PSA1026744 Datasheet
4-Arm Spiral Antenna, 18-40 GHz

General Description

Nuvotronics offers a market leading cavity backed four arm spiral antenna that supports multiple radiating modes for compact direction finding applications. The 4-arm antenna can be driven in sum or delta mode for wideband direction finding in monopulse tracking applications.

Applications

- Wideband Direction Finding
- Radar Warning Receivers
- SIGINT/ELINT
- Interferometry

Benefits

- Available in Right or Left Hand Polarization
- Compatible with Analog or Digital Beamforming Techniques
- 2-6 dBi Realized Gain
- Boresight Axial Ratio <2dB
- Low Weight (10g max.)

Ordering Information		
Polarity	**Connector**	**Part Number**
Right	SMPM	PSA1026744-1
Left	SMPM	PSA1026744-2

Mode Phases

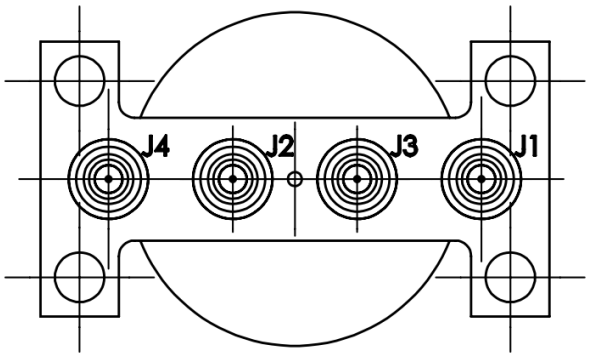


Table 1: Phases for Mode Formation

Polarity	Mode	J1	J2	J3	J4
RH	SUM	0	-90	-180	-270
RH	DELTA	0	180	0	180
LH	SUM	-270	-180	-90	0
LH	DELTA	180	0	180	0

Performance Specifications

Table 2: RF Performance

Parameter	Configuration [1]	Freq. Range (GHz)	Min.	Typ.	Max.	Unit
Return Loss	J1–J4	18–40	10	15	–	dB
	SUM Mode		–	10	–	dB
	DELTA Mode		–	6	–	dB
Peak Gain	J1–J4	18–40	1	2.5	6	dBiC
	SUM Mode		2	3	6	dBiC
	DELTA Mode		-2	0	2	dBiC
Axial Ratio at $\theta = 0^{\cdot}$	SUM Mode	18–40	0.2	0.4	1	dB
Axial Ratio at $\theta = 45^{\cdot}$	SUM Mode	18–40	1	1.2	3.5	dB
	DELTA Mode		0.2	0.4	1	dB
3dB Beamwidth	SUM Mode	18–40	–	55	–	deg
Boresight Null Stability	DELTA Mode	18–40	–	2.5	–	deg

[1] SUM and DELTA modes are referenced to analog modeformer

Table 3: Absolute Maximum Ratings

CW Power	24 dBm
Operating Temp.	-40°C to 85°C
Storage Temp.	-55°C to 125°C
Mechanical Vibration MIL-STD-883 M2026 (Cond. 1J)	19.3 Grms
Mechanical Shock MIL-STD-883 M2002.5 (Cond. B)	100 G

