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Millimeter-Wave High Power Amplifiers – QPN



Active Frequency Multipliers – QMM



Waveguide High-Power Termination – QTW



Waveguide to Coax Adapters – QWT



Micrometer Type Level Set Attenuator – QAL



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QJY/QJI
QJE/QJF
QIF
QCY/QCI
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QSN
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Waveguide to Coax Adapters

QJR
QJB/QJD
QDC
QJC
QJX
QJH
QSP
QMD
QFB
QFL
QFH
QNF
QUH
QWS/QWR/QWP
QAC
QWN/QTW/QTZ
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Motorized, Programmable Attenuators
Motorized, Programmable Phase Shifters

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Linear to Circular Fixed and Switchable Polarizers
Circular-to-Rectangular Waveguide Transitions
Mode Transition TE01 to TE10
Mode Filter
Circular Waveguide (TE11) Sections and Flanges
Circular Waveguide Termination
TE01 Circular Waveguide Sections and Flanges
Rotary Joints
Antenna Development Capability & Measurement Facility

QWH
QRR
QSH/QSW
QSF
QOD
QIA
QRP
QRC
QWO
QOT
QWL/QWQ
QWC
QMT
QMF
QCW
QTC
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QRJ

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QPP-94043335-00 W-Band MMW Dual-Mode SSPA

DESCRIPTION

QPP is a GaAs-based SSPA featuring high performance from 24 – 100 GHz in key frequency bands. Advanced MMICs and discrete devices deliver state-of-the-art power and high gain. The interface features waveguide or coaxial I/O. Conduction cooling through the base plate is available with optional heatsink and fans. This amplifier operates from -10°C to 60°C. QuinStar customizes amplifiers to meet specific requirements.



FEATURES

- Variable pulsed (0-100%) and CW operation
- Fast switching speed (<25 nsec typical)
- High-efficiency power combining design

APPLICATIONS

- High-reliability radar transmissions
- Data communication systems
- General test equipment

ELECTRICAL SPECIFICATIONS

PARAMETER	MINIMUM	TYPICAL	MAXIMUM
Frequency	92 GHz		96 GHz
Gain		35 dB	
P _{1dB}		+33 dBm	

ELECTRICAL SPECIFICATIONS

FREQUENCY (GHZ)	P _{1dB} (dBm)	P _{sat} (dBm)
92	31	34.1
93	30.5	33.5
94	30.3	33.5
95	30	33.3
96	30	33.2

MADE IN U.S.A.

QUINSTAR TECHNOLOGY, INC. | 24085 Garnier St. | Torrance, CA 90505 U.S.A. | (310) 320-1111 | sales@quinstar.com

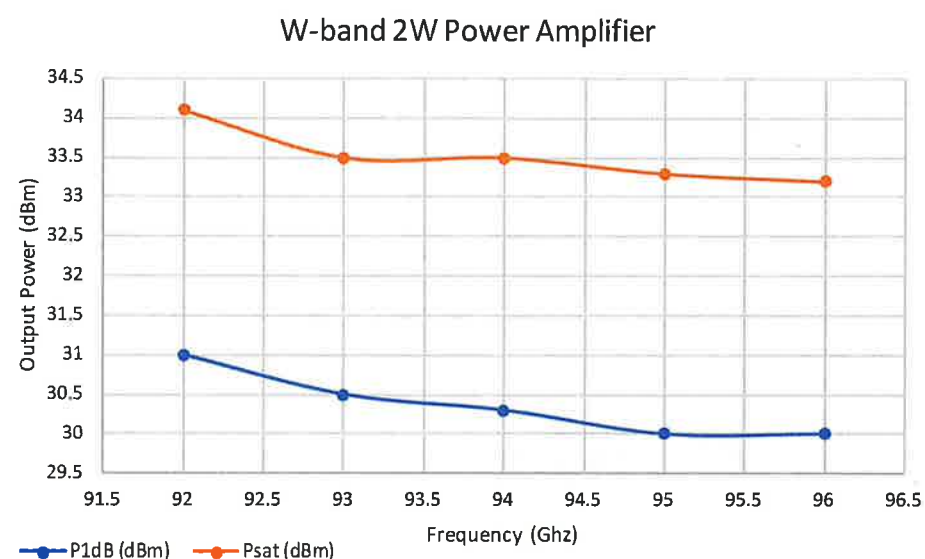
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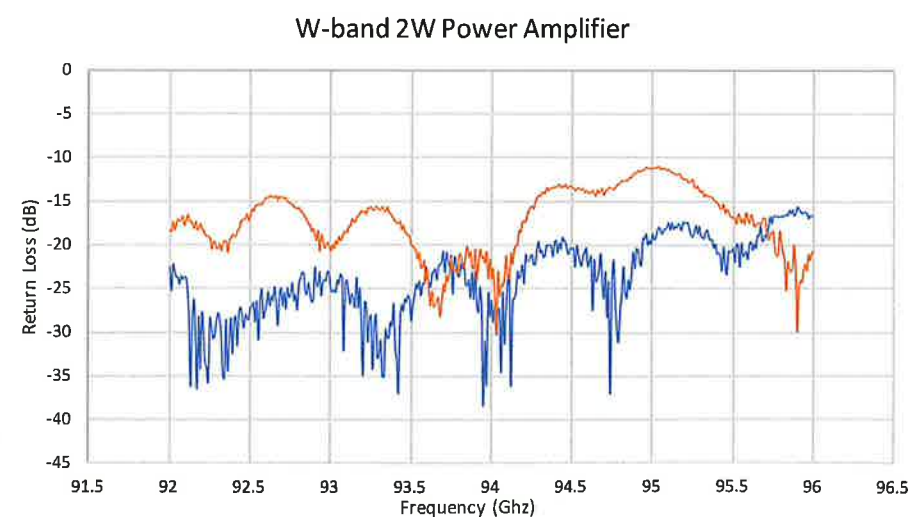
QPP-94043335-00

