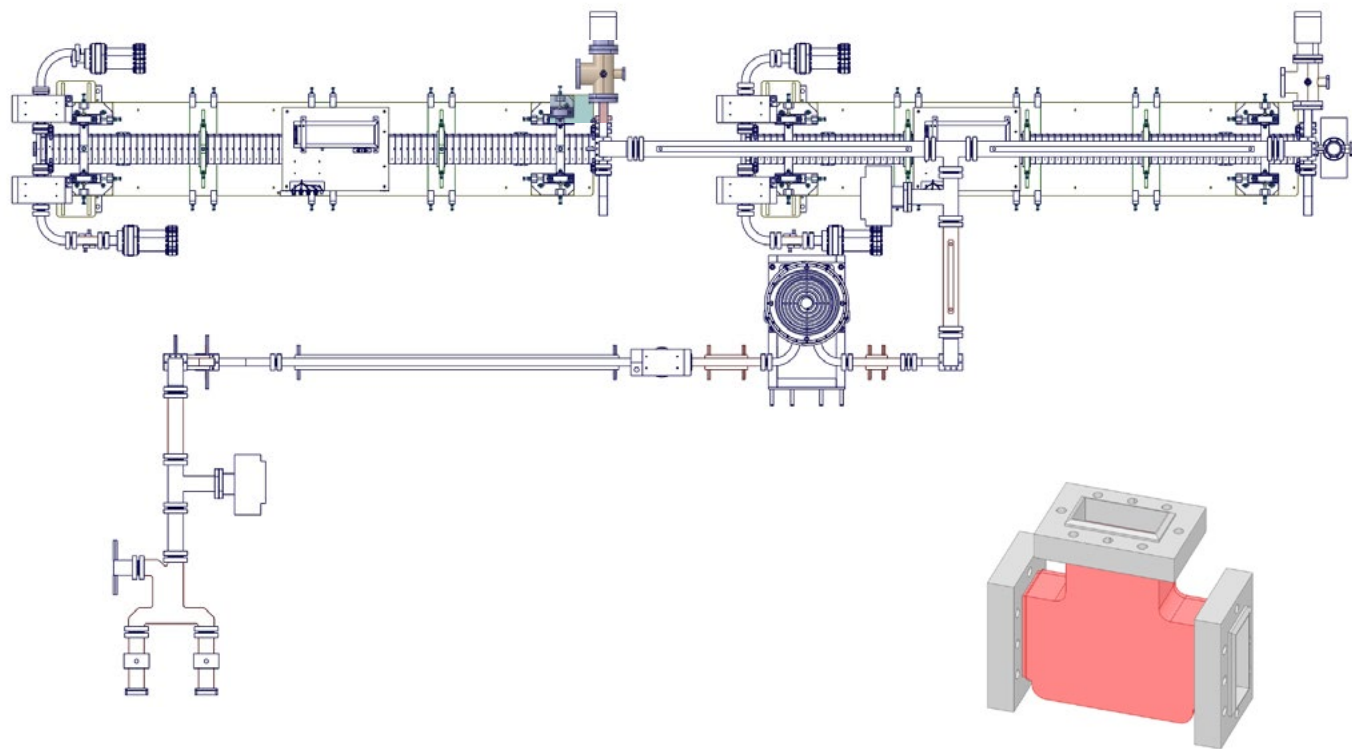


Plated Solution



Power Splitter

Compact, stub free, high power



Highlights

Feature	Benefit
OHFC (Oxygen Free High Conductivity Copper) waveguide	Fit to operate in Ultra High Vacuum (UHV) environment
Copper gasket sealing	High Vacuum Rate <1.3E ⁻¹¹ [Pa·m³/sec]
316 L Stainless Steel Flanges	Strong and vacuum compatible
Stub free design	Low chances of arcing

Application

Stub free, designed specifically to operate at high powers. The power at the input is divided in half and delivered at the output port perfectly in phase with each other. Absence of any stub

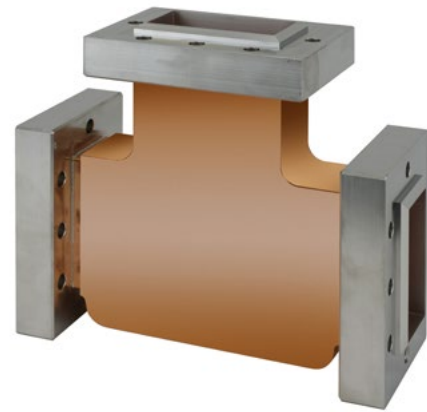
reduced the chances of arcing making it the best candidate for higher power operation.

