



Marketing Department Product Specification

Product Name: Ka-band Spaceborne Silicon-based 16-beam
Phased Array Antenna

1 Product Description

Using the key technology of digital-analog hybrid phased array antenna, flexible load can form flexible multi-beam coverage on demand, supporting requirements of multi-star multi-beam collaborative transmission. This product can provide technical basis of space-based platform for future 6G network.

2 Application Scenarios

Spaceborne phased array antenna.

3 Product Features

- 16 independent beams for both transmitting and receiving
- Modular design with reconfigurable function
- Allows subarrays to operate independently or as a composite array
- TR modules integrated with liquid-cooled micro-channel design

4 Technical Parameters

Table 1 Technical Parameters

Items	Parameters		Remarks
Working Frequency	Rx	27.5 GHz-31GHz	RHCP
	Tx	17.7 GHz-21.2GHz	LHCP
Beams	Rx	16	12 analog beams 4 analog to digital
	Tx	16	12 analog beams 4 analog to digital
Antenna Gain	22dBi @ 20GHz, 30GHz		Single sub-array
Scanning Range	$\geq \pm 50^\circ$		
Axial Ratio	$\leq 2\text{dB} @ 0^\circ; \leq 5\text{dB} @ \pm 50^\circ$		
Beam Switching Time	$\leq 50\mu\text{s}$		
VSWR	1.5		Total port
Working Bandwidth	$\geq 500\text{MHz}$		
EIRP	33dBW		Normal direction

G/T	$\geq -3\text{dB/K}$	Normal direction
Sidelobe Suppression	First sidelobe suppression $\geq 14\text{dBc}$ Second sidelobe suppression $\geq 17\text{dBc}$	
Beam Pointing Accuracy	$\leq 1/4$ beam width	
Third-order Intermodulation	a) Rx antenna: $\leq -25\text{dBc}$ @ scanning rang 50° (2 carriers tested at an interval of 10MHz, each signal reaching antenna port is -89dBm/m^2); b) Tx antenna: $\leq -24\text{dBc}$ @ scanning range 50° (Single beam EIRP = 33dBW (tested at 10MHz dual-carrier interval).	
EVM	Better than 10% @ rated EIRP, 3dB back-off (QPSK modulation, bandwidth 80Mhz)	
Gain Flatness	$\pm 1\text{dB}$ @ 400MHz	
Receiving Dynamic Range	$\geq 40\text{dB}$	
Emission Spurious	$\leq -50\text{dBc}$	
Phase Noise	-60dBc @ 100Hz -70dBc @ 1KHz -80dBc @ 10KHz -90dBc @ 100KHz	
Power Supply	+24VDC (20V ~ 36V)	4-core Circular Connector
Control Interface	Internet Port	
IF Interface	SMA	

Table 2 Requirements for DBF Module Interfaces

S/N	Item	Parameters	Remarks
	Input Frequency	2GHz-2.4GHz	
	Input Channels	20	
	Output Frequency	2GHz-2.4GHz	
	Output Channels	20	
	Channel Input Power	$-25\text{dBm} \sim -5\text{dBm}$	
	Output Power	-15dBm	
	Sub-band Out-of-band Suppression	$\geq 45\text{dBc}$	
	Channel Linearity (NPR)	$\geq 40\text{dBc}$	-15dBm output
	Noise Factor	$\leq 15\text{dB}$	
	Port Standing Wave	Input and output are better than 1.5	
	RF Interface	SMA	

5 Product Photos