W-Band MMW Dual-Mode SSPA

TYPICAL OUTPUT POWER VS. FREQUENCY



TYPICAL RETURN LOSS VS. FREQUENCY



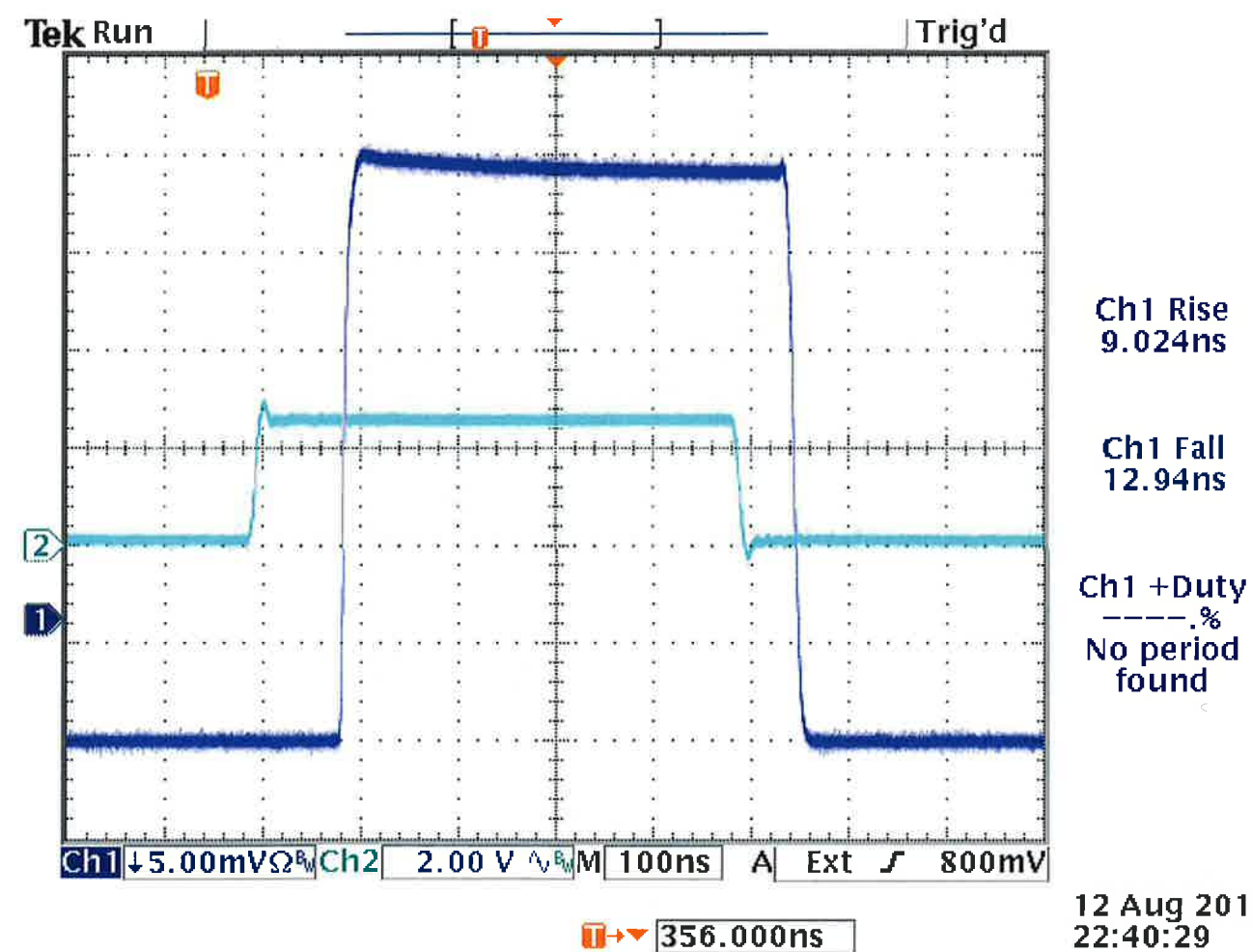
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W-Band MMW Dual-Mode SSPA