Specifications

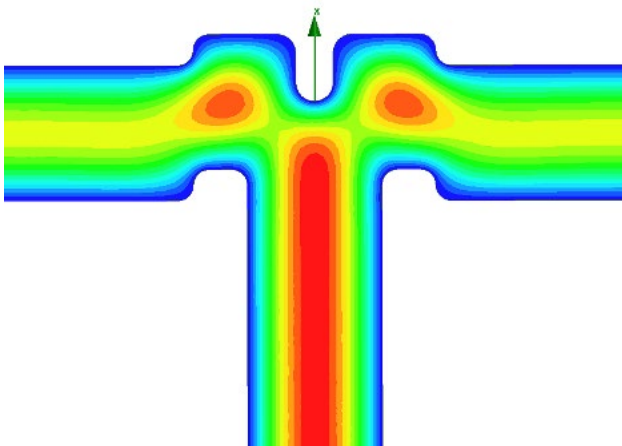
Parameter	Value
Operating frequency	2998.01 MHz
Bandwidth @ -30 dB	65 MHz
VSWR	<1.01
Pulse length	5μs
Repetition rate	60 Hz
Max peak power	200 MW
Max average RF power	≈20 W

Technical Support

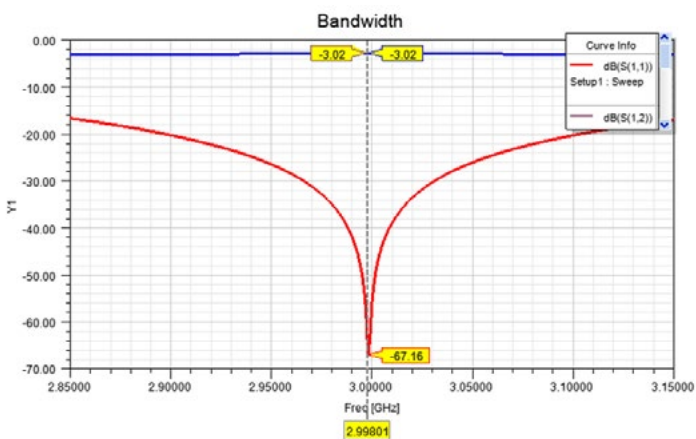
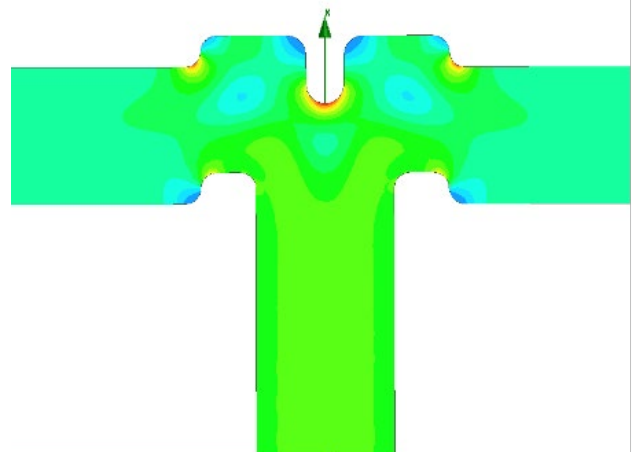
- Design and manufacturing
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E-Field

