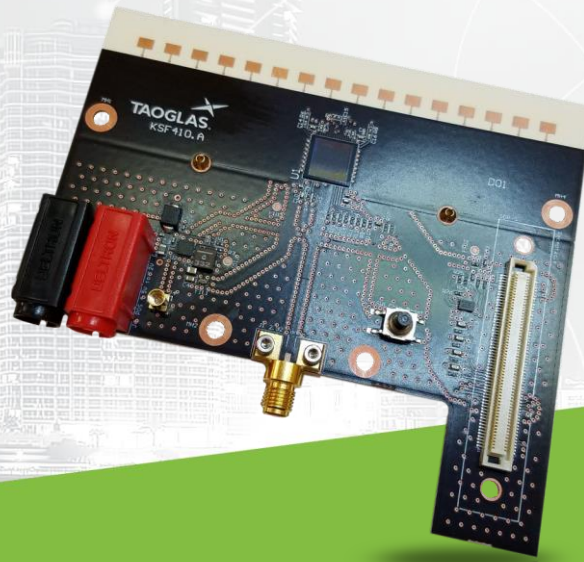




TAOGLAS®



Datasheet

Taoglas NR Series

Part No:
KSF410.A

Description:

27-29GHz Ka-Band, Steerable Fan Beam Antenna

Features:

27-29GHz 10dB Impedance Bandwidth

Peak Gain: 17 dBi

Amplified Gain: 31 dBi

Linearly Polarised with 20 dB Cross-Pol Rejection

Scan Range: +/-45°

Dimensions: 87.6 * 96.1 mm

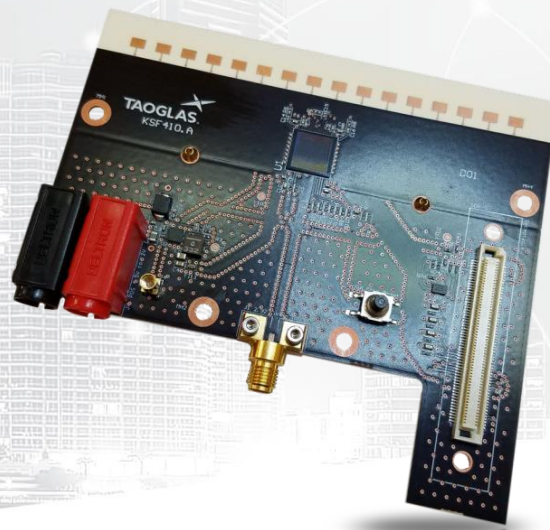
RoHS & Reach Compliant

| | |
|------------------------------------|---|
| 1. Introduction | 3 |
| 2. Specifications | 5 |
| 3. Passive Antenna Characteristics | 6 |
| 4. Active Antenna Characteristics | 8 |
| <hr/> | |
| Changelog | 9 |

Taoglas makes no warranties based on the accuracy or completeness of the contents of this document and reserves the right to make changes to specifications and product descriptions at any time without notice. Taoglas reserves all rights to this document and the information contained herein. Reproduction, use or disclosure to third parties without express permission is strictly prohibited. Copyright © Taoglas Ltd.



1. Introduction



The Taoglas NR, KSF410.A, is a sixteen-element linear phased-array with 17 dBi gain, a wide 3dB beamwidth for wide angular coverage in azimuth with most of the energy focused within 45° of the main beam. Since propagation losses at Ka band are 20x more than at 6GHz, the beamwidth of the antenna is reduced when the antenna gain increases. To alleviate this problem, the fan-beam type antenna can be useful to provide simultaneously high gain and wide azimuth coverage.

