

## Delta 45

IP67 Rated O-ring Sealed 2.4 GHz Bluetooth/Wi-Fi Stubby Antenna



### Key Features

- Supports 2.4 GHz Wi-Fi 4/5/6
- Supports Bluetooth / Zigbee / ISM 2450 / IEEE 802.15.4 Bands
- IP67 rated – No dust/water ingress (immersion in up to 1 meter of water for 30 minutes)
- High gain of 8.83 dBi at 2.4 GHz frequency
- Above 80% Radiation Efficiency and VSWR >2.5 at 2.4 GHz

### General Description

The Delta 45 is a compact, direct connect 2.4 GHz stubby antenna commonly used in Wi-Fi, Bluetooth and Zigbee applications.

Featuring a UV resistant TPE plastic radome and an O-ring seal to protect from water ingress, this antenna is IP67 rated and designed for outdoor use.

Ideally suited for covert situations where limiting antenna size is a critical consideration.

Despite its small size, the Delta 45 achieves a Peak Gain of 8.83 dBi, providing a stronger and more reliable Wi-Fi signal, particularly in areas with weaker signals.

The delta 45 is supplied with either an SMA Male or Reverse Polarity SMA Male Connector as standard, however other connector types can be specified for high volume orders.

### Additional Considerations

- Omnidirectional monopole
- Ground Plane independent
- 5/8 wave design

D Direct	IEEE 802.15.4	ISM 2.4G	ISM 5.8G	WLAN 2400
BLE Bluetooth	ZB Zigbee	IP 67		



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### Electrical Specifications

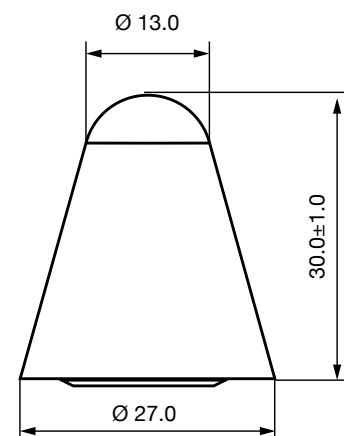
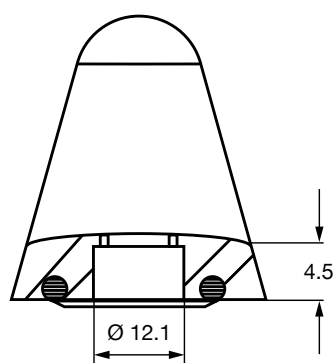
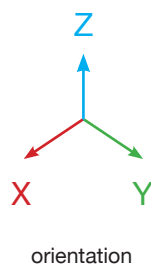
Impedance:	50 Ohm
Polarization:	Vertical
Max input power:	10 W
Ground plane independent:	Yes

### Environmental Specifications

Operating temperature range:	-40 °C to +65 °C
Storage temperature range:	-40 °C to +80 °C

### Mechanical Specifications

Dimensions:	30 mm Length, 27 mm Diameter
Weight:	12 g
Connector:	SMA Male / RP-SMA Male
Mounting method:	Direct Connect
Housing materials:	ABS/TPEE Black

