



## ALPHA 10

5G/4G/Bluetooth/Zigbee Adhesive Blade Antenna



### Key Features

- Supports 5G NR / 4G LTE / 3G UMTS / 2G GSM
- Supports LTE Cat M, LTE Cat NB & NR Cat NB Bands
- Supports Wi-Fi 2.4 GHz
- Supports Bluetooth and BLE, Zigbee, ISM 2.4 GHz & IEEE 802.15.4 Band
- Adhesive Mount
- Suitable for mounting on any non-metallic surface

### General Description

The Alpha 10 is a slim, blade antenna measuring 116 x 21.5 x 4mm, which is suitable for mounting on any non-metallic surface using the adhesive base.

The Alpha 10 achieves a reputable gain of 3 - 5 dBi in sections of the RF spectrum typically used for Industrial IoT applications, helping to improve the short-range signal transmission/reception of Wi-Fi modems, Bluetooth gadgets or low power Zigbee sensors.

Typical applications are for smart energy meters, alarm panel equipment or on the side of telemetry equipment. However, this antenna will suit a wide variety of environments and applications.

Custom cable lengths and alternative connector types can be supplied for volume orders.

### Additional Considerations

- Mounts discreetly, good for covert use
- Intended for internal to equipment use

A Adhesive	5G New Radio	4G LTE	3G UMTS	2G GSM
BLE Bluetooth	AoA Bluetooth	AoD Bluetooth	WiFi 2.4G	WLAN 2400
ISM 2450	LTE Cat M	LTE NB IoT	WiFi 4 802.11n	WiFi 5 802.11ac
WiFi 6 802.11ax	ZB Zigbee			



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### Electrical Specifications

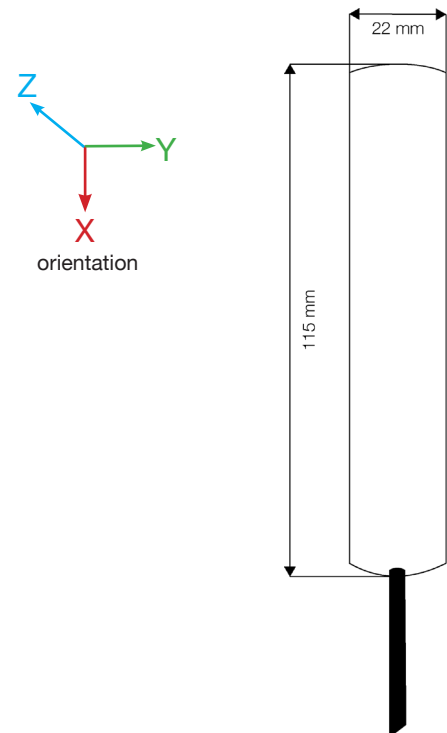
Impedance:	50 Ohm
Polarization:	Vertical
Max Input Power:	50 W
Ground plane independent:	Yes

### Environmental Specifications

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

### Mechanical Specifications

Dimensions:	116 x 21.5 x 4 mm
Weight:	48 g (with 3m RG174 cable and SMA male Connector)
Connector:	SMA Male
Mounting method:	Adhesive Pad
Housing materials:	ABS

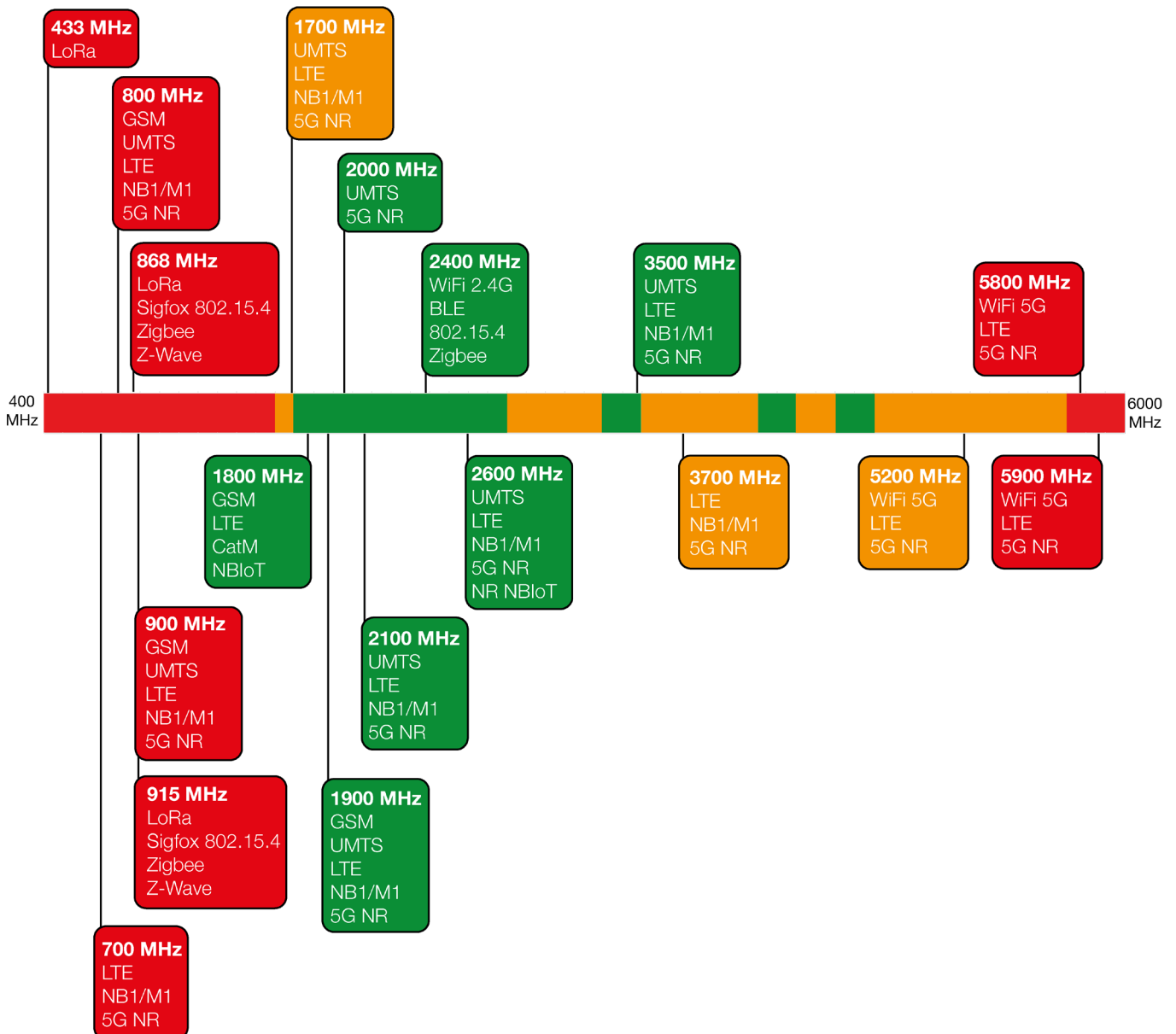




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### Spectrum Coverage



● 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)

