



Alpha 3A

5G/4G/2.4 GHz Wi-Fi, Bluetooth, Zigbee Adhesive Antenna



Key Features

- Supports 5G NR / 4G LTE / 3G UMTS / 2G Quad-band GSM
- Supports LTE Cat M, LTE Cat NB and NR Cat NB Bands
- Supports 2.4 GHz applications: Wi-Fi, Bluetooth, Zigbee, Z-Wave, ISM 2.4 GHz
- Supports 868 MHz and 915 MHz applications: LoRa, Sigfox, Helium, Weightless
- Compact size
- Suitable to be mounted on any non-metallic surface

Additional Considerations

- Mounts discretely in installation, good for covert use
- Intended for internal use

General Description

The Alpha 3A adhesive antenna is based on an efficiently tuned PCB that is matched with a wide variety of RF & M2M applications, operating on quad band 2G, 3G, 4G, 5G, LoRa, ISM and 2.4 GHz applications like Wi-Fi, Bluetooth, etc. It is designed as a ready to go antenna which fits most telemetry products.

Already proven in many applications where space is at a premium, this product is ideal as it is ground plane independent and compact, making it a popular choice where the user does not want to draw attention to having telemetry equipment on board.

Alternative cable lengths or connector types can be specified for volume orders.

A Adhesive	5G New Radio	4G LTE	3G UMTS	2G GSM
IEEE 802.15.4	BLE Bluetooth	AoA Bluetooth	AoD Bluetooth	WLAN 2400
LTE Cat M	LTE NB IoT	NR NB IoT	WiFi 4 802.11n	WiFi 5 802.11ac
WiFi 6 802.11ax	WiFi 2.4G	ISM 868	ISM 915	ISM 2450
LoRa Wireless	SF Sigfox	Z Wave	ZB Zigbee	HNT Helium
W Weightless				



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Electrical Specifications

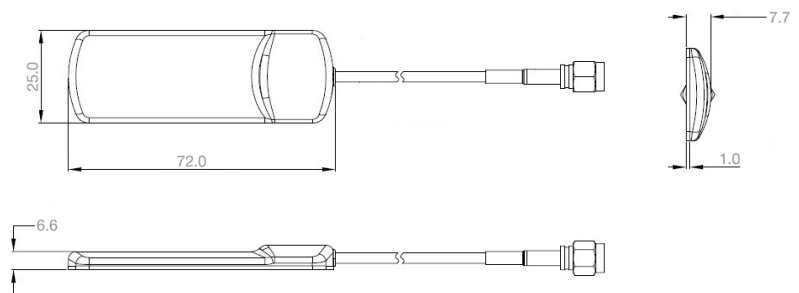
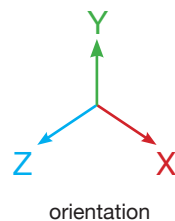
Impedance:	50 Ohm
Polarization:	Linear
Max Input Power:	10 W
Ground plane independent:	Yes

Environmental Specifications

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

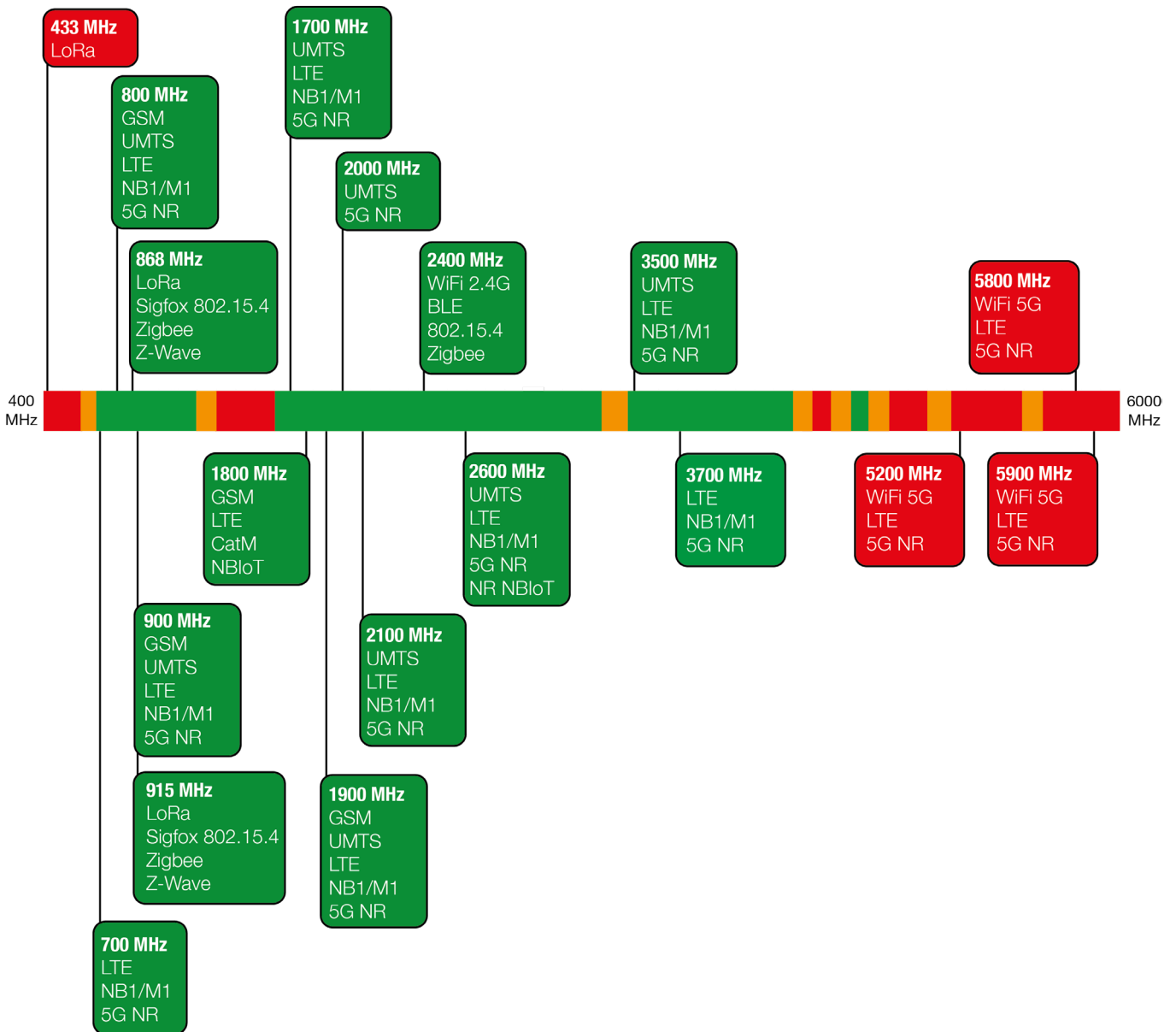
Mechanical Specifications

Dimensions:	L72 x W25 x H7.7 mm (excludes the cable)
Weight:	20.0 g
Cable:	RG174
Connector:	SMA Male / FME Female
Mounting method:	Adhesive Pad
Housing materials:	ABS





Spectrum Coverage



● Suitable band ● Adequate band in good signal conditions ● Likely to be unsuitable



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)

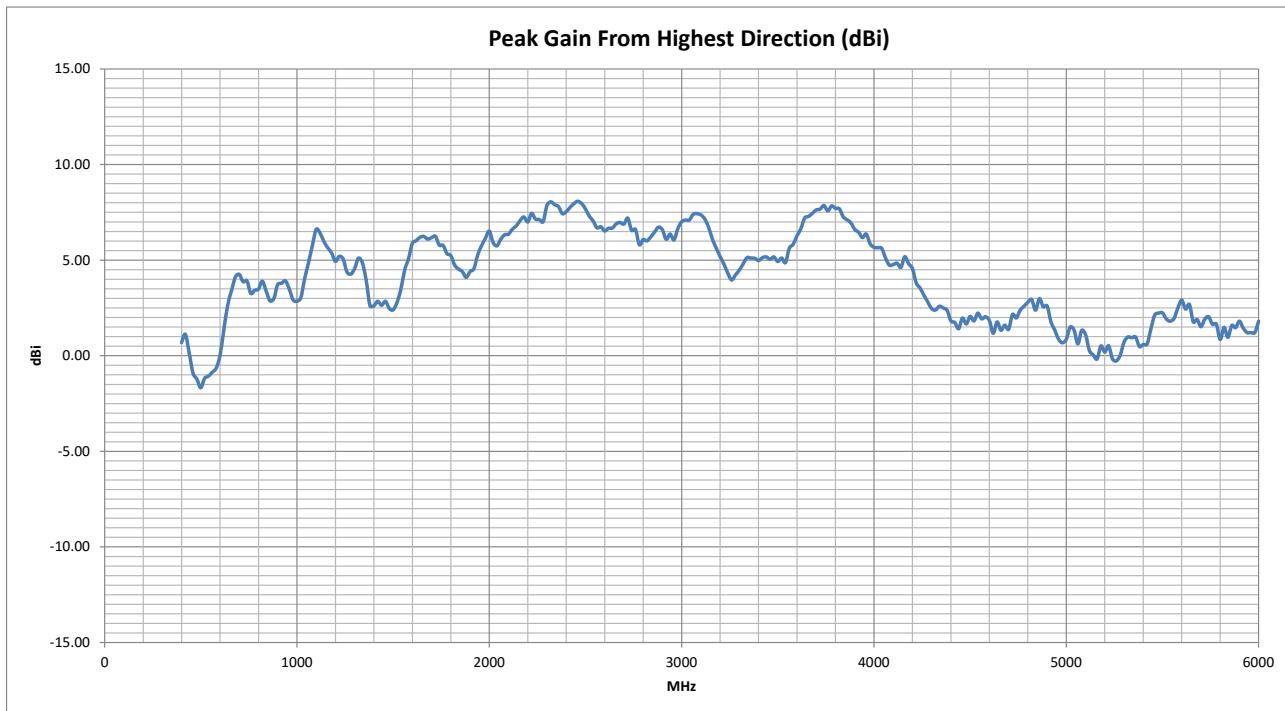
	433	868	915	2450	5800
Bluetooth				●	
IEEE 802.15.4		●	●	●	
LoRa		●	●		
Sigfox		●	●		
Wi-Fi 2.4G				●	
Wi-Fi 5G					
Zigbee		●	●	●	
Z-Wave		●	●		



