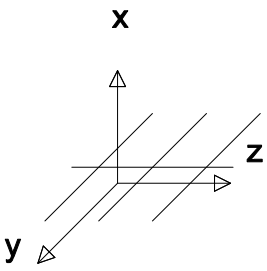
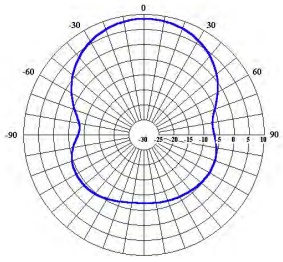
PRC-COM, INC

Antenna Catalog





2026

Antenna Solutions

If it must work first time and every time, PRC-COM is the answer.

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1.1 Superior Antenna Solutions from PRC COM

At PRC COM, we have dedicated decades to advancing antenna technology that pushes the boundaries of performance, reliability, and durability. Founded and led by Troy Scoughton, Sr. (MSEE), who brings over 30 years of experience in the design and manufacture of high-power antennas and electronic warfare systems, our company has become a trusted partner for military and commercial organizations alike. As a premier antenna equipment manufacturer and one of the leading custom antenna manufacturers in the United States, PRC COM stands at the intersection of engineering innovation and mission-critical reliability.

1.2 A Legacy of Innovation and Leadership

From the start, PRC COM has specialized in creating rugged, high-performance antennas capable of enduring the harshest test conditions and operational environments. Troy Scoughton, Sr.'s extensive expertise in custom antenna design has shaped a culture of precision and ingenuity within our team. Under his leadership, we have continually developed unique antenna solutions that meet the evolving needs of defense, aerospace, and research organizations worldwide.

As a trusted space antenna company and a long-standing partner to Department of Defense (DoD) contractors, we understand that when a mission depends on flawless communication, compromise is not an option. Every antenna we design, build, and test is engineered to perform under the most demanding conditions. Our goal has never been to build the most antennas—it has always been to build the best.

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1.3 Custom Antennas for Mission-Critical Applications

Every mission has unique communication requirements, and at PRC COM, we recognize that a one-size-fits-all approach does not work. That is why our team excels in custom antenna design, collaborating closely with clients to deliver solutions tailored to their exact specifications. Whether developing a military satcom antenna for secure communications or designing specialized helical and helicone antennas for research applications, our engineers ensure precision, performance, and dependability.

As one of the most experienced custom antenna manufacturers, we have created antennas for a wide variety of platforms and environments. From ground-based systems to space applications, our designs are proven in the field and trusted where success—or survival—depends on reliable communication.

1.4 Rugged Antennas Built for Harsh Environments

Antennas are often deployed in environments where failure is not an option. From arctic cold to desert heat, from high-vibration aircraft to rugged field installations, PRC Com designs antennas that endure. As a military antenna manufacturer, we know that resilience is just as critical as performance. Our products undergo rigorous testing to guarantee long-term durability and superior mechanical performance.

Each antenna is precision-machined, measured, and tested in-house to ensure specifications are met without compromise. By maintaining control of the entire design and manufacturing process, PRC COM ensures that every product works not just the first time—but every time it is needed.

1.5 Military Antennas and Defense Partnerships

For decades, PRC COM has supplied military antennas to support the most demanding defense applications. We work directly with DoD contractors and often with the Department of Defense itself, supplying robust communication solutions that integrate seamlessly into larger electronic warfare and communication systems.

Our military satcom antennas are designed to deliver secure, reliable communication in the most challenging conditions. Whether mounted on vehicles, integrated into airborne systems, or deployed in field environments, these antennas provide the backbone for critical military communication networks. As one of the most respected military antenna manufacturers, PRC COM takes pride in supporting those who depend on flawless performance in the field.

1.6 A Complete Range of Antenna Solutions

PRC COM offers an extensive portfolio of antenna products, including:

- Helical Antennas: Engineered for precision and optimized performance across a wide range of frequencies.
- Helicone Antennas: Designed for specialized research and defense applications, offering advanced directional and polarization capabilities.
- Dish Feeds: Including the BX Series and BH-11500, built for consistent high-gain performance.
- Custom-Built Antennas: Tailored to client specifications for unique mission and operational requirements.

Each product reflects our commitment to innovation and quality as a trusted antenna equipment manufacturer.

1.7 The PRC Com Difference: Quality That Endures

What sets PRC COM apart from other custom antenna manufacturers is our focus on quality at every stage of development. From concept to deployment, we apply the highest standards of engineering rigor. This commitment ensures that every antenna:

- Meets precise technical specifications.
- Is built with superior materials and machining processes.
- Undergoes extensive testing to verify reliability in real-world conditions.

As a space antenna company, we understand that reliability is non-negotiable. Antennas designed for aerospace and satellite applications must endure extreme environments and deliver consistent performance—failure in these settings is not an option. Our reputation has been built on ensuring that every PRC Com antenna achieves exactly that level of reliability.

1.8 Designed and Manufactured in the USA

All PRC COM products are proudly designed and manufactured in the United States. By keeping our design and production processes in-house, we maintain strict quality control and support American innovation in defense and aerospace industries. This dedication to domestic manufacturing also ensures faster turnaround times and greater collaboration with our clients.

1.9 Trusted Across Military and Commercial Sectors

While the majority of our work supports defense applications, PRC COM also provides antenna solutions to research organizations and commercial clients who demand the same level of ruggedness and reliability. From government agencies to private sector innovators, our reputation as a leading custom antenna manufacturer has made us the go-to partner for organizations that need antennas to perform without compromise.

1.10 Future-Focused Antenna Development

As technologies evolve, so do communication needs. PRC COM remains at the forefront of antenna innovation, developing designs that anticipate future challenges in communication, navigation, and electronic warfare. With ongoing investment in research, engineering talent, and advanced machining, we continue to expand our capabilities as a space antenna company and military antenna manufacturer.

1.11 Why Choose PRC COM?

When you partner with PRC COM, you're not just choosing an antenna equipment manufacturer, you're choosing a company with decades of experience, a proven track record, and a commitment to excellence.

- Proven Experience: Over 30 years in high-power antenna design and electronic warfare systems.
- Custom Expertise: Specialists in custom antenna design for unique mission requirements.
- Military Trust: Long-standing partnerships with DoD contractors and the U.S. military.
- Rugged Quality: Antennas designed to perform in the harshest environments.
- Made in the USA: 100% domestic design, manufacturing, and testing.

At PRC COM, we know that when your mission—or your life—depends on communication systems, only the best will do. That's why organizations worldwide trust us to deliver antennas that perform flawlessly, every time.

For more than three decades, PRC COM has been a leader in antenna innovation, serving as one of the most trusted custom antenna manufacturers and military antenna manufacturers in the industry. From military satcom antennas to specialized helical, helicone, and dish feed systems, our products are built to withstand extreme environments while delivering consistent, high-quality performance.

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If it must work first time and every time, PRC-COM is the answer.

As a space antenna company and antenna equipment manufacturer, we are proud to design, manufacture, and test every antenna in the United States, ensuring the highest standards of quality and reliability. Under the leadership of Troy Scoughton, Sr., PRC COM continues to push the limits of antenna technology, providing solutions that meet the most demanding military, defense, and commercial requirements.

If you need an antenna solution that works the first time and every time, PRC COM is the partner you can trust.

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2.0 Helical Antennas

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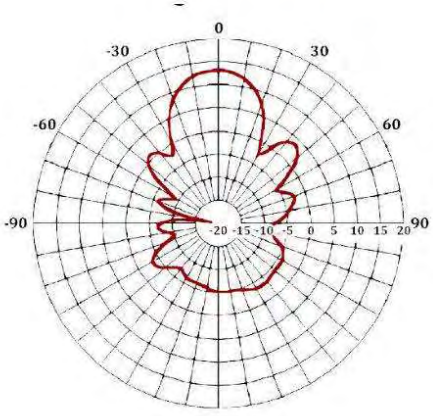
If it must work first time and every time, PRC-COM is the answer.

The HX-0410 series of helical antennas offer wide band reliable operation in a rugged and reliable design. Default is RHCP (LHCP available) with several Gain/HPBW combinations and connector types available.

Model Number	Fo GHz	Fl GHz	Fh GHz	# turns	HPBW	Gain	Length
HX-0410-04-R	0.410	0.370	0.450	4.0	52.9	7.0	28.0
HX-0410-06-R	0.410	0.370	0.450	6.0	43.2	8.7	42.0



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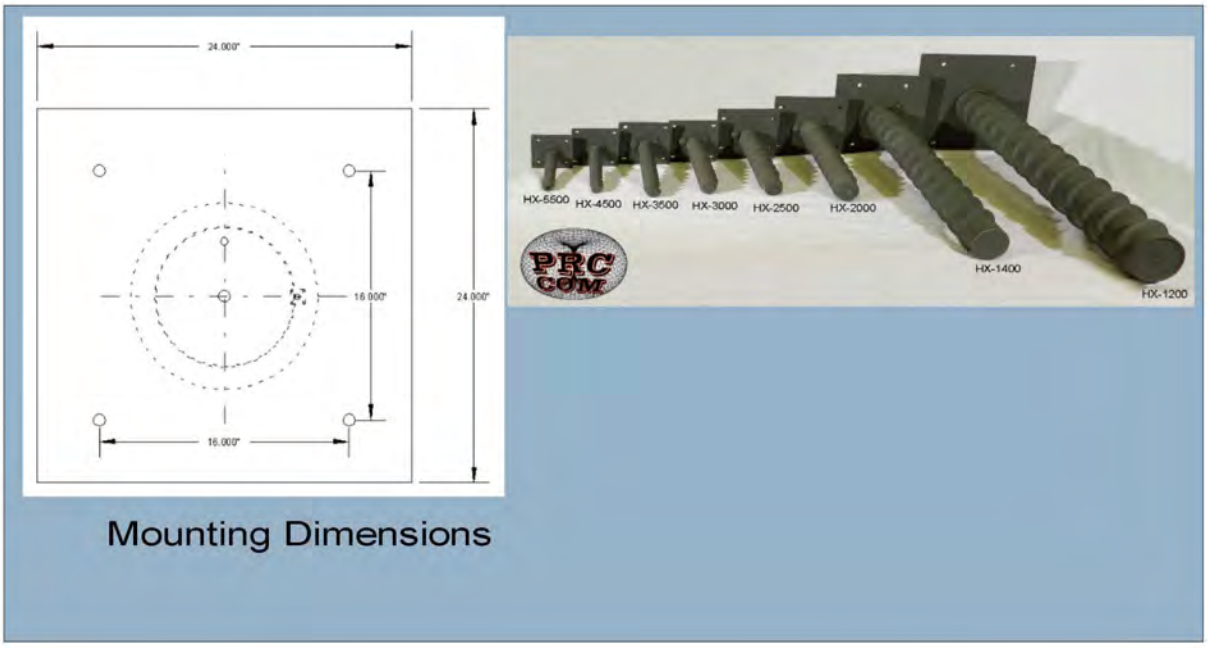
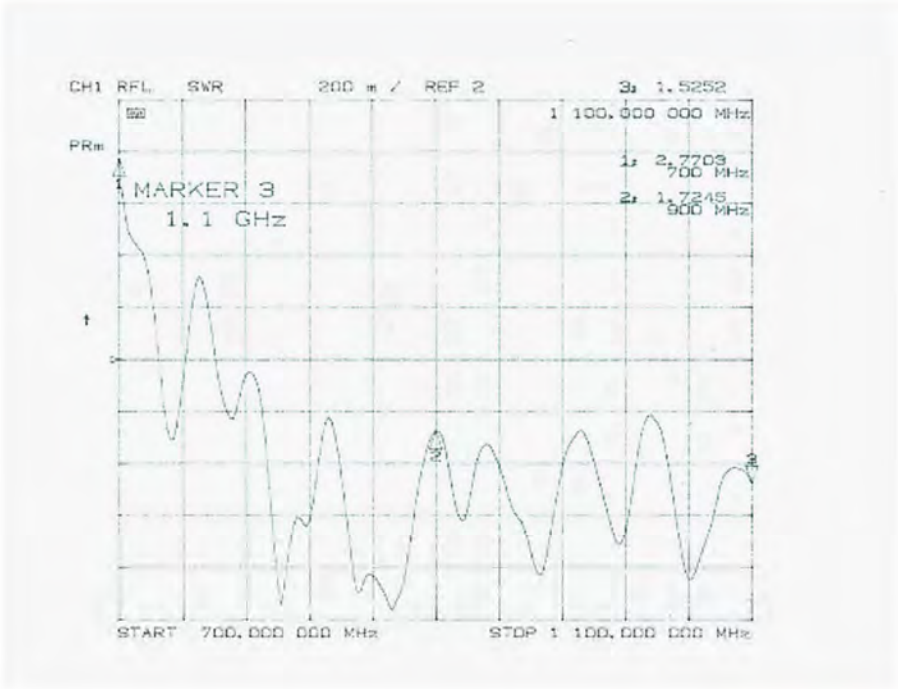


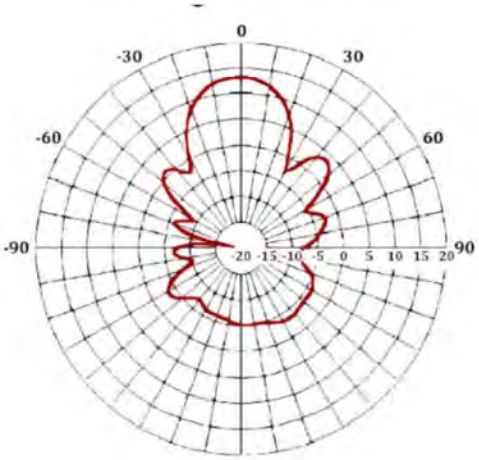


Antenna Solutions

If it must work first time and every time, PRC-COM is the answer.

The HX-0700 series of helical antennas offer wide band reliable operation in a rugged and reliable design. Default is RHCP (LHCP available) with several Gain/HPBW combinations available.

Model Number	Fo MHz	Fl MHz	Fh MHz	# turns	HPBW	Gain	Length
HX-0700-04-R	540	700	850	4.0	52.9	7.0	16.0
HX-0700-06-R	540	700	850	6.0	45.6	8.2	24.0
HX-0700-08-R	540	700	850	8.0	39.5	9.5	33.0



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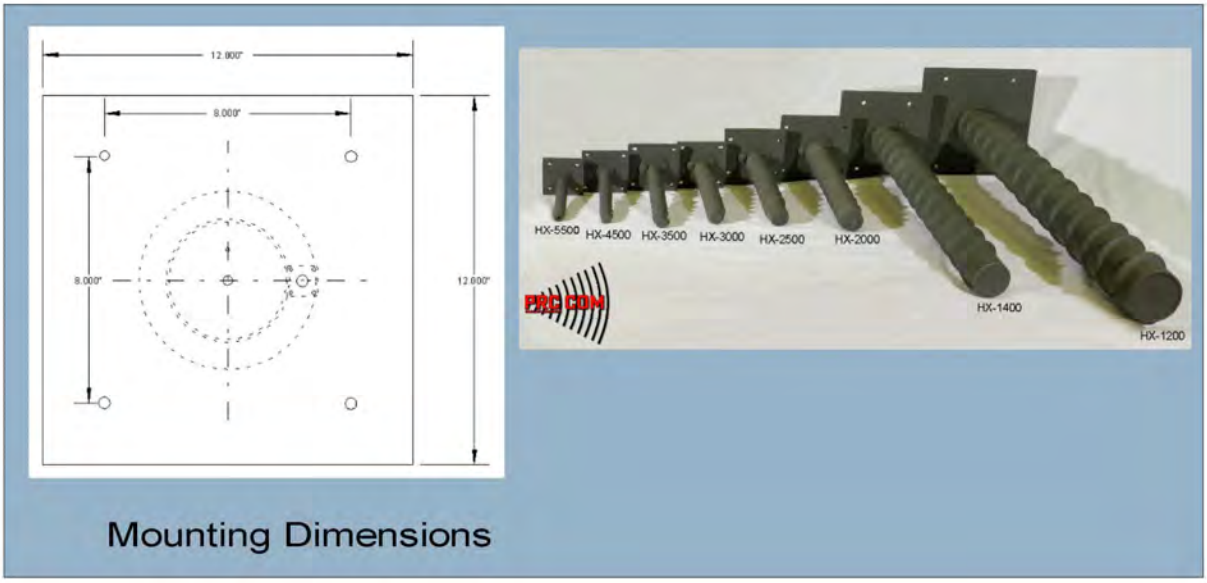

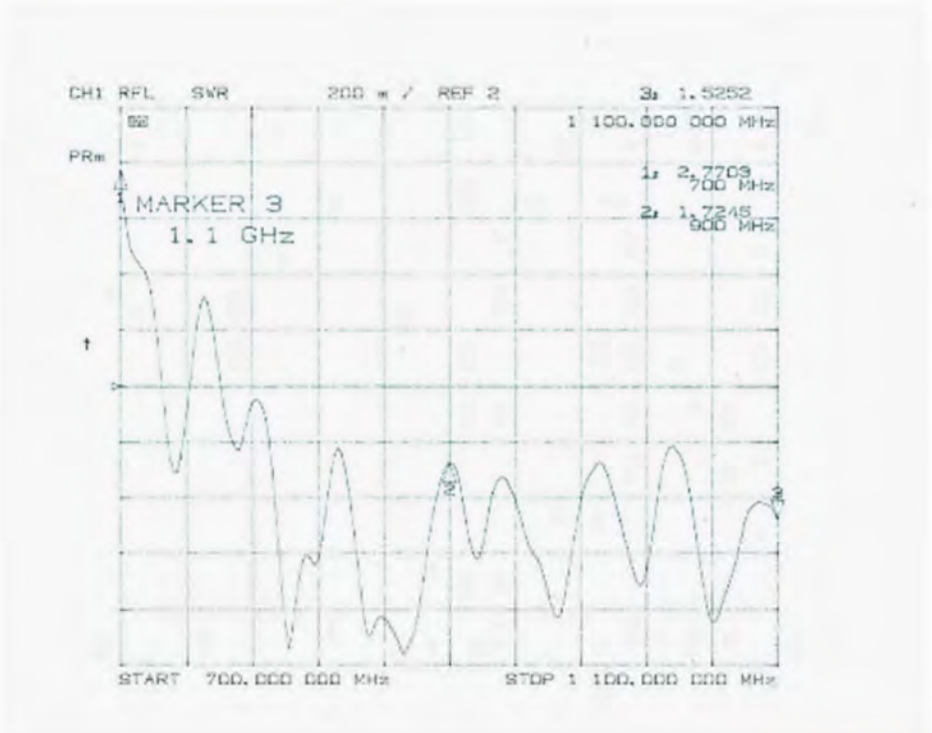

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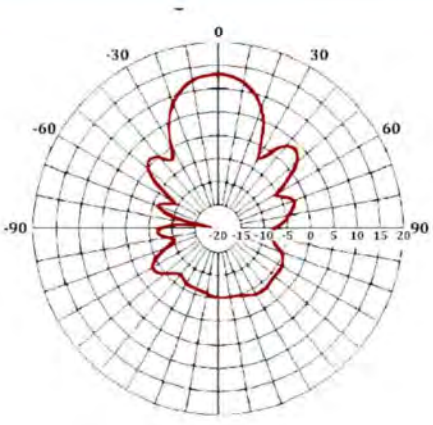
The HX-0900 series of helical antennas offer wide band reliable operation in a rugged and reliable design. Default is RHCP (LHCP available) with several Gain/HPBW combinations available.

Model Number	Fo MHz	Fl MHz	Fh MHz	# turns	HPBW	Gain	Length	Weight
HX-0900-06-R	700	900	1100	6.0	44.3	8.5	20.0	7.0
HX-0900-08-R	700	900	1100	8.0	38.4	9.7	26.0	7.5
HX-0900-10-R	700	900	1100	10.0	34.0	11.5	33.0	8.5
HX-0900-13-R	700	900	1100	13.0	30.0	13.0	43.0	10.5



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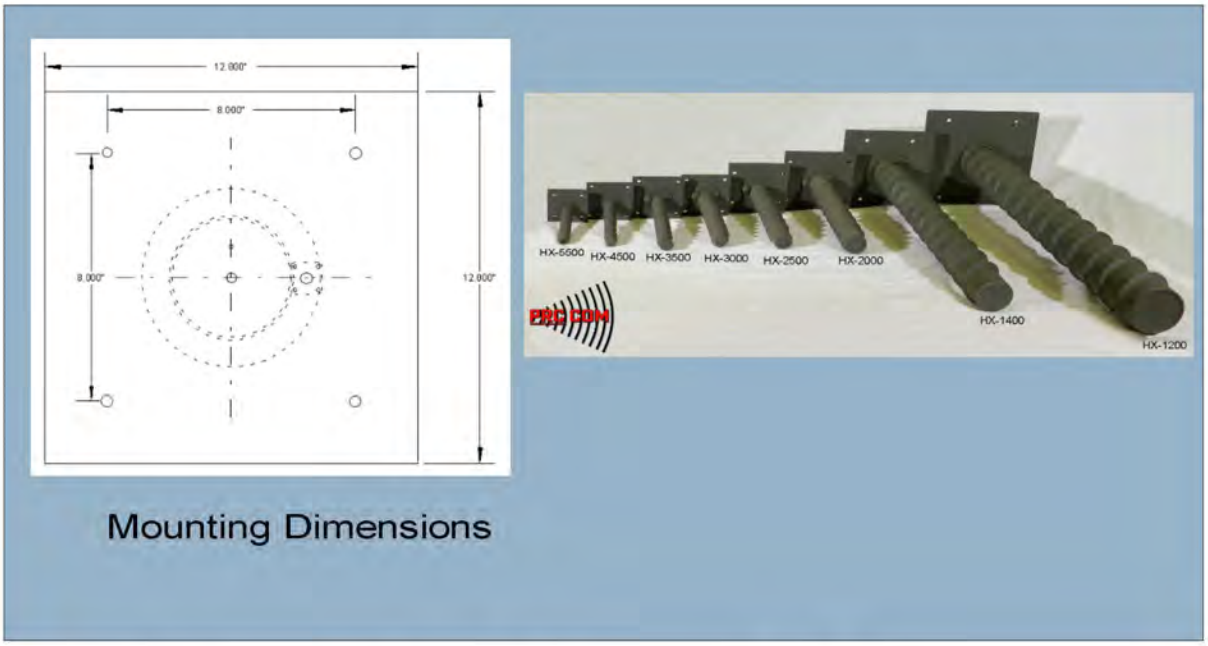

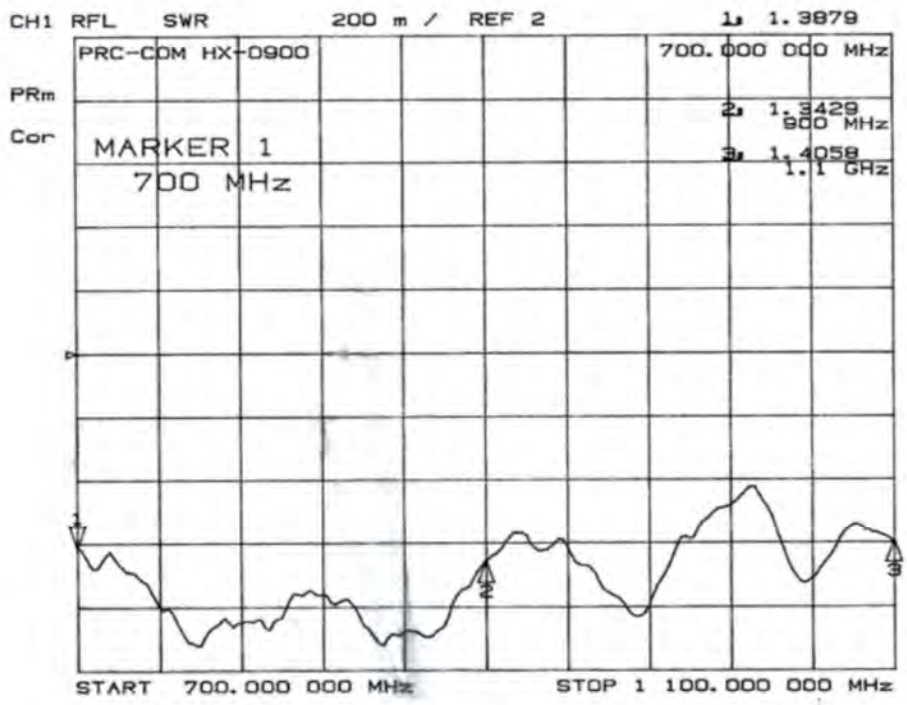

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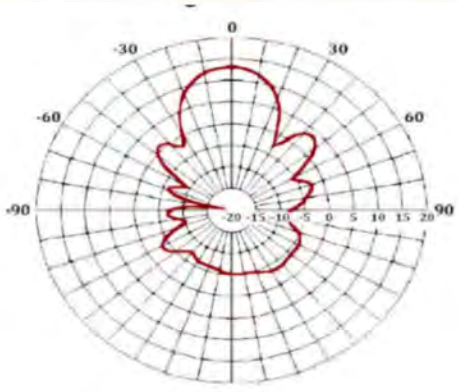
If it must work first time and every time, PRC-COM is the answer.