TYPICAL PULSED AMPLIFIER ON-OFF PERFORMANCE



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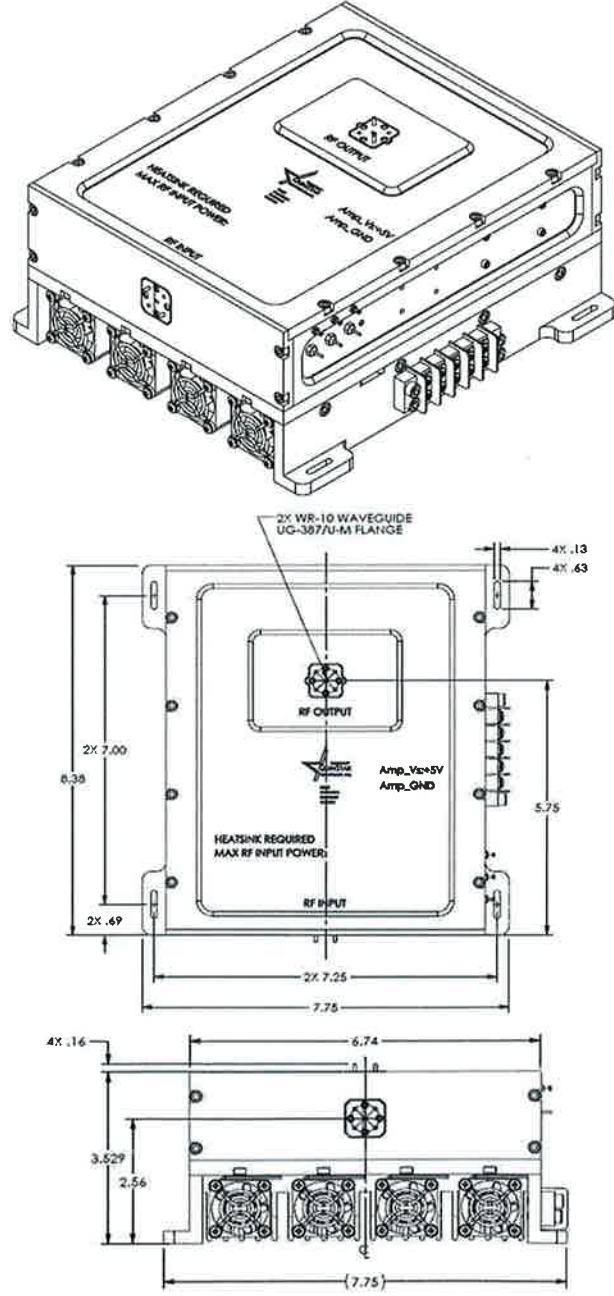


QPP-94043335-00

W-Band MMW Dual-Mode SSPA

MECHANICAL OUTLINE (WITH OPTIONAL HEATSINK AND FANS)

