

TECHNICAL SPECIFICATIONS

5G Horn Antenna

Quad Ridged Flared Horn Dual Polarization Antenna

LITEPOINT

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Overview

LitePoint's quad ridged dual polarization horn antenna is designed to perform 5G mmWave Over-the-air test and operates within frequencies ranging from 23 GHz - 45 GHz. The lightweight aluminum antenna comes in two different models – Low gain and High gain horn antenna and is scalable for different beamwidths, gain and form factor requirements.

The high gain horn antenna is ideal for design validation and antenna pattern measurements in a direct far field OTA chamber. The low gain horn antenna is ideal for shorter far field distances, such as a manufacturing-oriented small OTA test chamber. These antennas can be easily mounted inside an OTA chamber and be used with LitePoint's IQgig-5G to perform over-the-air RF measurements.



Low Gain Antenna (0150-IG5G-022)



High Gain Antenna (0150-IG5G-023)



Technical Specifications

Low Gain Antenna (0150-IG5G-022)

Specification	Value
Frequency Range	23 GHz - 45 GHz
Antenna Gain 23 GHz 45 GHz	6.5 dBi (Typical) 11.5 dBi (Typical)
Polarization	Dual Polarization
3 dB Beamwidth 23 GHz, E Plane 23 GHz, H Plane 45 GHz, E Plane 45 GHz, H Plane	56° (Typical) 58° (Typical) 30° (Typical) 40° (Typical)
Cross Polarization Isolation	20 dB
Port to Port Isolation	23 dB
VSWR 23 - 27.5 GHz 27.5 - 45 GHz	2.6 (Typical 2.5) 2.2 (Typical 2.1)

High Gain Antenna (0150-IG5G-023)

Specification	Value
Frequency Range	23 GHz - 45 GHz
Antenna Gain 23 GHz 45 GHz	10.5 dBi (Typical) 14.5 dBi (Typical)
Polarization	Dual Polarization
3 dB Beamwidth 23 GHz, E Plane 23 GHz, H Plane 45 GHz, E Plane 45 GHz, H Plane	30° (Typical) 42° (Typical) 22° (Typical) 22° (Typical)
Cross Polarization Isolation	20 dB
Port to Port Isolation	23 dB
VSWR 23 - 27.5 GHz 27.5 - 45 GHz	2.6 (Typical 2.5) 2.2 (Typical 2.1)

Electrical Specifications

Specification	Value
Power Handling	10W
Specification Temperature	+25°C

Mechanical Specifications

Low Gain Antenna (0150-IG5G-022)

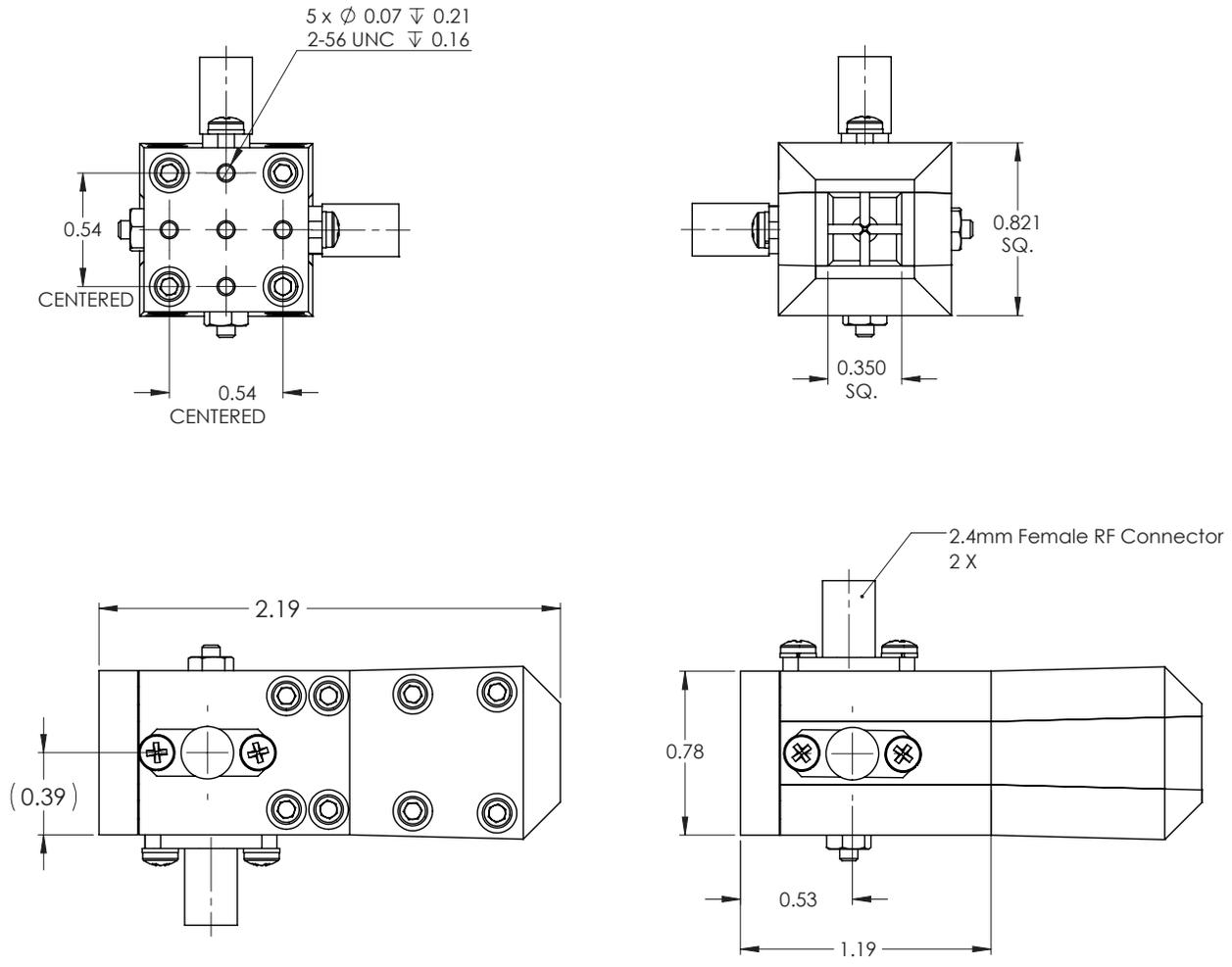
Specification	Value
Antenna Ports	2.4 mm Female
Material	Aluminum
Finish	Metal
Size	20.85 mm X 20.85 mm X 55.62 mm (0.82 in X 0.82 in X 2.19 in)
Net Weight	59.5 gm

High Gain Antenna (0150-IG5G-023)

Specification	Value
Antenna Ports	2.4 mm Female
Material	Aluminum
Finish	Metal
Size	29.71 mm X 29.71 mm X 61.21 mm (1.17 in X 1.17 in X 2.41 in)
Net Weight	75.5 gm

Mechanical Drawings

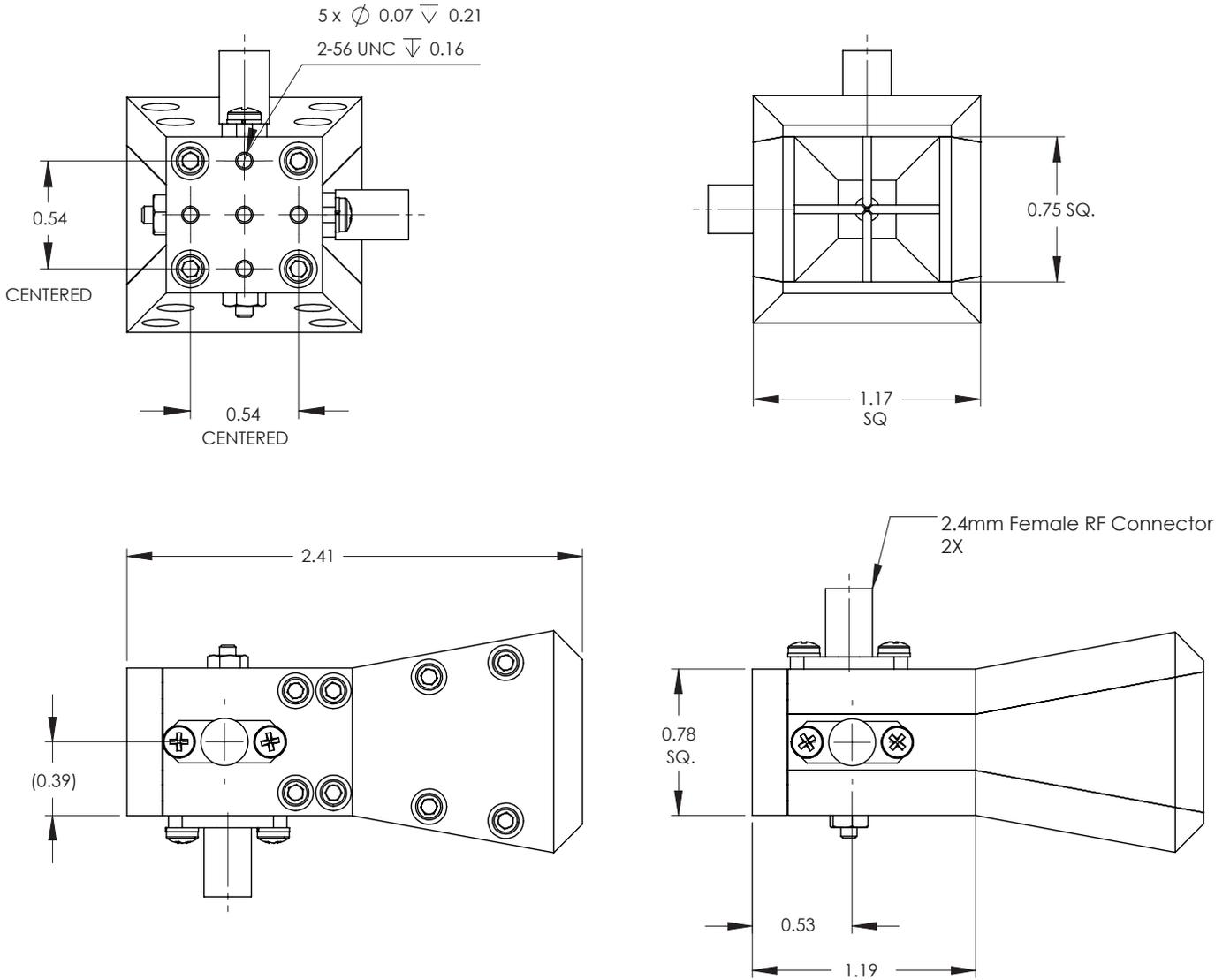
Low Gain Antenna (0150-IG5G-022)