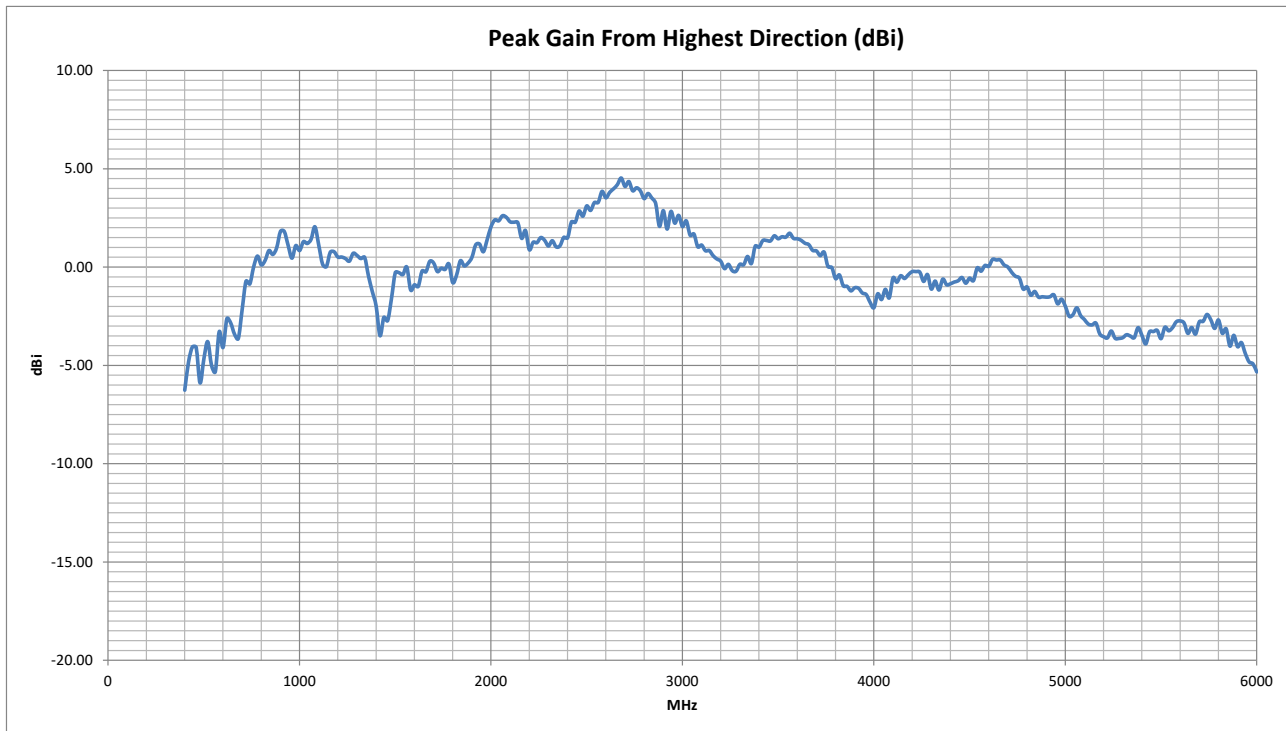
	433	868	915	2450	5800
Bluetooth				●	
IEEE 802.15.4				●	
LoRa					
Sigfox					
Wi-Fi 2.4G				●	
Wi-Fi 5G					
Zigbee				●	
Z-Wave					



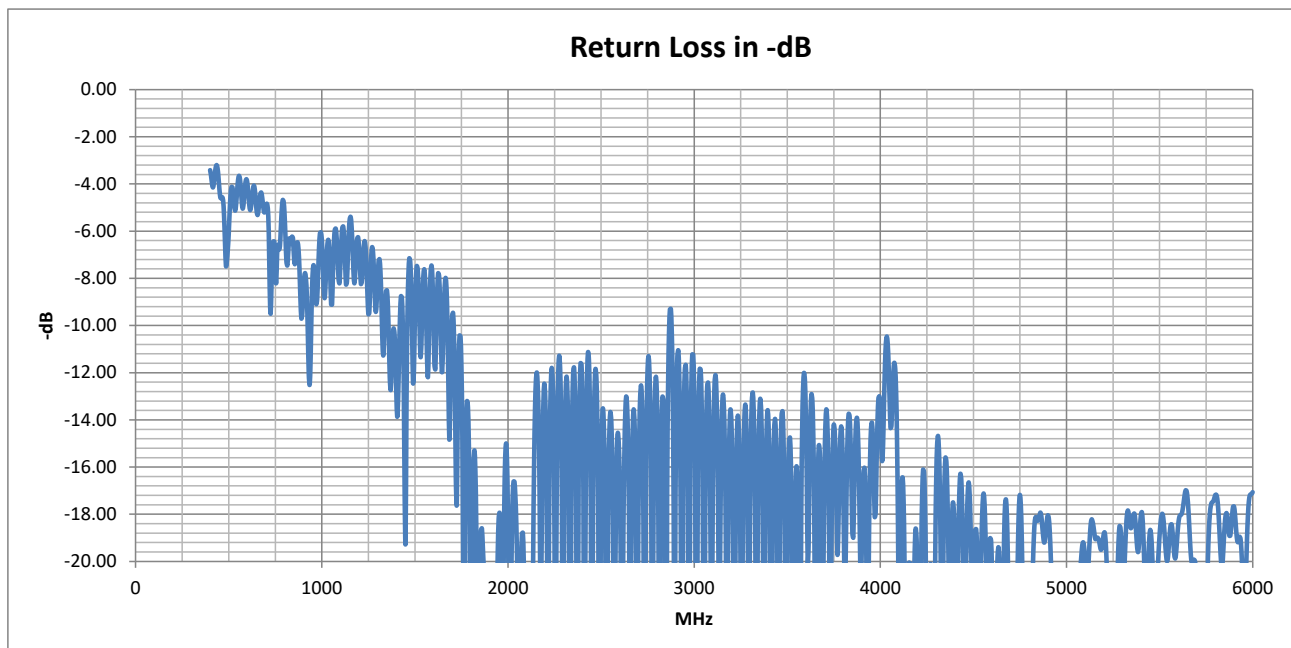
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### Peak Gain vs. Frequency



