



Alpha 40

5G/4G/Dual Band Wi-Fi and ISM Adhesive T-bar 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 Dual Band 2.4 GHz/5 GHz Wi-Fi
- Supports Bluetooth / Zigbee / IEEE 802.15.4 / ISM 2.4 GHz / ISM 5.8 GHz
- Supports LoRa / Zigfox / ISM 868 MHz / ISM 915 MHz
- Balanced dipole design – ground plane independent
- Use of Low Loss PRO100 cable
- Flexible antenna construction suitable for fitting to large-radius, curved surfaces

General Description

The Alpha 40 is a versatile, wideband antenna that can support various IoT applications. Its flexible antenna construction makes it suitable for fitting to large-radius and curved surfaces. The simple installation process with adhesive pads makes it an ideal choice for IoT applications where space is limited.

Supporting a wide range of Technologies, including 5G NR, Dual Band Wi-Fi, LoRa and CatM/NB IoT, the Alpha 40s balanced dipole design is ground plane independent, and it uses Low Loss PRO100 cable, which reduces attenuation.

The Alpha 40 antenna is a reliable and high-performance solution for a wide range of IoT applications that require a wideband antenna with excellent coverage and versatility. Supplied with different cable lengths and SMA Male connectors, the Alpha 40 can also be customized for volume orders.

Additional Considerations

- Simple installation with adhesive pads
- Reduced attenuation from Low Loss cable

A Adhesive	5G New Radio	4G LTE	3G UMTS	2G GSM
LTE Cat M	LTE NB IoT	NR NB IoT	BLE Bluetooth	AoA Bluetooth
AoD Bluetooth	ZB Zigbee	ISM 868	ISM 915	ISM 2.4G
ISM 5.8G	IEEE 802.15.4	WiFi 2.4G & 5G	LoRa Wireless	SF Sigfox
HNT Helium	W Weightless	Z Wave		



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Electrical Specifications

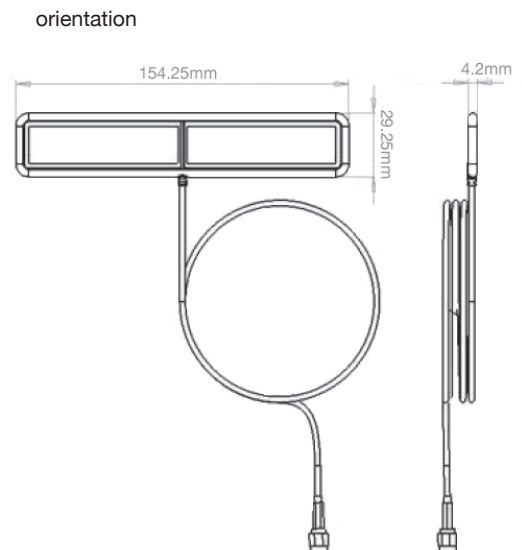
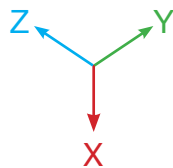
Impedance:	50 Ohm
Polarization:	Vertical
Max Input Power:	1 W
Ground plane independent:	Yes

Environmental Specifications

Operating Temperature range:	-30 to +60 °C
Storage Temperature range:	-30 to +60 °C

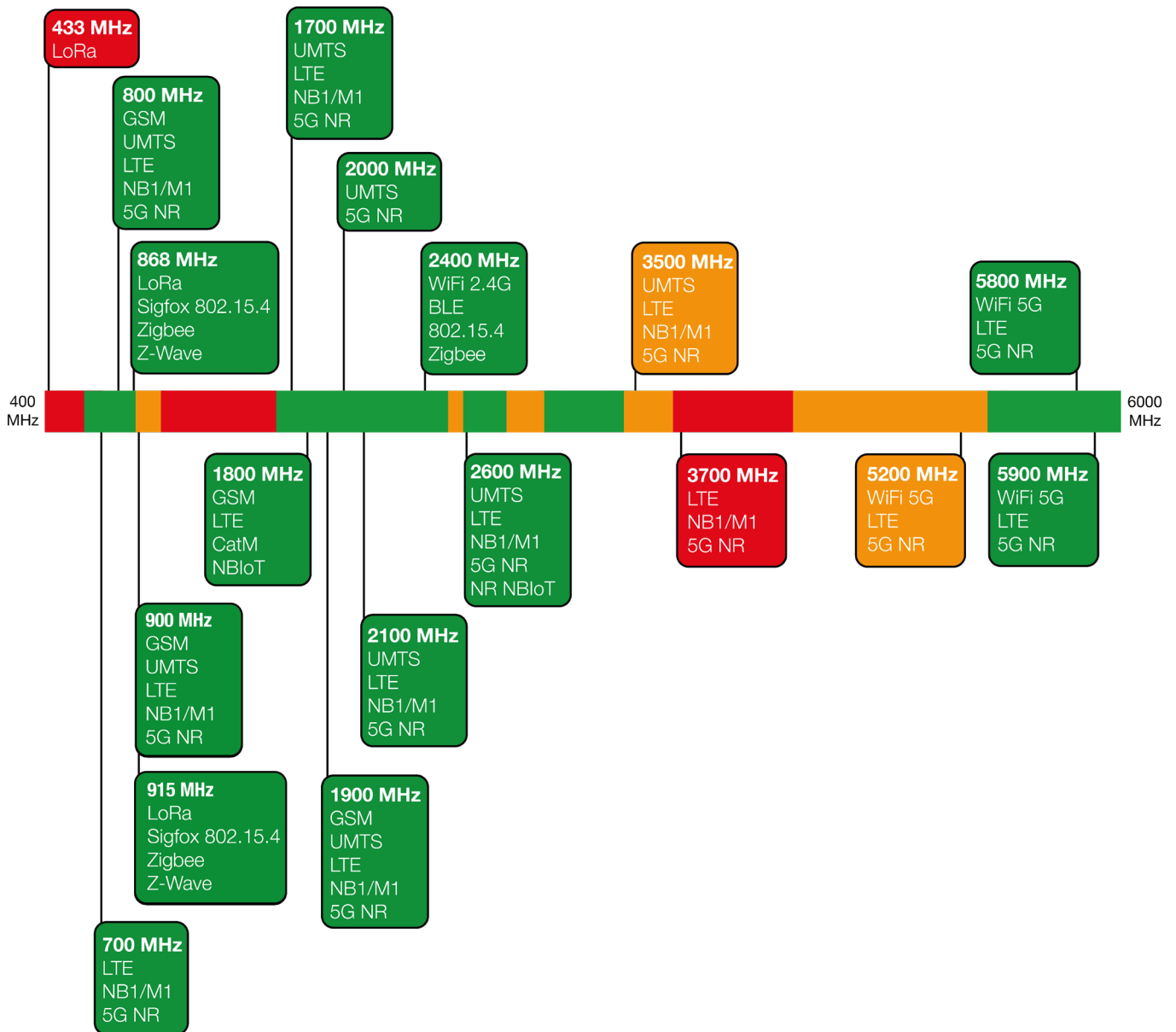
Mechanical Specifications

Dimensions:	154.25 x 29.25 x 4.2 mm
Weight:	59 g
Cable:	PRO100 low loss
Connector:	SMA Male
Mounting method:	Adhesive Pad
Housing materials:	PVC





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)

