



## Delta 22B

915 MHz ISM Direct Connect 95mm Hinged Antenna



### Key Features

- Dedicated ISM antenna for 915 MHz band
- Supports some bands of 5G NR, 4G LTE, 3G UMTS, 2G GSM
- Supports some bands of LTE Cat M, LTE Cat NB and NR Cat NB
- Supports Wi-Fi 5G bands
- Small antenna size with 3 dBi gain

### General Description

The Delta 22B is a dedicated 915 MHz ISM band antenna which combines good performance with a small size, enabling its use with devices from the Industrial, Scientific or Medical equipment. In addition, the antennas can be used for mobile communications on board vessels.

Terminated with an SMA male connector, it is ideally suited to applications requiring a simple, cable free set up. The knuckle design allows the antenna to be positioned to take best advantage of the incoming signal. Allowing straight, 45° and 90° positions along with 360° rotation. The omni directional, radiating element is capped with a black high-grade rubber mould.

### Additional Considerations

- Ideal for Industrial, Scientific or Medical devices
- Does not rely on mounting on a metallic surface

D Direct	ISM 915	5G New Radio	4G LTE	3G UMTS
2G GSM	LTE Cat M	LTE NB IoT	NR NB IoT	ISM 5.8G
WLAN 5800	WiFi 5G	WiFi 4 802.11n	WiFi 5 802.11ac	WiFi 6 802.11ax
LoRa Wireless	SF Sigfox	ZB Zigbee	Z Wave	IEEE 802.15.4
HNT Helium	W Weightless			



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### Electrical Specifications

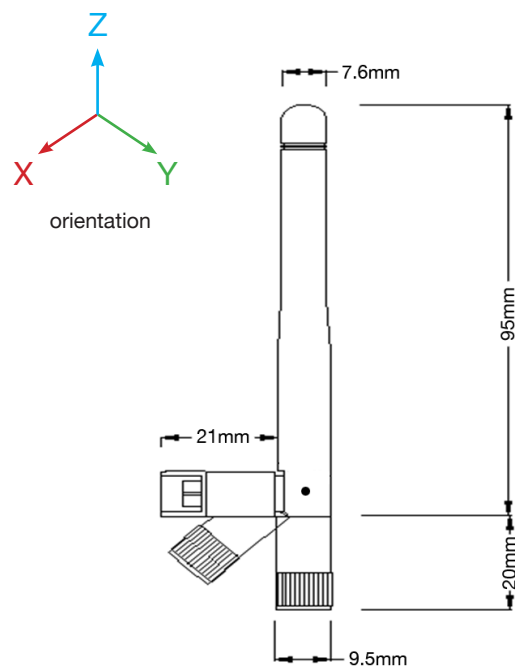
Impedance:	50 Ohm
Polarization:	Vertical
Max Input Power:	50 W
Ground plane independent:	Yes

### Environmental Specifications

Operating Temperature range:	-30 to +75 °C
Storage Temperature range:	-30 to +75 °C

### Mechanical Specifications

Dimensions:	L115 x 9.5 mm base diameter
Weight:	12 g
Connector:	SMA Male
Mounting method:	Direct Connect
Housing materials:	TPE

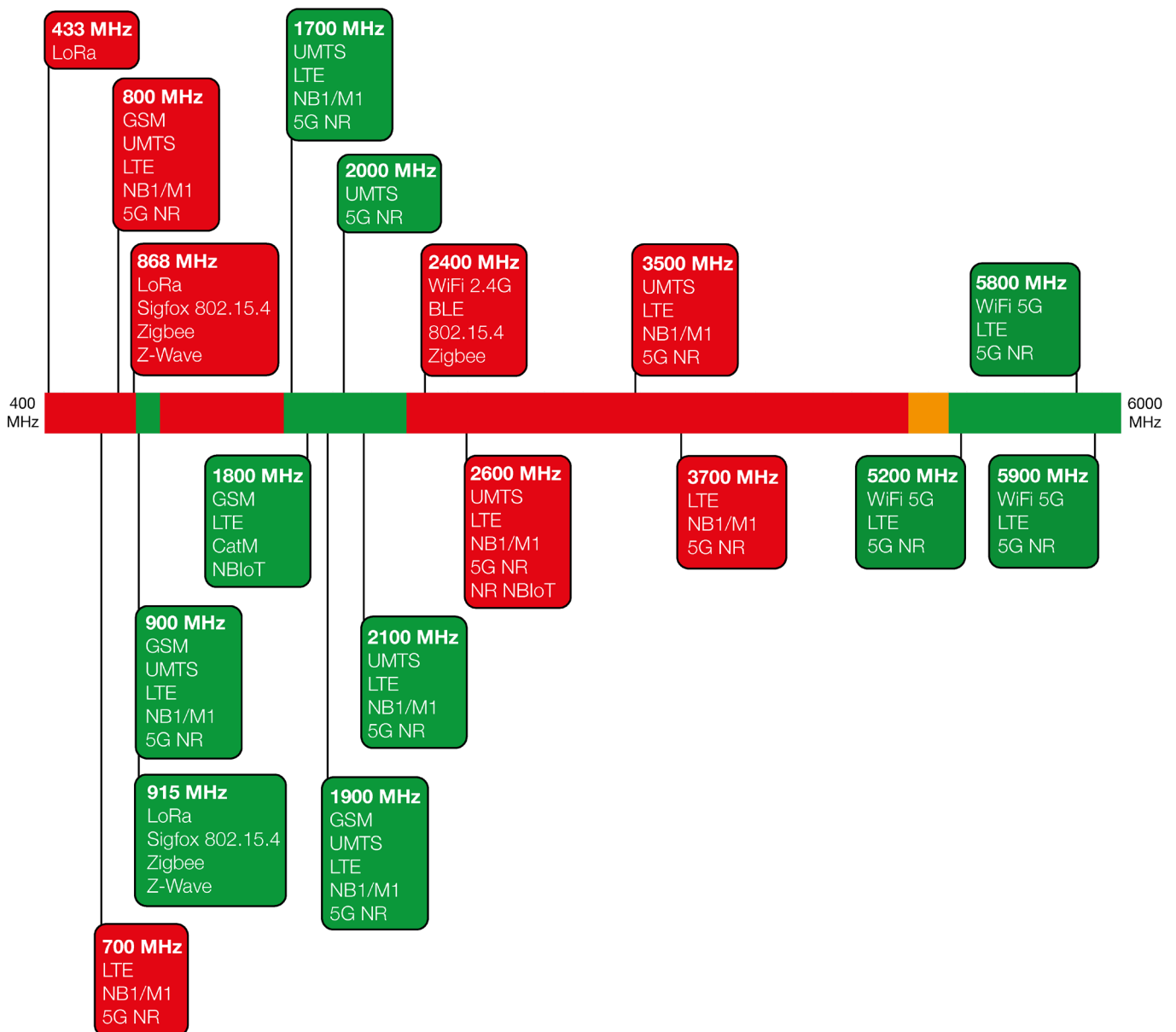




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### Spectrum Coverage



● Suitable band

● Adequate band in good signal conditions

● Likely to be unsuitable



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### Usable Cellular Frequency Support (410 MHz – 1900 MHz)