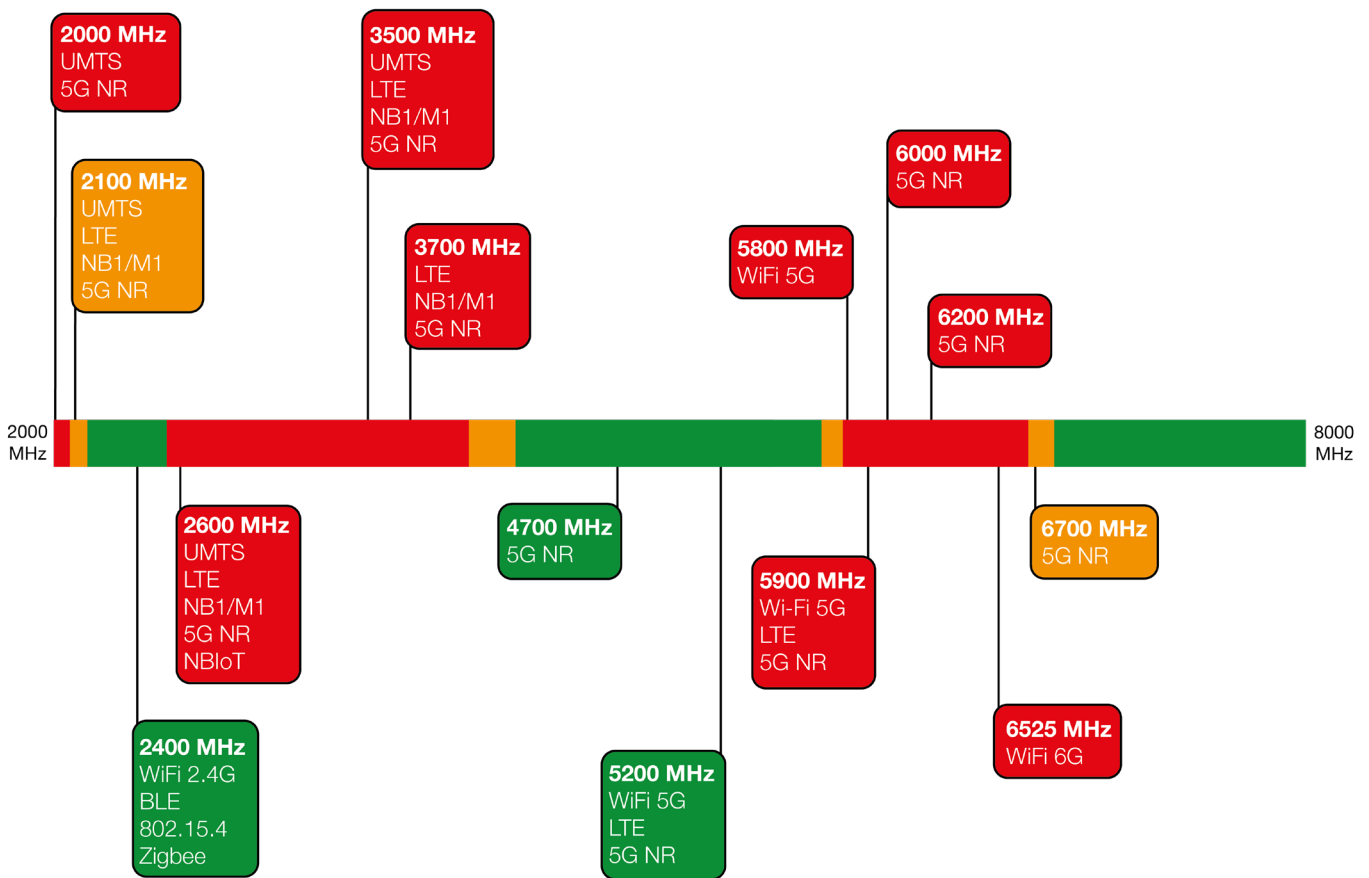




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### Spectrum Coverage



● Suitable band

● Adequate band in good signal conditions

● Likely to be unsuitable





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### Usable Cellular Frequency Support (2000 MHz – 5900 MHz)

	2000	2100	2300	2400	2500	2600	3300	3500	3700	4700	5200	5900	6000	6200	6700
GSM Bands:															
UMTS Bands:						●									
LTE Bands:			●	●		●									
LTE Cat M Bands:			●			●									
LTE Cat NB Bands:						●									
5G NR Bands:			●	●		●									
NR Cat NB Bands:						●				●					

### Usable ISM Frequency Support (2450 MHz - 6525 MHz)

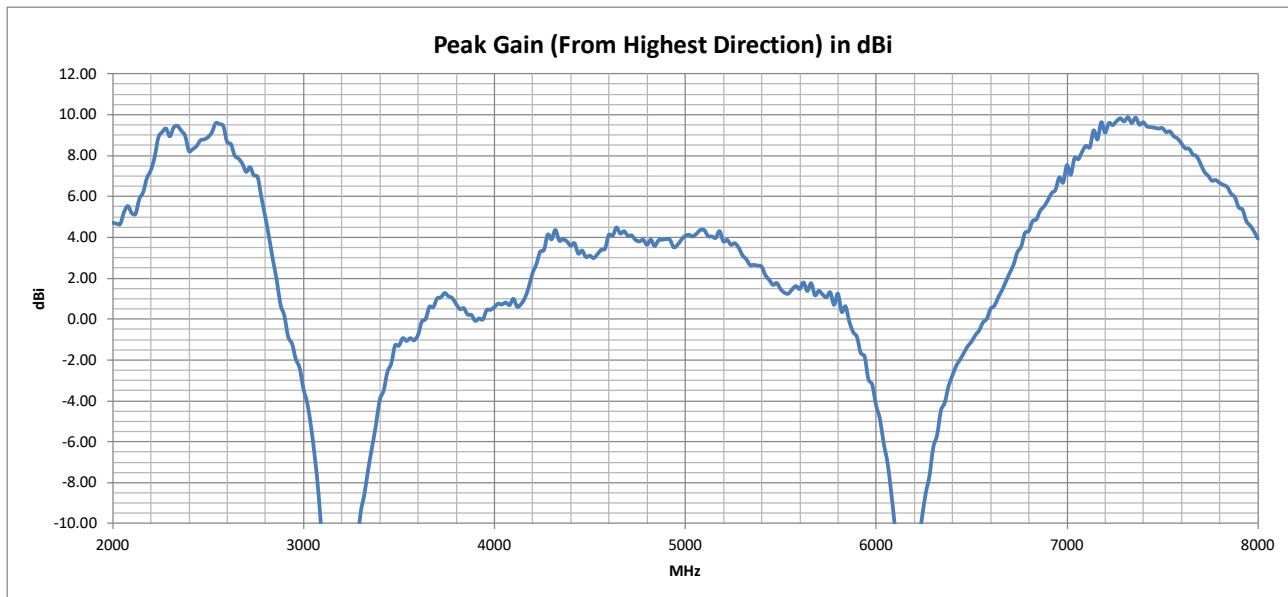
	2450	5800	6525
Bluetooth	●		
IEEE 802.15.4	●		
ISM 2.4G	●		
ISM 5.8G	●		
Wi-Fi 2.4G	●		
Wi-Fi 5G			
Wi-Fi 6E		●	
Zigbee	●		



