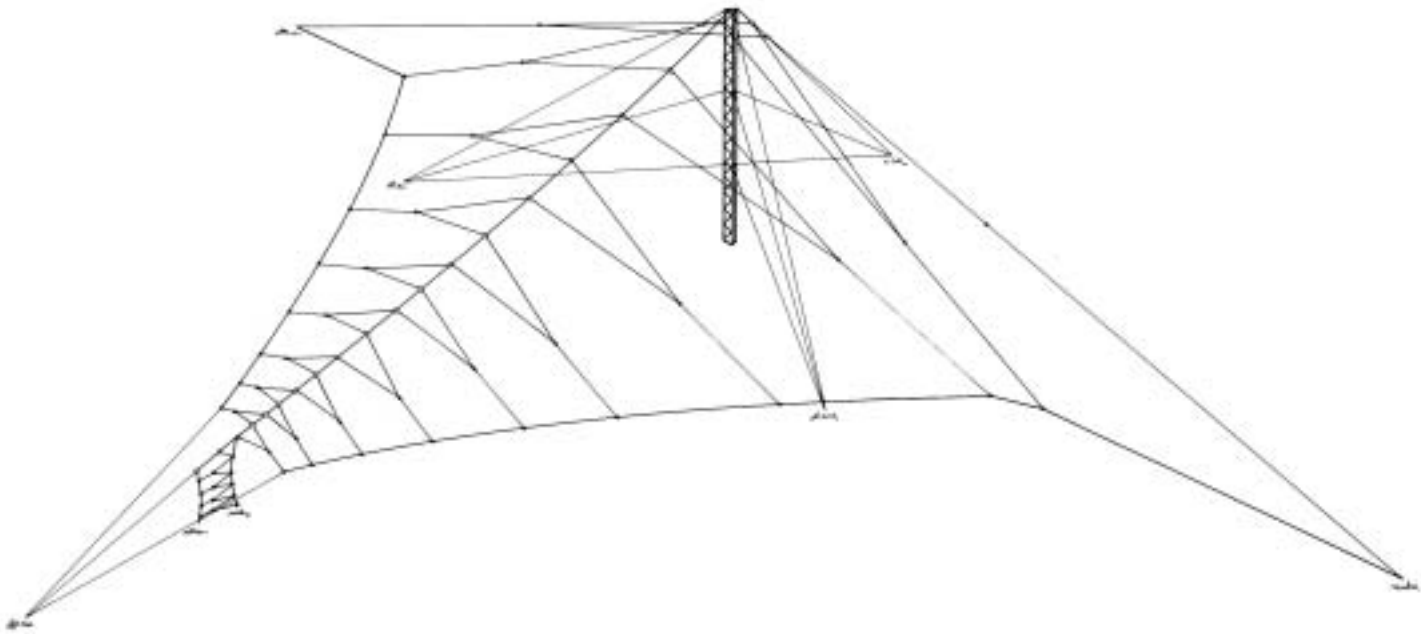
TCI
A Dielectric Company

MODEL

537

Highly Transportable Log-Periodic Antenna



The communications quality of transportable high frequency communications terminals is commonly inhibited by the poor performance of the antennas. Improved performance requires transportable antennas which, ideally, must exhibit seemingly contradictory characteristics. The antenna must be extremely lightweight for ease of conveyance, yet be rugged enough to withstand the rigors of transport and installation. It must be simple in design and essentially preassembled to allow rapid installation by a small crew, yet it must use materials and connections which allow the antenna to pack easily and perform reliably. The disassembled antenna must be compact enough to fit in a small, easily transportable container, yet the erected structure must have a large radiating aperture to provide the high power gain and proper radiation patterns needed for high quality communications.

To meet all of these requirements, TCI has designed the Model 537, a nearly ideal transportable HF antenna.

A log-periodic configuration is used to provide the necessary bandwidth, gain, and radiation patterns. The antenna has a maximum VSWR of 2.0:1 across the entire frequency bandwidth of 2–30 MHz. This frequency bandwidth is achieved with only one input terminal.