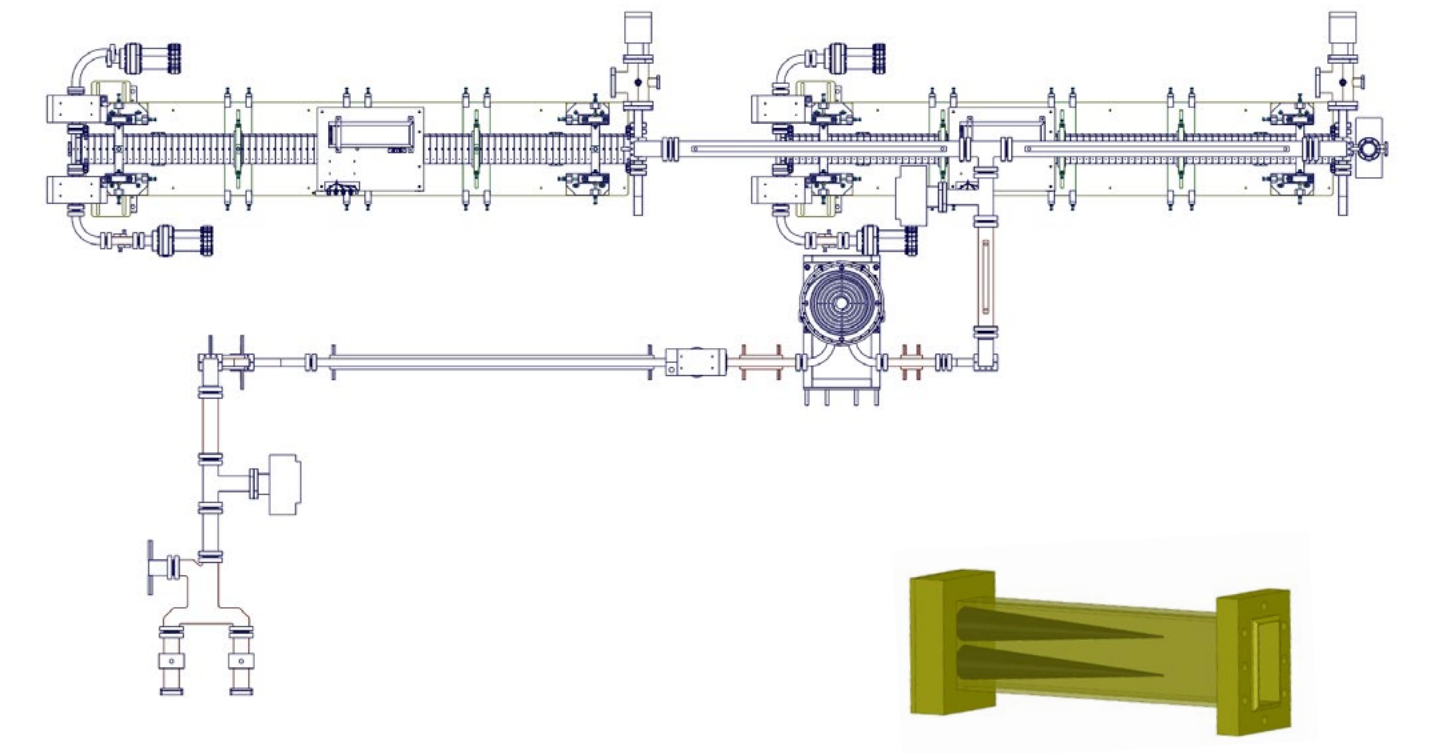


H-Field



Dry Loads

Compact, UHV, high power



Highlights

Feature	Benefit
OHFC (Oxygen Free High Conductivity Copper) waveguide	Fit to operate in Ultra High Vacuum (UHV) environment
Copper gasket sealing	High Vacuum Rate <1.3E-11[Pa-m³/sec]
316 L Stainless Steel Flanges	Strong and vacuum compatible

Application

Compact UHV compatible design available in S and X bands. Optimized for high power operation at high rep. rate. The power

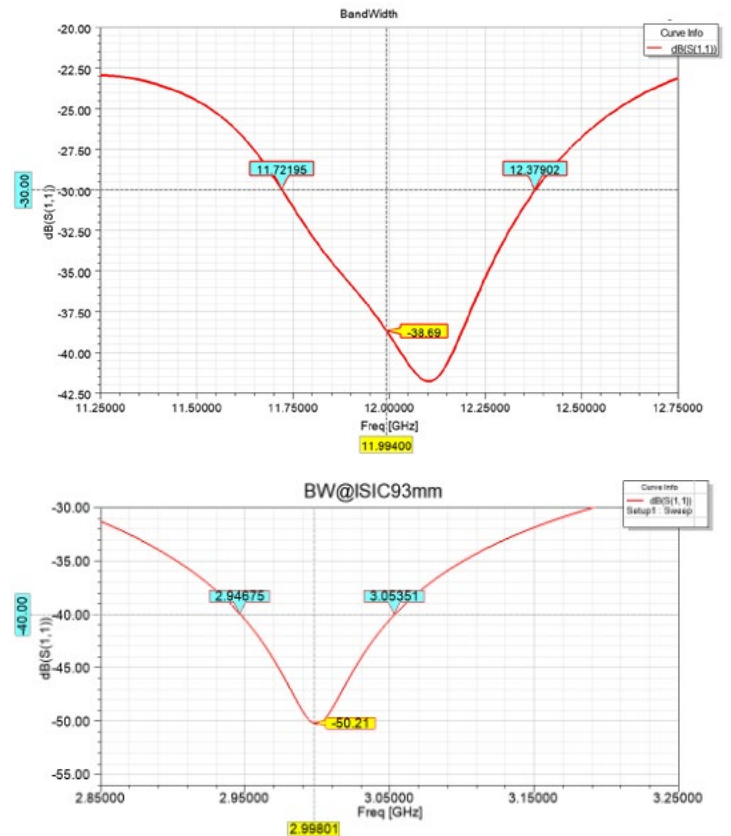
is absorbed by EkasicP cones, number and position of them is optimized to have high power operation.

Specifications

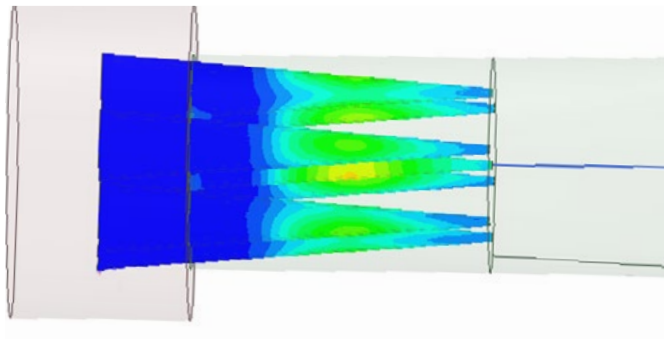
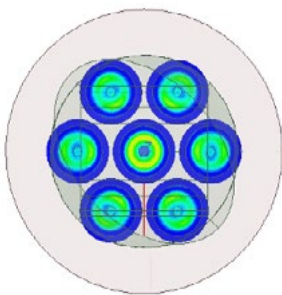
Parameter	Value
Operating frequency	2998.01 MHz, 11994.2 MHz
Bandwidth @ -30 dB	100 MHz
VSWR	<1.01
Pulse length	5μs
Repetition rate	60 Hz
Absorbing material	EkasicP
Max peak RF power	≈20 MW

Technical Support

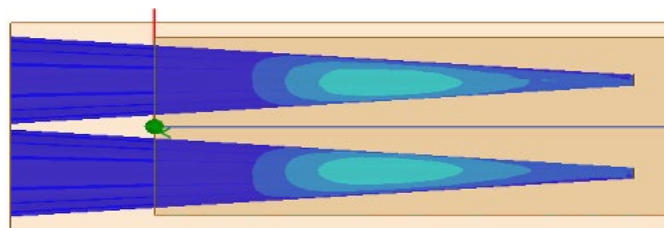
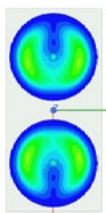
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Seven Cones Solution X-Band