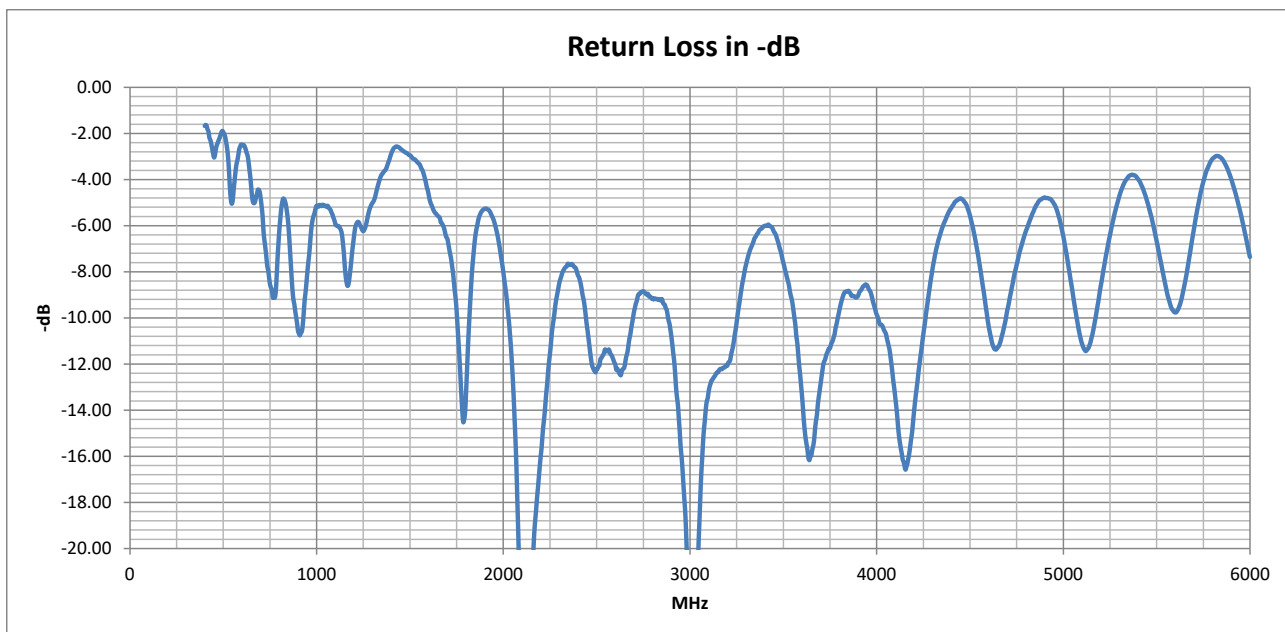
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Peak Gain vs. Frequency



Return Loss

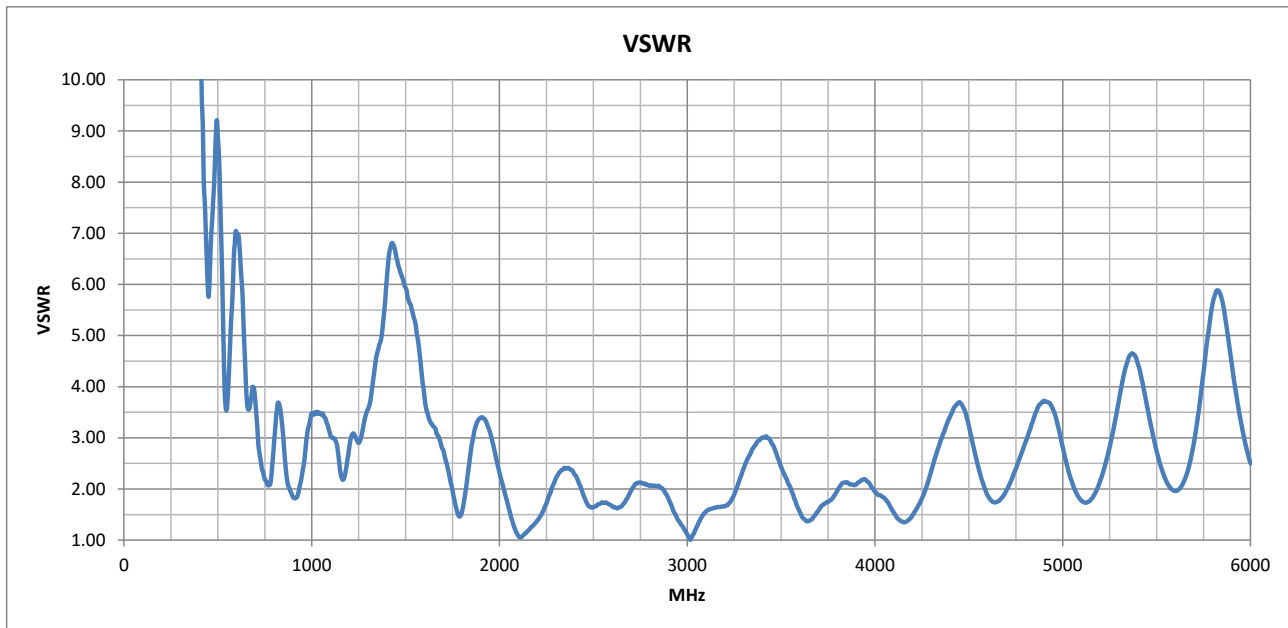




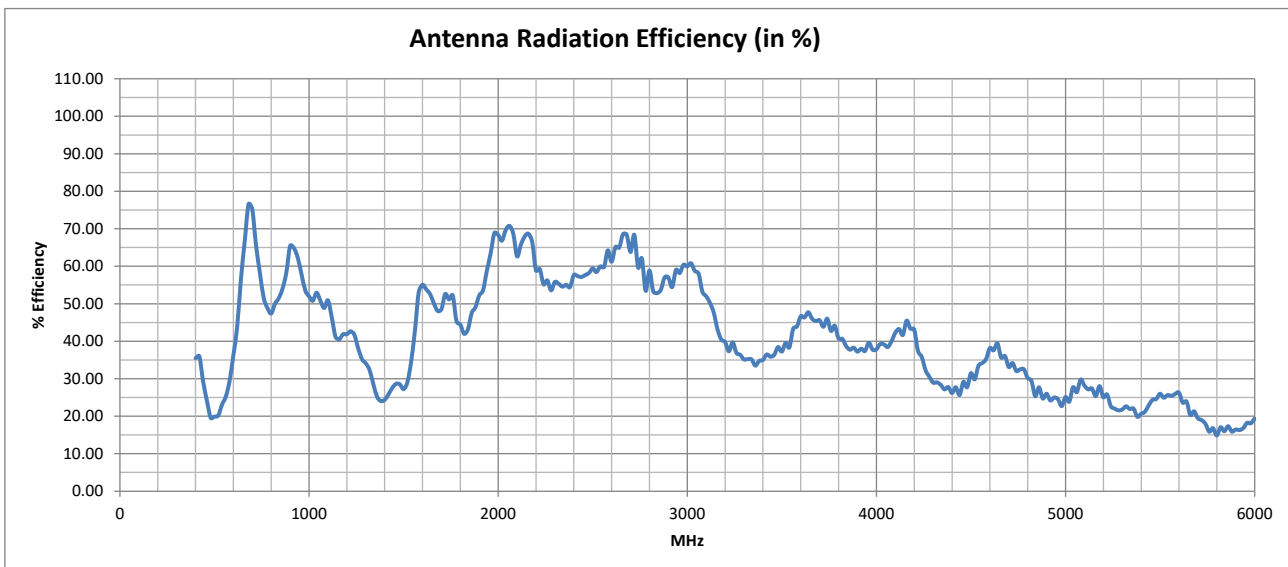
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VSWR