	410	450	600	700	800	850	900	1500	1600	1700	1800	1900
GSM Bands:							●				●	●
UMTS Bands:							●			●	●	●
LTE Bands:							●			●	●	●
LTE Cat M Bands:							●			●	●	●
LTE Cat NB Bands:							●			●	●	●
5G NR Bands:							●			●	●	●
NR Cat NB Bands:							●			●	●	●

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

	2000	2100	2300	2400	2500	2600	3300	3500	3700	4700	5200	5900
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 (433 MHz - 5800 MHz)

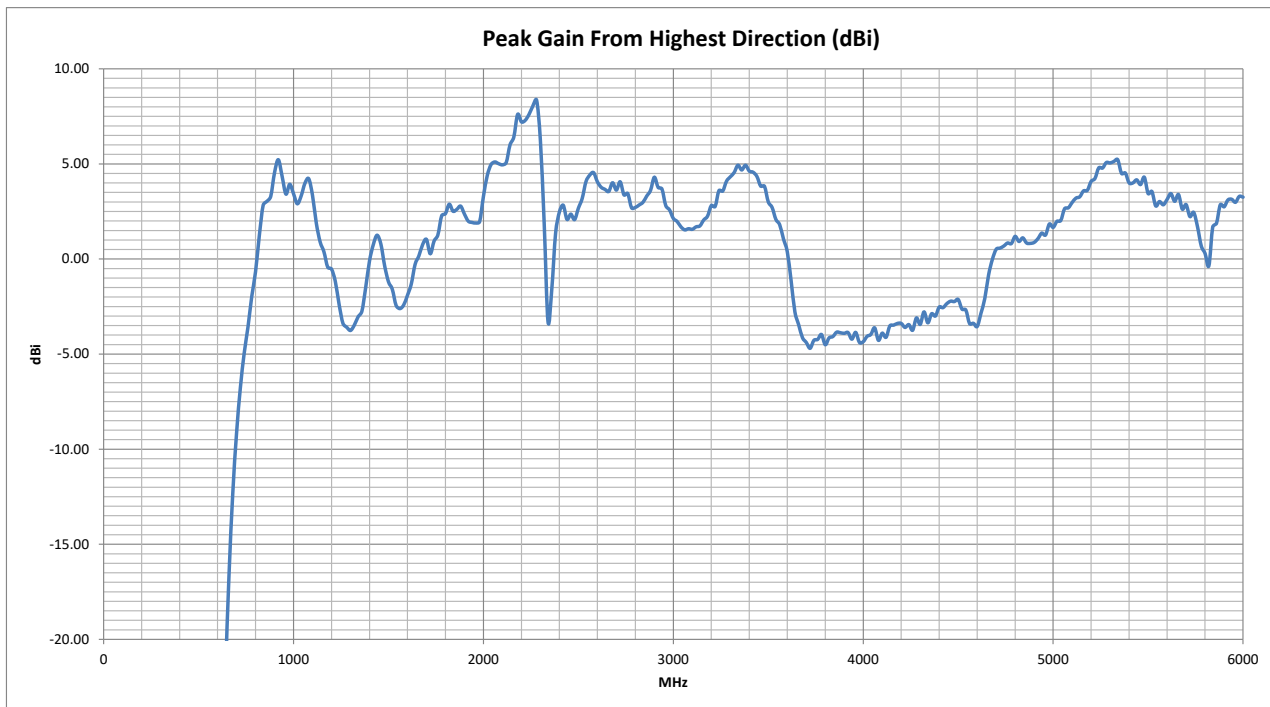
	433	868	915	2450	5800
Bluetooth					
IEEE 802.15.4			●		
LoRa			●		
Sigfox			●		
WiFi 2.4G					
WiFi 5G					●
Zigbee			●		
Z-Wave			●		



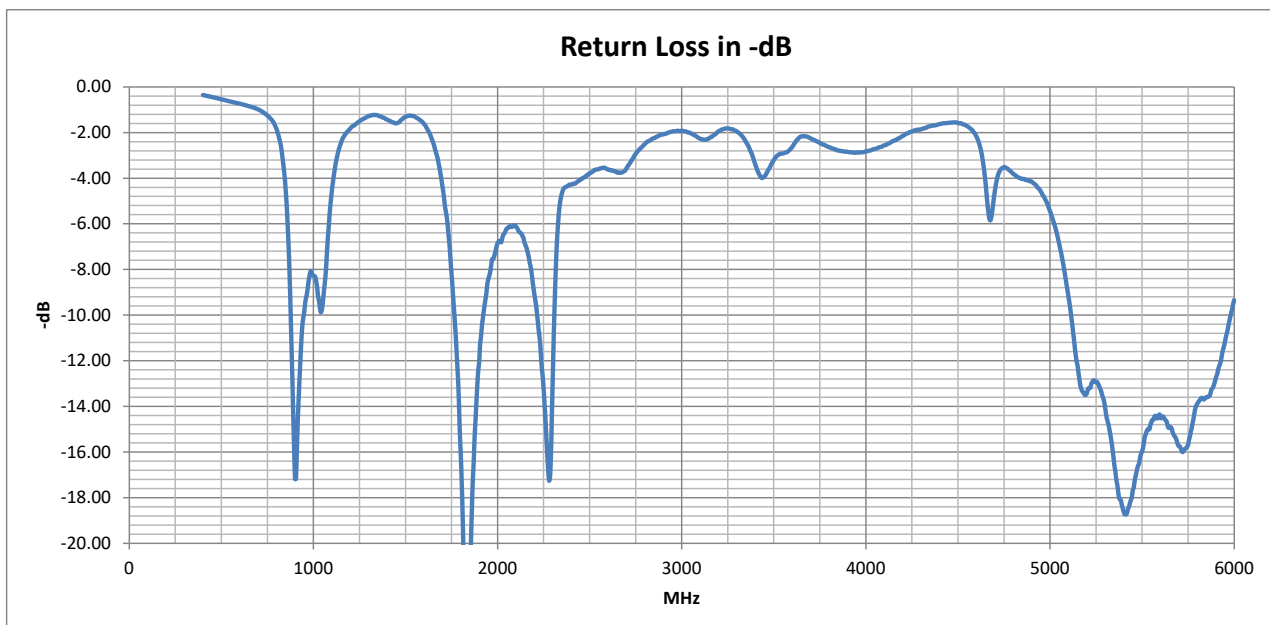
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### Peak Gain vs. Frequency



