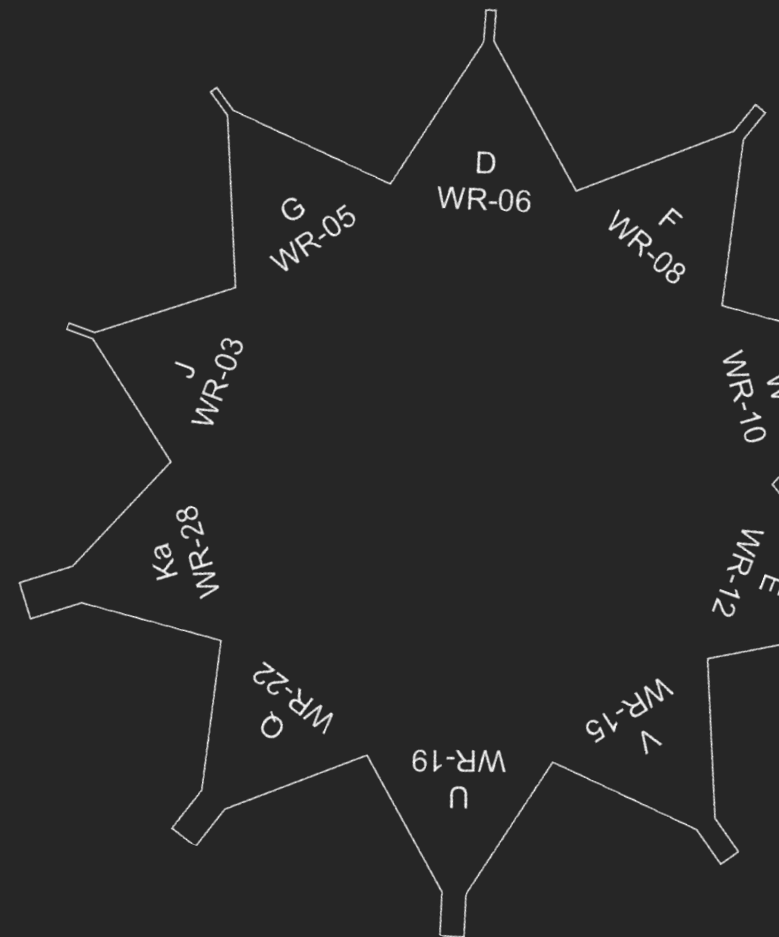


ERA^{ANT}

MAKING MILLIMETERWAVE ACCESSIBLE

J-BAND UPDATES

AUGUST 2022



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ANTENNAS

Pyramidal Horn, Conical Horn, Probe Antenna

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INTRODUCTION

ERAVANT designs and manufactures total solutions for microwave and millimeterwave applications covering 10 MHz to 325 GHz

- **This presentation introduces a selection of Eravant's standard product offerings in the J-Band (220 to 325 GHz)**
- The entire J-Band product line, including Limited Run models, are listed on the website at www.eravant.com

Additional products and presentations are available upon request.

- Custom models for components and subassemblies can be configured to customer specifications
- Presentations for Ka, Q, U, V, E, W, F, D and G bands are also available
- Presentations for specific applications including 5G/6G, IoT, Space, Test Instrumentation, Communications and Radar are available [here](#)

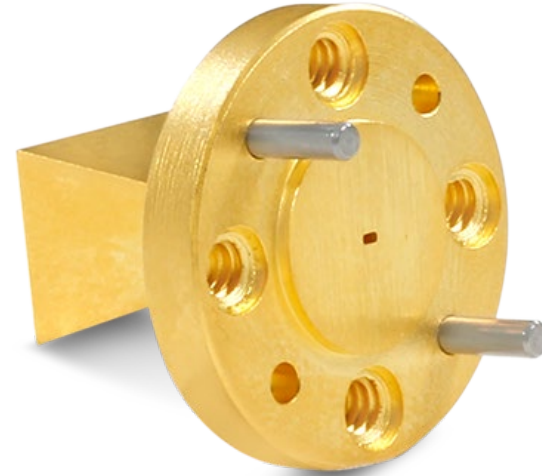
INTRODUCTION

- ERAVANT offers Total Product Solutions to configure any system applications in the Frequency Range of DC to 325 GHz.
- **J Band** products are mainly used in
 - 5G and 6G mmW systems
 - Security systems
 - Radar systems
 - Scientific and industrial systems
 - Test equipment and lab setups
- This presentation includes examples of ERAVANT product offerings in **J Band (220 to 325 GHz)** as a quick overview of available product families for project and system planning. Specific models are selected for illustration. Other models with various performance in the same product family are described on the website (www.eravant.com).