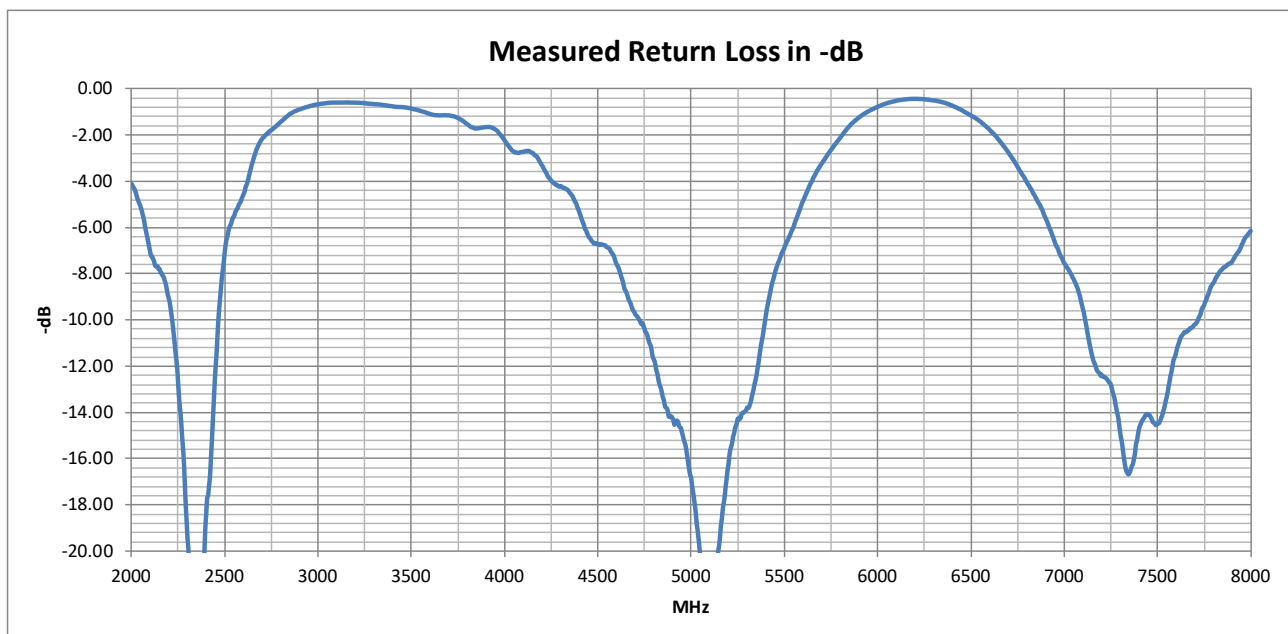
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### Peak Gain vs. Frequency