### Return Loss

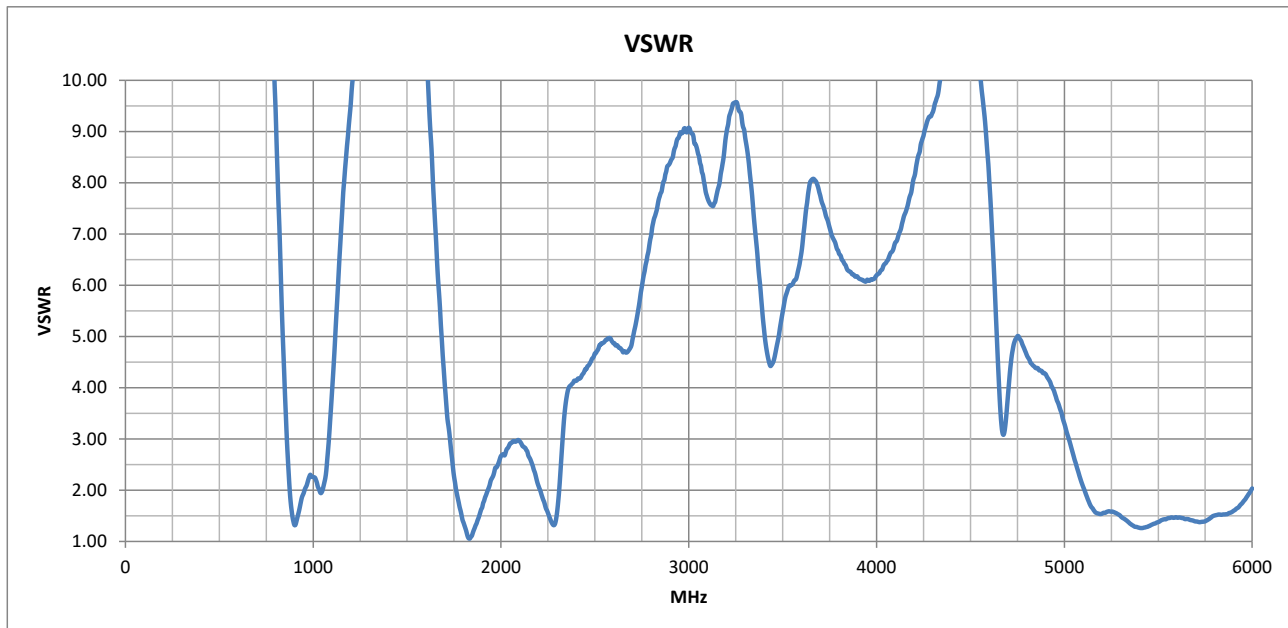




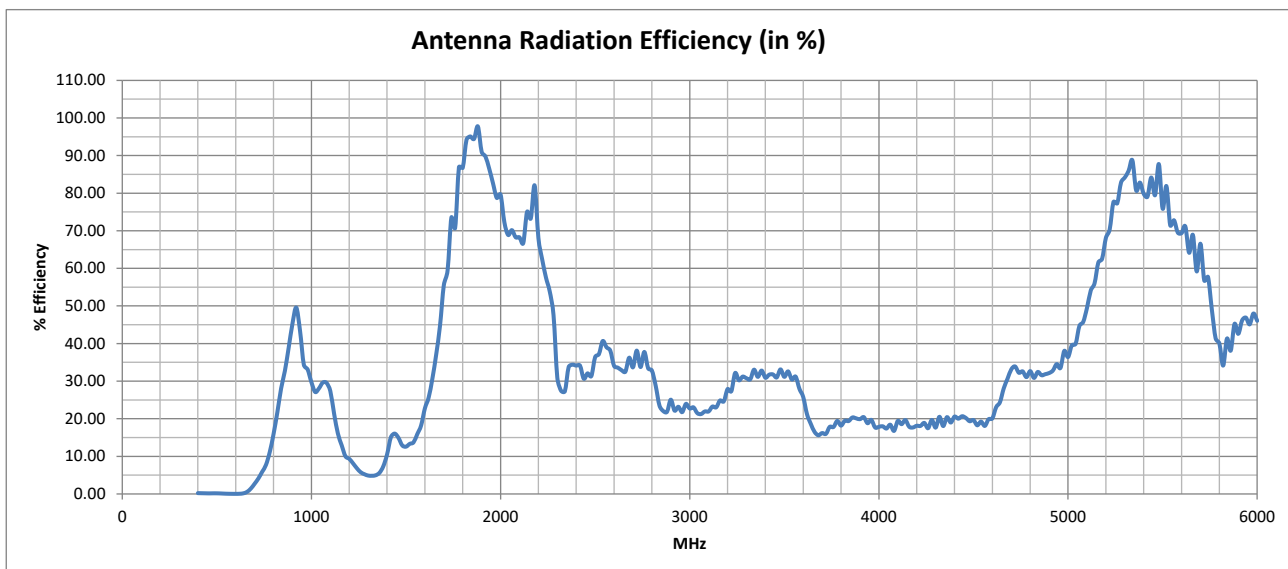
## Delta 22B

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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
	1	1	1	1	n1	n1	1920 - 1980 MHz	2110 - 2170 MHz	84.44	72.08	2.47	2.90	●
PCS-1900	2	2	2	2	n2	n2	1850 - 1910 MHz	1930 - 1990 MHz	94.35	82.78	1.79	2.56	●
DCS-1800	3	3	3	3	n3	n3	1710 - 1785 MHz	1805 - 1880 MHz	71.56	94.39	3.62	1.46	●
	4	4	4	4			1710 - 1755 MHz	2110 - 2155 MHz	66.66	71.17	3.62	2.90	●
GSM-850	5	5	5	5	n5	n5	824 - 849 MHz	869 - 894 MHz	26.80	39.41	6.66	2.37	●
	6						830 - 840 MHz	875 - 885 MHz	26.46	38.92	5.90	2.00	●
	7	7	7	7	n7	n7	2500 - 2570 MHz	2620 - 2690 MHz	38.53	33.74	4.97	4.83	●
E-GSM-900	8	8	8	8	n8	n8	880 - 915 MHz	925 - 960 MHz	44.15	41.77	1.77	2.05	●
	9	9					1749.9 - 1784.9 MHz	1844.9 - 1879.9 MHz	77.84	95.45	2.27	1.45	●
	10	10					1710 - 1770 MHz	2110 - 2170 MHz	68.40	72.08	3.62	2.90	●
	11	11	11	11			1427.9 - 1447.9 MHz	1475.9 - 1495.9 MHz	15.76	12.84	11.26	13.06	●
	12	12	12	12	n12	n12	699 - 716 MHz	729 - 746 MHz	3.24	5.67	17.63	15.48	●
	13	13	13	13	n13	n13	777 - 787 MHz	746 - 756 MHz	11.65	6.90	11.73	14.14	●
	14	14	14	14	n14		788 - 798 MHz	758 - 768 MHz	14.25	8.26	10.66	13.26	●
		17		17			704 - 716 MHz	734 - 746 MHz	3.41	5.89	17.34	15.12	●
		18	18	18	n18	n18	815 - 830 MHz	860 - 875 MHz	22.50	35.05	7.63	2.98	●
	19	19	19	19			830 - 845 MHz	875 - 890 MHz	27.19	39.71	5.90	2.00	●
	20	20	20	20	n20	n20	832 - 862 MHz	791 - 821 MHz	29.61	17.72	5.67	10.32	●
	21	21	21	21			1447.9 - 1462.9 MHz	1495.9 - 1510.9 MHz	15.17	12.72	11.21	13.61	●
	22	22					3410 - 3490 MHz	3510 - 3590 MHz	31.80	30.41	5.26	6.41	●
		24	24	24	n24		1626.5 - 1660.5 MHz	1525 - 1559 MHz	32.05	14.23	8.87	13.82	●
	25	25	25	25	n25	n25	1850 - 1915 MHz	1930 - 1995 MHz	94.03	82.51	1.86	2.62	●
	26	26	26	26	n26		814 - 849 MHz	859 - 894 MHz	25.26	37.86	7.75	3.07	●
		27	27				807 - 824 MHz	852 - 869 MHz	20.40	33.03	8.56	3.68	●
		28	28	28	n28	n28	703 - 748 MHz	758 - 803 MHz	4.67	11.64	17.39	13.26	●