Radiation Efficiency





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	61.12	67.24	3.37	1.26	●
PCS-1900	2	2	2	2	n2	n2	1850 - 1910 MHz	1930 - 1990 MHz	49.49	63.43	3.40	3.31	●
DCS-1800	3	3	3	3	n3	n3	1710 - 1785 MHz	1805 - 1880 MHz	50.51	44.91	2.61	3.30	●
	4	4	4	4			1710 - 1755 MHz	2110 - 2155 MHz	51.71	66.89	2.61	1.20	●
GSM-850	5	5	5	5	n5	n5	824 - 849 MHz	869 - 894 MHz	51.34	59.23	3.68	2.17	●
	6						830 - 840 MHz	875 - 885 MHz	51.14	58.52	3.61	2.06	●
	7	7	7	7	n7	n7	2500 - 2570 MHz	2620 - 2690 MHz	59.59	66.85	1.74	1.89	●
E-GSM-900	8	8	8	8	n8	n8	880 - 915 MHz	925 - 960 MHz	63.33	61.51	2.02	2.54	●
	9	9					1749.9 - 1784.9 MHz	1844.9 - 1879.9 MHz	49.19	47.26	1.97	3.30	●
	10	10					1710 - 1770 MHz	2110 - 2170 MHz	51.54	67.24	2.61	1.26	●
	11	11	11	11			1427.9 - 1447.9 MHz	1475.9 - 1495.9 MHz	27.31	28.11	6.81	6.19	●
	12	12	12	12	n12	n12	699 - 716 MHz	729 - 746 MHz	71.51	59.26	3.73	2.53	●
	13	13	13	13	n13	n13	777 - 787 MHz	746 - 756 MHz	48.75	54.66	2.35	2.24	●
	14	14	14	14	n14		788 - 798 MHz	758 - 768 MHz	47.93	51.27	2.84	2.15	●
		17		17			704 - 716 MHz	734 - 746 MHz	70.31	58.38	3.50	2.41	●
		18	18	18	n18	n18	815 - 830 MHz	860 - 875 MHz	50.15	55.68	3.69	2.46	●
	19	19	19	19			830 - 845 MHz	875 - 890 MHz	51.38	59.35	3.61	2.06	●
	20	20	20	20	n20	n20	832 - 862 MHz	791 - 821 MHz	52.48	48.47	3.56	3.69	●
	21	21	21	21			1447.9 - 1462.9 MHz	1495.9 - 1510.9 MHz	28.37	27.62	6.58	5.96	●
	22	22					3410 - 3490 MHz	3510 - 3590 MHz	36.72	41.32	3.03	2.34	●
		24	24	24	n24		1626.5 - 1660.5 MHz	1525 - 1559 MHz	52.00	35.87	3.36	5.61	●
	25	25	25	25	n25	n25	1850 - 1915 MHz	1930 - 1995 MHz	49.77	63.82	3.40	3.31	●
	26	26	26	26	n26		814 - 849 MHz	859 - 894 MHz	50.91	58.00	3.69	2.51	●
		27	27				807 - 824 MHz	852 - 869 MHz	49.40	54.34	3.69	2.83	●
		28	28	28	n28	n28	703 - 748 MHz	758 - 803 MHz	63.94	49.22	3.55	3.07	●

● 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	66.80	49.92	3.55	2.39	●
		29			n29		N/A	717 - 728 MHz	N/A	64.63	N/A	2.83	●
		30			n30		2305 - 2315 MHz	2350 - 2360 MHz	55.59	54.95	2.31	2.41	●
		31	31	31			452.5 - 457.5 MHz	462.5 - 467.5 MHz	25.43	23.01	6.28	7.13	●
	32	32					N/A	1452 - 1496 MHz	N/A	28.34	N/A	6.51	●
		33					1900 - 1920 MHz	1900 - 1920 MHz	52.91	52.91	3.40	3.40	●
		34			n34		2010 - 2025 MHz	2010 - 2025 MHz	67.21	67.21	2.17	2.17	●
		35					1850 - 1910 MHz	1850 - 1910 MHz	49.49	49.49	3.40	3.40	●
		36					1930 - 1990 MHz	1930 - 1990 MHz	63.43	63.43	3.31	3.31	●
		37					1910 - 1930 MHz	1910 - 1930 MHz	54.06	54.06	3.40	3.40	●
		38			n38		2570 - 2620 MHz	2570 - 2620 MHz	63.01	63.01	1.73	1.73	●
		39	39		n39		1880 - 1920 MHz	1880 - 1920 MHz	51.79	51.79	3.40	3.40	●
		40	40		n40		2300 - 2400 MHz	2300 - 2400 MHz	55.24	55.24	2.41	2.41	●
		41	41	41	n41	n41	2496 - 2690 MHz	2496 - 2690 MHz	63.08	63.08	1.89	1.89	●
		42	42	42			3400 - 3600 MHz	3400 - 3600 MHz	39.05	39.05	3.03	3.03	●
		43	43	43			3600 - 3800 MHz	3600 - 3800 MHz	45.16	45.16	1.97	1.97	●
		44					703 - 803 MHz	703 - 803 MHz	56.32	56.32	3.55	3.55	●
		45					1447 - 1467 MHz	1447 - 1467 MHz	28.40	28.40	6.60	6.60	●
		46			n46		5150 - 5925 MHz	5150 - 5925 MHz	21.55	21.55	5.88	5.88	●
		47			n47		5855 - 5925 MHz	5855 - 5925 MHz	16.45	16.45	5.57	5.57	●
		48			n48		3550 - 3700 MHz	3550 - 3700 MHz	45.55	45.55	2.02	2.02	●
		49					3550 - 3700 MHz	3550 - 3700 MHz	45.55	45.55	2.02	2.02	●
		50			n50		1432 - 1517 MHz	1432 - 1517 MHz	28.05	28.05	6.79	6.79	●
		51			n51		1427 - 1432 MHz	1427 - 1432 MHz	26.64	26.64	6.81	6.81	●
		52					3300 - 3400 MHz	3300 - 3400 MHz	34.74	34.74	3.01	3.01	●

● 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	58.77	58.77	1.65	1.65	●
		65		65	n65	n65	1920 - 2010 MHz	2110 - 2200 MHz	63.55	66.21	3.37	1.38	●
		66	66	66	n66	n66	1710 - 1780 MHz	2110 - 2200 MHz	50.89	66.21	2.61	1.38	●
		67			n67		N/A	738 - 758 MHz	N/A	55.67	N/A	2.36	●
		68					698 - 728 MHz	753 - 783 MHz	68.97	50.70	3.77	2.20	●
		69					N/A	2570 - 2620 MHz	N/A	63.01	N/A	1.73	●
		70		70	n70	n70	1695 - 1710 MHz	1995 - 2020 MHz	49.19	67.78	2.79	2.39	●
		71	71	71	n71		663 - 698 MHz	617 - 652 MHz	74.19	52.87	4.00	6.64	●
		72	72	72			451 - 456 MHz	461 - 466 MHz	25.81	23.36	6.11	7.05	●
		73	73	73			450 - 455 MHz	460 - 465 MHz	26.06	23.58	5.99	7.00	●
		74	74	74	n74		1427 - 1470 MHz	1475 - 1518 MHz	27.88	28.02	6.81	6.20	●
		75			n75		N/A	1432 - 1517 MHz	N/A	28.05	N/A	6.79	●
		76			n76		N/A	1427 - 1432 MHz	N/A	26.64	N/A	6.81	●
					n77		3300 - 4200 MHz	3300 - 4200 MHz	40.31	40.31	3.03	3.03	●
					n78		3300 - 3800 MHz	3300 - 3800 MHz	40.63	40.63	3.03	3.03	●
					n79		4400 - 5000 MHz	4400 - 5000 MHz	30.38	30.38	3.73	3.73	●
					n80		1710 - 1785 MHz	N/A	50.51	N/A	2.61	N/A	●
					n81		880 - 915 MHz	N/A	63.33	N/A	2.02	N/A	●
					n82		832 - 862 MHz	N/A	52.48	N/A	3.56	N/A	●
					n83		703 - 748 MHz	N/A	63.94	N/A	3.55	N/A	●
					n84		1920 - 1980 MHz	N/A	61.12	N/A	3.37	N/A	●
		85	85	85	n85		698 - 716 MHz	728 - 746 MHz	71.72	59.43	3.77	2.55	●
					n86		1710 - 1780 MHz	N/A	50.89	N/A	2.61	N/A	●
		87	87	87			410 - 415 MHz	420 - 425 MHz	35.79	35.13	10.41	9.09	●
		88	88	88			412 - 417 MHz	422 - 427 MHz	35.84	34.46	10.06	8.64	●

● 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	51.34	N/A	3.68	N/A	●
					n90	n90	2496 - 2690 MHz	2496 - 2690 MHz	63.08	63.08	1.89	1.89	●
					n91		832 - 862 MHz	1427 - 1432 MHz	52.48	26.64	3.56	6.81	●
					n92		832 - 862 MHz	1432 - 1517 MHz	52.48	28.05	3.56	6.79	●
					n93		880 - 915 MHz	1427 - 1432 MHz	63.33	26.64	2.02	6.81	●
					n94		880 - 915 MHz	1432 - 1517 MHz	63.33	28.05	2.02	6.79	●
					n95		2010 - 2025 MHz	N/A	67.21	N/A	2.17	N/A	●
					n97		2300 - 2400 MHz	N/A	55.24	N/A	2.41	N/A	●
					n98		1880 - 1920 MHz	N/A	51.79	N/A	3.40	N/A	●
					n99		1626.5 - 1660.5 MHz	N/A	52.00	N/A	3.36	N/A	●
					n101		1900 - 1910 MHz	1900 - 1910 MHz	52.57	52.57	3.40	3.40	●
				103			787 - 788 MHz	757 - 758 MHz	48.32	52.48	2.39	2.15	●