### Return Loss

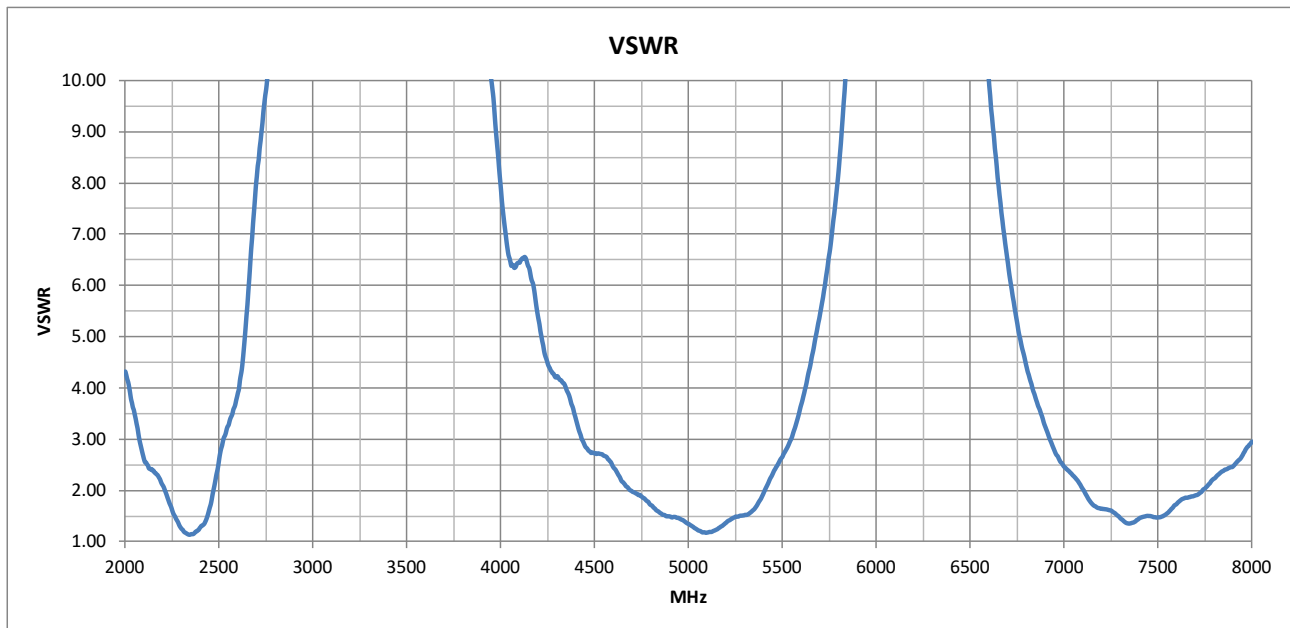




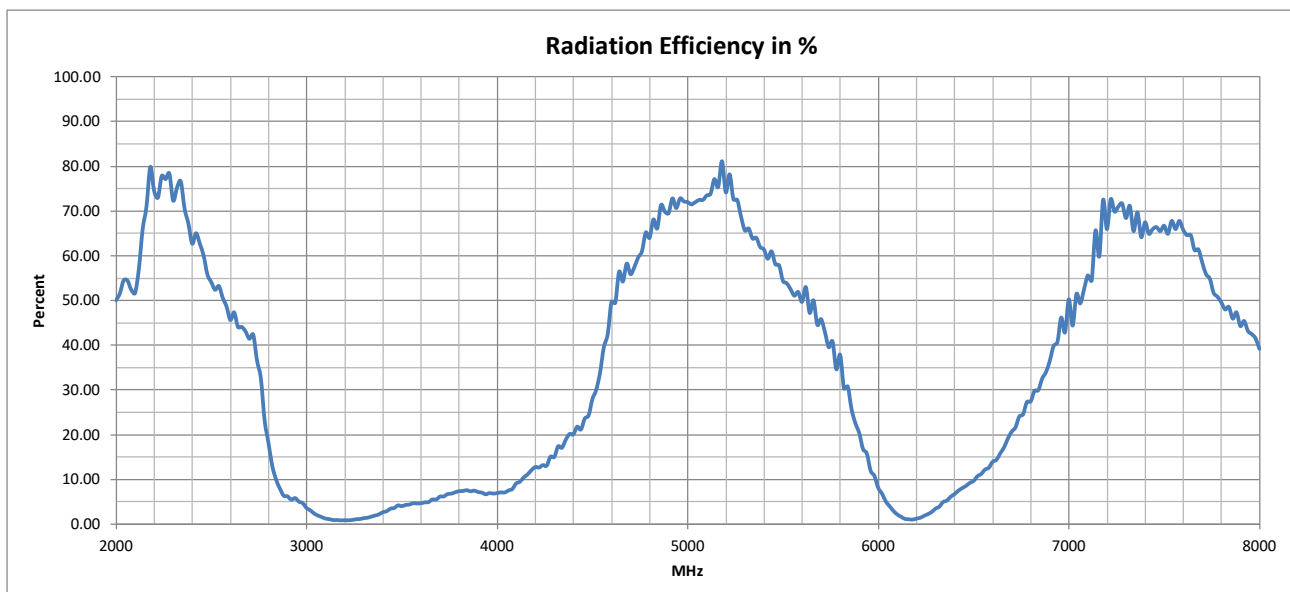
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### VSWR



### Radiation Efficiency





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### Cellular Standards Band Support