*Size = inch

Mechanical Drawings

High Gain Antenna (0150-IG5G-023)



*Size = inch

Performance Characteristics



Note: The antenna ports are referred to as "Port A" and "Port B" in this data-sheet and as "H-Pol (H)" and "V-Pol (V)" respectively in the horn antenna calibration data file.

Low Gain Antenna (0150-IG5G-022)

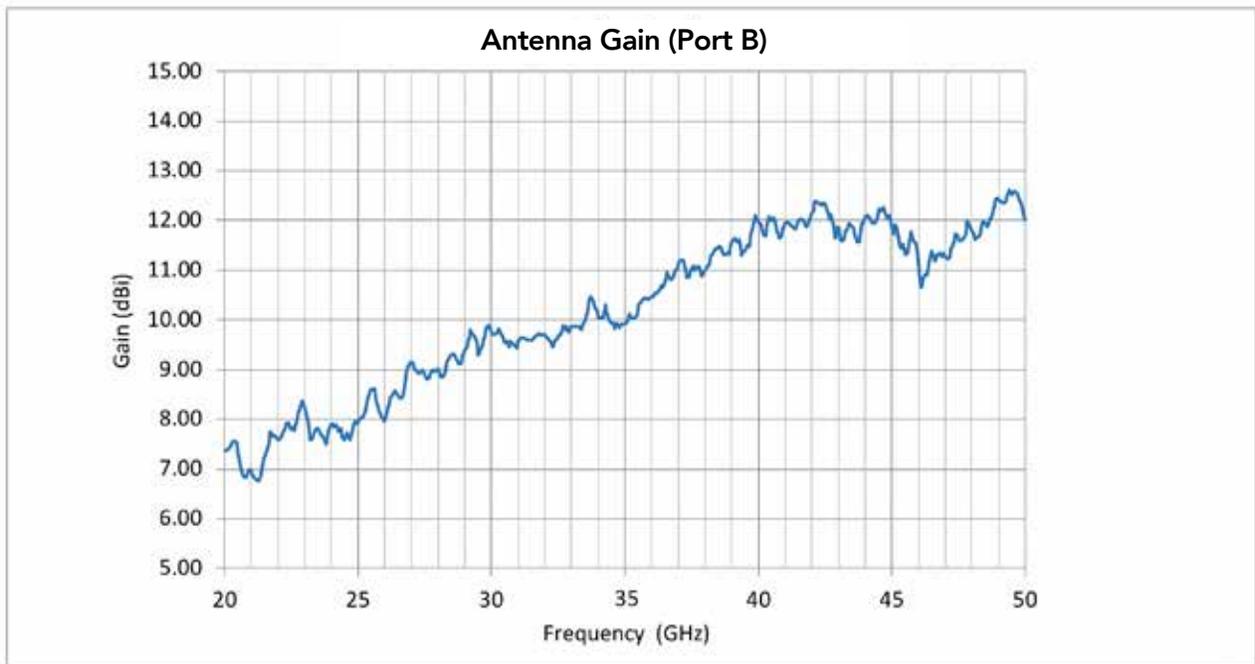


Figure 1: Antenna Gain, Port B

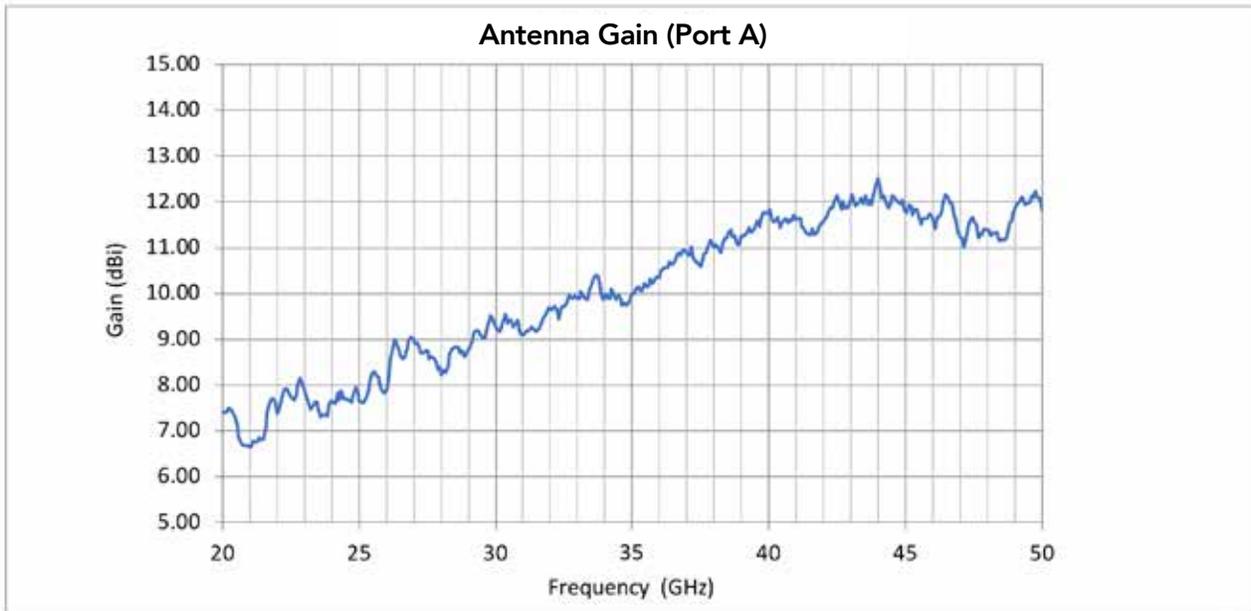