The HX-1000 series of helical antennas offer wide band reliable operation in a rugged and reliable design. Default is RHCP (LHCP available) with several Gain/HPBW combinations available.

Model Number	Fo MHz	Fl MHz	Fh MHz	# turns	HPBW°	Gain dBic	Length"	Weight lbs
HX-1000-06-R	800	1000	1200	6	42.5	8.8	21	5.82
HX-1000-08-R	800	1000	1200	8	36.8	10.1	27	6.50
HX-1000-10-R	800	1000	1200	10	32.9	11.0	33	6.88
HX-1000-13-R	800	1000	1200	13	28.9	12.2	42	7.45
HX-1000-15-R	800	1000	1200	15	26.9	13.0	50	6.88



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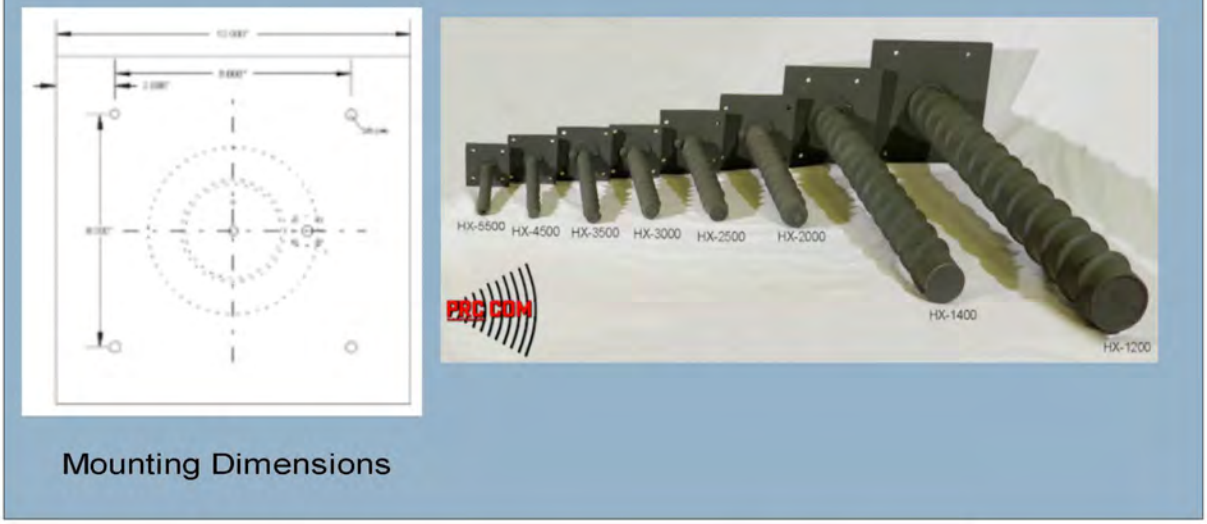

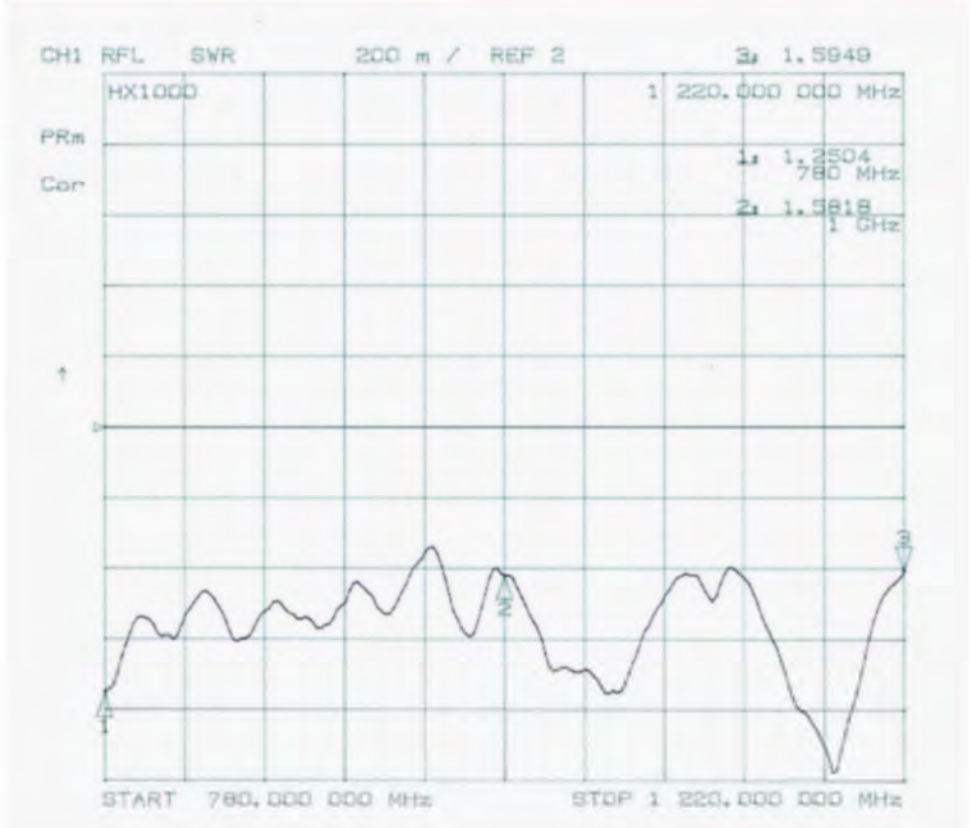

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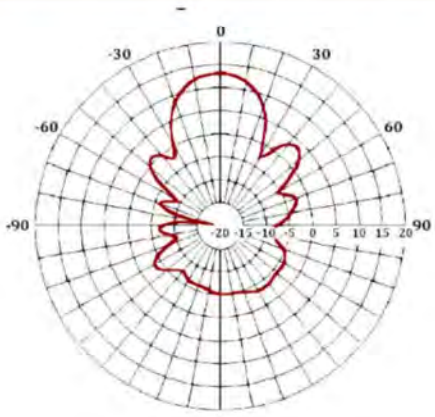
The HX-1200 series of helical antennas offer wide band reliable operation in a rugged and reliable design. Default is RHCP (LHCP available) with several Gain/HPBW combinations available.

Model Number	Fo MHz	Fl MHz	Fh MHz	# turns	HPBW	Gain	Weight	Length
HX-1200-06-R	1200	936	1464	6.0	44.3	8.5	1 lb 9 oz	10.0
HX-1200-08-R	1200	936	1464	8.0	38.4	9.7	1 lb 11 oz	12.0
HX-1200-10-R	1200	936	1464	10.0	34.3	10.7	1 lb 13 oz	14.8
HX-1200-13-R	1200	936	1464	13.0	30.1	11.8	2 lb 0 oz	19.8
HX-1200-15-R	1200	936	1464	15.0	28.0	12.4	2 lb 3 oz	22.6



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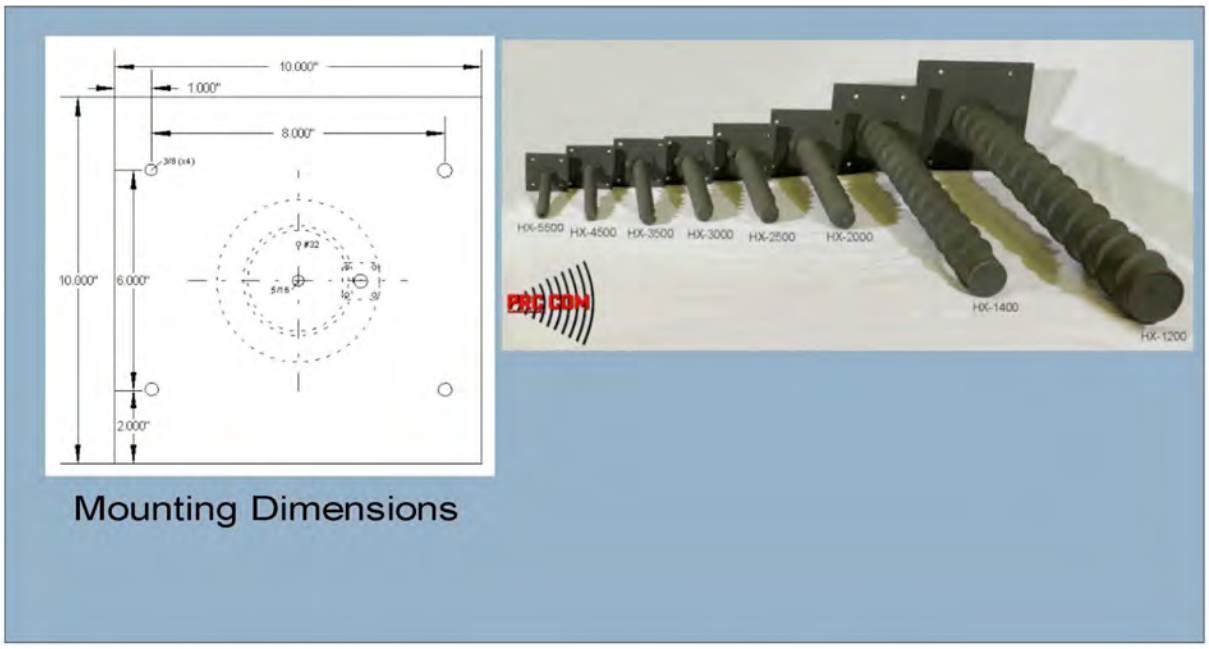

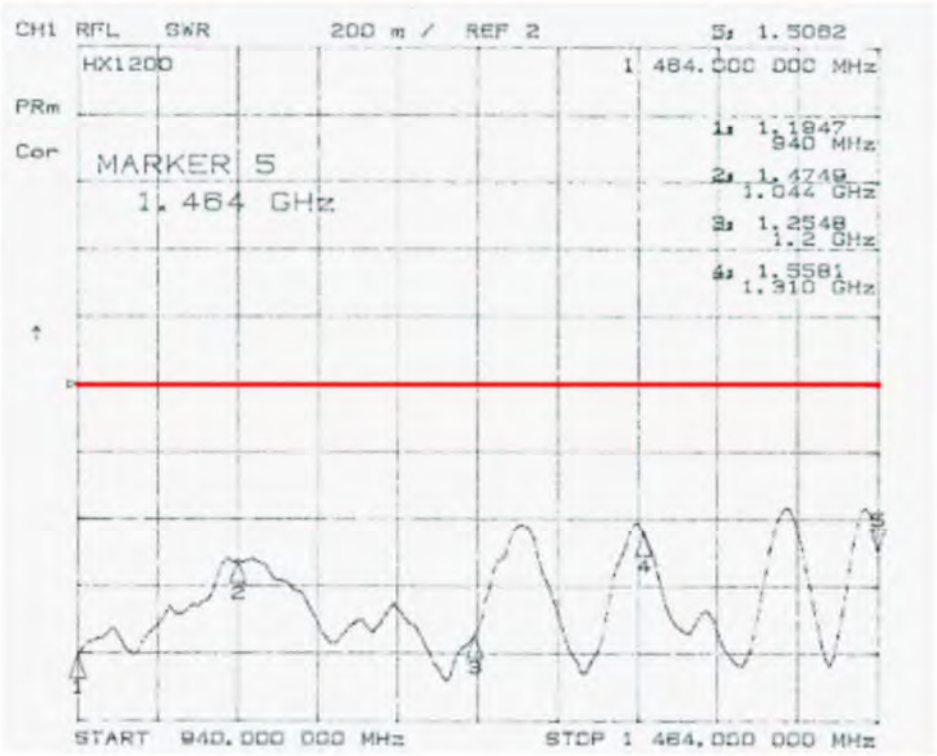

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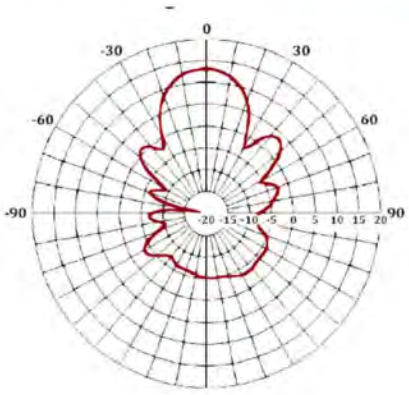
The HX-1400 series of helical antennas offer wide band reliable operation in a rugged and reliable design. Default is RHCP (LHCP available) with several Gain/HPBW combinations available.

Model Number	Fo GHz	Fl GHz	Fh GHz	# turns	HPBW	Gain	Weight lbs	Length"
HX-1400-04-R	1.40	1.10	1.71	4.0	50.7	7.3	2.5	8.5
HX-1400-06-R	1.40	1.10	1.71	6.0	41.4	9.1	2.8	12.7
HX-1400-08-R	1.40	1.10	1.71	10.0	35.9	10.3	3.1	16.9
HX-1400-10-R	1.40	1.10	1.71	11.0	32.1	11.3	3.4	21.4
HX-1400-13-R	1.40	1.10	1.71	13.0	28.1	12.4	3.9	27.4
HX-1400-15-R	1.40	1.10	1.71	15.0	26.2	13.0	4.4	31.4



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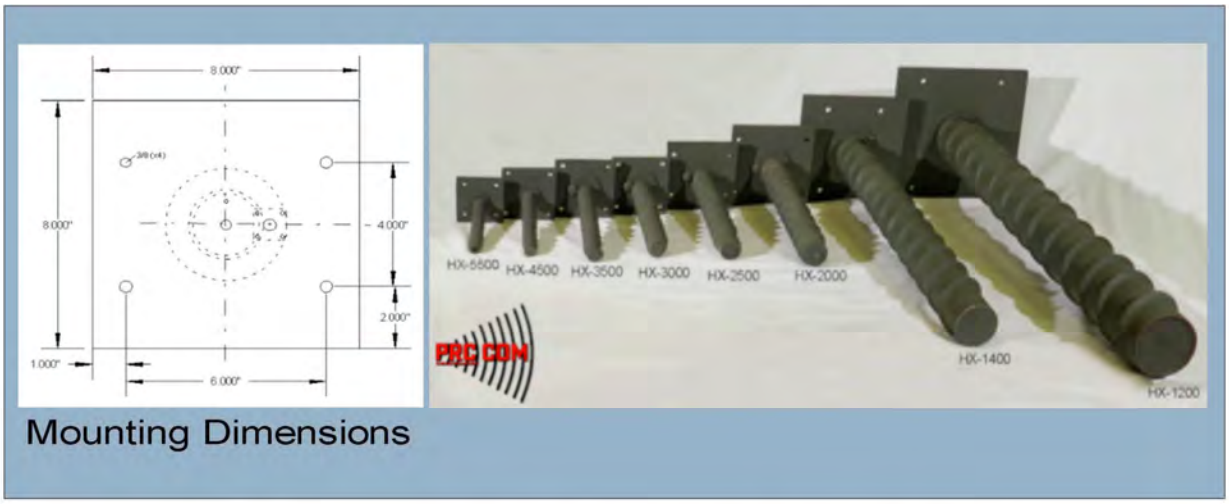
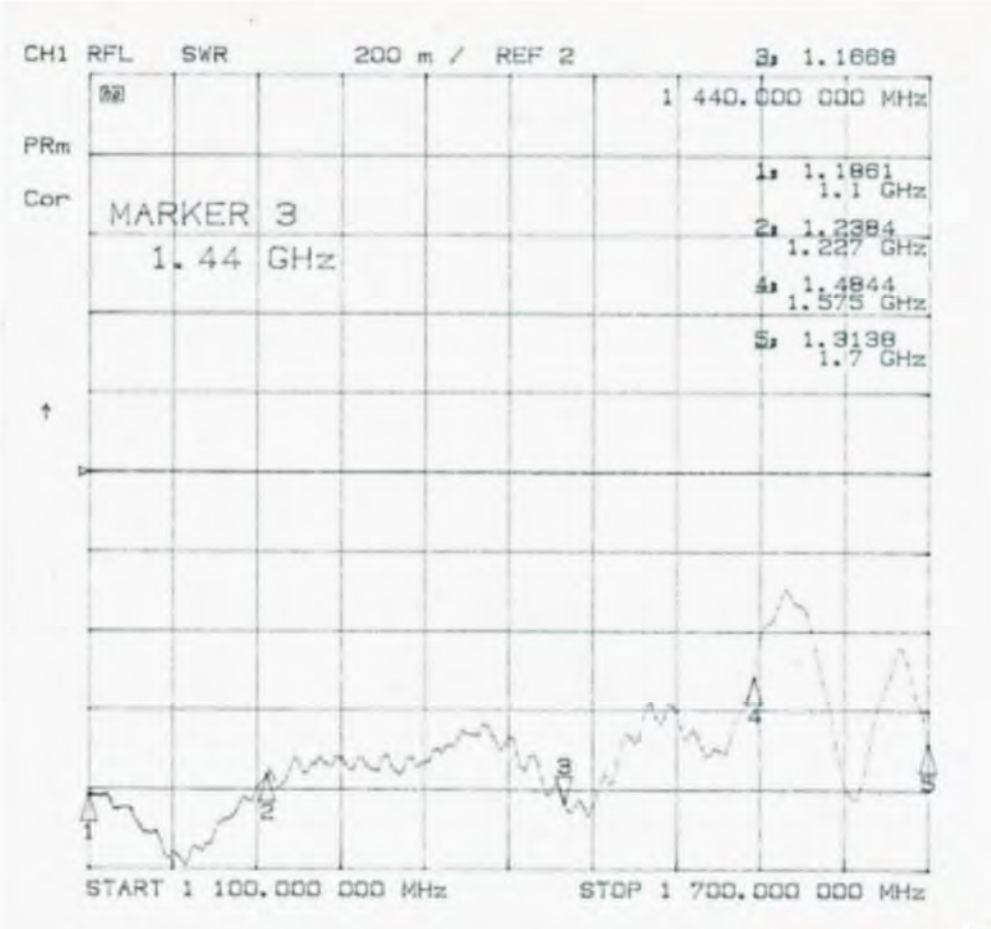


Mounting Dimensions



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The HX-1600 series of helical antennas offer wide band reliable operation in a rugged and reliable design. Default is RHCP (LHCP available) with several Gain/HPBW combinations available.