GSM (2G) Band	UMTS (3G) Band	E-UTRA (4G) Band	Cat M E-UTRA Band	Cat NB E-UTRA Band	NR (5G) Band	Cat NB NR (5G) Band	Uplink	Downlink	Average Upload Efficiency (%)	Average Download Efficiency (%)	Maximum Upload VSWR	Maximum Download VSWR	Use Indicator
	7	7	7	7	n7	n7	2500 - 2570 MHz	2620 - 2690 MHz	92.06	61.32	3.49	7.68	●
	22	22					3410 - 3490 MHz	3510 - 3590 MHz	48.07	80.94	22.86	20.13	●
		30			n30		2305 - 2315 MHz	2350 - 2360 MHz	68.84	74.47	1.22	1.14	●
		34			n34		2010 - 2025 MHz	2010 - 2025 MHz	17.72	17.72	4.16	4.16	●
		38			n38		2570 - 2620 MHz	2570 - 2620 MHz	66.31	66.31	4.35	4.35	●
		40	40		n40		2300 - 2400 MHz	2300 - 2400 MHz	75.57	75.57	1.27	1.27	●
		41	41	41	n41	n41	2496 - 2690 MHz	2496 - 2690 MHz	74.38	74.38	7.68	7.68	●
		42	42	42			3400 - 3600 MHz	3400 - 3600 MHz	64.18	64.18	23.27	23.27	●
		43	43	43			3600 - 3800 MHz	3600 - 3800 MHz	96.14	96.14	16.13	16.13	●
		46			n46		5150 - 5925 MHz	5150 - 5925 MHz	87.92	87.92	16.09	16.09	●
		47			n47		5855 - 5925 MHz	5855 - 5925 MHz	81.89	81.89	16.09	16.09	●
		48	48	48	n48		3550 - 3700 MHz	3550 - 3700 MHz	95.78	95.78	18.40	18.40	●
		49					3550 - 3700 MHz	3550 - 3700 MHz	95.78	95.78	18.40	18.40	●
		52					3300 - 3400 MHz	3300 - 3400 MHz	51.53	51.53	26.77	26.77	●
		53			n53		2483.5 - 2495 MHz	2483.5 - 2495 MHz	88.26	88.26	2.48	2.48	●
		69					N/A	2570 - 2620 MHz	N/A	66.31	N/A	4.35	●
					n77		3300 - 4200 MHz	3300 - 4200 MHz	78.42	78.42	26.77	26.77	●
					n78		3300 - 3800 MHz	3300 - 3800 MHz	74.43	74.43	26.77	26.77	●
					n79		4400 - 5000 MHz	4400 - 5000 MHz	91.36	91.36	3.37	3.37	●
					n90	n90	2496 - 2690 MHz	2496 - 2690 MHz	74.38	74.38	7.68	7.68	●
					n95		2010 - 2025 MHz	N/A	17.72	N/A	4.16	N/A	●
					n96		5925 - 7125 MHz	5925 - 7125 MHz	81.99	81.99	41.28	41.28	●
					n97		2300 - 2400 MHz	N/A	75.57	N/A	1.27	N/A	●
					n102		5925 - 6425 MHz	5925 - 6425 MHz	83.69	83.69	41.28	41.28	●
					n104		6425 - 7125 MHz	6425 - 7125 MHz	80.77	80.77	21.49	21.49	●

● Suitable band

● Adequate band in good signal conditions

● Likely to be unsuitable

**NOTE:** For each frequency band, Siretta provides a traffic light indication to show the suitability of the antenna for use at that frequency band. Determination of exactly what makes an antenna good or bad at any frequency is subjective.

The view presented is that of Siretta's engineering team having taken into account the efficiency and VSWR measurements. The end user is advised to use their own criteria and/or testing to confirm suitability.



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### ISM Standards Frequency Support

Application	Frequency Range	Efficiency (%)	Maximum VSWR	Peak Gain from highest direction (dBi)	Use Indicator
ISM 2.4 GHz	2400 - 2500 MHz	84.38	2.61	8.92	●
Wi-Fi 2.4G	2401 - 2483 MHz	83.21	2.26	8.83	●
Wi-Fi 2.4G (USA)	2401 - 2473 MHz	83.38	2.06	8.79	●
Wi-Fi 2.4G (Japan)	2401 - 2495 MHz	83.83	2.48	8.89	●
Wi-Fi 5G (all channels)	5150 - 5990 MHz	87.26	21.64	4.32	●
Wi-Fi 5G (Ch 32-48)	5150 - 5250 MHz	92.36	1.48	4.32	●
Wi-Fi 5G (Ch 32-64)	5150 - 5330 MHz	91.95	1.56	4.32	●
Wi-Fi 5G (Ch 32-161)	5150 - 5815 MHz	88.74	9.03	4.32	●
Wi-Fi 5G (Ch 32-173)	5150 - 5875 MHz	88.33	12.51	4.32	●
Wi-Fi 6E (Ch 1-93)	5925 - 6425 MHz	83.69	41.28	-1.69	●
Wi-Fi 6E (all channels)	5925 - 7125 MHz	81.99	41.28	8.63	●
ISM 5.8 GHz	5725 - 5875 MHz	84.61	12.51	1.33	●
UWB band 1	3168 - 3696 MHz	66.99	29.82	0.94	●
UWB band 2	3696 - 4224 MHz	85.76	15.34	2.82	●
UWB band 3	4224 - 4752 MHz	88.89	4.84	4.50	●
UWB band 4	4752 - 5280 MHz	90.41	1.86	4.38	●
UWB band 5	5280 - 5808 MHz	87.90	8.68	3.51	●
UWB band 6	5808 - 6336 MHz	82.31	41.28	0.90	●
UWB band 7	6336 - 6864 MHz	80.58	32.01	5.36	●
UWB band 8	6864 - 7392 MHz	86.58	3.61	9.90	●
UWB band 9	7392 - 7920 MHz	61.23	2.55	9.65	●

● Suitable band

● Adequate band in good signal conditions

● Likely to be unsuitable

**NOTE:** For each frequency band, Siretta provides a traffic light indication to show the suitability of the antenna for use at that frequency band. Determination of exactly what makes an antenna good or bad at any frequency is subjective.