Figure 2: Antenna Gain, Port A

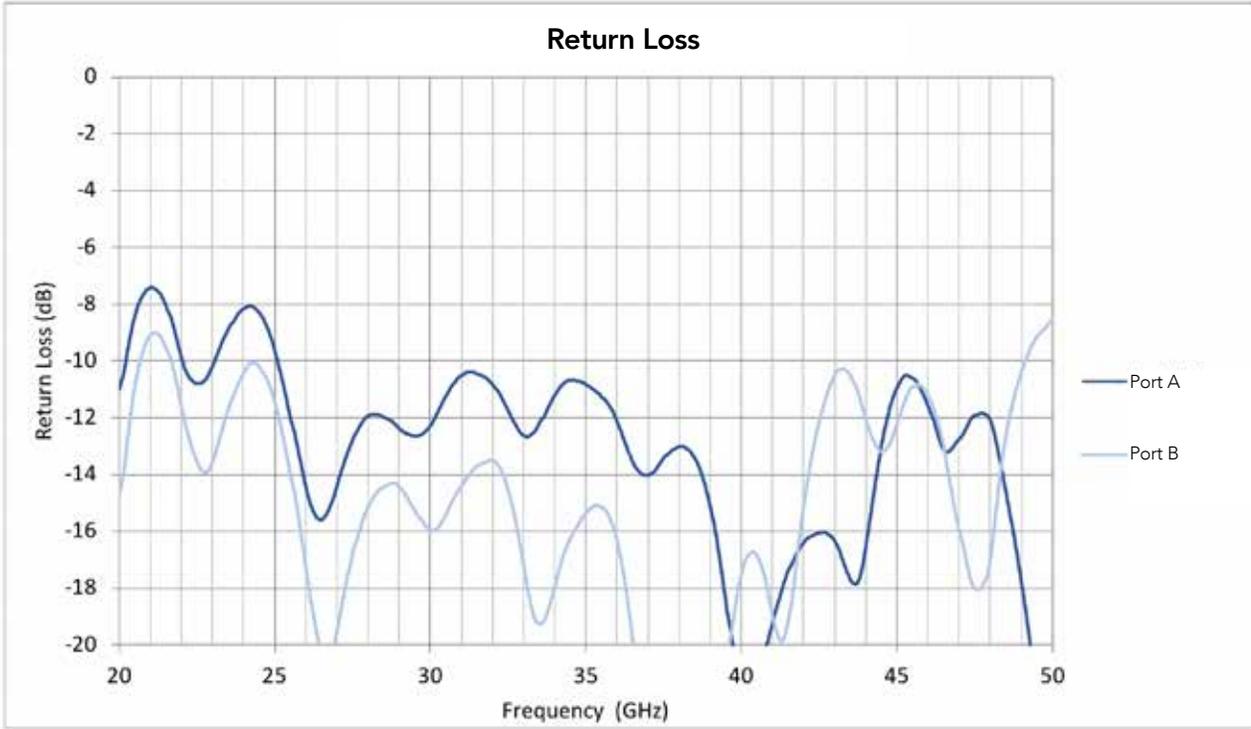


Figure 3: Return Loss

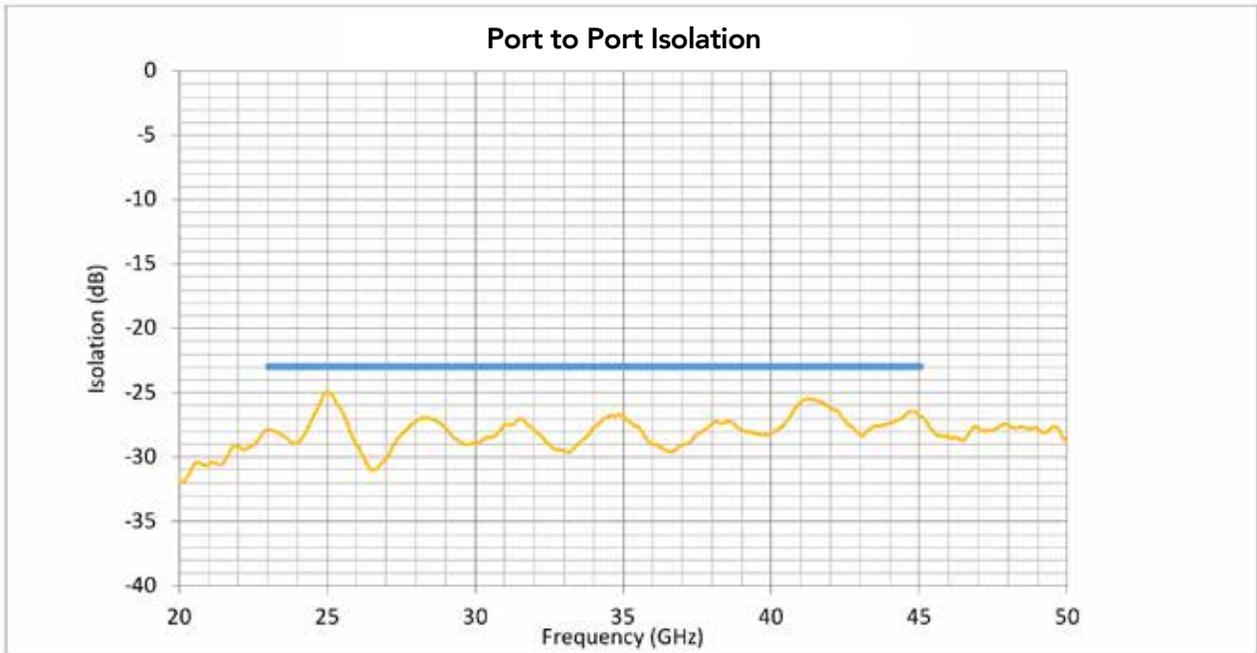


Figure 4: Port-to-Port Isolation

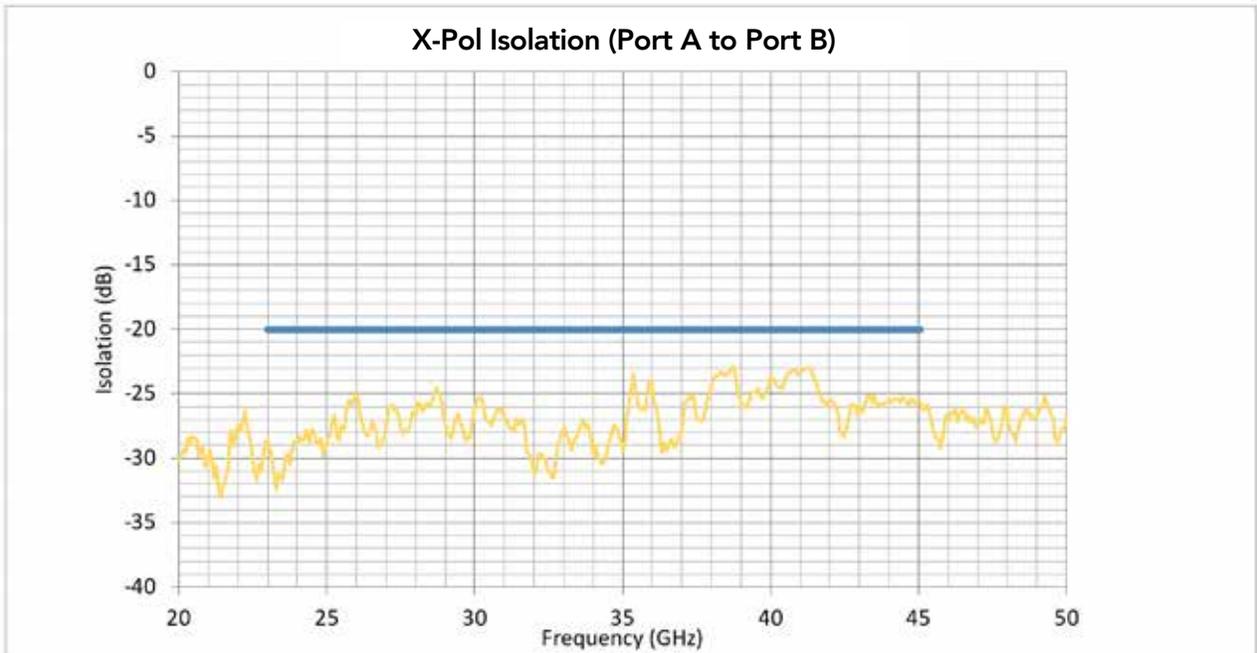


Figure 5: Cross Polarization Isolation Port A to Port B

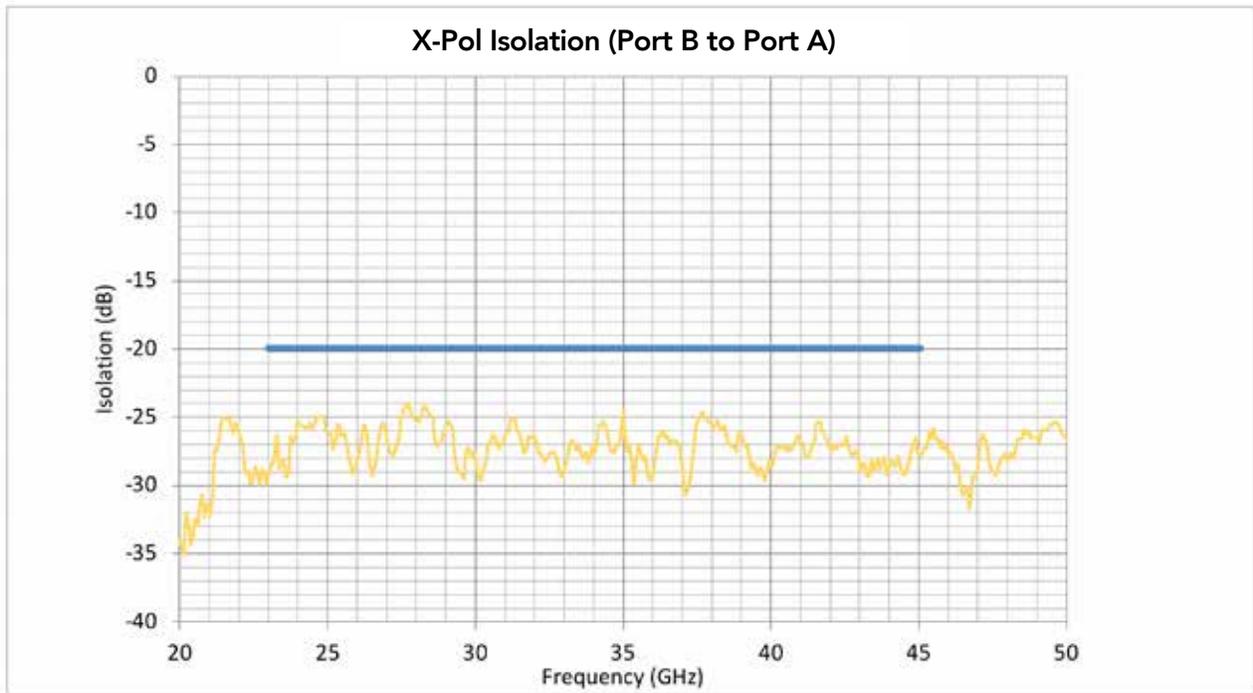


Figure 6: Cross Polarization Isolation Port B to Port A

High Gain Antenna (0150-IG5G-023)