Model Number	Fo Mhz	Fl Mhz	Fh Mhz	# turns	HPBW°	Gain dBiC	Weight lbs	Length "
HX-1600-06-R	1600	1250	1950	6.0	44.3	9.5	2.3	11.0
HX-1600-08-R	1600	1250	1950	8.0	38.4	10.7	2.6	14.0
HX-1600-10-R	1600	1250	1950	10.0	34.3	11.7	2.9	18.0
HX-1600-13-R	1600	1250	1950	13.0	30.1	12.8	3.3	23.0
HX-1600-15-R	1600	1250	1950	15.0	28.0	13.4	3.6	27.0

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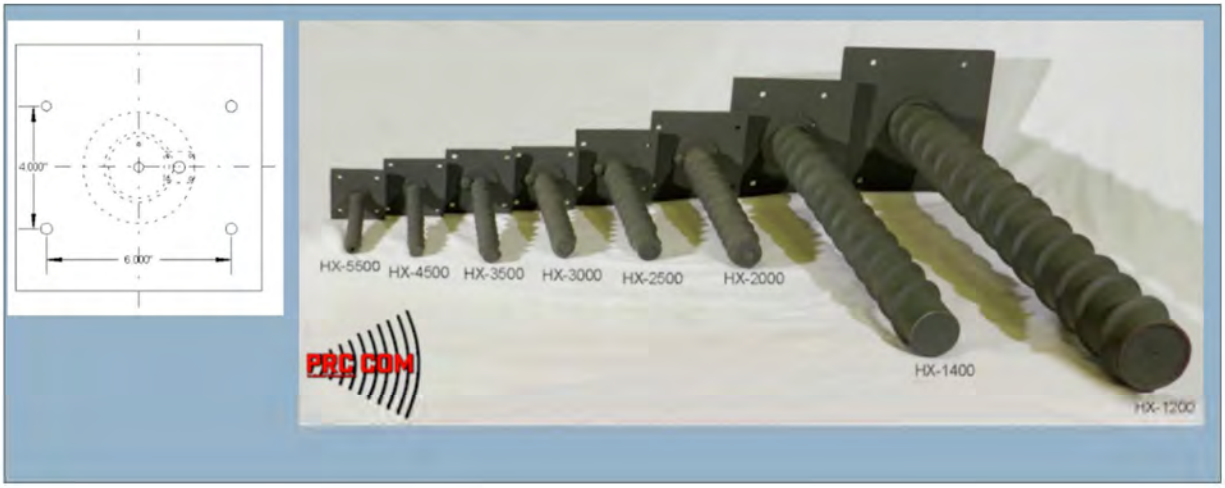

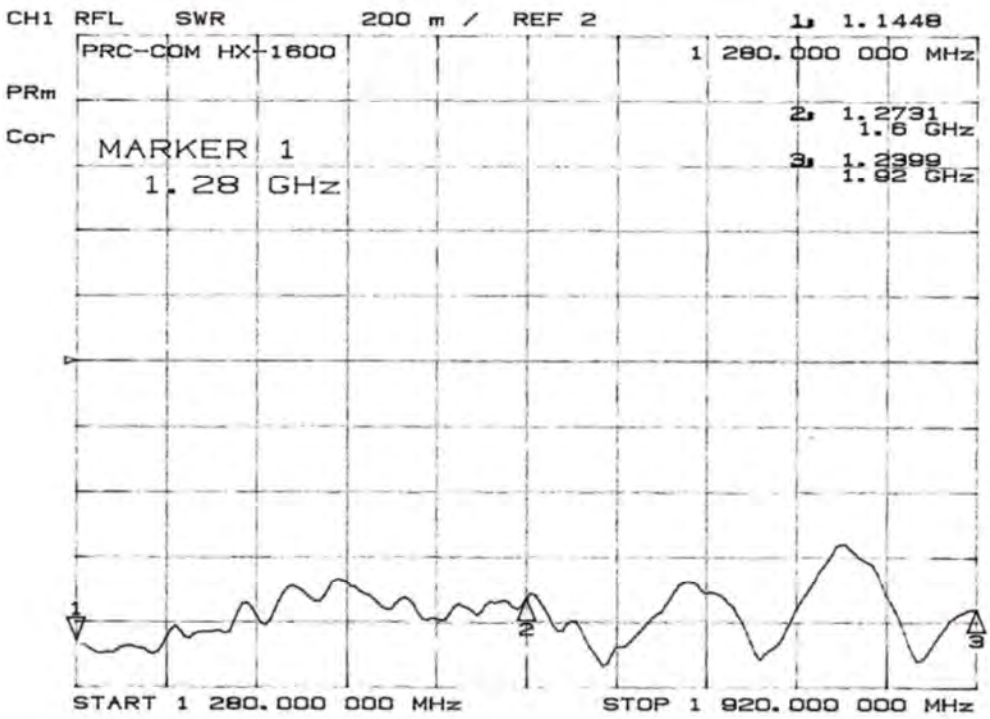

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Model Number	Fo GHz	Fl GHz	Fh Ghz	# turns	HPBW°	Gain dBiC	Weight lbs	Length "
HX-1700-06-R	1.70	1.30	2.10	6.0	44.5	9.4	1.6	10.0
HX-1700-08-R	1.70	1.30	2.10	8.0	38.5	10.7	1.7	12.3
HX-1700-10-R	1.70	1.30	2.10	10.0	34.5	11.6	1.9	15.0
HX-1700-13-R	1.70	1.30	2.10	13.0	30.2	12.8	2.1	19.0
HX-1700-15-R	1.70	1.30	2.10	15.0	27.0	13.8	2.3	22.0

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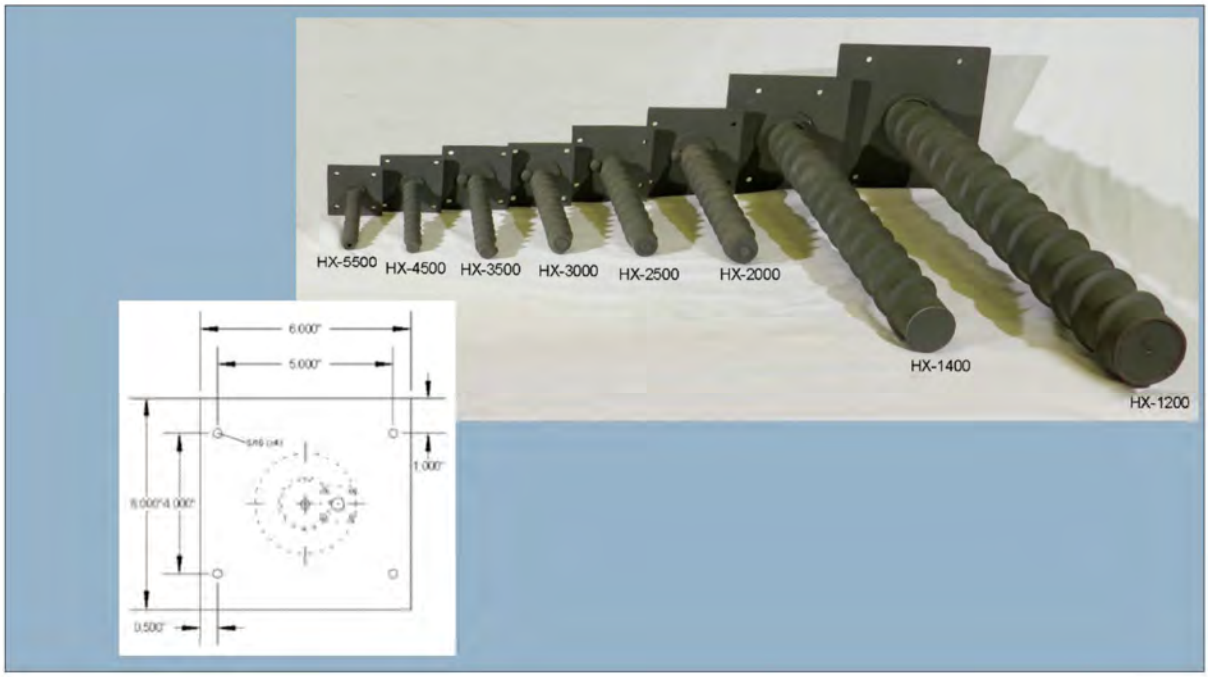

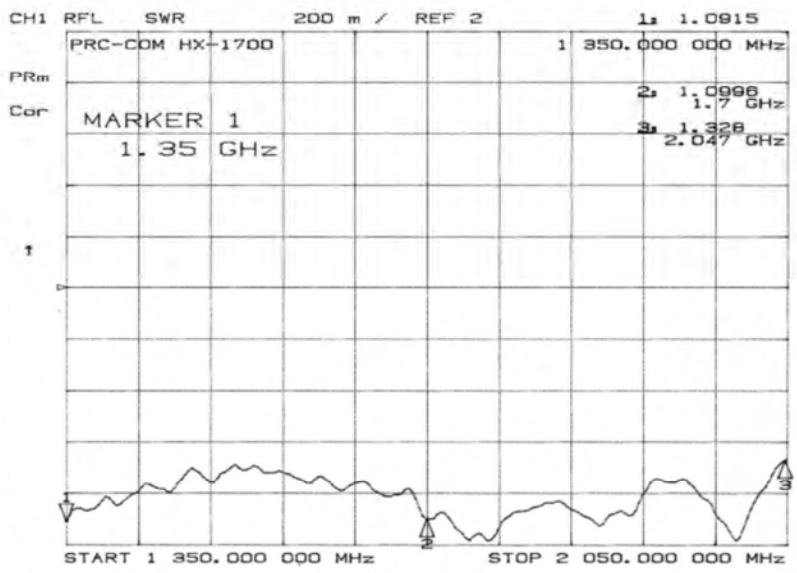

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Model Number	Fo GHz	Fl GHz	Fh Ghz	# turns	HPBW°	Gain dBiC	Weight lbs	Length "
HX-1800-06-R	1.80	1.40	2.20	6.0	46.6	9.0	1.6	9.0
HX-1800-08-R	1.80	1.40	2.20	8.0	40.4	10.3	1.7	13.0
HX-1800-10-R	1.80	1.40	2.20	10.0	36.1	11.2	1.9	16.0
HX-1800-13-R	1.80	1.40	2.20	13.0	31.7	12.4	2.1	21.0
HX-1800-15-R	1.80	1.40	2.20	15.0	29.5	13.6	2.3	24.0

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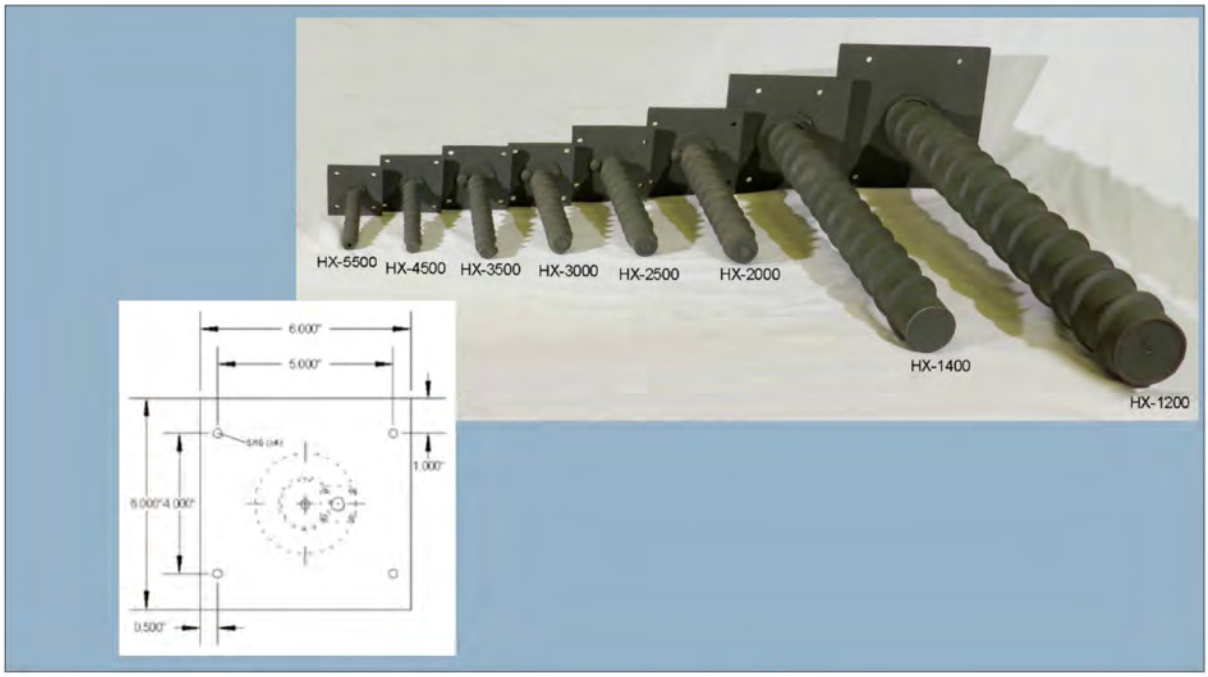

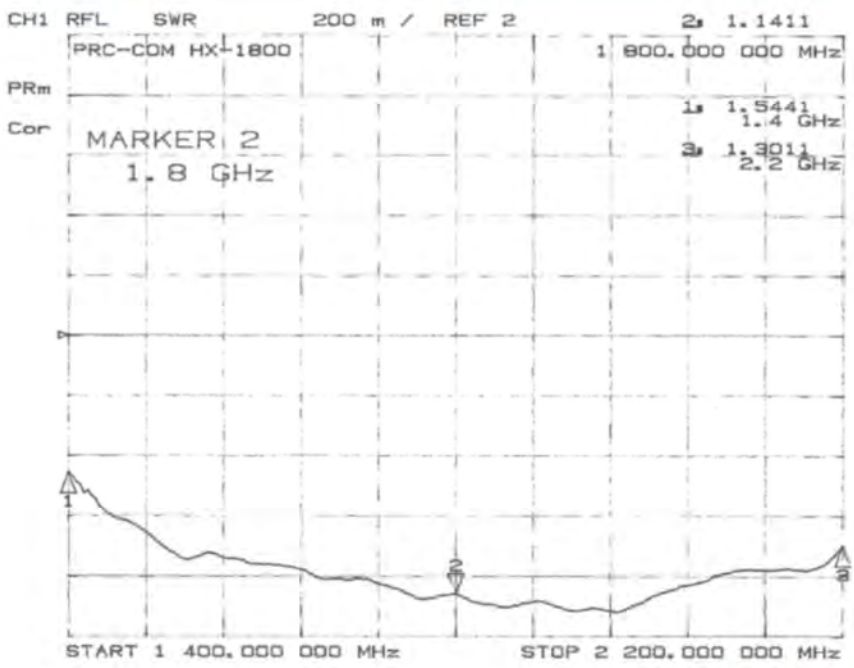

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Model Number	Fo GHz	Fl GHz	Fh Ghz	# turns	HPBW°	Gain dBiC	Weight lbs	Length "
HX-2000-06-R	2.00	1.60	2.40	6.0	42.5	8.2	1.4	8.0
HX-2000-08-R	2.00	1.60	2.40	8.0	36.8	9.5	1.5	10.5
HX-2000-10-R	2.00	1.60	2.40	10.0	32.9	10.8	1.6	13.0
HX-2000-13-R	2.00	1.60	2.40	13.0	28.5	13.2	1.8	15.5
HX-2000-15-R	2.00	1.60	2.40	15.0	26.5	14.0	2.1	18.0

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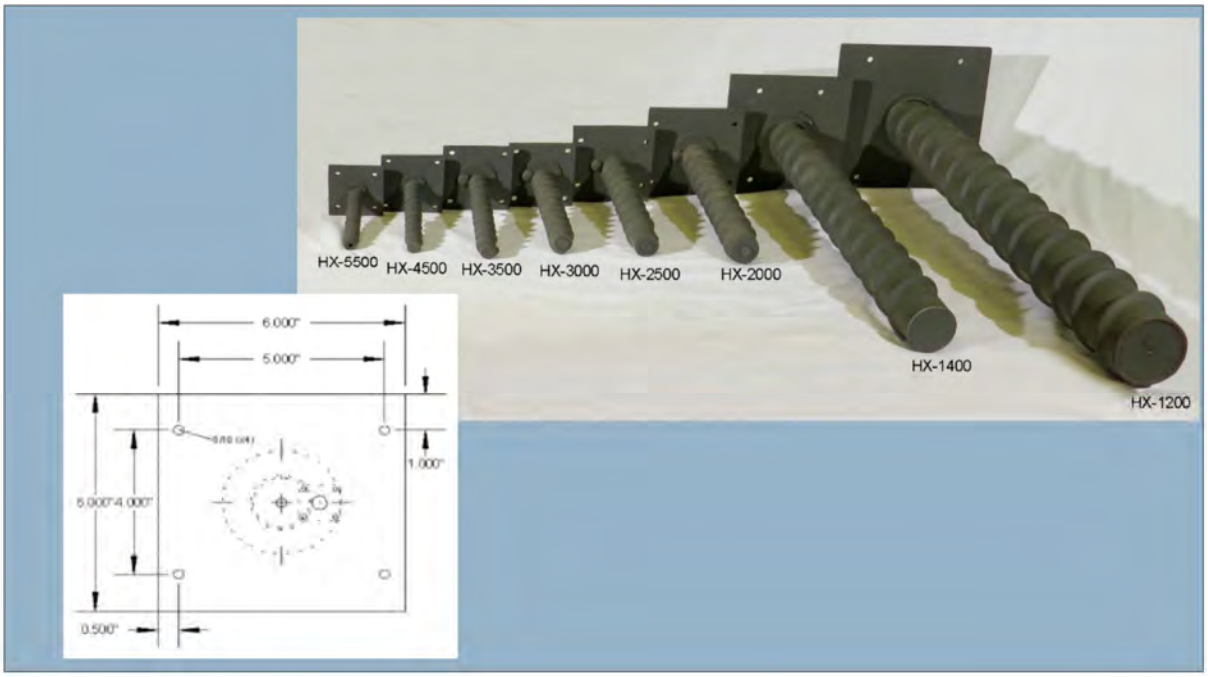
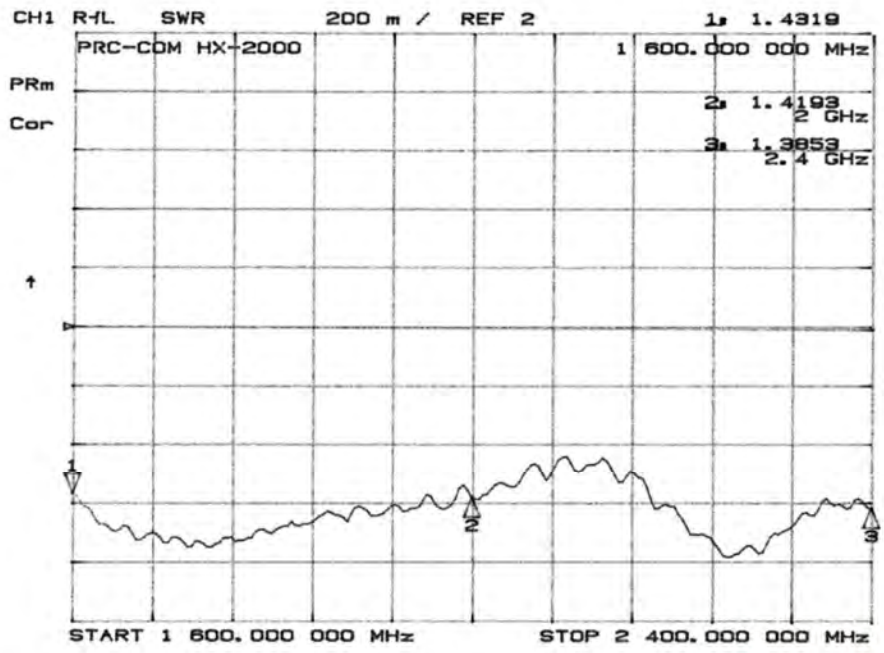
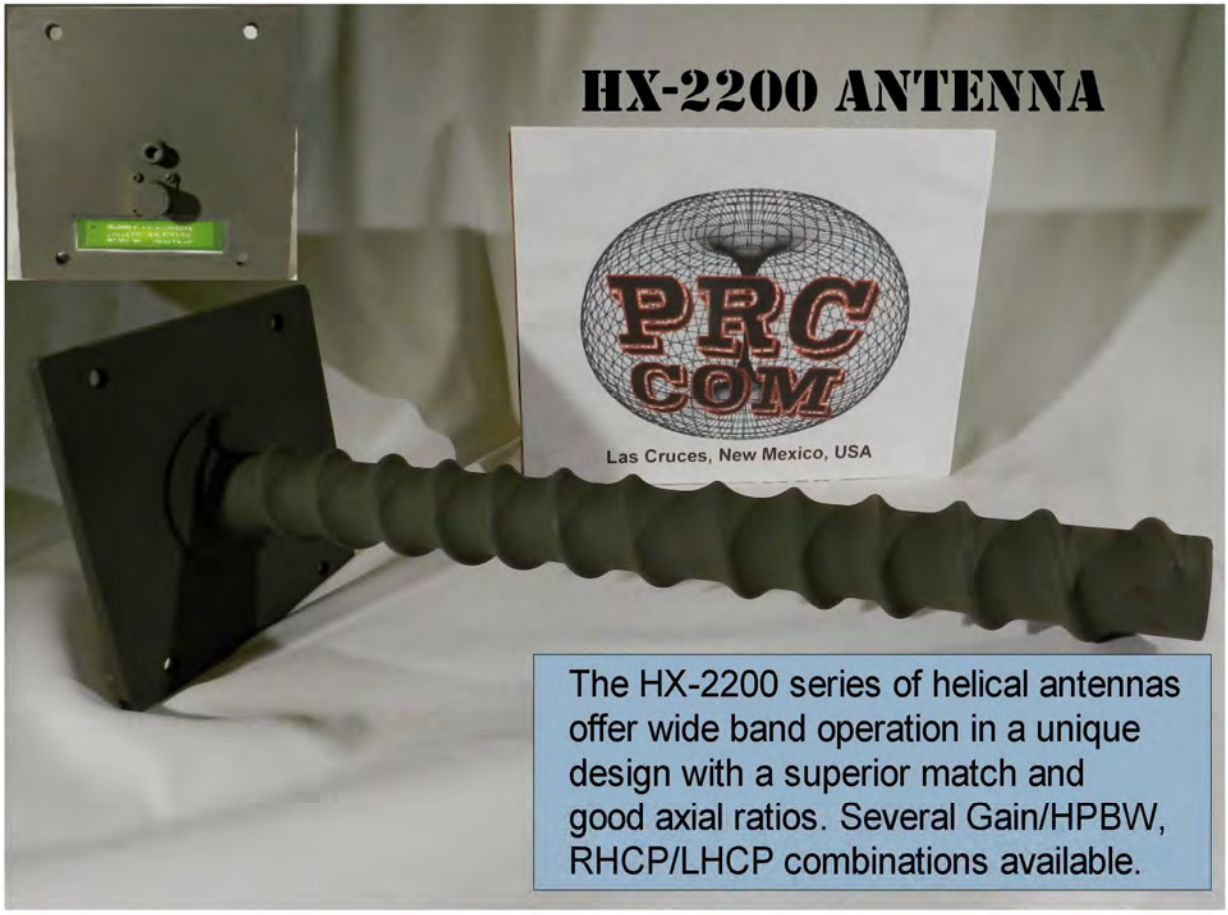


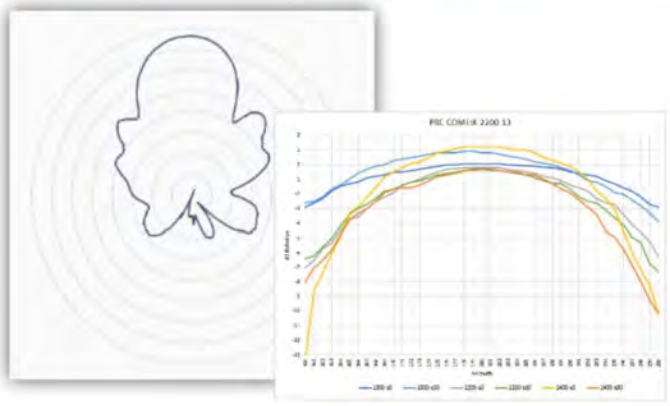


Antenna Solutions

If it must work first time and every time, PRC-COM is the answer.