### Return Loss

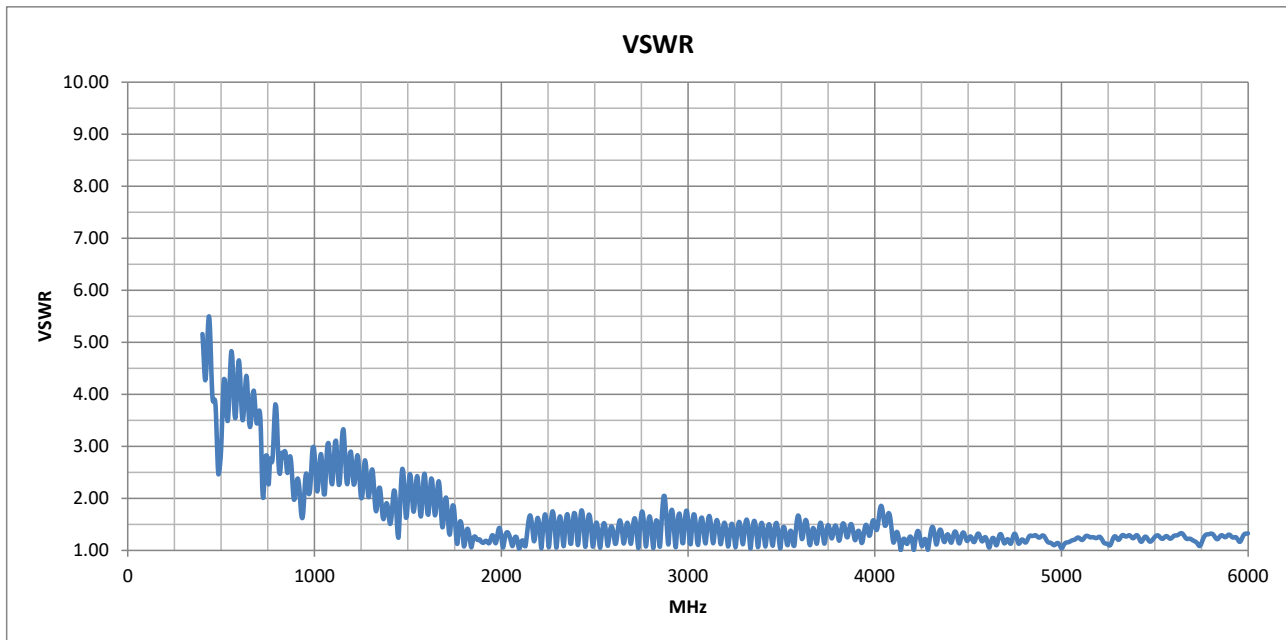




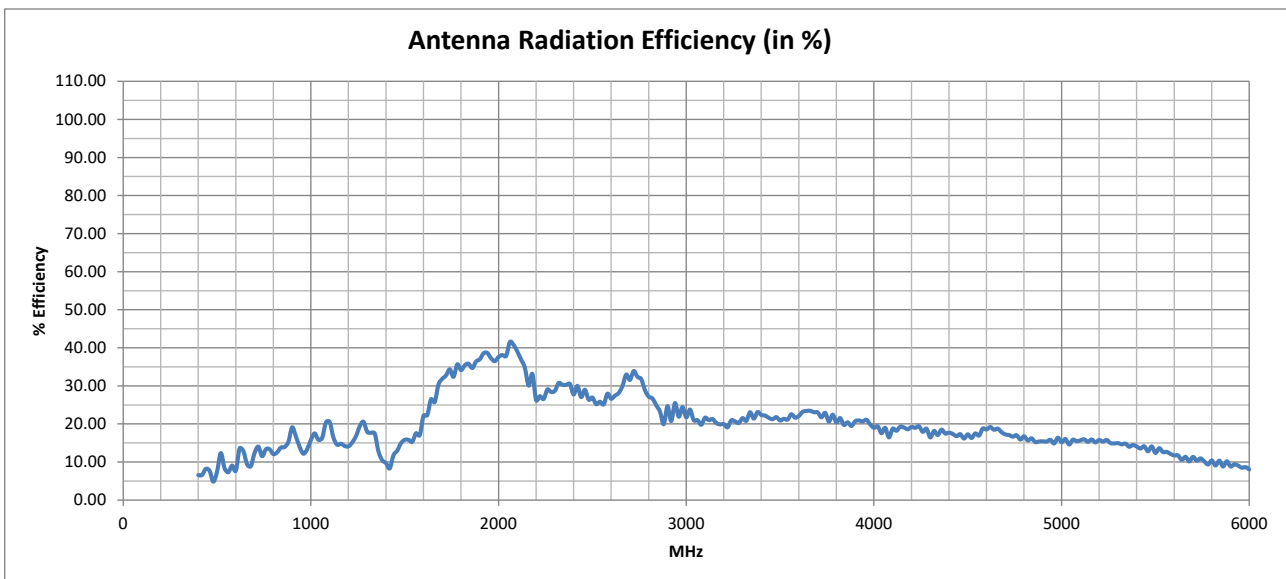
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### VSWR



### Radiation Efficiency





## ALPHA 10

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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	37.80	34.12	1.30	1.67	●
PCS-1900	2	2	2	2	n2	n2	1850 - 1910 MHz	1930 - 1990 MHz	36.13	37.49	1.27	1.43	●
DCS-1800	3	3	3	3	n3	n3	1710 - 1785 MHz	1805 - 1880 MHz	33.61	35.35	1.86	1.42	●
	4	4	4	4			1710 - 1755 MHz	2110 - 2155 MHz	33.33	35.23	1.86	1.67	●
GSM-850	5	5	5	5	n5	n5	824 - 849 MHz	869 - 894 MHz	13.47	15.86	2.91	2.81	●
	6						830 - 840 MHz	875 - 885 MHz	13.46	15.43	2.91	2.69	●
	7	7	7	7	n7	n7	2500 - 2570 MHz	2620 - 2690 MHz	25.69	29.87	1.54	1.58	●
E-GSM-900	8	8	8	8	n8	n8	880 - 915 MHz	925 - 960 MHz	17.62	13.89	2.43	2.48	●
	9	9					1749.9 - 1784.9 MHz	1844.9 - 1879.9 MHz	33.88	35.35	1.70	1.27	●
	10	10					1710 - 1770 MHz	2110 - 2170 MHz	33.25	34.12	1.86	1.67	●
	11	11	11	11			1427.9 - 1447.9 MHz	1475.9 - 1495.9 MHz	11.23	15.17	2.14	2.47	●
	12	12	12	12	n12	n12	699 - 716 MHz	729 - 746 MHz	12.98	12.06	3.69	2.82	●
	13	13	13	13	n13	n13	777 - 787 MHz	746 - 756 MHz	13.18	12.51	3.63	2.74	●
	14	14	14	14	n14		788 - 798 MHz	758 - 768 MHz	12.50	13.32	3.80	2.77	●
		17		17			704 - 716 MHz	734 - 746 MHz	13.19	11.84	3.69	2.82	●
		18	18	18	n18	n18	815 - 830 MHz	860 - 875 MHz	12.72	14.44	2.87	2.81	●
	19	19	19	19			830 - 845 MHz	875 - 890 MHz	13.57	15.86	2.91	2.69	●
	20	20	20	20	n20	n20	832 - 862 MHz	791 - 821 MHz	13.77	12.32	2.91	3.79	●
	21	21	21	21			1447.9 - 1462.9 MHz	1495.9 - 1510.9 MHz	12.71	15.79	2.20	2.46	●
	22	22					3410 - 3490 MHz	3510 - 3590 MHz	21.67	21.66	1.53	1.67	●
		24	24	24	n24		1626.5 - 1660.5 MHz	1525 - 1559 MHz	25.70	15.97	2.37	2.43	●
	25	25	25	25	n25	n25	1850 - 1915 MHz	1930 - 1995 MHz	36.27	37.47	1.27	1.43	●
	26	26	26	26	n26		814 - 849 MHz	859 - 894 MHz	13.20	15.39	2.91	2.81	●
		27	27				807 - 824 MHz	852 - 869 MHz	12.44	14.08	2.83	2.80	●
		28	28	28	n28	n28	703 - 748 MHz	758 - 803 MHz	12.82	12.96	3.69	3.80	●