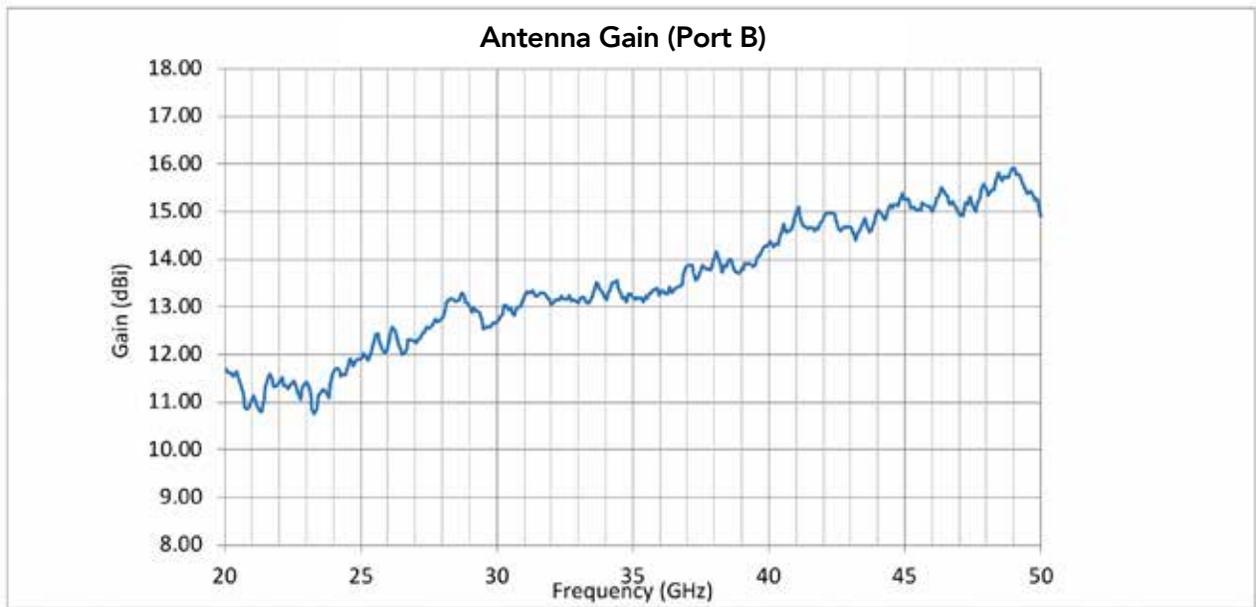


Figure 7: Antenna Gain, Port B

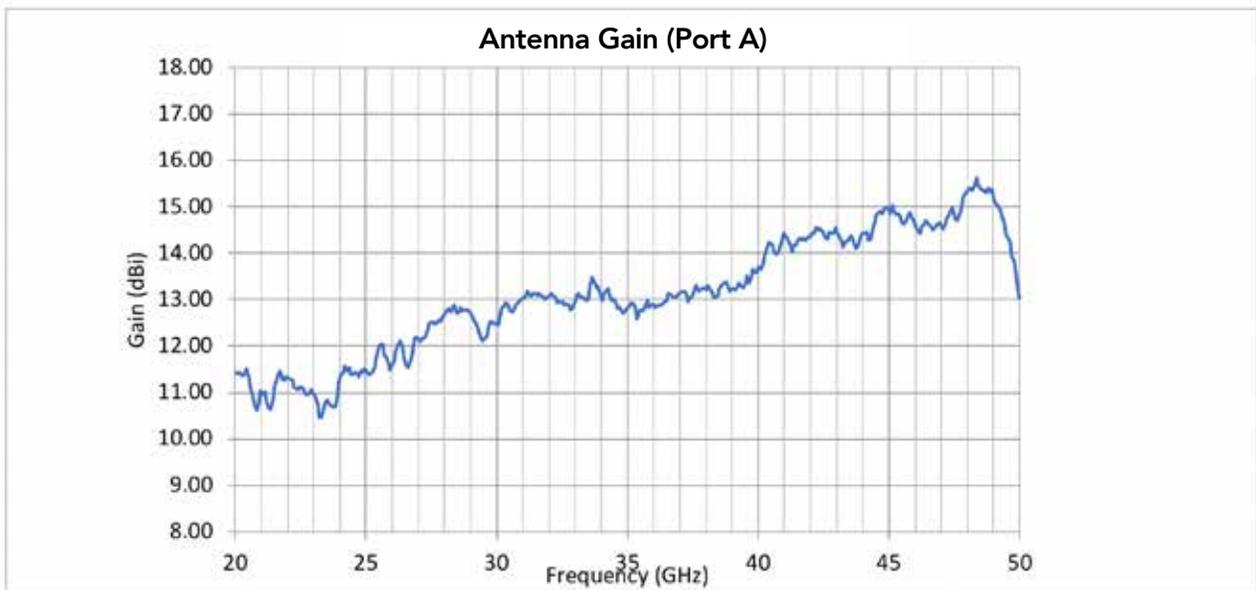


Figure 8: Antenna Gain, Port A

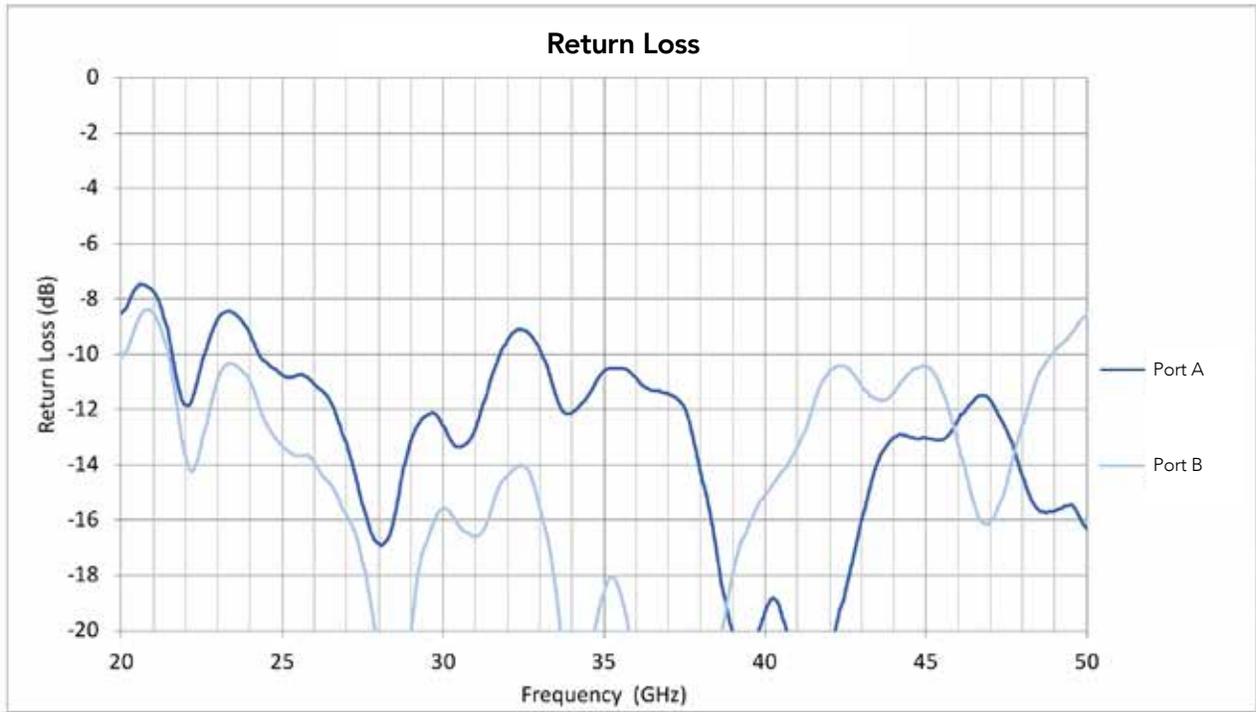


Figure 9: Return Loss

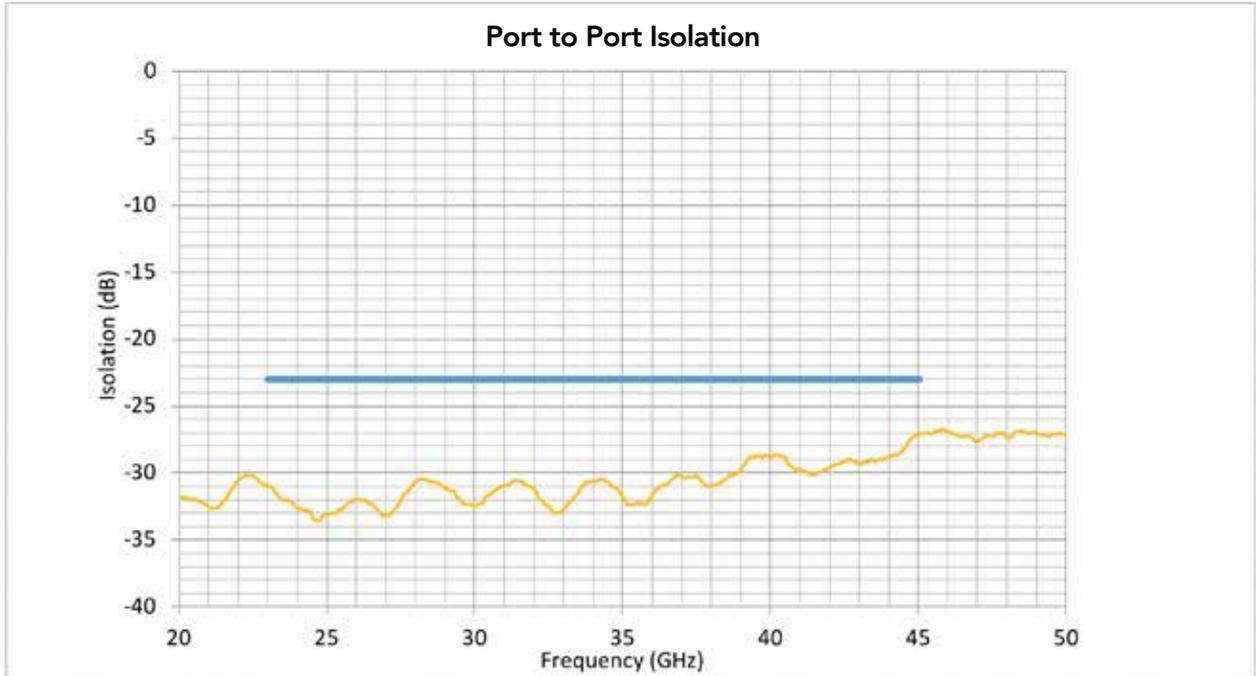


