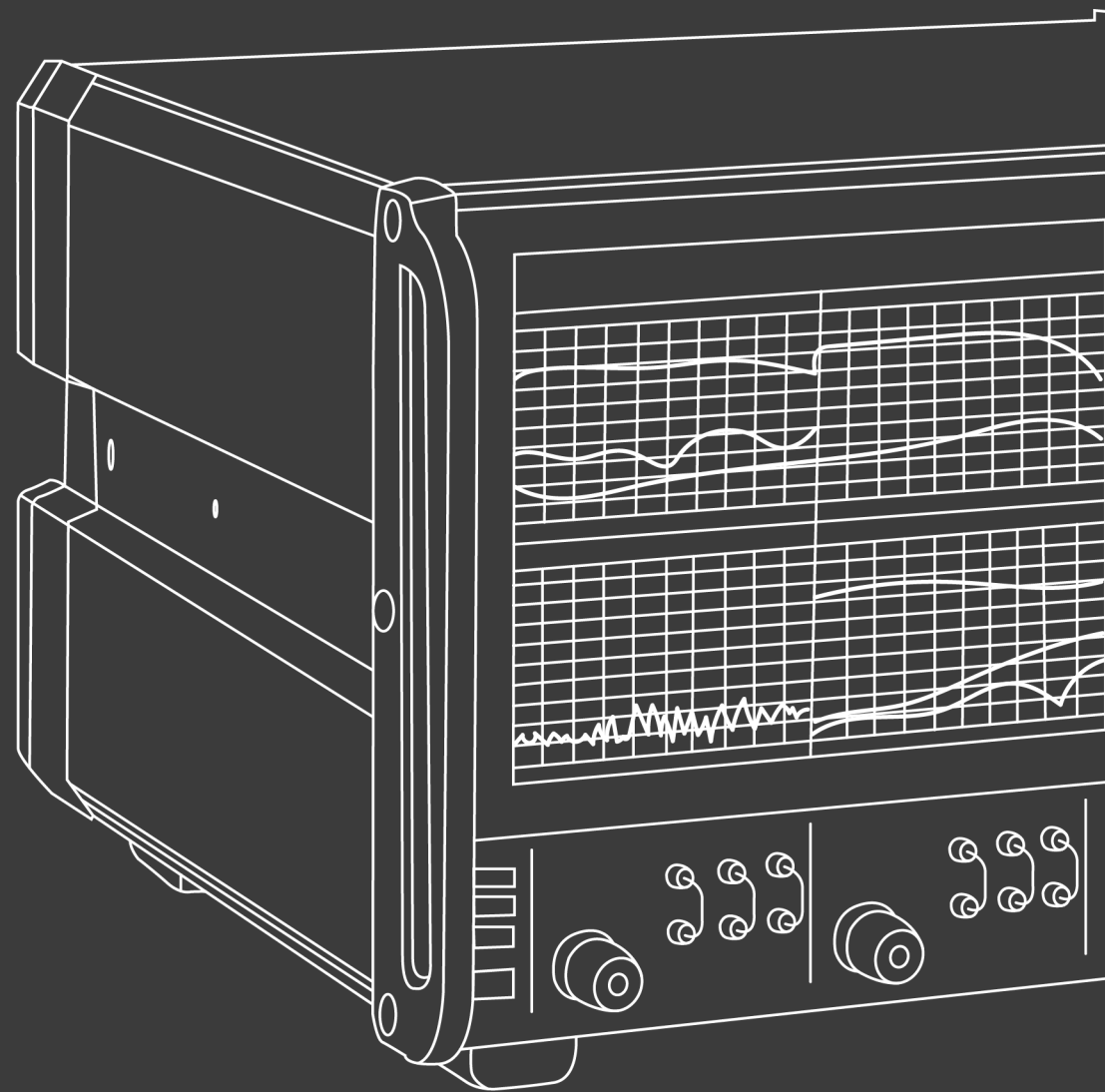


ERA ∇ ANT

NEXT GENERATION MILLIMETERWAVE COMPONENTS

ONE MILLIMETER (1MM)
CONNECTORIZED COMPONENTS
FOR TEST & INSTRUMENTATION

8 to 10 June 2021, IMS 2021 MicroApps



CONTENTS

1 mm CONNECTOR

COMPONENTS FOR TESTING STATIONS & LABS

COAXIAL CABLES

COAXIAL ADAPTERS

WAVEGUIDE TO COAX ADAPTERS

FIXED ATTENUATOR

DUAL RIDGED BROADBAND ANTENNA

BOOSTING AMPLIFIER

COMPONENTS FOR INSTRUMENTATIONS

SPDT SWITCH

POWER AMPLIFIER

BROADBAND AMPLIFIER

COMPONENTS UNDER DEVELOPMENT

POWER DIVIDER

DIRECTIONAL COUPLER

DC BLOCK

BIAS TEE

FILTER

MIXER

CONCLUSION

1 MM CONNECTOR

What is 1 mm Connector?

- The 1 mm connector is a coax connector with coaxial line outer diameter 1.00 mm.
- The 1 mm connector supports the frequency range of DC to 110 GHz operation and can be stretched to cover DC to 130 GHz.
- There are many different types of connectors. For this presentation, only sparkplug and cable connectors are included.



COMPONENTS FOR TEST STATIONS & LABS

These products are designed and manufactured for Test Stations and Labs.

- Coaxial Cables
- Coaxial Adapters
- Waveguide to Coax Adapters
- Fixed Attenuators
- Dual Ridged Broadband Antenna
- Boosting Amplifier

COMPONENTS FOR TEST STATIONS & LABS

Flexible Cables (SCM)

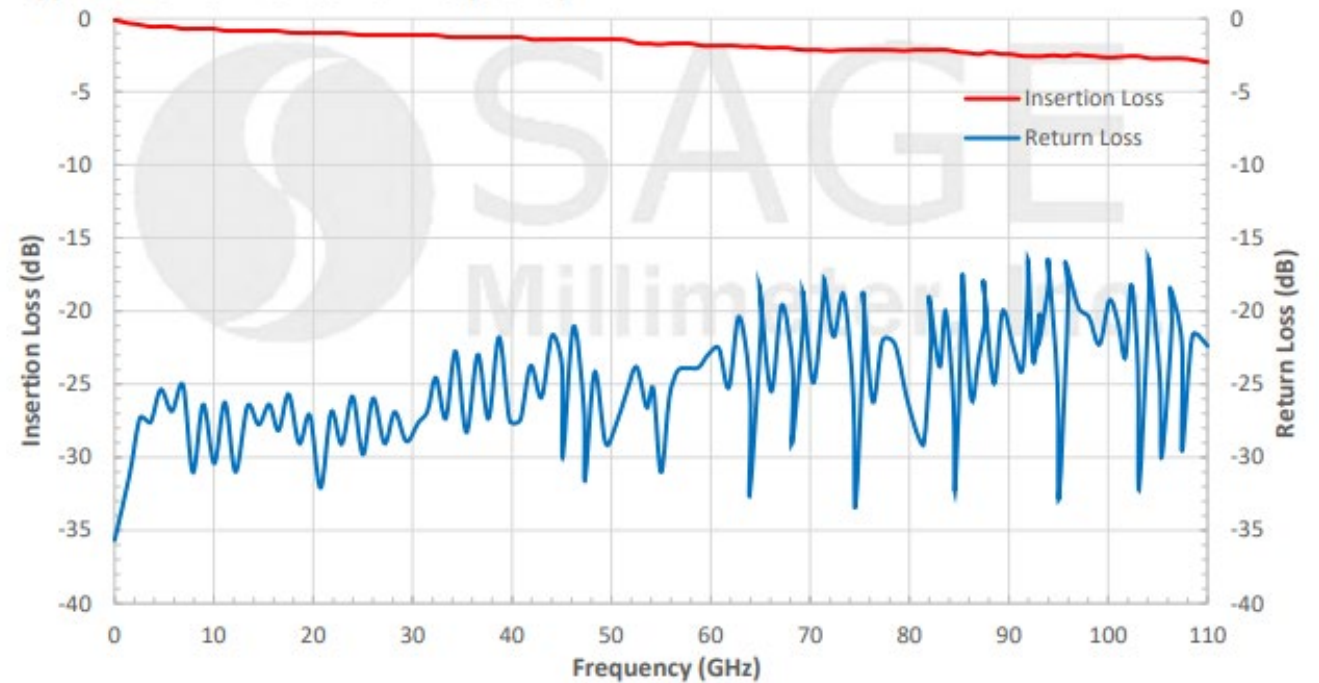
- Male to Male
- Female to Male
- Female to Female
- COTS: 3", 6", 12"
- Custom Length