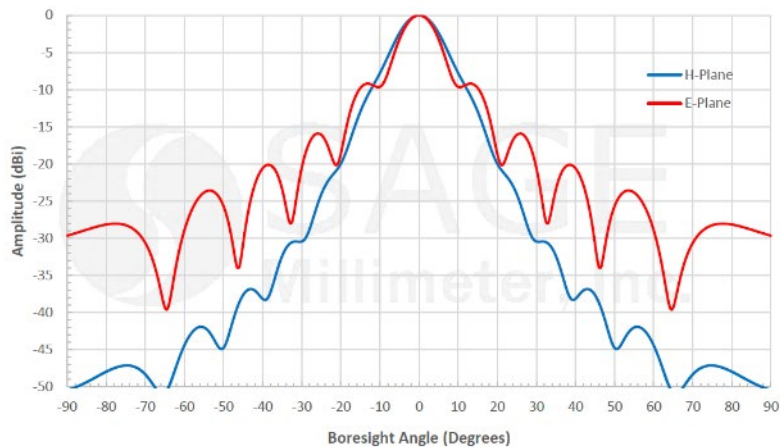
SAR-2309-03-S2

Pyramidal Horn Antenna, 23 dBi Gain

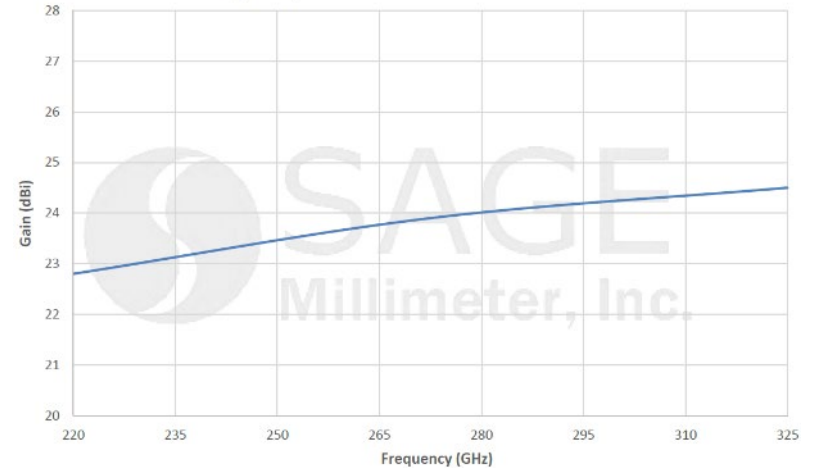
Parameter	Minimum	Typical	Maximum
Frequency	220 GHz		325 GHz
Gain		23 dBi	
Polarization		Linear	
3 dB Beamwidth, E-Plane		9°	
3 dB Beamwidth, H-Plane		11°	
Side Lobes, E -Plane		-9 dB	
Side Lobes, H Plane		-21 dB	