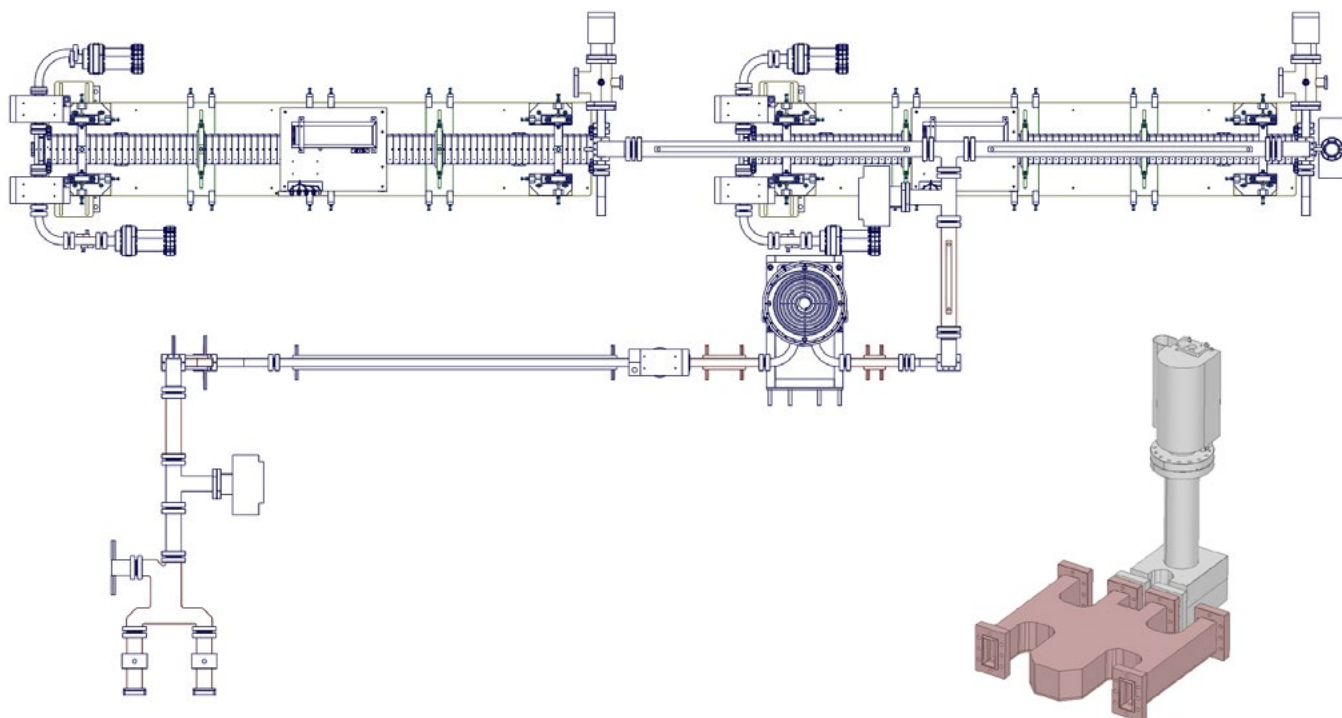


Two Cones Solution S-Band



In-Vacuum Variable Power Divider

Compact, single piston, SF6 free, high power



Highlights

Feature	Benefit
OHFC (Oxygen Free High Conductivity Copper) waveguide	Fit to operate in Ultra High Vacuum (UHV) environment
Copper gasket sealing	High Vacuum Rate $<1.3E^{-11}[\text{Pa}\cdot\text{m}^3/\text{sec}]$
316 L Stainless Steel Flanges	Strong and vacuum compatible
No SF6 (All vacuum based)	Simple and compact waveguide layout without RF windows
Single piston based design	Linear with high precision
Special choke design	Proper higher order modes damping
Two configurations for both E and H plane versions	Making installation simpler and economical

Application

A single piston designed specifically for high power operation and HOMs damping is used to control the phase linearly and precisely at the output port of compact orthogonal mode launcher. Very

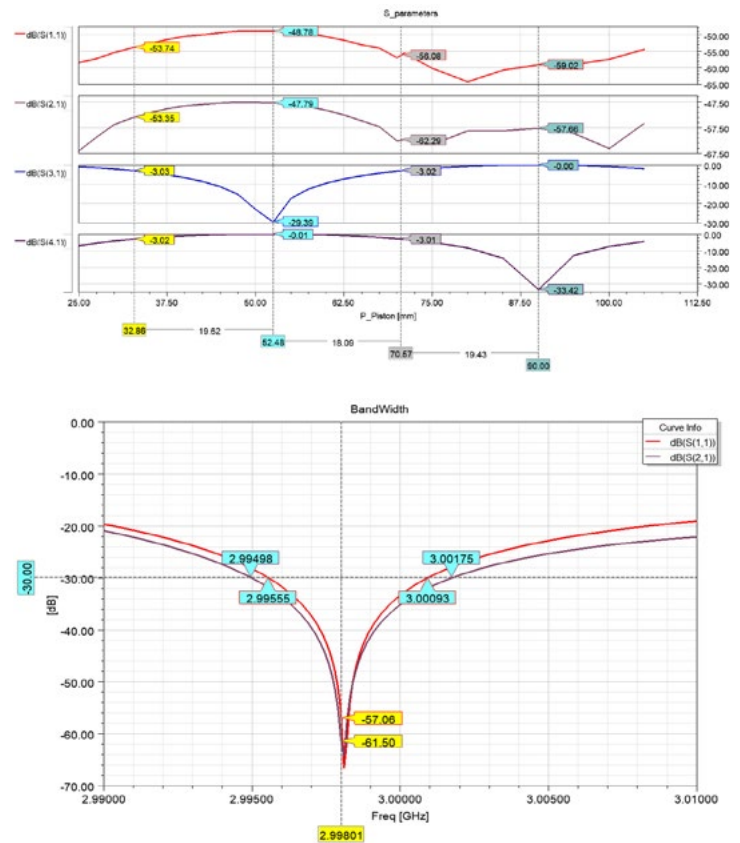
compact design makes it easy to install and being in-vacuum eliminates the need of RF windows resulting in very compact and cost effective waveguide network.