● Suitable band

● 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
		28A					703 - 733 MHz	758 - 788 MHz	13.27	13.26	3.69	3.69	●
		29			n29		N/A	717 - 728 MHz	N/A	13.63	N/A	2.69	●
		30			n30		2305 - 2315 MHz	2350 - 2360 MHz	29.73	30.27	1.65	1.69	●
		31	31	31			452.5 - 457.5 MHz	462.5 - 467.5 MHz	7.83	6.99	4.04	3.90	●
	32	32					N/A	1452 - 1496 MHz	N/A	14.21	N/A	2.56	●
		33					1900 - 1920 MHz	1900 - 1920 MHz	37.77	37.77	1.18	1.18	●
		34			n34		2010 - 2025 MHz	2010 - 2025 MHz	38.01	38.01	1.32	1.32	●
		35					1850 - 1910 MHz	1850 - 1910 MHz	36.13	36.13	1.27	1.27	●
		36					1930 - 1990 MHz	1930 - 1990 MHz	37.49	37.49	1.43	1.43	●
		37					1910 - 1930 MHz	1910 - 1930 MHz	38.36	38.36	1.18	1.18	●
		38			n38		2570 - 2620 MHz	2570 - 2620 MHz	27.16	27.16	1.46	1.46	●
		39	39		n39		1880 - 1920 MHz	1880 - 1920 MHz	37.23	37.23	1.21	1.21	●
		40	40		n40		2300 - 2400 MHz	2300 - 2400 MHz	30.00	30.00	1.71	1.71	●
		41	41	41	n41	n41	2496 - 2690 MHz	2496 - 2690 MHz	27.60	27.60	1.58	1.58	●
		42	42	42			3400 - 3600 MHz	3400 - 3600 MHz	21.65	21.65	1.67	1.67	●
		43	43	43			3600 - 3800 MHz	3600 - 3800 MHz	22.50	22.50	1.58	1.58	●
		44					703 - 803 MHz	703 - 803 MHz	12.87	12.87	3.80	3.80	●
		45					1447 - 1467 MHz	1447 - 1467 MHz	12.84	12.84	2.44	2.44	●
		46			n46		5150 - 5925 MHz	5150 - 5925 MHz	12.51	12.51	1.33	1.33	●
		47			n47		5855 - 5925 MHz	5855 - 5925 MHz	9.33	9.33	1.30	1.30	●
		48			n48		3550 - 3700 MHz	3550 - 3700 MHz	22.75	22.75	1.67	1.67	●
		49					3550 - 3700 MHz	3550 - 3700 MHz	22.75	22.75	1.67	1.67	●
		50			n50		1432 - 1517 MHz	1432 - 1517 MHz	14.01	14.01	2.56	2.56	●
		51			n51		1427 - 1432 MHz	1427 - 1432 MHz	9.95	9.95	2.14	2.14	●
		52					3300 - 3400 MHz	3300 - 3400 MHz	22.06	22.06	1.59	1.59	●

● 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	26.62	26.62	1.35	1.35	●
		65		65	n65	n65	1920 - 2010 MHz	2110 - 2200 MHz	37.62	32.93	1.43	1.67	●
		66	66	66	n66	n66	1710 - 1780 MHz	2110 - 2200 MHz	33.48	32.93	1.86	1.67	●
		67			n67		N/A	738 - 758 MHz	N/A	12.26	N/A	2.82	●
		68					698 - 728 MHz	753 - 783 MHz	13.21	13.25	3.69	3.34	●
		69					N/A	2570 - 2620 MHz	N/A	27.16	N/A	1.46	●
		70		70	n70	n70	1695 - 1710 MHz	1995 - 2020 MHz	31.93	37.76	2.01	1.39	●
		71	71	71	n71		663 - 698 MHz	617 - 652 MHz	9.80	12.72	4.07	4.35	●
		72	72	72			451 - 456 MHz	461 - 466 MHz	7.86	7.20	4.13	3.90	●
		73	73	73			450 - 455 MHz	460 - 465 MHz	7.89	7.35	4.20	3.90	●
		74	74	74	n74		1427 - 1470 MHz	1475 - 1518 MHz	12.10	15.47	2.56	2.52	●
		75			n75		N/A	1432 - 1517 MHz	N/A	14.01	N/A	2.56	●
		76			n76		N/A	1427 - 1432 MHz	N/A	9.95	N/A	2.14	●
					n77		3300 - 4200 MHz	3300 - 4200 MHz	20.91	20.91	1.86	1.86	●
					n78		3300 - 3800 MHz	3300 - 3800 MHz	22.07	22.07	1.67	1.67	●
					n79		4400 - 5000 MHz	4400 - 5000 MHz	16.81	16.81	1.36	1.36	●
					n80		1710 - 1785 MHz	N/A	33.61	N/A	1.86	N/A	●
					n81		880 - 915 MHz	N/A	17.62	N/A	2.43	N/A	●
					n82		832 - 862 MHz	N/A	13.77	N/A	2.91	N/A	●
					n83		703 - 748 MHz	N/A	12.82	N/A	3.69	N/A	●
					n84		1920 - 1980 MHz	N/A	37.80	N/A	1.30	N/A	●
		85	85	85	n85		698 - 716 MHz	728 - 746 MHz	12.93	12.11	3.69	2.82	●
					n86		1710 - 1780 MHz	N/A	33.48	N/A	1.86	N/A	●
		87	87	87			410 - 415 MHz	420 - 425 MHz	6.57	6.78	4.45	4.89	●
		88	88	88			412 - 417 MHz	422 - 427 MHz	6.57	6.94	4.38	5.06	●

● 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	13.47	N/A	2.91	N/A	●
					n90	n90	2496 - 2690 MHz	2496 - 2690 MHz	27.60	27.60	1.58	1.58	●
					n91		832 - 862 MHz	1427 - 1432 MHz	13.77	9.95	2.91	2.14	●
					n92		832 - 862 MHz	1432 - 1517 MHz	13.77	14.01	2.91	2.56	●
					n93		880 - 915 MHz	1427 - 1432 MHz	17.62	9.95	2.43	2.14	●
					n94		880 - 915 MHz	1432 - 1517 MHz	17.62	14.01	2.43	2.56	●
					n95		2010 - 2025 MHz	N/A	38.01	N/A	1.32	N/A	●
					n97		2300 - 2400 MHz	N/A	30.00	N/A	1.71	N/A	●
					n98		1880 - 1920 MHz	N/A	37.23	N/A	1.21	N/A	●
					n99		1626.5 - 1660.5 MHz	N/A	25.70	N/A	2.37	N/A	●
					n101		1900 - 1910 MHz	1900 - 1910 MHz	37.37	37.37	1.17	1.17	●
				103			787 - 788 MHz	757 - 758 MHz	12.85	13.11	3.69	2.49	●

● 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.



### 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	7.69	5.49	-4.2576	●
ISM 868 MHz	863 - 870 MHz	14.37	2.81	0.805	●
ISM 915 MHz	902 - 928 MHz	17.29	2.38	1.81	●
ISM 2.4 GHz	2400 - 2500 MHz	27.94	1.77	3.11	●
Wi-Fi 2.4G	2401 - 2483 MHz	28.20	1.77	2.85	●
Wi-Fi 2.4G (USA)	2401 - 2473 MHz	28.41	1.77	2.85	●
Wi-Fi 2.4G (Japan)	2401 - 2495 MHz	28.00	1.77	2.98	●
Wi-Fi 5G (all channels)	5150 - 5990 MHz	12.22	1.33	-2.41	●
Wi-Fi 5G (Ch 32-48)	5150 - 5250 MHz	15.55	1.26	-2.85	●
Wi-Fi 5G (Ch 32-64)	5150 - 5330 MHz	15.26	1.29	-2.85	●
Wi-Fi 5G (Ch 32-161)	5150 - 5815 MHz	13.01	1.33	-2.41	●
Wi-Fi 5G (Ch 32-173)	5150 - 5875 MHz	12.72	1.33	-2.41	●
ISM 5.8 GHz	5725 - 5875 MHz	9.89	1.32	-2.41	●

● Suitable band

● Adequate band in good signal conditions

● Likely to be unsuitable

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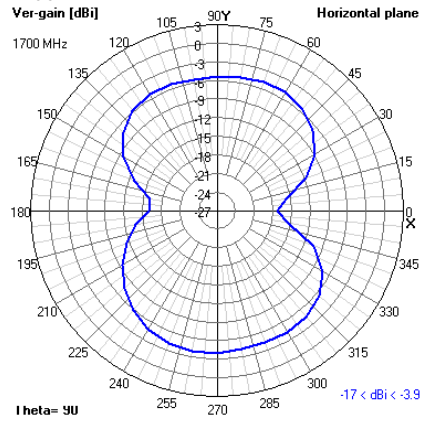