Simulated Antenna Pattern @ 272.5 GHz



Simulated Gain vs. Frequency



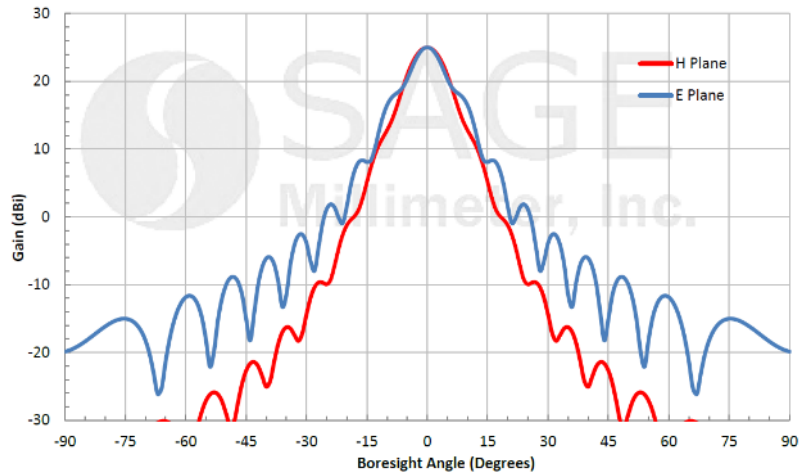
SAC-2507-039-S2

Conical Horn Antenna, 25 dBi Gain

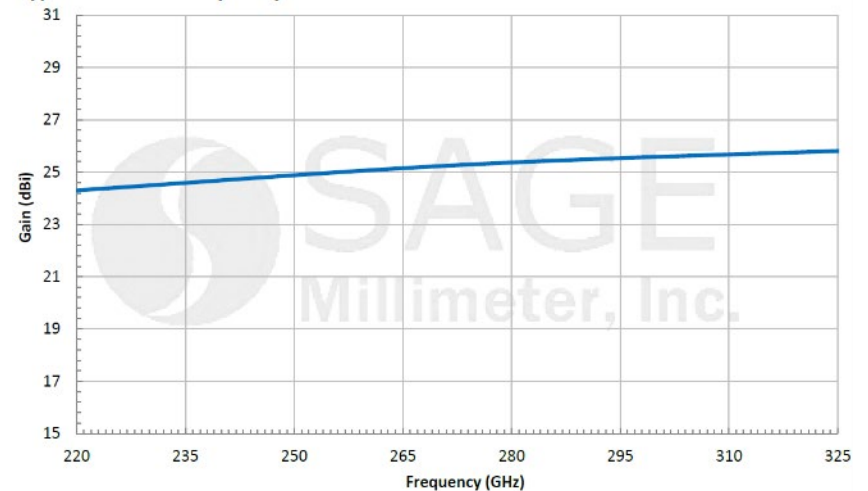
Parameter	Minimum	Typical	Maximum
Frequency	220 GHz		325 GHz
Gain		25 dBi	
Polarization		Linear, Circular	
3 dB Beamwidth, E-Plane		7.5°	
3 dB Beamwidth, H-Plane		8.5°	
Side Lobes, E -Plane		-16 dB	
Side Lobes, H Plane		-28 dB	



Typical Antenna Pattern @ 275 GHz



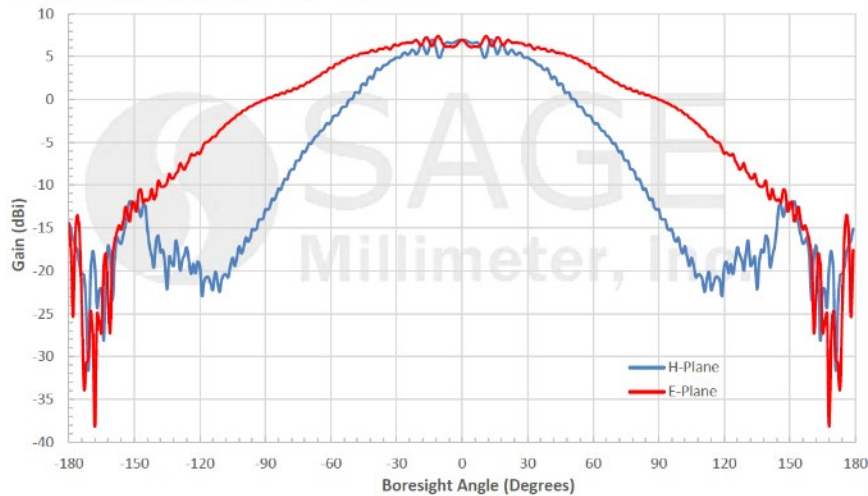
Typical Gain vs. Frequency



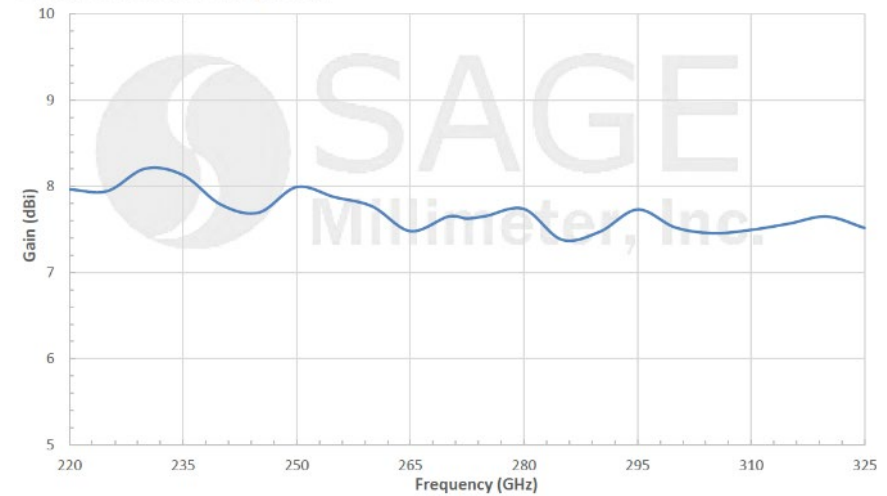
Parameter	Minimum	Typical	Maximum
Frequency	220 GHz		325 GHz
Gain		23 dBi	
Polarization		Linear	
3 dB Beamwidth, E-Plane		115°	
3 dB Beamwidth, H-Plane		55°	
Side Lobes, E -Plane		-10 dB	
Side Lobes, H Plane		-14 dB	