6" Long: SCW-1M1M006-F1
1 mm (M) to 1 mm (M)

1 mm (M) to 1 mm (M) Coaxial Cable, Flexible, 6"

Typical Performance vs. Frequency



COMPONENTS FOR TEST STATIONS & LABS

Semi-Ridged Cables (SCM)

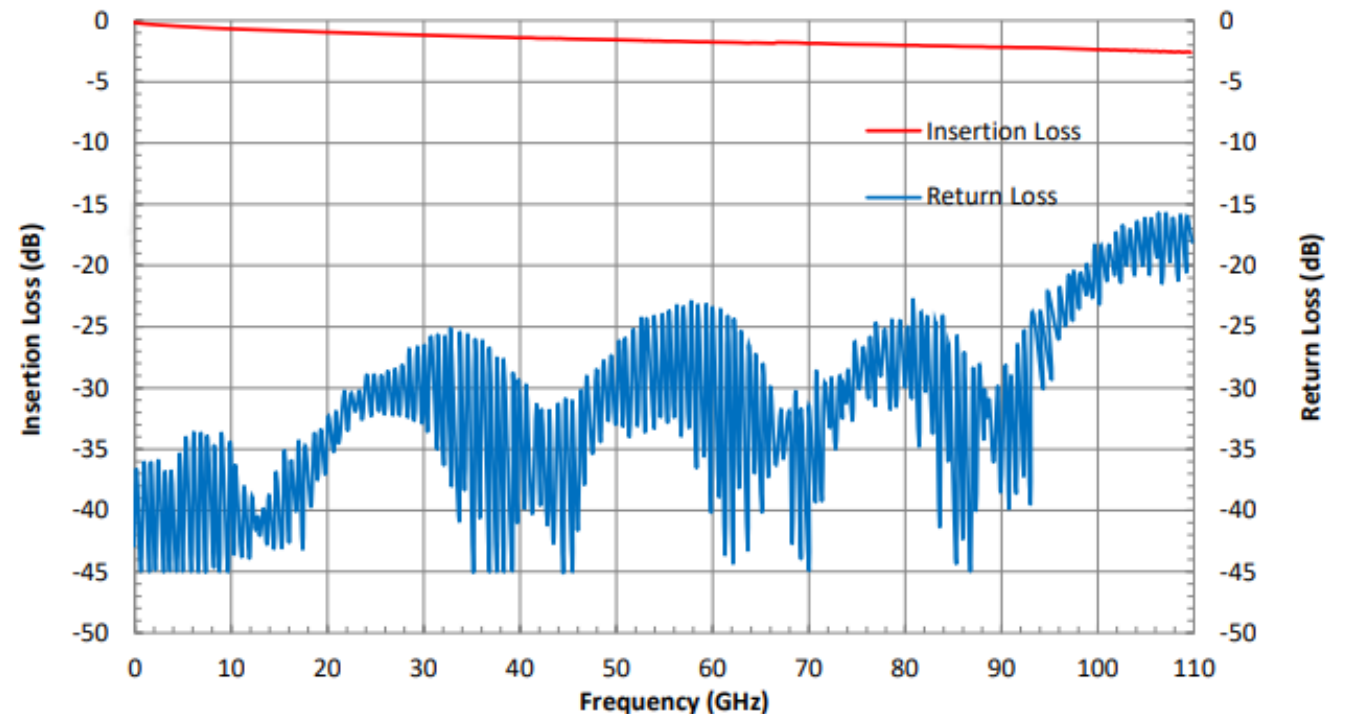
- Male to Male
- Female to Male
- Female to Female
- COTS: 3", 6", 12"
- Custom Length



6" Long: SCW-1M1M006-S1
1 mm (M) to 1 mm (M)

1 mm (M) to 1 mm (M) Coaxial Cable, Semi-Rigid, 6"

Typical Performance vs. Frequency



COMPONENTS FOR TEST STATIONS & LABS

Coaxial Adapters (SCT)

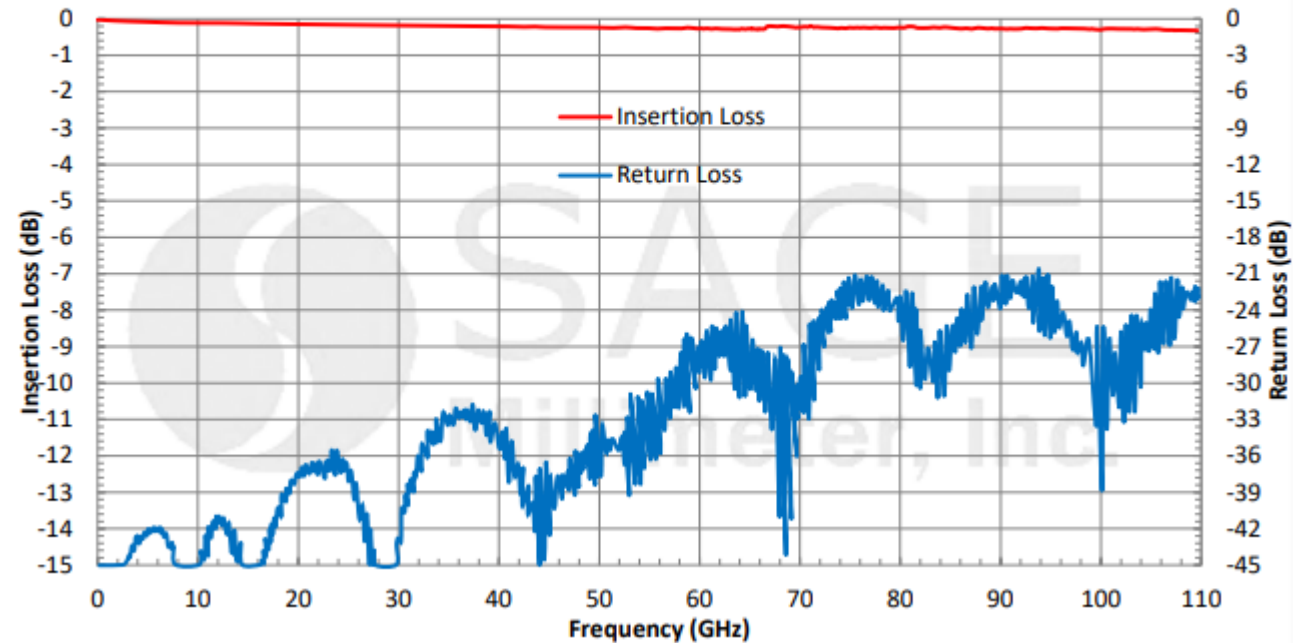
- Male to Male
- Female to Male
- Female to Female
- In Series



In Series: SCT-1M1M-U7
1 mm (M) to 1 mm (M)

1 mm (M) to 1 mm (M), High Performance Coaxial Adapter

Typical Performance vs. Frequency



COMPONENTS FOR TEST STATIONS & LABS

Coaxial Adapters (SCT)