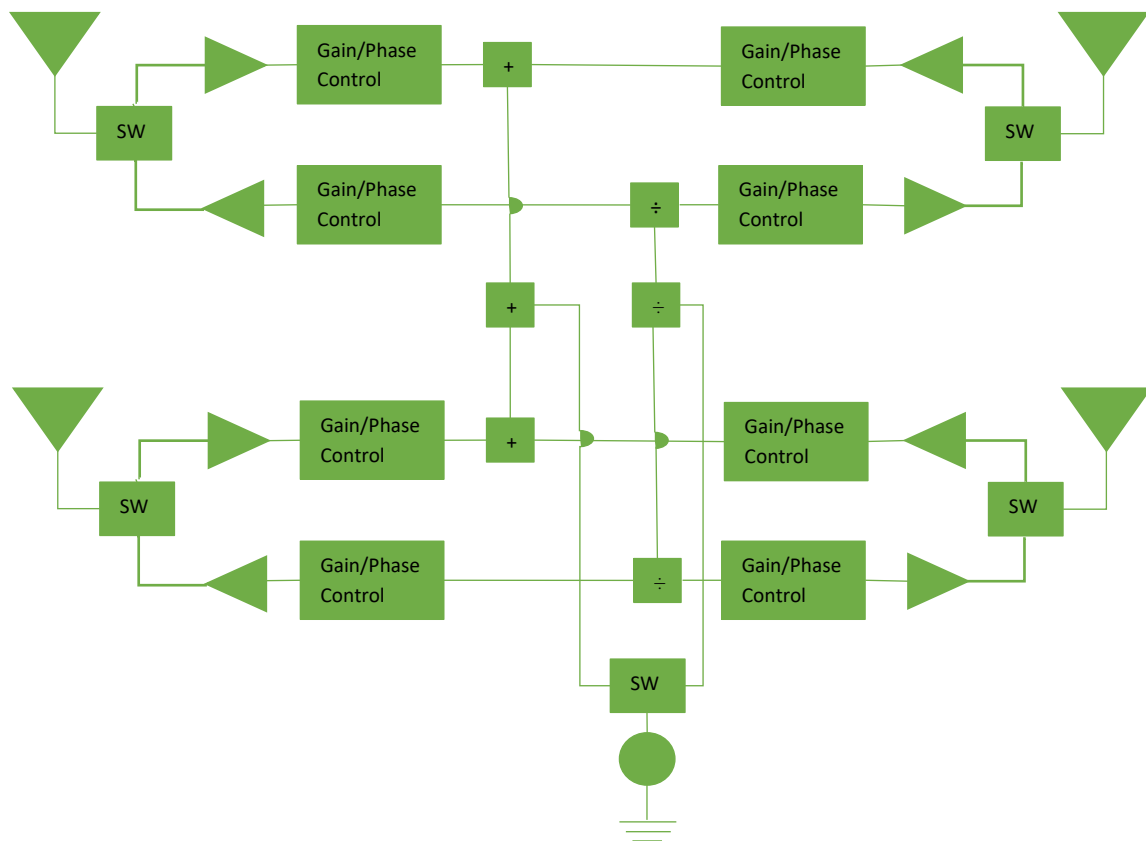
It is ideal for use at User Equipment for client-side integration or inside a Ka band 5G Access Point (AP) where its small size, extremely light weight structure and low profile makes it suitable for integration in different types of customer device environments. The application can be for indoor and outdoor wireless coverage for mobile or fixed broadband access in 5G Routers/ and or APs. It employs beam steering/forming at the RF level using RF phase and amplitude shifters, or beam forming networks. Antennas in the array are grouped in groups of four, each group with Integrated circuit (IC) Phase shifter, LNA and Power amplifier (PA) allowing field of view (FoV) of $\pm 45^\circ$.

The provided SPI interface allows direct access to chipset to control the device configuration. The antenna has up-to 2 GHz impedance bandwidth which gives upwards of 2Gbps data rates which is well suited for fixed and mobile broadband capacity hungry Next Generation Networks. The KSF410.A features higher than 20 dB cross pol rejection making it less susceptible to interference from undesired signals.

The antenna can be directly connected using standard 2.92mm and SMPM connectors. There is also an option to use a coaxial to waveguide adaptor in conjunction with Ultra Low Loss Pre-Connectorized Cables.

The KSF410.A uses a Ka-Band 5G chipset that supports four Tx/Rx radiating elements, includes all requisite beam steering controls for 5 bit phase and gain control, and operates in half duplex fashion to enable a single antenna to support both Tx and Rx operation. Phased arrays (static or scanned-beam) can direct or modify their radiation beam through varying the relative phase and amplitude of each element (or groups of elements) in the array. The variable phase delay enables steering the beam. The RF signal from the radio is input into a Tx/Rx module. In the Tx/Rx module the RF signal is divided by a 4-way RF splitter. Each output of the splitter is then connected to a RF path comprising phase shifter, amplifier and low-pass filter.

For further information on how to integrate into your 5G application, contact your local Taoglas customer support team.