Simulated Antenna Patterns @ 272.5 GHz



Simulated Gain vs. Frequency

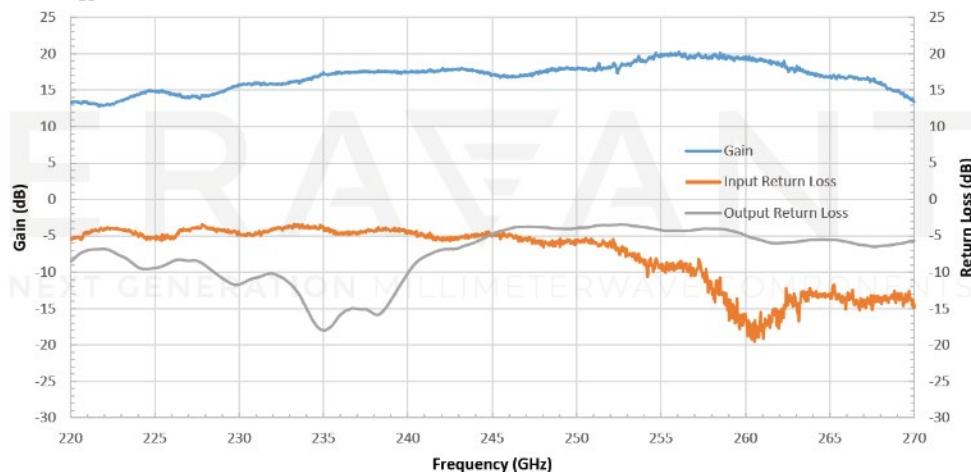


Parameter	Minimum	Typical	Maximum
Frequency	220 GHz		270 GHz
Gain		15 dB	
Noise Figure		8.5 dB	
P_{1dB}		-5 dBm	
P_{in}			10 dBm
Input Return Loss		5 dB	
Output Return Loss		5 dB	
DC Voltage		+8 V _{DC}	+12 V _{DC}
DC Supply Current		50 mA	
Operation Temperature	0 °C		+50 °C



Gain and Return Loss vs. Frequency

Bias: +8 V_{DC}/40 mA



Features

- Broad Band Operation
- Low Noise Figure
- Low Bias Current
- Compact Package

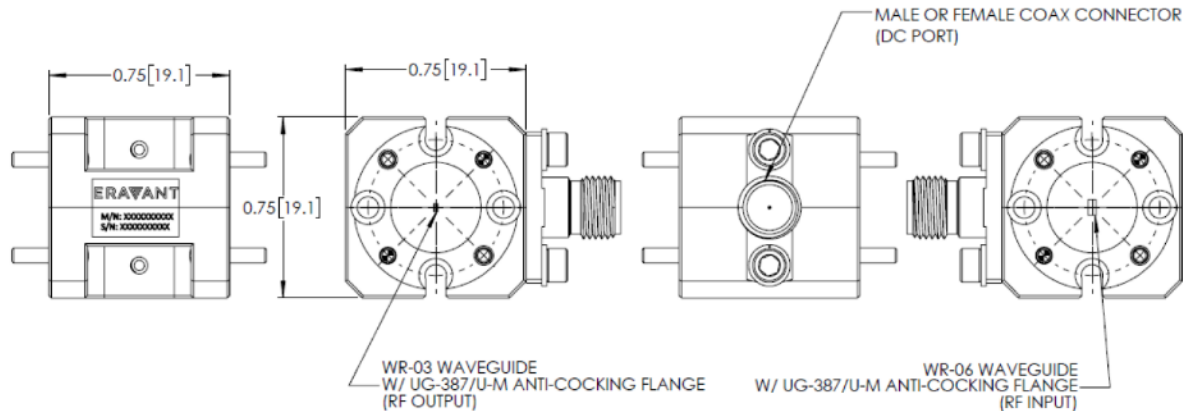
SFP-03206-UEB

X2 Passive Multiplier



Parameter	Minimum	Typical	Maximum
Input Frequency	110 GHz		165 GHz
Output Frequency	220 GHz		330 GHz
Input Power		+12 dBm	+16 dBm
Output Power		0 dBm	
Harmonic Suppression		20 dB	

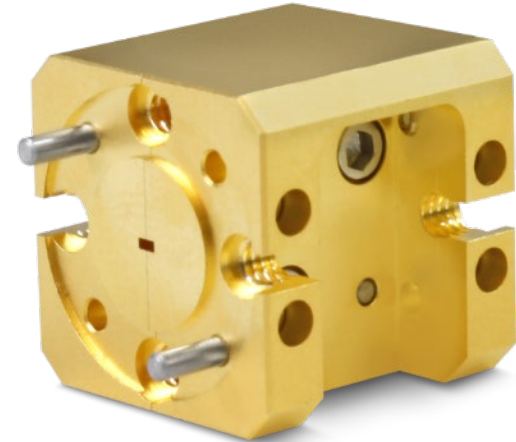
Mechanical Outline: (Unless otherwise specified, all dimensions are in inches [Millimeters])



