

5G Active Antenna Innovator's Kit

AWMF-0129-IK

Product Overview

AWMF-0129 Performance Features

- 27.5 - 30 GHz operation
- Tx/Rx half duplex operation
- +50 dBm EIRP at P1dB
- -7 dB/K G/T (receiver sensitivity)
- Linear polarization
- 2D electronic beam scan
- Programmable beam widths
- Fast beam update rate
- Temperature sense telemetry
- Scalable for hybrid beamforming MU-MIMO

Innovator's Kit Contents

- Power Cord (country specific) with power supply block
- Ethernet Cord (cross-over cable required)
- Micro-USB cord
- Tripod with mount and adapter
- Fan (optional)
- Phillips screw driver with screws
- AWMF-0129 Active Antenna
- USB with GUI files and drivers

General Description

The AWMF-0129 is an 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 +50dBm output power while consuming just 12W DC power in the RF circuits and has achieved Gb/s data rates in OTA trials. 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 AWMF-0129 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.



*Low Latency Beam Steering™
by Anokiwave*

5G Active Antenna Innovator's Kit AWMF-0129-1K

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The AWMF-0129 from Anokiwave is a 28 GHz, 64 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 mm-wave 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 AWMF-0129 represents the first commercially available 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 AWMF-0129 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 combined with multiple synchronized transceivers to support hybrid beamforming.

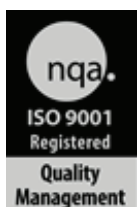
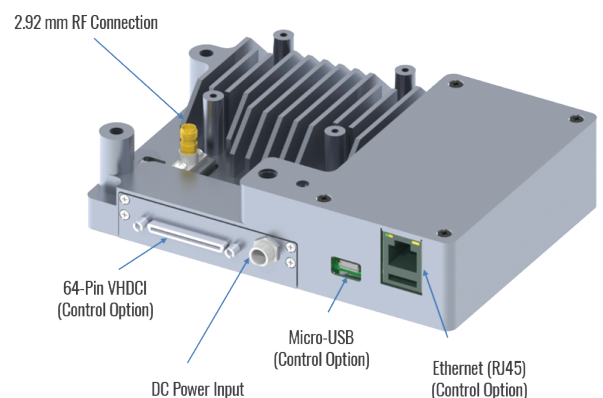
Parameter	Typical Performance	Units
General		
Frequency	27.5 - 30.0	GHz
EIRP (at P1dB)	+50*	dBm
G/T	-7*	dB/K
Effective Rx NF	5	dB
Polarization	Vertical Linear	-
Electronic Beam Scan	+/- 60 deg 2D	-
Number Beams	Single radiation beam	-
Beam Update Rate	13	uS
RF Interface	Half duplex (TDD)	-
Average Power	18	W DC
Size	11 x 15 x 4	cm
Weight	0.5	kg
Supply Voltage	Single 12 or 18	VDC
Control Interfaces	LVDS, Ethernet, USB	
Additional Features		
Electronic, analog beam forming		
Temperature sense telemetry		
Programmable beam width/taper		
Scalable for hybrid beamforming MU-MIMO		