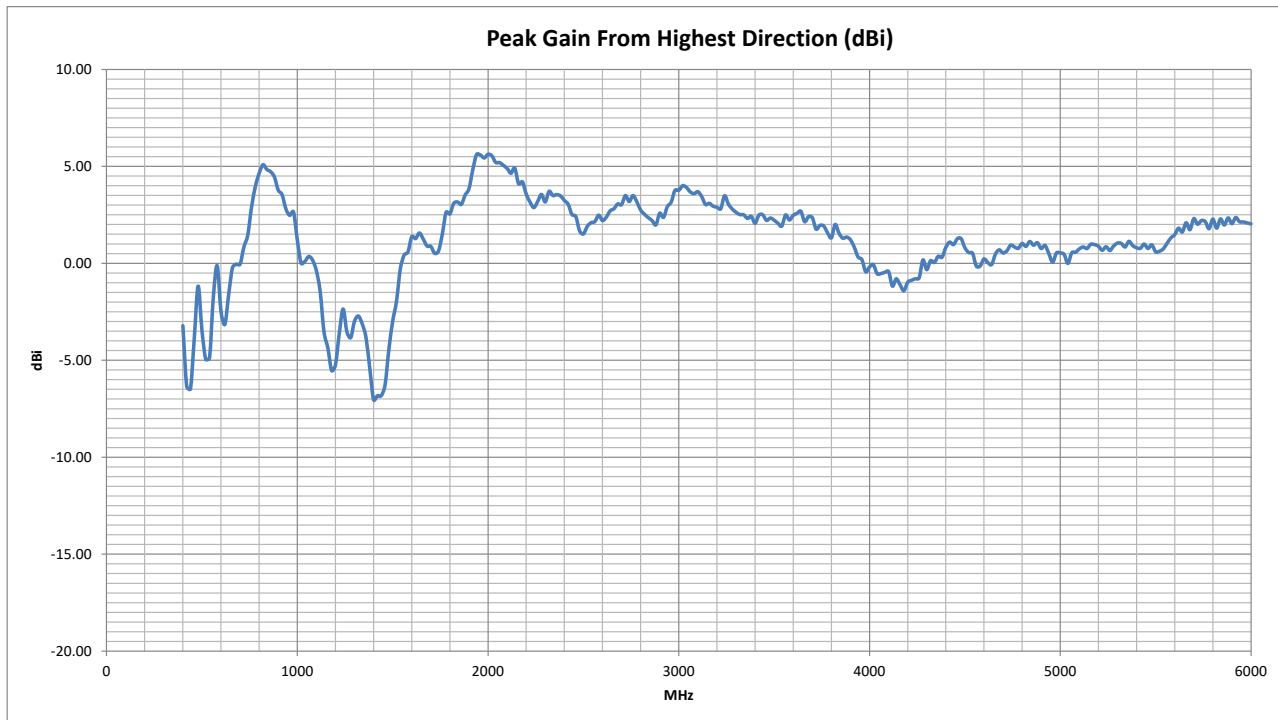
	433	868	915	2450	5800
Bluetooth				●	
IEEE 802.15.4		●	●	●	
LoRa		●	●		
Sigfox		●	●		
WiFi 2.4G				●	
WiFi 5G					●
Zigbee		●	●	●	
Z-Wave		●	●		



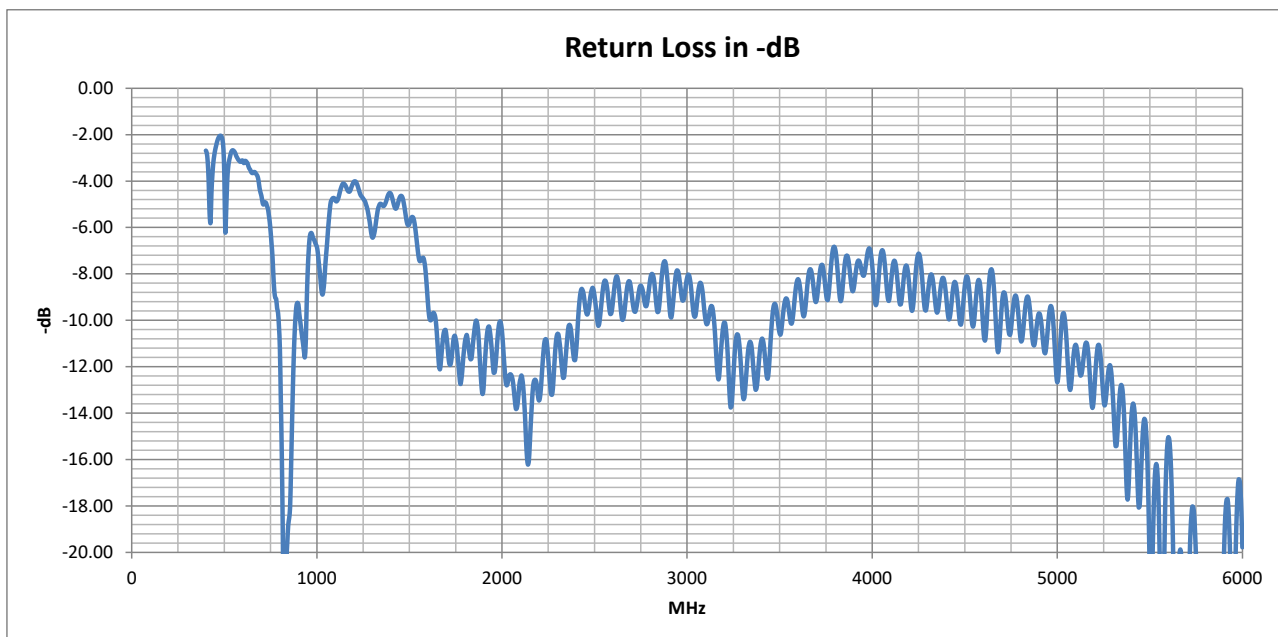
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Peak Gain vs. Frequency