Model Number	Fo GHz	Fl GHz	Fh Ghz	# turns	HPBW°	Gain dBiC	Weight lbs	Length "
HX-2200-06-R	2.20	1.70	2.70	6.0	42.5	8.2	1.3	8.2
HX-2200-08-R	2.20	1.70	2.70	8.0	36.8	9.5	1.4	10.0
HX-2200-10-R	2.20	1.70	2.70	10.0	32.9	10.8	1.5	12.5
HX-2200-13-R	2.20	1.70	2.70	13.0	28.5	13.1	1.7	16.0
HX-2200-15-R	2.20	1.70	2.70	15.0	26.5	14.0	1.8	17.5



Antenna Solutions

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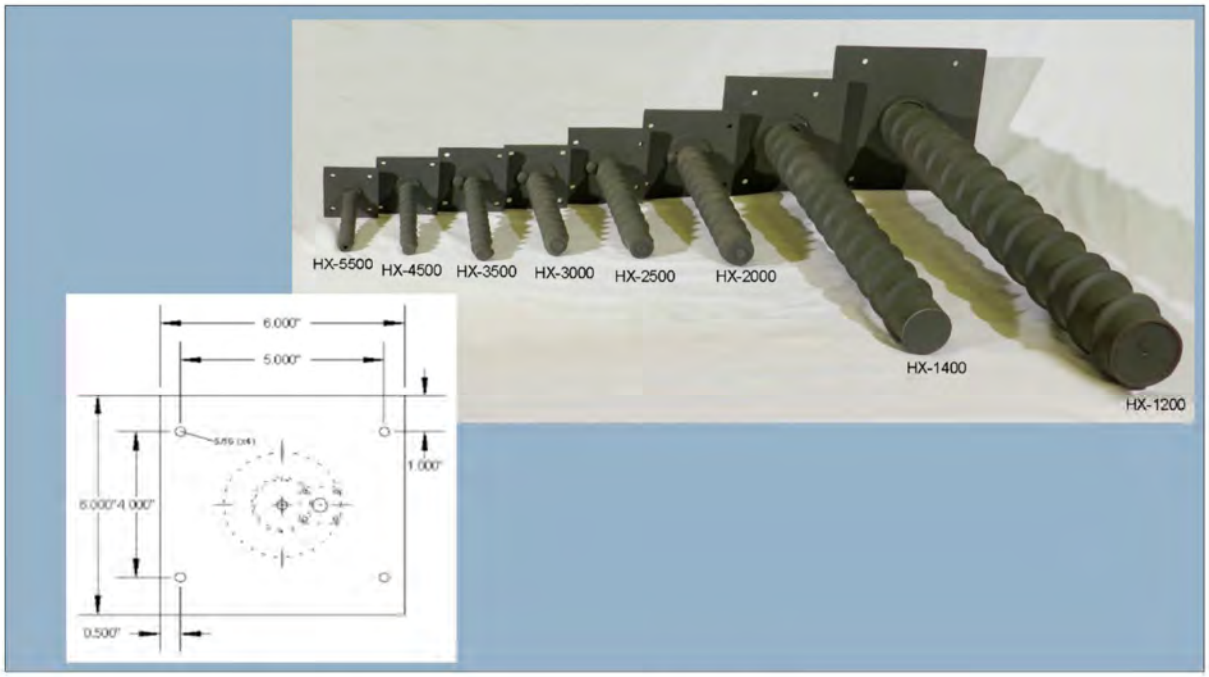
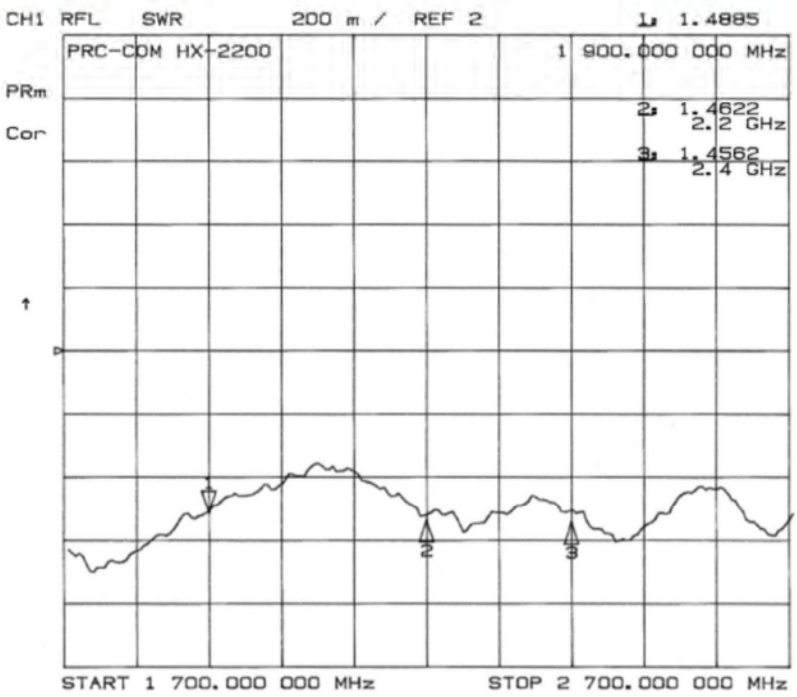


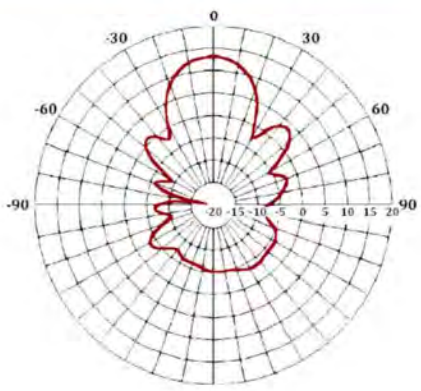


Antenna Solutions

If it must work first time and every time, PRC-COM is the answer.

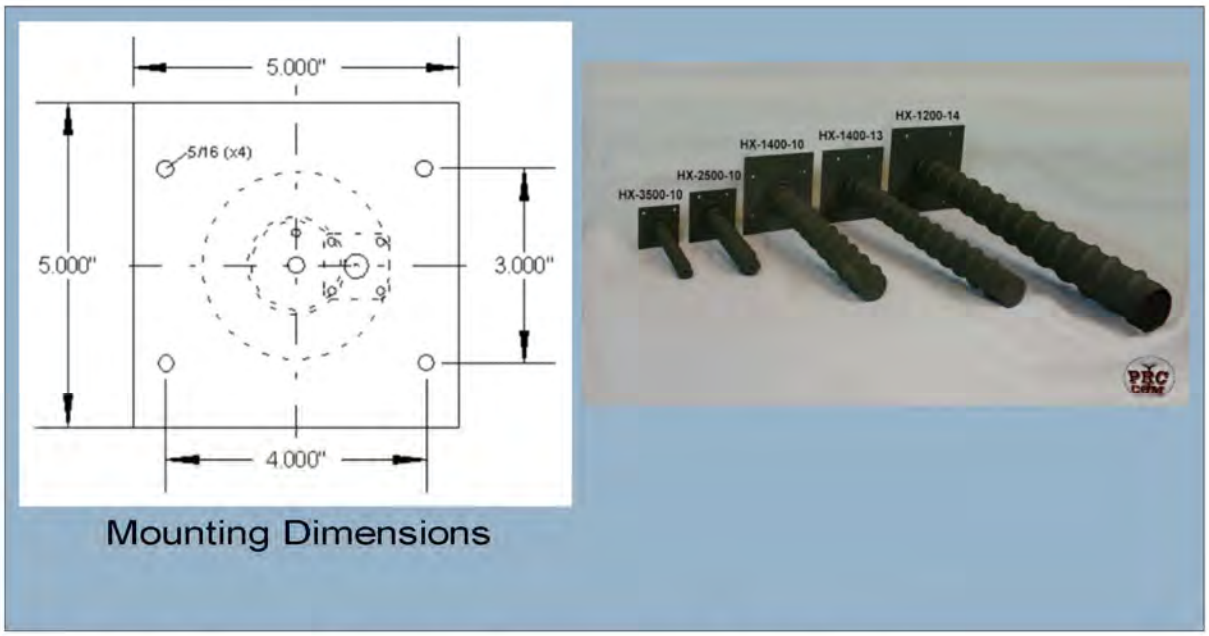
The HX-2500 series of helical antennas offer wide band reliable operation in a rugged and reliable design. Default is RHCP (LHCP available) with several Gain/HPBW combinations available.
note: remove plug for high altitude flight

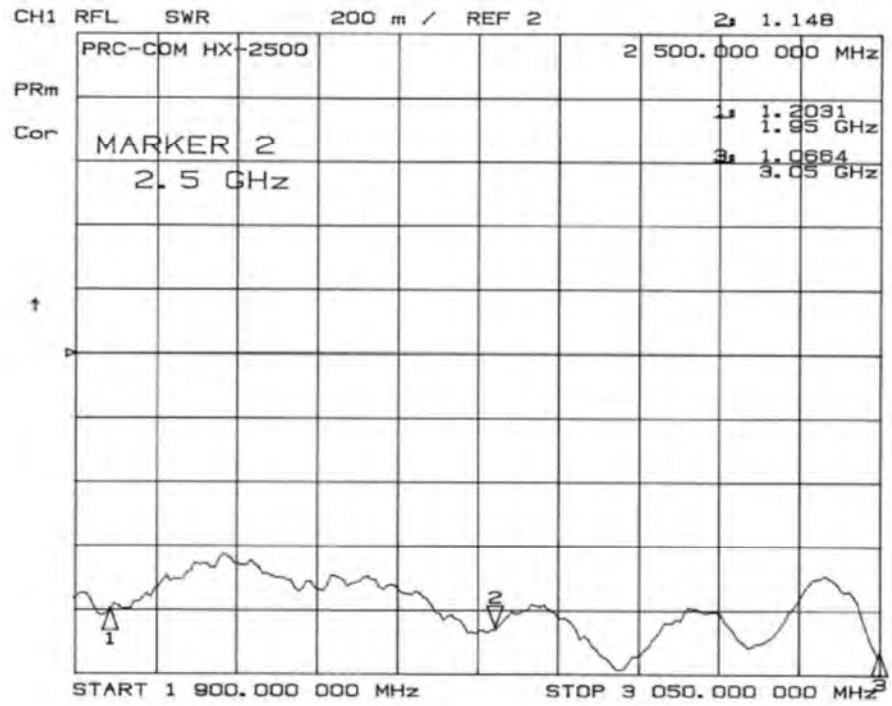
Model Number	Fo Mhz	Fl Mhz	Fh Mhz	# turns	HPBW°	Gain dBiC	Weight lbs	Length "
HX-2500-06-R	1950	2500	3050	6.0	40.0	9.5	0.8	8.3
HX-2500-08-R	1950	2500	3050	8.0	36.2	10.7	0.9	10.5
HX-2500-10-R	1950	2500	3050	10.0	32.9	11.7	1.1	13.3
HX-2500-13-R	1950	2500	3050	13.0	28.0	13.0	1.3	17.0
HX-2500-15-R	1950	2500	3050	15.0	26.9	13.6	1.6	19.5



Antenna Solutions

If it must work first time and every time, PRC-COM is the answer.





Antenna Solutions

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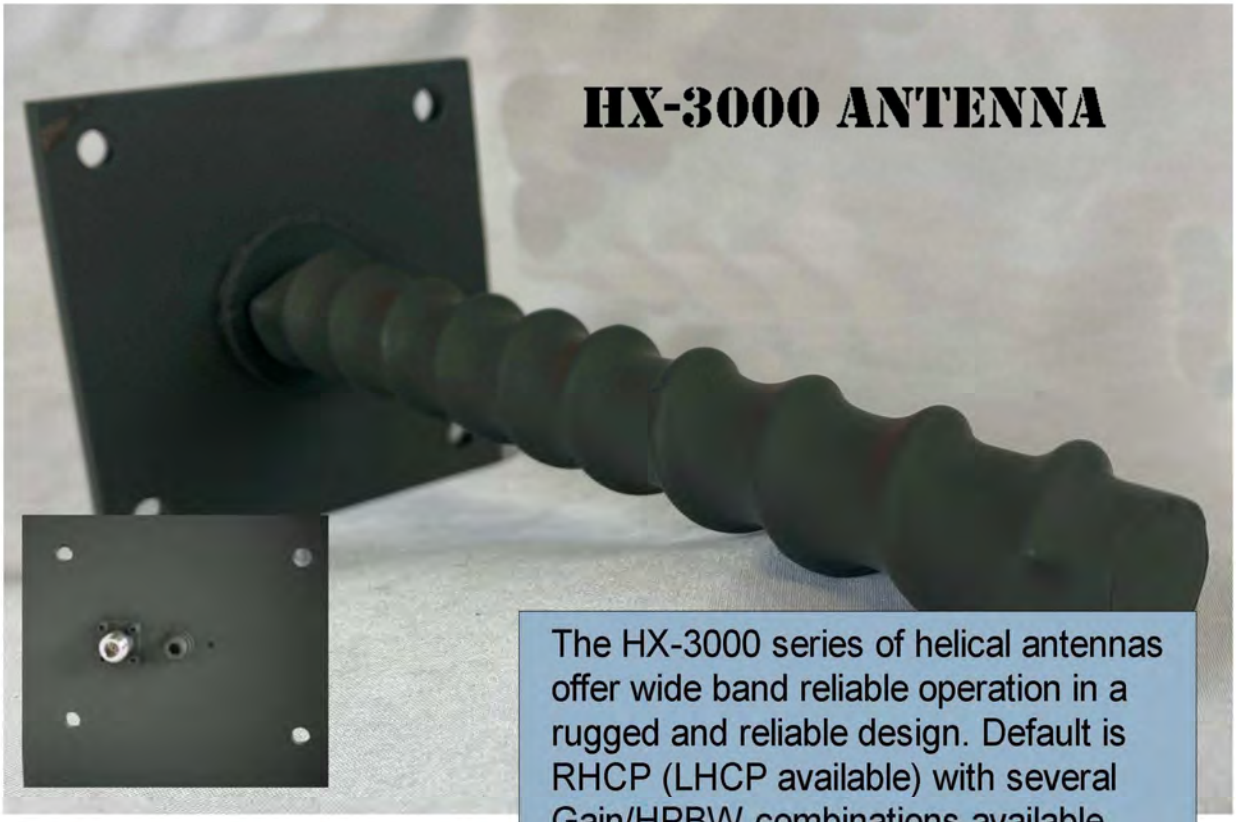
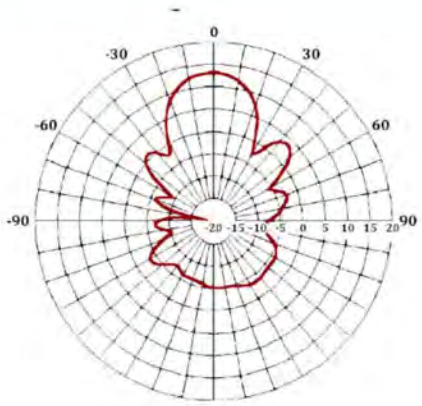


Model Number	Fo GHz	Fl GHz	Fh Ghz	# turns	HPBW°	Gain dBiC	Weight lbs	Length "
HX-3000-06-R	3.00	2.40	3.60	6.0	44.0	9.0	0.8	7.5
HX-3000-08-R	3.00	2.40	3.60	8.0	39.0	10.0	0.9	8.3
HX-3000-10-R	3.00	2.40	3.60	10.0	35.0	11.0	1.1	10.0
HX-3000-13-R	3.00	2.40	3.60	13.0	30.0	13.0	1.3	13.0
HX-3000-15-R	3.00	2.40	3.60	15.0	28.0	14.0	1.5	16.0



Antenna Solutions

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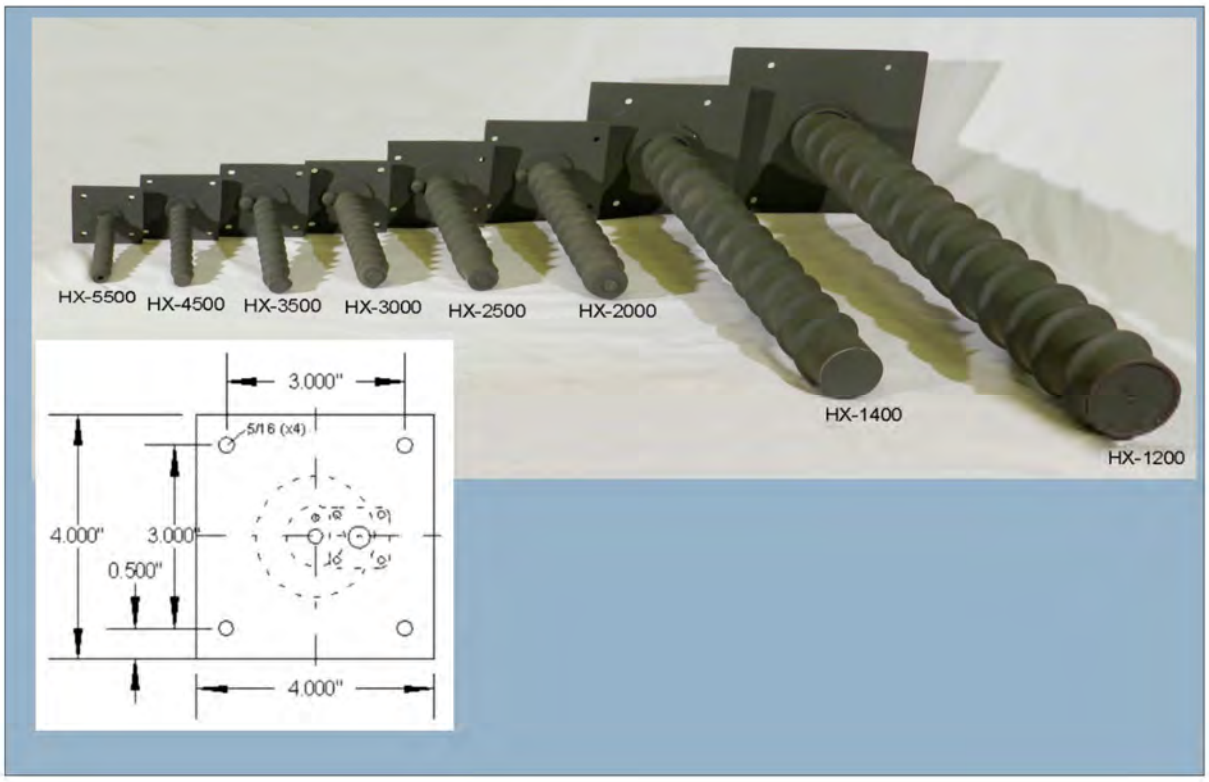
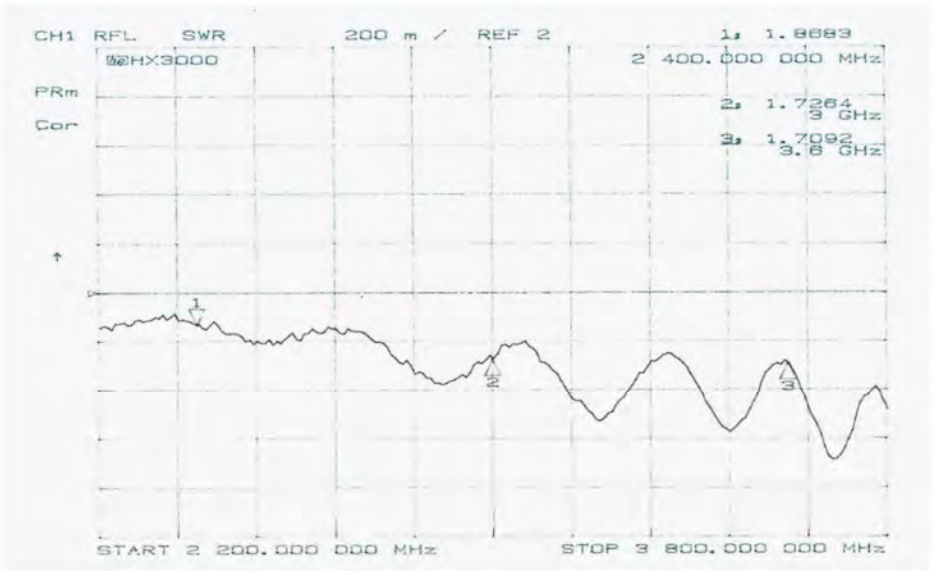
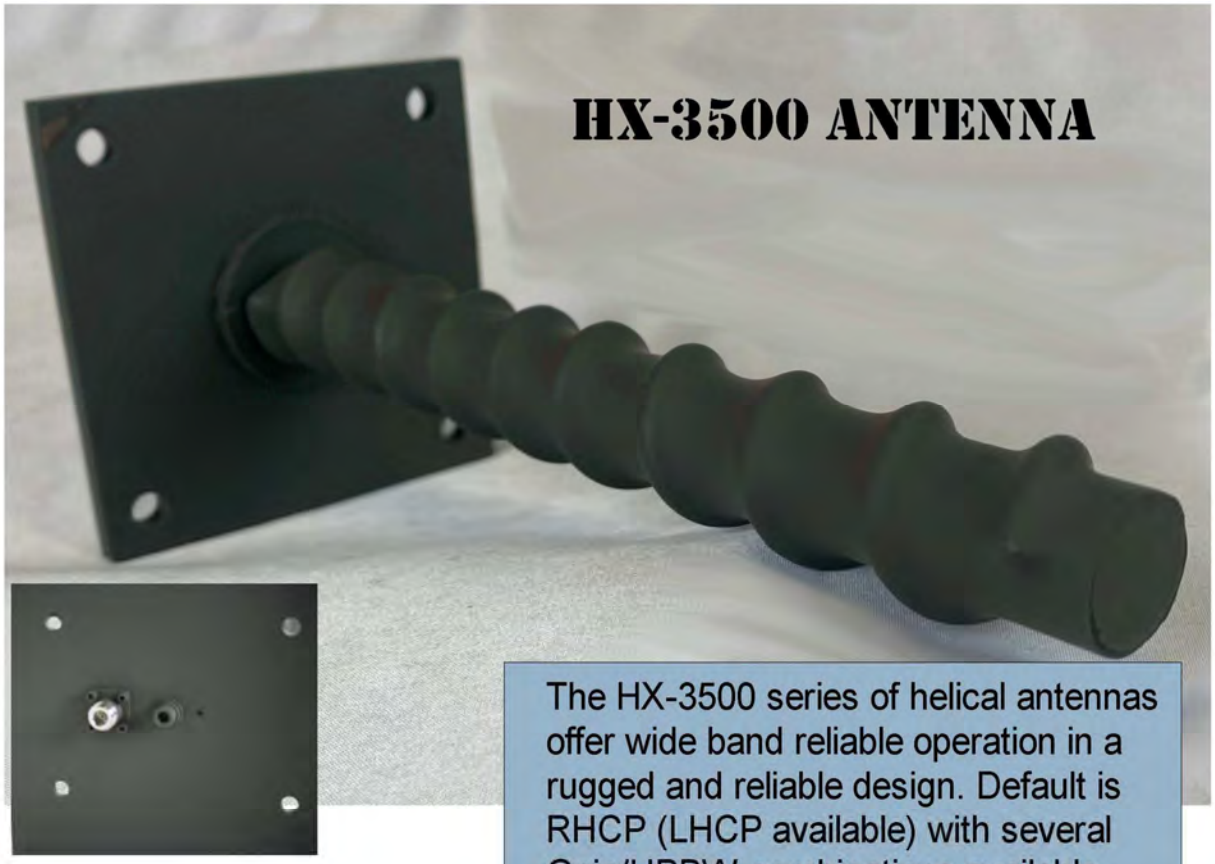




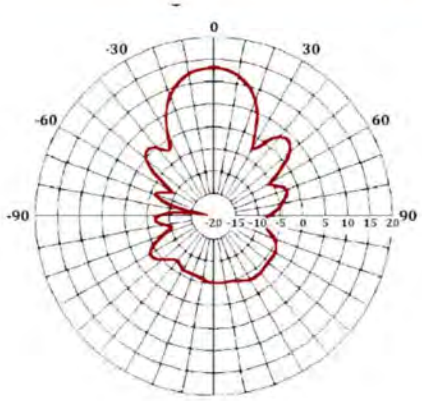
Antenna Solutions

If it must work first time and every time, PRC-COM is the answer.