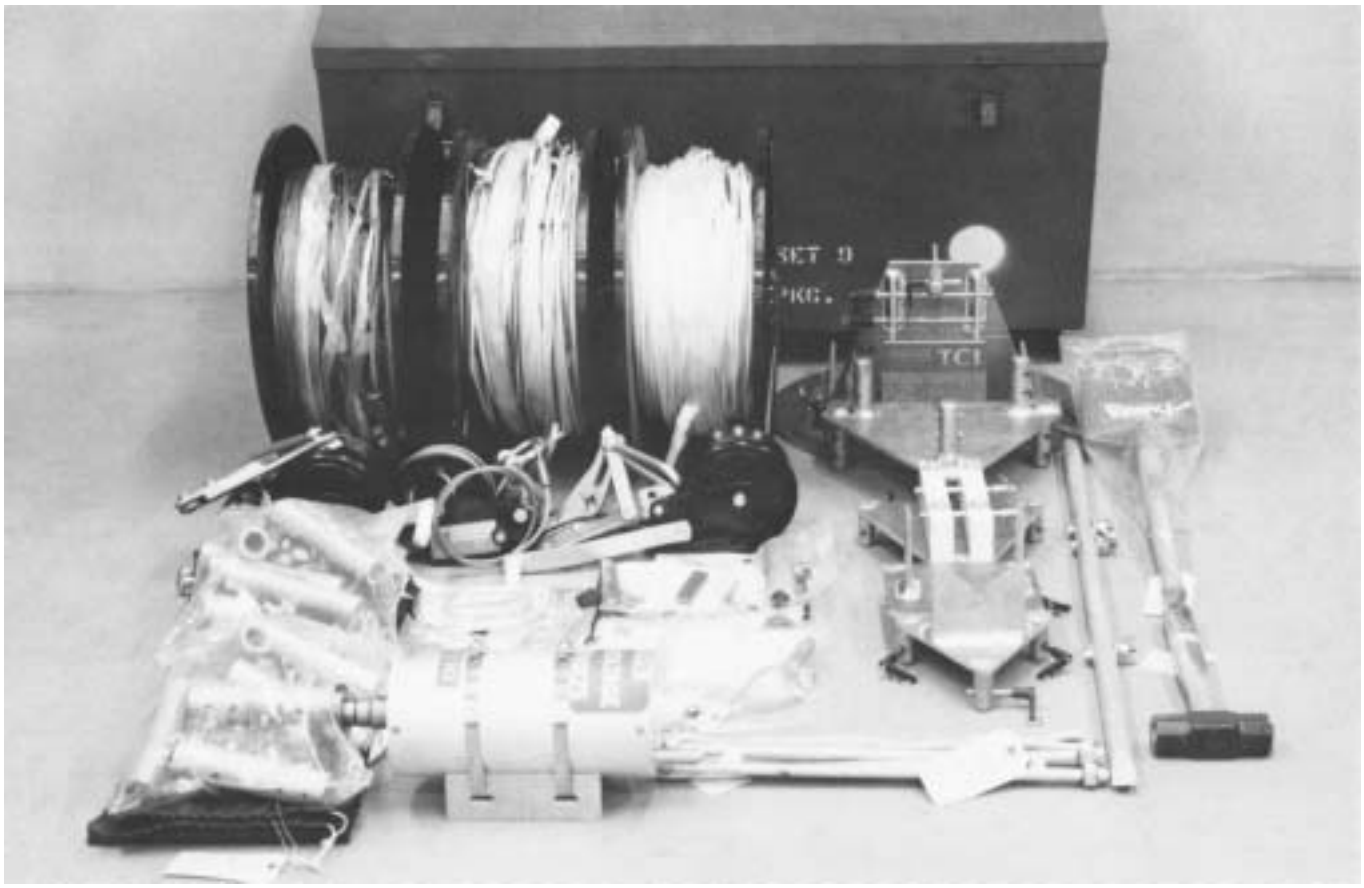
- **Easy and rapid installation**
- **Lightweight (243 kg)**
- **Small transit size (1.2m^3)**
- **2–30 MHz with one input**
- **10 dBi gain**

In the transportable communications application, the receiving terminal may be at any given distance from the transmitting station. Therefore, an antenna elevation pattern which supports short, medium, and long range communications is necessary. The TCI Model 537 provides radiation patterns which are optimized for this application. At the low frequencies, which are normally used to support short range communications, the antenna radiates at the high takeoff angles