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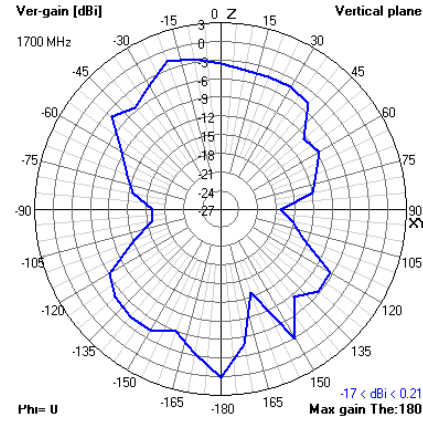
5G/4G/Bluetooth/Zigbee Adhesive Blade Antenna

### 2D Radiation Plots

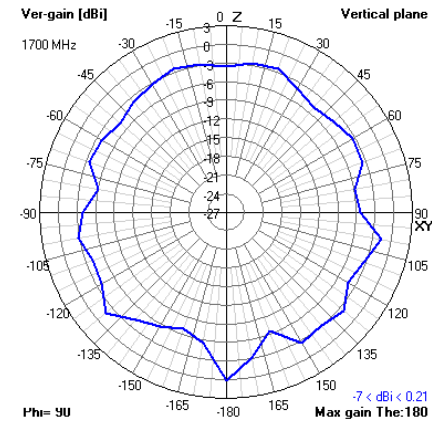
#### 1700 MHz XY



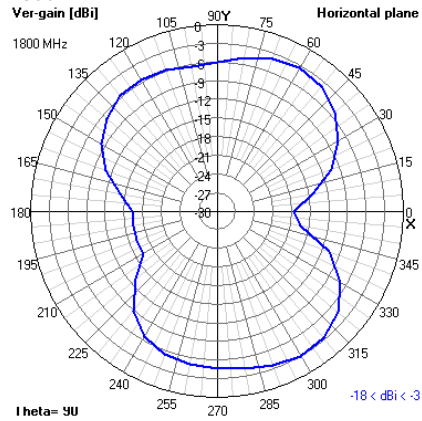
#### XZ



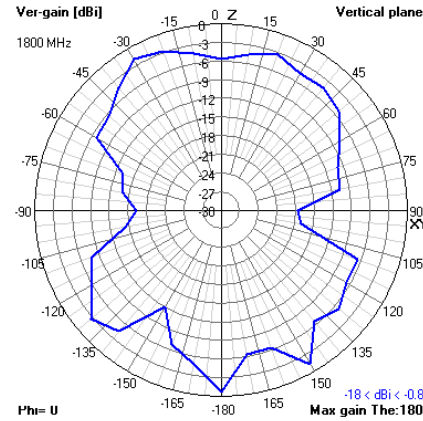
#### YZ



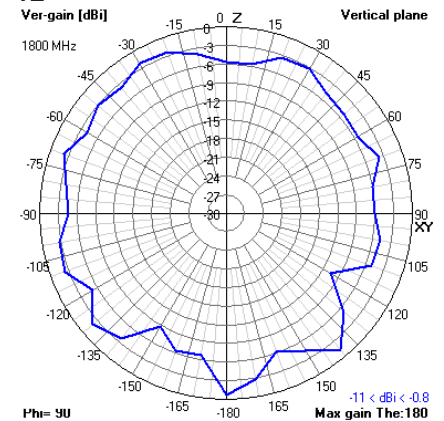
#### 1800 MHz XY



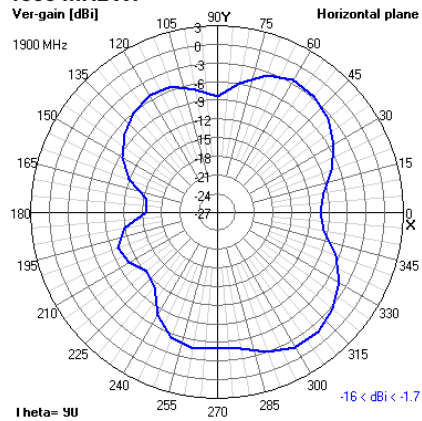
#### XZ



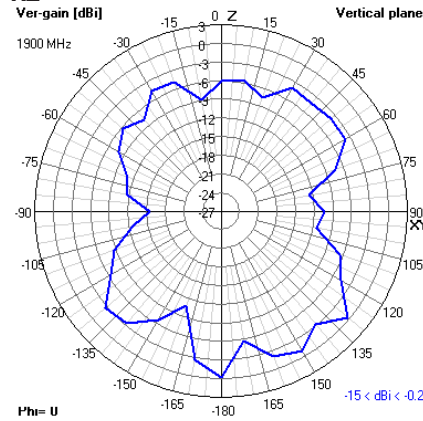
#### YZ



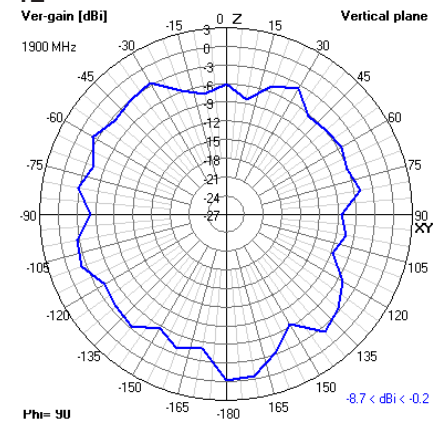
#### 1900 MHz XY



#### XZ



#### YZ



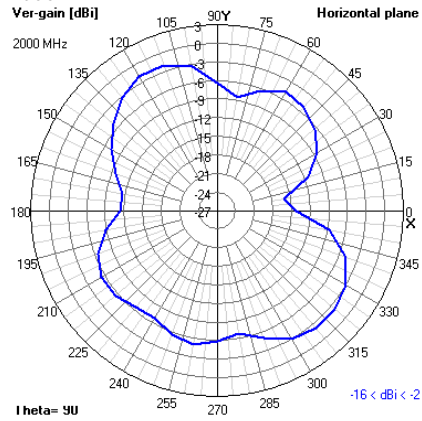


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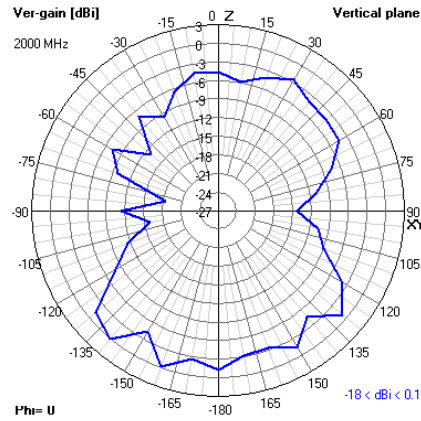
5G/4G/Bluetooth/Zigbee Adhesive Blade Antenna