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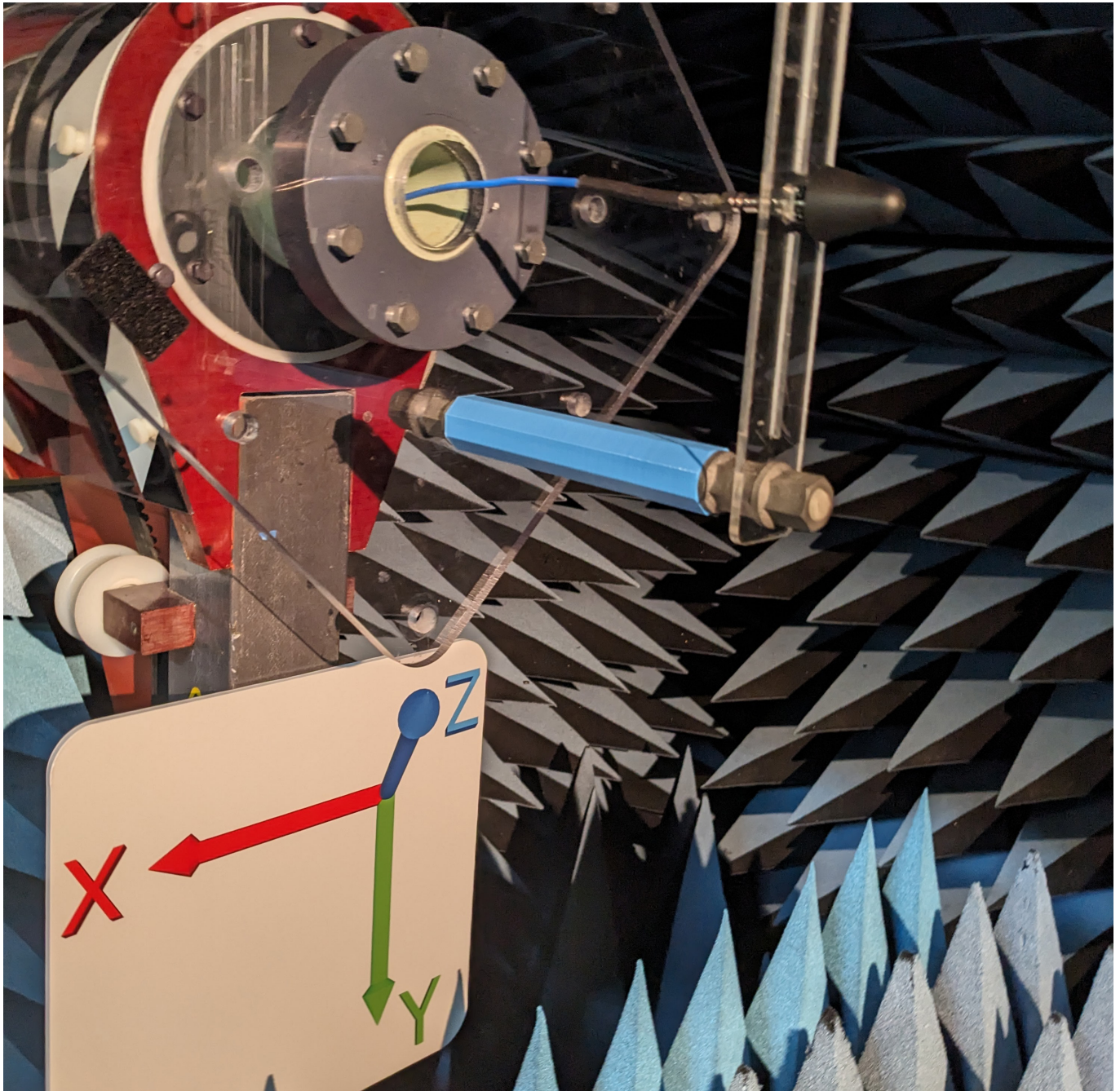




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### Test Setup (in Free Space)