Figure 10: Port-to-Port Isolation

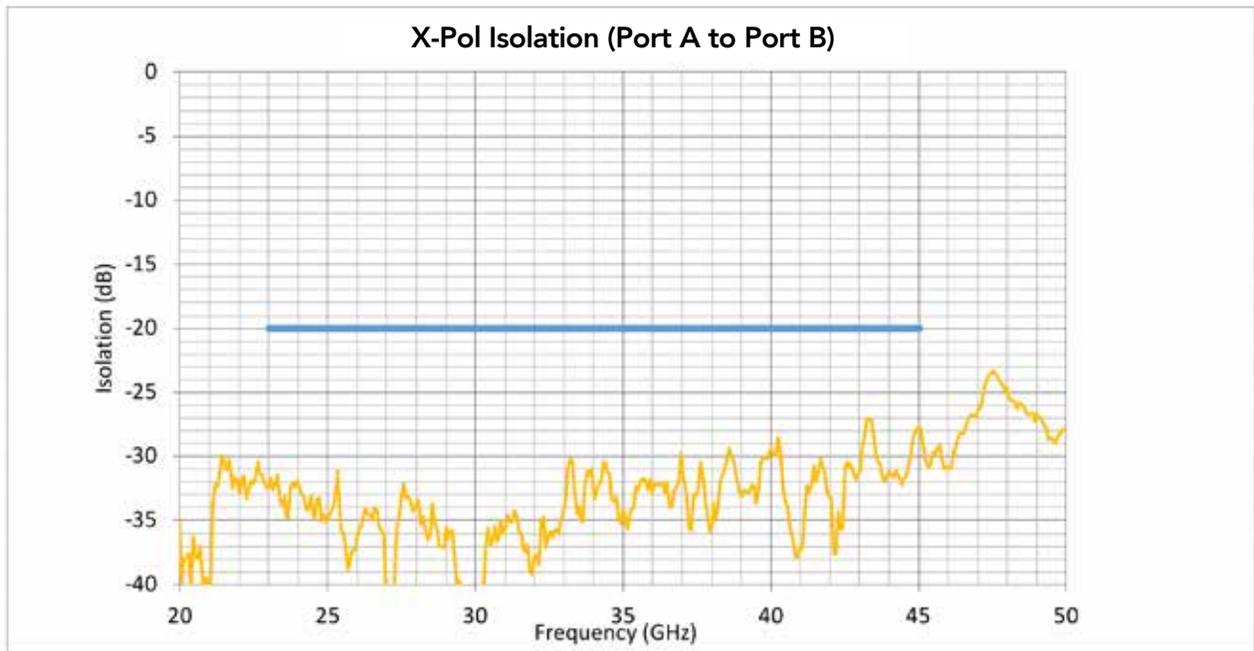


Figure 11: Cross Polarization Isolation Port A to Port B

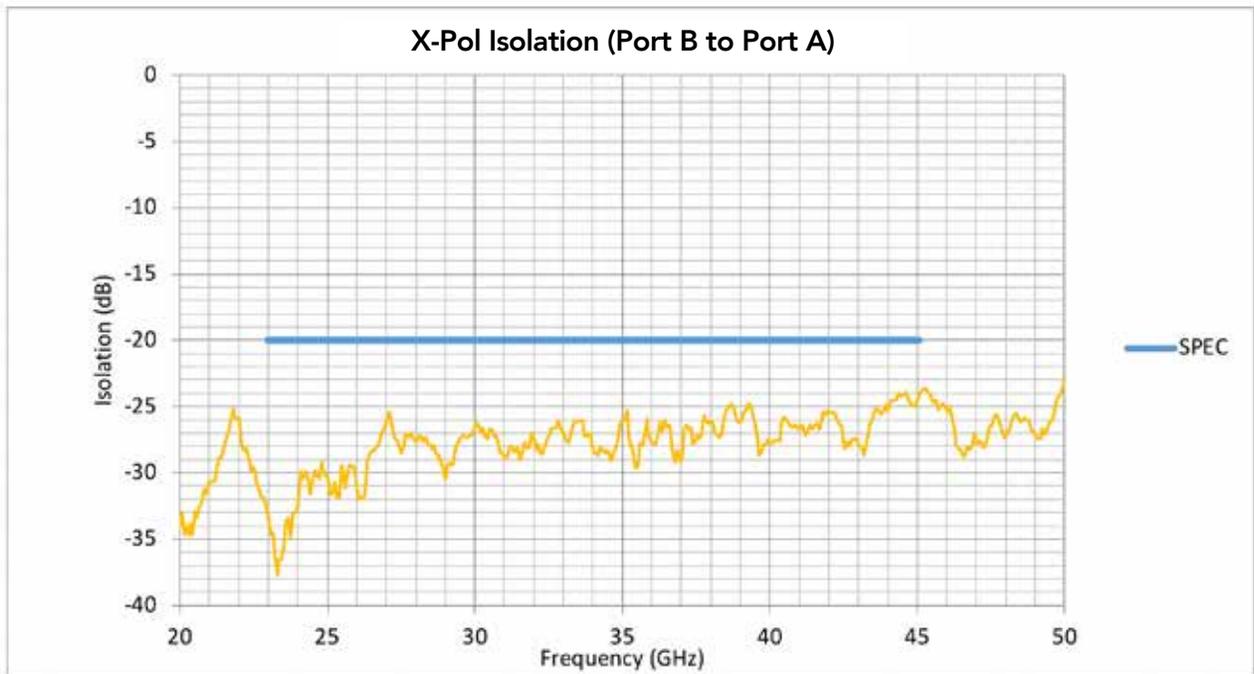
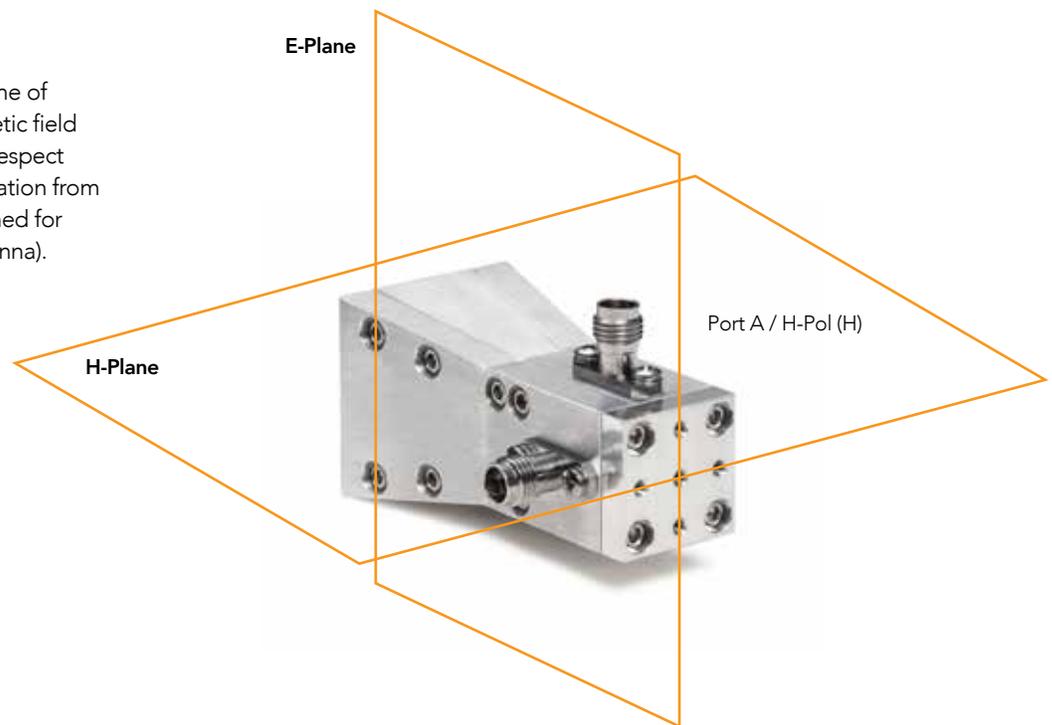