### 2D Radiation Plots

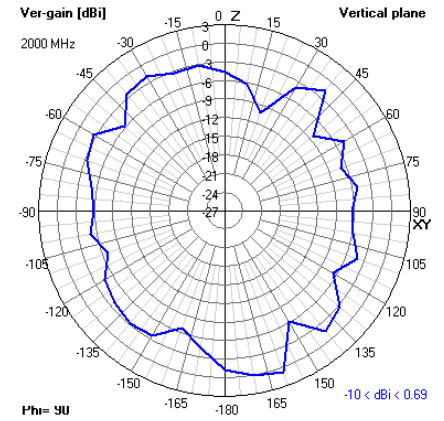
#### 2000 MHz XY



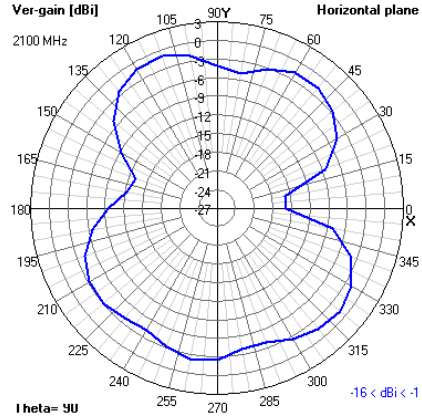
#### XZ



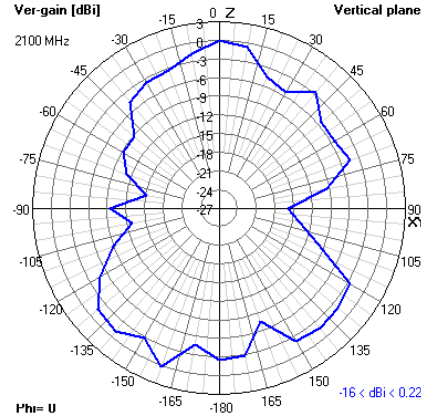
#### YZ



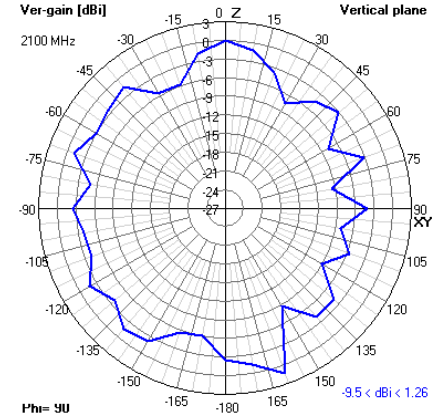
#### 2100 MHz XY



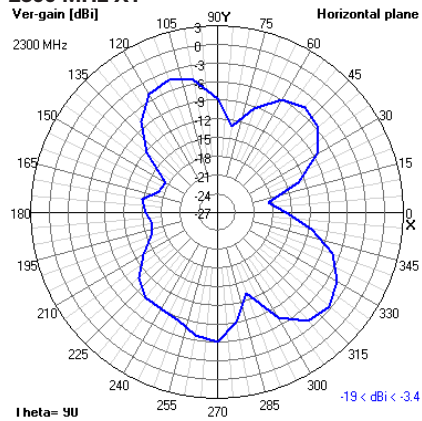
#### XZ



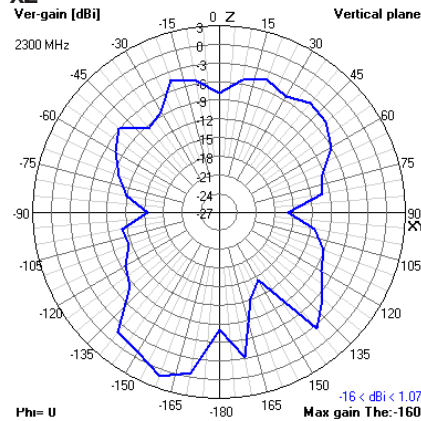
#### YZ



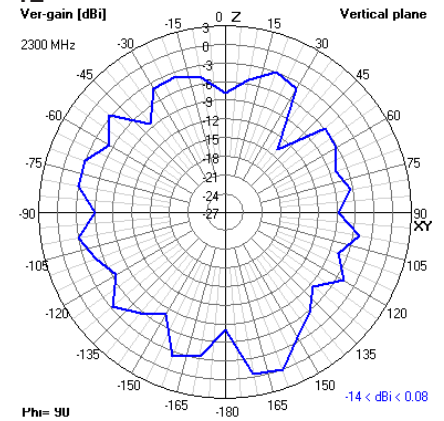
#### 2300 MHz XY



#### XZ



#### YZ



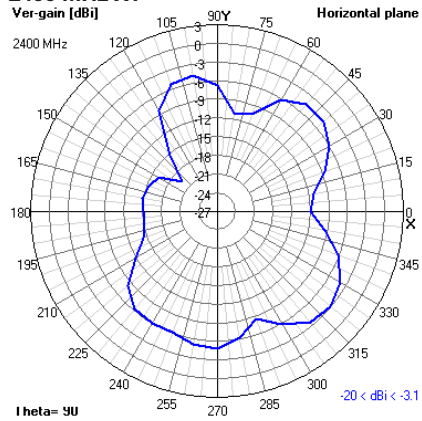


## ALPHA 10

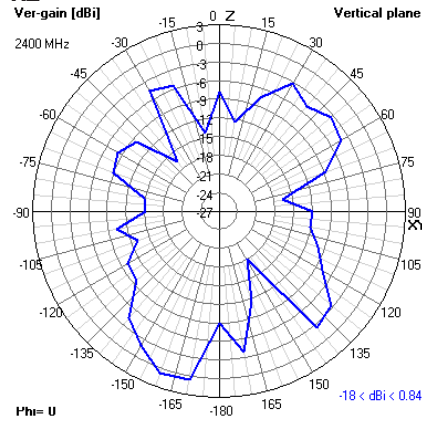
5G/4G/Bluetooth/Zigbee Adhesive Blade Antenna