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● Adequate band in good signal conditions

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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
		28A					703 - 733 MHz	758 - 788 MHz	4.03	10.03	17.39	13.26	●
		29			n29		N/A	717 - 728 MHz	N/A	4.35	N/A	16.38	●
		30			n30		2305 - 2315 MHz	2350 - 2360 MHz	29.16	32.12	2.27	3.99	●
		31	31	31			452.5 - 457.5 MHz	462.5 - 467.5 MHz	0.14	0.14	38.50	37.15	●
	32	32					N/A	1452 - 1496 MHz	N/A	13.73	N/A	13.06	●
		33					1900 - 1920 MHz	1900 - 1920 MHz	90.37	90.37	1.90	1.90	●
		34			n34		2010 - 2025 MHz	2010 - 2025 MHz	73.36	73.36	2.74	2.74	●
		35					1850 - 1910 MHz	1850 - 1910 MHz	94.35	94.35	1.79	1.79	●
		36					1930 - 1990 MHz	1930 - 1990 MHz	82.78	82.78	2.56	2.56	●
		37					1910 - 1930 MHz	1910 - 1930 MHz	89.49	89.49	2.00	2.00	●
		38			n38		2570 - 2620 MHz	2570 - 2620 MHz	35.62	35.62	4.97	4.97	●
		39	39		n39		1880 - 1920 MHz	1880 - 1920 MHz	92.37	92.37	1.90	1.90	●
		40	40		n40		2300 - 2400 MHz	2300 - 2400 MHz	31.06	31.06	4.14	4.14	●
		41	41	41	n41	n41	2496 - 2690 MHz	2496 - 2690 MHz	36.00	36.00	4.97	4.97	●
		42	42	42			3400 - 3600 MHz	3400 - 3600 MHz	30.91	30.91	6.64	6.64	●
		43	43	43			3600 - 3800 MHz	3600 - 3800 MHz	18.10	18.10	8.08	8.08	●
		44					703 - 803 MHz	703 - 803 MHz	8.05	8.05	17.39	17.39	●
		45					1447 - 1467 MHz	1447 - 1467 MHz	15.04	15.04	11.40	11.40	●
		46			n46		5150 - 5925 MHz	5150 - 5925 MHz	66.66	66.66	1.66	1.66	●
		47			n47		5855 - 5925 MHz	5855 - 5925 MHz	43.16	43.16	1.66	1.66	●
		48			n48		3550 - 3700 MHz	3550 - 3700 MHz	21.97	21.97	8.08	8.08	●
		49					3550 - 3700 MHz	3550 - 3700 MHz	21.97	21.97	8.08	8.08	●
		50			n50		1432 - 1517 MHz	1432 - 1517 MHz	13.98	13.98	13.81	13.81	●
		51			n51		1427 - 1432 MHz	1427 - 1432 MHz	15.51	15.51	11.29	11.29	●
		52					3300 - 3400 MHz	3300 - 3400 MHz	31.65	31.65	8.89	8.89	●

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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
		53			n53		2483.5 - 2495 MHz	2483.5 - 2495 MHz	33.67	33.67	4.62	4.62	●
		65		65	n65	n65	1920 - 2010 MHz	2110 - 2200 MHz	82.53	73.60	2.70	2.90	●
		66	66	66	n66	n66	1710 - 1780 MHz	2110 - 2200 MHz	70.47	73.60	3.62	2.90	●
		67			n67		N/A	738 - 758 MHz	N/A	6.62	N/A	14.79	●
		68					698 - 728 MHz	753 - 783 MHz	3.64	9.17	17.71	13.61	●
		69					N/A	2570 - 2620 MHz	N/A	35.62	N/A	4.97	●
		70		70	n70	n70	1695 - 1710 MHz	1995 - 2020 MHz	55.67	76.65	4.37	2.70	●
		71	71	71	n71		663 - 698 MHz	617 - 652 MHz	1.53	0.14	19.79	22.51	●
		72	72	72			451 - 456 MHz	461 - 466 MHz	0.14	0.14	38.74	37.40	●
		73	73	73			450 - 455 MHz	460 - 465 MHz	0.14	0.14	38.90	37.56	●
		74	74	74	n74		1427 - 1470 MHz	1475 - 1518 MHz	15.30	12.85	11.59	13.81	●
		75			n75		N/A	1432 - 1517 MHz	N/A	13.98	N/A	13.81	●
		76			n76		N/A	1427 - 1432 MHz	N/A	15.51	N/A	11.29	●
					n77		3300 - 4200 MHz	3300 - 4200 MHz	22.75	22.75	8.89	8.89	●
					n78		3300 - 3800 MHz	3300 - 3800 MHz	25.93	25.93	8.89	8.89	●
					n79		4400 - 5000 MHz	4400 - 5000 MHz	27.43	27.43	11.20	11.20	●
					n80		1710 - 1785 MHz	N/A	71.56	N/A	3.62	N/A	●
					n81		880 - 915 MHz	N/A	44.15	N/A	1.77	N/A	●
					n82		832 - 862 MHz	N/A	29.61	N/A	5.67	N/A	●
					n83		703 - 748 MHz	N/A	4.67	N/A	17.39	N/A	●
					n84		1920 - 1980 MHz	N/A	84.44	N/A	2.47	N/A	●
		85	85	85	n85		698 - 716 MHz	728 - 746 MHz	3.20	5.63	17.71	15.56	●
					n86		1710 - 1780 MHz	N/A	70.47	N/A	3.62	N/A	●
		87	87	87			410 - 415 MHz	420 - 425 MHz	0.19	0.18	46.36	44.27	●
		88	88	88			412 - 417 MHz	422 - 427 MHz	0.18	0.17	45.94	43.89	●

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● Adequate band in good signal conditions

