



## Delta 1D

5G/4G/3G/2G Stubby Antenna



### Key Features

- Supports 5G NR / 4G LTE / 3G UMTS / 2G GSM
- Supports LTE Cat M, LTE Cat NB and NR Cat NB Bands
- Ground-plane independent
- Compact size

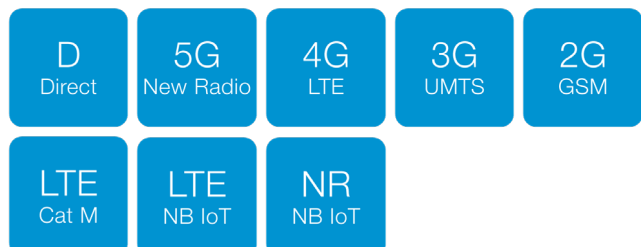
### General Description

The Delta 1D Multiband antenna has good performance for such a small size. It is a popular choice for customers requiring a multiband antenna for use with 2G/3G terminals and IoT communication equipment. With the new 4G/5G LTE bands there is also some coverage provided with this antenna.

The antenna is finished with a stylish black 'cap' radome.

### Additional Considerations

- Typical Application: terminal equipment
- Does not rely on mounting on metallic surface





## Delta 1D

5G/4G/3G/2G Stubby Antenna

### Electrical Specifications

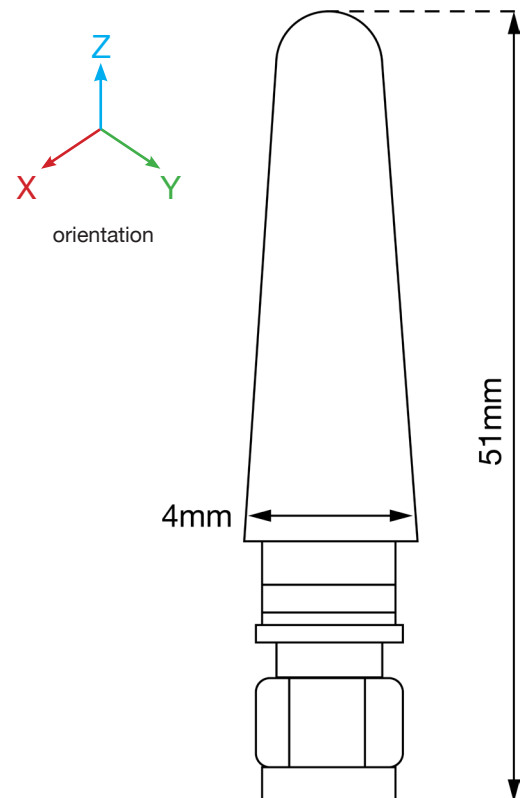
Impedance:	50 Ohm
Polarization:	Linear
Max Input Power:	50 W
Ground plane independent:	Yes

### Environmental Specifications

Operating Temperature range:	-40 to +85 °C
Storage Temperature range:	-40 to +85 °C

