

AWA-0134 Performance Features

- 26.5 – 29.5 GHz operation
- 256 single beam or 4 x 64 MIMO operation
- Tx/Rx half duplex operation
- +60 dBm/1 KW EIRP at P1dB
- -2 dB/K G/T (receiver sensitivity)
- Linear polarization
- 2D electronic beam scan; no moving parts
- 4 Pre-programmed beam states (Uniform Illumination; 25dB SLL Taylor taper; plus two broad beams for broadcast)
- Fast beam update rate
- Temperature sense telemetry
- Passive cooling option
- Suitable for outdoor deployment



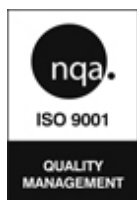
*Low Latency Beam Steering™
 by Anokiwave*

Innovator's Kit Contents

- AWA-0134 Active Antenna
- Power cord (country specific) with power supply block
- Ethernet cable
- Micro-USB cable
- Tripod with mount and adapter
- USB with GUI files and drivers

General Description

The AWA-0134 is a Tx/Rx active array for 5G wireless applications, developed using planar antenna technology in collaboration with Ball Aerospace. This approach results in a very low profile, lightweight unit. The surface mount assembled antenna board is based on Anokiwave's AWMF-0108 Silicon Quad Core IC and demonstrates the performance achievable using low power silicon integration and efficient antenna layout and design. Using the AWMF-0108, the antenna provides +60 dBm (1 KW) EIRP. The electronic 2D beam steering is achieved using analog RF beam forming, with independent phase and gain control in both Tx and Rx operating modes. The AWA-0134 antenna leads the way in showing how 5G coverage can be rolled out by network operators using the mmW bands, with low power footprint and high energy efficiency, while meeting key operating specifications for data rate, latency, coverage, and reliability.



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Overview

The AWA-0134 from Anokiwave is a 28 GHz, 256 element active electronically scanned antenna for 5G mm-wave communication applications. It is designed to take advantage of the rapid progress in recent developments of highly integrated semiconductor solutions for active antenna applications.

Next generation telecommunications is moving to mmW frequencies to take advantage of the increased spectrum availability and highly focused radiated energy, where rapid beam steering and pointing are needed to overcome increased path loss and enable the high data-rate multi-user experience. The AWA-0134 represents the first commercially available 256-element phased-array at 28 GHz to enable the development of and measurement of radio links and channel models, as well as for rapid prototyping and testing of electronically beam-steered radio links through low-latency beam update rates that meet the 5G requirements for sub-symbol interval update rates.

The AWA-0134 includes an integrated controller that can steer the single-beam array to a predetermined position within a wide scan volume with minimal latency and system sensitivity, as well as facilitating multiple programmable beam widths. It can be used as a single 256 element array or as a 4 x 64 MIMO system.

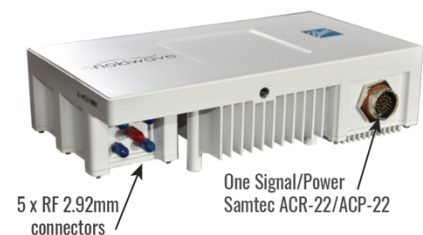
Parameter	Typical Performance	Units
General		
Frequency	26.5 - 29.5	GHz
EIRP (at P1dB)	+60*	dBm
G/T	-2*	dB/K
Effective Rx NF	5	dB
Polarization	Horizontal Linear	-
Electronic Beam Scan	+/- 60 deg 2D	-
Number Beams	Single radiation beam	256 Element Mode
	Up to four radiation beams	64 Element Mode
Beam Update Rate	13	uS
RF Mode of Operation	Half duplex (TDD)	-
RF Interface	2.92 mm coaxial connector (female)	x 5
Max Power	65	W DC
Size	26 x 15 x 4	cm
Weight	3	kg
Supply Voltage	Single 12 or 18	VDC
Control Interfaces	LVDS, Ethernet, USB	
Additional Features		
Weather sealed for outdoor deployment		
Electronic, analog beam forming		
Temperature sense telemetry		
4 Pre-programmed beam states: Uniform Illumination; 25dB SLL Taylor taper; plus two broad beams for broadcast		
256 single element or 4 x 64 MIMO operation		