● 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	31.30	7.33	0.483	●
ISM 868 MHz	863 - 870 MHz	55.46	2.35	2.93	●
ISM 915 MHz	902 - 928 MHz	64.90	1.92	3.842	●
ISM 2.4 GHz	2400 - 2500 MHz	57.80	2.28	8.08	●
Wi-Fi 2.4G	2401 - 2483 MHz	57.57	2.28	8.08	●
Wi-Fi 2.4G (USA)	2401 - 2473 MHz	57.49	2.28	8.08	●
Wi-Fi 2.4G (Japan)	2401 - 2495 MHz	57.72	2.28	8.08	●
Wi-Fi 5G (all channels)	5150 - 5990 MHz	21.25	5.88	2.91	●
Wi-Fi 5G (Ch 32-48)	5150 - 5250 MHz	25.42	2.82	0.52	●
Wi-Fi 5G (Ch 32-64)	5150 - 5330 MHz	23.90	4.31	0.98	●
Wi-Fi 5G (Ch 32-161)	5150 - 5815 MHz	22.39	5.84	2.91	●
Wi-Fi 5G (Ch 32-173)	5150 - 5875 MHz	21.92	5.88	2.91	●
ISM 5.8 GHz	5725 - 5875 MHz	16.62	5.88	2.04	●

● Suitable band

● Adequate band in good signal conditions

● Likely to be unsuitable

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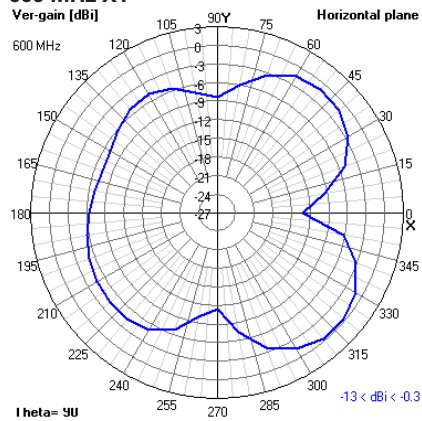


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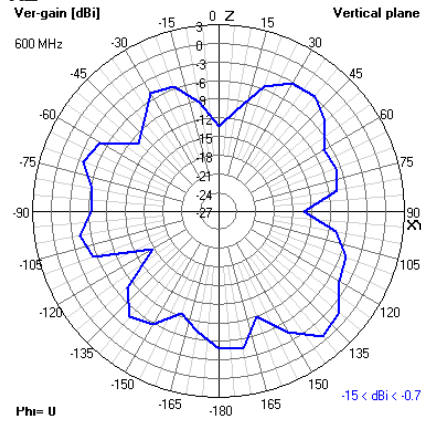
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2D Radiation Plots

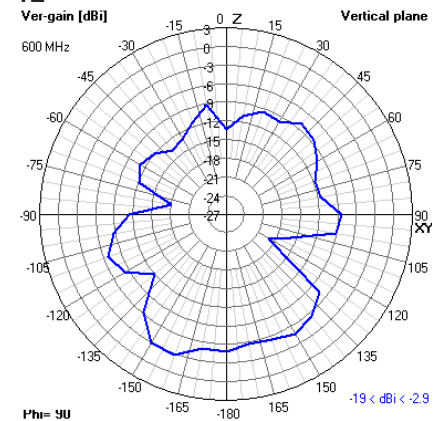
600 MHz XY



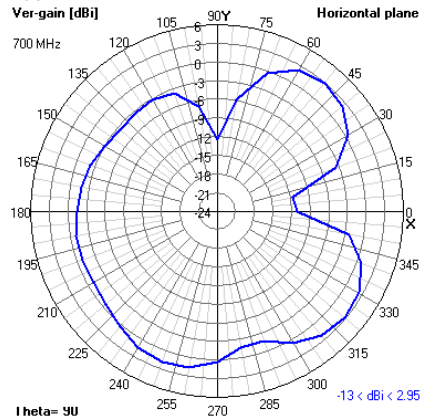
XZ



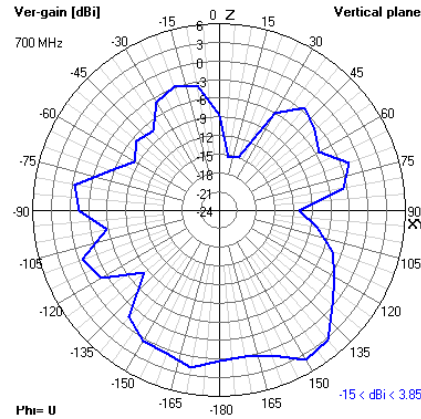
YZ



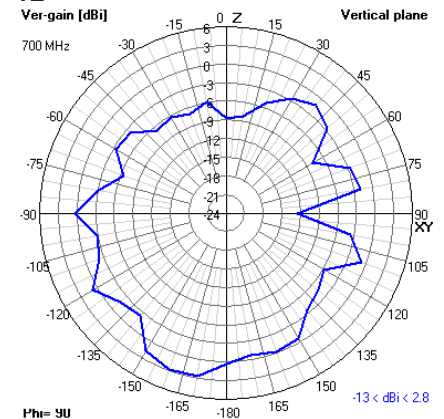
700 MHz XY



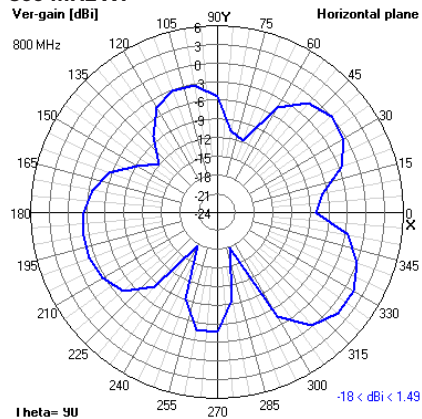
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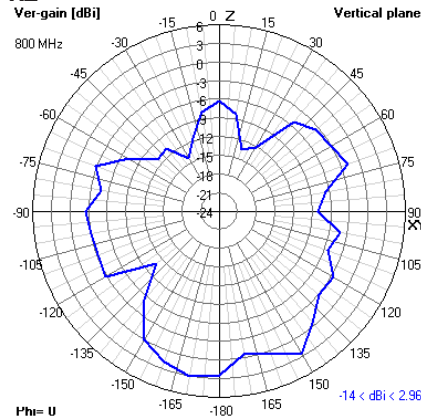
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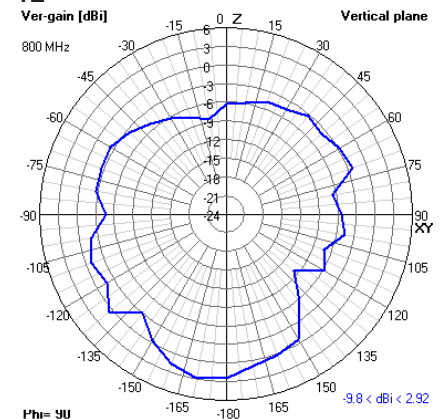
800 MHz XY



XZ



YZ



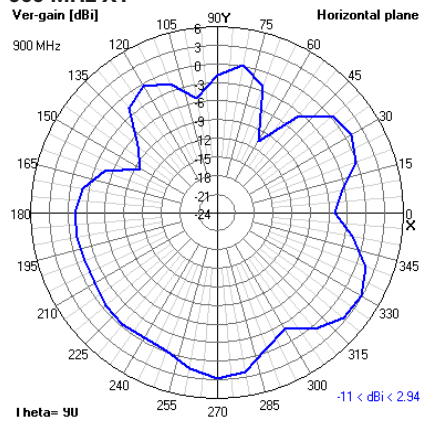


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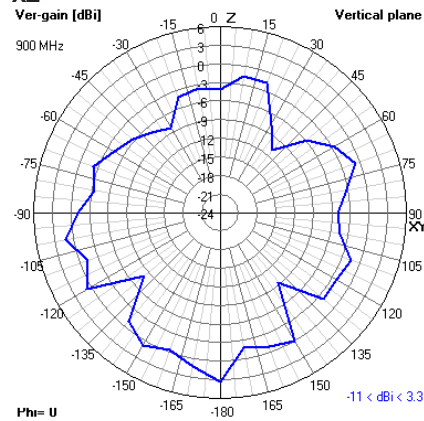
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2D Radiation Plots