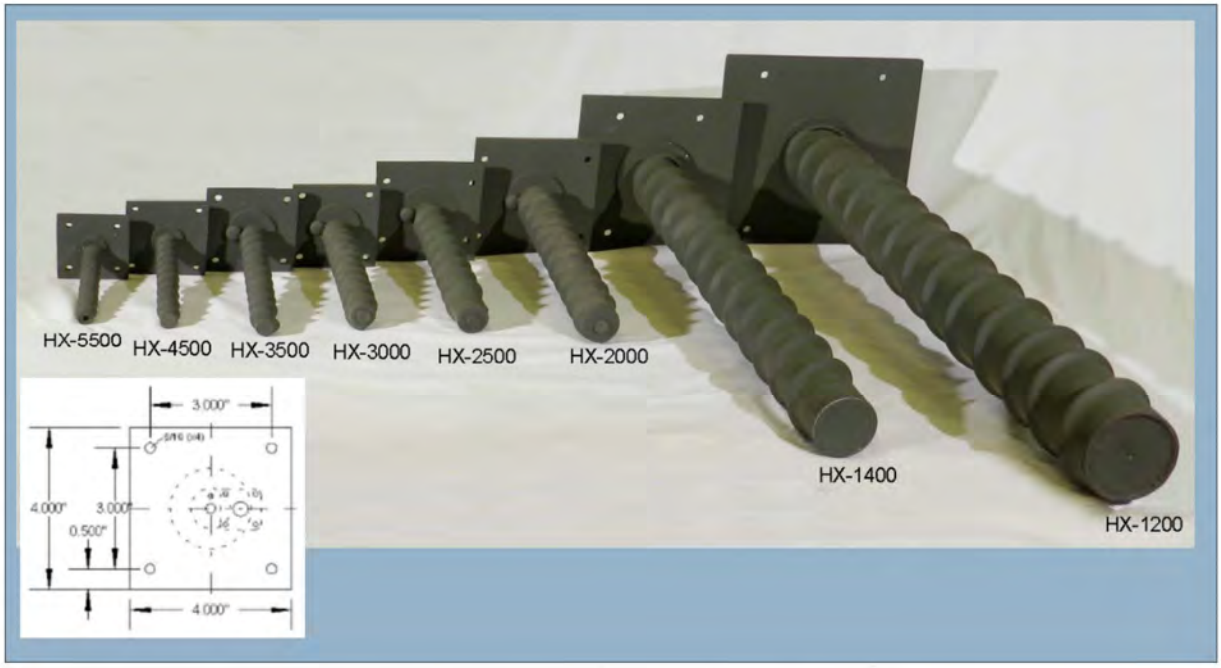
The HX-3500 series of helical antennas offer wide band reliable operation in a rugged and reliable design. Default is RHCP (LHCP available) with several Gain/HPBW combinations available.

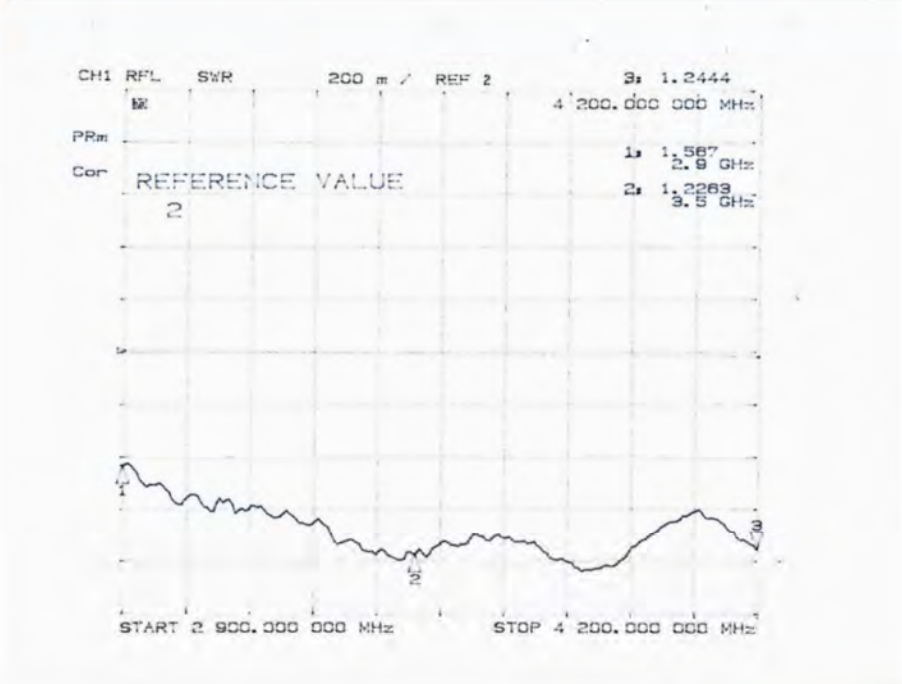
Model Number	Fo GHz	Fl GHz	Fh Ghz	# turns	HPBW°	Gain dBiC	Weight lbs	Length "
HX-3500-06-R	3.50	2.90	4.20	6.0	42.5	8.5	0.7	7.5
HX-3500-08-R	3.50	2.90	4.20	8.0	36.8	9.7	0.8	8.3
HX-3500-10-R	3.50	2.90	4.20	10.0	32.9	11.0	0.9	10.0
HX-3500-13-R	3.50	2.90	4.20	13.0	28.9	13.0	1.2	12.5
HX-3500-15-R	3.50	2.90	4.20	15.0	26.7	14.0	1.4	14.5



Antenna Solutions

If it must work first time and every time, PRC-COM is the answer.

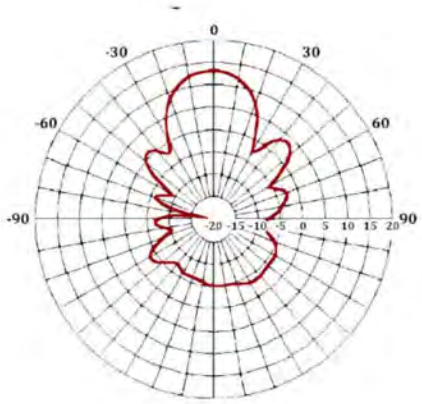




Antenna Solutions

If it must work first time and every time, PRC-COM is the answer.

Model Number	Fo GHz	Fl GHz	Fh GHz	# turns	HPBW	Gain	Length
HX-4500-06-R	4.500	3.500	5.500	6.0	47.3	8.9	4.5
HX-4500-08-R	4.500	3.500	5.500	8.0	40.9	10.2	5.5
HX-4500-10-R	4.500	3.500	5.500	10.0	36.6	11.1	7.0
HX-4500-13-R	4.500	3.500	5.500	13.0	32.1	12.3	9.0
HX-4500-15-R	4.500	3.500	5.500	15.0	29.9	13.0	10.5



Antenna Solutions

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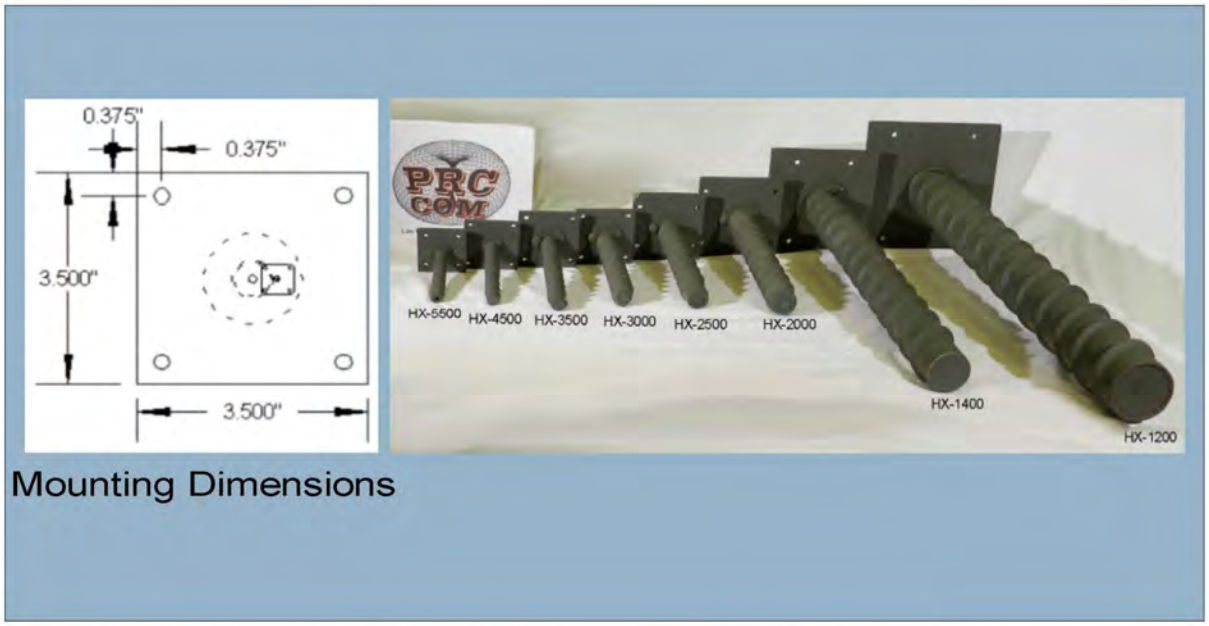
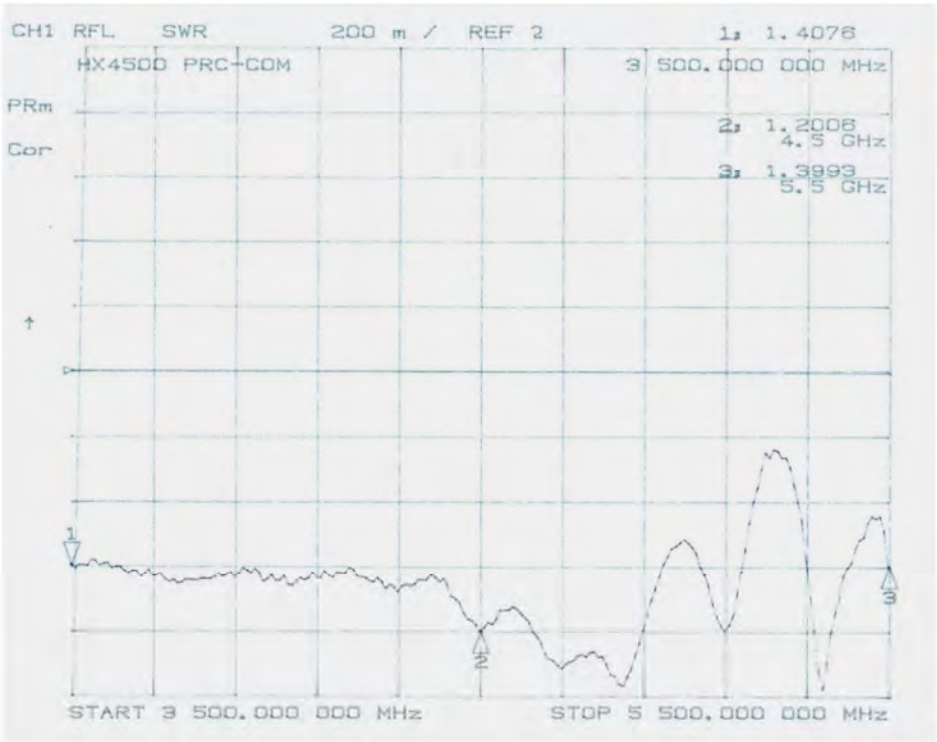


Mounting Dimensions

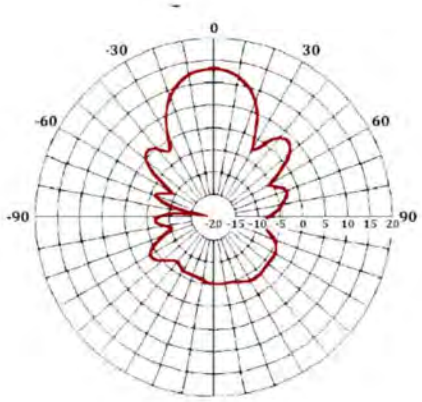


Antenna Solutions

If it must work first time and every time, PRC-COM is the answer.

The HX-5500 series of helical antennas offer wide band reliable operation in a rugged and reliable design. Default is RHCP (LHCP available) with several Gain/HPBW combinations available.

Model Number	Fo	Fl	Fh	# turns	HPBW	Gain	Length
HX-5500-06-R	5.500	4.200	6.200	6.0	44.0	8.4	3.8
HX-5500-08-R	5.500	4.200	6.200	8.0	38.0	9.5	4.5
HX-5500-10-R	5.500	4.200	6.200	10.0	30.0	10.5	6.0
HX-5500-13-R	5.500	4.200	6.200	13.0	27.0	11.7	7.5



Antenna Solutions

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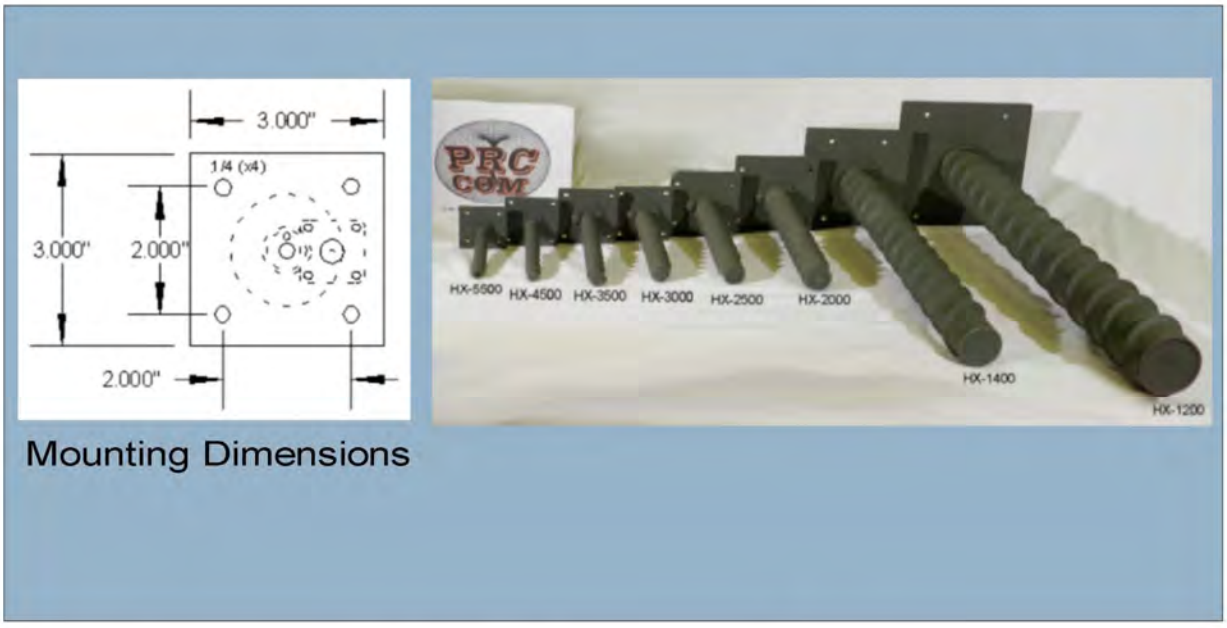
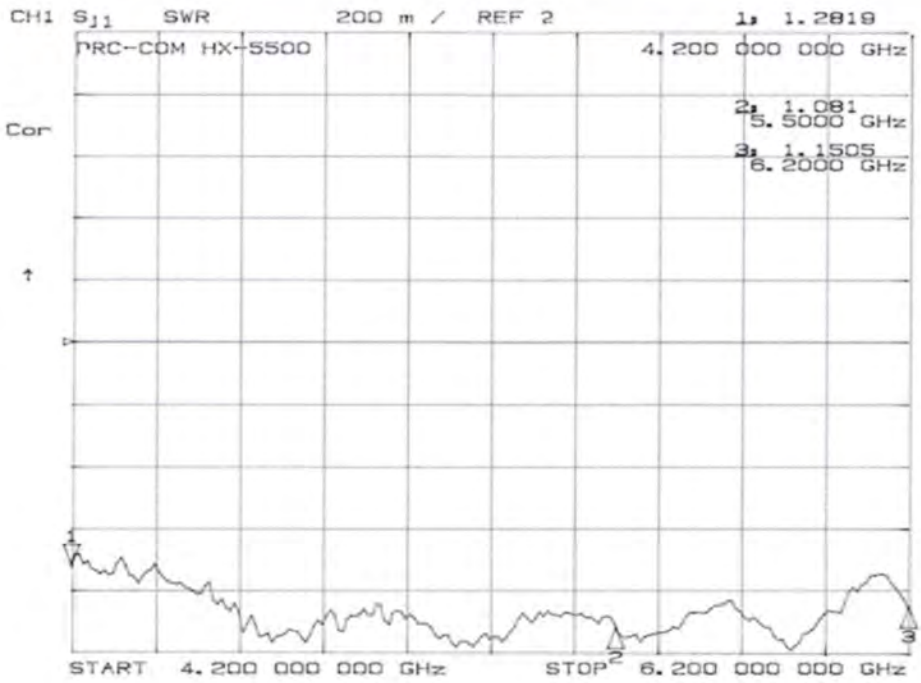


Mounting Dimensions

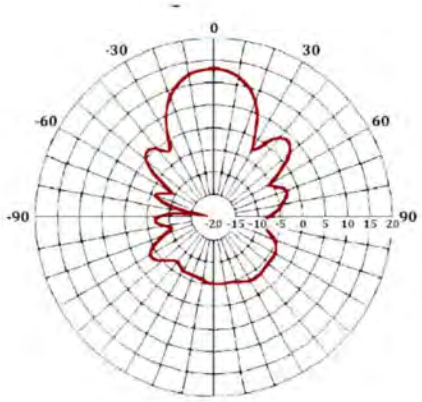


Antenna Solutions

If it must work first time and every time, PRC-COM is the answer.

The HX-6500 series of helical antennas offer wide band reliable operation in a rugged and reliable design. Default is RHCP (LHCP available) with several Gain/HPBW combinations available.