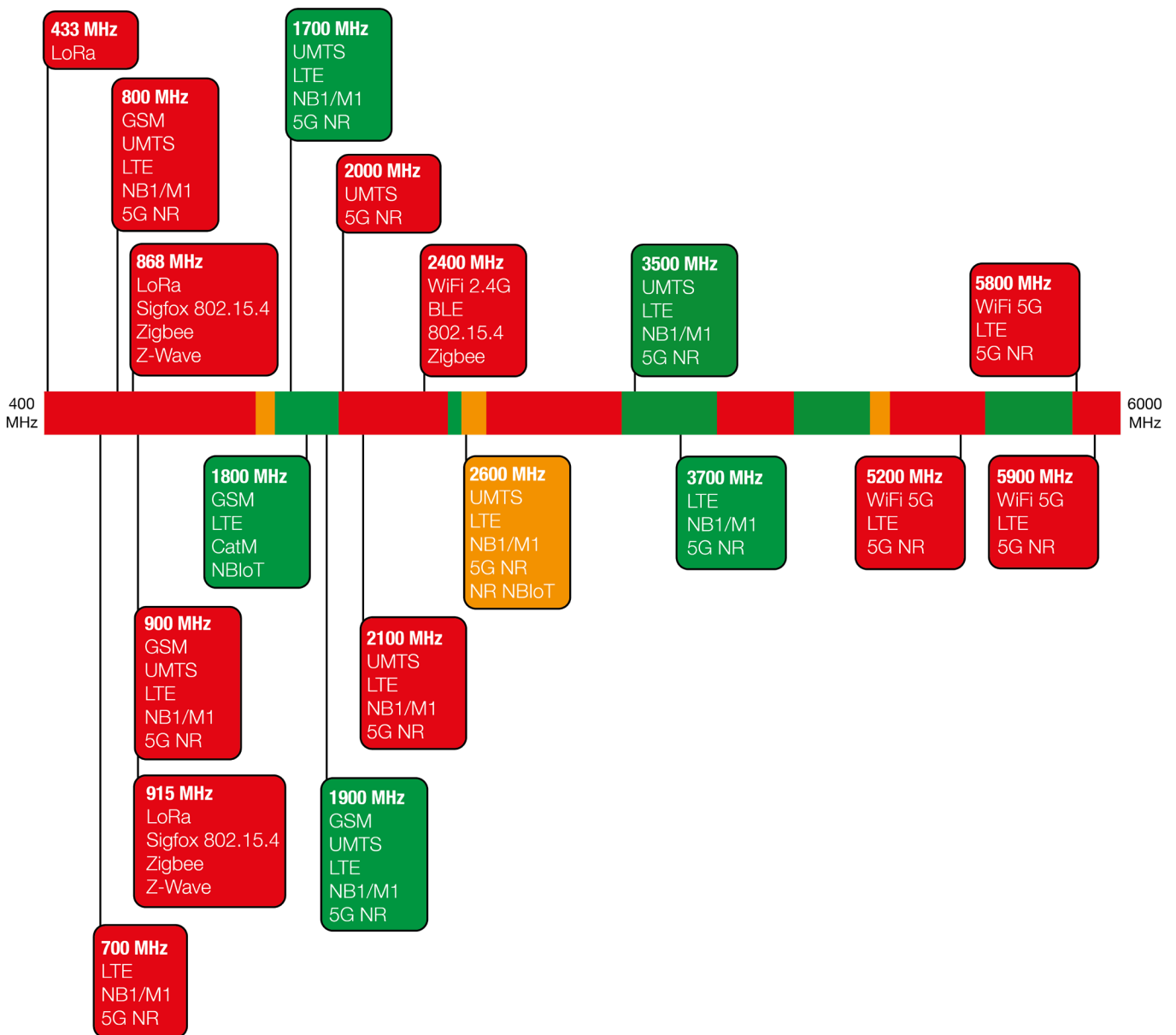
### Mechanical Specifications

Dimensions:	51 x 10.4 mm
Weight:	6.4 g
Connector:	SMA Male
Mounting method:	Direct Connect
Connector Plating:	Gold/Nickel
Housing materials:	ABS





### Spectrum Coverage



● Suitable band

● Adequate band in good signal conditions

● Likely to be unsuitable



## Delta 1D

5G/4G/3G/2G Stubby Antenna

### 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)

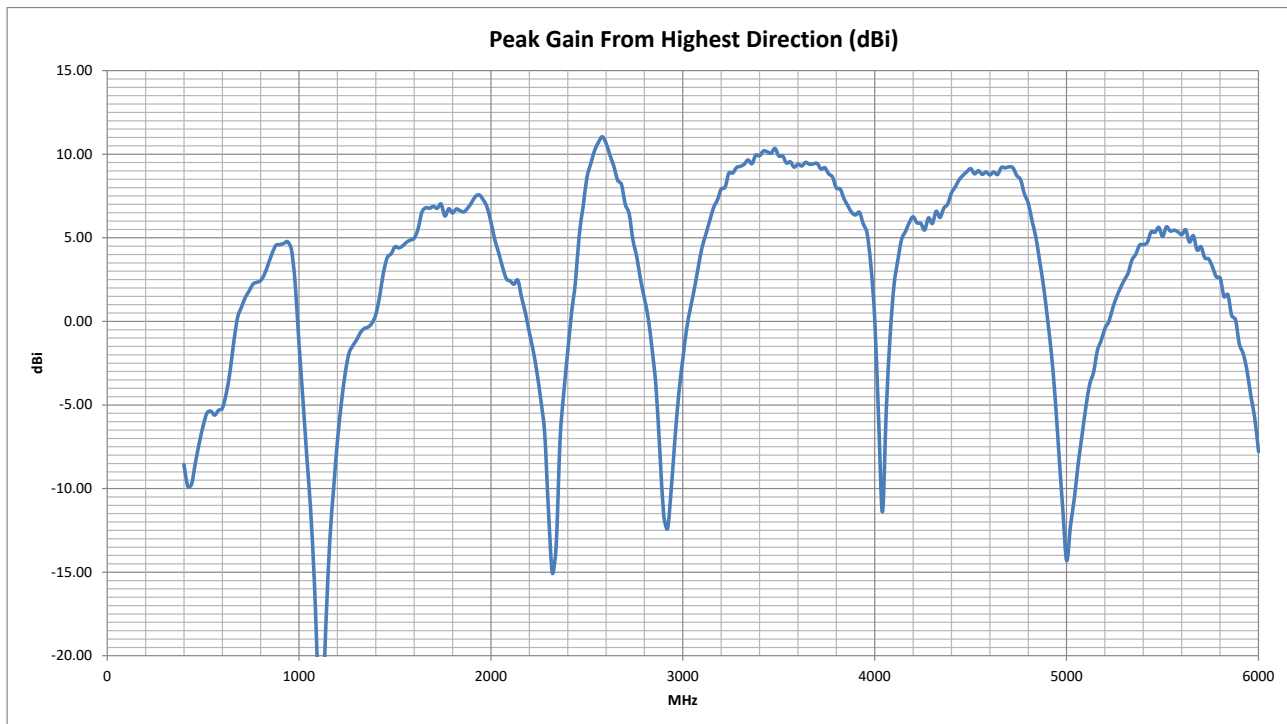
	2000	2100	2300	2400	2500	2600	3300	3500	3700	4700	5200	5900
GSM Bands:												
UMTS Bands:								●				
LTE Bands:						●		●	●			
LTE Cat M Bands:								●	●			
LTE Cat NB Bands:								●	●			
5G NR Bands:						●		●				
NR Cat NB Bands:												