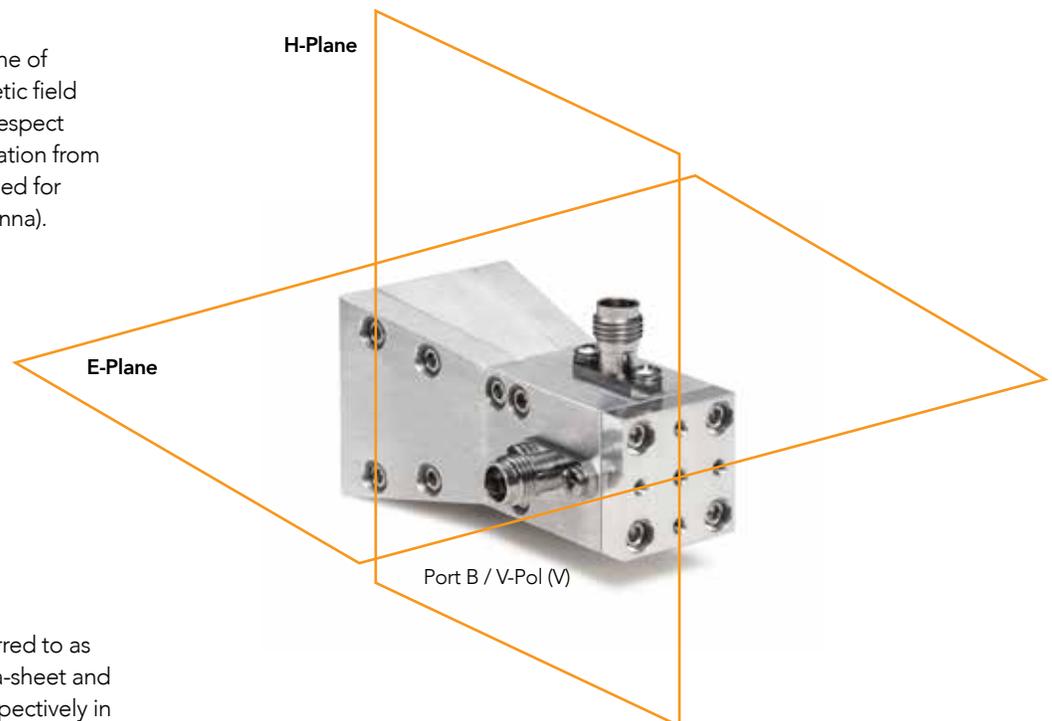
Figure 12: Cross Polarization Isolation Port B to Port A

Antenna Patterns

Illustrated to the right are the plane of electric field (E-plane) and magnetic field (H-plane) vectors observed with respect to the direction of maximum radiation from Port A (same assumption is deemed for both low gain and high gain antenna).



Illustrated to the right are the plane of electric field (E-plane) and magnetic field (H-plane) vectors observed with respect to the direction of maximum radiation from Port B (same assumption is deemed for both low gain and high gain antenna).



Note: The antenna ports are referred to as "Port A" and "Port B" in this data-sheet and as "H-Pol (H)" and "V-Pol (V)" respectively in the horn antenna calibration data file.

Low Gain Antenna (0150-IG5G-022)

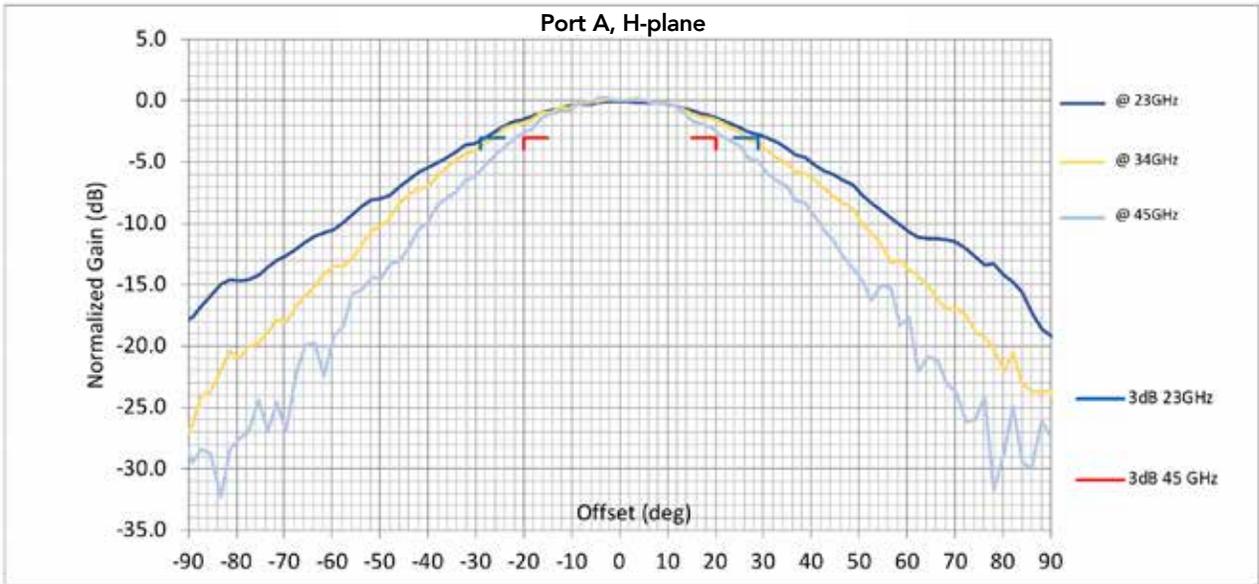


Figure 13: Typical antenna patterns at three different frequencies with Port A, H-plane

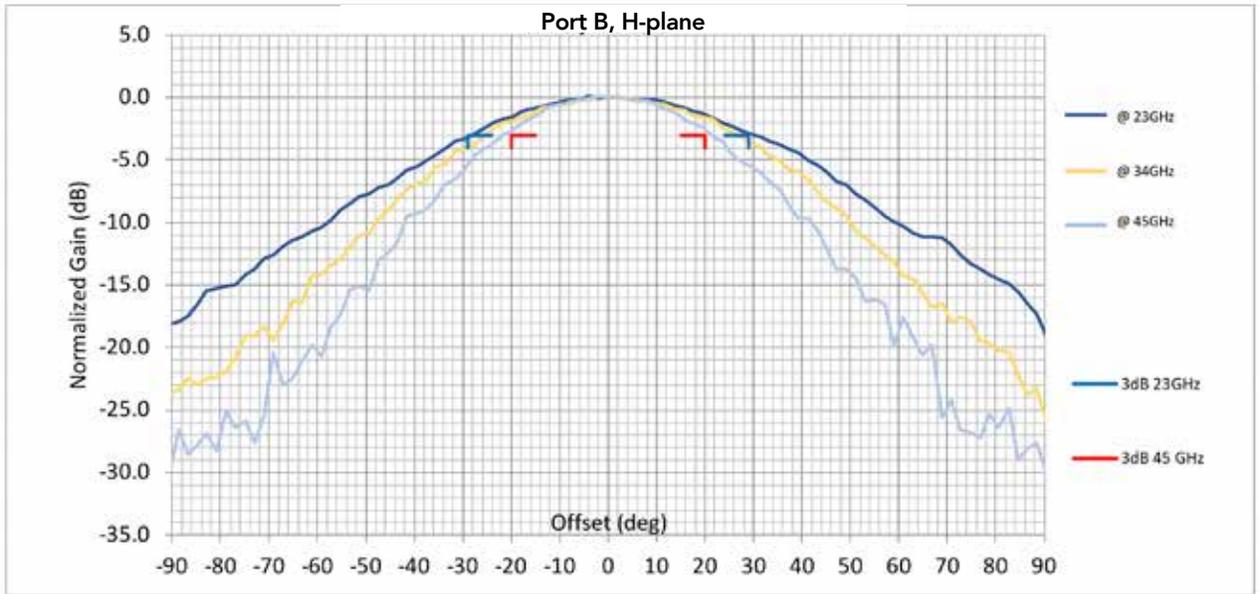


Figure 14: Typical antenna patterns at three different frequencies with Port B, H-plane

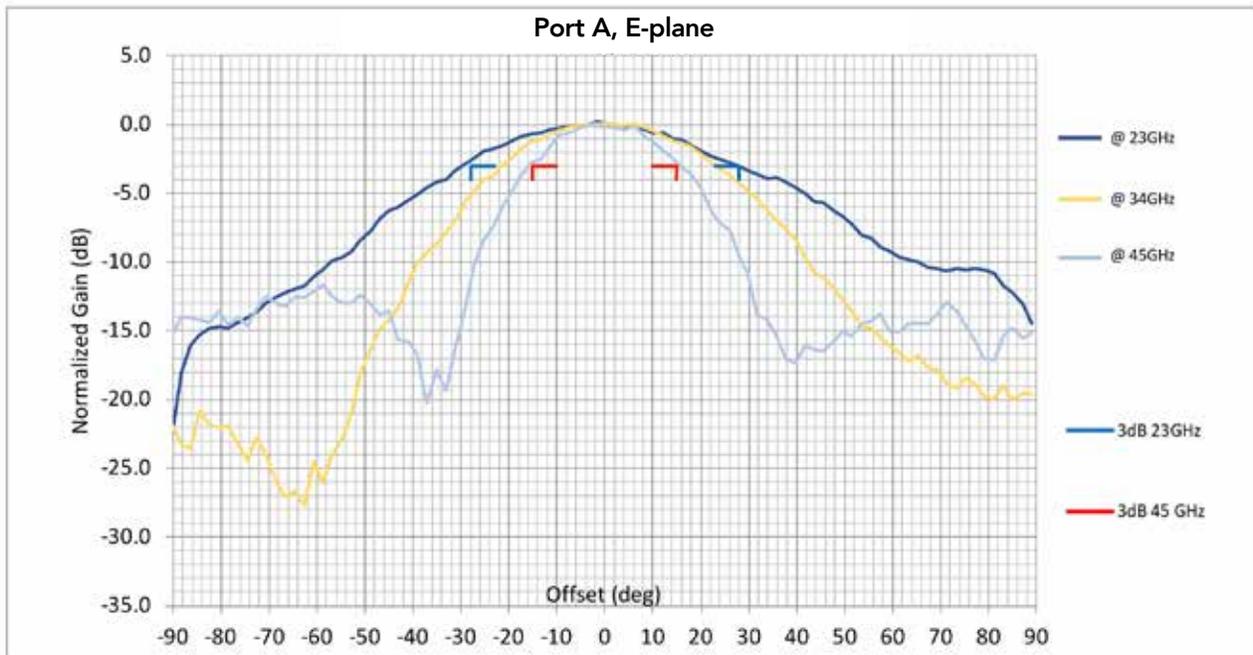


Figure 15: Typical antenna patterns at three different frequencies with Port A, E-plane