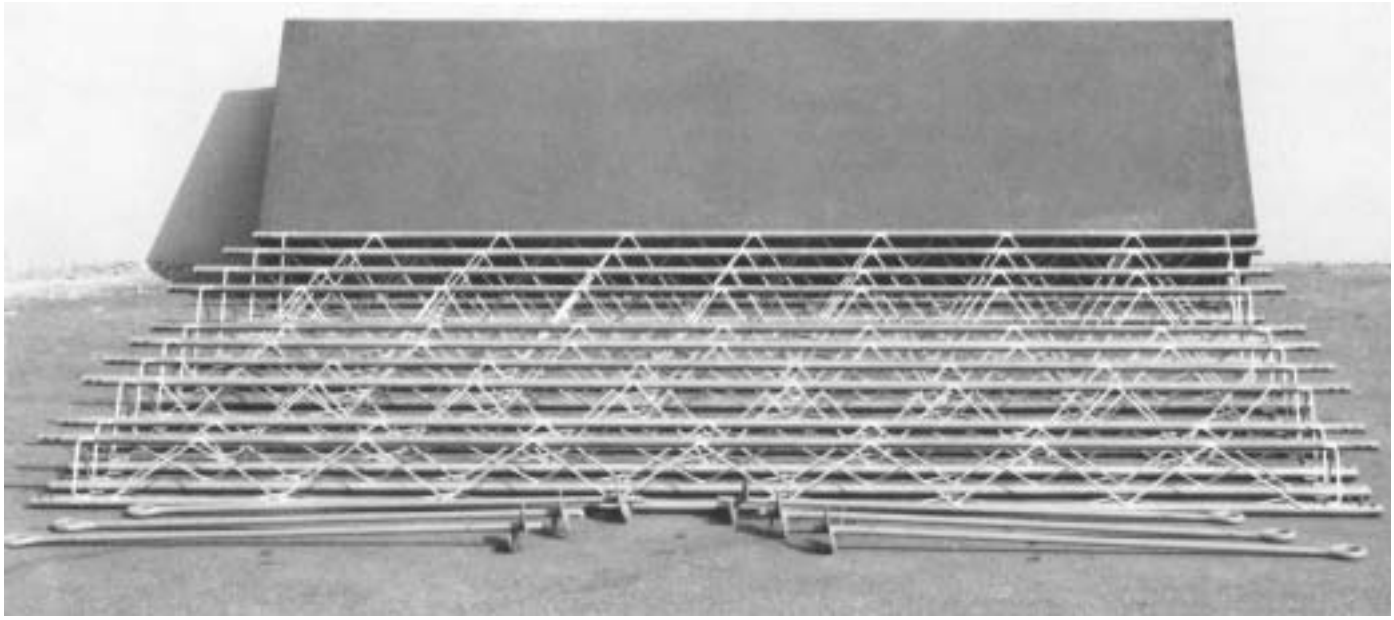
necessary for short range communications. As the frequency is increased to support longer range communications, the take-off angles decrease to support these longer paths. With this radiation pattern performance, the 537 can support all ranges of circuits and yield highly reliable communications.

The materials used in the Model 537 antenna are selected for their ruggedness, light weight, and ease of handling. The supporting tower is made of lightweight but strong aluminum. It is supplied in nesting 10 foot (3.1 m) sections which make it easy to handle and assemble. The antenna curtain wires are easily handled flexible bronze and stainless steel. Great attention is given to the fittings and connection points so that assembly is simple, rapid, and foolproof. With a trained crew of four men, the Model 537 antenna may be completely installed and made operational in less than two hours.

The Model 537 is supplied complete with all the necessary hardware, tools, and 50 ohm transformer necessary to make the antenna operational. A hand winch and rope snubbers are included to facilitate quick erection. All necessary guy anchors are included in the tower package. Sturdy transit cases and complete instructions for assembly and disassembly are included.



Curtain Package



Tower Package

The Model 537 is available in two basic configurations. The 537-1 is supported by an 80 ft. mast while the 537-2 uses only a 41 ft. mast. The 537-2 is still rated to cover the 2 to 30 MHz range but with reduced efficiency in the 2 to 4 MHz range. To maintain VSWR over the range load is used. If operation is not required in the 2 to 4 MHz range, the loading resistors need not be installed.

Both models are available in power ratings from Receive Only to 3 kW avg. and PEP.

Specifications

Frequency Range ..... 2–30 MHz

VSWR..... 2.0:1 maximum

Input Impedance..... 50 ohms nominal

Polarization ..... Horizontal

Front-to-Back Ratio ..... 5 dB at 4 MHz
11 dB at 10 MHz

Environmental Performance..... Designed in accordance with EIA Specification RS-222C for loading of 136 km/h (85mi/h) wind, no ice 120 km/h (75 mi/h) wind, 6mm (1/4") radial ice

Also complies with EIA specification EIA-222-E for the indicated wind speeds at the top of the mast.