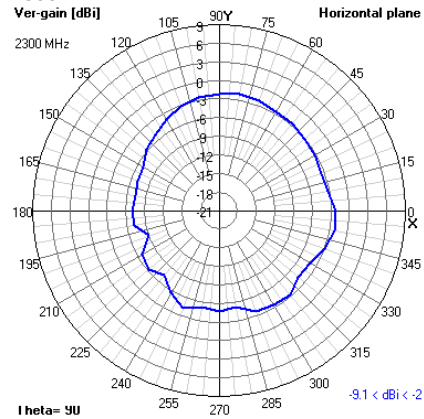


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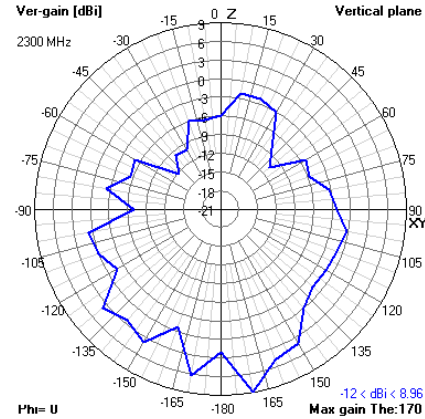
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### 2D Radiation Plots

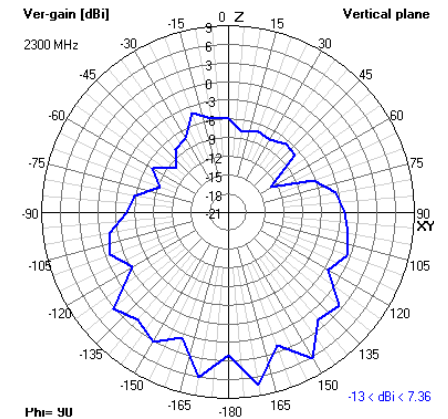
#### 2300 MHz XY



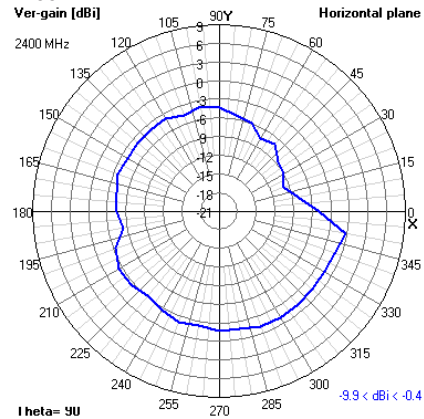
#### XZ



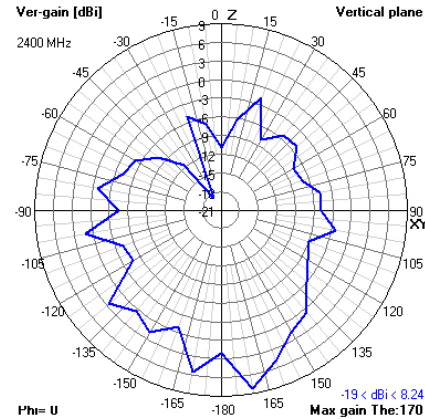
#### YZ



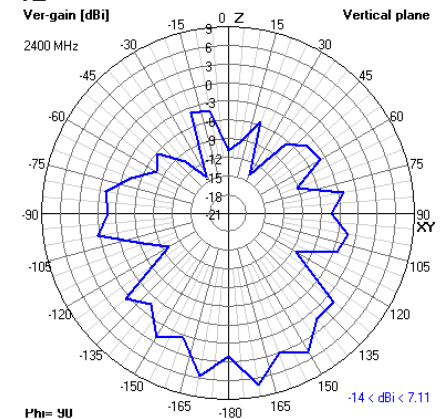
#### 2400 MHz XY



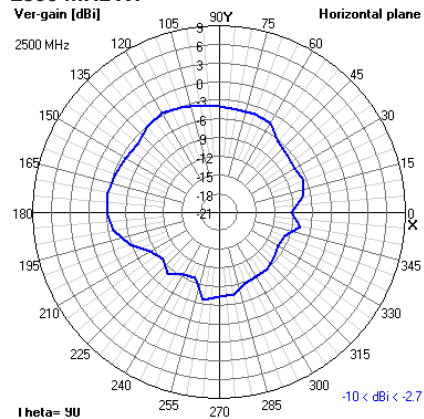
#### XZ



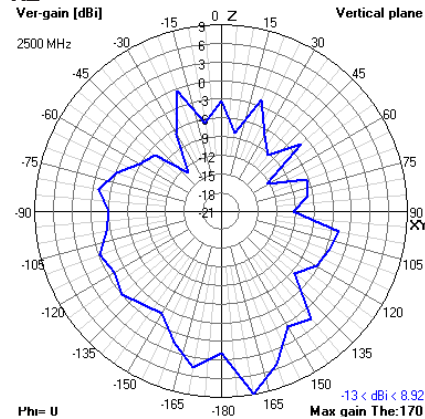
#### YZ



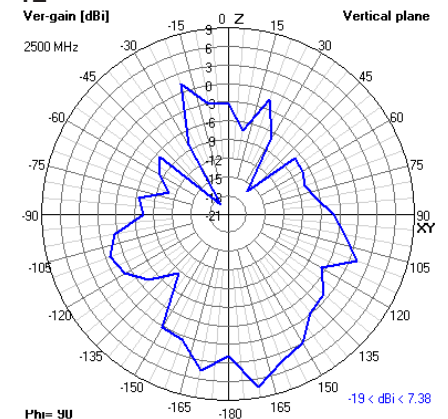
#### 2500 MHz XY



#### XZ



#### YZ







## IP67 Rated O-ring Sealed 2.4 GHz Bluetooth/Wi-Fi Stubby Antenna

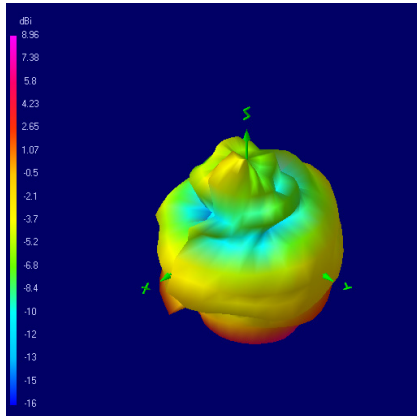