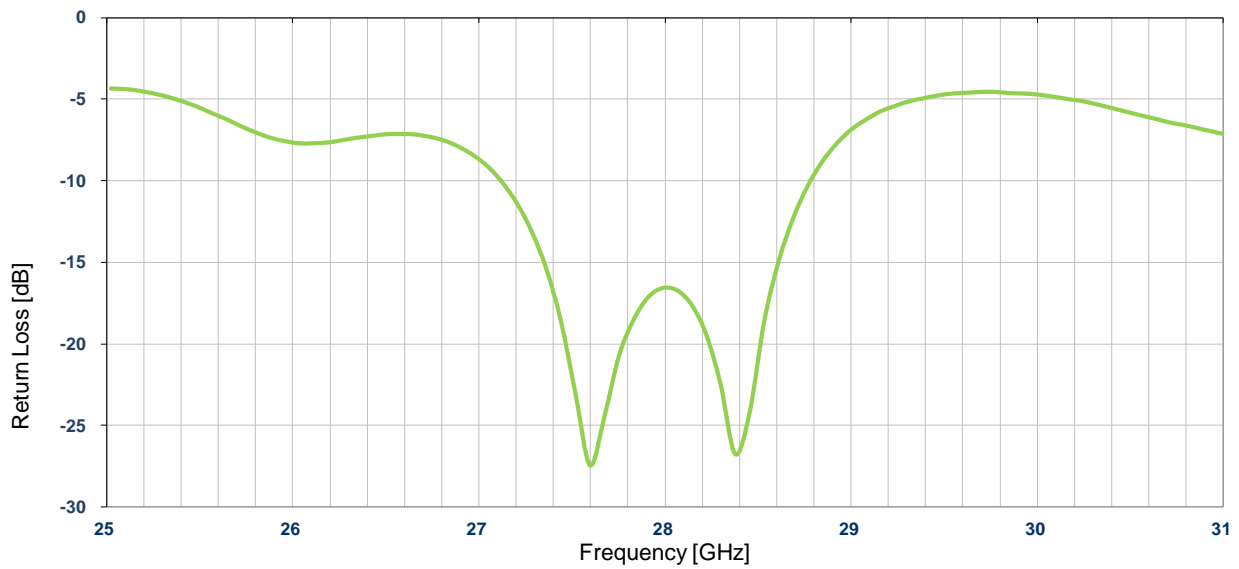


2. Specifications

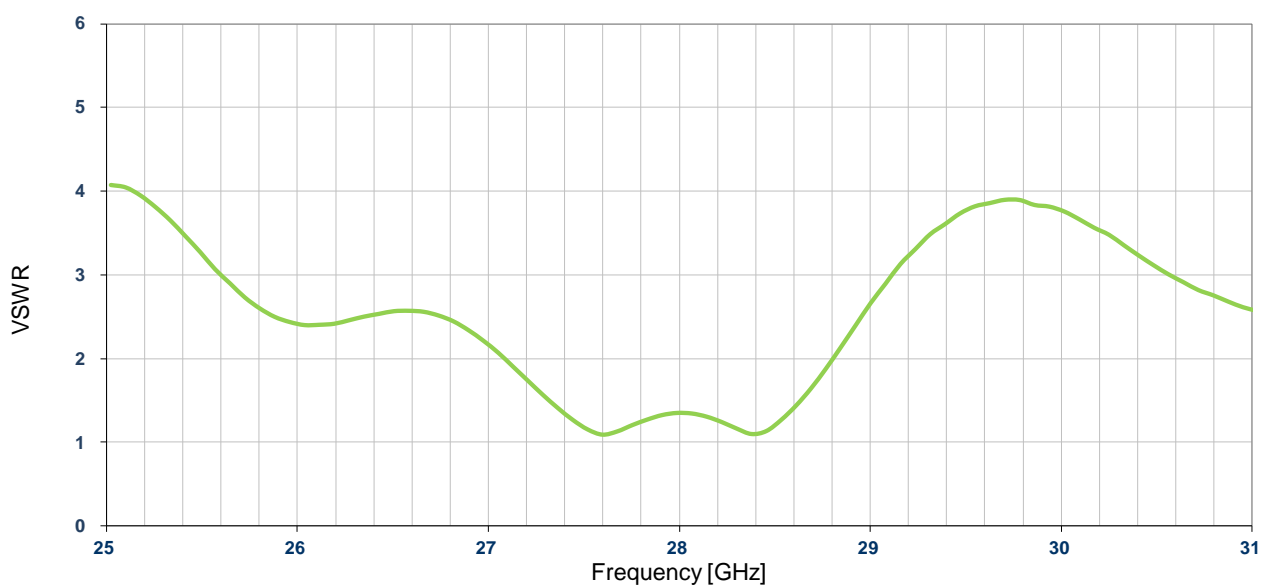
| Electrical | |
|---------------------------------|----------------------------------|
| Standard | 5G |
| Frequency (GHz) | 27-29 |
| Max VSWR | 2:1 |
| Max Return Loss (dB) | -10 |
| Passive Antenna Peak Gain (dBi) | 17 |
| Beamwidth | Vertical: 5.1°, Horizontal: 44 ° |
| Efficiency (%) | 85 |
| Scan range (°) | ±45 |
| Radiation Properties | Directional |
| Polarization | Linear |
| Impedance | 50 Ω |
| RF IC Electrical Properties | |
| Supply Voltage (V) | +1.8 |
| Phase Bits | 5 |
| Phase LSB (degree) | 11.25 |
| Amplitude Bits | 5 |
| Amplitude LSB | 1 |
| Channel Gain (Tx) (dB) | +24 |
| Mechanical | |
| Dimensions (mm) | 87.6 * 96.1 mm |
| Material | Teflon |
| Connector Options | 2.92mm or SMPM |
| Environmental | |
| Operation Temperature | -40°C to 85°C |
| Storage Temperature | -40°C to 85°C |
| Relative Humidity | 40% to 95% |
| RoHs Compliant | Yes |

