tcibr.com

530 Short and Medium-Range Log-Periodic Antenna

HF communications in the 0–300 kilometer range can be difficult. Ground waves have very limited coverage over land, and skywaves radiated by traditional HF antennas tend to skip over the shorter ranges. The Model 530 is designed specifically to support skywave communications at short (0–500 km) ranges. The 530 directs energy overhead to provide optimal support for short-range circuits. In addition, at the higher frequencies used for longer ranges, the 530 radiates significant energy at lower angles for medium- and long-range circuits.

The 530 is extremely useful for ground-air and ship-shore applications. Its radiation pattern is also suitable for secondary coverage of medium-range circuits, significantly outperforming traditional conical monopole and inverted cone antennas. A comparison of the gain of the 530 with the gain of typical vertically polarized omnidirectional antennas (see reverse) clearly shows the superiority of the 530 for medium-range communications.

Support skywave communications at distances up 500 km and beyond.

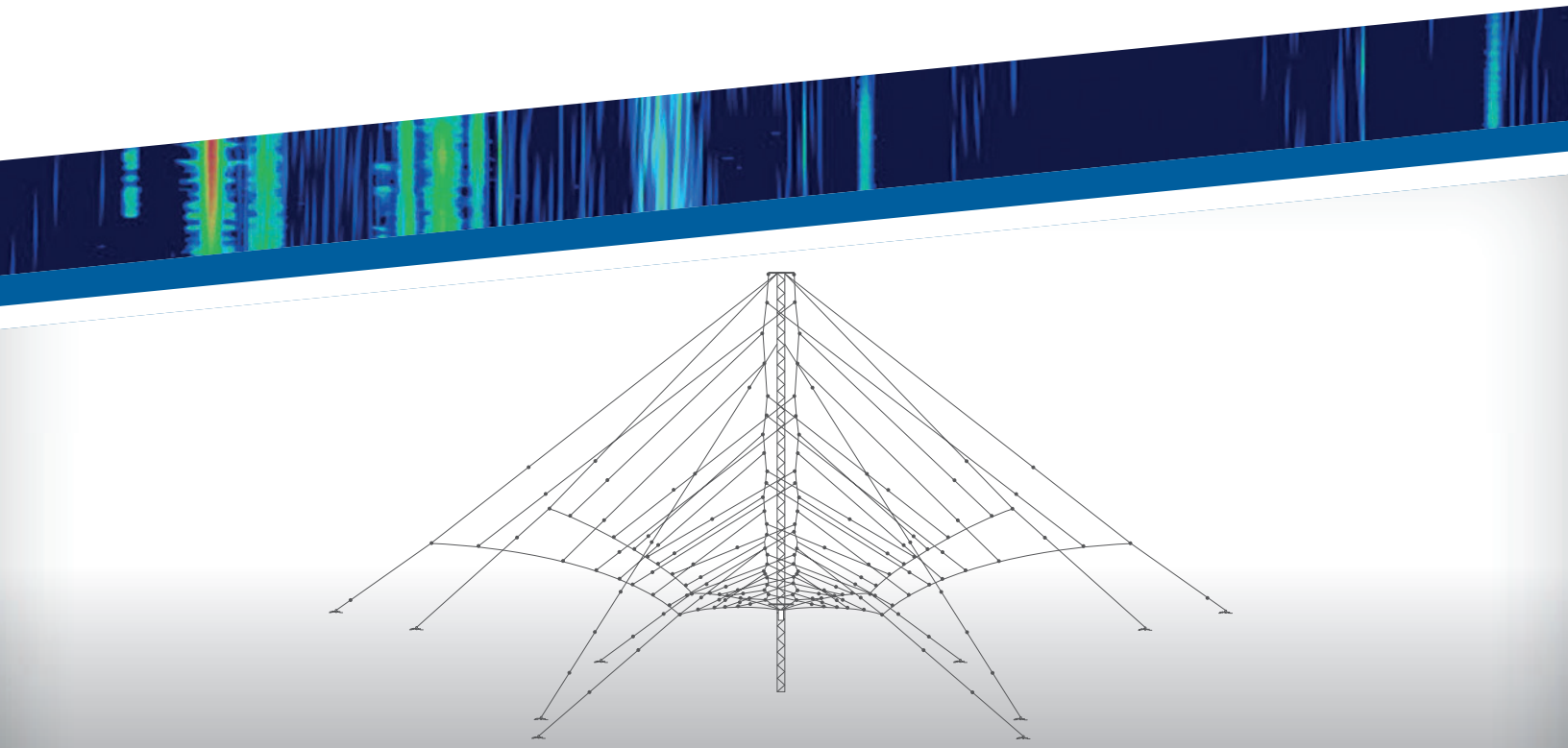
The 530 is horizontally polarized, thus avoiding the ground losses associated with vertically polarized antennas. The efficiency of the 530 exceeds 95% throughout the band; no lossy terminations are used.