Model Number	Fo	Fl	Fh	# turns	HPBW	Gain	Length
HX-6500-06-R	6.500	5.000	7.900	6.0	34.0	9.3	3.0
HX-6500-08-R	6.500	5.000	7.900	8.0	32.0	10.5	4.0
HX-6500-10-R	6.500	5.000	7.900	10.0	30.0	11.5	5.0
HX-6500-13-R	6.500	5.000	7.900	13.0	28.0	12.6	6.0
HX-6500-15-R	6.500	5.000	7.900	15.0	26.0	13.2	7.0



Antenna Solutions

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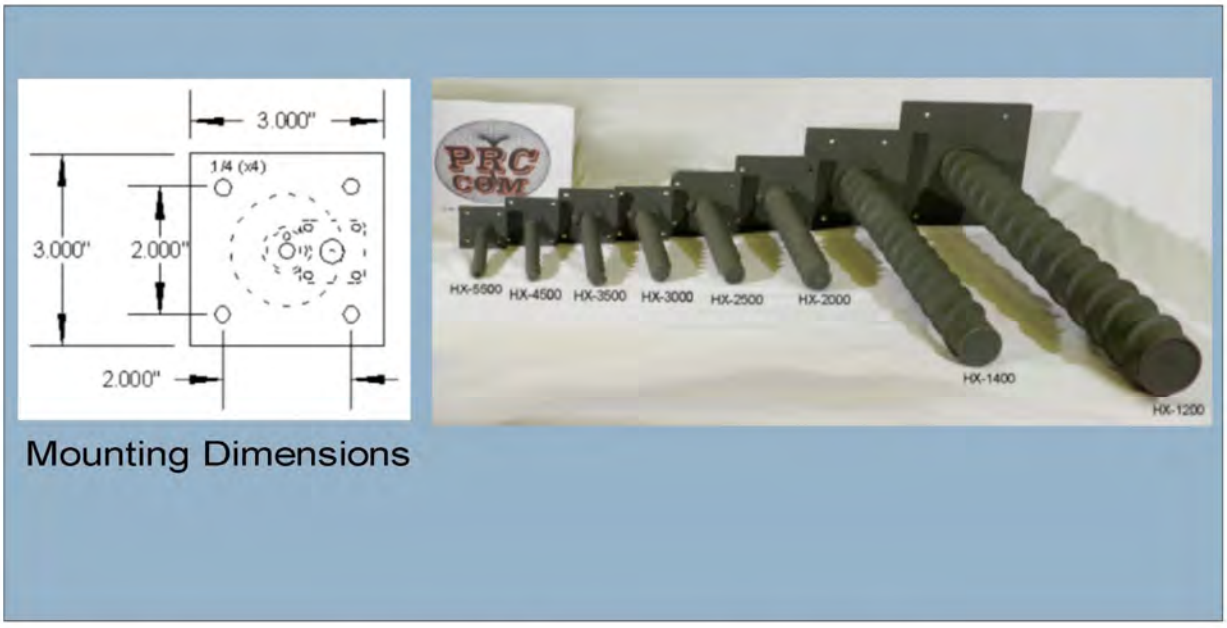
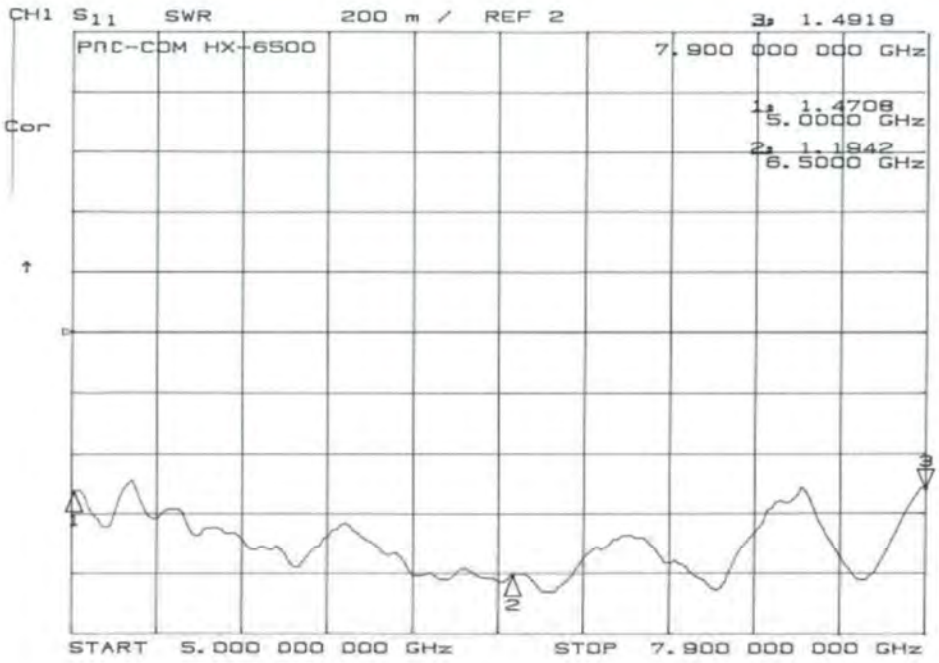


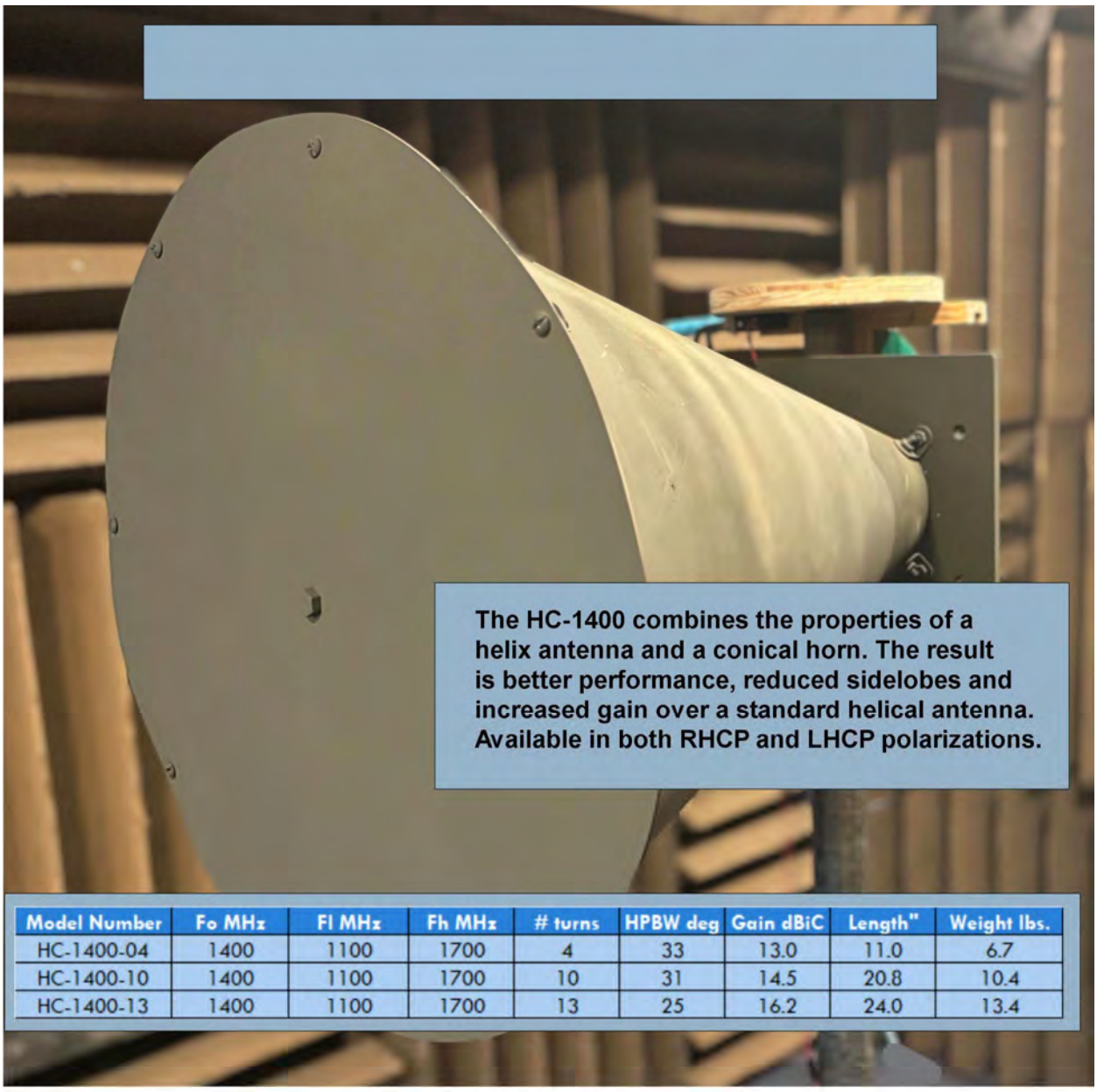
Mounting Dimensions



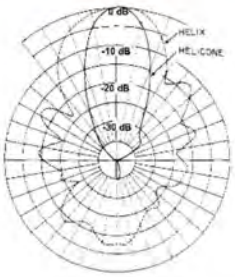
3.0 Helicone Antennas

Antenna Solutions

If it must work first time and every time, PRC-COM is the answer.



Model Number	Fo MHz	Fl MHz	Fh MHz	# turns	HPBW deg	Gain dBiC	Length"	Weight lbs.
HC-1400-04	1400	1100	1700	4	33	13.0	11.0	6.7
HC-1400-10	1400	1100	1700	10	31	14.5	20.8	10.4
HC-1400-13	1400	1100	1700	13	25	16.2	24.0	13.4



Antenna Solutions

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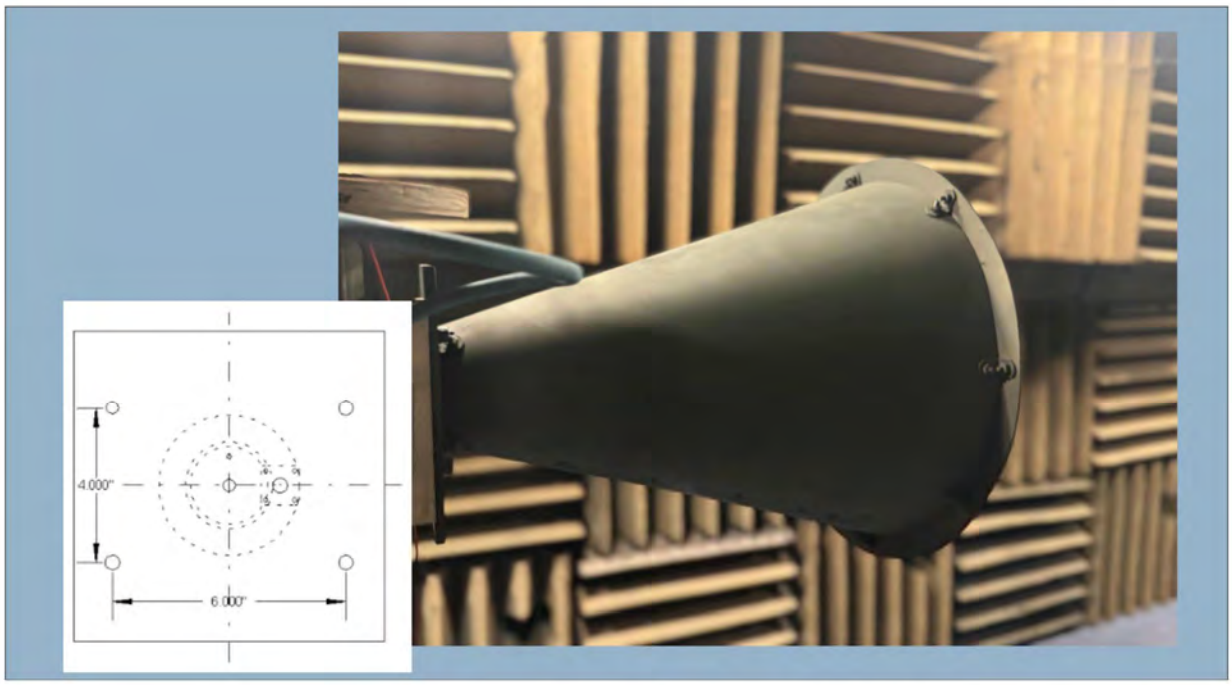
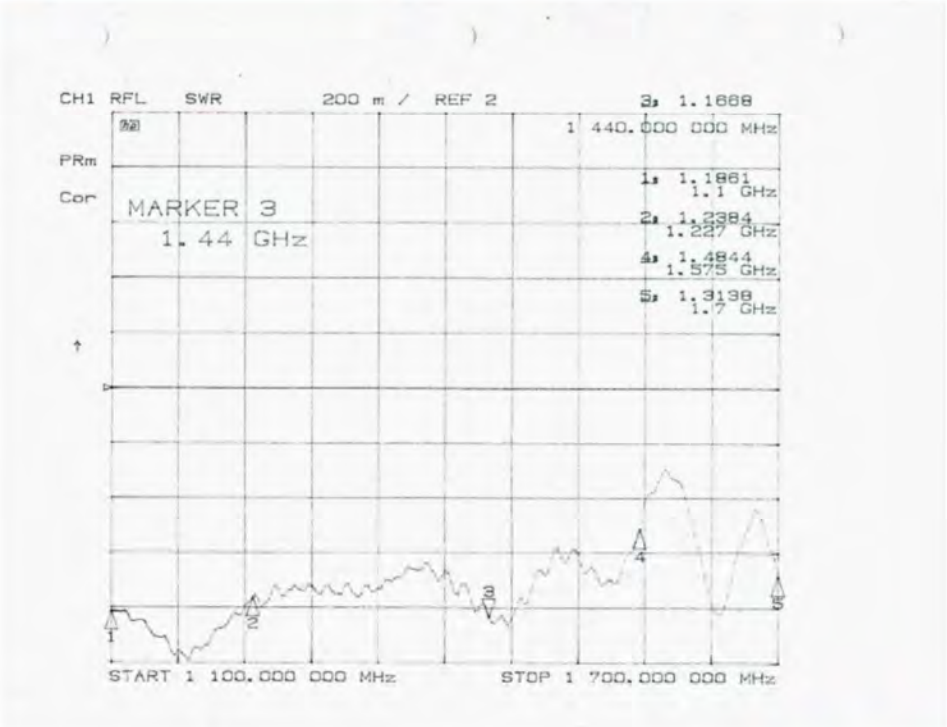


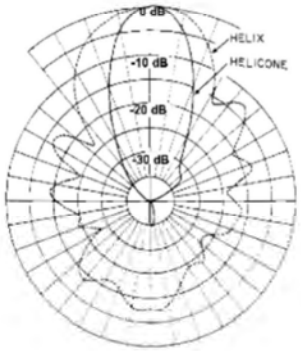


Antenna Solutions

If it must work first time and every time, PRC-COM is the answer.

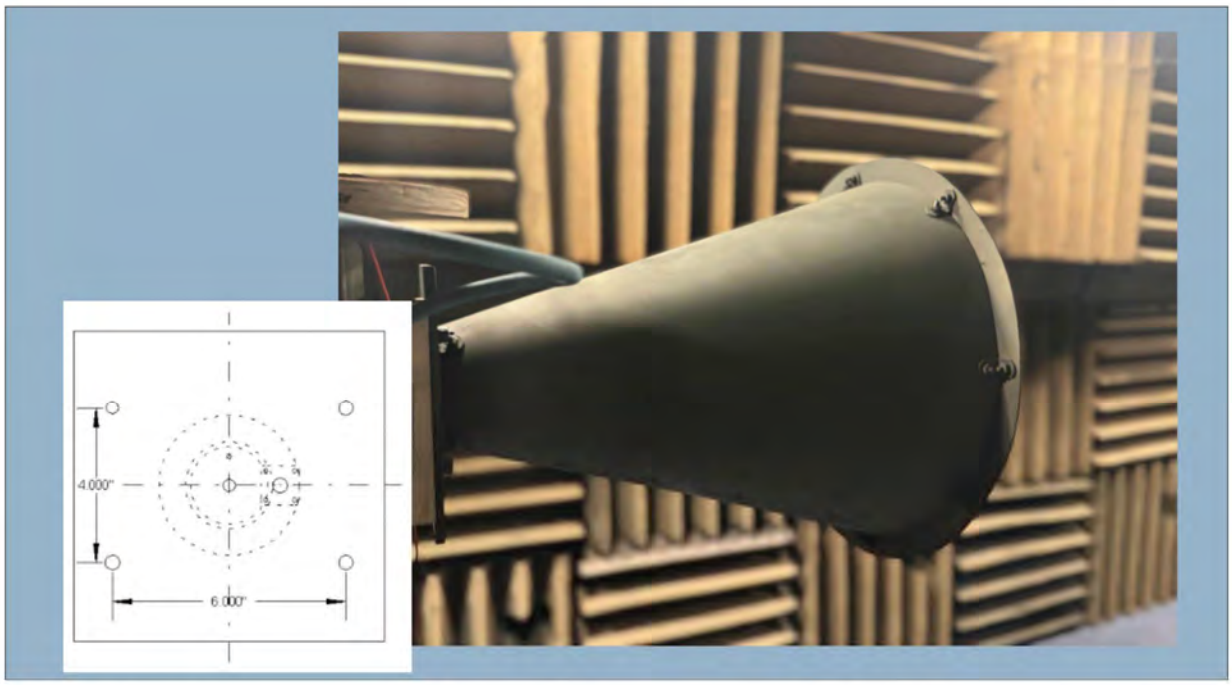
The HC-1600 combines the properties of a helix antenna and a conical horn. The result is better performance, reduced sidelobes and increased gain over a standard helical antenna. Available in both RHCP and LHCP polarizations.

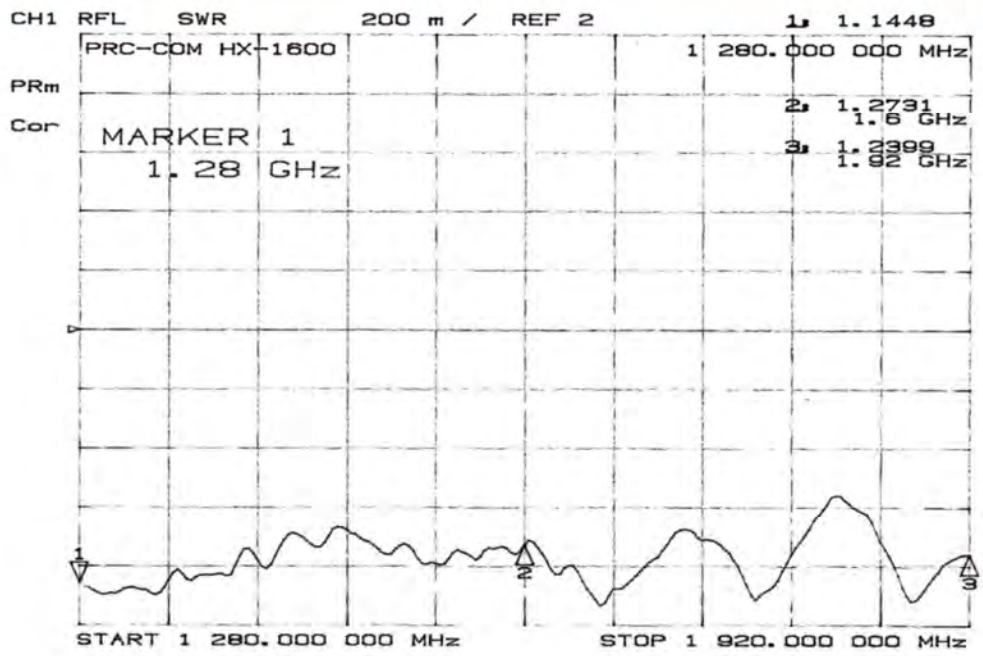
Model Number	Fo MHz	Fl MHz	Fh MHz	# turns	HPBW deg	Gain dBiC	Length"	Weight lbs.
HC-1600-04	1600	1250	1950	4	33	13.2	10.0	4.3
HC-1600-10	1600	1250	1950	10	31	14.9	19.5	8.7
HC-1600-13	1600	1250	1950	13	25	16.5	23.0	11.4



Antenna Solutions

If it must work first time and every time, PRC-COM is the answer.





Antenna Solutions

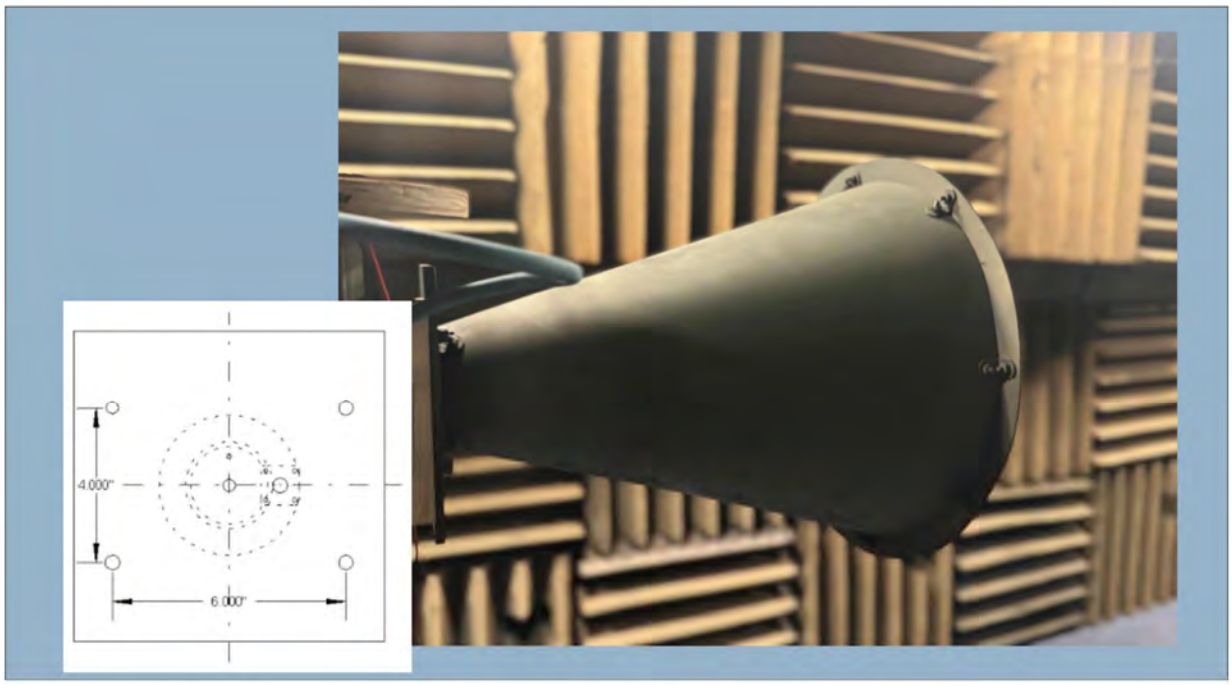
If it must work first time and every time, PRC-COM is the answer.

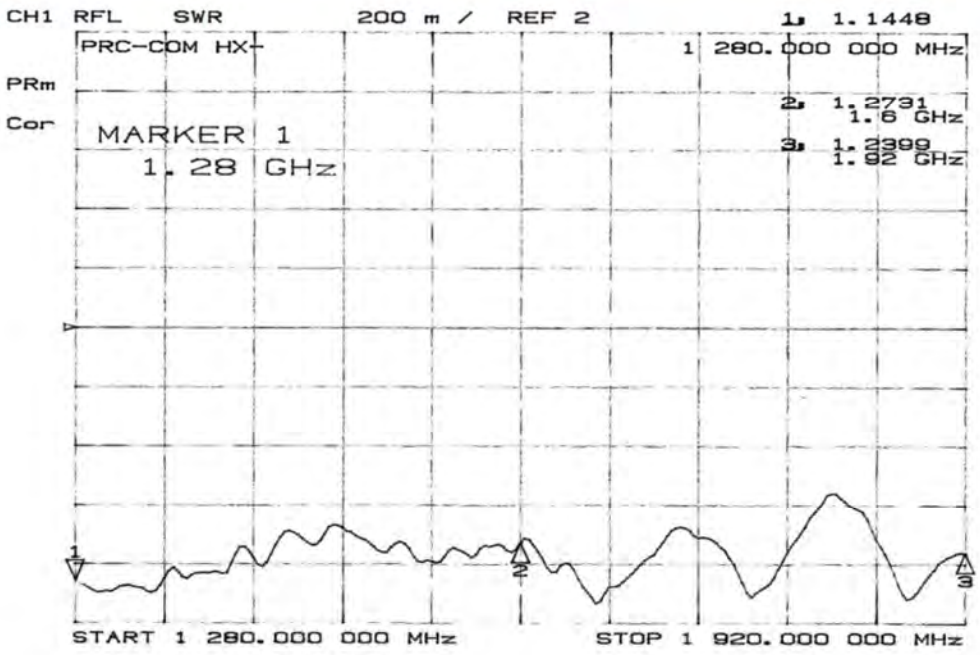
The HC-2200 combines the properties of a helix antenna and a conical horn. The result is better performance, reduced sidelobes and increased gain over a standard helical antenna. Available in both RHCP and LHCP polarizations.

Model Number	Fo MHz	Fl MHz	Fh MHz	# turns	HPBW deg	Gain dBiC	Length"	Weight lbs.
HC-2200-04	2200	1750	2650	4	33	13.2	6.0	3.3
HC-2200-10	2200	1750	2650	10	31	14.9	12.5	6.7
HC-2200-13	2200	1750	2650	13	25	16.5	16.5	8.4

Antenna Solutions

If it must work first time and every time, PRC-COM is the answer.





4.0 Biconical Monopole Antennas

Antenna Solutions

If it must work first time and every time, PRC-COM is the answer.