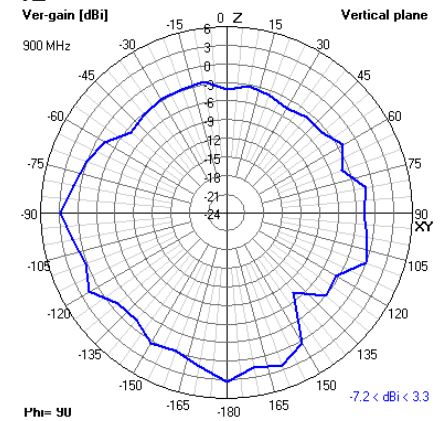
900 MHz XY



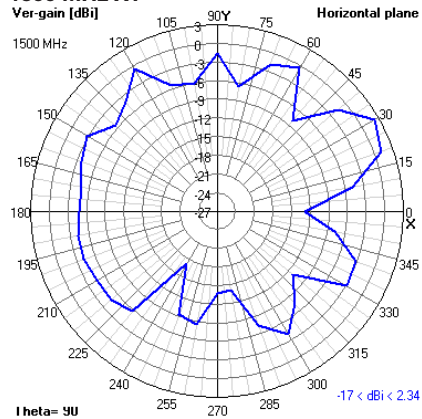
XZ



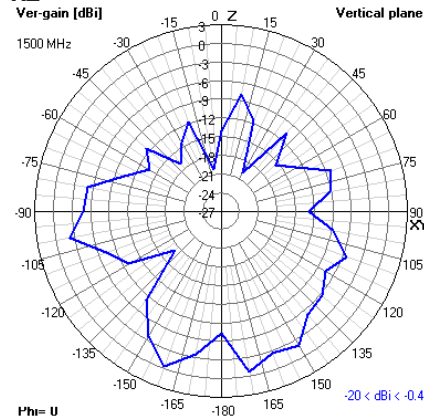
YZ



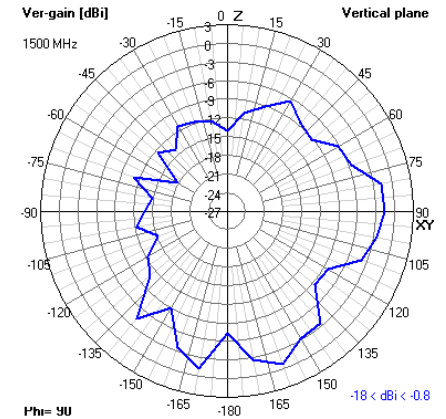
1500 MHz XY



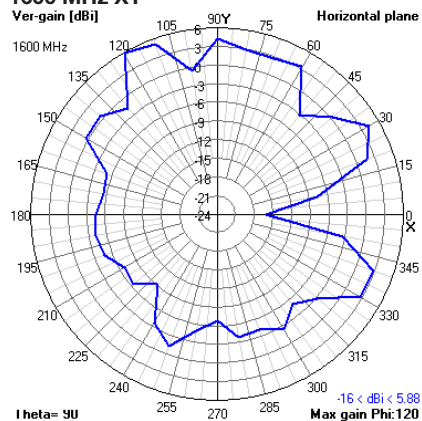
XZ



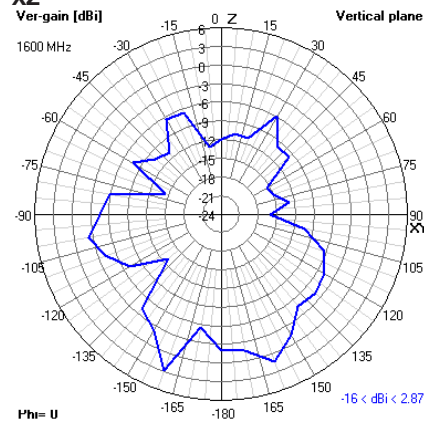
YZ



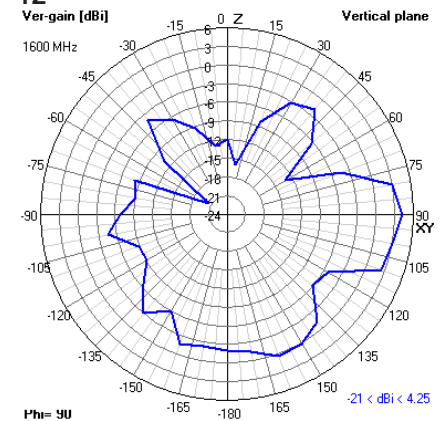
1600 MHz XY



XZ



YZ



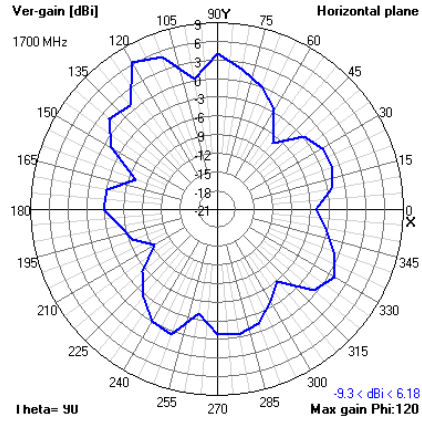


Alpha 3A

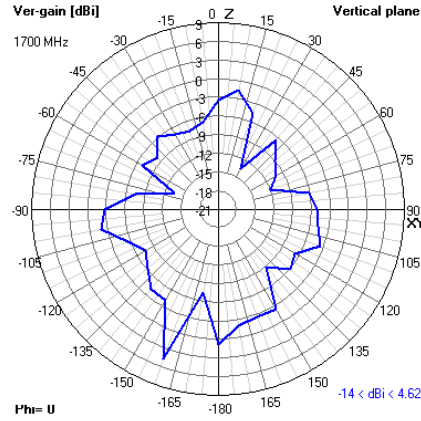
5G/4G/2.4 GHz Wi-Fi, Bluetooth, Zigbee Adhesive Antenna