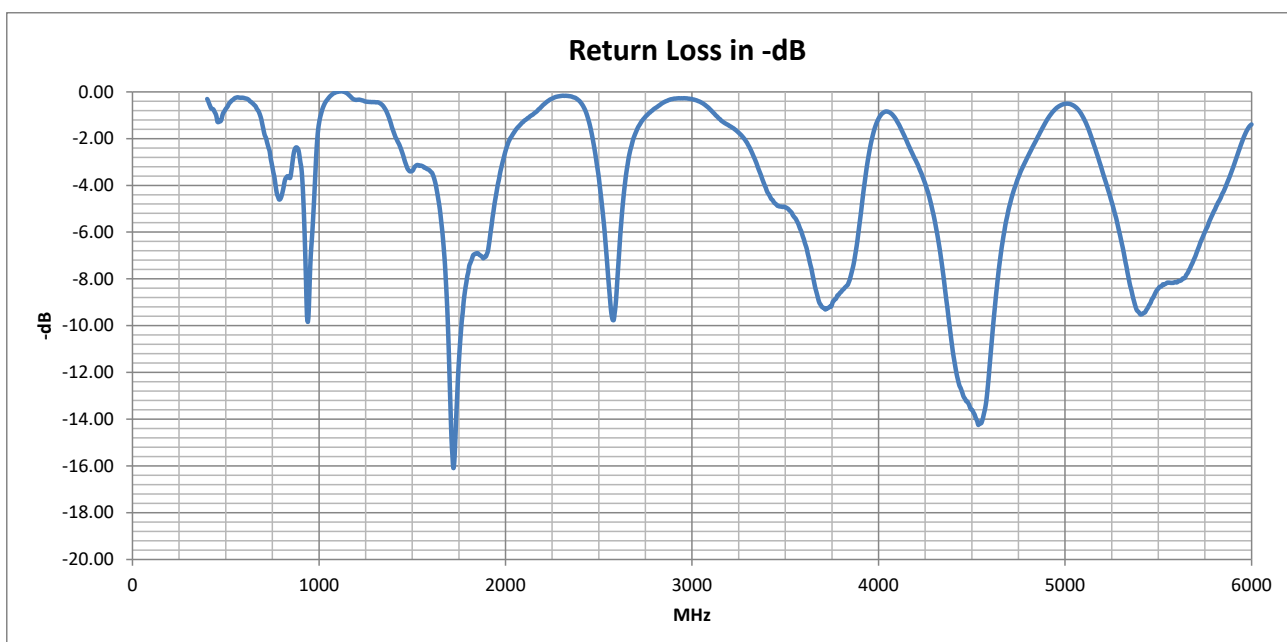
## Delta 1D

5G/4G/3G/2G Stubby Antenna

### Peak Gain vs. Frequency



### Return Loss

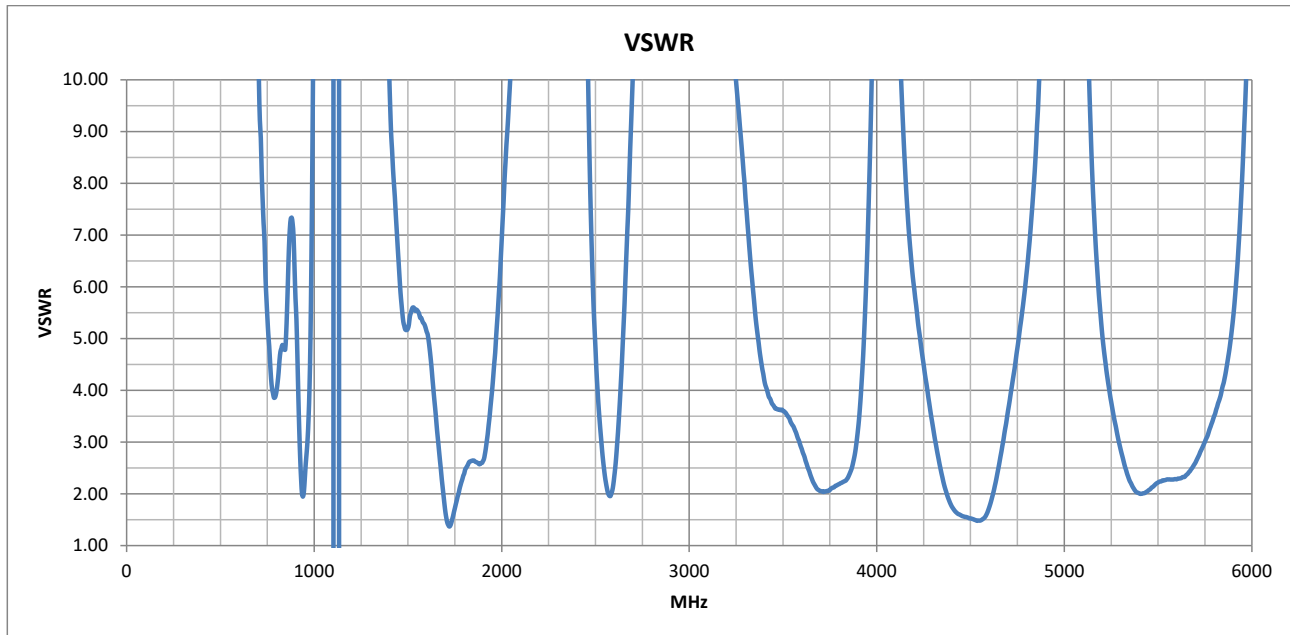




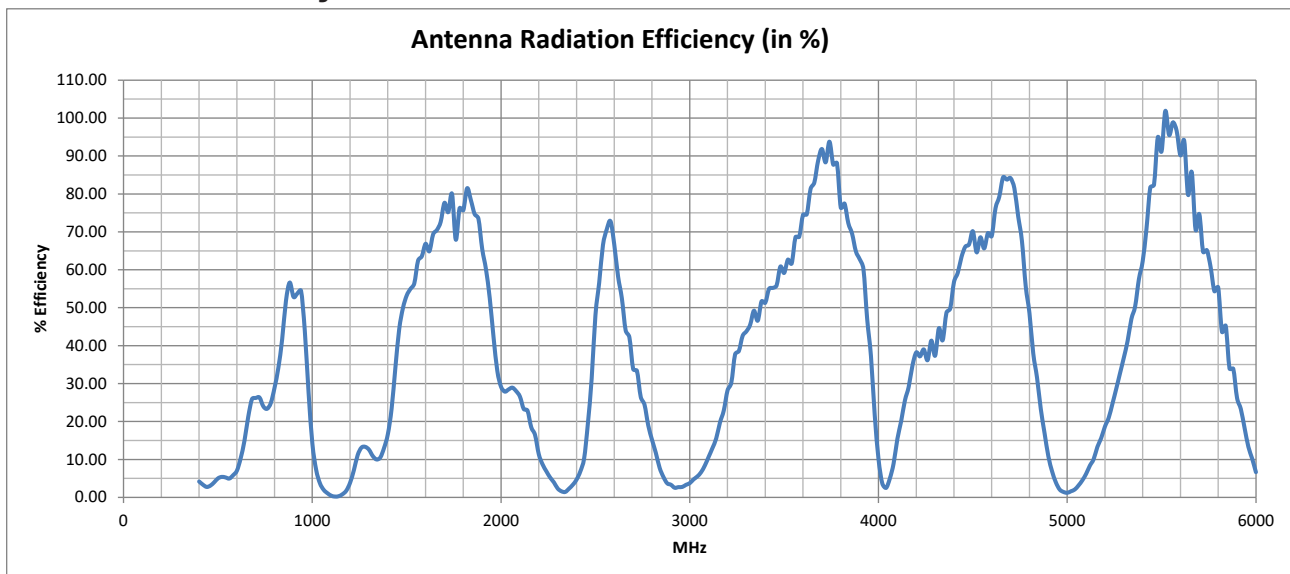
## Delta 1D

5G/4G/3G/2G Stubby Antenna

### VSWR



### Radiation Efficiency





### 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	47.16	21.58	5.58	21.27	●
PCS-1900	2	2	2	2	n2	n2	1850 - 1910 MHz	1930 - 1990 MHz	71.12	42.84	2.76	6.18	●
DCS-1800	3	3	3	3	n3	n3	1710 - 1785 MHz	1805 - 1880 MHz	74.81	77.31	2.23	2.65	●
	4	4	4	4			1710 - 1755 MHz	2110 - 2155 MHz	76.46	22.67	1.80	19.07	●
GSM-850	5	5	5	5	n5	n5	824 - 849 MHz	869 - 894 MHz	40.59	55.29	5.02	7.34	●
	6						830 - 840 MHz	875 - 885 MHz	39.81	56.08	4.88	7.34	●
	7	7	7	7	n7	n7	2500 - 2570 MHz	2620 - 2690 MHz	62.29	47.65	4.80	9.16	●
E-GSM-900	8	8	8	8	n8	n8	880 - 915 MHz	925 - 960 MHz	54.07	51.30	7.34	2.82	●
	9	9					1749.9 - 1784.9 MHz	1844.9 - 1879.9 MHz	72.33	74.91	2.23	2.65	●
	10	10					1710 - 1770 MHz	2110 - 2170 MHz	74.80	21.58	2.01	21.27	●
	11	11	11	11			1427.9 - 1447.9 MHz	1475.9 - 1495.9 MHz	33.00	50.82	7.84	5.32	●
	12	12	12	12	n12	n12	699 - 716 MHz	729 - 746 MHz	26.23	24.37	11.53	7.31	●
	13	13	13	13	n13	n13	777 - 787 MHz	746 - 756 MHz	25.36	23.63	4.00	5.71	●
	14	14	14	14	n14		788 - 798 MHz	758 - 768 MHz	27.54	23.59	3.98	4.94	●
		17		17			704 - 716 MHz	734 - 746 MHz	26.24	24.11	10.23	6.95	●
		18	18	18	n18	n18	815 - 830 MHz	860 - 875 MHz	35.23	53.58	4.88	7.32	●
	19	19	19	19			830 - 845 MHz	875 - 890 MHz	40.86	55.79	4.88	7.34	●
	20	20	20	20	n20	n20	832 - 862 MHz	791 - 821 MHz	45.33	30.62	6.39	4.76	●
	21	21	21	21			1447.9 - 1462.9 MHz	1495.9 - 1510.9 MHz	41.88	53.46	6.61	5.44	●
	22	22					3410 - 3490 MHz	3510 - 3590 MHz	56.54	65.47	4.06	3.58	●
		24	24	24	n24		1626.5 - 1660.5 MHz	1525 - 1559 MHz	69.09	57.73	4.40	5.60	●
	25	25	25	25	n25	n25	1850 - 1915 MHz	1930 - 1995 MHz	70.42	41.91	2.88	6.56	●
	26	26	26	26	n26		814 - 849 MHz	859 - 894 MHz	38.71	54.55	5.02	7.34	●