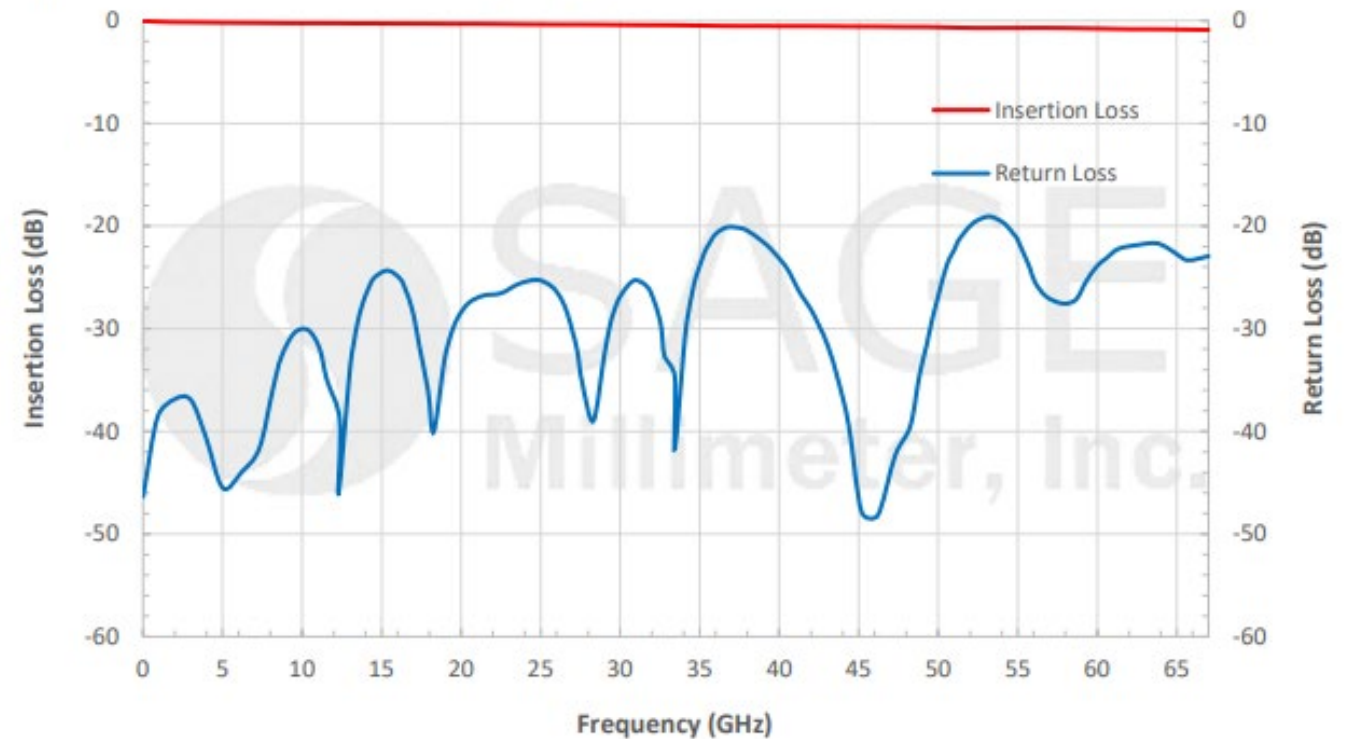
- Male to Male
- Female to Male
- Female to Female
- Between Series



Between Series: SCT-VM1F-UB
1.85 mm (M) to 1 mm (F)

1.85 mm (M) to 1 mm (F) Coaxial Adapter

Typical Performance vs. Frequency



COMPONENTS FOR TEST STATIONS & LABS

Coaxial Adapters (SCT)

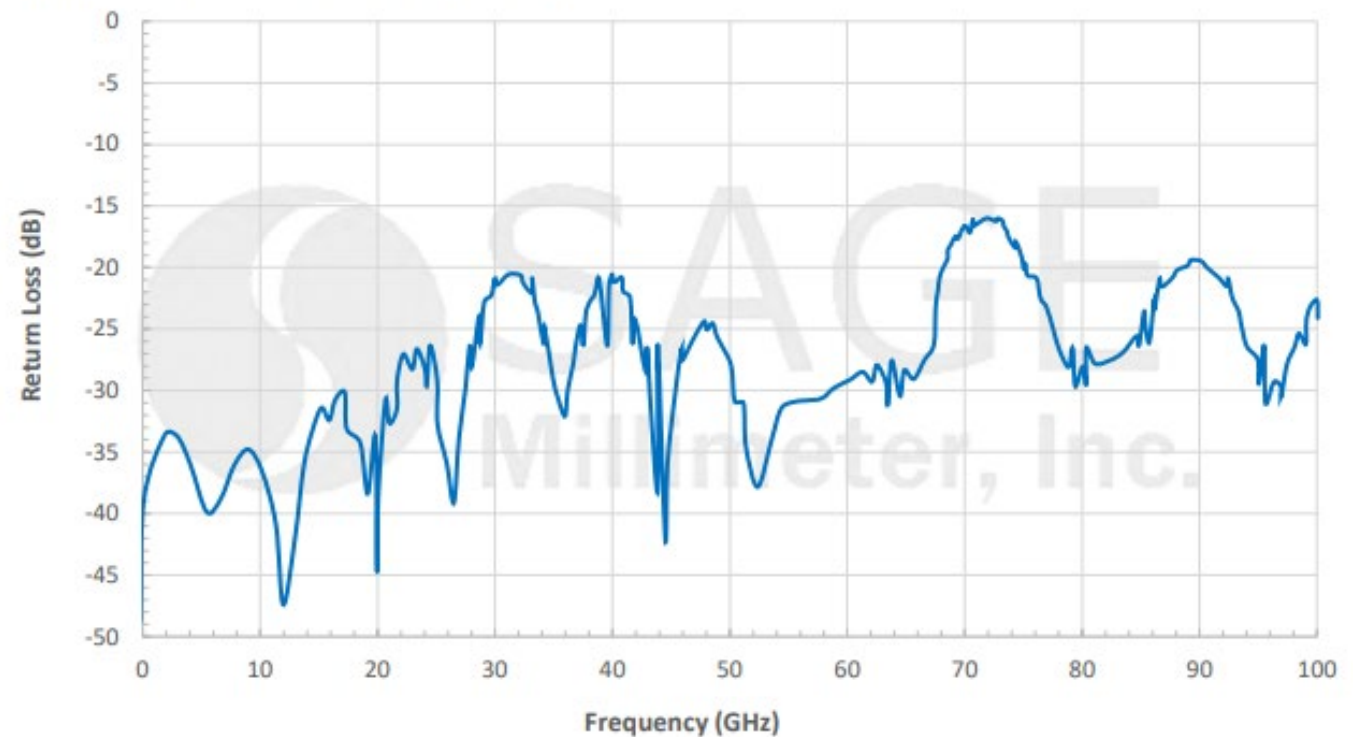
- Male to Male
- Female to Male
- Female to Female
- Between Series



Between Series: SCT-AF1F-UB
SMPS (G3PO) to 1 mm (F)