### 2D Radiation Plots

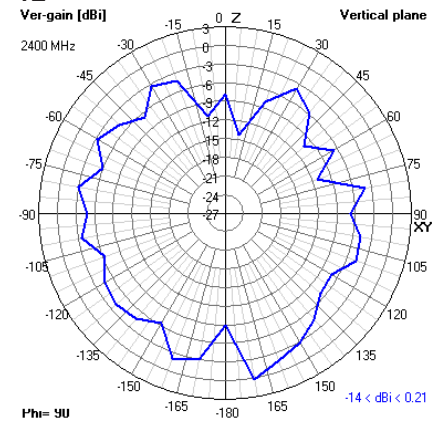
#### 2400 MHz XY



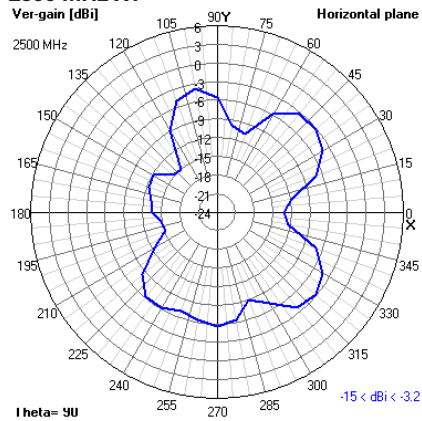
#### XZ



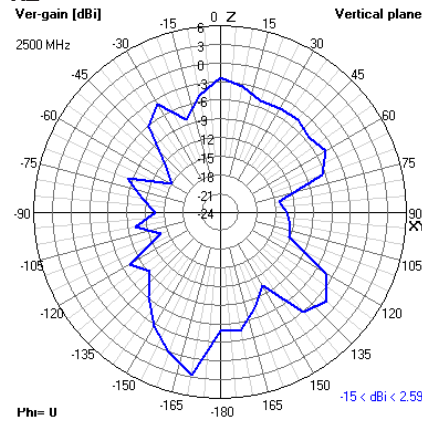
#### YZ



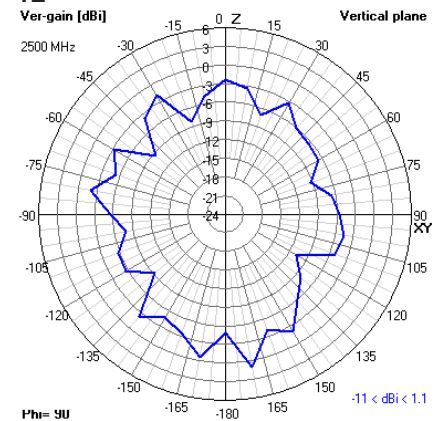
#### 2500 MHz XY



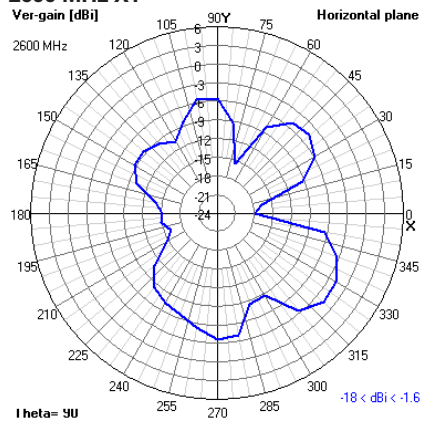
#### XZ



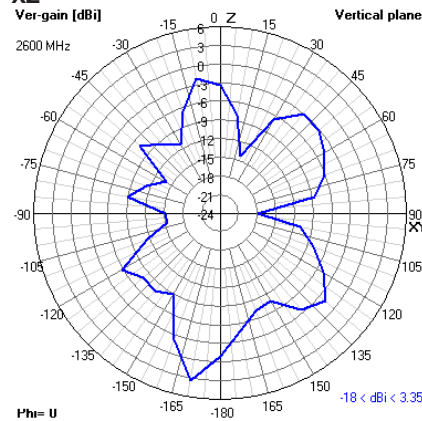
#### YZ



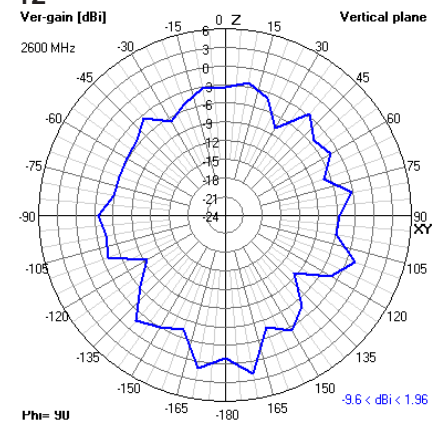
#### 2600 MHz XY



#### XZ



#### YZ



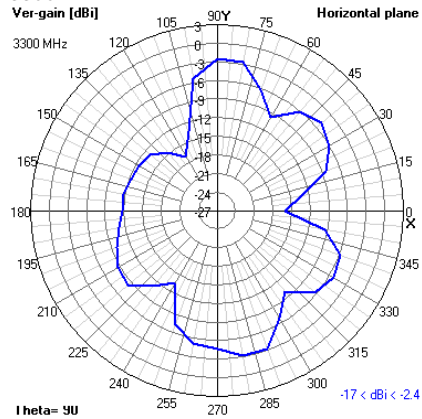


## ALPHA 10

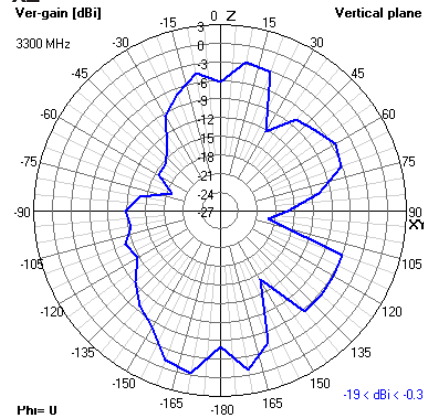
5G/4G/Bluetooth/Zigbee Adhesive Blade Antenna