		27	27				807 - 824 MHz	852 - 869 MHz	33.08	51.39	4.80	7.05	●
		28	28	28	n28	n28	703 - 748 MHz	758 - 803 MHz	25.33	25.68	10.48	4.94	●

● Suitable band

● Adequate band in good signal conditions

● Likely to be unsuitable



### 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
		28A					703 - 733 MHz	758 - 788 MHz	25.95	24.49	10.48	4.94	●
		29			n29		N/A	717 - 728 MHz	N/A	25.96	N/A	8.61	●
		30			n30		2305 - 2315 MHz	2350 - 2360 MHz	1.95	2.06	102.93	88.13	●
		31	31	31			452.5 - 457.5 MHz	462.5 - 467.5 MHz	3.00	3.31	14.94	14.27	●
	32	32					N/A	1452 - 1496 MHz	N/A	47.70	N/A	6.36	●
		33					1900 - 1920 MHz	1900 - 1920 MHz	62.79	62.79	3.02	3.02	●
		34			n34		2010 - 2025 MHz	2010 - 2025 MHz	28.09	28.09	8.75	8.75	●
		35					1850 - 1910 MHz	1850 - 1910 MHz	71.12	71.12	2.76	2.76	●
		36					1930 - 1990 MHz	1930 - 1990 MHz	42.84	42.84	6.18	6.18	●
		37					1910 - 1930 MHz	1910 - 1930 MHz	59.83	59.83	3.33	3.33	●
		38			n38		2570 - 2620 MHz	2570 - 2620 MHz	67.25	67.25	3.19	3.19	●
		39	39		n39		1880 - 1920 MHz	1880 - 1920 MHz	66.13	66.13	3.02	3.02	●
		40	40		n40		2300 - 2400 MHz	2300 - 2400 MHz	2.41	2.41	102.93	102.93	●
		41	41	41	n41	n41	2496 - 2690 MHz	2496 - 2690 MHz	57.95	57.95	9.16	9.16	●
		42	42	42			3400 - 3600 MHz	3400 - 3600 MHz	61.04	61.04	4.20	4.20	●
		43	43	43			3600 - 3800 MHz	3600 - 3800 MHz	85.27	85.27	2.87	2.87	●
		44					703 - 803 MHz	703 - 803 MHz	25.32	25.32	10.48	10.48	●
		45					1447 - 1467 MHz	1447 - 1467 MHz	42.48	42.48	6.66	6.66	●
		46			n46		5150 - 5925 MHz	5150 - 5925 MHz	58.28	58.28	8.11	8.11	●
		47			n47		5855 - 5925 MHz	5855 - 5925 MHz	29.48	29.48	6.51	6.51	●
		48			n48		3550 - 3700 MHz	3550 - 3700 MHz	77.92	77.92	3.33	3.33	●
		49					3550 - 3700 MHz	3550 - 3700 MHz	77.92	77.92	3.33	3.33	●
		50			n50		1432 - 1517 MHz	1432 - 1517 MHz	46.24	46.24	7.60	7.60	●
		51			n51		1427 - 1432 MHz	1427 - 1432 MHz	28.52	28.52	7.89	7.89	●
		52					3300 - 3400 MHz	3300 - 3400 MHz	48.08	48.08	7.71	7.71	●