*Indicates measurement calculated at boresight

Advantages

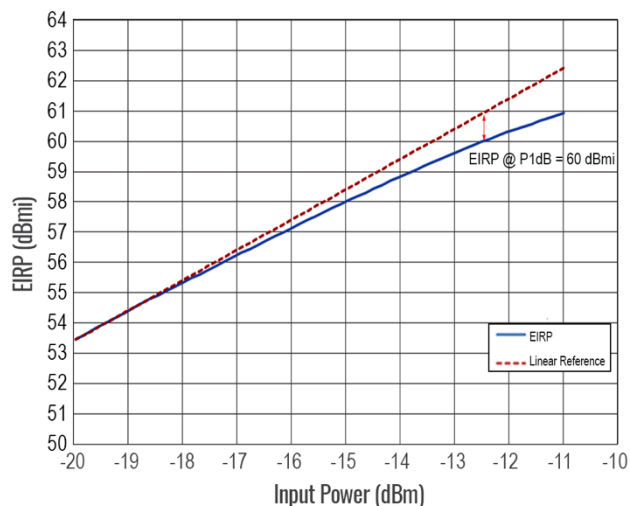
Electronically steered mmW phased arrays have numerous advantages.

- Improved SNR
- Increased data rate and capacity
- Reduced interference
- Supports mmW channel sounding
- Improved wireless network power efficiency
- Anokiwave's Active Antenna IC technology enables planar active antenna solutions with low latency beam steering™

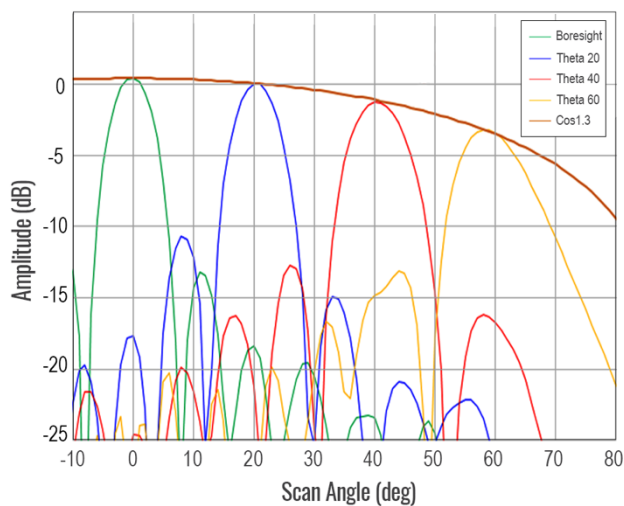


Array Data

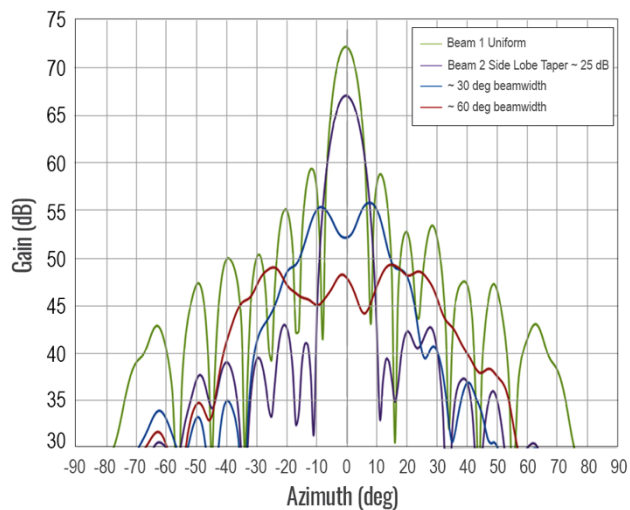
All measurements are made at the following conditions: Temp = 25°C, Vs=12V



Measured EIRP vs. Input Drive



Scan Loss over Azimuthal Plane



Antenna Gain vs. Applied Taper