Return Loss

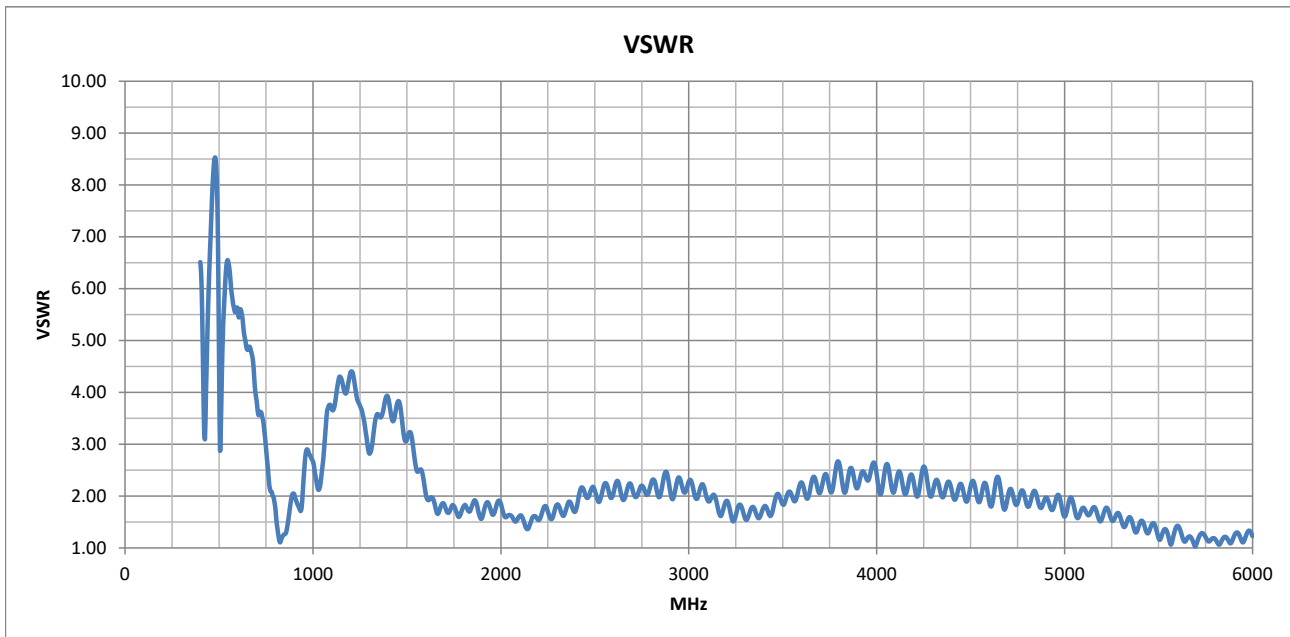




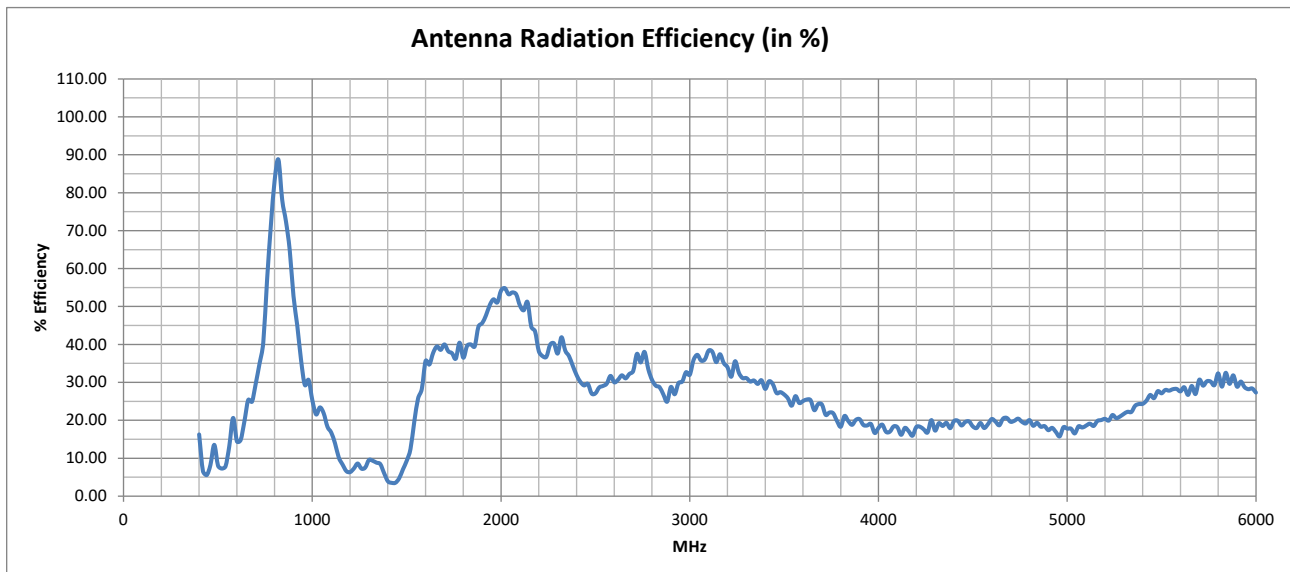
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VSWR



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	50.52	48.27	1.88	1.62	●
PCS-1900	2	2	2	2	n2	n2	1850 - 1910 MHz	1930 - 1990 MHz	43.35	51.11	1.92	1.92	●
DCS-1800	3	3	3	3	n3	n3	1710 - 1785 MHz	1805 - 1880 MHz	38.01	40.11	1.83	1.92	●
	4	4	4	4			1710 - 1755 MHz	2110 - 2155 MHz	37.82	49.45	1.83	1.62	●
GSM-850	5	5	5	5	n5	n5	824 - 849 MHz	869 - 894 MHz	80.40	63.40	1.27	2.05	●
	6						830 - 840 MHz	875 - 885 MHz	80.80	64.58	1.23	1.96	●
	7	7	7	7	n7	n7	2500 - 2570 MHz	2620 - 2690 MHz	28.90	31.58	2.25	2.30	●
E-GSM-900	8	8	8	8	n8	n8	880 - 915 MHz	925 - 960 MHz	54.95	35.47	2.05	2.80	●
	9	9					1749.9 - 1784.9 MHz	1844.9 - 1879.9 MHz	38.06	41.02	1.81	1.92	●
	10	10					1710 - 1770 MHz	2110 - 2170 MHz	37.62	48.27	1.83	1.62	●
	11	11	11	11			1427.9 - 1447.9 MHz	1475.9 - 1495.9 MHz	3.61	7.71	3.78	3.39	●
	12	12	12	12	n12	n12	699 - 716 MHz	729 - 746 MHz	31.62	40.43	3.86	3.54	●
	13	13	13	13	n13	n13	777 - 787 MHz	746 - 756 MHz	72.42	49.61	2.09	3.08	●
	14	14	14	14	n14		788 - 798 MHz	758 - 768 MHz	79.01	59.13	1.99	2.60	●
		17		17			704 - 716 MHz	734 - 746 MHz	32.28	41.37	3.70	3.46	●
		18	18	18	n18	n18	815 - 830 MHz	860 - 875 MHz	86.72	69.60	1.26	1.72	●
	19	19	19	19			830 - 845 MHz	875 - 890 MHz	79.69	63.15	1.26	2.04	●
	20	20	20	20	n20	n20	832 - 862 MHz	791 - 821 MHz	76.41	84.39	1.39	1.96	●
	21	21	21	21			1447.9 - 1462.9 MHz	1495.9 - 1510.9 MHz	4.44	9.86	3.84	3.22	●
	22	22					3410 - 3490 MHz	3510 - 3590 MHz	28.51	25.17	2.04	2.21	●
		24	24	24	n24		1626.5 - 1660.5 MHz	1525 - 1559 MHz	37.86	20.02	1.98	3.15	●
	25	25	25	25	n25	n25	1850 - 1915 MHz	1930 - 1995 MHz	43.62	51.26	1.92	1.92	●
	26	26	26	26	n26		814 - 849 MHz	859 - 894 MHz	82.51	65.55	1.29	2.05	●
		27	27				807 - 824 MHz	852 - 869 MHz	87.08	72.08	1.48	1.56	●
		28	28	28	n28	n28	703 - 748 MHz	758 - 803 MHz	36.91	70.90	3.73	2.60	●

● 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	34.44	66.16	3.73	2.60	●
		29			n29		N/A	717 - 728 MHz	N/A	35.63	N/A	3.63	●
		30			n30		2305 - 2315 MHz	2350 - 2360 MHz	39.73	37.27	1.84	1.89	●
		31	31	31			452.5 - 457.5 MHz	462.5 - 467.5 MHz	7.56	9.56	7.26	8.11	●
	32	32					N/A	1452 - 1496 MHz	N/A	6.37	N/A	3.84	●
		33					1900 - 1920 MHz	1900 - 1920 MHz	46.62	46.62	1.85	1.85	●
		34			n34		2010 - 2025 MHz	2010 - 2025 MHz	54.65	54.65	1.71	1.71	●
		35					1850 - 1910 MHz	1850 - 1910 MHz	43.35	43.35	1.92	1.92	●
		36					1930 - 1990 MHz	1930 - 1990 MHz	51.11	51.11	1.92	1.92	●
		37					1910 - 1930 MHz	1910 - 1930 MHz	47.73	47.73	1.88	1.88	●
		38			n38		2570 - 2620 MHz	2570 - 2620 MHz	30.71	30.71	2.30	2.30	●
		39	39		n39		1880 - 1920 MHz	1880 - 1920 MHz	45.88	45.88	1.85	1.85	●
		40	40		n40		2300 - 2400 MHz	2300 - 2400 MHz	37.25	37.25	1.90	1.90	●
		41	41	41	n41	n41	2496 - 2690 MHz	2496 - 2690 MHz	30.30	30.30	2.30	2.30	●
		42	42	42			3400 - 3600 MHz	3400 - 3600 MHz	26.83	26.83	2.27	2.27	●
		43	43	43			3600 - 3800 MHz	3600 - 3800 MHz	22.86	22.86	2.67	2.67	●
		44					703 - 803 MHz	703 - 803 MHz	53.65	53.65	3.73	3.73	●
		45					1447 - 1467 MHz	1447 - 1467 MHz	4.59	4.59	3.84	3.84	●
		46			n46		5150 - 5925 MHz	5150 - 5925 MHz	26.35	26.35	1.79	1.79	●
		47			n47		5855 - 5925 MHz	5855 - 5925 MHz	30.16	30.16	1.30	1.30	●
		48			n48		3550 - 3700 MHz	3550 - 3700 MHz	24.72	24.72	2.38	2.38	●
		49					3550 - 3700 MHz	3550 - 3700 MHz	24.72	24.72	2.38	2.38	●
		50			n50		1432 - 1517 MHz	1432 - 1517 MHz	6.73	6.73	3.84	3.84	●
		51			n51		1427 - 1432 MHz	1427 - 1432 MHz	3.51	3.51	3.50	3.50	●
		52					3300 - 3400 MHz	3300 - 3400 MHz	30.10	30.10	1.80	1.80	●