Note: Dimensions in Inches

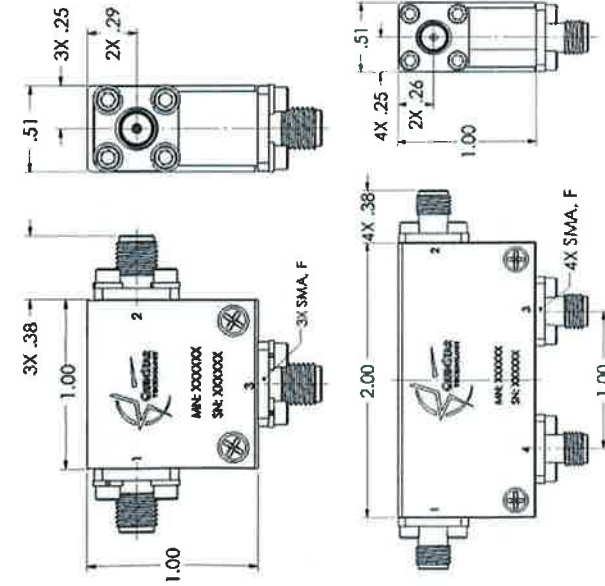
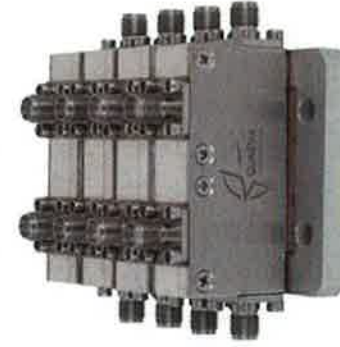


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Cryogenic Arrays

Cryogenic arrays are custom designed to meet your requirements. Stacked and individually tuned for optimal performance and compact size. Arrays can be configured in many channel formations—1X4, 2X2, 3X2, etc.



3 Shielding Options:

Standard shielding offers no magnetic protection. Internal magnets can affect nearby components and external magnetic fields can affect the units. Units must be 4 - 6" apart.

μ-metal shielding shields against low-level magnetic fields but doesn't protect the unit when exposed to high-level magnetic fields. Units can be next to each other. **Does not increase unit size.**

Shield can or double shielding offers maximum shielding. Units withstand up to 1.5K Gauss without interference. Units can be next to each other. **Increases unit size.**

About QuinStar

QuinStar is an R&D-based engineering company. Our comprehensive onsite capabilities and experienced team keep us at the leading edge of cryogenic product development. We continually advance SOA performance and trim unit size to meet emerging requirements.

Contact QuinStar

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www.QuinStar.com



QuinStar engineers have **35+ years** experience in cryogenic ferrite product design. They work directly with customers to develop state-of-the-art custom solutions.



4.0 - 12.0 GHz

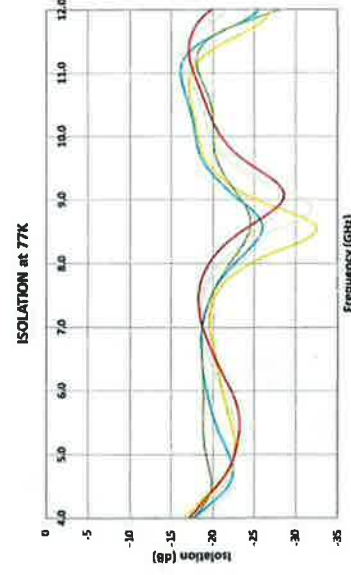
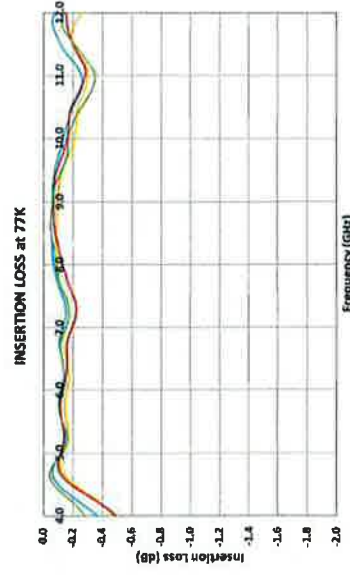
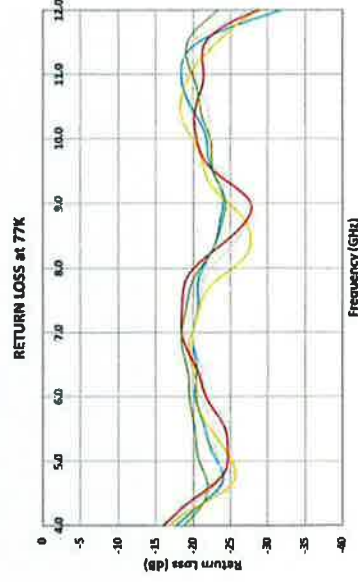
Cryogenic

- Circulators
- Isolators
- Arrays

Exceptional broadband performance down to mK range.