Specifications

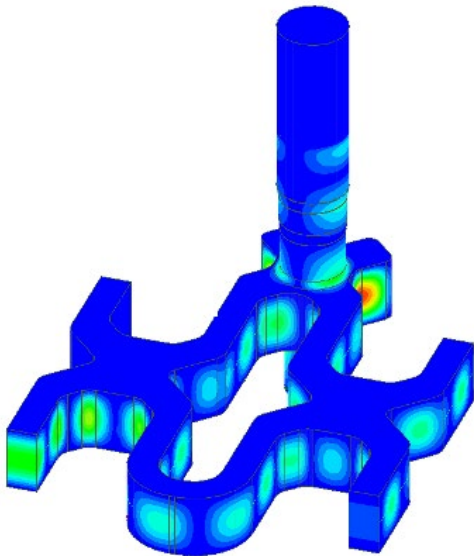
Parameter	Value
Operating frequency	2998.01 MHz
Bandwidth @ -30 dB	15 MHz
VSWR	<1.01
Phase range	±200 degrees
Pulse length	1μs
Repetition rate	60 Hz
Max peak power	80 MW
Max average RF power	≈20 W

Technical Support

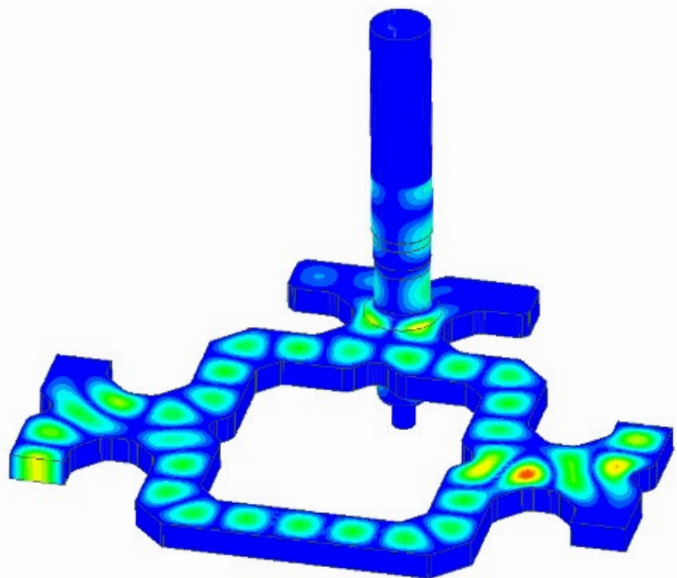
- Design and manufacturing
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- Conditioning, high power testing and reports
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E-Plane Variant