● 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	27.07	27.07	2.18	2.18	●
		65		65	n65	n65	1920 - 2010 MHz	2110 - 2200 MHz	51.42	46.11	1.92	1.62	●
		66	66	66	n66	n66	1710 - 1780 MHz	2110 - 2200 MHz	37.87	46.11	1.83	1.62	●
		67			n67		N/A	738 - 758 MHz	N/A	47.19	N/A	3.35	●
		68					698 - 728 MHz	753 - 783 MHz	33.09	62.61	3.88	2.80	●
		69					N/A	2570 - 2620 MHz	N/A	30.71	N/A	2.30	●
		70		70	n70	n70	1695 - 1710 MHz	1995 - 2020 MHz	39.63	54.37	1.86	1.90	●
		71	71	71	n71		663 - 698 MHz	617 - 652 MHz	26.09	18.47	4.88	5.57	●
		72	72	72			451 - 456 MHz	461 - 466 MHz	7.36	9.17	7.12	8.02	●
		73	73	73			450 - 455 MHz	460 - 465 MHz	7.23	8.90	7.02	7.95	●
		74	74	74	n74		1427 - 1470 MHz	1475 - 1518 MHz	4.20	9.07	3.84	3.42	●
		75			n75		N/A	1432 - 1517 MHz	N/A	6.73	N/A	3.84	●
		76			n76		N/A	1427 - 1432 MHz	N/A	3.51	N/A	3.50	●
					n77		3300 - 4200 MHz	3300 - 4200 MHz	22.51	22.51	2.67	2.67	●
					n78		3300 - 3800 MHz	3300 - 3800 MHz	25.90	25.90	2.67	2.67	●
					n79		4400 - 5000 MHz	4400 - 5000 MHz	18.93	18.93	2.37	2.37	●
					n80		1710 - 1785 MHz	N/A	38.01	N/A	1.83	N/A	●
					n81		880 - 915 MHz	N/A	54.95	N/A	2.05	N/A	●
					n82		832 - 862 MHz	N/A	76.41	N/A	1.39	N/A	●
					n83		703 - 748 MHz	N/A	36.91	N/A	3.73	N/A	●
					n84		1920 - 1980 MHz	N/A	50.52	N/A	1.88	N/A	●
		85	85	85	n85		698 - 716 MHz	728 - 746 MHz	31.49	40.25	3.88	3.56	●
					n86		1710 - 1780 MHz	N/A	37.87	N/A	1.83	N/A	●
		87	87	87			410 - 415 MHz	420 - 425 MHz	10.24	6.50	5.54	3.33	●
		88	88	88			412 - 417 MHz	422 - 427 MHz	9.28	6.39	5.09	3.43	●

● 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	80.40	N/A	1.27	N/A	●
					n90	n90	2496 - 2690 MHz	2496 - 2690 MHz	30.30	30.30	2.30	2.30	●
					n91		832 - 862 MHz	1427 - 1432 MHz	76.41	3.51	1.39	3.50	●
					n92		832 - 862 MHz	1432 - 1517 MHz	76.41	6.73	1.39	3.84	●
					n93		880 - 915 MHz	1427 - 1432 MHz	54.95	3.51	2.05	3.50	●
					n94		880 - 915 MHz	1432 - 1517 MHz	54.95	6.73	2.05	3.84	●
					n95		2010 - 2025 MHz	N/A	54.65	N/A	1.71	N/A	●
					n97		2300 - 2400 MHz	N/A	37.25	N/A	1.90	N/A	●
					n98		1880 - 1920 MHz	N/A	45.88	N/A	1.85	N/A	●
					n99		1626.5 - 1660.5 MHz	N/A	37.86	N/A	1.98	N/A	●
					n101		1900 - 1910 MHz	1900 - 1910 MHz	46.11	46.11	1.72	1.72	●
				103			787 - 788 MHz	757 - 758 MHz	75.74	54.96	2.00	2.64	●

● 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	5.87	4.65	-6.431	●
ISM 868 MHz	863 - 870 MHz	69.98	1.58	4.6795	●
ISM 915 MHz	902 - 928 MHz	46.83	2.01	3.747	●
ISM 2.4 GHz	2400 - 2500 MHz	29.09	2.18	3.24	●
Wi-Fi 2.4G	2401 - 2483 MHz	29.47	2.17	3.23	●
Wi-Fi 2.4G (USA)	2401 - 2473 MHz	29.76	2.17	3.23	●
Wi-Fi 2.4G (Japan)	2401 - 2495 MHz	29.16	2.18	3.23	●
Wi-Fi 5G (all channels)	5150 - 5990 MHz	26.52	1.79	2.36	●
Wi-Fi 5G (Ch 32-48)	5150 - 5250 MHz	20.25	1.79	0.98	●
Wi-Fi 5G (Ch 32-64)	5150 - 5330 MHz	20.76	1.79	1.04	●
Wi-Fi 5G (Ch 32-161)	5150 - 5815 MHz	25.68	1.79	2.3	●
Wi-Fi 5G (Ch 32-173)	5150 - 5875 MHz	26.09	1.79	2.3	●
ISM 5.8 GHz	5725 - 5875 MHz	30.44	1.29	2.29	●

● Suitable band

● Adequate band in good signal conditions

● Likely to be unsuitable

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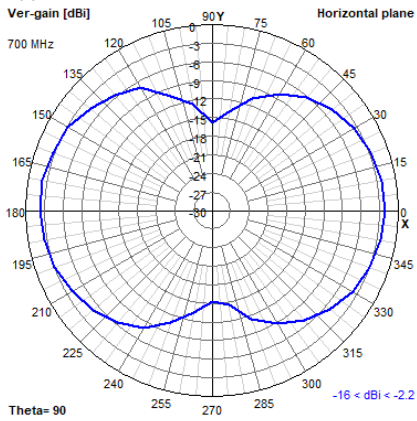


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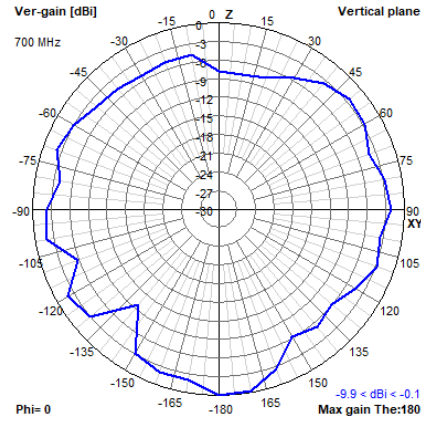
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2D Radiation Plots