SMPS (F) to 1.0 mm (F) Coaxial Adapter

Typical Return Loss vs. Frequency



COMPONENTS FOR TEST STATIONS & LABS

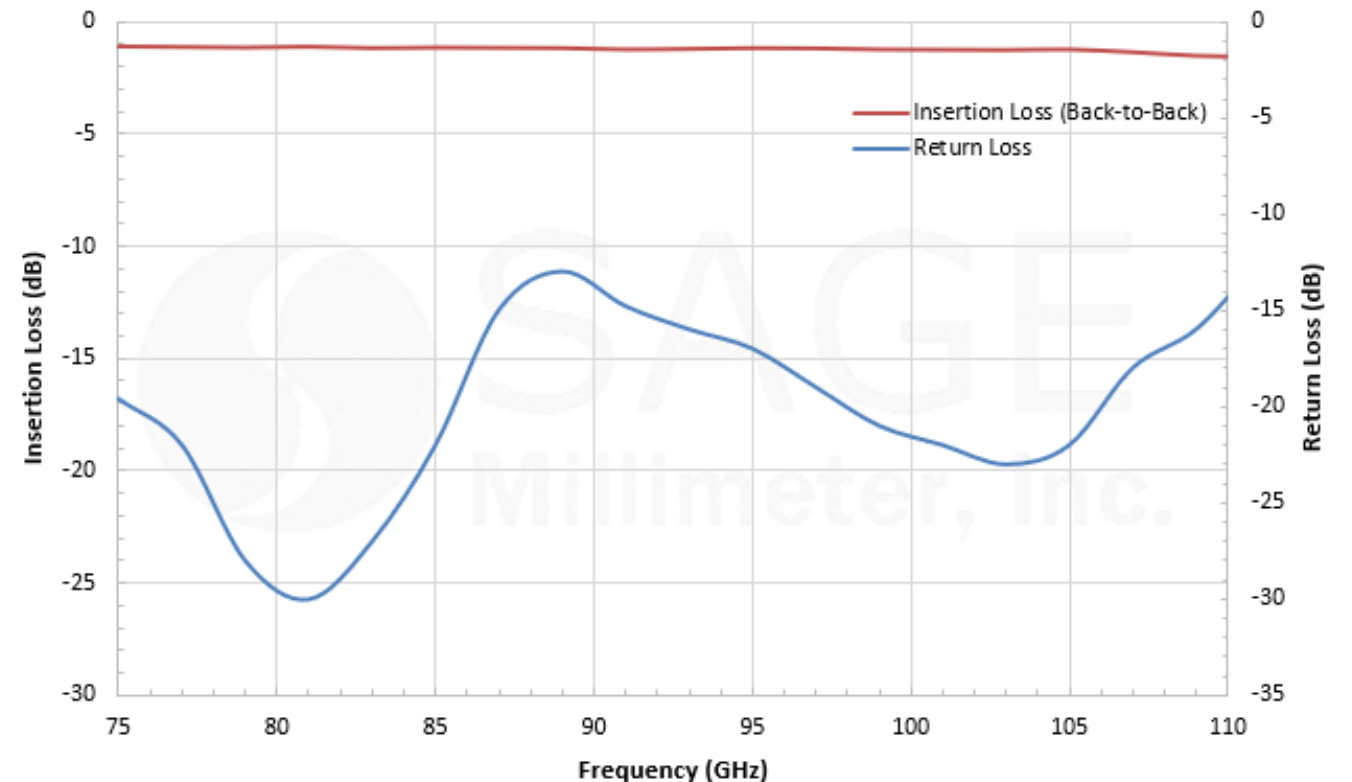
Waveguide to Coax Adapters

- Standard Waveguide
- 40 to 125 GHz
- End Launch
- COTS Models



SWC-101F-E1
WR-10 to 1.0 mm (F)

Typical Return Loss and Back-to-Back Insertion Loss vs. Frequency



COMPONENTS FOR TEST STATIONS & LABS

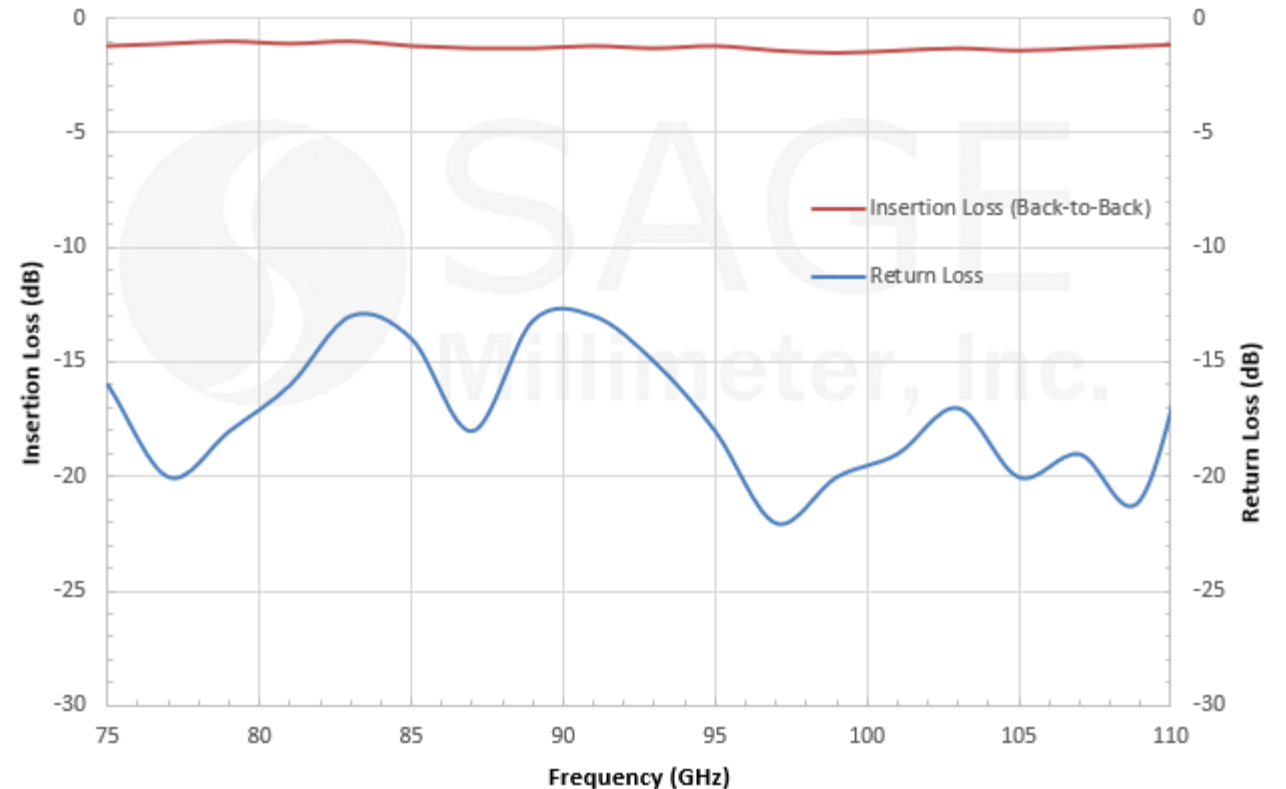
Waveguide to Coax Adapters

- Standard Waveguide
- 40 to 125 GHz
- Right Angle
- COTS Models



SWC-101M-R1
WR-10 to 1.0 mm (M)