● Likely to be unsuitable



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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
					n89		824 - 849 MHz	N/A	26.80	N/A	6.66	N/A	●
					n90	n90	2496 - 2690 MHz	2496 - 2690 MHz	36.00	36.00	4.97	4.97	●
					n91		832 - 862 MHz	1427 - 1432 MHz	29.61	15.51	5.67	11.29	●
					n92		832 - 862 MHz	1432 - 1517 MHz	29.61	13.98	5.67	13.81	●
					n93		880 - 915 MHz	1427 - 1432 MHz	44.15	15.51	1.77	11.29	●
					n94		880 - 915 MHz	1432 - 1517 MHz	44.15	13.98	1.77	13.81	●
					n95		2010 - 2025 MHz	N/A	73.36	N/A	2.74	N/A	●
					n97		2300 - 2400 MHz	N/A	31.06	N/A	4.14	N/A	●
					n98		1880 - 1920 MHz	N/A	92.37	N/A	1.90	N/A	●
					n99		1626.5 - 1660.5 MHz	N/A	32.05	N/A	8.87	N/A	●
					n101		1900 - 1910 MHz	1900 - 1910 MHz	90.68	90.68	1.79	1.79	●
				103			787 - 788 MHz	757 - 758 MHz	12.94	7.50	10.78	13.33	●

● 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 433 MHz	433.05 - 434.79 MHz	0.16	41.87	-23.1955	●
ISM 868 MHz	863 - 870 MHz	34.74	2.77	3.16	●
ISM 915 MHz	902 - 928 MHz	47.83	1.65	5.22	●
ISM 2.4 GHz	2400 - 2500 MHz	32.68	4.67	2.83	●
Wi-Fi 2.4G	2401 - 2483 MHz	32.34	4.55	2.83	●
Wi-Fi 2.4G (USA)	2401 - 2473 MHz	32.45	4.47	2.83	●
Wi-Fi 2.4G (Japan)	2401 - 2495 MHz	32.50	4.62	2.83	●
Wi-Fi 5G (all channels)	5150 - 5990 MHz	65.10	1.97	5.22	●
Wi-Fi 5G (Ch 32-48)	5150 - 5250 MHz	67.86	1.65	4.79	●
Wi-Fi 5G (Ch 32-64)	5150 - 5330 MHz	74.42	1.65	5.175	●
Wi-Fi 5G (Ch 32-161)	5150 - 5815 MHz	70.84	1.65	5.22	●
Wi-Fi 5G (Ch 32-173)	5150 - 5875 MHz	68.20	1.65	5.22	●
ISM 5.8 GHz	5725 - 5875 MHz	43.65	1.55	2.605	●

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● Adequate band in good signal conditions

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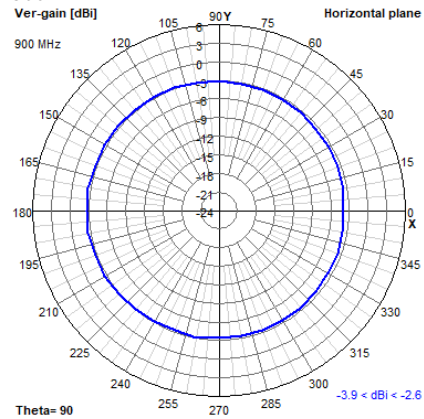
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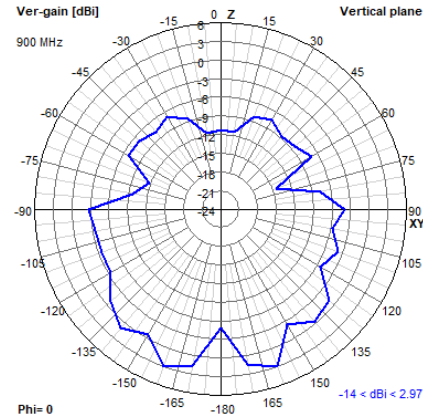
915 MHz ISM Direct Connect 95mm Hinged Antenna