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Typical Data for Single Junction



Engineering MW and MMW
solutions since 1993.

4.0 – 12.0 GHz

Cryogenic Circulators and Isolators

Exceptional broadband performance

77K down to mK range

Applications include:

Quantum Computing
Radio Astronomy
Particle Physics Research

QCY-G0401201AU / QCI-G0401201AU



Single Junction
Circulator/
Isolator*

Typical at 77K:

Return Loss	20.0 dB
Insertion Loss	0.20 dB
Isolation	20.0 dB

QCY-G0401202AU / QCI-G0401202AU



Double Junction
Circulator/
Isolator*

Typical at 77K:

Return Loss	20.0 dB
Insertion Loss	0.40 dB
Isolation	36.0 dB

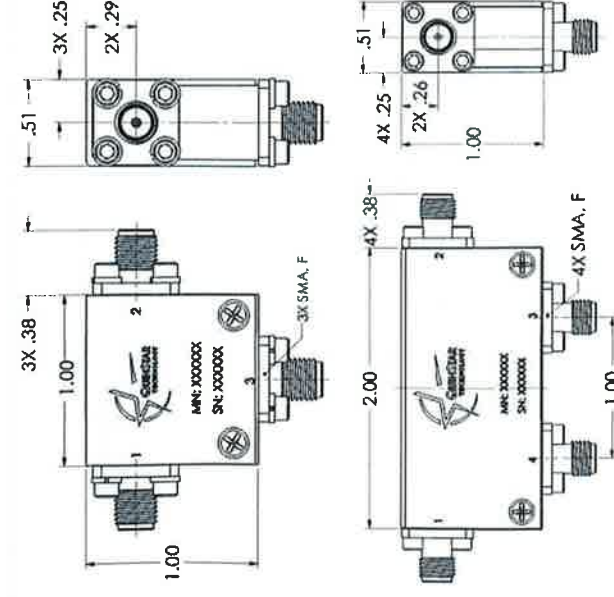
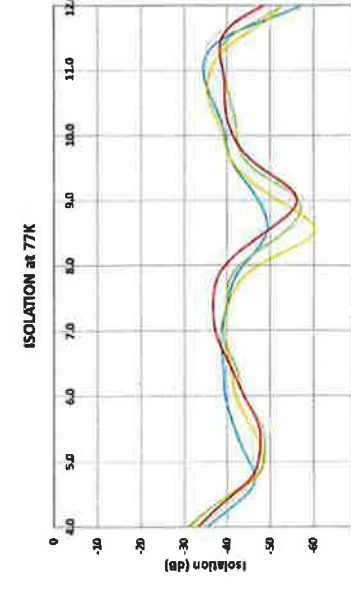
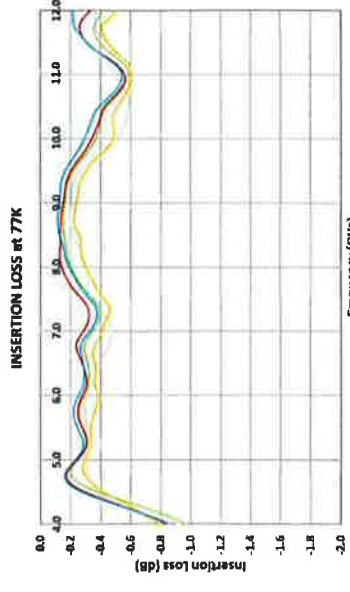
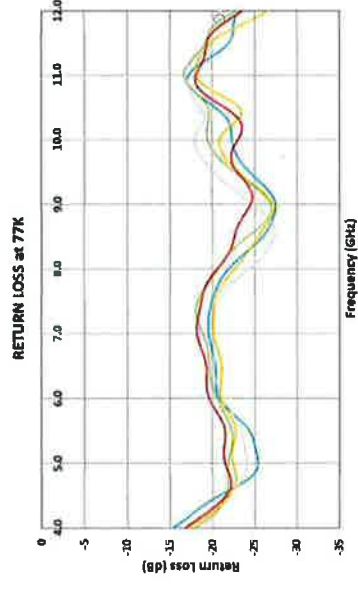
*Any port can be terminated for isolator.