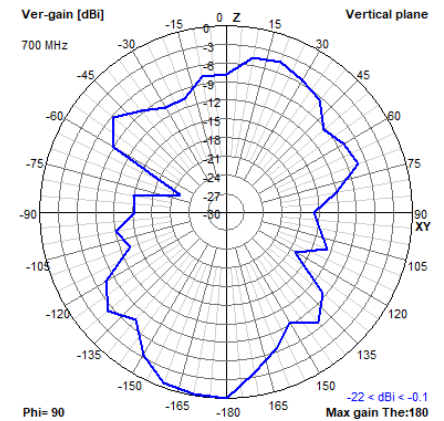
700 MHz XY



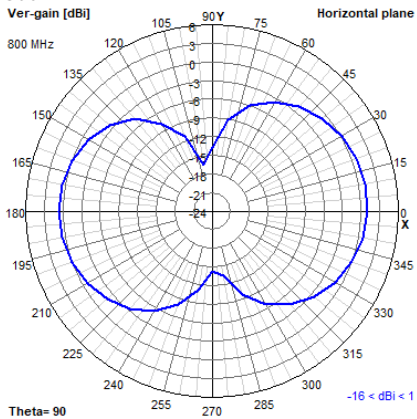
XZ



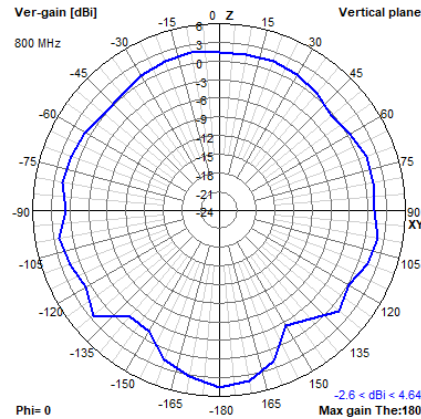
YZ



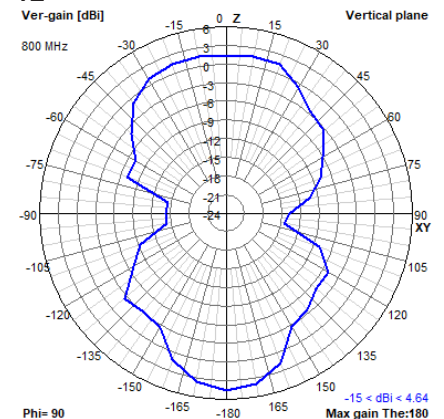
800 MHz XY



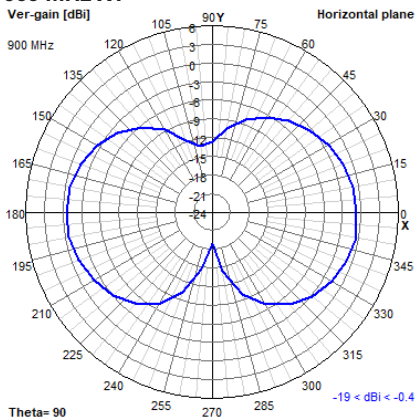
XZ



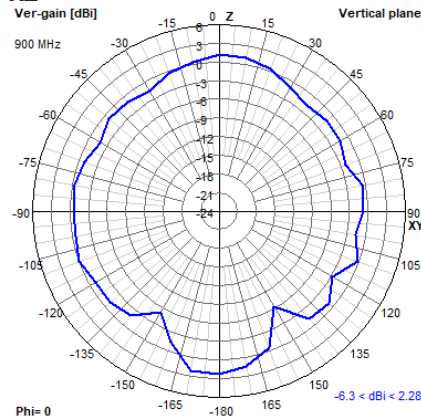
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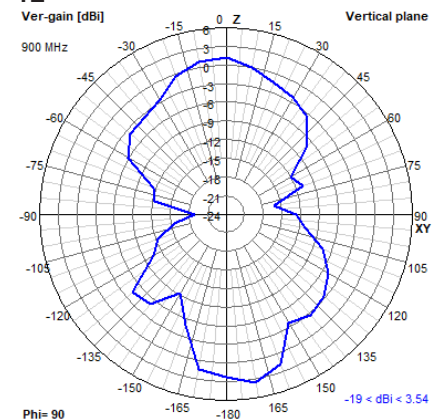
900 MHz XY



XZ



YZ



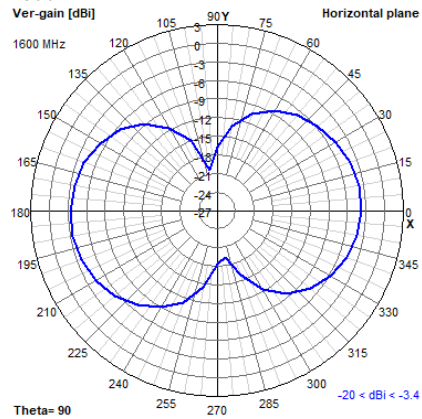


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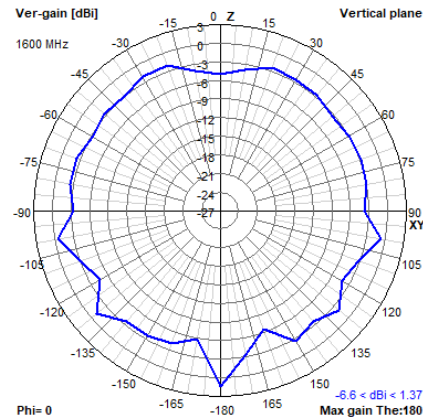
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2D Radiation Plots