Typical Return Loss and Back-to-Back Insertion Loss vs. Frequency



COMPONENTS FOR TEST STATIONS & LABS

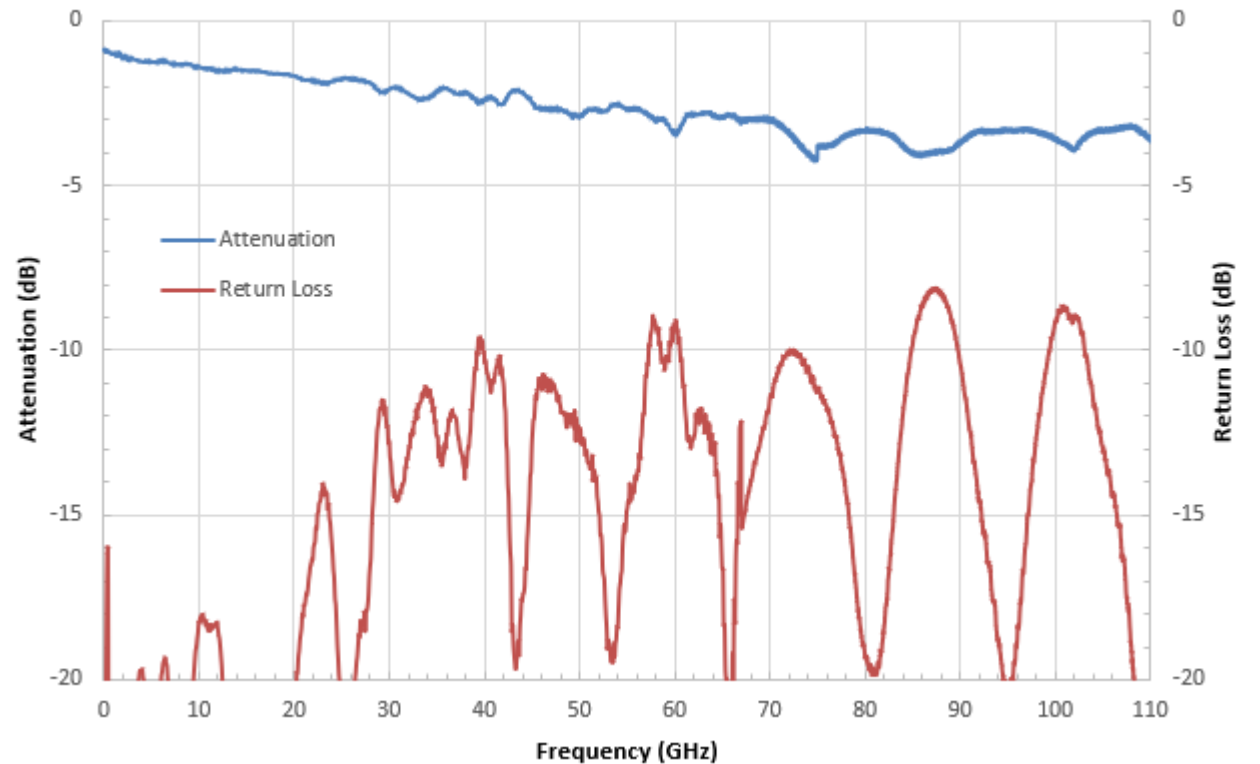
Coax Attenuators (SCA)

- Fixed
- DC to 110 GHz
- 3 dB, 6 dB, 9 dB, 12 dB
- COTS Models



SCA-03-1M1F-S1
3 dB

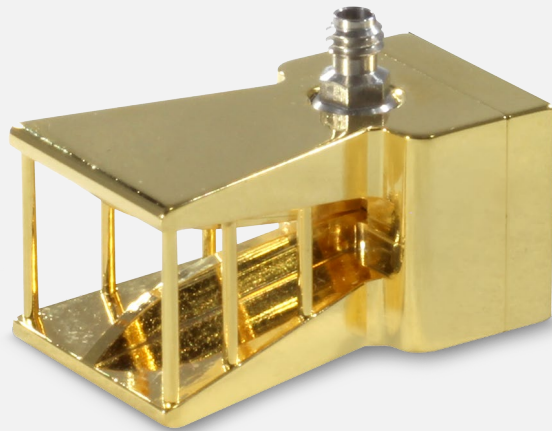
Attenuation and Return Loss vs. Frequency



COMPONENTS FOR TEST STATIONS & LABS

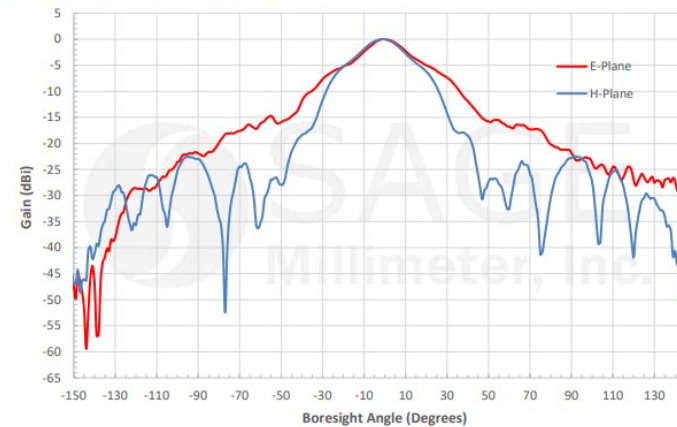
Dual Ridged Antenna (SAV)

- Broad Bandwidth
- 14 to 110 GHz
- COTS

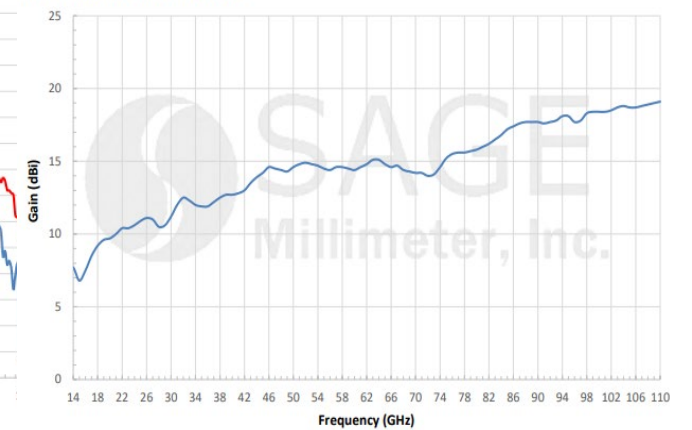


SAV-1431141535-1F-U5
15 dB Nominal Gain

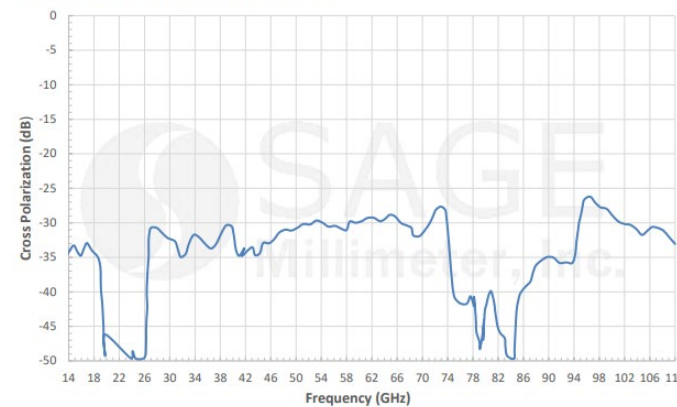
Typical Antenna Pattern @ 62 GHz



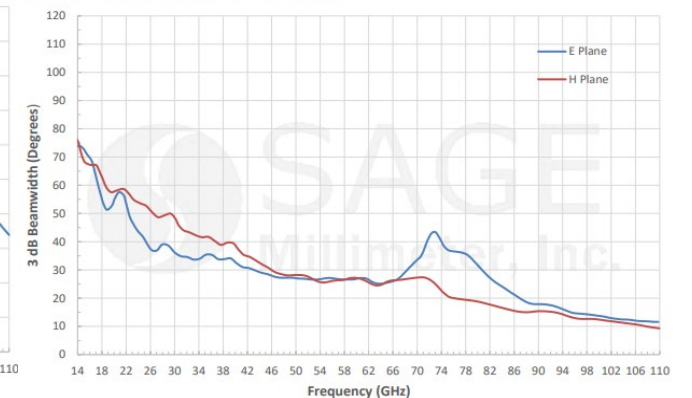
Typical Gain vs. Frequency



Typical Cross Polarization vs Frequency



Typical 3 dB Beamwidth vs Frequency



COMPONENTS FOR TEST STATIONS & LABS

Boosting Amplifier (SBB)

