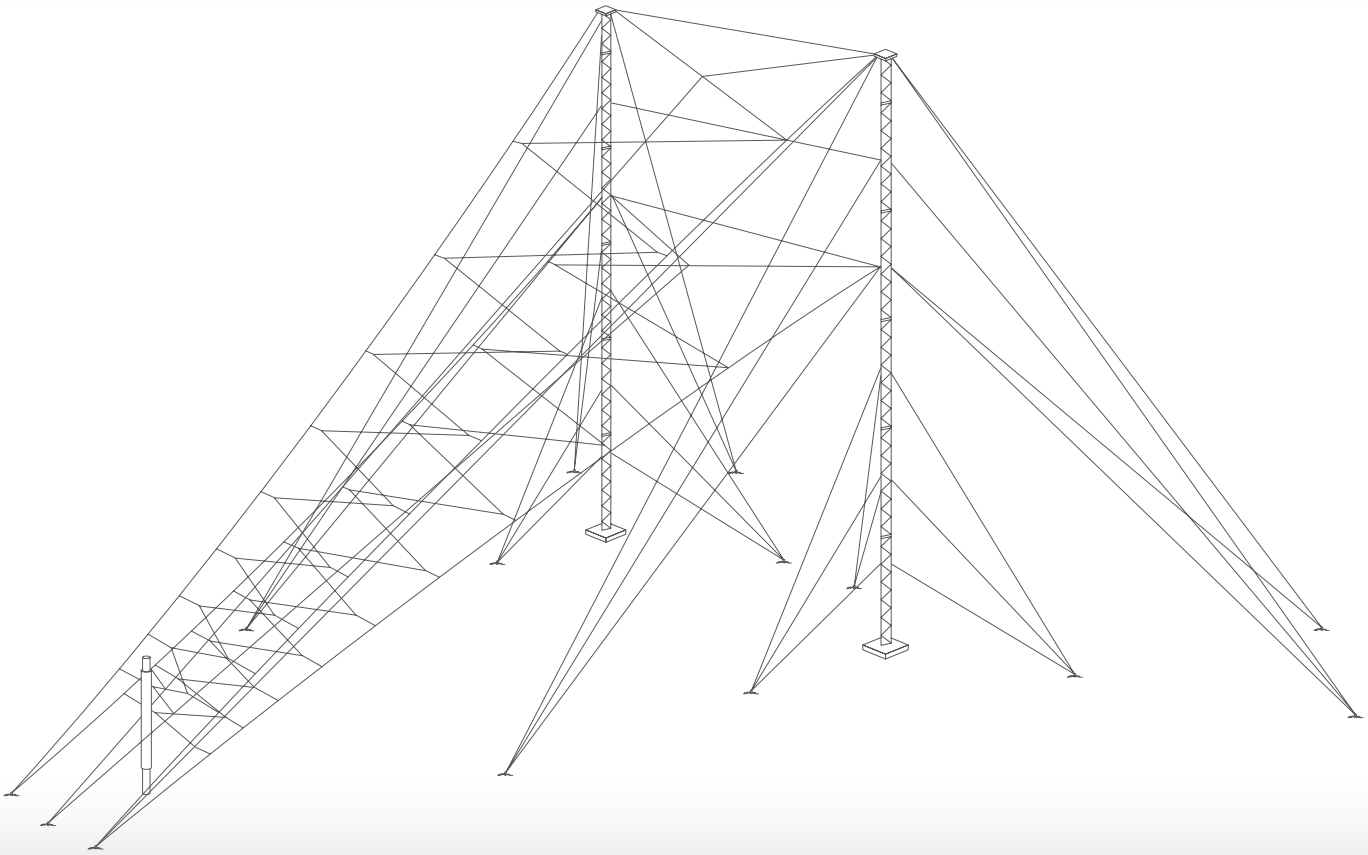


515/516 Short Wave Broadcast High Power Log-Periodic Antennas

Because of seasonal and diurnal variations of the ionosphere, shortwave broadcasters have found it necessary to change frequencies at regular intervals. Frequency changes can be simplified with the use of wideband, frequency-independent antennas. The Model 515 and 516 high-power log-periodic antennas are well suited for this application.

For medium-range broadcasting (700 km to 3000 km) moderate transmitter power and high take-off angles are required. The Model 515 and 516 log-periodic antennas are optimum for this application, and have the ability to handle 100 kW carrier power with 100% modulation.

The 515 provides take-off angles of 30 to 45 degrees, and the 516 provides a take-off angle of 21 degrees for slightly longer paths. Both antennas have negligible side and back lobes, low VSWR, and are extremely efficient, resulting in high ERP and received signal level.

Combine frequency independence with high ERP.

The radiator design is the equivalent of "fattened" radiators with lowered Q and reduced voltage stress. These radiators also increase the effective "active region" radiating length in each curtain, resulting in greater radiation efficiency and higher power gain. TCI analytical techniques provide large volumetrical apertures and resultant high power gain while maintaining log-periodic performance.