● Suitable band

● Adequate band in good signal conditions

● Likely to be unsuitable





### 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
		53			n53		2483.5 - 2495 MHz	2483.5 - 2495 MHz	38.99	38.99	6.31	6.31	●
		65		65	n65	n65	1920 - 2010 MHz	2110 - 2200 MHz	41.58	19.35	7.66	30.27	●
		66	66	66	n66	n66	1710 - 1780 MHz	2110 - 2200 MHz	74.71	19.35	2.17	30.27	●
		67			n67		N/A	738 - 758 MHz	N/A	23.74	N/A	6.47	●
		68					698 - 728 MHz	753 - 783 MHz	26.13	24.07	11.82	5.22	●
		69					N/A	2570 - 2620 MHz	N/A	67.25	N/A	3.19	●
		70		70	n70	n70	1695 - 1710 MHz	1995 - 2020 MHz	77.00	28.72	1.79	8.41	●
		71	71	71	n71		663 - 698 MHz	617 - 652 MHz	24.98	13.79	25.79	55.37	●
		72	72	72			451 - 456 MHz	461 - 466 MHz	2.97	3.24	15.76	14.27	●
		73	73	73			450 - 455 MHz	460 - 465 MHz	2.96	3.20	16.31	14.27	●
		74	74	74	n74		1427 - 1470 MHz	1475 - 1518 MHz	38.14	52.30	7.89	5.53	●
		75			n75		N/A	1432 - 1517 MHz	N/A	46.24	N/A	7.60	●
		76			n76		N/A	1427 - 1432 MHz	N/A	28.52	N/A	7.89	●
					n77		3300 - 4200 MHz	3300 - 4200 MHz	53.97	53.97	20.62	20.62	●
					n78		3300 - 3800 MHz	3300 - 3800 MHz	68.14	68.14	7.71	7.71	●
					n79		4400 - 5000 MHz	4400 - 5000 MHz	52.05	52.05	33.64	33.64	●
					n80		1710 - 1785 MHz	N/A	74.81	N/A	2.23	N/A	●
					n81		880 - 915 MHz	N/A	54.07	N/A	7.34	N/A	●
					n82		832 - 862 MHz	N/A	45.33	N/A	6.39	N/A	●
					n83		703 - 748 MHz	N/A	25.33	N/A	10.48	N/A	●
					n84		1920 - 1980 MHz	N/A	47.16	N/A	5.58	N/A	●
		85	85	85	n85		698 - 716 MHz	728 - 746 MHz	26.22	24.42	11.82	7.40	●
					n86		1710 - 1780 MHz	N/A	74.71	N/A	2.17	N/A	●
		87	87	87			410 - 415 MHz	420 - 425 MHz	3.64	3.25	34.73	24.93	●
		88	88	88			412 - 417 MHz	422 - 427 MHz	3.56	3.19	32.47	24.47	●

● Suitable band

● Adequate band in good signal conditions

● Likely to be unsuitable



### 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	40.59	N/A	5.02	N/A	●
					n90	n90	2496 - 2690 MHz	2496 - 2690 MHz	57.95	57.95	9.16	9.16	●
					n91		832 - 862 MHz	1427 - 1432 MHz	45.33	28.52	6.39	7.89	●
					n92		832 - 862 MHz	1432 - 1517 MHz	45.33	46.24	6.39	7.60	●
					n93		880 - 915 MHz	1427 - 1432 MHz	54.07	28.52	7.34	7.89	●
					n94		880 - 915 MHz	1432 - 1517 MHz	54.07	46.24	7.34	7.60	●
					n95		2010 - 2025 MHz	N/A	28.09	N/A	8.75	N/A	●
					n97		2300 - 2400 MHz	N/A	2.41	N/A	102.93	N/A	●
					n98		1880 - 1920 MHz	N/A	66.13	N/A	3.02	N/A	●
					n99		1626.5 - 1660.5 MHz	N/A	69.09	N/A	4.40	N/A	●
					n101		1900 - 1910 MHz	1900 - 1910 MHz	64.13	64.13	2.76	2.76	●
				103			787 - 788 MHz	757 - 758 MHz	26.42	23.42	3.86	4.99	●

● 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.



### 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	2.92	22.83	-9.7738	●
ISM 868 MHz	863 - 870 MHz	53.34	7.12	4.315	●
ISM 915 MHz	902 - 928 MHz	53.48	5.62	4.7	●
ISM 2.4 GHz	2400 - 2500 MHz	18.82	40.61	8.59	●
Wi-Fi 2.4G	2401 - 2483 MHz	14.42	39.73	7.1025	●
Wi-Fi 2.4G (USA)	2401 - 2473 MHz	12.23	39.73	6.252	●
Wi-Fi 2.4G (Japan)	2401 - 2495 MHz	17.53	39.73	8.1525	●
Wi-Fi 5G (all channels)	5150 - 5990 MHz	54.89	11.84	5.65	●
Wi-Fi 5G (Ch 32-48)	5150 - 5250 MHz	18.67	8.11	1.12	●
Wi-Fi 5G (Ch 32-64)	5150 - 5330 MHz	25.89	8.11	3.27	●
Wi-Fi 5G (Ch 32-161)	5150 - 5815 MHz	62.21	8.11	5.65	●
Wi-Fi 5G (Ch 32-173)	5150 - 5875 MHz	60.39	8.11	5.65	●
ISM 5.8 GHz	5725 - 5875 MHz	51.06	4.66	3.775	●

● 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.