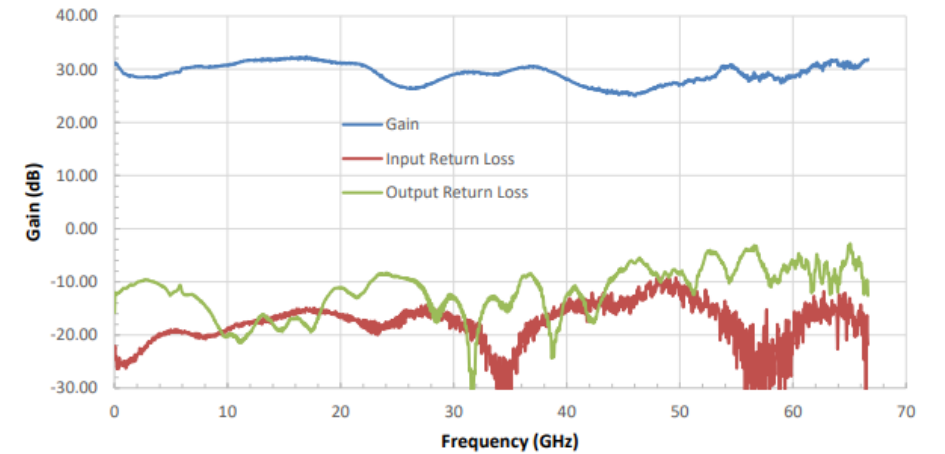
- 0.01 to 70 GHz
- +15 dBm P-1dB
- +16 dBm Psat
- 30 dB Gain



SBB-0117033015-1F1F-E3

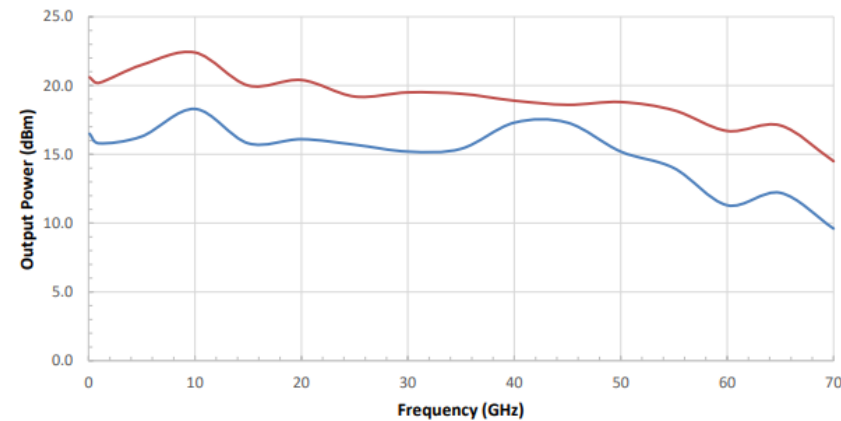
Gain and Return Loss vs. Frequency

Bias: +12 V_{DC}/600 mA



Output Power vs. Frequency

Bias: +12 V_{DC}/600 mA



COMPONENTS FOR INSTRUMENTATIONS

These products are designed and manufactured for Instrumentations.

- SPDT Switch
- Power Amplifier
- Broad Bandwidth Amplifier

COMPONENTS FOR SUB-SYSTEM & SYSTEM APPLICATIONS

SPDT Switch (SKD)

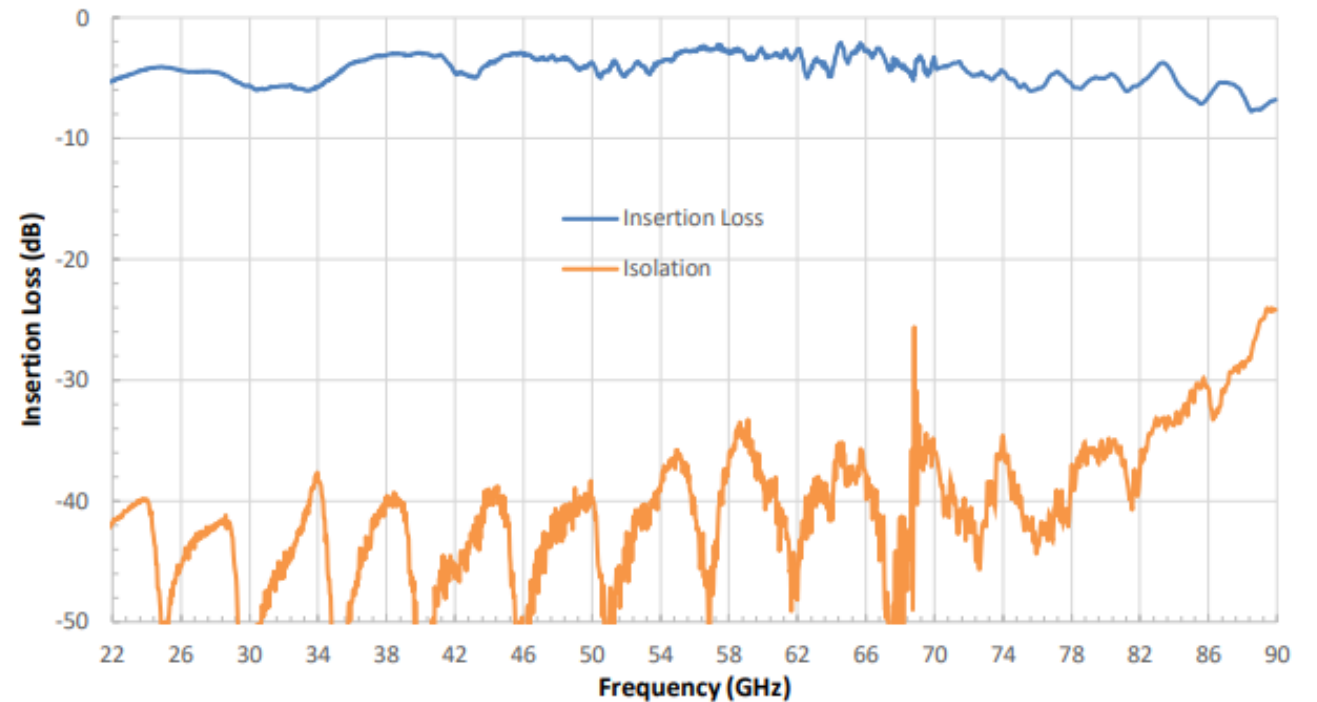
- Electrical
- 22 to 90 GHz
- 6 dB Insertion Loss
- 25 dB Isolation
- COTS



SKD-2239036025-1F1F-R1-M

Typical Insertion Loss and Isolation vs. Frequency

Bias: $\pm 5V_{DC}/15\text{ mA}$



COMPONENTS FOR SUB-SYSTEM & SYSTEM APPLICATIONS

Power Amplifier (SBP)

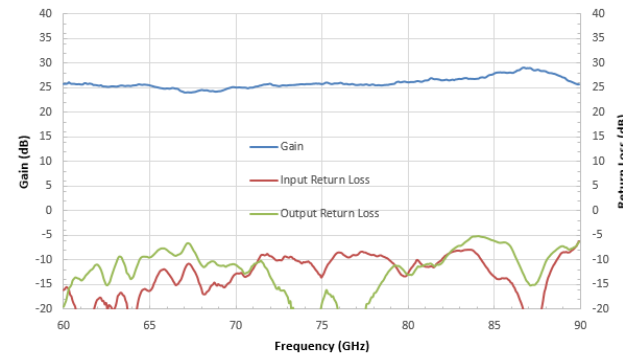
- 60 to 90 GHz
- +16 dBm P-1dB
- +20 dBm Psat
- 25 dB Gain