Any port can be biased with pin or connector.

Triple and higher junctions available.

www.QuinStar.com

Typical Data for Double Junction



3 Shielding Options:

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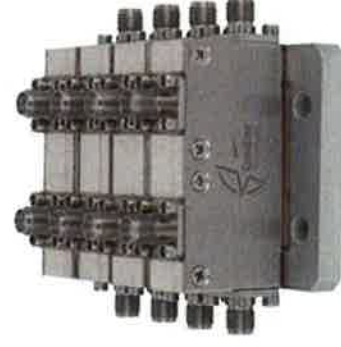
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Cryogenic Arrays

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4.0 – 8.0 GHz

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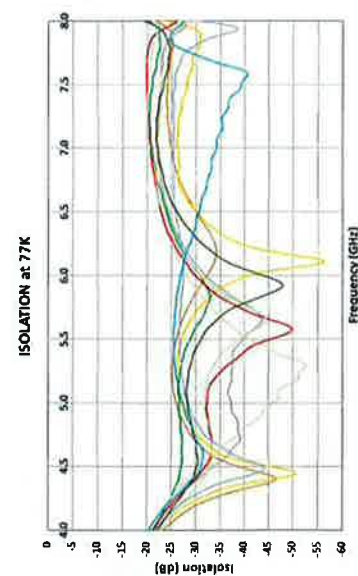
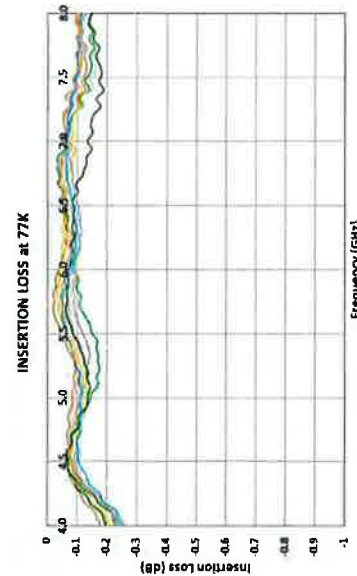
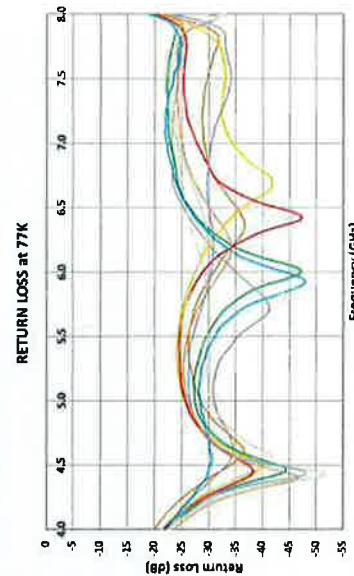
Cryogenic

- Circulators
- Isolators
- Arrays

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down to mK range.

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Typical Data for Single Junction



Engineering MW and MMW
solutions since 1993.

4.0 – 8.0 GHz Cryogenic Circulators and Isolators

Exceptional broadband performance

77K down to mK range

Applications include:

- Quantum Computing
- Radio Astronomy
- Particle Physics Research

QCY-G0400801AU / QCI-G0400801AU



Single Junction
Circulator/
Isolator*

Typical at 77K:

Return Loss	24.0 dB**
Insertion Loss	0.15 dB**
Isolation	24.0 dB**

QCY-G0400802AU / QCI-G0400802AU



Double Junction
Circulator/
Isolator*

Typical at 77K:

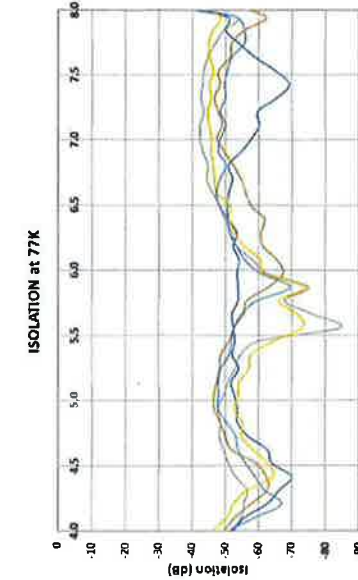
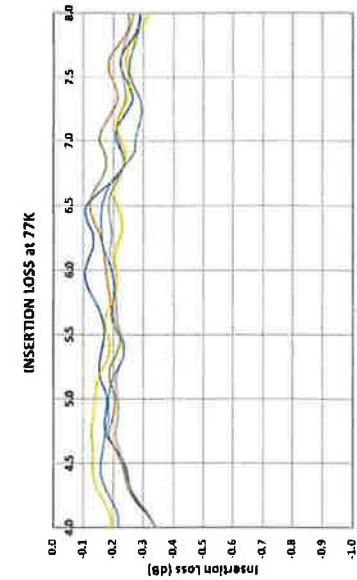
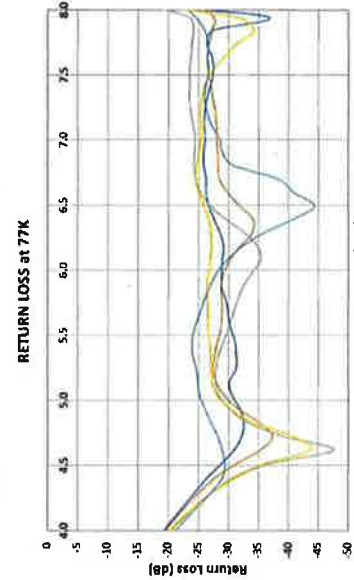
Return Loss	24.0 dB**
Insertion Loss	0.25 dB**
Isolation	44.0 dB**

*Any port can be terminated for isolator. Any port can be biased with pin or connector.

**Standard unit. Premium version meets higher performance requirements.

Triple and higher junctions available.

Typical Data for Double Junction



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Description

QuinStar's QPN Millimeter-Wave High-Power Amplifiers use advanced Monolithic Integrated Circuits (MMICs) and discrete devices to achieve state-of-the-art power. Power performance at 4 GHz bandwidth is in the 18 – 95 GHz frequency range. Many options are available. For example, our standard housing comes in wide-ranging combinations of input and output coaxial connectors or waveguide ports. We offer 2.9 mm coaxial connectors for 18 – 40 GHz amplifiers. For 40-50 GHz amplifiers, we offer 2.4 mm coaxial connectors. Finally, we offer 1.9 mm connectors for frequencies beyond. Appropriate waveguide input and output ports are available for 18 – 95 GHz. With this in mind, QuinStar can produce any valid combination of coaxial and waveguide input and output ports.

QuinStar's QMM-93351306 is a state-of-the-art active multiplier device for frequency multiplication and amplification over the 75 – 110 GHz frequency range. This frequency multiplier has an SMA input port and WR-10 waveguide output port. With 5 dBm input power, signals from 12.5 – 18.33 GHz are multiplied and amplified to 12 – 14 dBm covering full W band 75 – 110 GHz. This x6 multiplier is useful as part of the LO chain of communication and radar systems. It can also provide a simple and cost-effective solution for signal multiplication in a variety of custom test system applications.

QTW High-Power Termination features a standard waveguide flange interface from 12.4 – 220 GHz in Ku through G bands. The termination is a short length of waveguide and an integral matched terminal load. We taper the individual resistive dielectric loads to precise wedge configurations. This maximizes effective power absorption. We also designed the gradual taper to ensure a low VSWR over the full waveguide band. These loads absorb from 100 Watts to 300 Watts of power depending on the frequency band of the high-power termination.

Additionally, QuinStar offers a broad line of waveguide terminations in a variety of shapes and styles, power-handling capacities, and cooling methods to suit both typical and special applications. Click here to see QuinStar's complete line-up of load and termination products.

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QuinStar's QAL Micrometer Type Level Set Attenuator is available in seven waveguide bands to cover the frequency range of 18 – 110 GHz. These level set attenuators feature a micrometer. The micrometer enables fine and repeatable adjustments with quick reset. We fabricate QAL using a straight waveguide section. The waveguides incorporate a lossy material for the attenuators. As a result, the operating characteristics are relatively constant over full waveguide bandwidths.