### 2D Radiation Plots

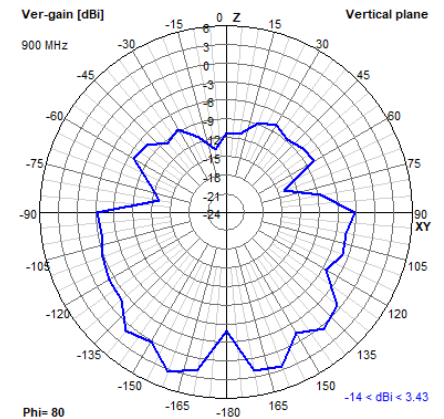
#### 900 MHz XY



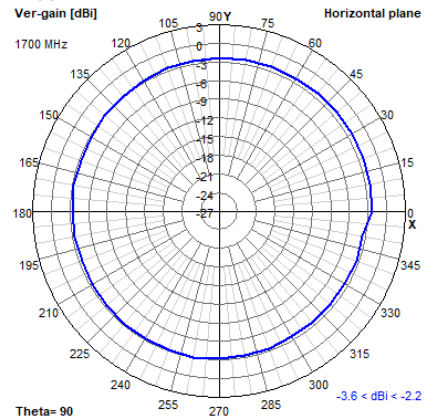
#### XZ



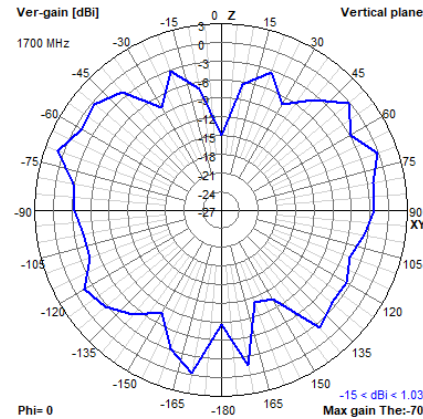
#### YZ



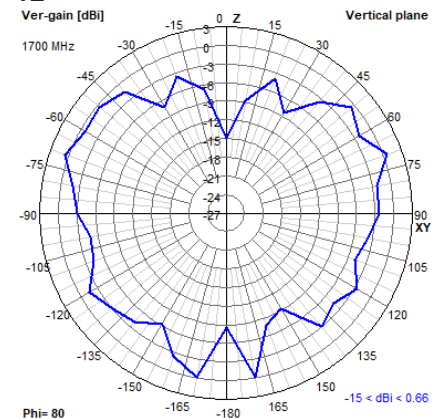
#### 1700 MHz XY



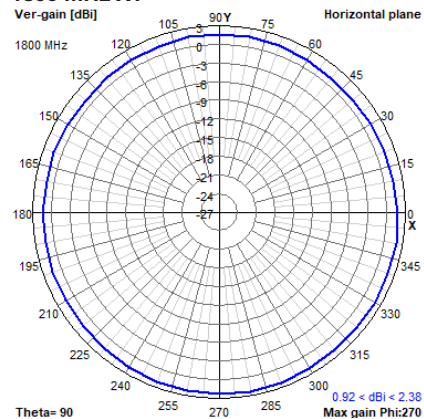
#### XZ



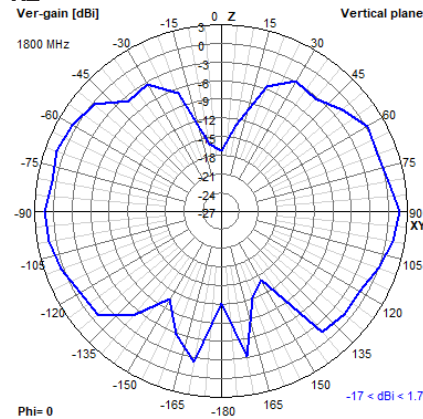
#### YZ



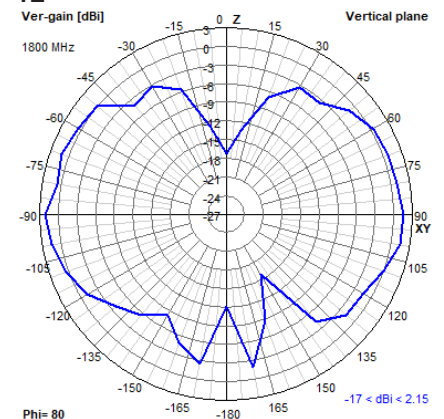
#### 1800 MHz XY



#### XZ



#### YZ



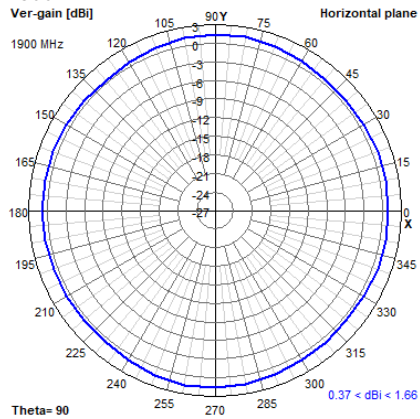


## Delta 22B

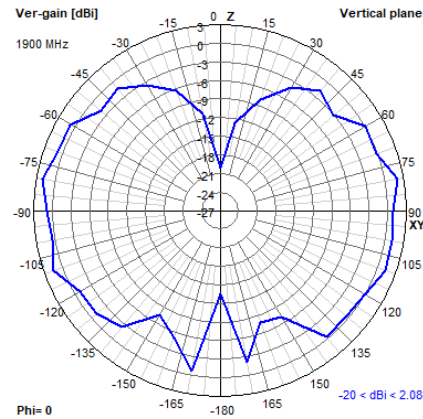
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### 2D Radiation Plots