SBB-6039032516-1F1F-S1

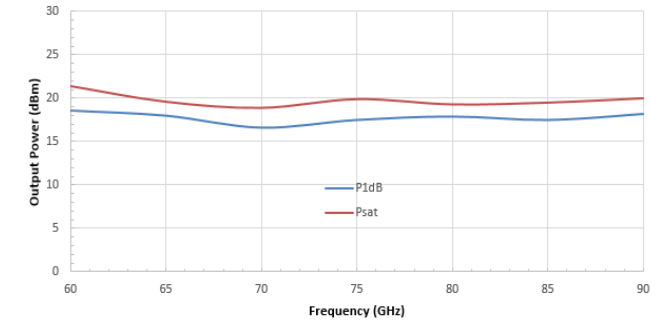
Gain and Return Loss vs. Frequency

Bias: +8 V_{DC}/634 mA



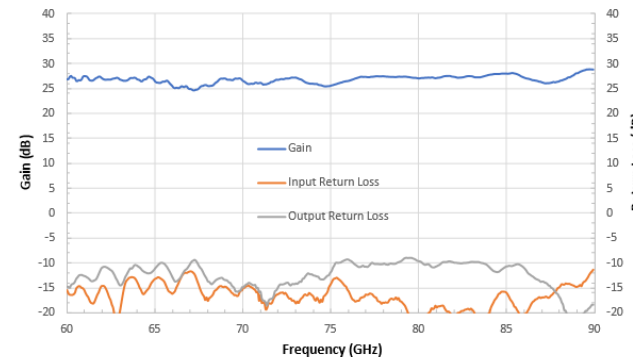
Output Power vs. Frequency

Bias: +8 V_{DC}/634 mA



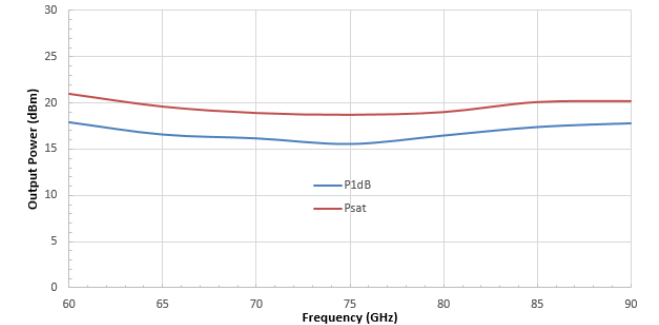
Gain and Return Loss vs. Frequency

Bias: +8 V_{DC}/639 mA



Output Power vs. Frequency

Bias: +8 V_{DC}/639 mA



COMPONENTS FOR SUB-SYSTEM & SYSTEM APPLICATIONS

Broadband Amplifier (SBB)

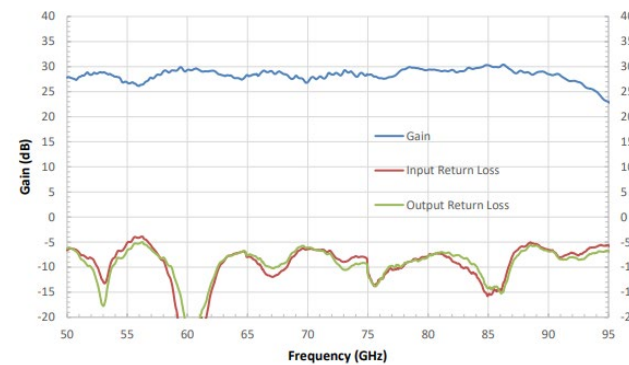
- 50 to 95 GHz
- +10 dBm P-1dB
- +15 dBm Psat
- 25 dB Gain



SBB-5039532510-1F1F-S1

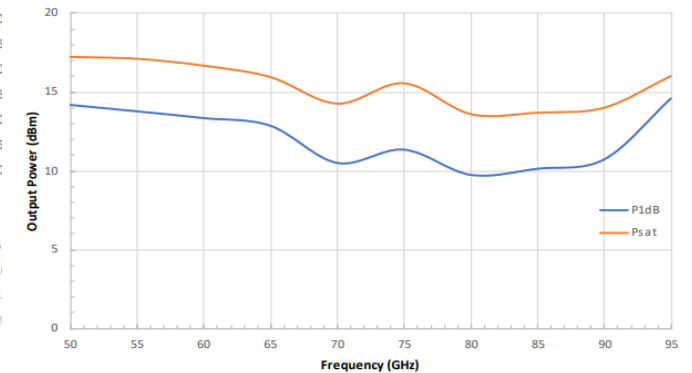
Gain and Return Loss vs. Frequency

Bias: +8 V_{DC}/374 mA



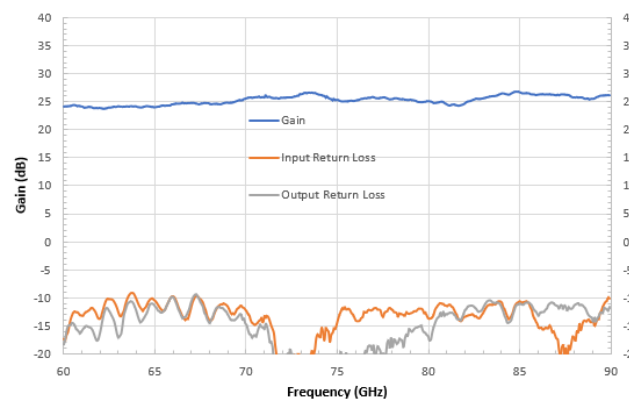
Output Power vs. Frequency

Bias: +8 V_{DC}/374 mA



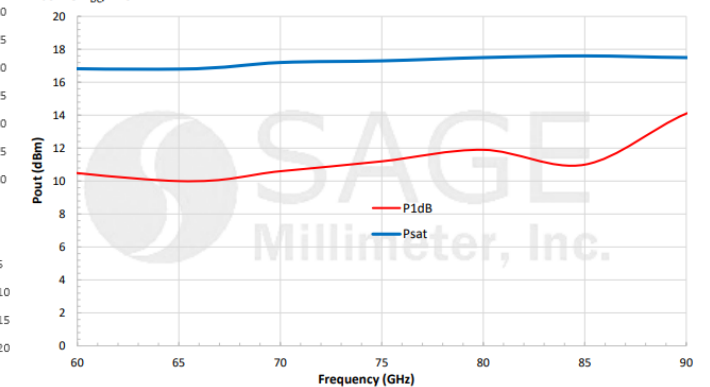
Gain and Return Loss vs. Frequency

Bias: +8 V_{DC}/260 mA



Typical Output Power vs. Frequency

Bias: +8 V_{DC}/270 mA



COMPONENTS UNDER DEVELOPMENT

Because of Covid -19, products listed on the right, development is delayed.

Electrical and mechanical designs of some products were completed.

The projected performance of some products are simulated.

The final measured data will be included in their datasheets and released on Eravant website in the coming months.

POWER DIVIDER

DIRECTIONAL COUPLER

DC BLOCK

BIAS TEE

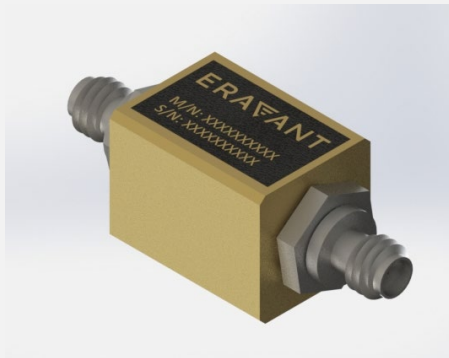
FILTER

MIXER

THE COMPONENTS UNDER DEVELOPMENT

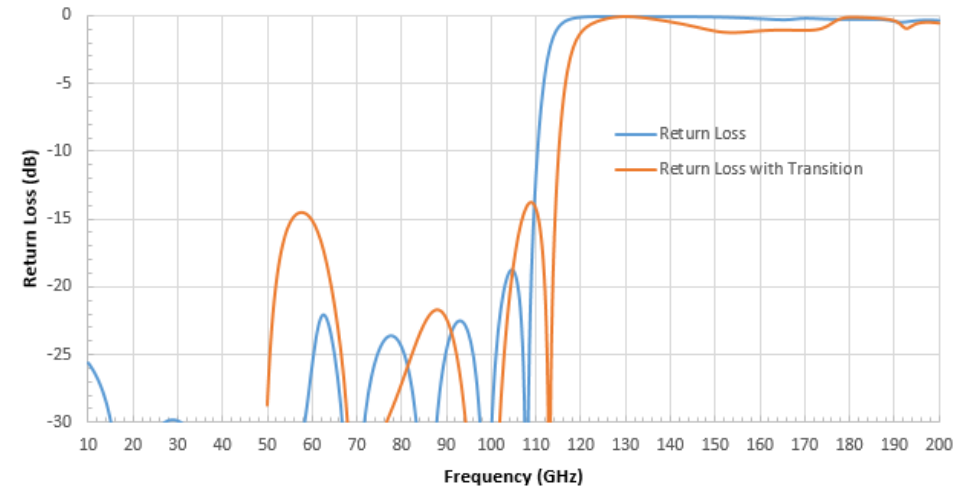
Lowpass Filter (SCF)