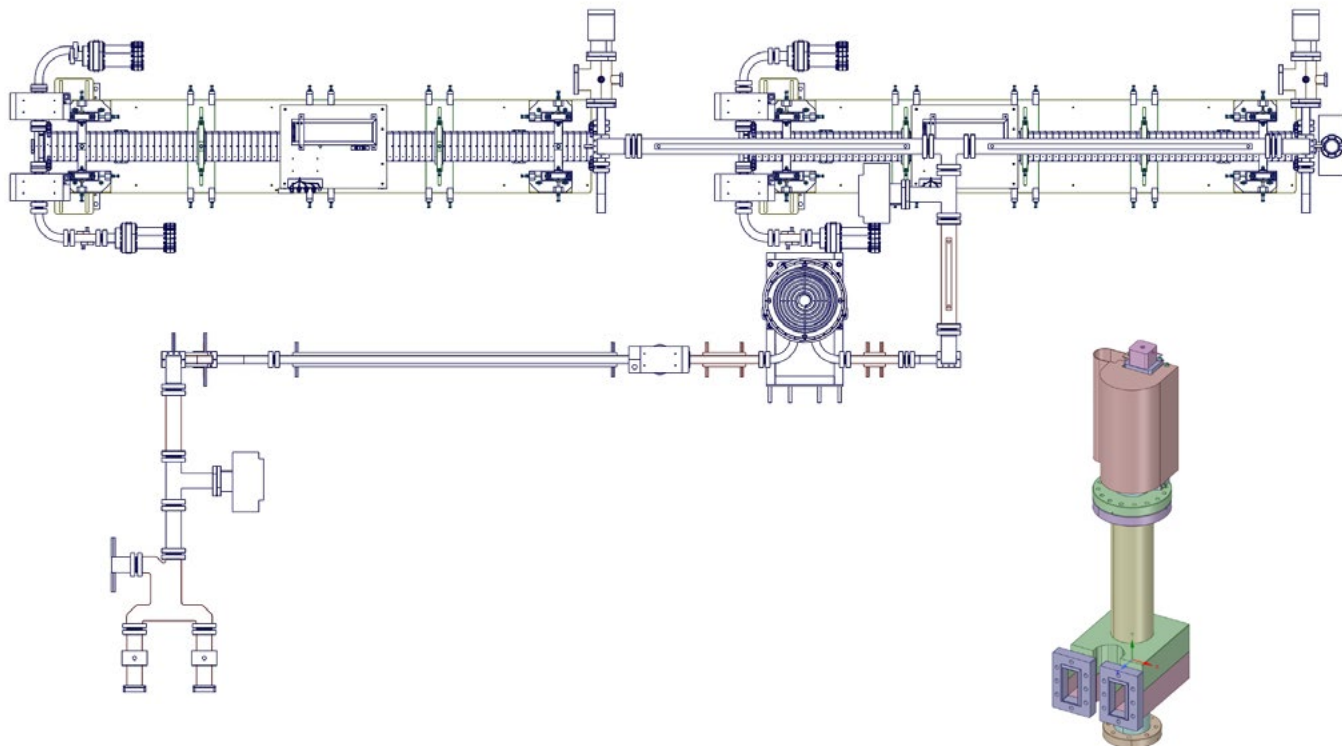


H-Plane Variant



In-Vacuum Phase Shifter

Compact, single piston, SF6 free, high power



Highlights

Feature	Benefit
OHFC (Oxygen Free High Conductivity Copper) waveguide	Fit to operate in Ultra High Vacuum (UHV) environment
Copper gasket sealing	High Vacuum Rate $<1.3E^{-11}$ [Pa·m ³ /sec]
316 L Stainless Steel Flanges	Strong and vacuum compatible
No SF6 (All vacuum based)	Simple and compact waveguide layout without RF windows
Single piston based design	Linear with high precision
Special choke design	Proper higher order modes damping
Available in both E and H plane versions	Making installation simpler and economical

Application

A single piston designed specifically for high power operation and HOMs damping is used to control the phase linearly and precisely at the output port of compact orthogonal mode launcher. Very

compact design makes it easy to install and being in vacuum eliminates the need of RF windows resulting in very compact and cost effective waveguide network.

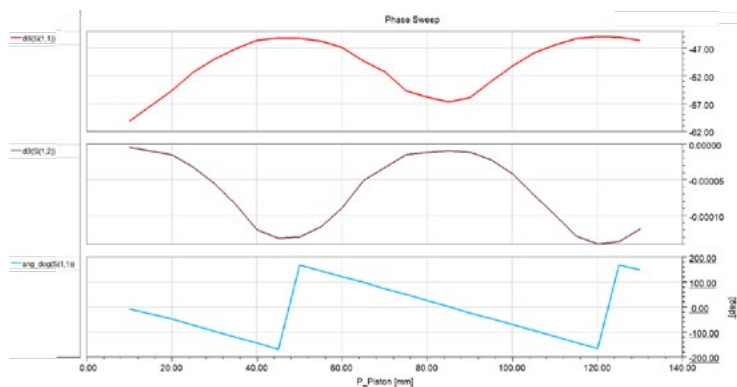
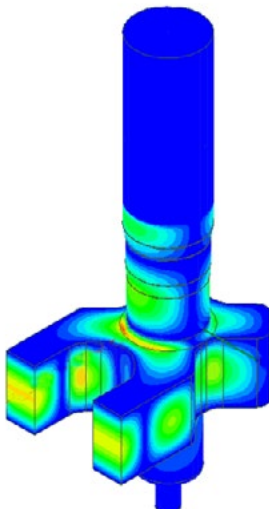
Specifications

Parameter	Value
Operating frequency	2998.01 MHz
Bandwidth @ -30 dB	15 MHz
VSWR	<1.01
Phase range	± 200 degrees
Pulse length	1 μ s
Repetition rate	60 Hz
Max peak power	80 MW
Max average RF power	≈ 20 W

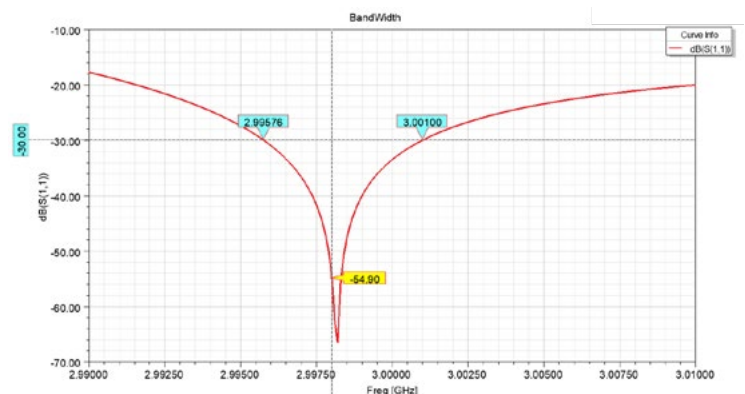
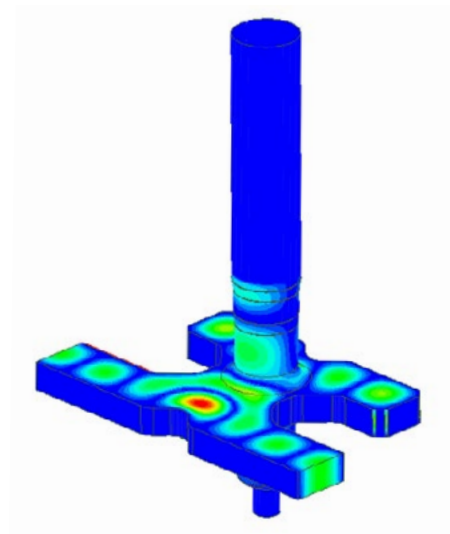
Technical Support