### 2D Radiation Plots

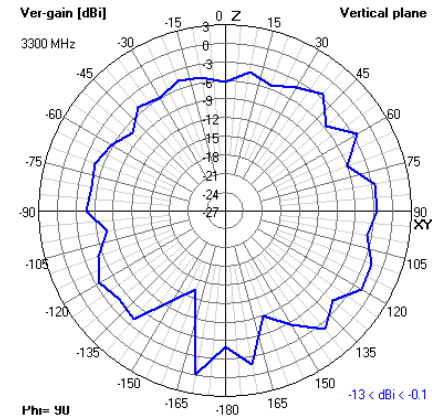
#### 3300 MHz XY



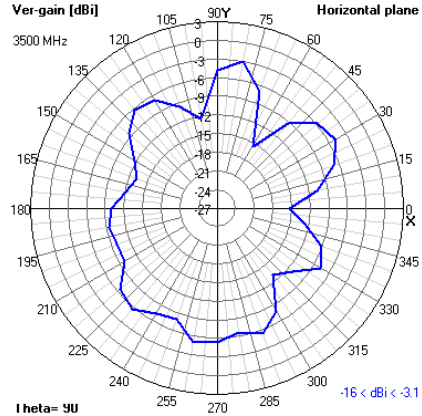
#### XZ



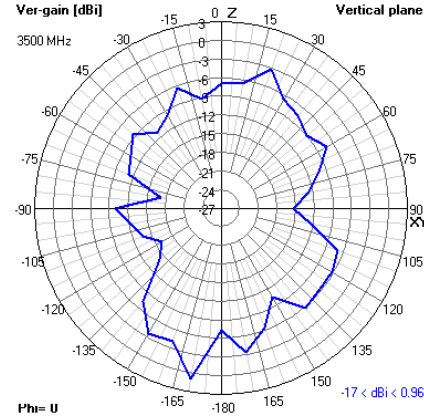
#### YZ



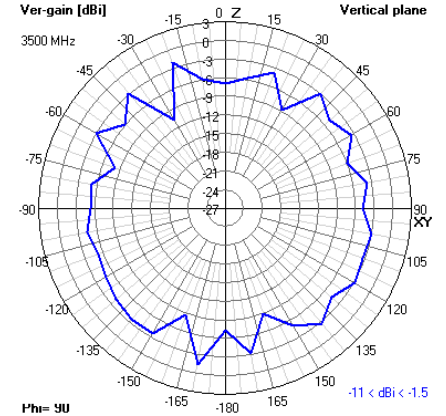
#### 3500 MHz XY



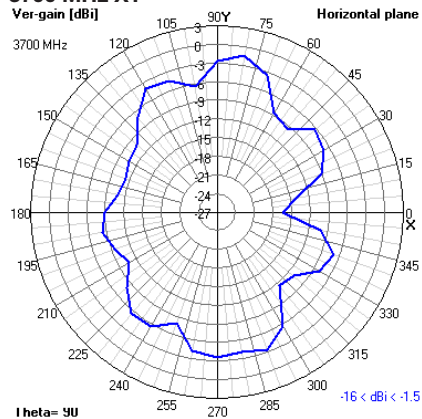
#### XZ



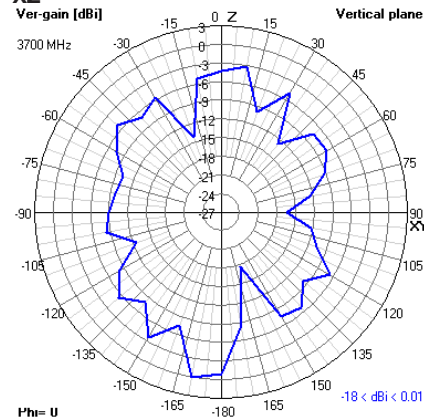
#### YZ



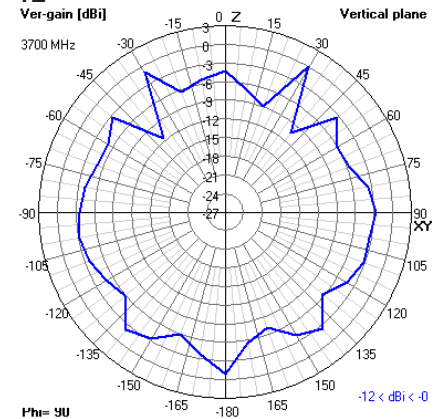
#### 3700 MHz XY



#### XZ



#### YZ



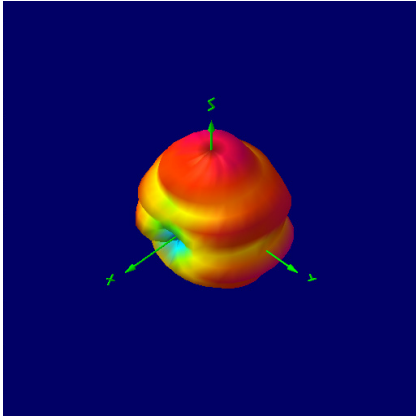


## ALPHA 10

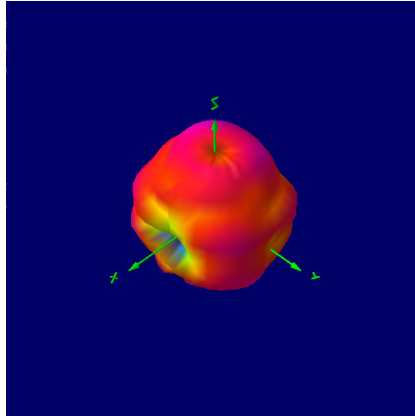
5G/4G/Bluetooth/Zigbee Adhesive Blade Antenna

### 3D Radiation Plots

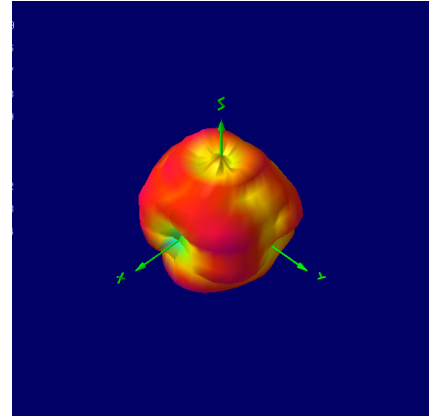
1700 MHz



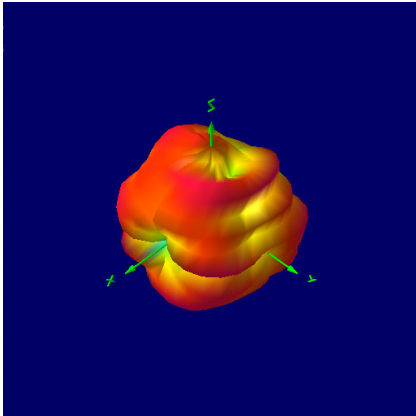
1800 MHz



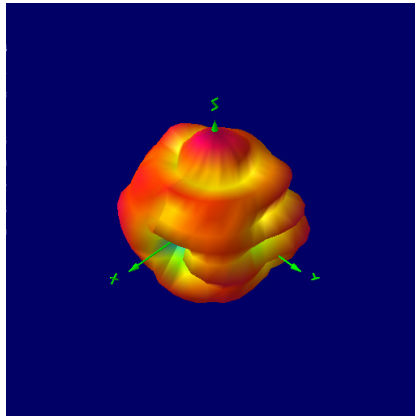
1900 MHz



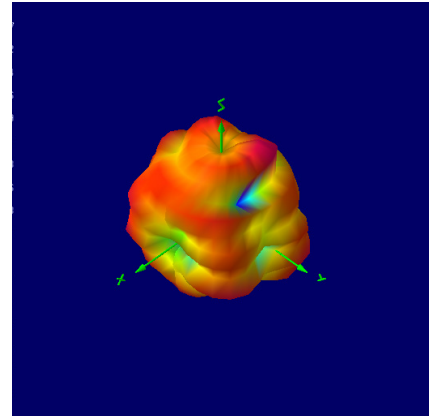
2000 MHz



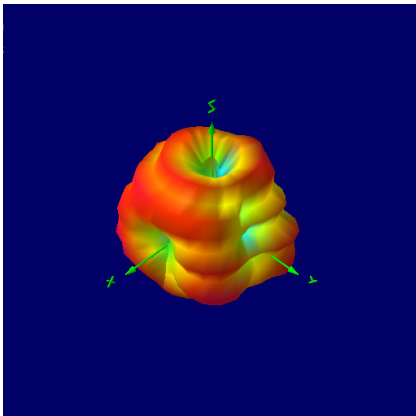
2100 MHz



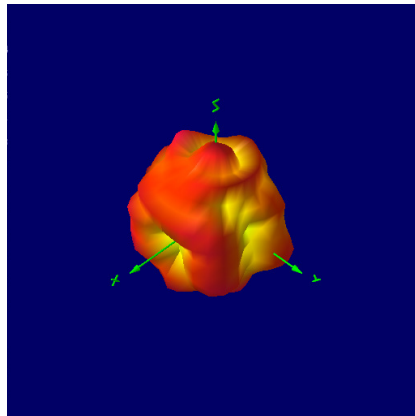
2300 MHz



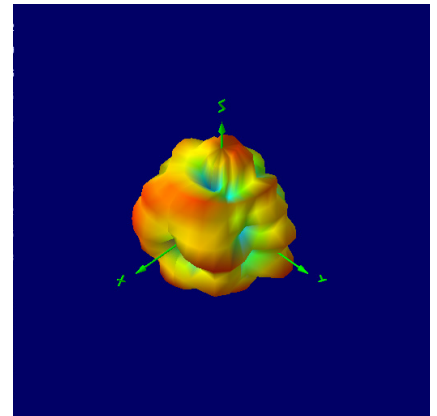
2400 MHz



2500 MHz



2600 MHz





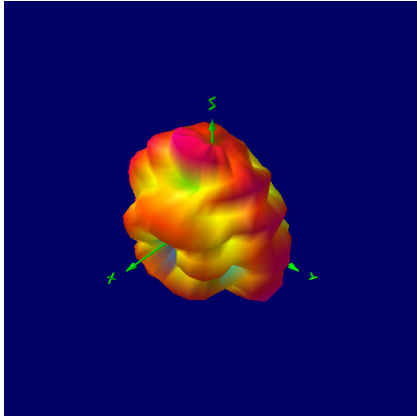


## ALPHA 10

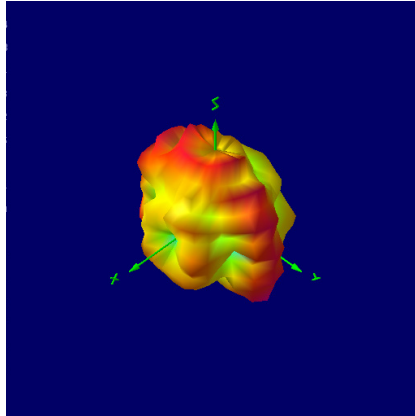
5G/4G/Bluetooth/Zigbee Adhesive Blade Antenna

### 3D Radiation Plots

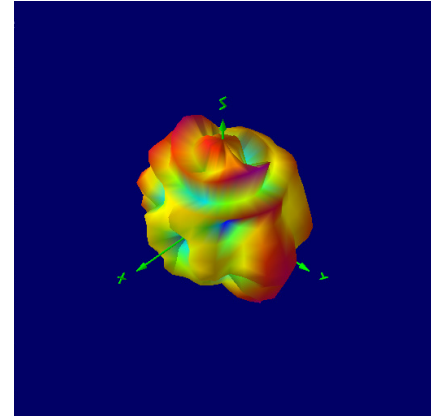
3300 MHz



3500 MHz



3700 MHz



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

### Ordering Details:

Part Number	Description
ALPHA10/2.5M/SMAM/S/S/20	5G/4G/Bluetooth/Zigbee Adhesive Blade Antenna 2.5M Cable SMA male Connector