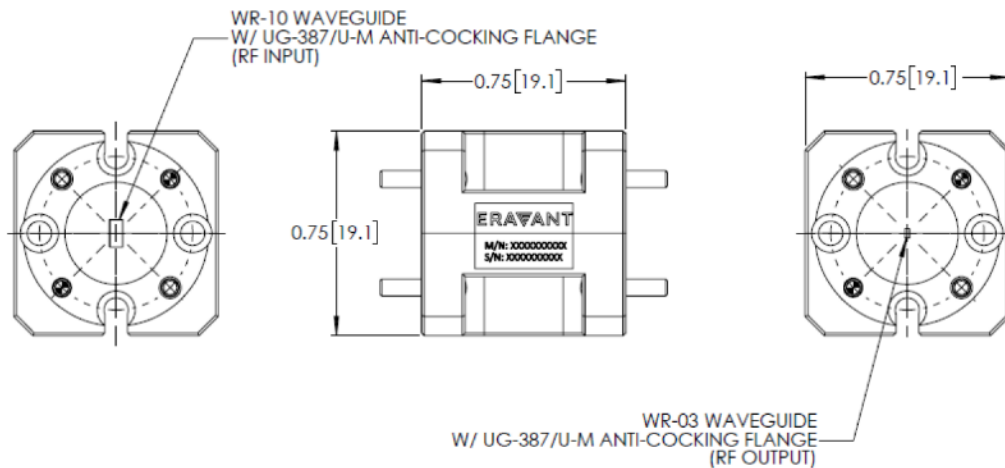
Features

- Full Band Operation
- Low Conversion Loss
- Low External Bias
- Compact Package

Parameter	Minimum	Typical	Maximum
Input Frequency	73.3 GHz		110 GHz
Output Frequency	220 GHz		330 GHz
Input Power		+17 dBm	+20 dBm
Output Power		0 dBm	
Harmonic Suppression		20 dB	



Mechanical Outline: (Unless otherwise specified, all dimensions are in inches [Millimeters])



Features

- Full Band Operation
- Low Conversion Loss
- No External Bias
- Compact Package

SKS-2242946035-0303-A1-M

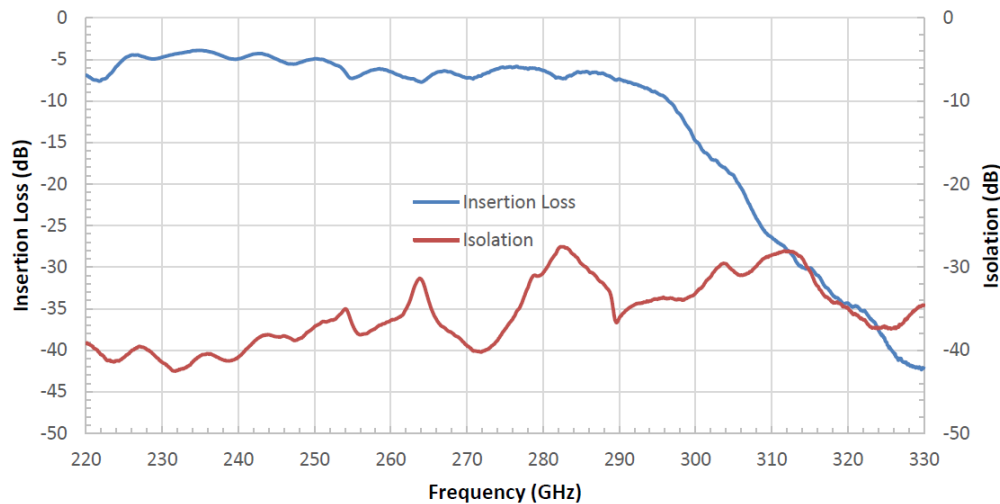
Electrical SPST
Absorptive Switch

Parameter	Minimum	Typical	Maximum
RF Frequency	220 GHz		290 GHz
Insertion Loss		6 dB	
Isolation		35 dB	
Power Handling			+5 dBm
Bias Voltage		+1/-2 V _{DC}	
Bias Current		+3 mA/0 mA	
Control Signal		TTL	
Switching Speed		100 ns	



Insertion Loss and Isolation vs. Frequency

Bias: +1 V_{DC}/3 mA and -2 V_{DC}/ <0 mA



Features

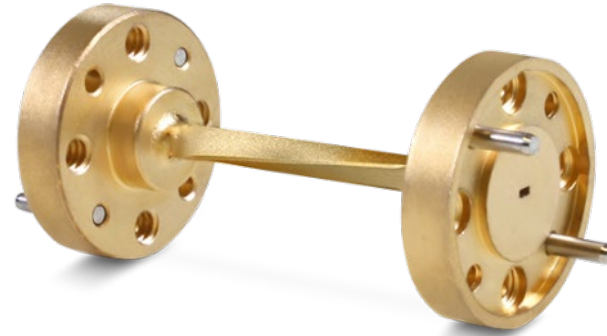
- Full Band Operation
- Low Insertion Loss
- High Isolation
- Fast Control Speed