*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™



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Rev. V7P

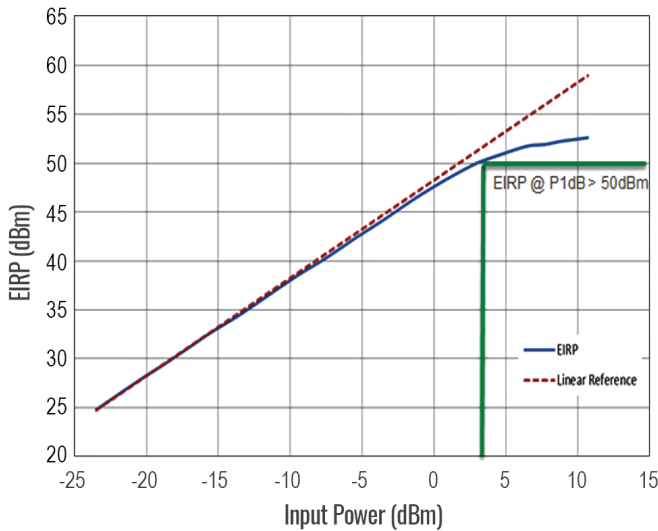
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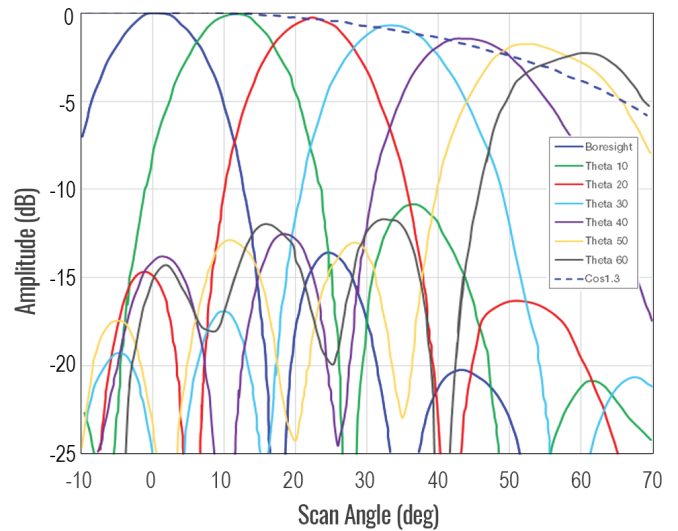
Product Overview

Array Data

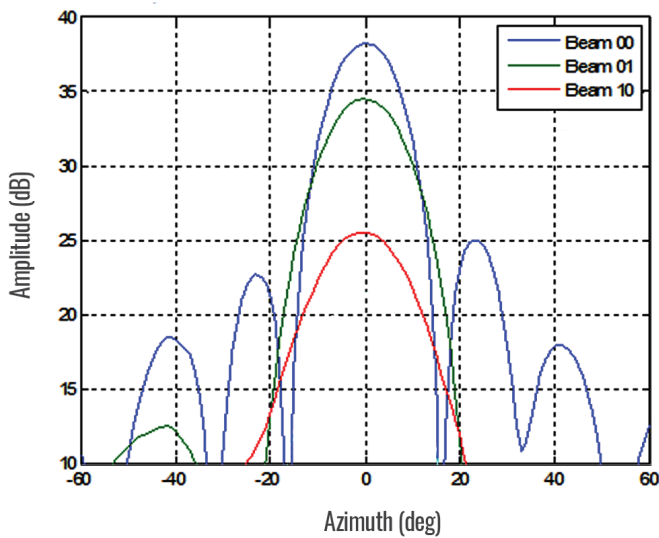
Measured EIRP vs. Input Drive
Temp = +25°C, Vs = 12V



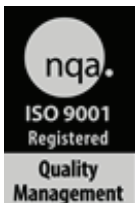
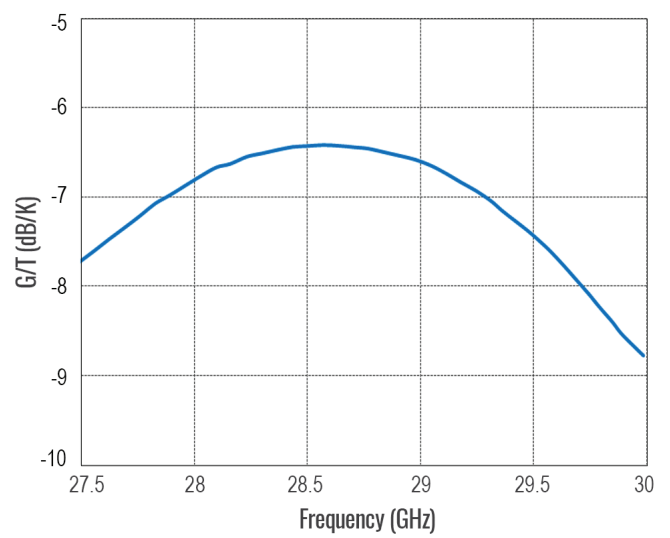
Scan Loss over Azimuthal Plane
Temp = +25°C, Vs = 12V



Antenna Gain vs. Applied Taper
Temp = +25°C, Vs = 12V



G/T vs. Frequency
Temp = +25°C, Vs = 12V



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