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E-Plane Variant

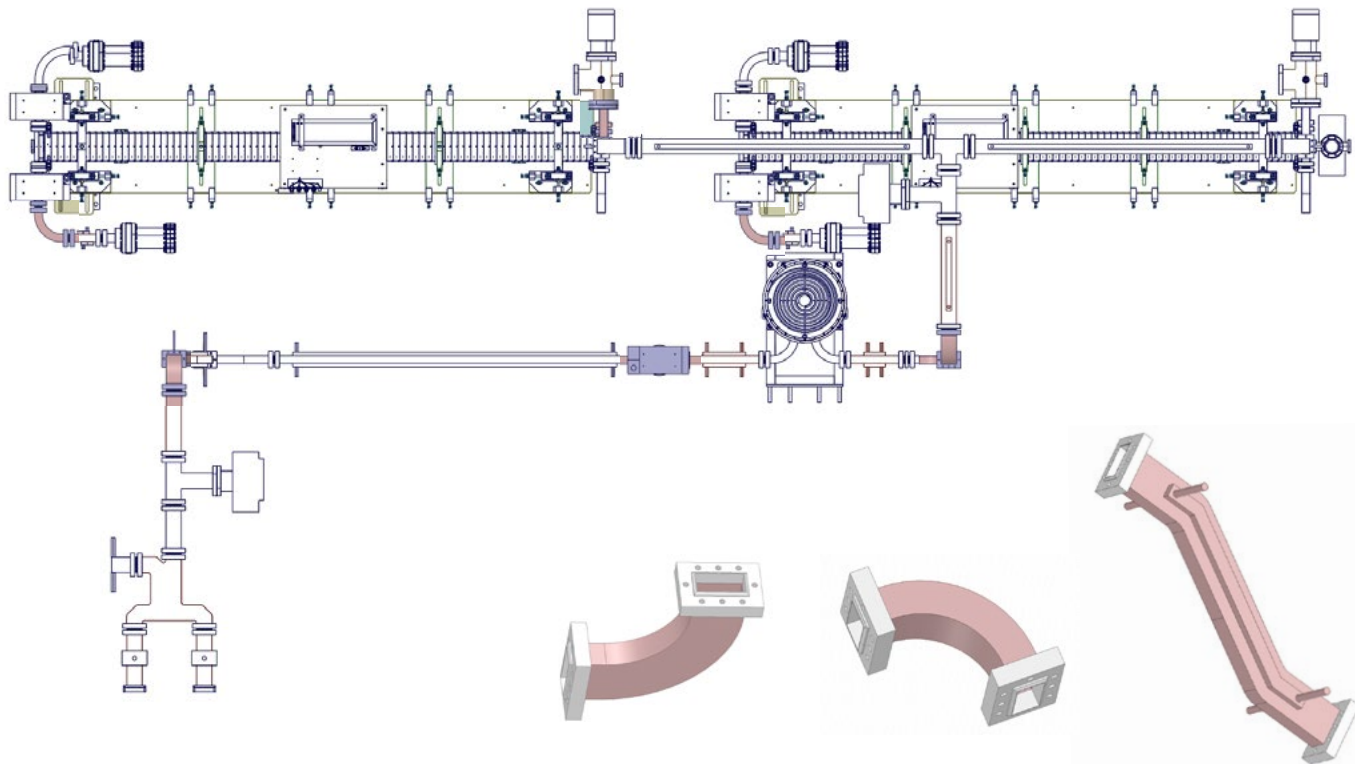


H-Plane Variant



Twists and Bends

Compact, UHV, high power



Highlights

Feature	Benefit
OHFC (Oxygen Free High Conductivity Copper) waveguide	Fit to operate in Ultra High Vacuum (UHV) environment
Copper gasket sealing	High Vacuum Rate $<1.3E^{-11}$ [Pa-m ³ /sec]
316 L Stainless Steel Flanges	Strong and vacuum compatible

Application

Compact UHV compatible design available in S and X bands.
Optimized for high power operation at high repetition rate.