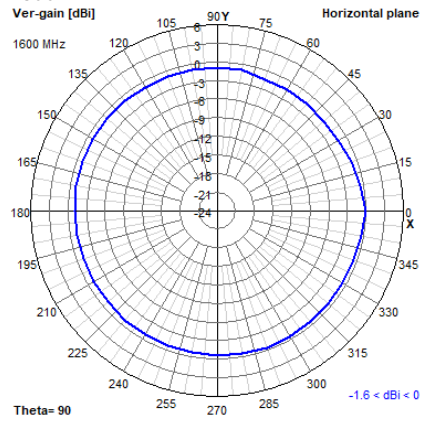


## Delta 1D

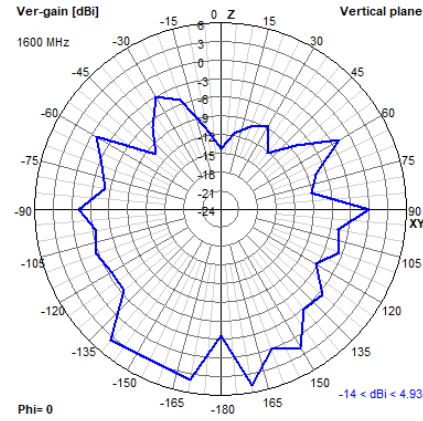
5G/4G/3G/2G Stubby Antenna

### 2D Radiation Plots

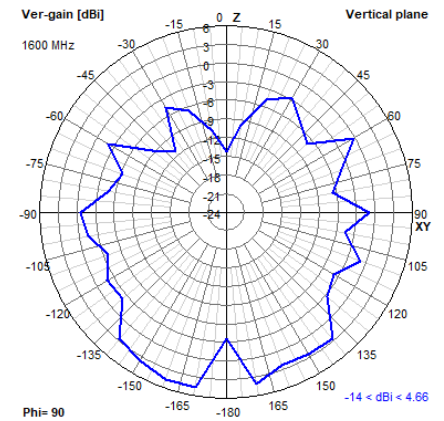
#### 1600 MHz XY



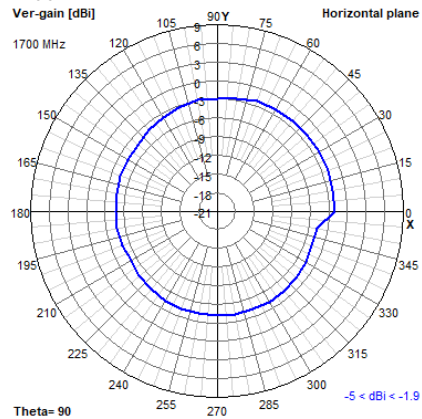
#### XZ



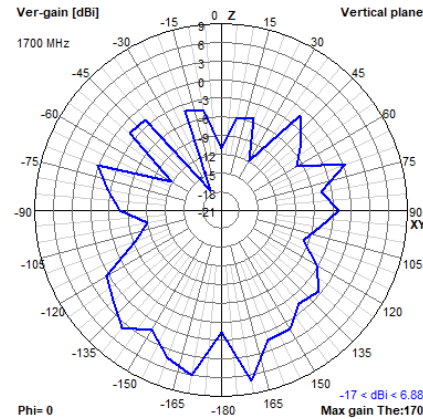
#### YZ



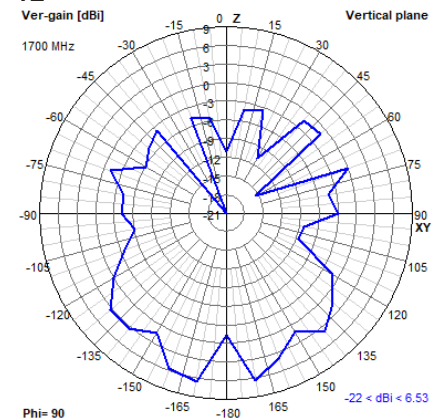
#### 1700 MHz XY



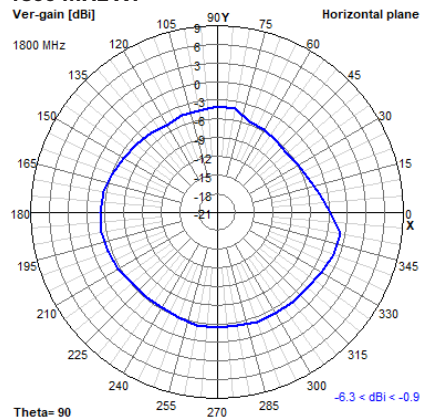
#### XZ



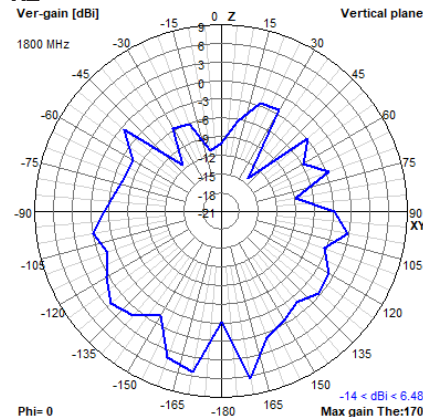
#### YZ



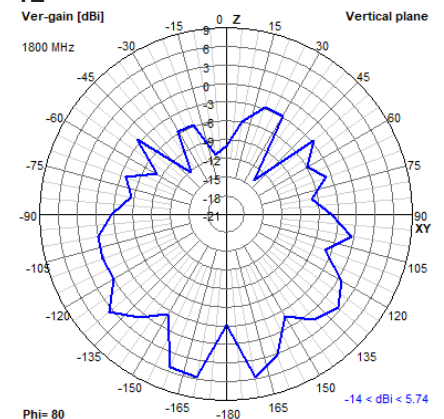
#### 1800 MHz XY



#### XZ



#### YZ



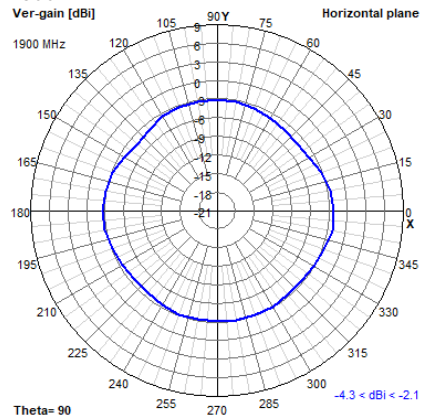