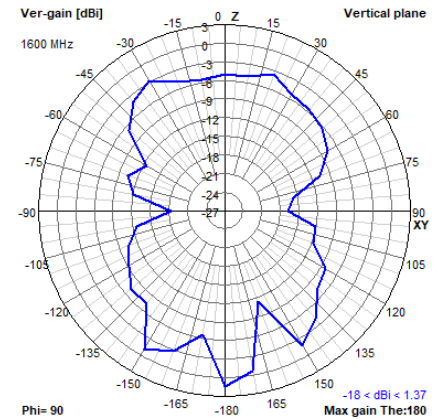
1600 MHz XY



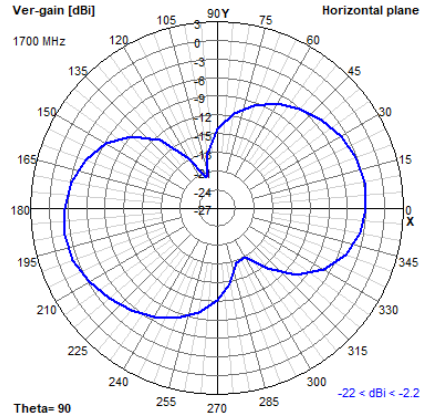
XZ



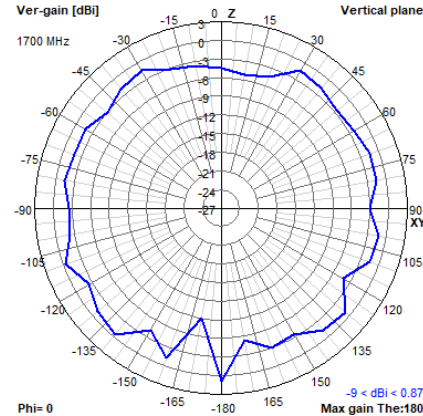
YZ



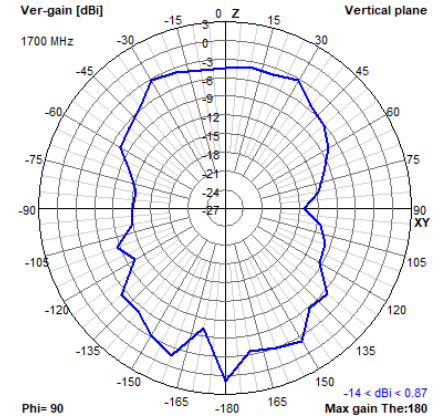
1700 MHz XY



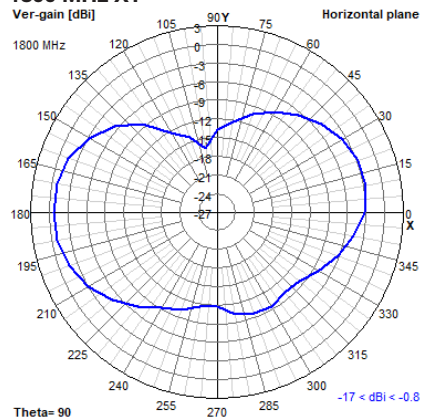
XZ



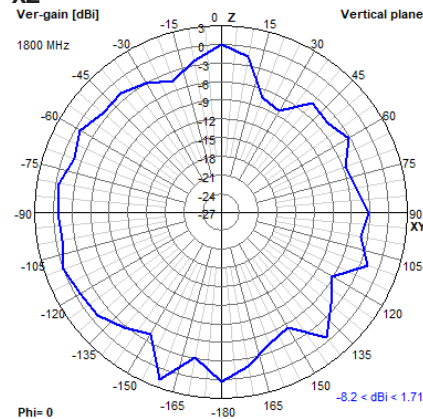
YZ



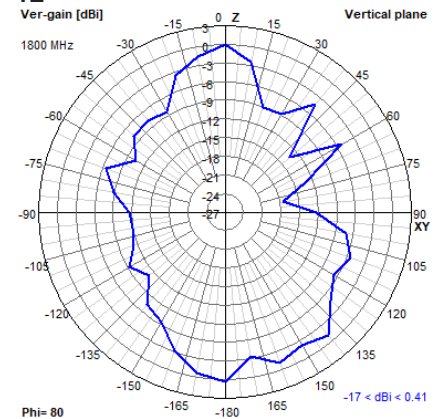
1800 MHz XY



XZ



YZ



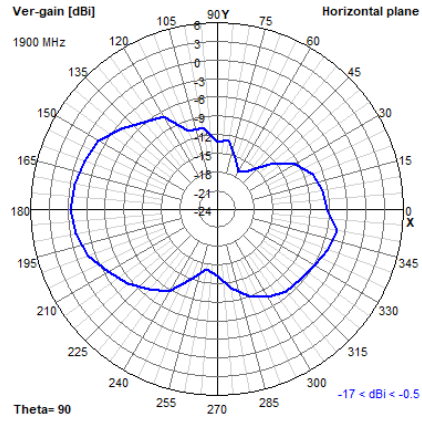


Alpha 40

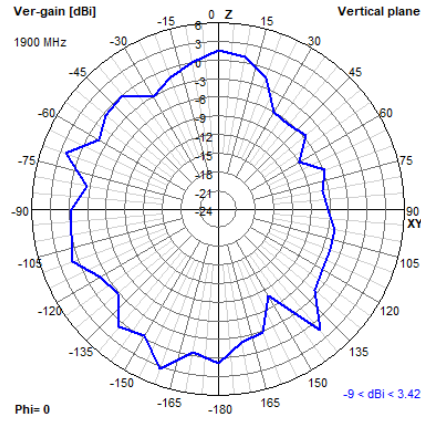
5G/4G/Dual Band Wi-Fi and ISM Adhesive T-bar Antenna

2D Radiation Plots

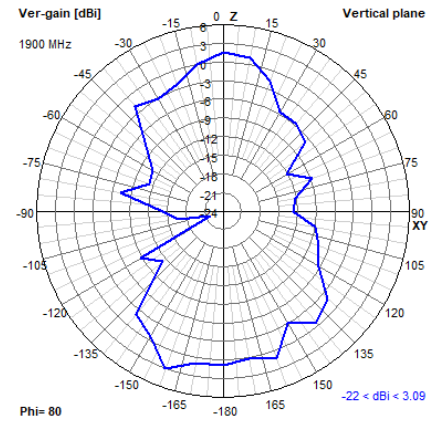
1900 MHz XY



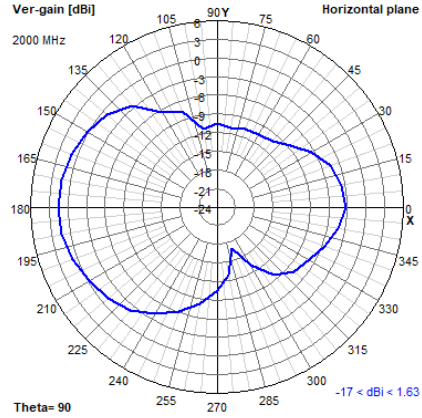
XZ



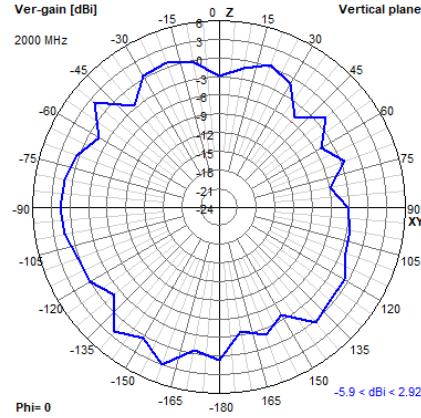
YZ



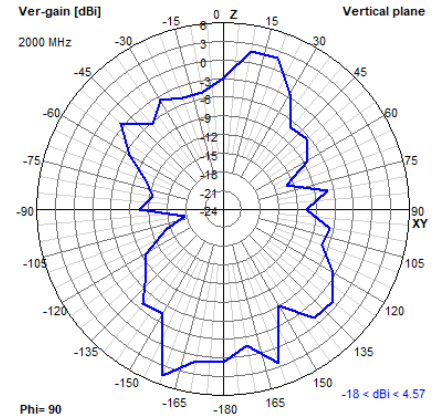
2000 MHz XY



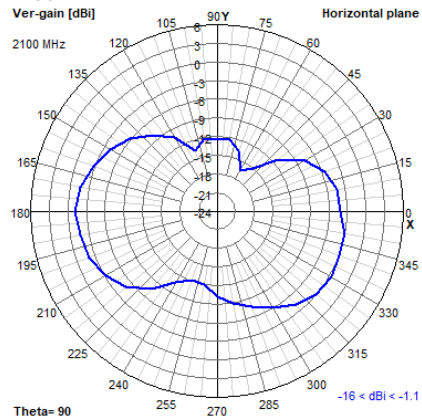
XZ



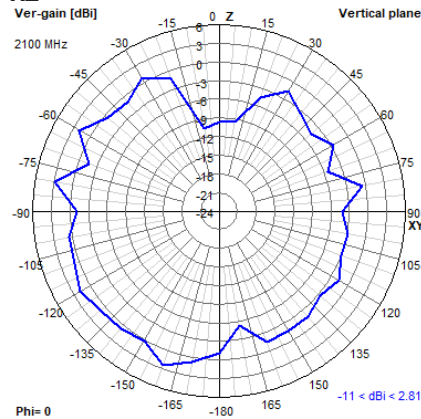
YZ



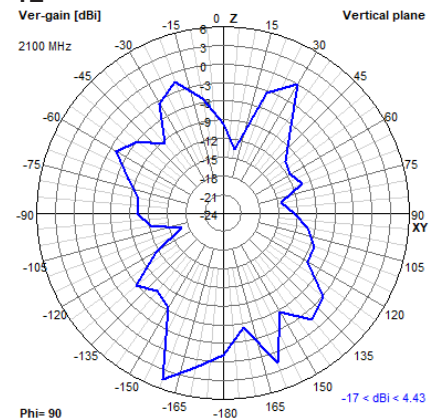
2100 MHz XY



XZ



YZ



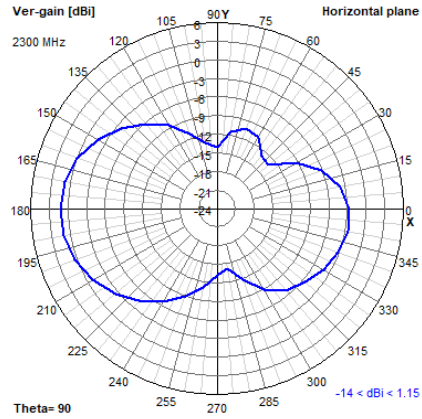


Alpha 40

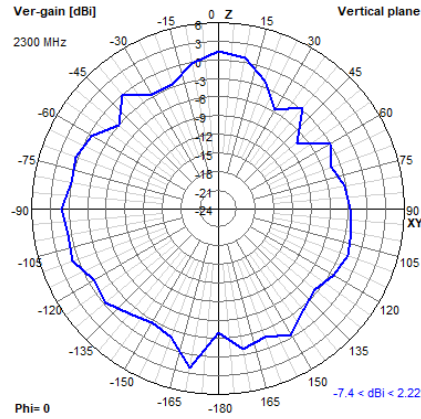
5G/4G/Dual Band Wi-Fi and ISM Adhesive T-bar Antenna