BM-04G BICONNICAL MONOPOLE ANTENNA

Specifications

Electrical

Freq:	50 to 6000 MHz
Gain:	4 dB (Fo)
Pwr:	100 Watts (CW)
Pol:	Linear (Vertical)
VSWR:	3.0:1 (maximum)
HPBW:	360 x 85 Degrees (Fo)

Mechanical

Dimensions:	3.0" x 13.5" (antenna)
Weight:	4 lbs. (antenna) 4.8 lbs. (antenna with Mag Mount)
Connector:	Type N (female)

The BM-04G is an extreamly wide band and rugged antenna, ideally suited for test, electronic warfare and field measurement use.

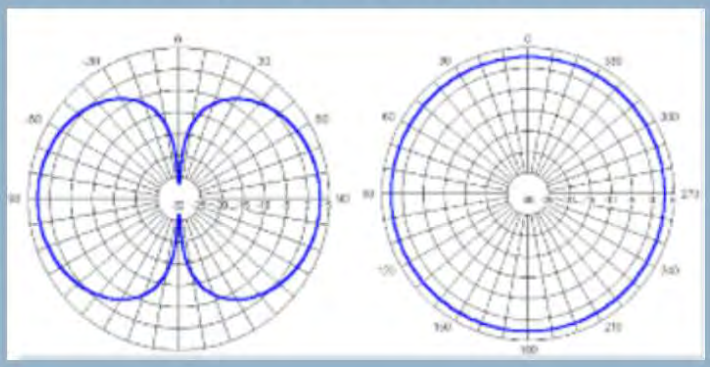
Antenna Solutions

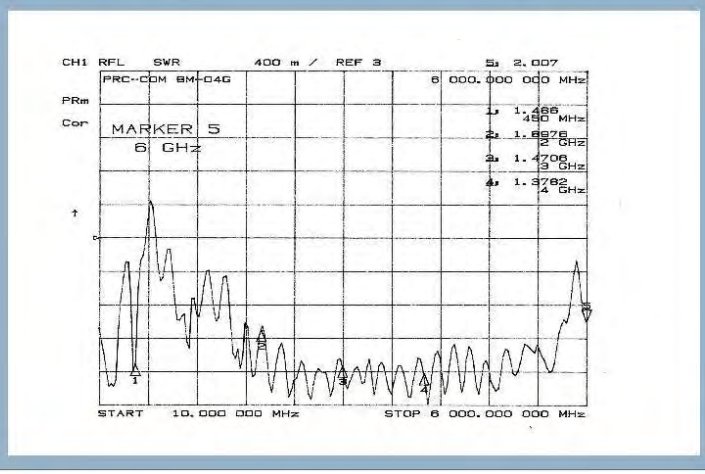
If it must work first time and every time, PRC-COM is the answer.

BM-04G BiConnical Monopole

All of our antennas and systems are designed, machined, assembled and tested in house at the PRC-COM facilities in Las Cruces, NM allowing us to provide quick and cost effective solutions.

The antenna is offered as a stand alone unit and is available with an optional attachable +19dB LNA (provided with 5VDC power supply), Mag Mount (for vechicle mounting) and a rugged flight case.





Antenna Solutions

If it must work first time and every time, PRC-COM is the answer.

Specifications

Electrical
Freq: 450 to 6000 MHz
Gain: 4 dB (Fo)
Pwr: 50 Watts (CW)
Pol: Linear (Vertical)
VSWR: 3.0:1 (maximum)
HPBW: 360 x 85 Degrees (Fo)

Mechanical
Dimensions: 3.0" x 7.75" (antenna)
3.0" x 9.35" (with LNA)
Weight: 1.3 lbs. (antenna)
2.1 lbs. (antenna with LNA)
3.6 lbs. (antenna with LNA and Mag Mount)
Connector: Type-N, SMA (available)

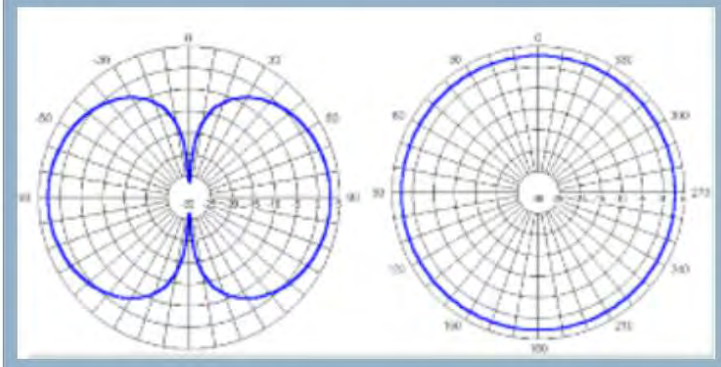
The BM-05G Biconnical Monopole Antenna Is an Extreamly Wide Band Antenna designed to cover the 5G bands from 450 MHz to 6 GHz. This rugged antenna is ideal for test and field use

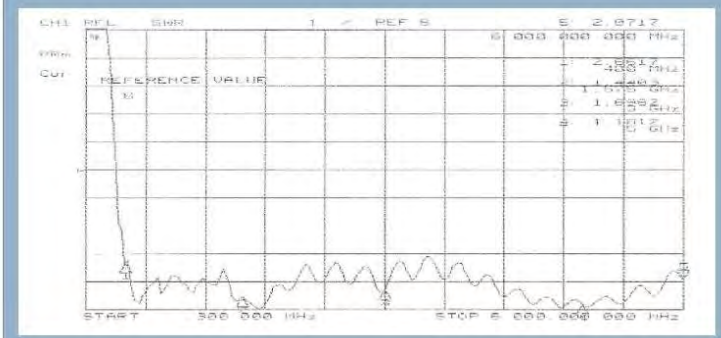
Antenna Solutions

If it must work first time and every time, PRC-COM is the answer.

All of our antennas and systems are designed, machined, assembled and tested in house at the PRC-COM facilities in Las Cruces, NM allowing us to provide quick and cost effective solutions.

The antenna is offered as a stand alone unit and is available with an optional attachable +19dB LNA (provided with 5VDC power supply), Mag Mount (for vechicle mounting) and a rugged flight case.





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BM-100/2000 Biconnical Monopole Antenna

Specifications

Electrical

Freq:	450 to 6000 MHz
Gain:	4 dB (Fo)
Pwr:	100 Watts (CW)
Pol:	Linear (Vertical)
VSWR:	3.0:1 (maximum)
HPBW:	360 x 85 Degrees (Fo)

Mechanical

Dimensions:	3.0" x 12" (antenna)
Weight:	4 lbs. (antenna) 4.8 lbs. (antenna with Mag Mount)
Connector:	Type N (female)

The BM-100/2000 Biconnical Monopole Antenna Is an extreamly wide band antenna.
This rugged antenna is ideal for test, EW and field use

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BM-100/2000 BiConnical Monopole

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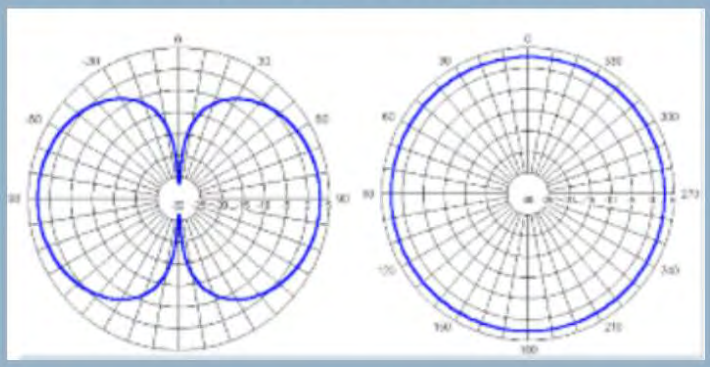

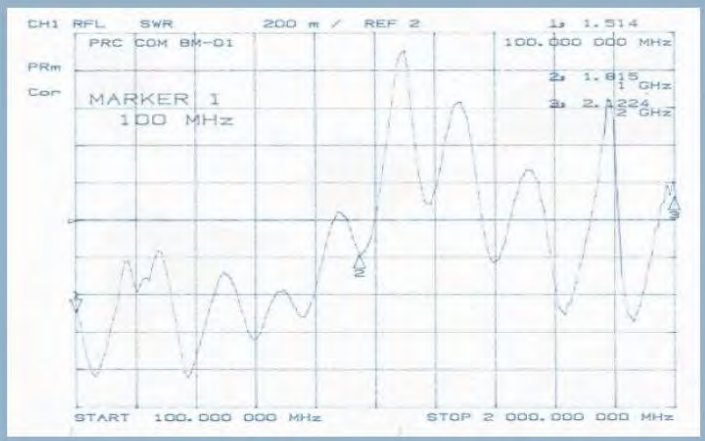

5.0 Box Feed Antennas

Antenna Solutions

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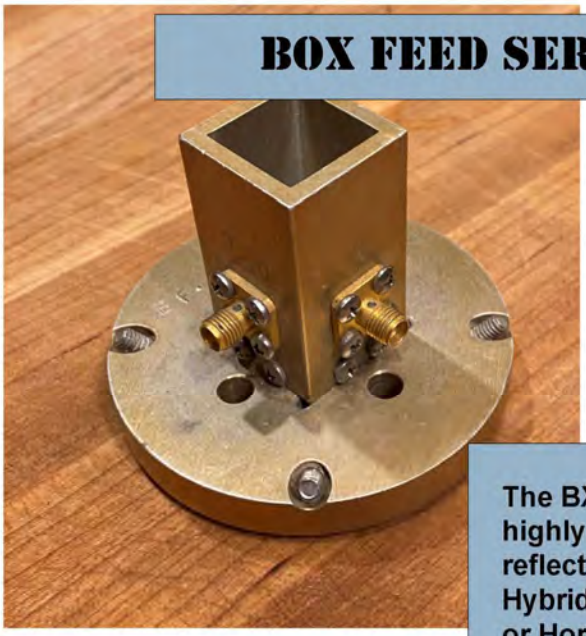


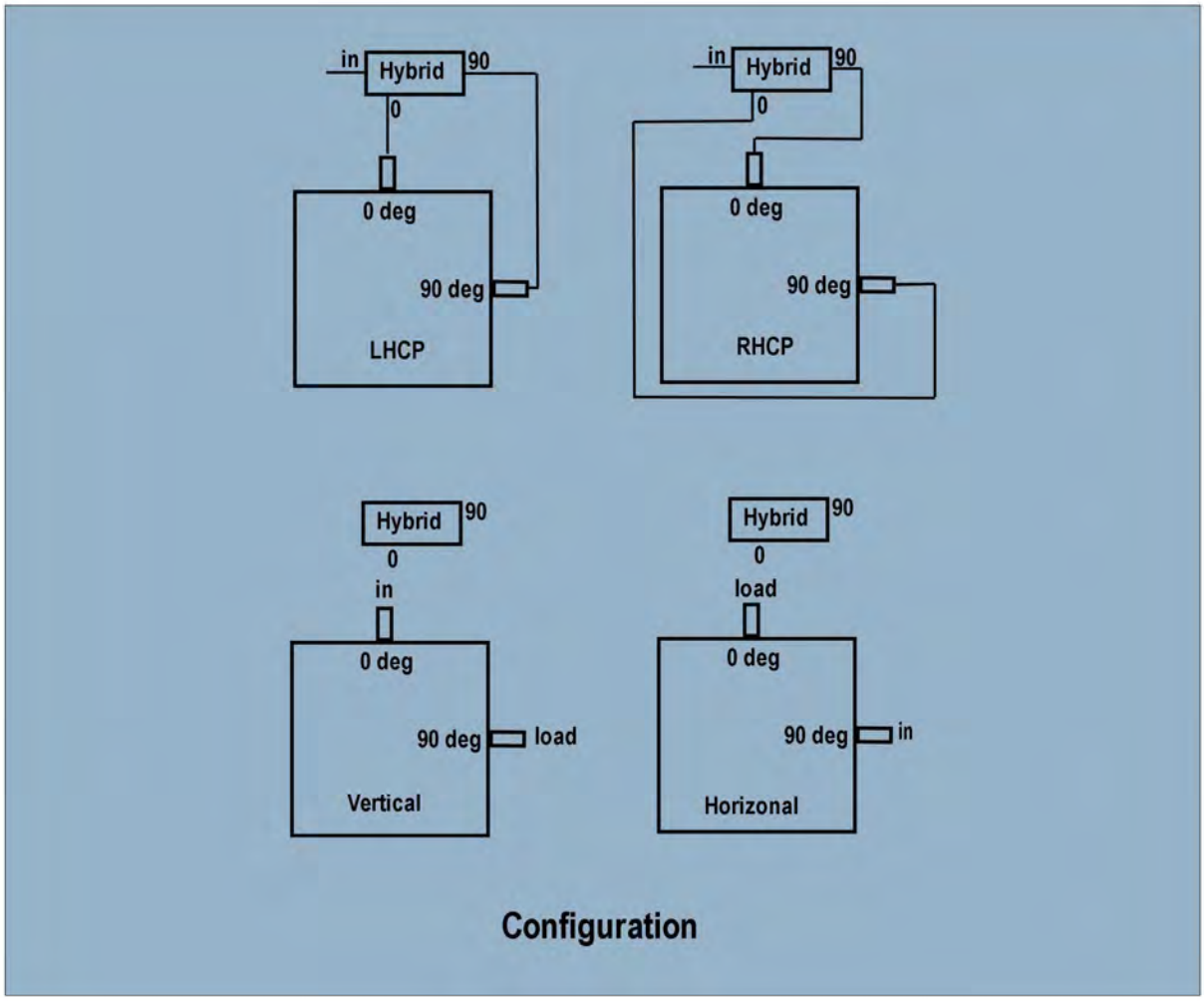
BOX FEED SERIES BX

The BX series of box feed antennas provides a highly flexiable and changeable feed for your reflector antenna system. With the use of a 90 deg Hybrid these feeds can be RHCP, LHCP, Vertical or Horizional by changing the cable connections. Available in several mountng conficurations.

Model	Fl Ghz	Fo GHz	Fh GHz	Dimensions"	Weight lbs.
BX-1400	1.12	1.41	1.70	7x7x10	7.2
BX-1700	1.40	1.70	2.00	6x6x10	5.3
BX-2000	1.60	2.00	2.40	5x5x8	4.3
BX-2500	2.14	2.57	3.00	4x4x6	3.6
BX-3500	2.90	3.45	4.00	3x3x6	2.92
BX-4500	3.50	4.25	5.00	2.5x2.5x5	2.33
BX-5500	4.50	5.50	6.50	2x2x4	2.27
BX-6000	4.94	5.97	7.00	2x2x4	2.25
BX-6500	5.20	6.35	7.50	1.8x1.8x3	1.15
BX-7700	6.50	7.70	8.90	1.5x1.5x3	1.89
BX-9500	7.60	9.55	11.50	1.3x1.3x3	1.65
BX-12500	10.20	12.60	15.00	1x1x1.8	1.45
BX-15200	12.40	15.20	18.00	.8x.8x3	1.45

Antenna Solutions

If it must work first time and every time, PRC-COM is the answer.



Configuration

6.0 Box Horn Antennas

Antenna Solutions

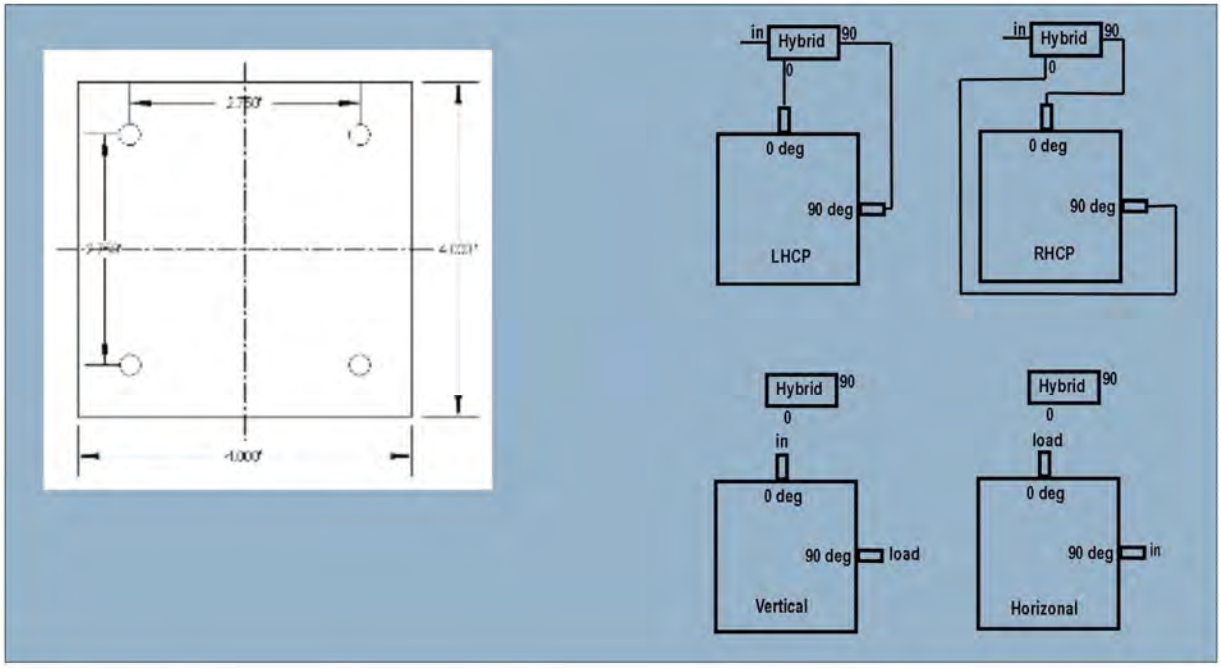
If it must work first time and every time, PRC-COM is the answer.

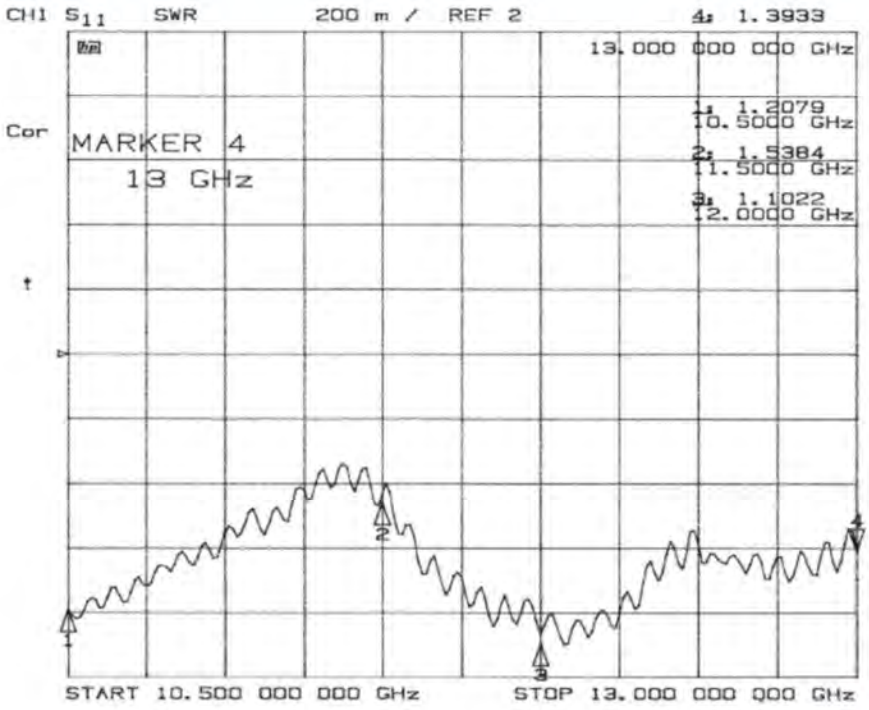
Model Number	Fo GHz	Fl GHz	Fh GHz	HPBW deg	Gain dBiC	Length"	Weight lbs.
BH-11500-10	11.5	10.0	13.0	30	10.0	4.5	2.8
BH-11500-15	11.5	10.0	13.0	20	15.0	5.8	3.0
BH-11500-20	11.5	10.0	13.0	15	20.0	7.8	5.8

The BH-11500 combines the properties of a box feed and a horn antenna. The result is polarization flexibility with the performance of a horn antenna, reduced sidelobes and increased gain. Available with a 90 deg hybrid and matched cable set or use your own.

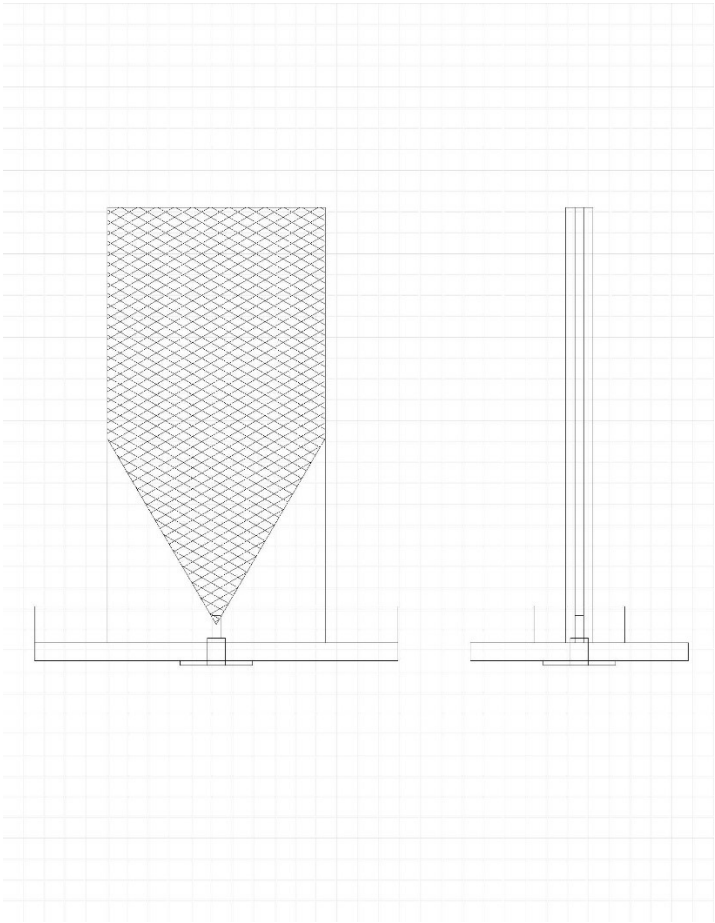
Antenna Solutions

If it must work first time and every time, PRC-COM is the answer.