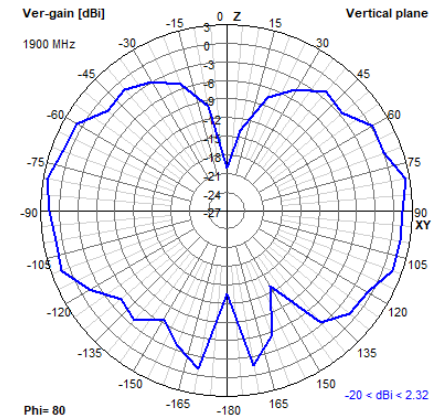
#### 1900 MHz XY



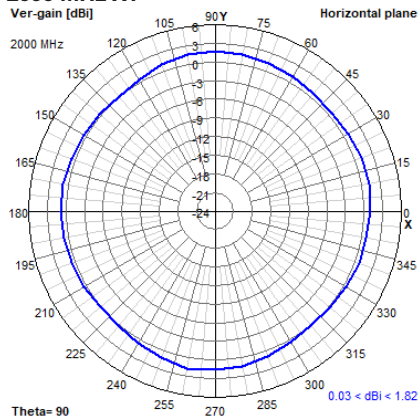
#### XZ



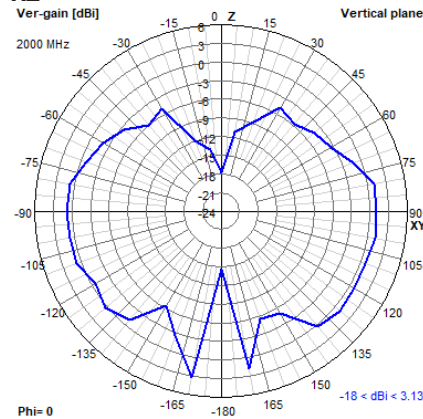
#### YZ



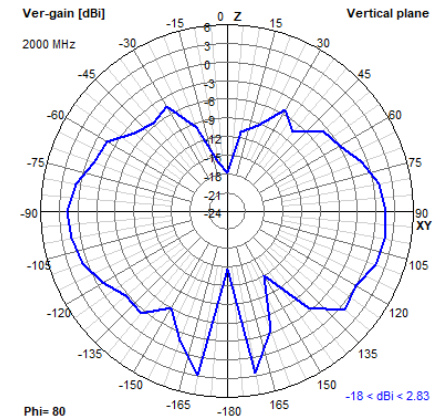
#### 2000 MHz XY



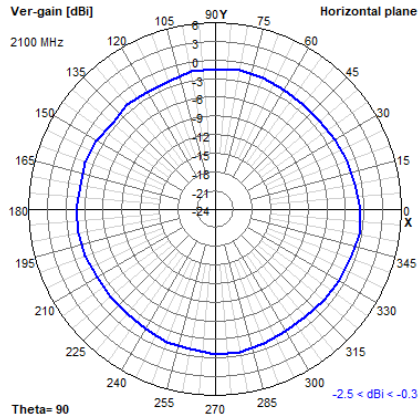
#### XZ



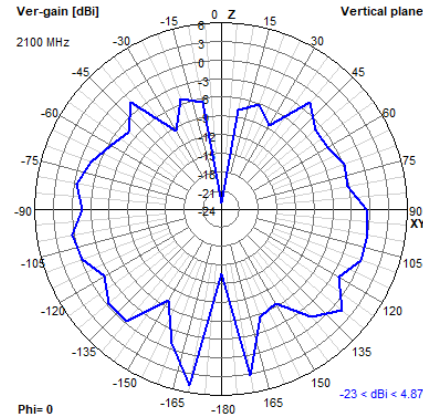
#### YZ



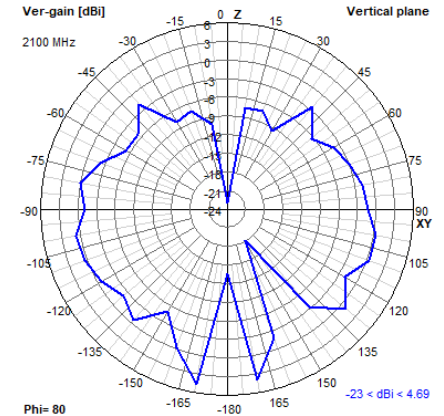
#### 2100 MHz XY



#### XZ



#### YZ



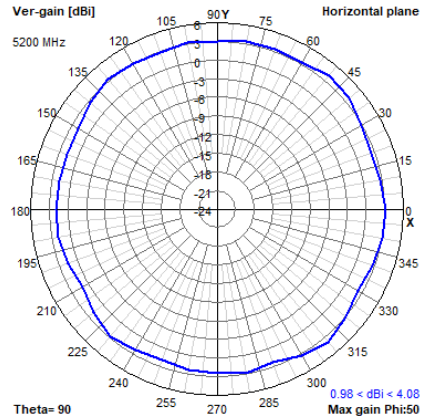


## Delta 22B

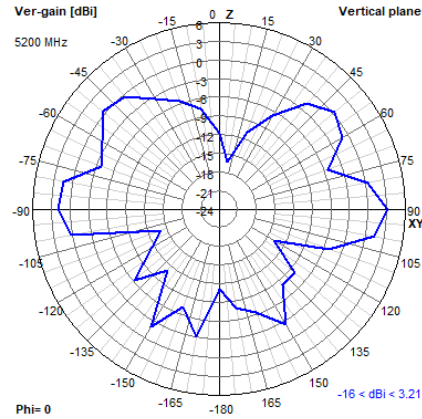
915 MHz ISM Direct Connect 95mm Hinged Antenna

### 2D Radiation Plots

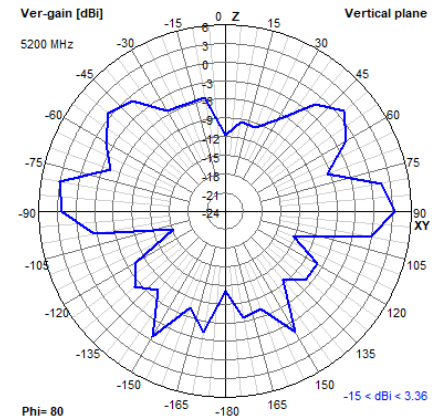
#### 5200 MHz XY



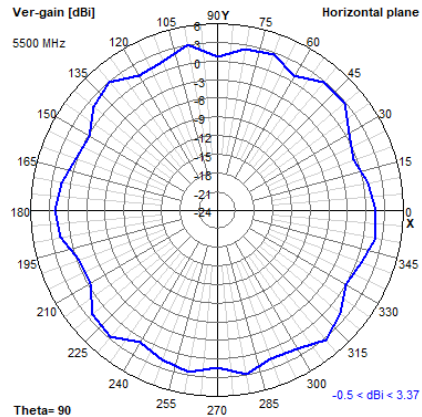
#### XZ



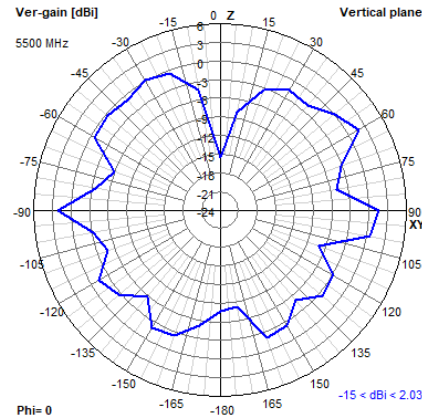
#### YZ



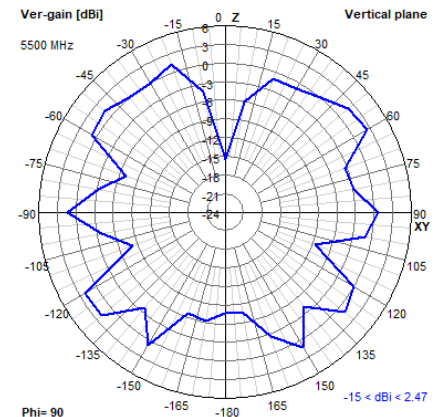
#### 5500 MHz XY



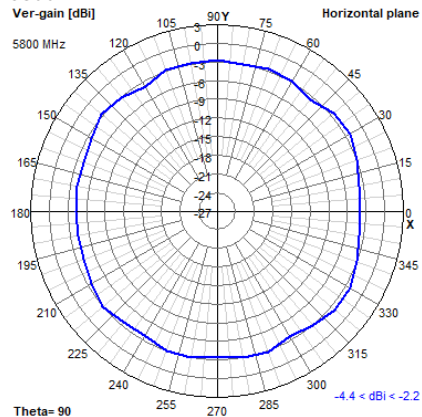
#### XZ



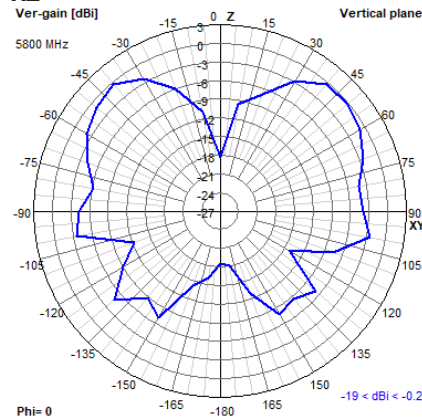
#### YZ



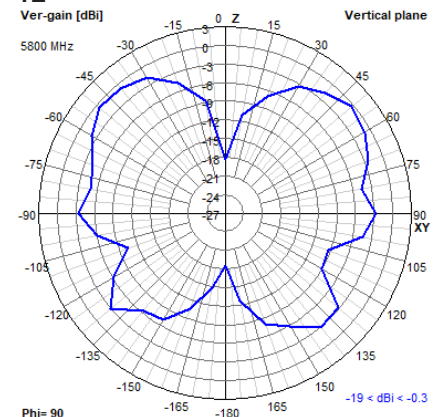
#### 5800 MHz XY



#### XZ



#### YZ



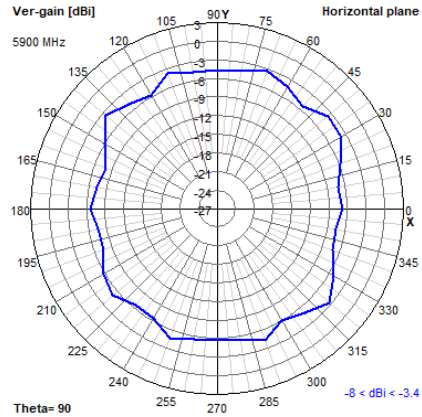


## Delta 22B

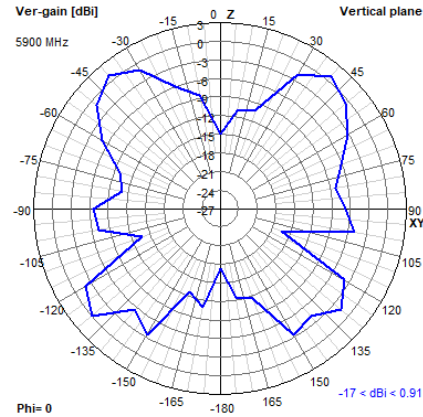
915 MHz ISM Direct Connect 95mm Hinged Antenna