Waveguides

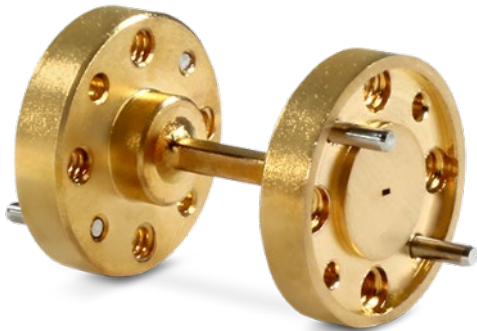
- Straights: 1", 2" etc. and Custom Length
- Bends, 90° and Custom Angle
- Twists, 90° and Custom Angle



Waveguide E-Bend: 90°



Waveguide Twist: 90°



Waveguide Straight: 1.25"



Waveguide H-Bend: 90°

Instrumentation Waveguide Sections



Metrology Grade
Model: [STQ-WG-03025-F1-A-R](#)



Proxi-Flange™ Contactless Flange
Model: [STQ-WG-03025-FB-CF](#)



Wave-Glide VNA Rail System
Model: [STQ-TL-RW-S10-M1](#)

Waveguide Transitions



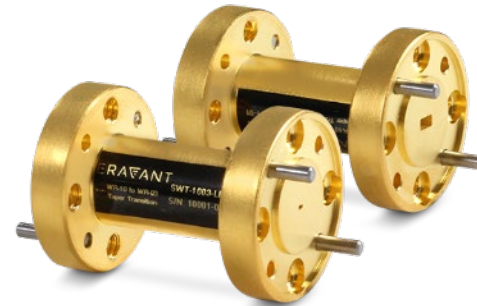
WR-03 to WR-04
Model: [SWT-0504-LB](#)



WR-03 to WR-05
Model: [SWT-0503-LB](#)



WR-03 to WR-06
Model: [SWT-0603-LB](#)



WR-03 to WR-15
Model: [SWT-1503-LB](#)

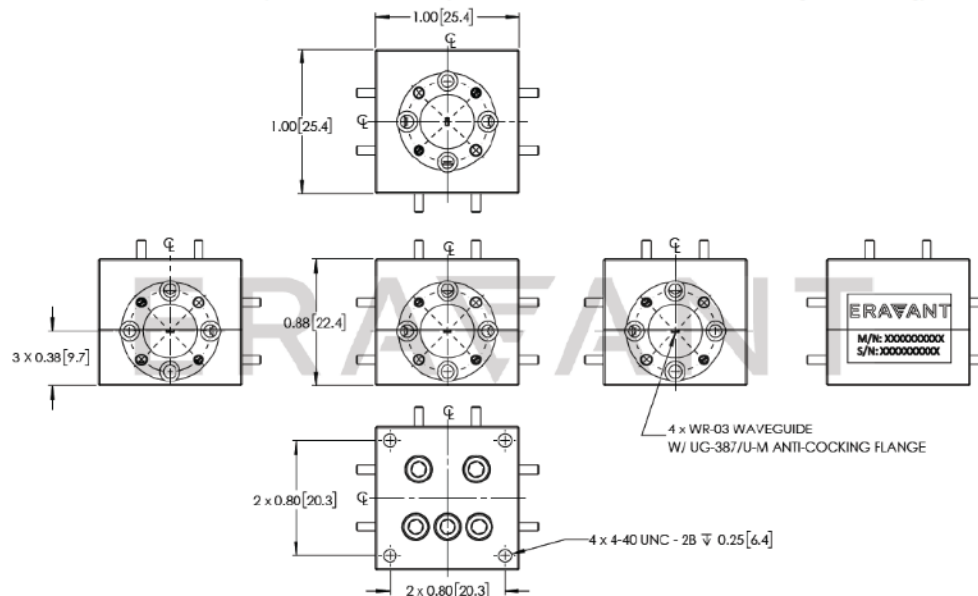
SWM-22433420-03-SB

Waveguide Magic Tee

Parameter		Minimum	Typical	Maximum
Frequency		220 GHz		330 GHz
Insertion Loss			2.3 dB	
Isolation	Sum and Difference		30 dB	
	Colinear		20 dB	
Return Loss			15 dB	



Mechanical Outline: (Unless otherwise specified, all dimensions are in inches [millimeters])