Specifications

Parameter	Value
Operating frequency	2998.01 MHz
Bandwidth @ -30 dB	100 MHz
VSWR	< 1.01

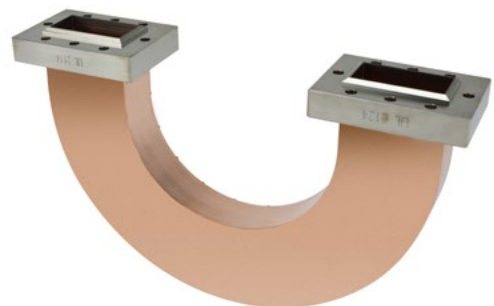
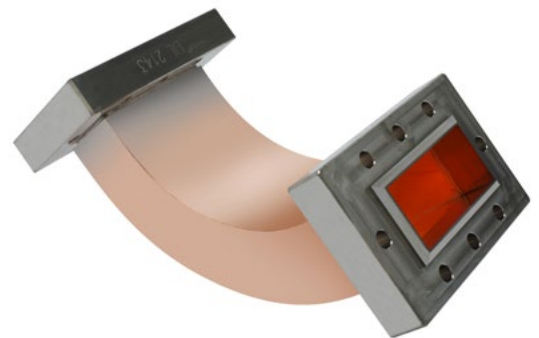
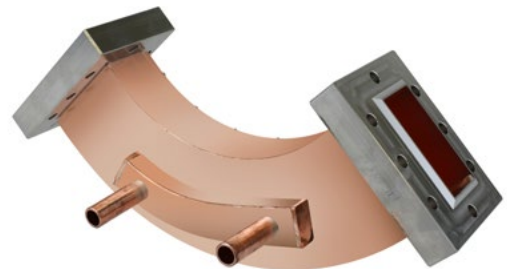
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- Conditioning, high power testing and reports
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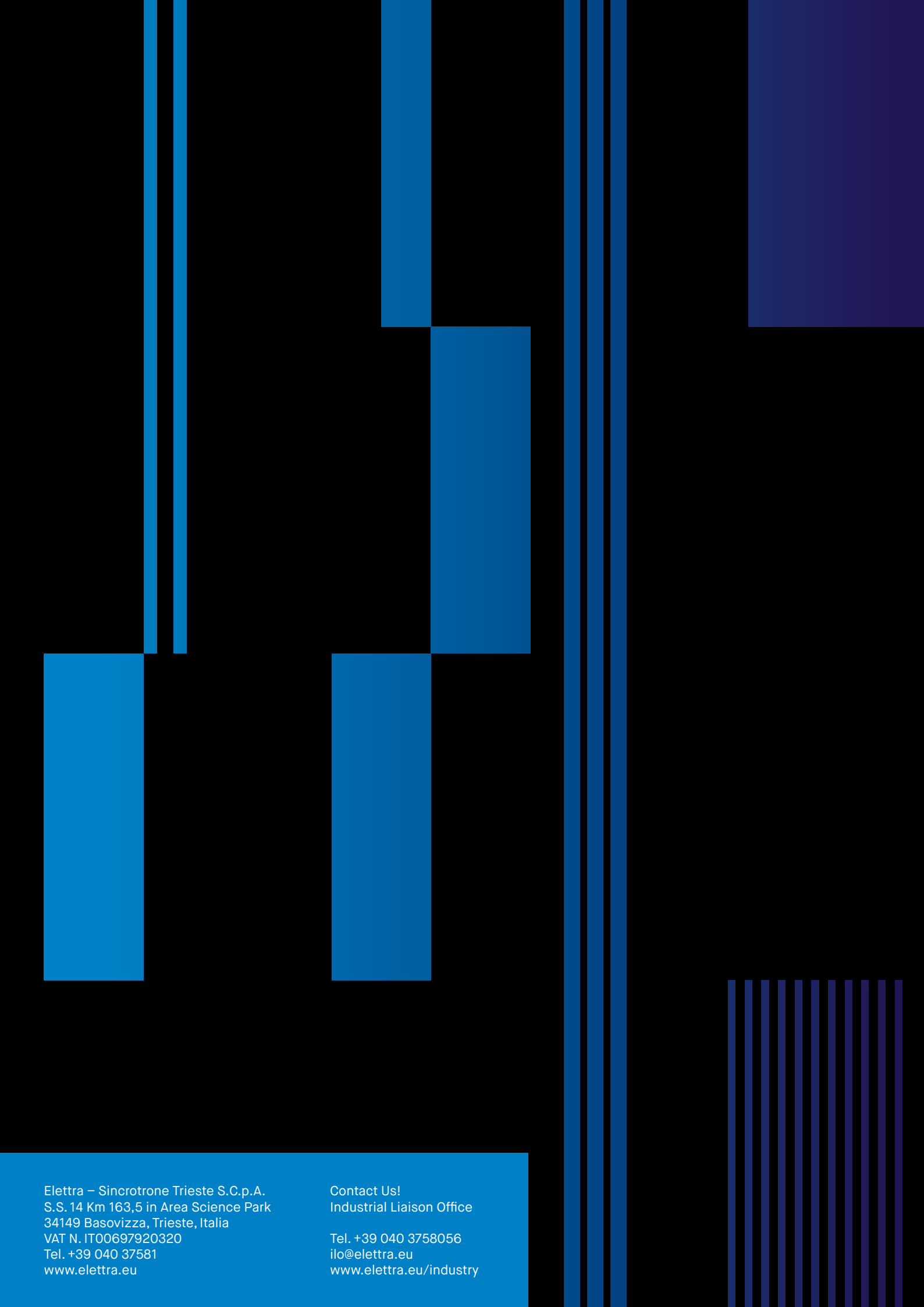
Twists



Bends







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