### 2D Radiation Plots

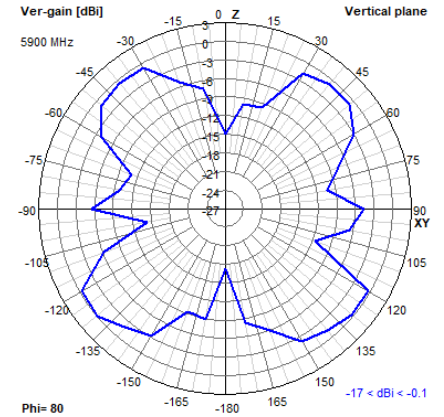
#### 5900 MHz XY



#### XZ



#### YZ





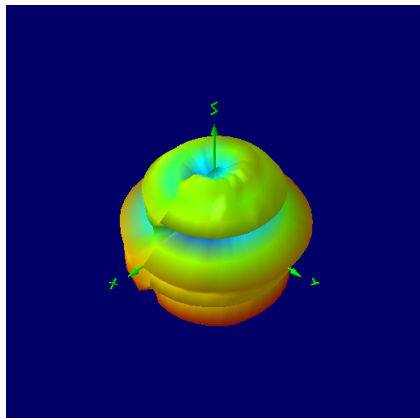


## Delta 22B

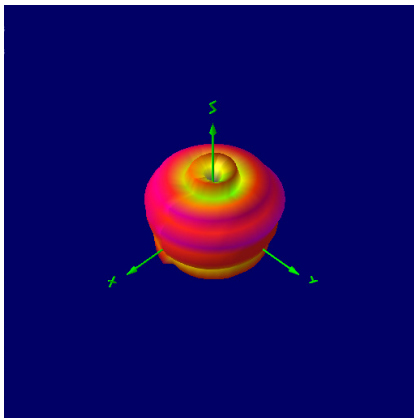
915 MHz ISM Direct Connect 95mm Hinged Antenna

### 3D Radiation Plots

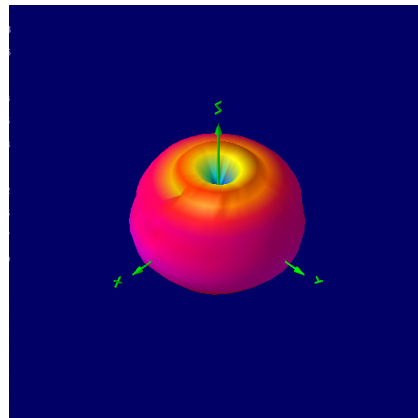
900 MHz



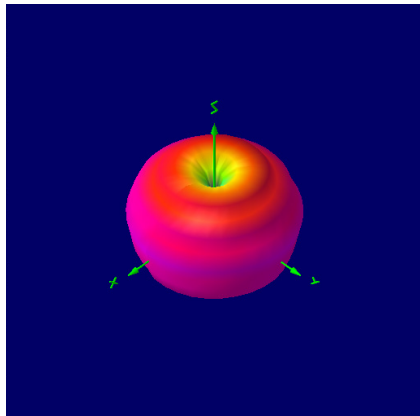
1700 MHz



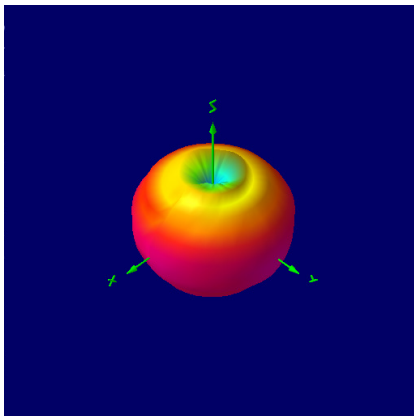
1800 MHz



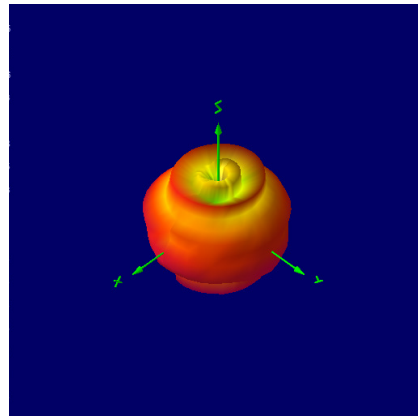
1900 MHz



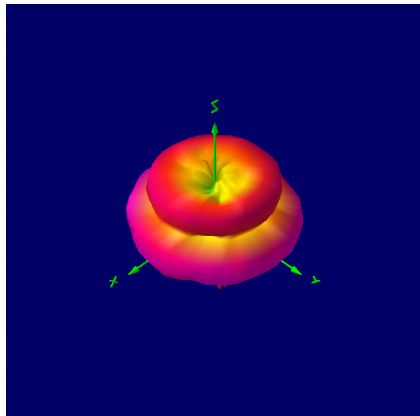
2000 MHz



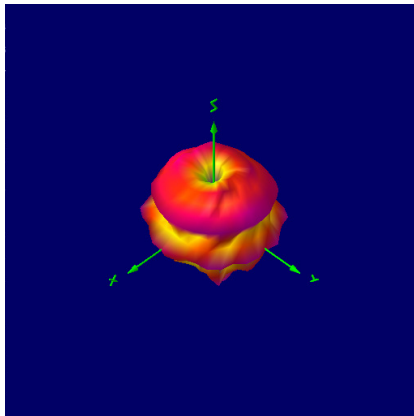
2100 MHz



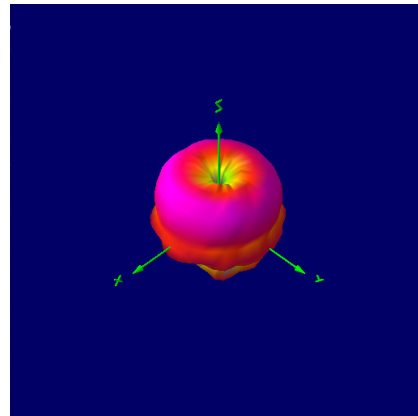
5200 MHz



5500 MHz



5800 MHz





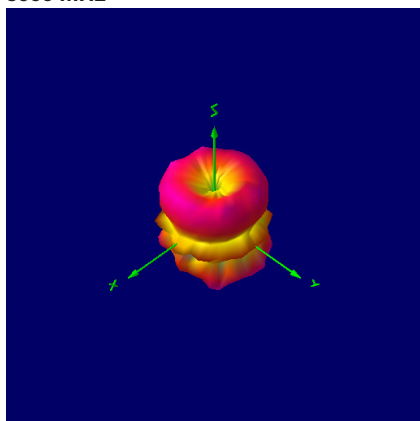


## Delta 22B

915 MHz ISM Direct Connect 95mm Hinged Antenna

### 3D Radiation Plots

5900 MHz



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

### Ordering Details:

Part Number	Description
DELTA22B/X/SMAM/S/S/20	915 MHz ISM Direct Connect 95mm Hinged Antenna SMA Male