3. Passive Antenna Characteristics

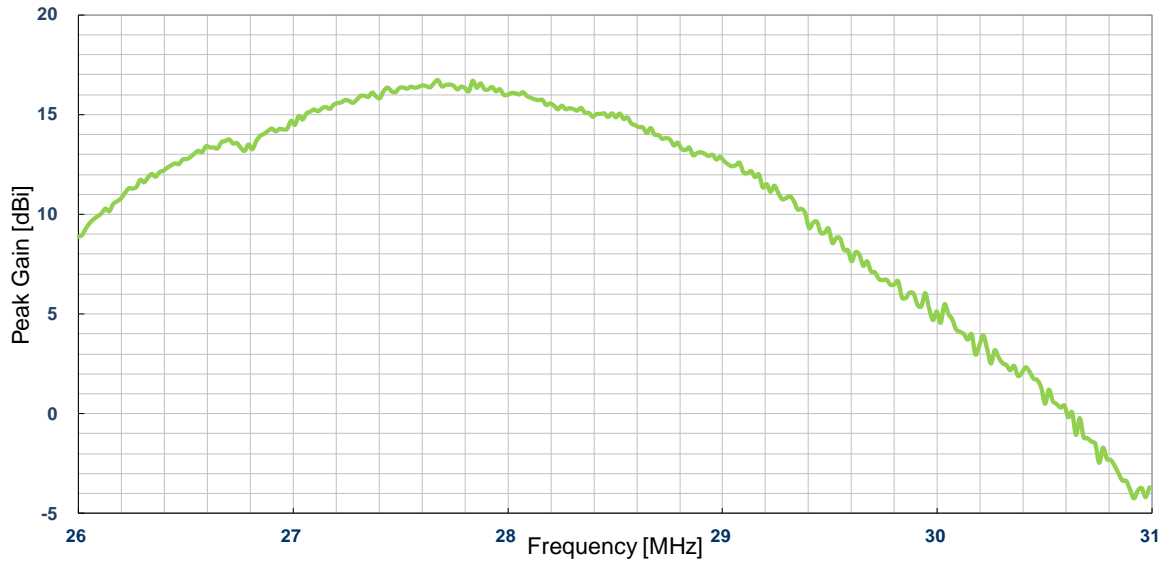
3.1 Return Loss



3.2 VSWR

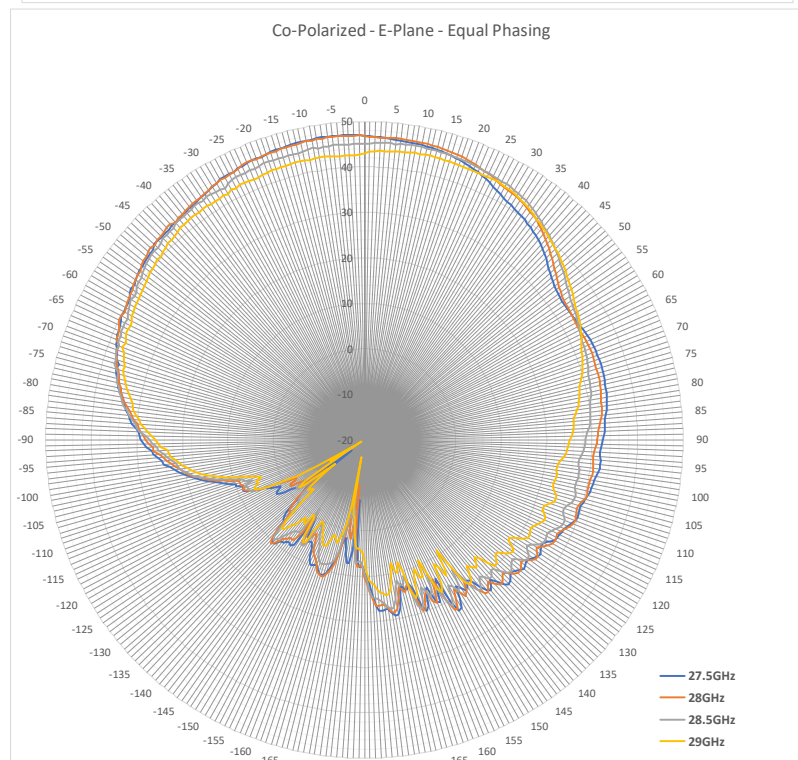
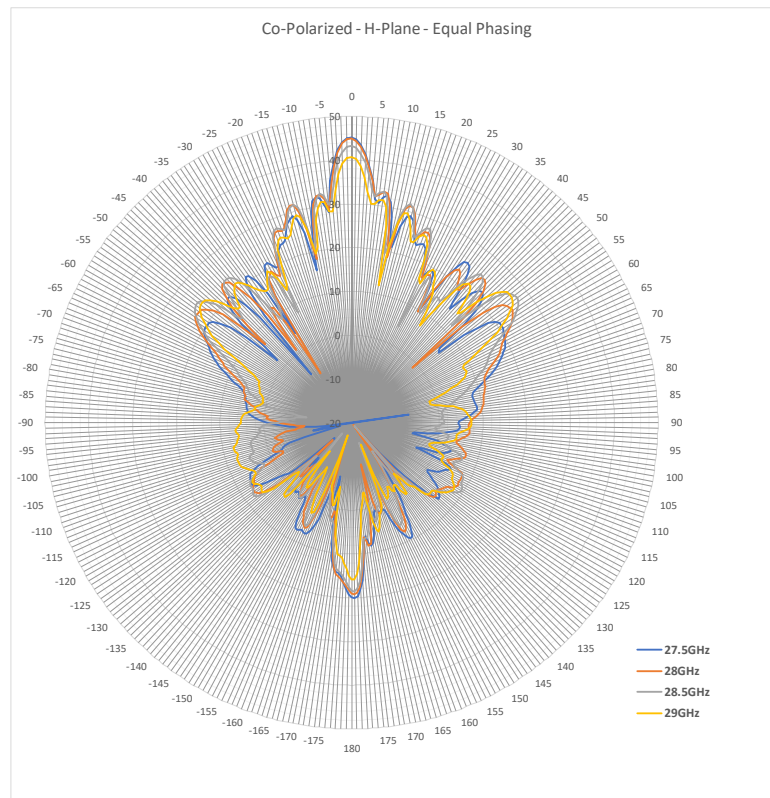


3.3 Peak Gain



4. Active Antenna Characteristics

4.1 2D Radiation Patterns



Datasheet Changelog

DSP-19-8-012 - KSF.410A

Revision: B (Current Version)

| | |
|------------------|--------------|
| Date: | 2020-03-03 |
| Changes: | Gain Amended |
| Changes Made by: | Jack Conroy |

Previous Revisions

Revision: A (Initial Version)

| | |
|------------------|---------------------|
| Date: | 2019-02-2 |
| Changes: | First Draft Release |
| Changes Made by: | David Connolly |



TAOGLAS®

www.taoglas.com