## Delta 1D

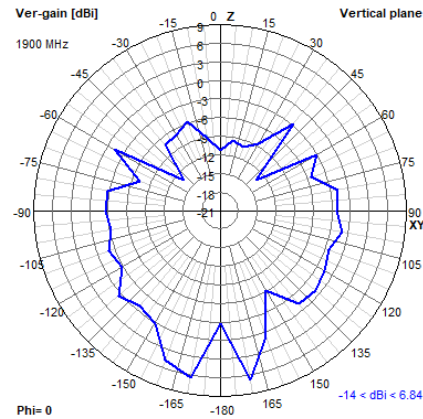
5G/4G/3G/2G Stubby Antenna

### 2D Radiation Plots

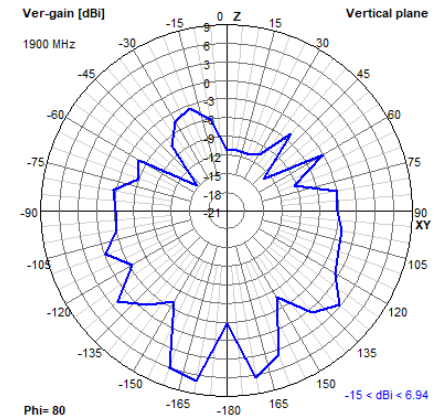
#### 1900 MHz XY



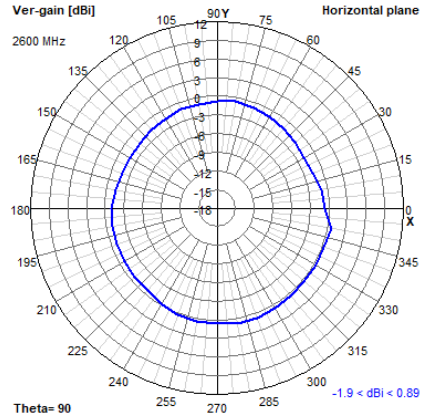
#### XZ



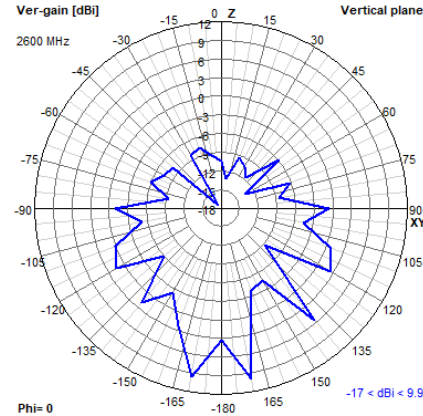
#### YZ



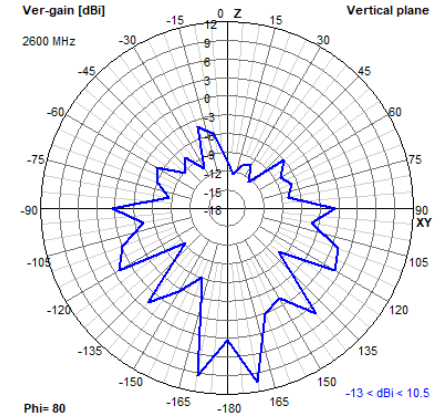
#### 2600 MHz XY



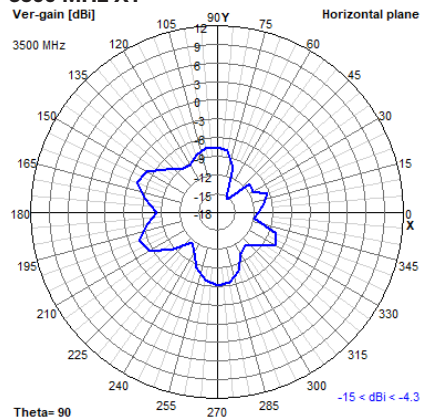
#### XZ



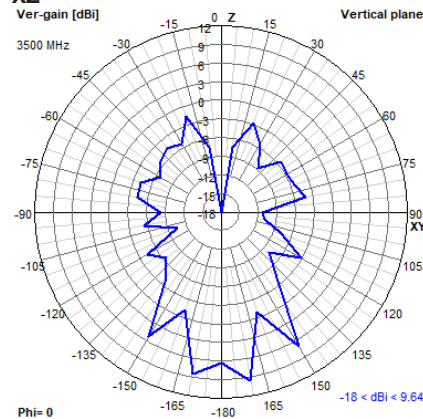
#### YZ



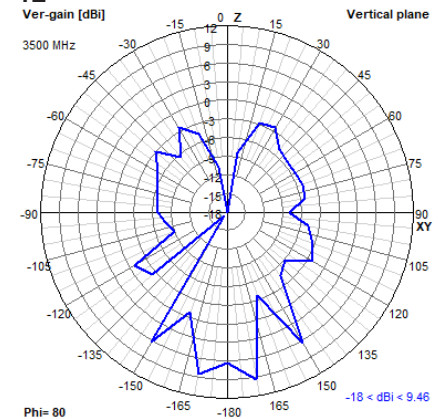
#### 3500 MHz XY



#### XZ



#### YZ



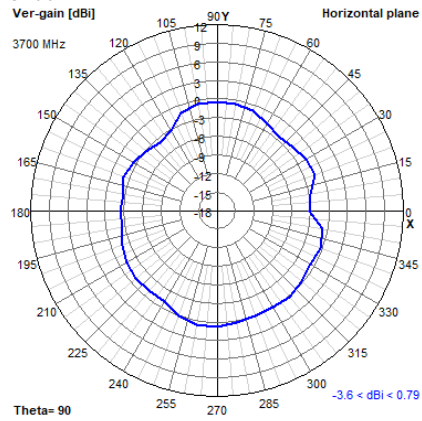


## Delta 1D

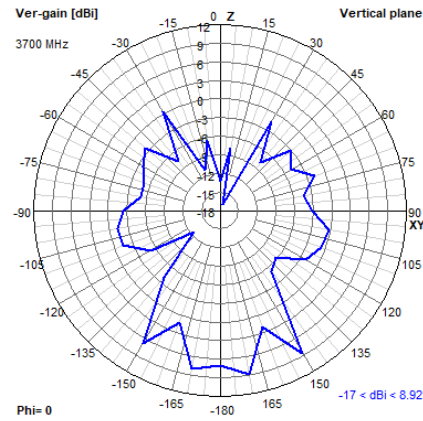