Turning Radius ..... 537-1-N 197 feet (60 meters)
537-2-N 170 feet (52 meters)

Dimensions Installed..... 537-1-N
Height: 80 feet (24.4 meters)
Length: 280 feet (85.4 meters)
Width: 325 feet (99 meters)

537-2-N
Height: 41 feet (12.5 meters)
Length: 160 feet (48.8 meters)
Width: 162 feet (49.5 meters)

Installation Time ..... Crew of 4 trained men in 2 hours

MIL Nomenclatures 537A-1-29 OE-317/TSC99
537A-2-29 OE-317A/TSC99

Gain and Pattern Data, 537-1-N

Frequency	Gain Relative to Isotropic	Lower Half-Power Point	Upper Nominal Take-off Angle	Half-Power Point	Azimuth Beamwidth
3 MHz	6 dBi	30°	70°	135°	100°
4 MHz	8 dBi	25°	55°	110°	120°
10 MHz	9 dBi	25°	50°	90°	80°
30 MHz	10 dBi	15°	35°	55°	80°

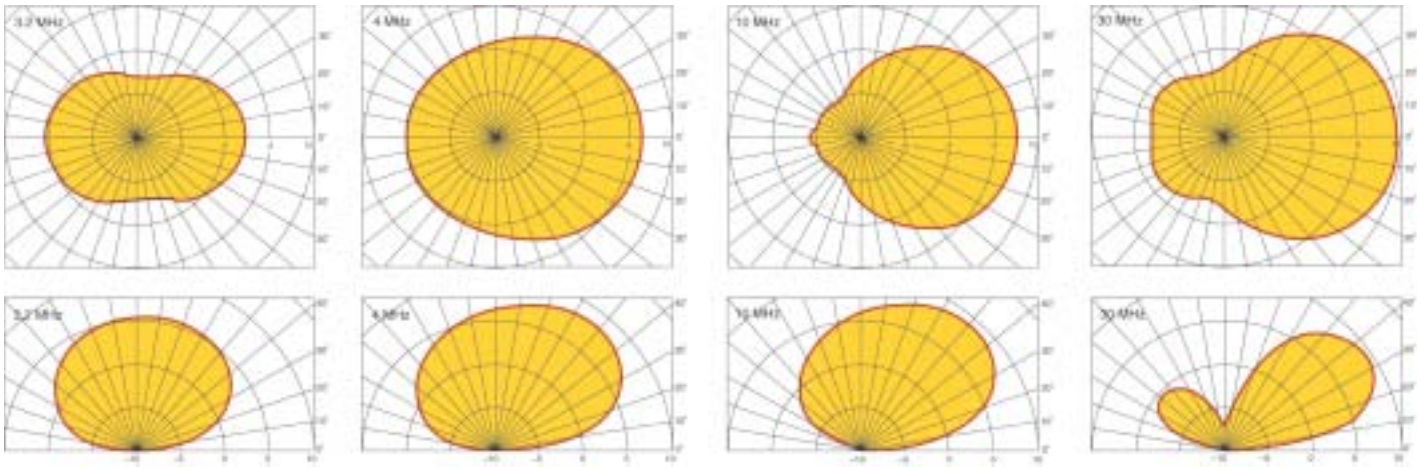
Power and Impedance Data

Model Number	Input Impedance	Power Handling Capacity	Connector
537-1-02	50 ohms	Receive	Type N Female
537-1-06	50 ohms	1 kW avg / 2 kW PEP	Type N Female
537-1-29	50 ohms	3 kW avg / 3 kW PEP	7/8" EIA Female
537A-1-29	50 ohms	3 kW avg / 3 kW PEP	7/8" EIA Female
537A-2-29	50 ohms	3 kw avg / 3 kW PEP	7/8" EIA Female

Dimensions when packed for transit (53701-06 & 537-2-06)

	Weight	Volume	Length	Height	Width
Tower Package	300 lbs (136 kg)	31.6 ft^3 (0.9 m^3)	120 in (3 m)	13 in (0.33 m)	35 in (0.90 m)
Curtain Package	235 lbs (107 kg)	10.7 ft^3 (0.3m^3)	42 in (1.1 m)	21 in (0.53 m)	21 in (0.53 m)
Total	535 lbs (243 kg)	42.1 ft^3 1.2 m^3)			

Elevation and Azimuth Patterns (Azumuth Pattern at 30* elevation) Gain in dBi, 537-1-N



TCI A Dielectric Company 47300 Kato Road, Fremont, California 94538, USA • 1 800 824-8074 (USA) • Tel 1 510 687-6100 • Fax 1 510 687-6101

www.tcibr.com