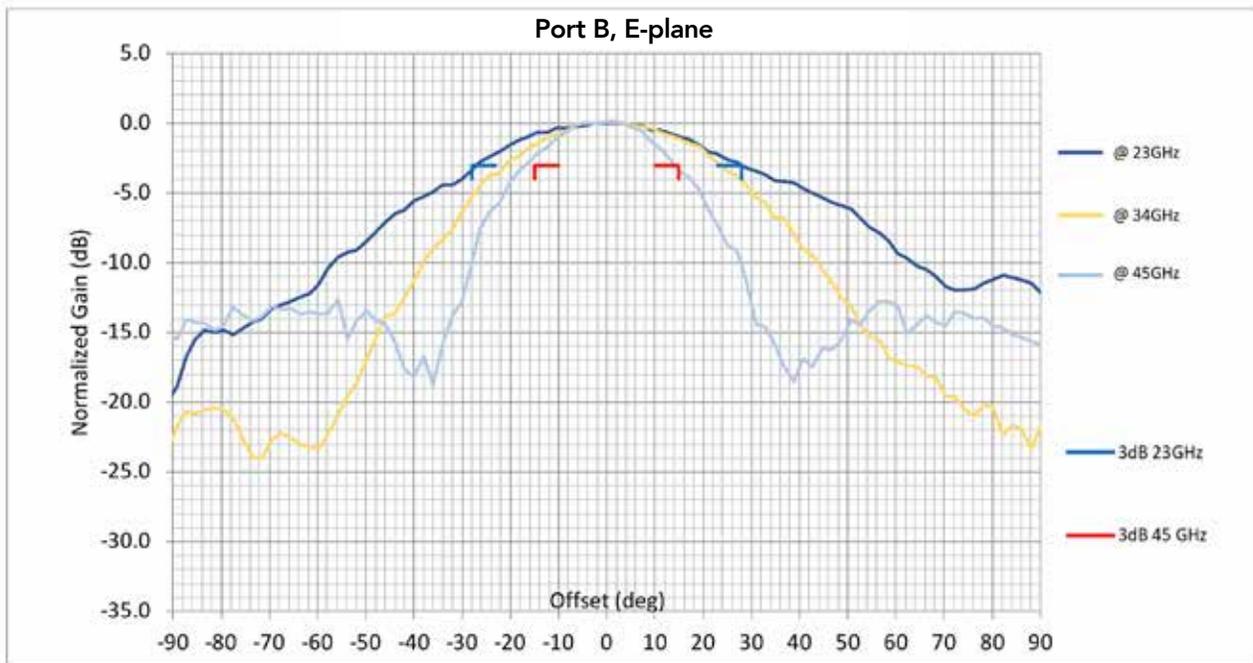


Figure 16: Typical antenna patterns at three different frequencies with Port B, E-plane

High Gain Antenna (0150-IG5G-023)

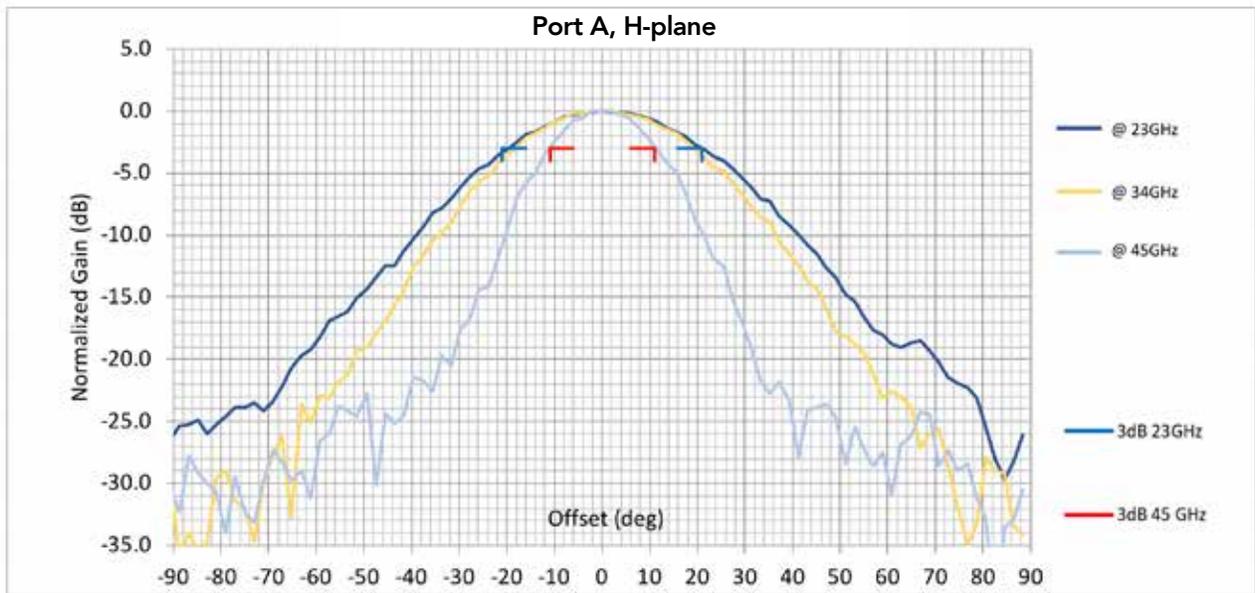


Figure 17: Typical antenna patterns at three different frequencies with Port A, H-plane

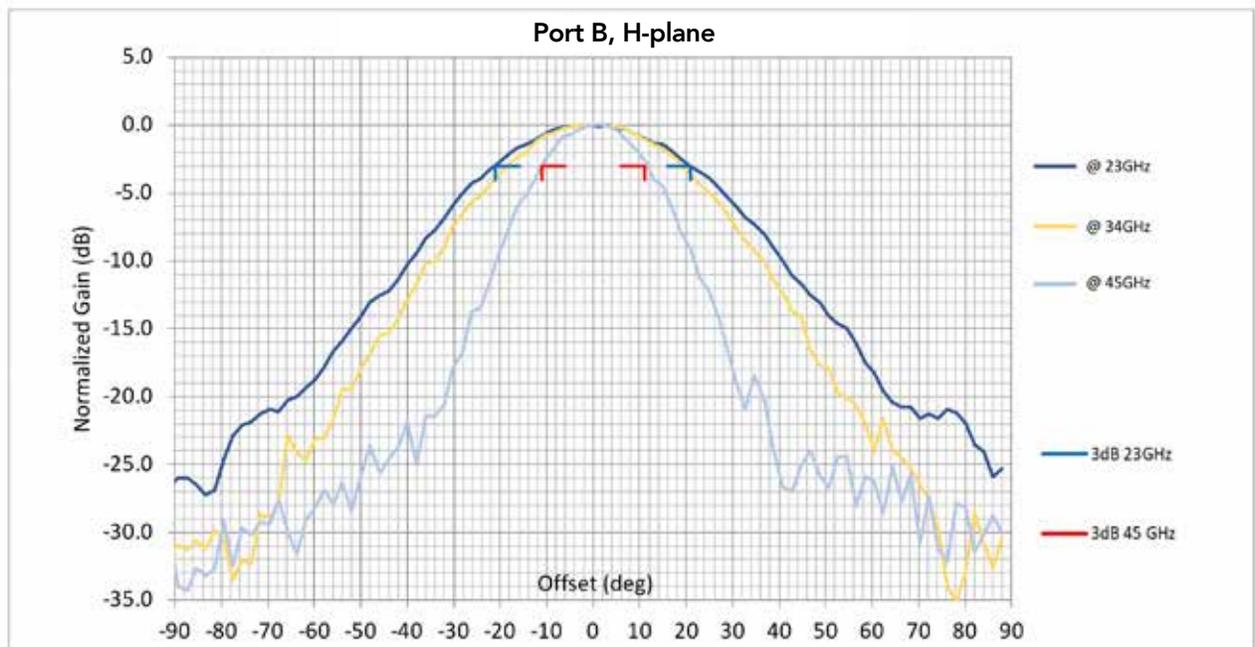


Figure 18: Typical antenna patterns at three different frequencies with Port B, H-plane