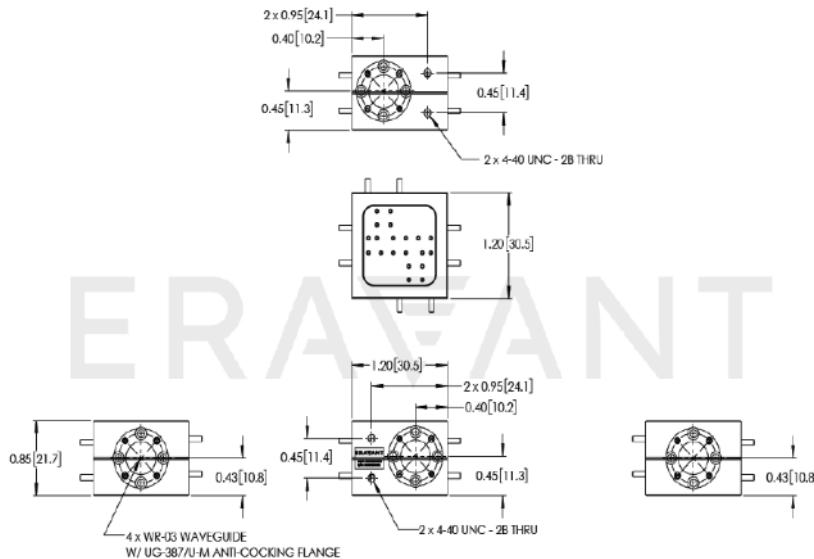
Features

- Full Band Operation
- Low Insertion Loss
- High Isolation
- Compact Design

Parameter	Minimum	Typical	Maximum
Frequency	220 GHz		325 GHz
Insertion Loss		3.5 dB	
Coupling		10 dB	
Directivity		20 dB	
Return Loss		18 dB	



Mechanical Outline: (Unless otherwise specified, all dimensions are in inches [millimeters])



Features

- Full Band Operation
- Low Insertion Loss
- Good Directivity
- Compact Design

STP-18-03-M1-C-1.2

Mechanical Tunable Phase Shifter

Features

- Full Band Coverage
- Compact Size
- Low Insertion Loss
- Precision Machined Housing

Applications:

- Test Lab
- Instrumentations
- Manual Test Set



Parameter	Minimum	Typical	Maximum
RF Frequency Range	220 GHz		330 GHz
Insertion Loss		2.5 dB	
Phase Shifting Range	0°		180°
Return Loss		20 dB	
Power Handling CW			100 mW
Waveguide	WR-03 with UG-387/U-M Flange		

STA-03-03-F1

Fixed Tuned Attenuator

Features

- Full Band Coverage
- 3, 6, 10, 20, 30 dB attenuation
- High Performance
- Rugged Mechanical Structure

Applications:

- Test Lab
- Instrumentations
- Subsystems



Parameter	Minimum	Typical	Maximum
RF Frequency Range	220 GHz		330 GHz
Attenuation		3, 6, 10, 20, 30 dB	
Return Loss		16 dB	
Power Handling			100 mW
Waveguide	WR-03 with UG-387/U-M Flange		

STA-30-03-M1-C-1.2

Level Setting Attenuator

Features

- Full Band Coverage
- Compact Size
- Precision Machined Housing
- Convenient Level Setting

Applications:

- Test Lab
- Instrumentations
- Manual Test Set



Parameter	Minimum	Typical	Maximum
RF Frequency Range	220 GHz		330 GHz
Insertion Loss		2.5 dB	
Attenuation Range		30 dB	
Return Loss		20 dB	
Power Handling			100 mW
Waveguide	WR-03 with UG-387/U-M Flange		

Features

- Full Band Coverage
- High Attenuation Accuracy
- Large Scaled Dial

Applications:

- Test Lab
- Instrumentations
- Manual Test Set



Parameter	Minimum	Typical	Maximum
RF Frequency Range	220 GHz		325 GHz
Insertion Loss		5.5 dB	
Attenuation Range		40 dB	
Attenuation Accuracy	0.1 dB or 3% of reading, whichever is larger, up to 40 dB		
Return Loss		16 dB	
Power Handling		50 mW	100 mW

STA-60-03-D5

Digital Direct Reading Attenuator

Features

- Full Band Coverage
- High Attenuation Accuracy
- Digital Screen with Back Light

Applications:

- Test Lab
- Instrumentations
- Manual Test Set



Parameter	Minimum	Typical	Maximum
RF Frequency Range	220 GHz		325 GHz
Insertion Loss		5.5 dB	
Attenuation Range		60 dB	
Attenuation Accuracy	0.1 dB or 2% of reading, whichever is larger, up to 40 dB		
VSWR		16 dB	
Power Handling		25 mW	75 mW

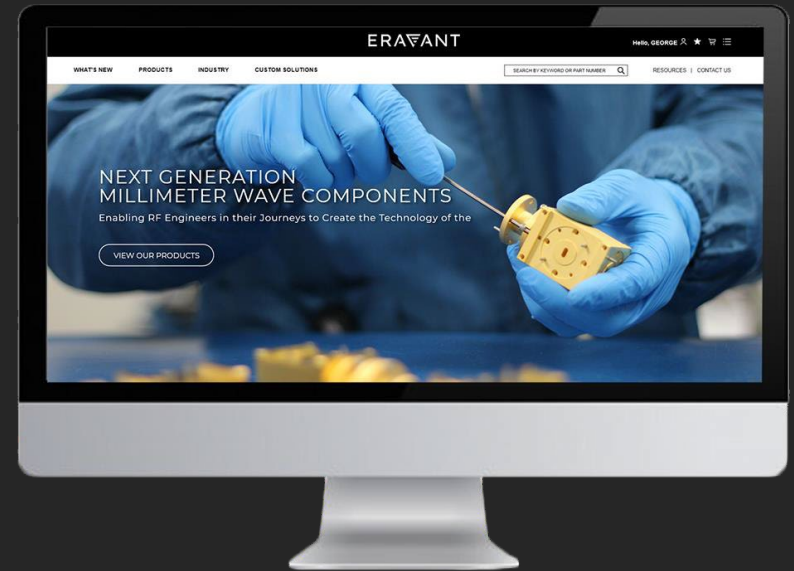
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STO-06203-U6