2D Radiation Plots

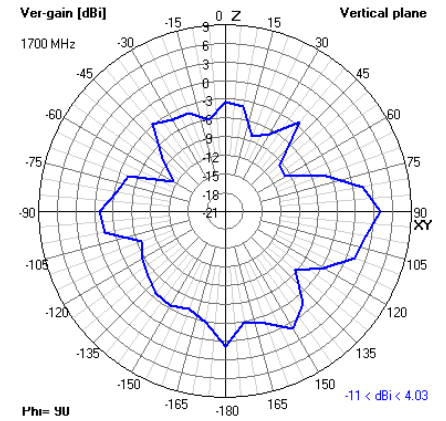
1700 MHz XY



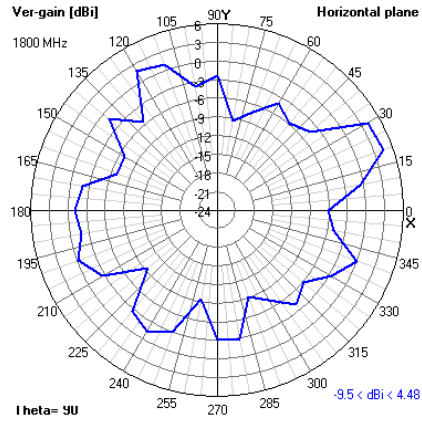
XZ



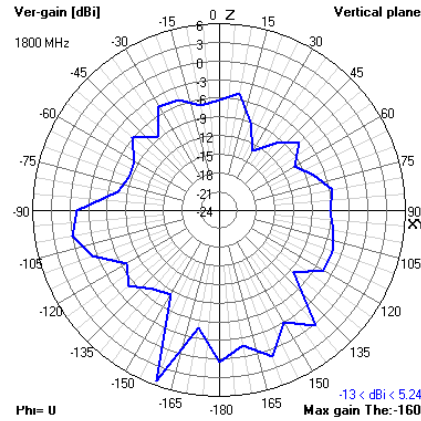
YZ



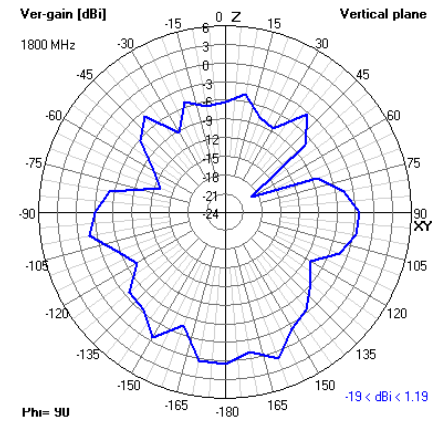
1800 MHz XY



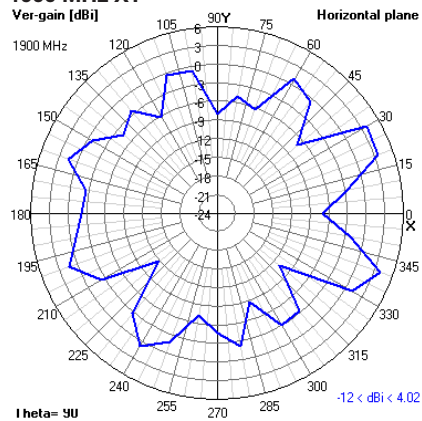
XZ



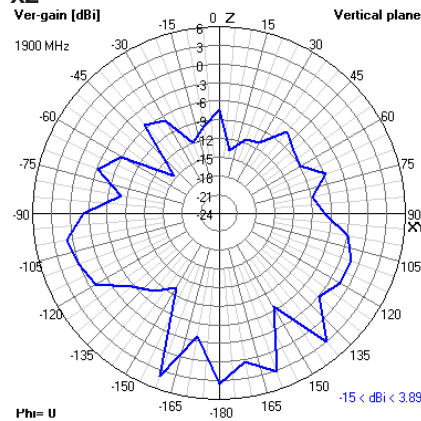
YZ



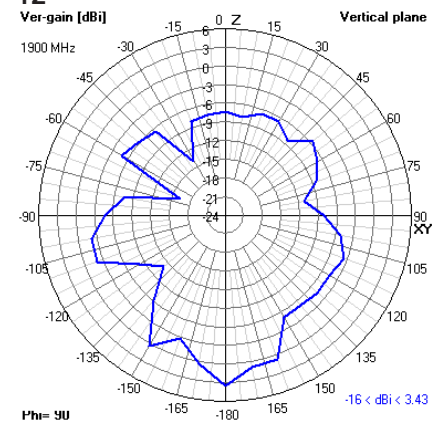
1900 MHz XY



XZ



YZ



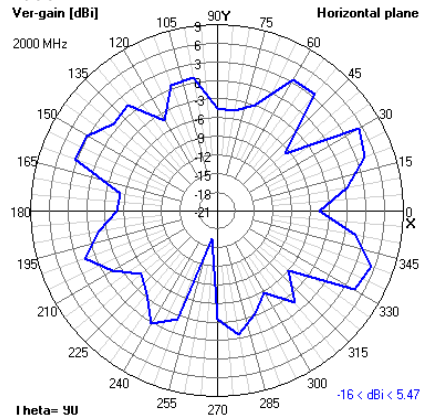


Alpha 3A

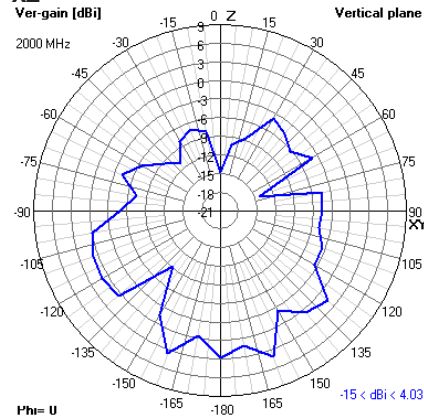
5G/4G/2.4 GHz Wi-Fi, Bluetooth, Zigbee Adhesive Antenna

2D Radiation Plots

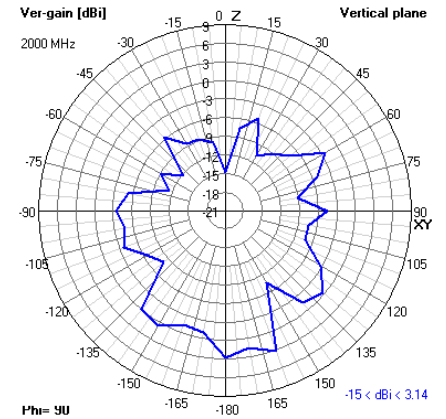
2000 MHz XY



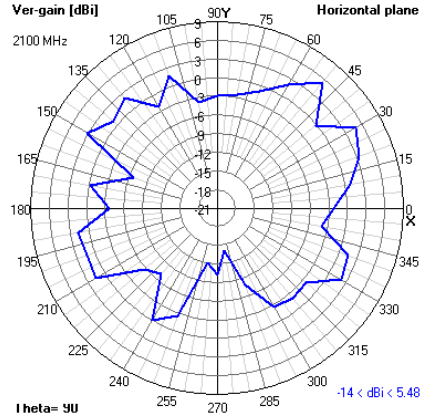
XZ



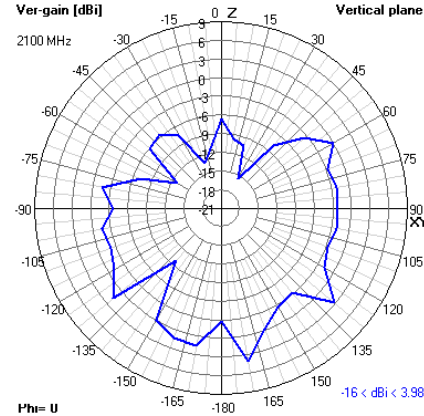
YZ



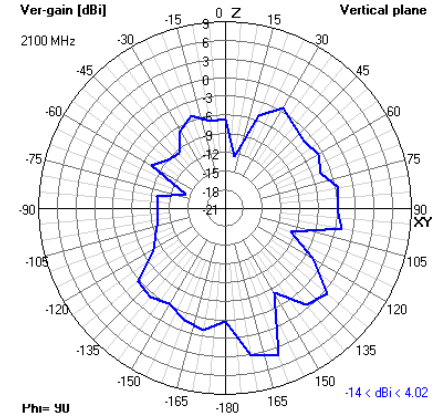
2100 MHz XY



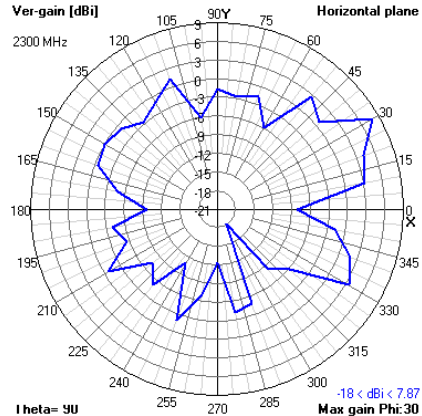
XZ



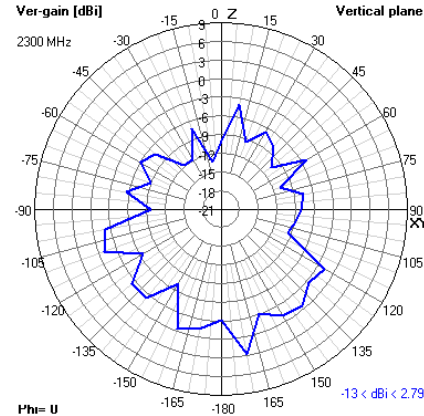
YZ



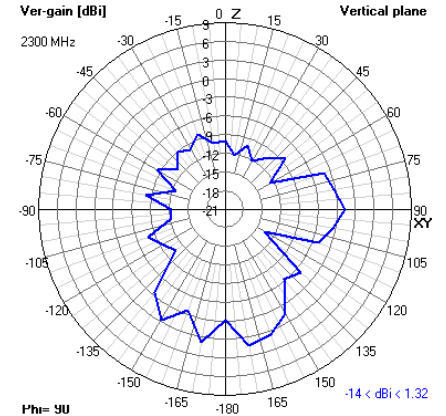
2300 MHz XY



XZ



YZ



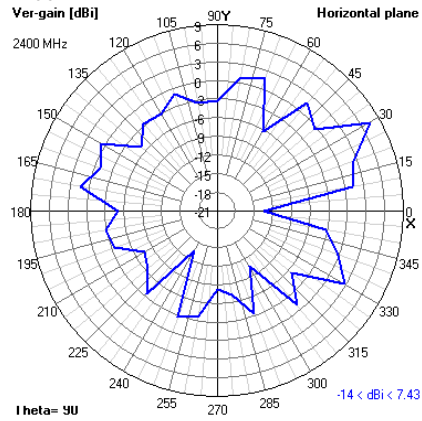


Alpha 3A

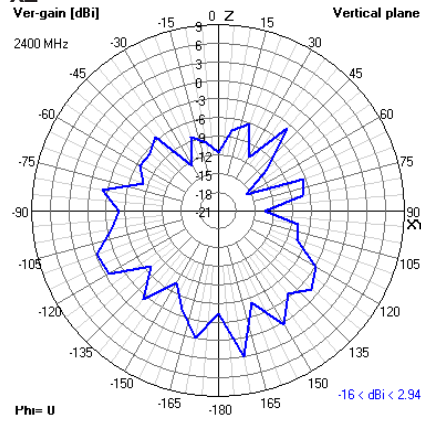
5G/4G/2.4 GHz Wi-Fi, Bluetooth, Zigbee Adhesive Antenna