U-V Sine Space Patterns - Composite Modes

Figure 1: 18GHz

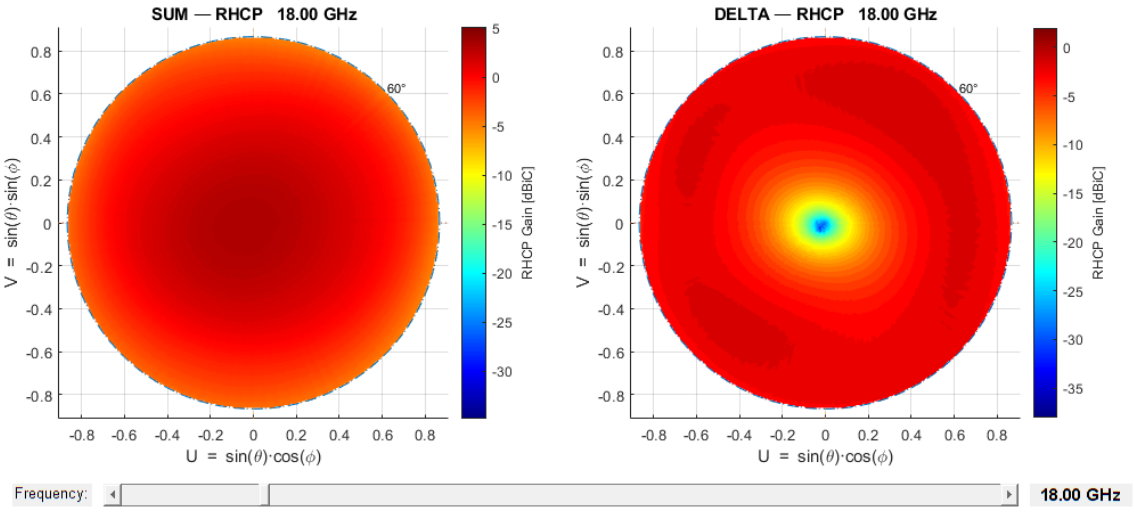
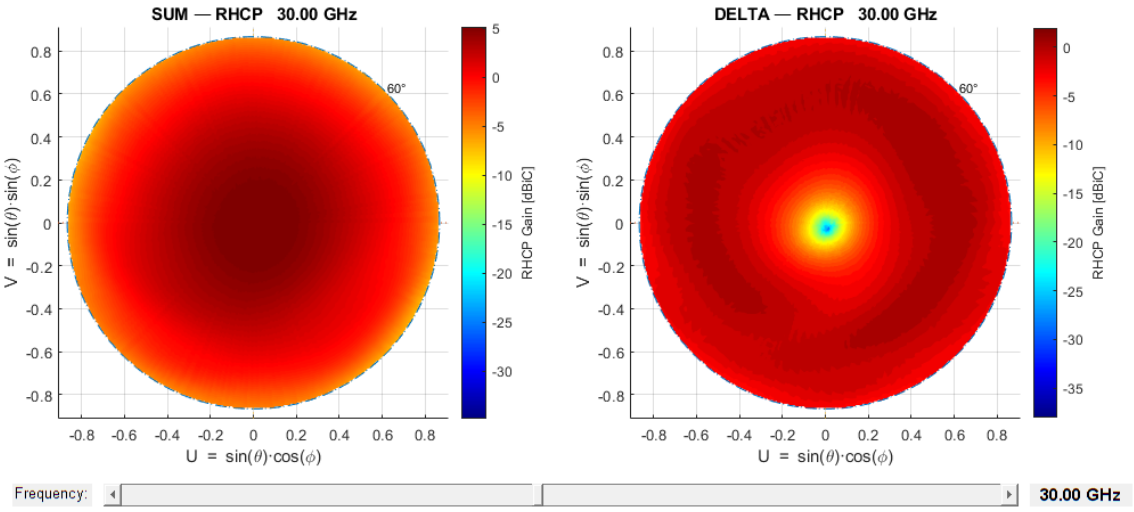
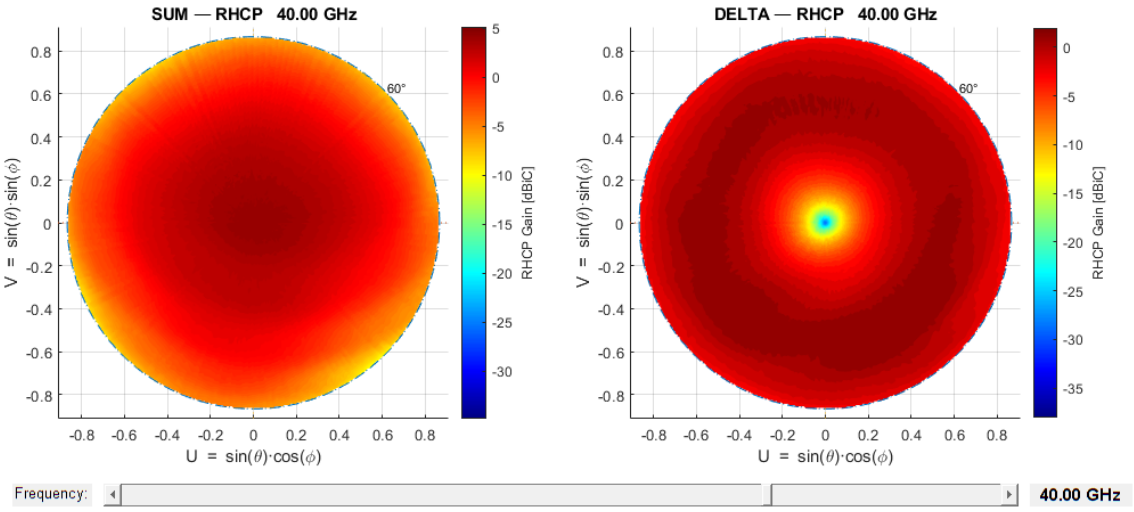