As with all TCI antennas, the 515 and 516 utilize high-quality, rugged, exhaustively tested components and materials. No fiberglass assemblies are used. Alumoweld wire, segmented where necessary with high-quality ceramic fail-safe insulators, is used to provide long and trouble-free service life. Carefully tested corona-protection details are employed where necessary in the curtain. No dissimilar contacts, which have historically been the major cause of corrosion, exist anywhere in the tower structure or antenna curtains.

KEY FEATURES

- High power — able to handle 2 megawatt peak power (500 kW carrier power)
- High power gain (over 20 dBi) — provides high receive signal levels for good listening
- Slewable over +23°
- Wide frequency bandwidth: 3–27 MHz
- Low VSWR — 2.0:1 max.
- Rugged construction
- Easily and quickly installed

TCI

Model 515/516
Specifications

Polarization	Horizontal
VSWR	2.0:1 Maximum
Input Impedance	300 ohms Balanced
Power	• 50 kW AM Carrier Power (75 kW avg., 200 kW Peak) or • 100 kW AM Carrier Power (150 kW avg., 400 kW Peak) • 250 kW AM Carrier Power (516 – 3A only)
Side Lobe Level	Less than –13 dB
Front-to-Back Ratio	14 dB Minimum
Environmental Performance	Designed in accordance with EIA Specifi cation RS-222C for loading of 160 km/h (100 mi/h) wind (Higher environmental capability available upon request)

Size

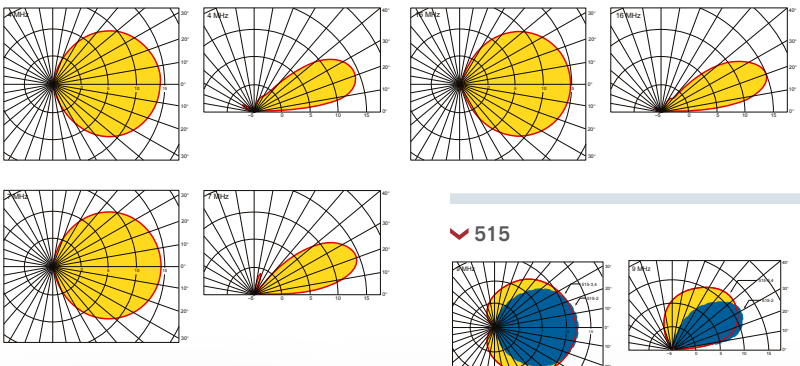
Model Number	Frequency Range	Height		Length*		Width*	
		ft.	mtr.	ft.	mtr.	ft.	mtr.
515-2	4-9 MHz	165	50	432	132	410	125
515-3	3.9-18 MHz	121	36.9	333	102	362	110.5
515-4	3-20 MHz	141	43	378	115	502.5	153
516-2	3.9-17.9 MHz	225	68.6	476	145	497	151
516-3	5.95-17.9 MHz	145	44.2	352	107	381	116
516-3A	5.95-26.1 MHz	145	44.2	352	107	381	116

* Measured from extreme guy points

Gain and Pattern Data

Model	Lower HPP	Take-Off Angle	Upper HPP	Azimuth Beamwidth	
515-2	15°	30°	42°	68°	12.5 dBi
515-3,4	20°	45°	74°	86°	12 dBi
516-2,3,3A	10°	21°	33°	68°	14.5 dBi

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



515

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Field strength contour (millivolts/meter) resulting from 528 antenna and 250 kW AM transmitter located in San Francisco. Data generated by ITS propagation analysis computer program. CCIR minimum acceptable signal level 0.56 mV/m. The values for the 528S with a 300 kW transmitter are shown in parentheses.

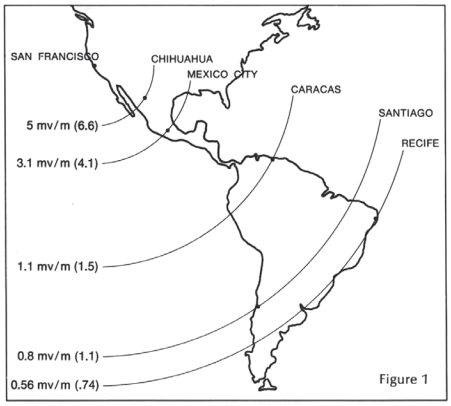

Figure 1

Field strength contour (millivolts/meter) resulting from 516 antenna and 100 kW transmitter located in San Francisco. Data generated by ITS propagation analysis computer program.

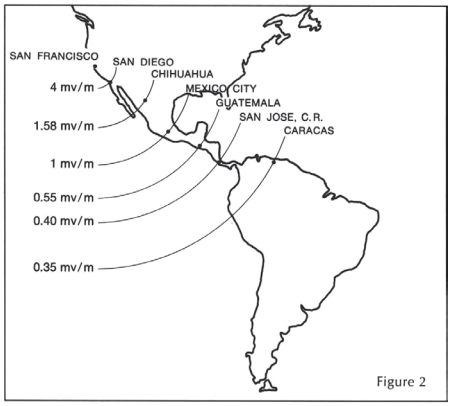

Figure 2

515/516-08-14-12