2D Radiation Plots

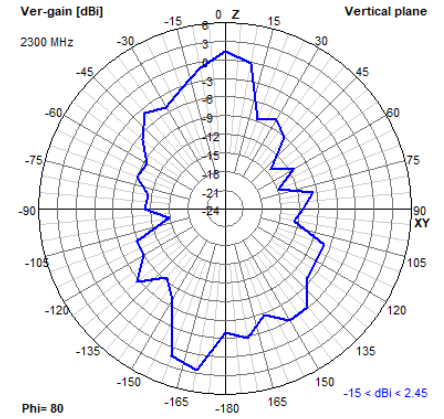
2300 MHz XY



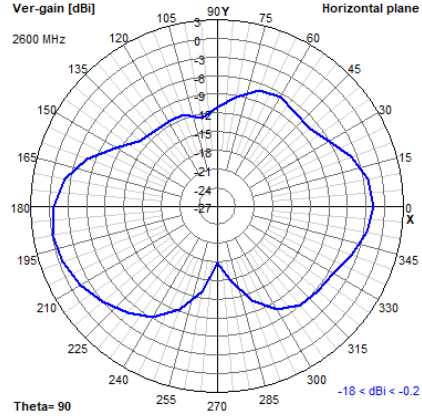
XZ



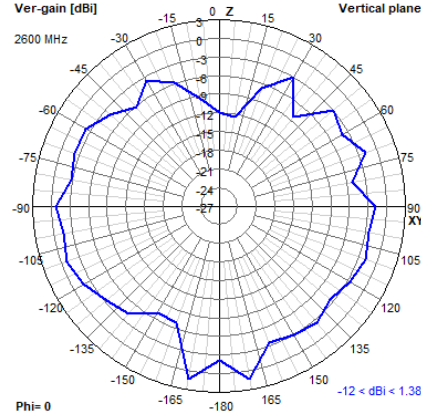
YZ



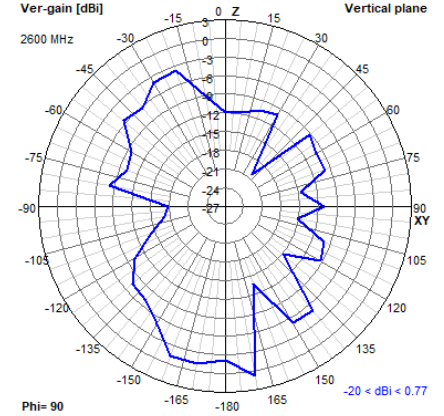
2600 MHz XY



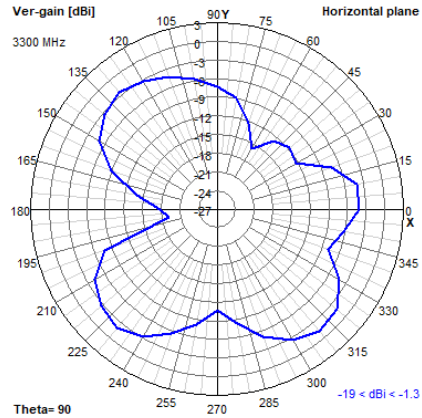
XZ



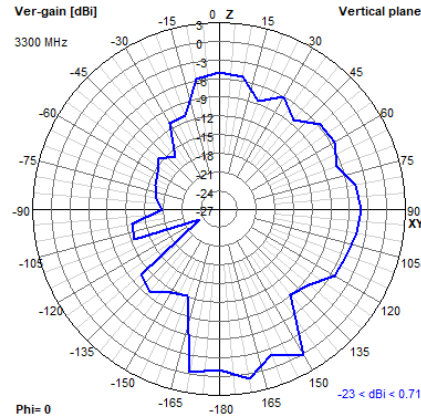
YZ



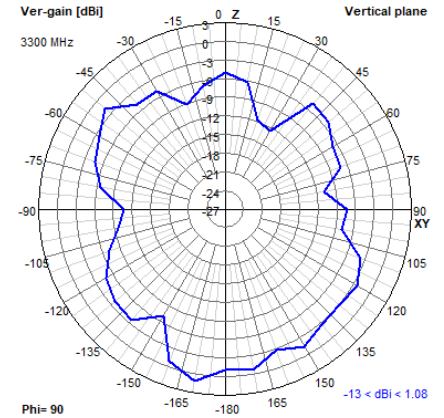
3300 MHz XY



XZ



YZ



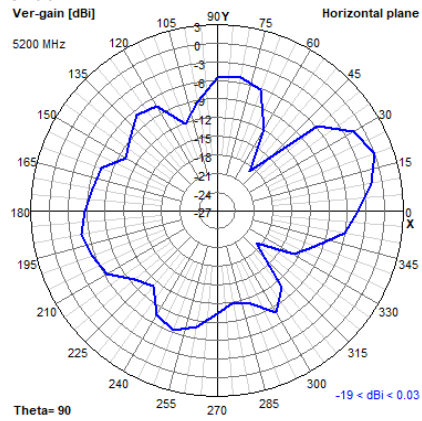


Alpha 40

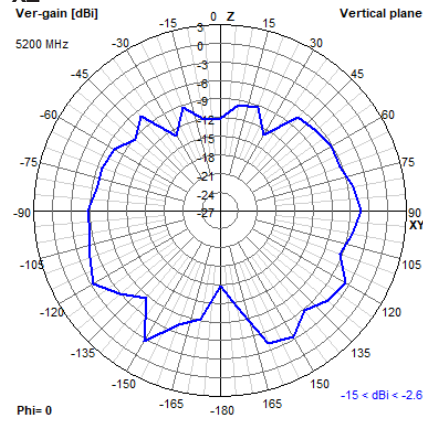
5G/4G/Dual Band Wi-Fi and ISM Adhesive T-bar Antenna