Figure 2: 30GHz



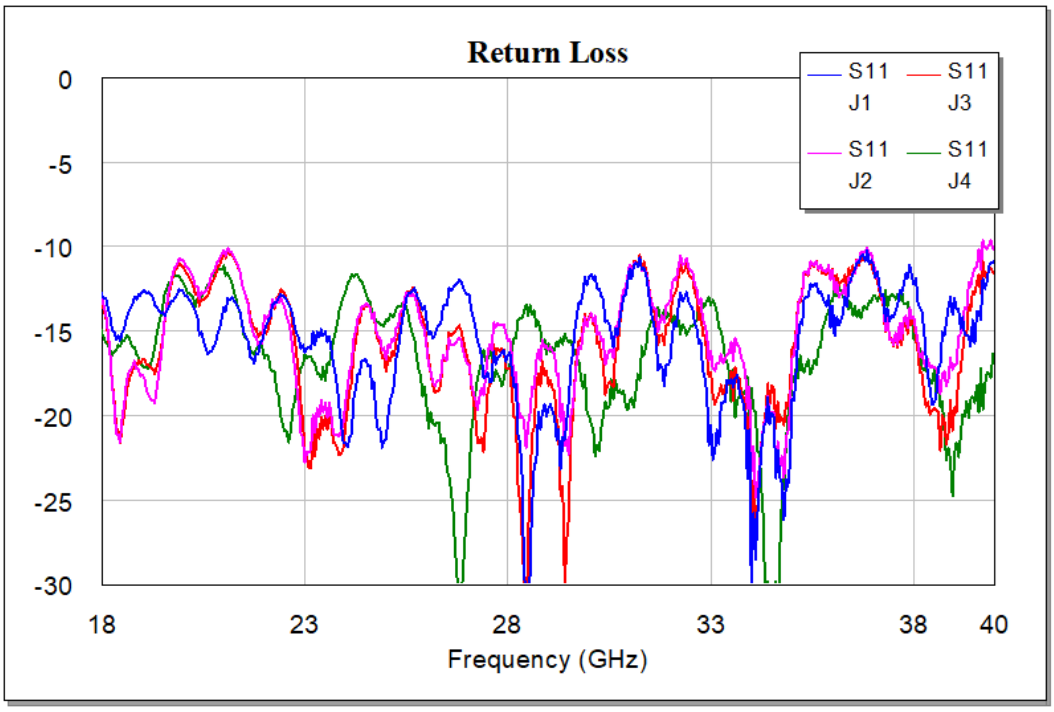
U-V Sine Space Patterns - Composite Modes (con't)

Figure 3: 40GHz



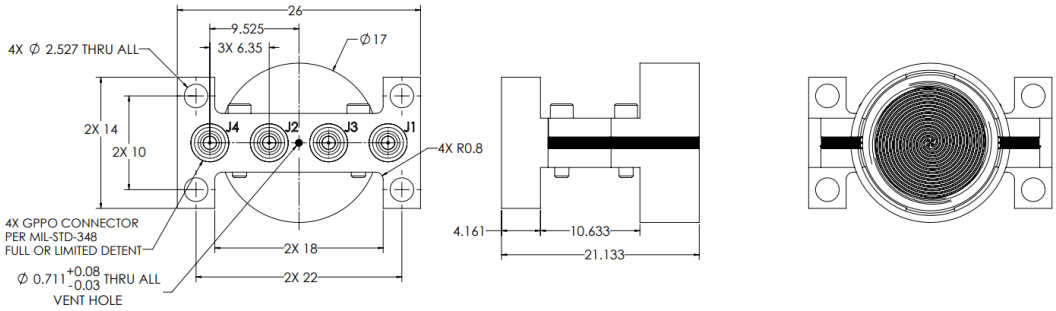
Typical Return Loss

Figure 4: RF performance



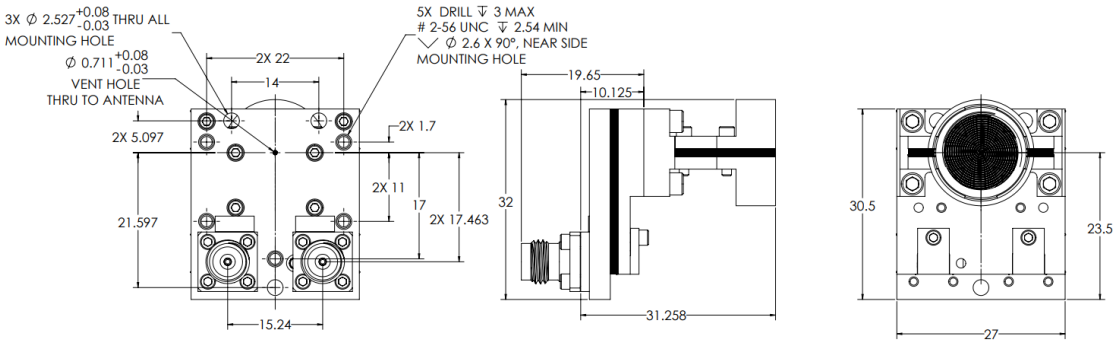
Mechanical Information

Figure 5: 2D Mechanical Drawing - Antenna



Dimensions in mm

Figure 6: 2D Mechanical Drawing - Antenna with Modeformer



Dimensions in mm