## Delta 45

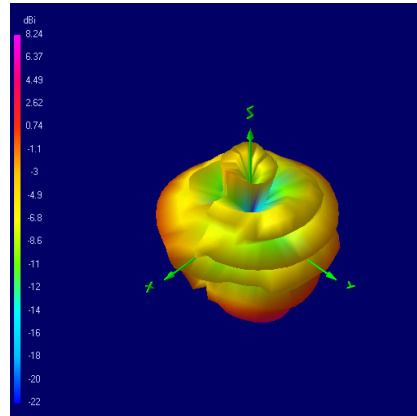
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### 3D Radiation Plots

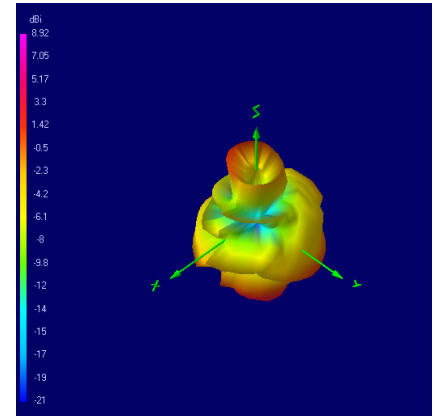
2300 MHz



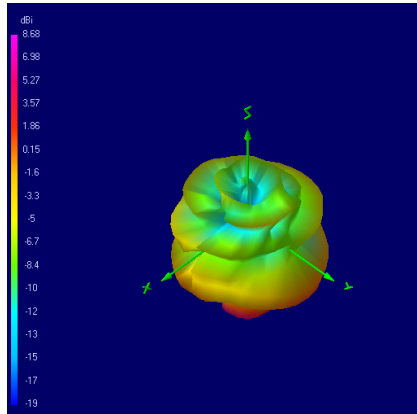
2400 MHz



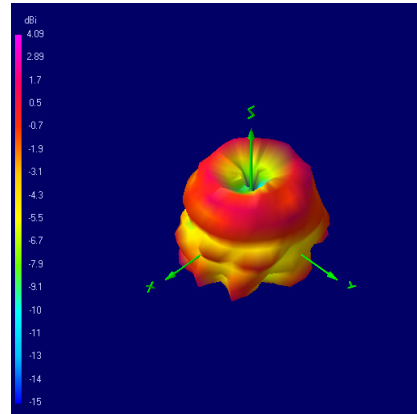
2500 MHz



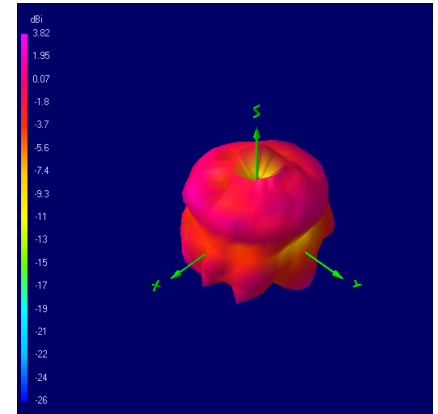
2600 MHz



5000 MHz



5200 MHz



**NOTE:** All 3D radiation plots are shown with Theta = 45 and Phi = 45.

### Ordering Details:

Part Number	Description
DELTA45/X/SMAM/RP/S/35	IP67 Rated O-ring Sealed 2.4 GHz Bluetooth/Wi-Fi Stubby Antenna RP-SMAM Connector
DELTA45/X/SMAM/S/S/35	IP67 Rated O-ring Sealed 2.4 GHz Bluetooth/Wi-Fi Stubby Antenna SMAM Connector