8.0 Blade Antennas



Coming Soon

9.0 Custom Antennas

If you can't find exactly what you need in our catalog let us know what you are looking for and we can make you a custom antenna. Our non-recurring engineering (NRE) costs are reasonable, and we are always looking for ways to meet our customers' needs. Just fill out this table and send it to us for a fast response or discussion of your custom antenna needs.

Copy then fill out this table and send it with any other questions or comments to

info@PRC-COM.com

Item	Specification	Input	Comments
1	Center Frequency		
2	Bandwidth		
3	Desired Beamwidth (HPBW or -10 BW)		
4	Desired Gain		
5	Power Input (specify Continuous or Peak power)		
6	Environment (Ground, drone, medium performance aircraft, high performance aircraft, space)		
7	Testing Required (VSWR, verification, full patterns, shock, vibe, temperature, other)		
8	Special Considerations (outgassing, materials)		

10.0 Helpful Antenna Information

Antenna Impedance

Most connectorized RF and/ microwave devices have an impedance of 50 Ω. Free space (generally the transmission media) has an impedance of 377 Ω. To further complicate matters, most antennas have a free space impedance of their own (a helix 140 Ω and ½ wave dipole 70 Ω). The most efficient transfer of power occurs when the antenna matches the transmission media and/or source impedance. Not all sources are 50 Ω (CATV is 75Ω and wave-guide 377 Ω) and not all impedance is real but for explanation purposes we will use a real impedance of 50 Ω and ignore imaginary contributions.

Matching the antenna and transmission line to the source impedance is important for a transmitter. The most accepted description of that match is the Voltage Standing Wave Ratio of VSWR. A perfect match is 1.0:1, which indicates the source and load impedance are the same. A bad match depends on the application. For very high power applications (EW systems, radar, radio/television transmitters) anything over 1.5:1 may be unacceptable. Wide band test antennas may have a VSWR of 3.5:1 or more. The ratio describes how much power will be transmitted into the antenna and how much power will be reflected back to the source (see table B-1). The VSWR is then an indication of the efficiency of an antenna. An antenna, which has a poor match, will not be an efficient radiator but an antenna with a good match is not necessary an efficient radiator.

Table B-1, Mismatch effects

VSWR	Antenna Impedance Ω	Gain Reduction	Gain Reduction (10 dB antenna)
1.0:1	50	0.0%	0 dB
1.5:1	75, 33	4.0%	.20 dB
2.0:1	100, 25	11.1%	.51 dB
3.0:1	150, 16.67	25.0%	1.28 dB
5.0:1	250, 10	44.5%	2.59 dB
10.0:1	500, 5	67.0%	4.81 dB

In addition to matching the impedance, most transmission sources have coaxial outputs. This type of connector has a grounded shield surrounding the center conductor, which carries the RF/Microwave energy. Many antennas are balanced

and both sides of the transmission line are active (such as 300 Ω twin lead for radio and television). This requires that not only the impedance be transformed but that the unbalanced coax transmission line is transformed into a balanced condition prior to connection to the antenna. The device that accomplishes this is generally referred to as a balun. It is important to note that the best match is obtained with a dummy load, which does not generally radiate at all. This leads to the next topic, efficiency.

Antenna Efficiency

Antenna efficiency is a complicated and often misused figure. All antennas suffer from losses. A simple horn antenna for example will not be as efficient as a perfect aperture of the same size because of phase offset. The real efficiency of an antenna combines impedance match with other factors such as aperture and radiation efficiency to give the overall radiated signal for a given input. The best and most widely used expression of this efficiency is to combine overall efficiency with directivity (of the antenna) and express the efficiency times directivity as gain.

Gain

Gain is a widely used parameter directly measurable by substituting an antenna with known gain (generally a gain reference antenna) in for an antenna under test (AUT). The output levels of the AUT and the gain reference can then be measured for the same incident field. The gain can then be determined by comparing those measured levels. Gain of an antenna is expressed in dB, $10\log_{10}$(numerical gain), which is generally referenced to an isotropic radiator (radiates equally in all directions) and expressed as dBi. Typical gains are listed in table 2. The gain expressed for an antenna is generally the maximum or peak gain. This leads to the second part of the gain equation, directivity.

Directivity

The directivity of an antenna is generally combined with efficiency and expressed as gain as described above. The Half Power Beam Width (HPBW), of an antenna, is an expression, in degrees, of the width of the radiated beam between the half-power or 3 dB points (down from the peak of the beam). Many antennas will exhibit one HPBW in azimuth and a different HPBW in elevation written as $HPBW_A$ and $HPBW_E$. An antenna described as omni-directional will have equal coverage

in all directions. A typical wide band omni-directional (in azimuth) antenna will have a $HPBW_A$ of 360° and $HPBW_E$ = 50°.

Table B-2, Typical Antenna Gains and Beam-widths

Antenna Type	Application	Half Power Beam Width	Typical Gain (dB)
Monopole	Comm	360°x80°	2.5
Dipole	Comm, Test	360°x120°	2
Helix, 4-turn	EW, Comm, Test	60°x60°	10
Helix, 6-turn	EW, Comm, Test	45°x45°	12
Helix, 10-turn	EW, Comm, Test	35°x35°	14
Std. Gain Horn	EW, Comm, Test	22°x24°	16.5
Optimum Horn	EW, Comm, Test	10°x10°	24
Small Dish	EW, Comm, Test	30°x30°	16
Large Dish	EW, Comm, Test	1°x1°	45

A directional antenna will have a beam that is concentrated in one direction. A typical directional antenna is a standard gain horn with a HPBW of about 20° (in both elevation and azimuth). A highly directional dish antenna may have a HPBW as small as 0.5° in both elevation and azimuth. It is important to note that the HPBW and gain of an antenna are inversely proportional. For the above antennas, the gain for the omni-directional is 2 dB, for the horn 18 dB and for the dish 48 dB. A reasonable formula that relates HPBW and gain is:

$$\text{Gain (dB)} \sim 10 \log_{10} (31{,}000 / HPBW°_E \times HPBW°_A)$$

Several examples of typical antenna gains and HPBW are listed in table B-2, typical antenna gains and beam-widths.

The antenna pattern is a polar plot of antenna gain verses angle. A typical antenna pattern set will include principle plane or orthogonal cuts of the antenna radiation. Figure 1 shows the typical pattern configuration for an orthogonal antenna pattern measurement. The amplitude (and polarization in some measurements) and location of the antenna is measured and plotted in polar (or linear) form. The resulting patterns are presented in figures 2 and 3. The gain listed for a given antenna is assumed for the same polarization of the radiated or received signal. If the polarization is not correct, the gain seen will be less than expected.

Polarization

The polarization of an antenna is the orientation of the transmitted (or received) electric field (E field). The optimum polarization for a system depends on the polarization of other antennas in the system. An infinite number of polarizations exist but the most common are linear and circular. For a linear antenna three possibilities generally are seen vertical, horizontal and slant linear. It is important to match linear polarizations for transmit and receive sites. A linear polarization mismatch can result in up to a 20 dB loss (for cross-linear polarization).

Circular polarization is generally given as right hand circular polarization (RHCP) or left hand circular polarization (LHCP). To determine the polarization of a circular antenna, use the right hand rule. Point the thumb of your right hand in the direction of propagation and curl your fingers. If your fingers point in the direction of propagation, the antenna is RHCP (otherwise it is LHCP). Polarization mismatch loss for circular antennas can also be up to 20 dB (for opposite sense polarization). One technique often used in telemetry systems monitoring aircraft is to use a circular terrestrial receive antenna and a linear transmit on the aircraft. This results in a mismatch loss of about 3 dB (linear to circular) but allows the aircraft to maneuver without causing the link to suffer large mismatch losses caused by cross polarization.

Other Important Antenna Specifications and Definitions

Side lobe level- This specification is generally given as a maximum value or not to exceed envelope of maximum side lobe level vs. azimuth. The maximum side lobe level is often dictated by the FCC (or similar agency) for transmit antennas that could interfere with other systems if the side lobe levels were excessive.

Front-to-back ratio- Often listed in dB, this specification is the difference between the peak gain of the antenna and the radiation in the back of the antenna (often 180° from the peak of the beam).

RDP (Radiation Distribution Pattern)- This is a complete antenna set of antenna patterns generally taken at intervals of 2°x2°. The RDP allow for the 3-D reconstruction of the radiation pattern.

Coherent Measurements- The measurement of phase and amplitude verses angle for the antenna measurement. Measurement of orthogonal linear polarizations and the phase difference between them allows for the reconstruction of and incident polarizations.

Reading Antenna Patterns

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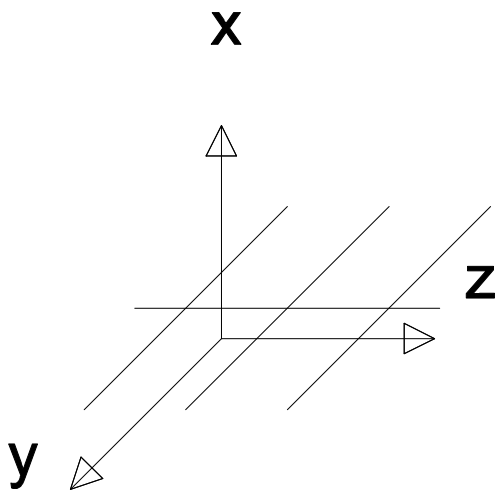
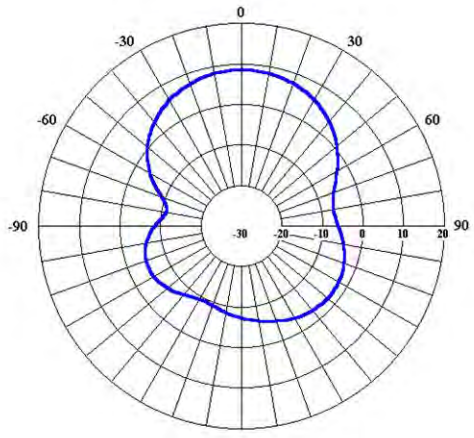
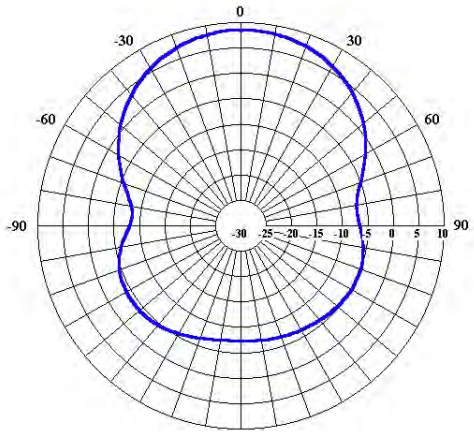
The key to understanding an antenna's performance is it's antenna pattern. The pattern will show in a graphical manner the gain of the antenna vs. angle. Generally two patterns are provided, called principle plane cuts, that show the azimuth and elevation plot of antenna gain. These patterns will show not only the gain and beamwidth for the main beam of the antenna but also side lobes and the back lobe of the antenna. The following is a typical set of antenna patterns for an antenna with a HPBW of 60° in both azimuth and elevation.



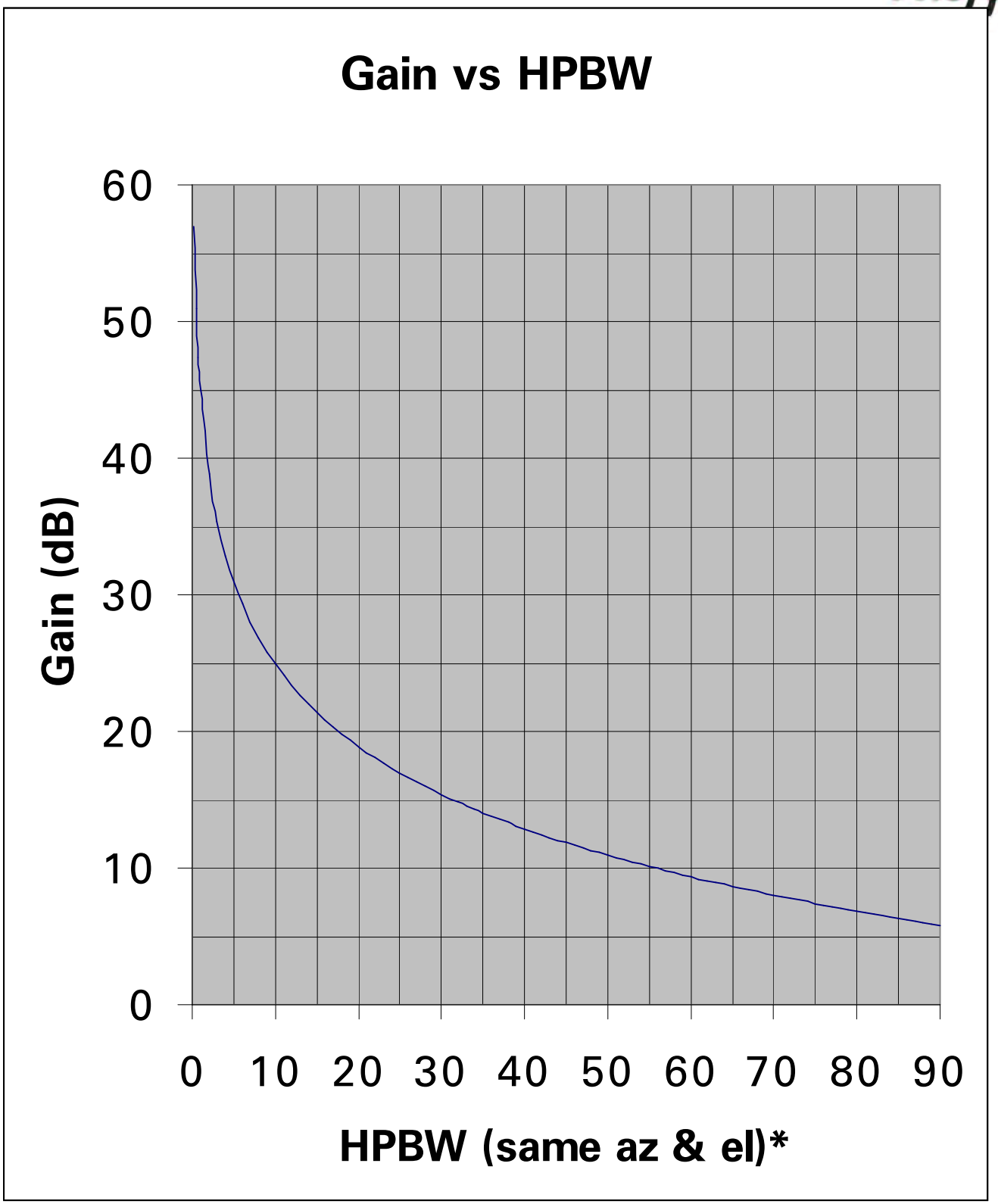
Measurement Coordinate System



Y-Z Plane



X-Z Plane



*assumes the same HPBW for Azimuth and elevation

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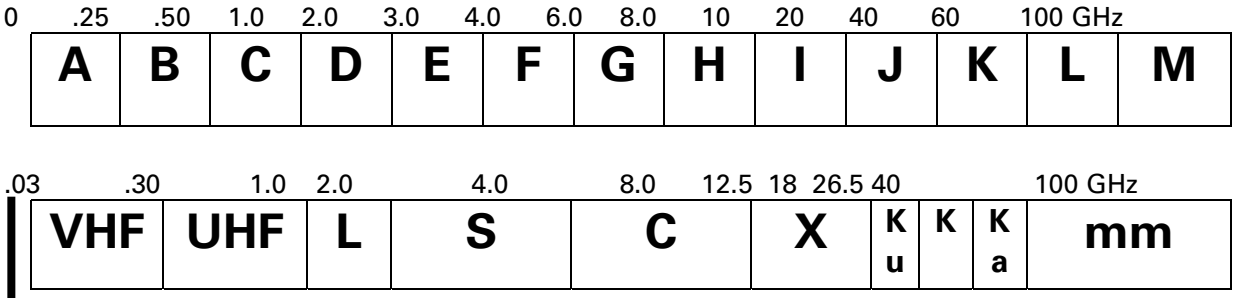
FREQUENCY DESIGNATIONS



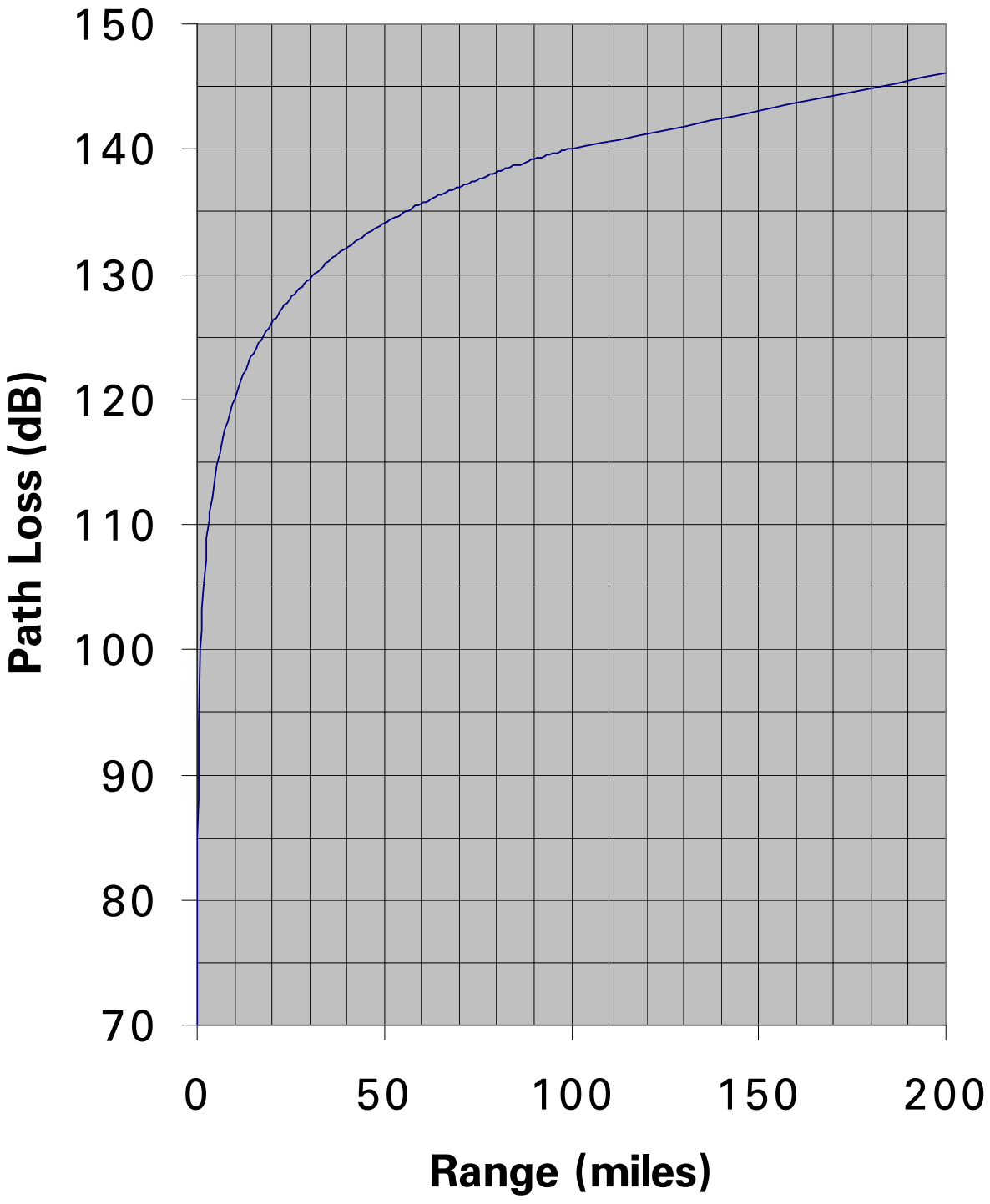
HF 3MHz to 30 MHz

MF 300 KHz to 3 MHz

LF 30 KHz to 300 KHz

VLF 3 KHz to 30 KHz

Path Loss



Standard Rectangular Waveguide Properties

Designation	Frequency Range (GHz)	Center Frequency (GHz)	Cutoff Frequency (GHz)	Inside Dimensions (Inches)
WR-1150	0.49-0.75	0.62	0.513	11.5-5.75
WR-975	0.75-1.12	0.935	0.605	9.750-4.875
WR-770	0.96-1.45	1.205	0.766	7.700-3.850
WR-650	1.12-1.70	1.41	0.908	6.500-3.250
WR-430	1.70-2.60	2.15	1.372	4.300-2.150
WR-284	2.60-3.95	3.275	2.078	2.840-1.340
WR-187	3.95-5.85	4.90	3.152	1.872-0.872
WR-137	5.85-8.20	7.025	4.301	1.372-0.622
WR-112	7.05-10.00	8.525	5.259	1.122-0.497
WR-90	8.20-12.40	10.30	6.557	0.900-0.400
WR-75	10.00-15.00	12.50	7.868	0.750-0.375
WR-62	12.40-18.00	15.20	9.486	0.622-0.311
WR-42	18.00-26.50	22.25	14.047	0.420-0.170
WR-28	26.50-40.00	33.25	21.081	0.280-0.140

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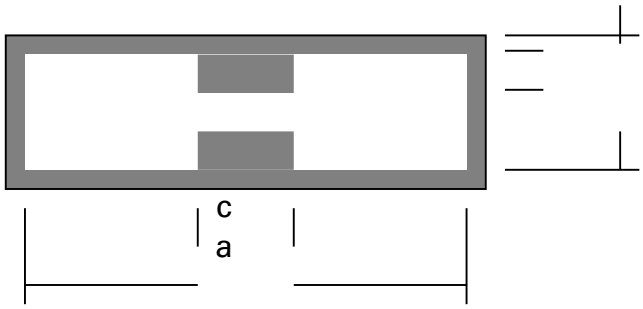
Double Ridge Waveguide Properties



Designation	Frequency Range (GHz)	Cutoff Frequency (GHz)	Dimensions (inches)			
			a	b	c	d
WRD-100	1.00-2.34	0.833	5.180	2.406	1.295	1.022
WRD-200	2.00-4.80	1.665	2.590	1.203	0.648	0.511
WRD-250	2.60-7.80	2.093	1.655	.715	.440	.150
WRD-350	3.50-8.20	2.915	1.480	.688	.370	.292
WRD-475	4.75-11.00	3.961	1.090	.506	.272	.215
WRD-500	5.00-18.00	4.222	.752	.323	.188	.063
WRD-650	6.50-18.00	5.348	.721	.321	.173	.101
WRD-750	7.50-1800	6.239	.691	.321	.173	.136
WRD-1100	11.00-26.50	9.363	.471	.219	.118	.093
WRD-1800	18.00-40.00	14.995	.288	.134	.072	.057