Using only a single tower for support minimizes the 530's installation costs and real estate requirements. The tower is made entirely of 6061-T6 structural aluminum alloy—the ideal material for antenna towers where long life and corrosion resistance are important considerations. Curtains and catenaries are fabricated in TCI's factory entirely of Alumoweld stranded wire cables. All guy insulators are low-loss, glazed ceramic fail-safe types. No organic or synthetic materials such as fiberglass or Kevlar® are used anywhere in the antenna. These features ensure long life and low maintenance costs.

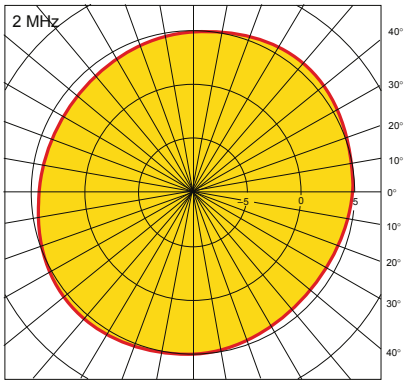
In periods of low sunspot activity, when high effective radiated power is required to produce sufficient signal at the receiver, the Model 530 provides superior electrical performance. For short-range communications with secondary coverage of medium- and long-range targets, the 530 outperforms all other HF antennas.

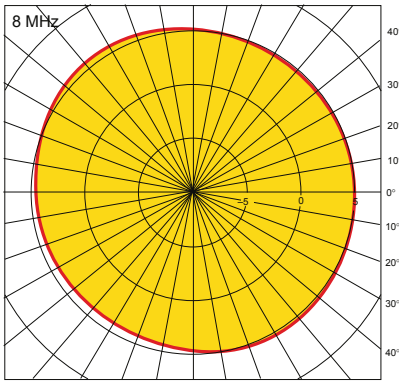
KEY FEATURES

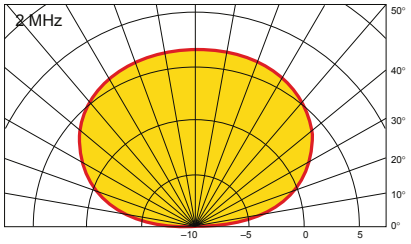
- **High-angle radiation for reliable short-range communications**
- **Horizontally polarized – no ground losses**
- **High power gain**
- **Wide bandwidth**
- **Effective medium-range cove**
- **Rugged construction**

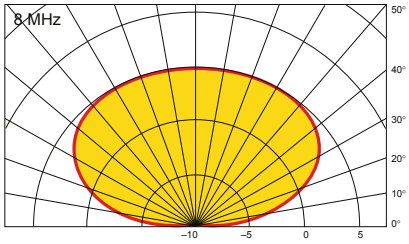


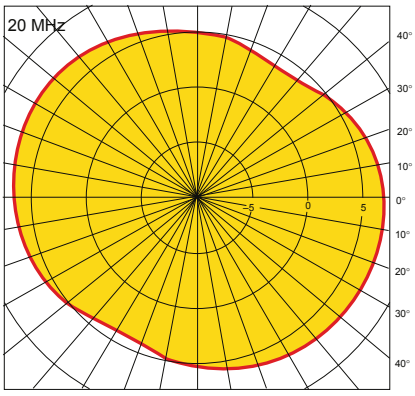
› Azimuth and Elevation Patterns (Azimuth pattern at elevation angle of beam maximum) gain in dBi