2D Radiation Plots

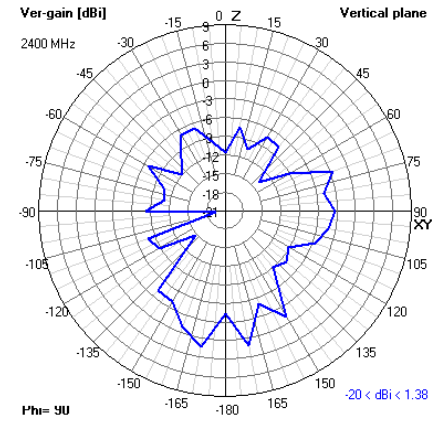
2400 MHz XY



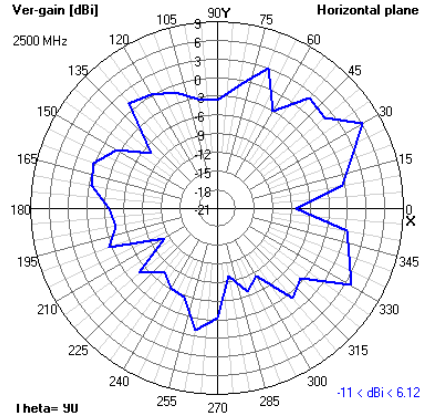
XZ



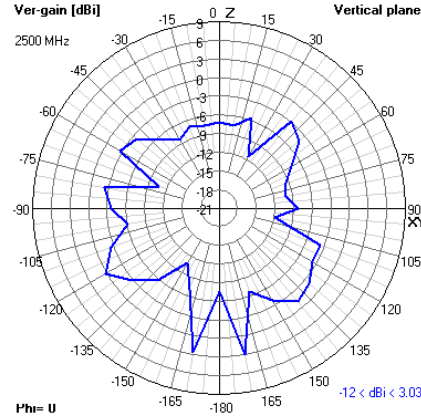
YZ



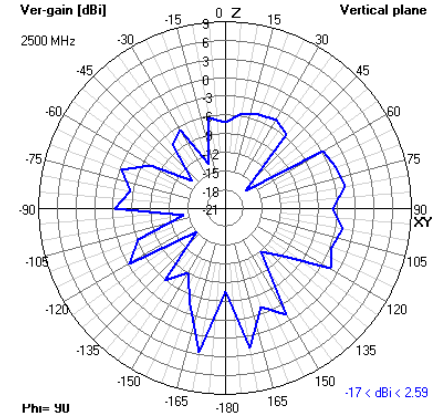
2500 MHz XY



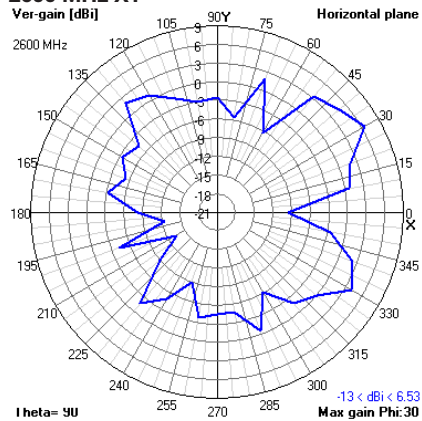
XZ



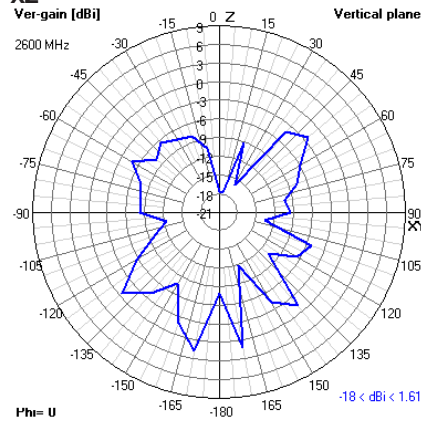
YZ



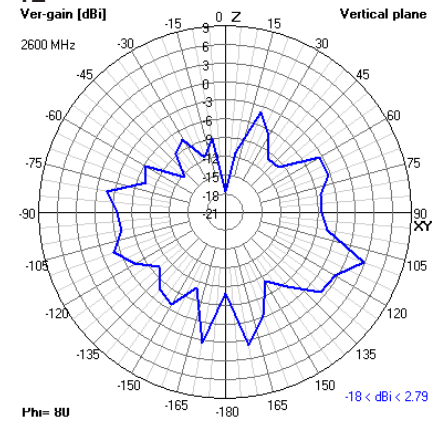
2600 MHz XY



XZ



YZ



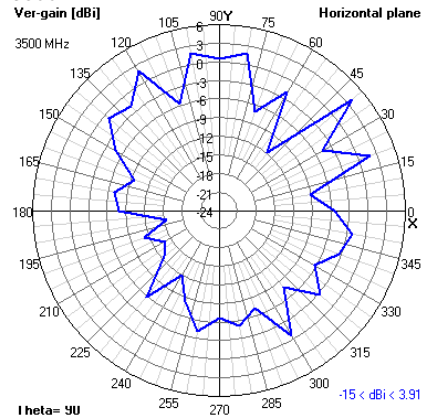


Alpha 3A

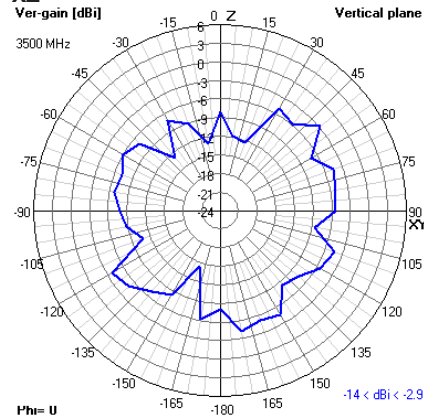
5G/4G/2.4 GHz Wi-Fi, Bluetooth, Zigbee Adhesive Antenna

2D Radiation Plots

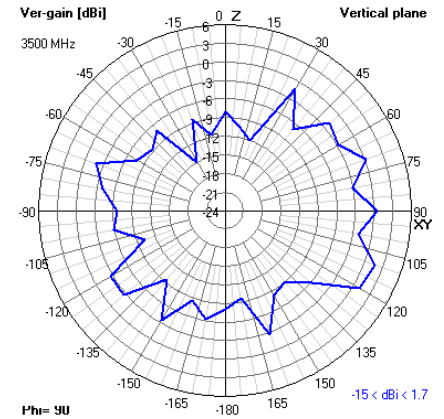
3500 MHz XY



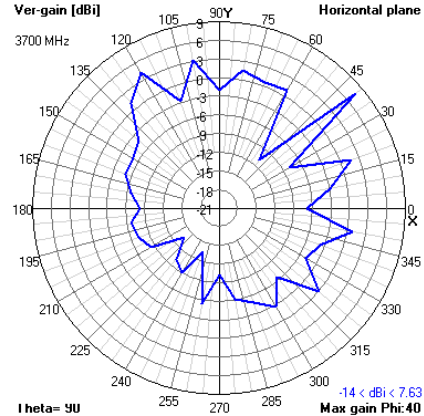
XZ



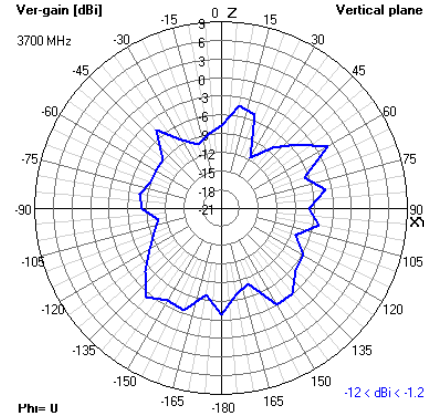
YZ



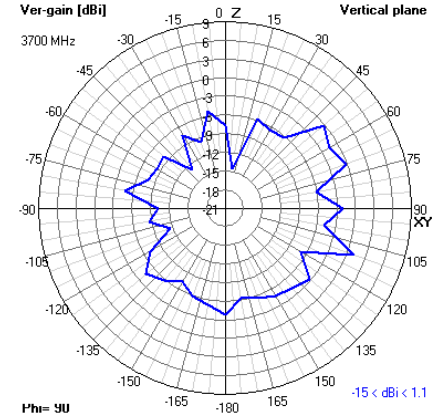
3700 MHz XY



XZ



YZ



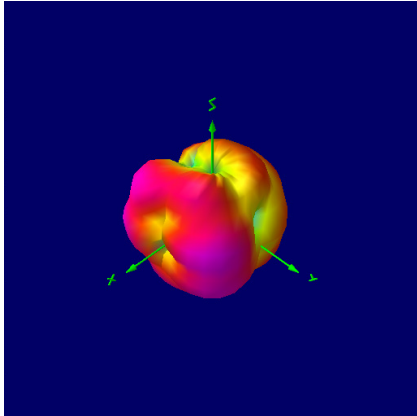


Alpha 3A

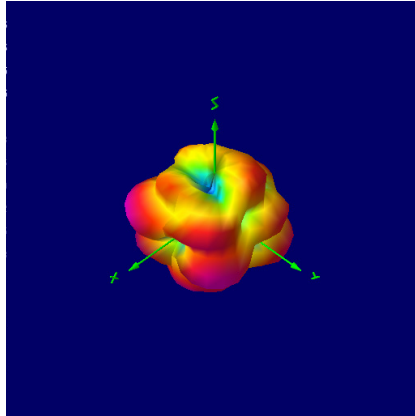
5G/4G/2.4 GHz Wi-Fi, Bluetooth, Zigbee Adhesive Antenna