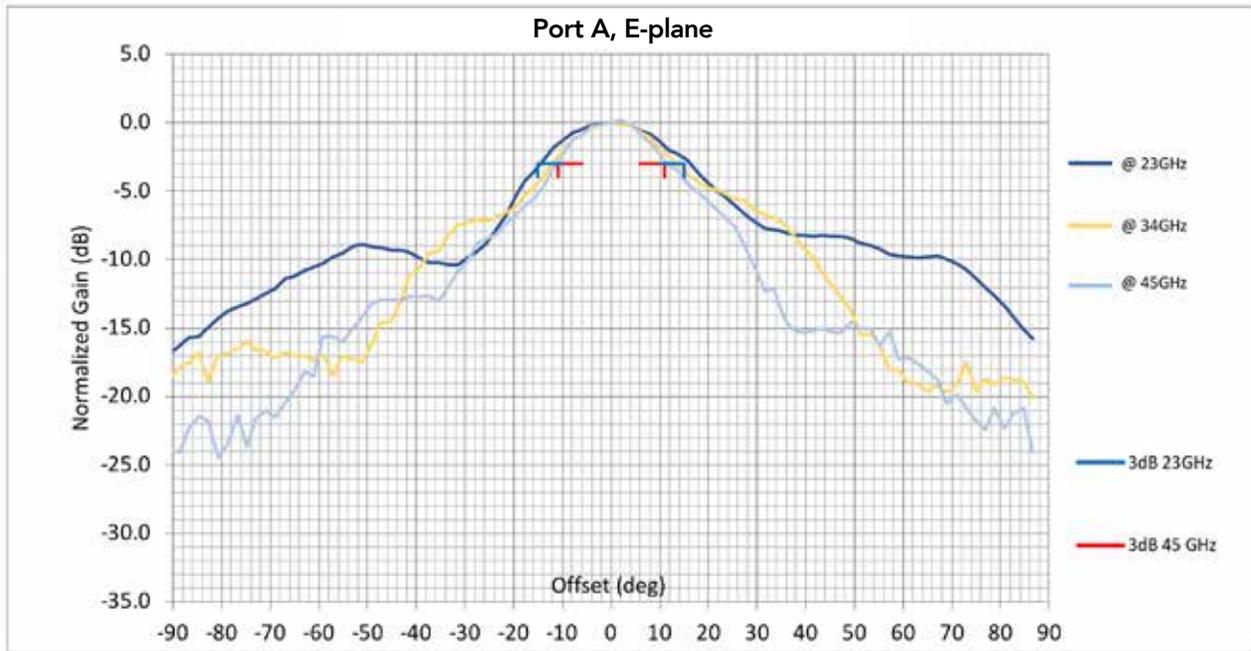


Figure 19: Typical antenna patterns at three different frequencies with Port A, E-plane

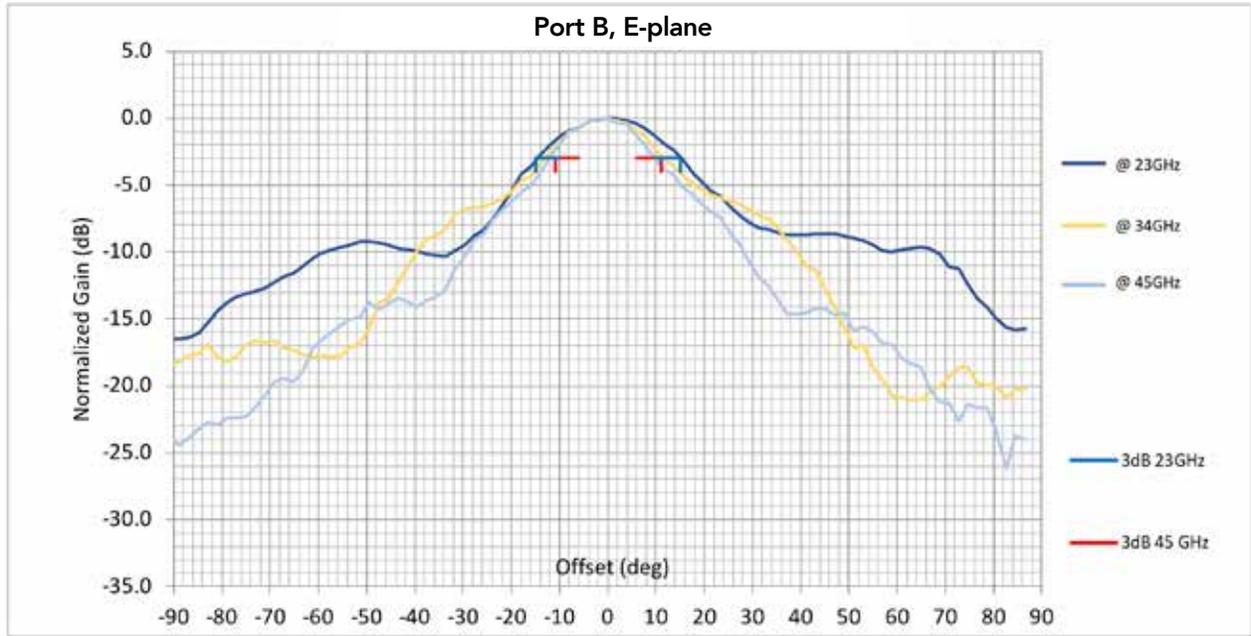
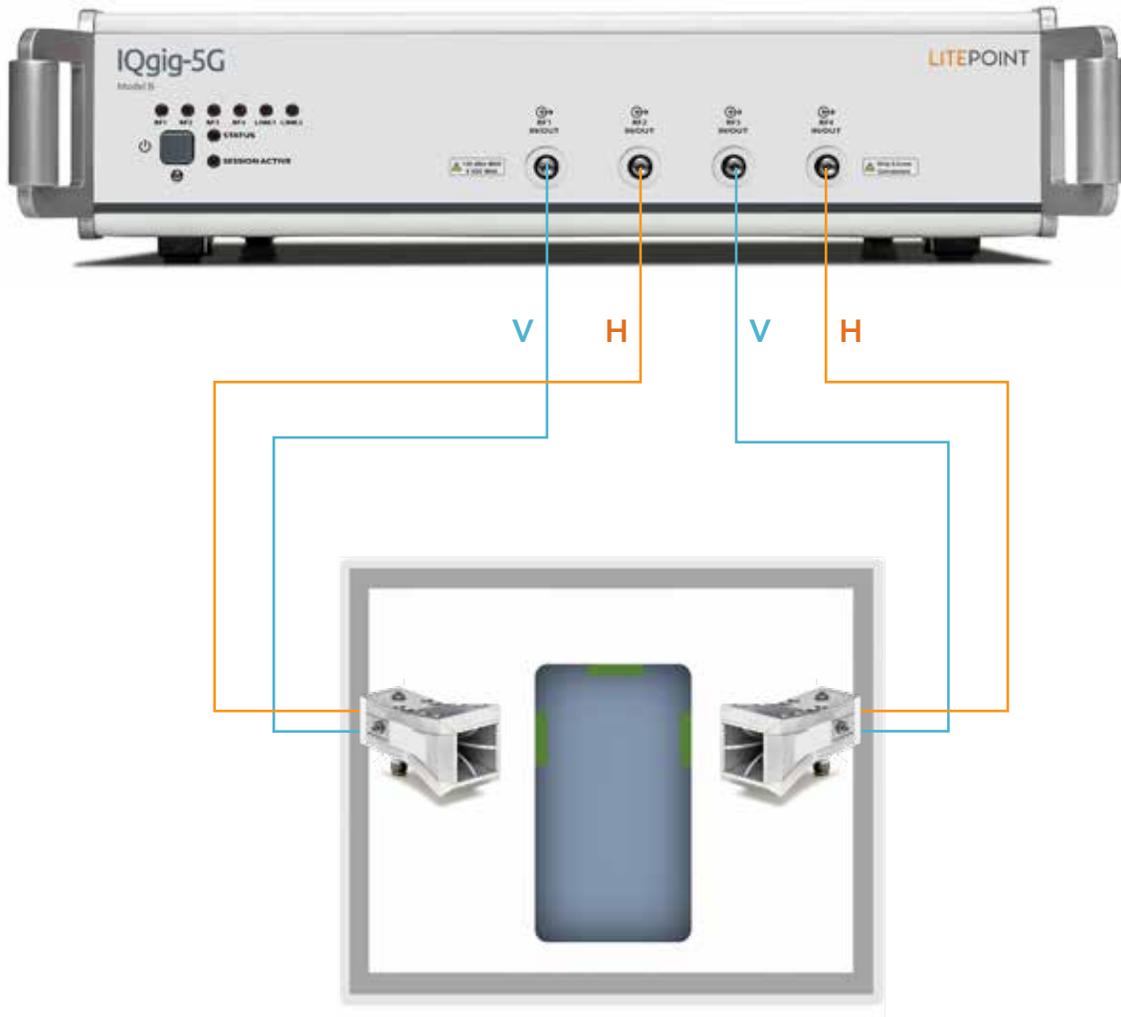


Figure 20: Typical antenna patterns at three different frequencies with Port B, E-plane

General Assembly

Final Product Testing

Shown below is a general positioning and assembly of 5G horn antennas within the OTA Chamber. To ensure accurate measurement each antenna is positioned in way that aligns with the antennas on the device under test. I/O ports outside of the OTA chamber allow LitePoints IQgig-5G to feed and receive signals on each of the antenna ports.



Code	Product
0150-IG5G-022	5G Horn Antenna - Low gain
0150-IG5G-023	5G Horn Antenna - High gain

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CONTACT INFORMATION

180 Rose Orchard Way
San Jose, CA 95134
United States of America

+1.866.363.1911
+1.408.456.5000

LITEPOINT TECHNICAL SUPPORT

www.litepoint.com/support

Doc: 1075-0144-001
May 2020 Rev 2