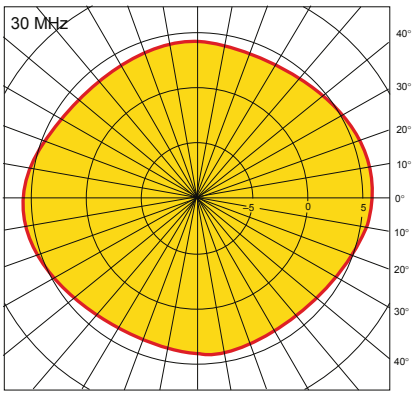


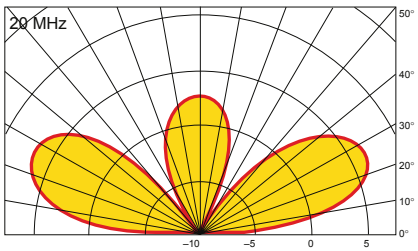


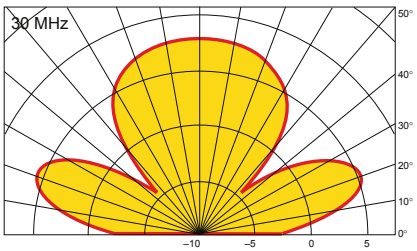












Model 530 Specifications

Polarization	Circular in horizontal plane. Either sense depending on requirements of application. Consult TCI regarding proper sense of polarization.
Direction of Beam Maximum	90° at 2 MHz, 90° at 8 MHz, 30° at 20 MHz, 20° at 30 MHz
Power Gain Relative to Isotropic Antenna	6.5 dB at 2 MHz, 5 dB at 8 MHz, 6.5 dB at 20 MHz, 5.5 dB at 30 MHz
Efficiency	Greater than 95%
Azimuth Pattern	Essentially circular
Shipping Weight and Volume	530-3 3500 lb. 150 cu. ft. (1600 kg. 5.9 cu. m.) 530-4 1900 lb. 95 cu. ft. (850 kg. 2.7 cu. m.) 530-5 3000 lb. 140 cu. ft. (1350 kg. 4 cu. m.)
VSWR	· 2.5:1 maximum · 2.0:1 maximum over 80% of frequency band
Ground Screen Requirement	None Required
Environmental Performance	530-3 & 530-4: Designed in accordance with TIA/EIA Specification RS-222C for loading of 225 km/h (140 mi/h) wind, no ice, or 145 km/h (90 mi/h) wind, 12 mm (1/2") radial ice. 530-5: Designed in accordance with TIA/EIA Specification RS-222E for loading of 201 km/h (125 mi/h) wind, no ice or 145 km/h (90 mph) wind, 6.3 mm (1/4") radial ice.

Table 1: Frequency Range & Size

Model Number	Frequency Range	Height		Width*	
		ft	m	ft	m
530-3-N	2–30 MHz	133	40.6	300 x 300	92 x 92
530-4-N	3–30 MHz	92	28.2	217 x 217	67 x 67
530-5-N	2.75–30 MHz	101	30.6	230 x 230	71 x 71

Note: replace "N" with power code from Table 2

Table 2: Power Rating and Impedance Data

Model Number	Input Impedance	Power Handling Capability	Connector
530-N-02	50 ohms	Receive only	Type N Female
530-N-03	50 ohms	10 kW Avg. / 20 kW pk	1-5/8" EIA Female
530-N-28	50 ohms	5 kW Avg. / 10 kW pk	7/8" EIA Female

Note: replace "N" with power code from Table 1

Table 3: Gain of Model 530 vs. Typical Vertically Polarized Omnis

Path Length	TOA	Gain at 3 MHz (dBi)*			Gain at 12 MHz (dBi)*			Gain at 20 MHz (dBi)*		
		530	Inverted Cone	Conical Monopole	530	Inverted Cone	Conical Monopole	530	Inverted Cone	Conical Monopole
200 mi. (333 km)	60°	+6	–3	–1	+5	–4	+3	—	—	—
1000 mi. (1600 km)	17°	–1	+2	+3	0	–4	–4	+5	1	1

*Gain calculated with antenna over average ground

Specialized Expertise in a Global Family

TCI International, Inc. is a leading global provider of innovative solutions for spectrum monitoring, spectrum management, communications intelligence, and antennas for communications and high-power radio broadcasting. TCI's products have been delivered to customers in more than 100 countries.

TCI's communication, DF, and spectrum monitoring antennas embody over 55 years of experience in RF system design and production techniques. Broadcasters rely on TCI for optimized HF antennas that minimize operating costs. Ground-to-air, shore-to-ship, GMDSS, military and civilian communication systems use TCI HF antennas tailored for a variety of mission critical applications.

Based in Fremont, California, TCI is a wholly-owned subsidiary of SPX Technologies (NYSE: SPXC), a global, diversified, multi-industry manufacturing leader of highly-engineered systems. With employees in over 15 countries, SPX team members collaborate across borders and business segments to deliver greater efficiencies and better ideas that help our customers succeed.

Learn more about TCI at www.tcibr.com, and SPX at www.spx.com.

TCI | ECS
SPX COMMUNICATION TECHNOLOGIES

TCI INTERNATIONAL, INC., 3541 Gateway Blvd., Fremont, CA 94538-6585 USA

| Tel: 1-510-687-6100 | tcibr.com |

ISO 9001:2015 CERTIFIED

530-04-10-24