3D Radiation Plots

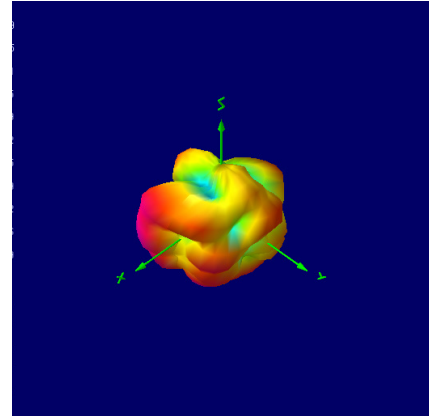
600 MHz



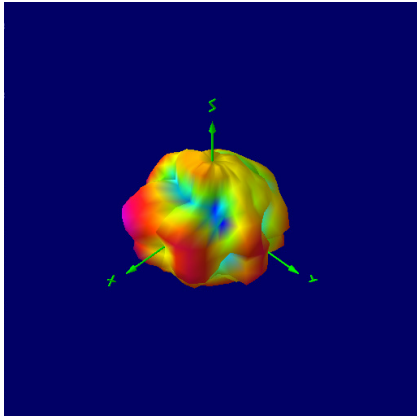
700 MHz



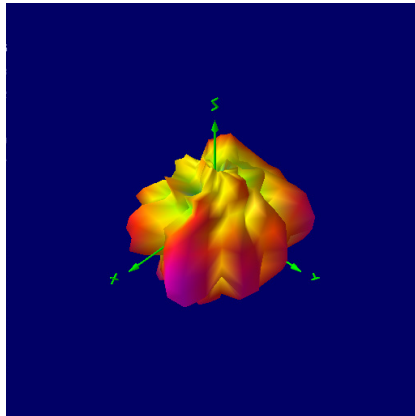
800 MHz



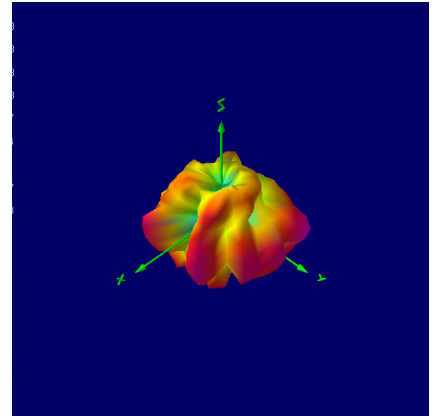
900 MHz



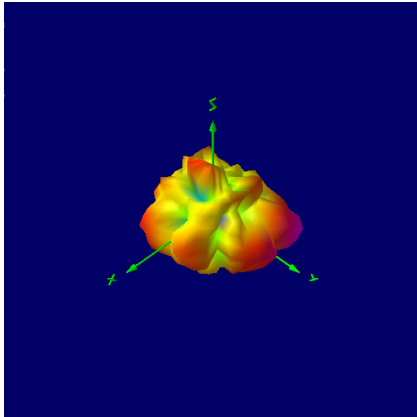
1500 MHz



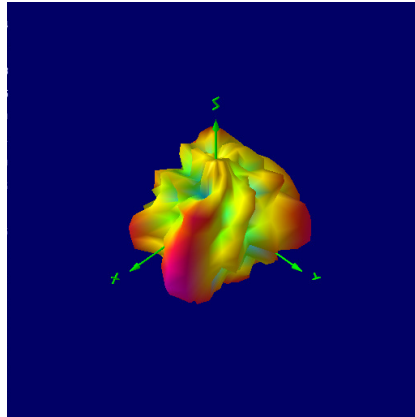
1600 MHz



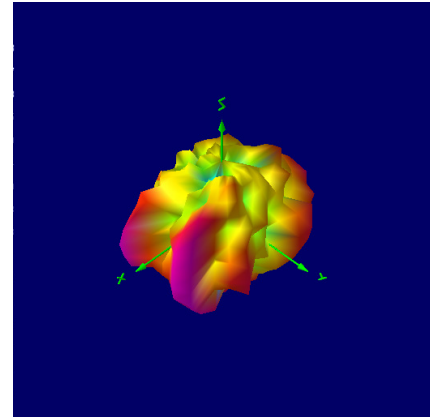
1700 MHz



1800 MHz



1900 MHz



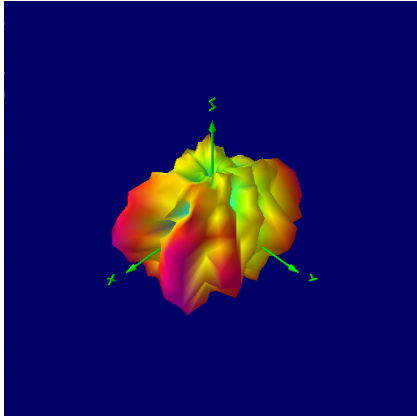


Alpha 3A

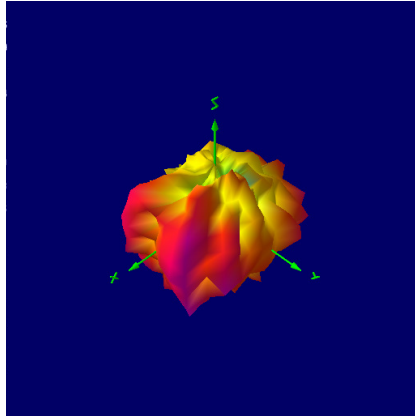
5G/4G/2.4 GHz Wi-Fi, Bluetooth, Zigbee Adhesive Antenna

3D Radiation Plots

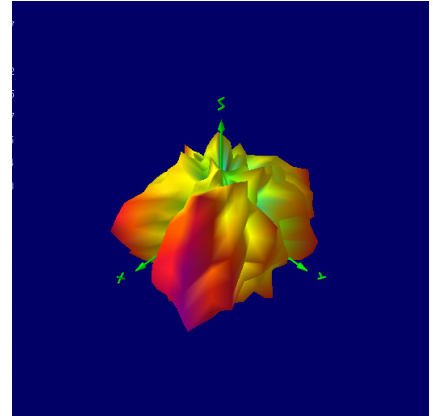
2000 MHz



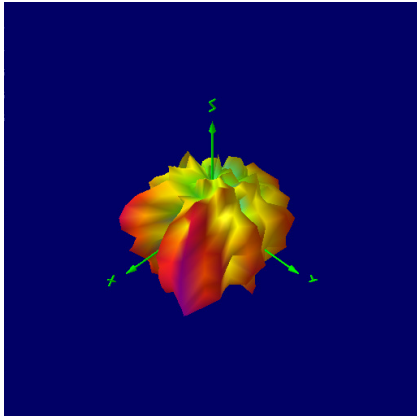
2100 MHz



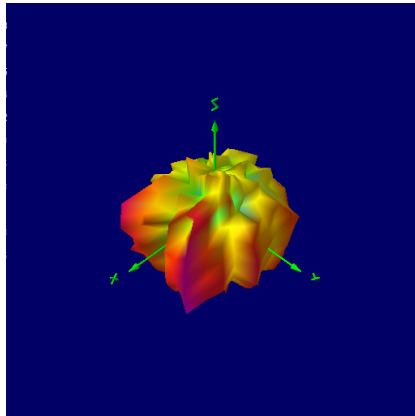
2300 MHz



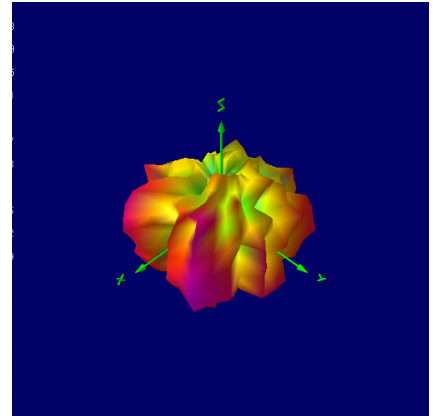
2400 MHz



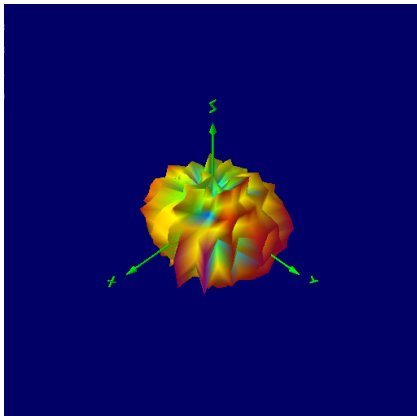
2500 MHz



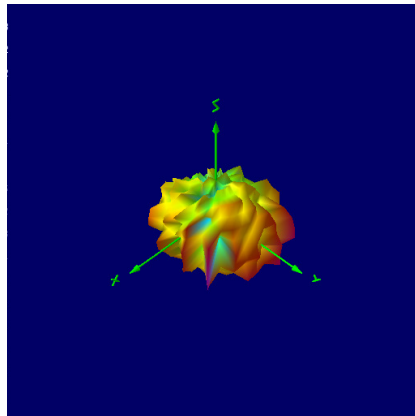
2600 MHz



3500 MHz



3700 MHz



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



Enabling Industrial IoT



Alpha 3A

5G/4G/2.4 GHz Wi-Fi, Bluetooth, Zigbee Adhesive Antenna

Ordering Details:

Part Number	Description
ALPHA3A/0.2M/MMCX/S/S/26	5G/4G/2.4GHz Wi-Fi, Bluetooth, Zigbee Adhesive Antenna MMCX Male 0.2M Cable
ALPHA3A/3M/SMAM/S/S/26	5G/4G/2.4GHz Wi-Fi, Bluetooth, Zigbee Adhesive Antenna SMA Male 3M Cable
ALPHA3A/0.4M/FMEF/S/S/26	5G/4G/2.4GHz Wi-Fi, Bluetooth, Zigbee Adhesive Antenna FME Female 0.4M Cable

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