- 50 to 95 GHz
- +10 dBm P-1dB
- +15 dBm Psat
- 25 dB Gain

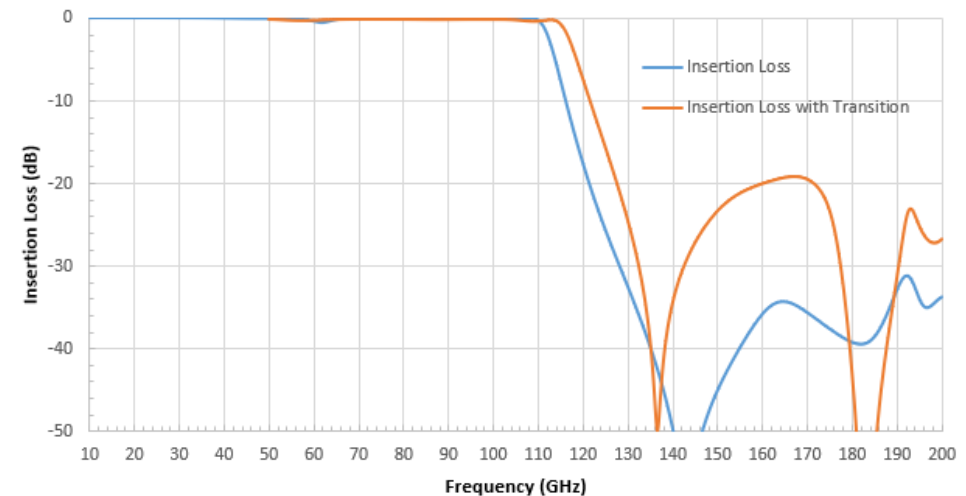


SCF1141243540-1F1F-S1

Simulated Return Loss vs. Frequency



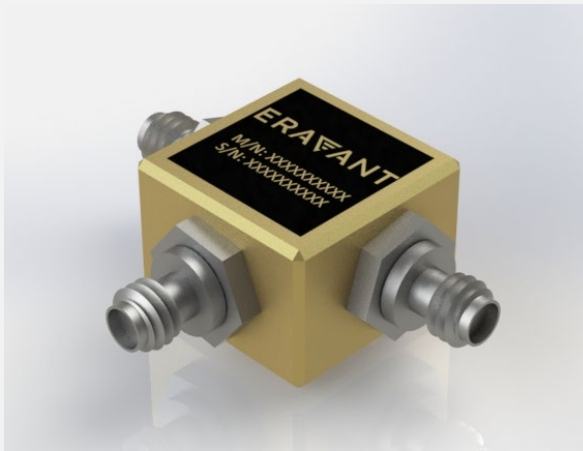
Simulated Insertion Loss vs. Frequency



THE COMPONENTS UNDER DEVELOPMENT

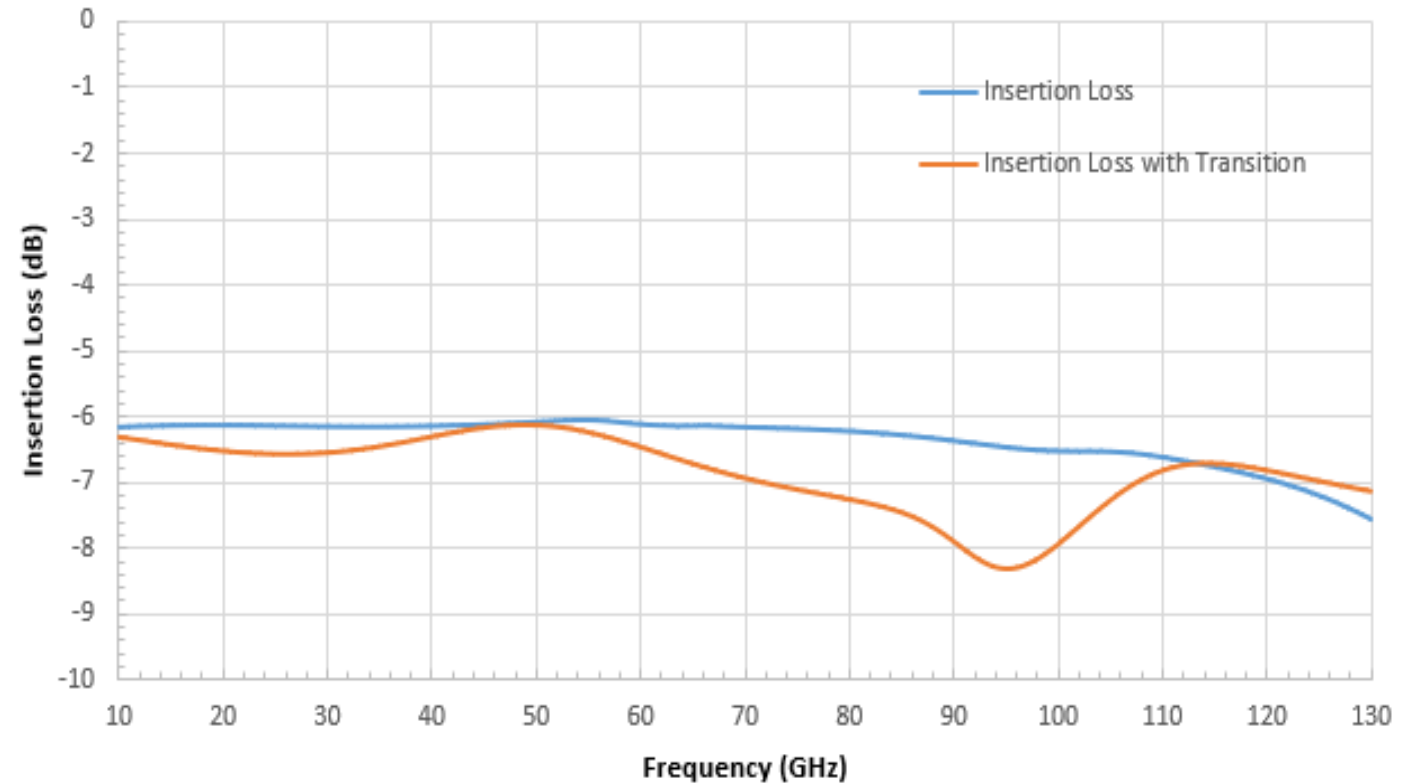
Power Divider (SCS)

- 10 to 110 GHz
- 7.0 dB Insertion Loss



SCS-1031142515-1F1F-22

Simulated Insertion Loss vs. Frequency



CONCLUSION

Many one-millimeter (1 mm) connector-based products are developed and are readily available for industry to adapt.

These products are coax cables, coax adapters, waveguide to coax adapters, fixed attenuators, broadband dual ridged antenna and boosting amplifier, broadband SPDT switch, power amplifier and broadband amplifier, etc..

The further products, power divider, directional coupler, DC block, bias tee, filter and balanced mixer, etc. are undergoing and will be available soon.