5G/4G/3G/2G Stubby Antenna

### 2D Radiation Plots

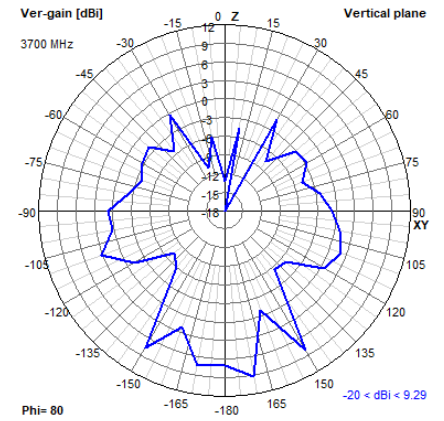
#### 3700 MHz XY



#### XZ



#### YZ



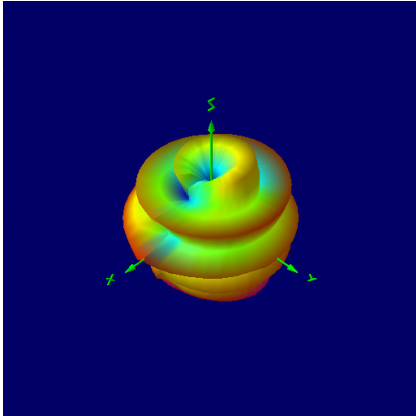


## Delta 1D

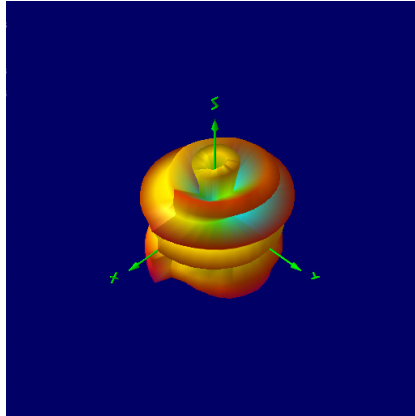
5G/4G/3G/2G Stubby Antenna

### 3D Radiation Plots

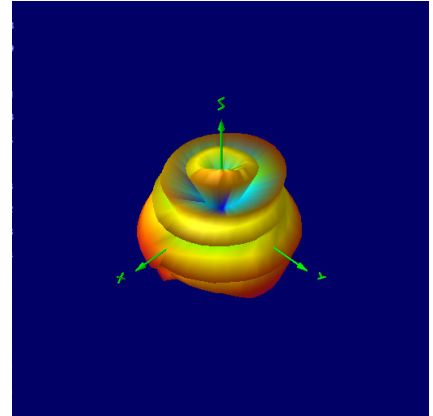
1600 MHz



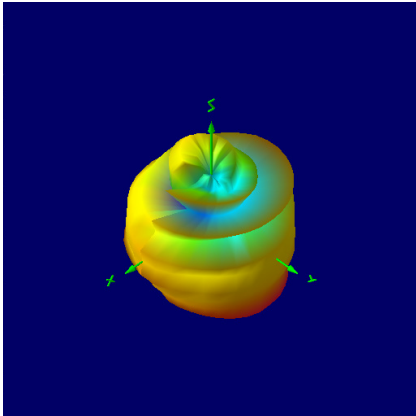
1700 MHz



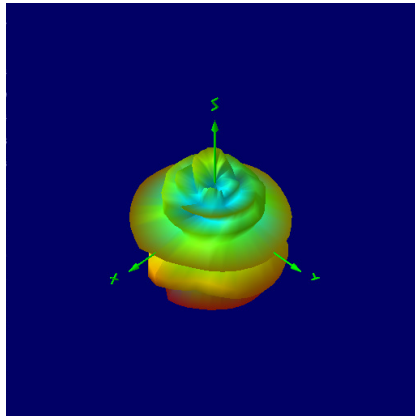
1800 MHz



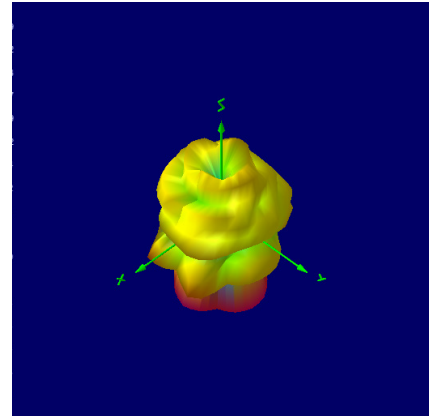
1900 MHz



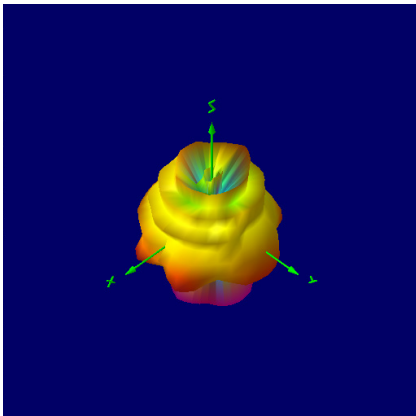
2600 MHz



3500 MHz



3700 MHz



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