Mechanical Specifications

Item	Description
Top Port	WR-08 Waveguide with CG-38713-M AW-Cocking Flange
RF and LO Source Input Ports	SMA (F), SMA (F)
RF Output Port	SMA (F)
RF Reference Port	SMA (F)
DC Power Reference	EXACT 100.304 CLAD52E, H=3.98 to 4.12 Vdc

STO-06203-U6

D-Band VNA Frequency Extender Set, +1 dBm

Electrical Specifications

Parameter	Minimum	Typical	Maximum
Frequency Range	130 GHz	130 GHz	130 GHz
Top Port Control Power (at Power)	N/A	+1 dBm	N/A
Dynamic Range @ 10 Hz BW	130 dB	30 dB	30 dB
Dynamic Range @ 100 Hz BW	50 dB	30 dB	30 dB
RF Source Input Frequency	9.37 GHz	14.11 GHz	14.11 GHz
RF Source Input Power	0 dBm	+3 dBm	+6 dBm
LO Source Input Frequency (RF/F)	9.37 GHz	14.11 GHz	14.11 GHz
LO Source Input Power	0 dBm	+3 dBm	+6 dBm
RF Frequency Range	10 MHz	100 MHz	100 MHz
Maximum Bandwidth	0.15 GHz	0.2 GHz	0.2 GHz
Phase Stability	<±0.1°	1.0°	<±0.1°
Specification Temperature	+30 °C		+30 °C
Operating Temperature	0 °C		+30 °C

PASSIVE FREQUENCY MULTIPLIERS

GRID TABLE 28 RESULTS

MODEL	MINIMUM OUTPUT FREQUENCY	MAXIMUM OUTPUT FREQUENCY	OUTPUT POWER	MINIMUM INPUT FREQUENCY	MAXIMUM INPUT FREQUENCY	INPUT POWER	OUTPUT PORT	INPUT PORT	DOWNLOADS	VIEW
SFP-06212-S2	110 GHz	170 GHz	0 dBm	55 GHz	85 GHz	+16 dBm	WR-08 Waveguide	WR-12 Waveguide	Datasheet	View
SFP-06319-U6	110 GHz	170 GHz	-3 dBm	36.67 GHz	56.67 GHz	+20 dBm	WR-08 Waveguide	WR-16 Waveguide	Datasheet	View
SFP-05210-S2	140 GHz	220 GHz	-3 dBm	70 GHz	110 GHz	+17 dBm	WR-05 Waveguide	WR-10 Waveguide	Datasheet	View
SFP-223403205-28SF-S1	22 GHz	40 GHz	+5 dBm	11 GHz	20 GHz	+18 dBm	WR-28 Waveguide	SMA (F)	Datasheet STEP File	View
SFP-245423303-28SF-S1	24 GHz	42 GHz	+3 dBm	8 GHz	14 GHz	+20 dBm	WR-28 Waveguide	SMA (F)	Datasheet STEP File	View
SFP-2835F-U9	26.5 GHz	40.0 GHz	+5 dBm	8.37 GHz	13.33 GHz	+20 dBm	WR-28 Waveguide	SMA (F)	Datasheet	View
SFP-2734033N05-28SF-S1	26.5 GHz	40 GHz	-5 dBm	8.37 GHz	13.33 GHz	+10 dBm	WR-28 Waveguide	SMA (F)	Datasheet STEP File	View
SFP-2235F-S1	33 GHz	50 GHz	+3 dBm	11 GHz	16.67 GHz	+20 dBm	WR-22 Waveguide	SMA (F)	Datasheet STEP File	View
SFP-222XF-S1	33 GHz	50 GHz	+7 dBm	10.5 GHz	25 GHz	+20 dBm	WR-22 Waveguide	2.92 mm (F)	Datasheet STEP File	View
SFP-3615T3303-10SF-F1	57 GHz	36 GHz	+3 dBm	12 GHz	19 GHz	+20 dBm	WR-19 Waveguide	SMA (F)	Datasheet STEP File	View
SFP-192XF-S1	40 GHz	80 GHz	+0 dBm	20 GHz	30 GHz	+20 dBm	WR-19 Waveguide	2.92 mm (F)	Datasheet STEP File	View