2D Radiation Plots

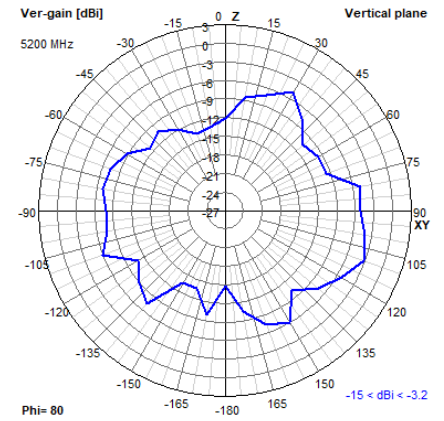
5200 MHz XY



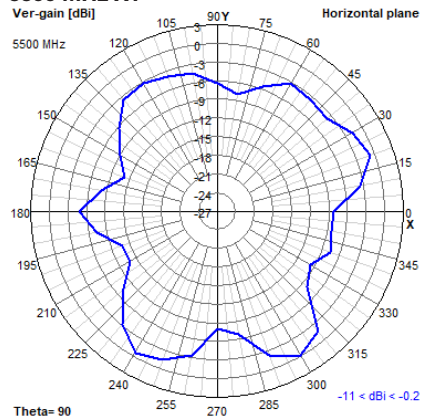
XZ



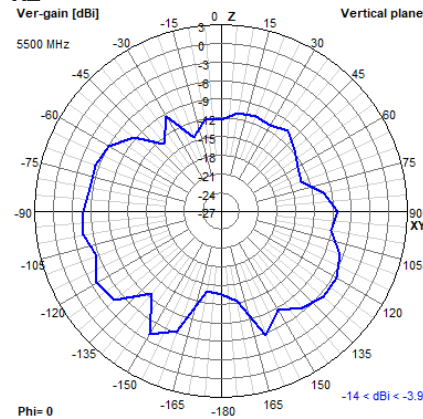
YZ



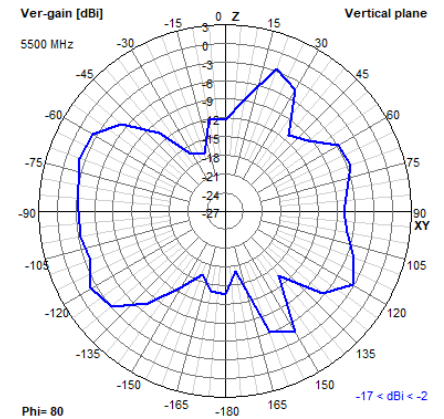
5500 MHz XY



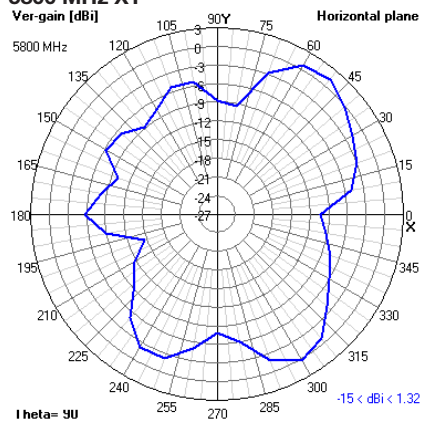
XZ



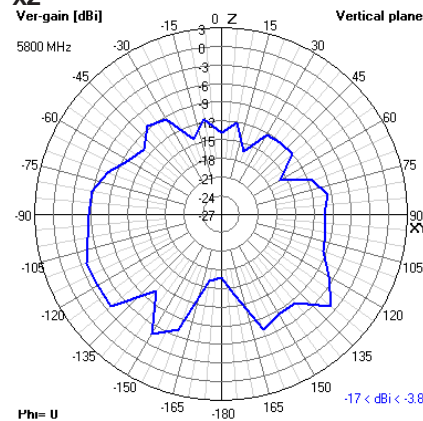
YZ



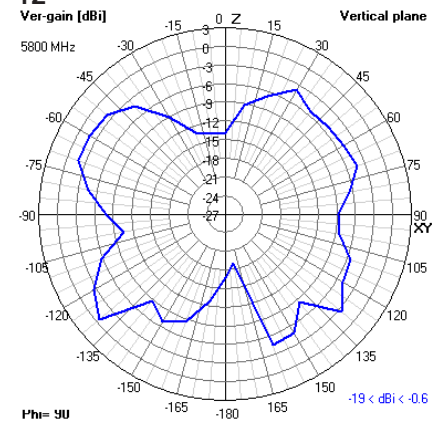
5800 MHz XY



XZ



YZ



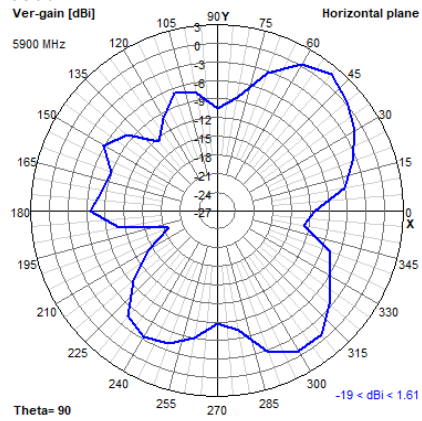


Alpha 40

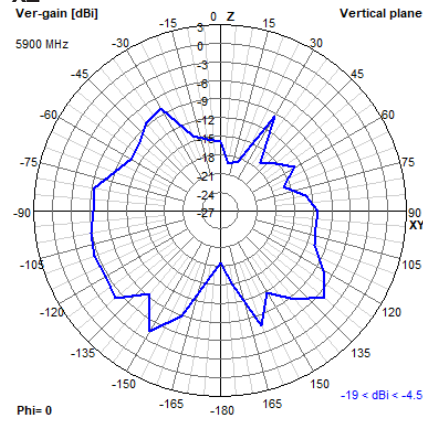
5G/4G/Dual Band Wi-Fi and ISM Adhesive T-bar Antenna

2D Radiation Plots

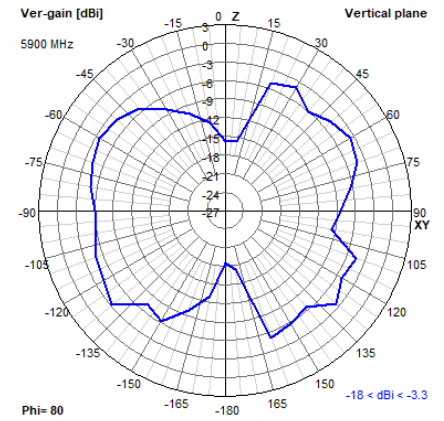
5900 MHz XY



XZ



YZ



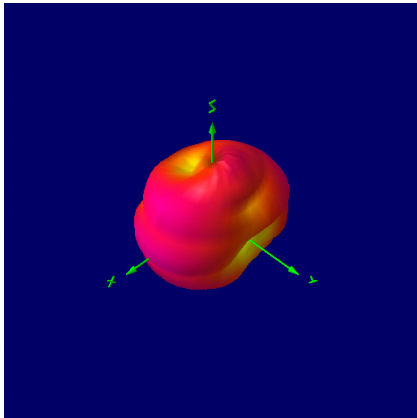


Alpha 40

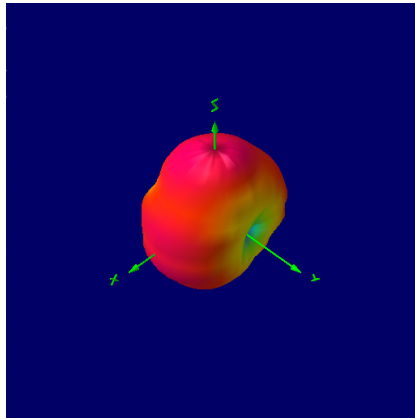
5G/4G/Dual Band Wi-Fi and ISM Adhesive T-bar Antenna

3D Radiation Plots

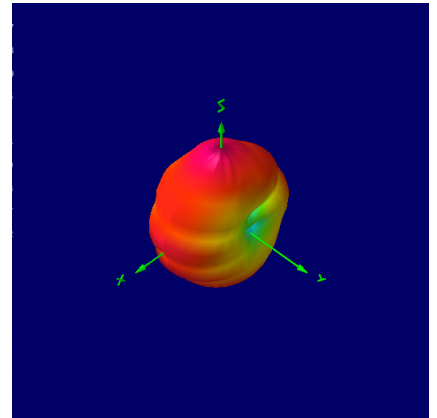
700 MHz



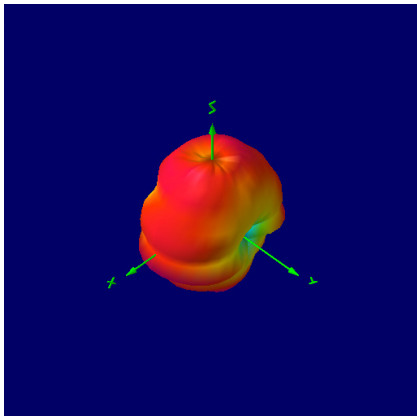
800 MHz



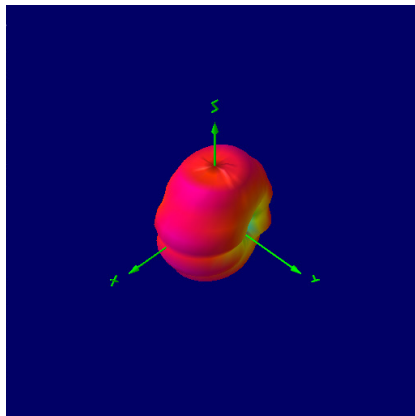
900 MHz



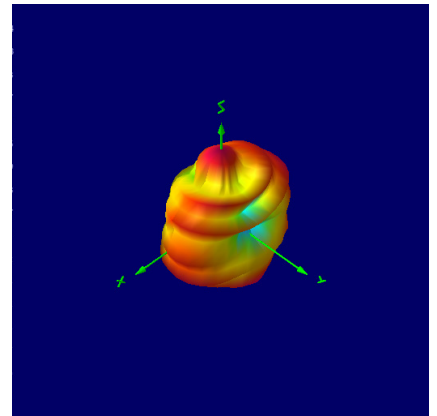
1600 MHz



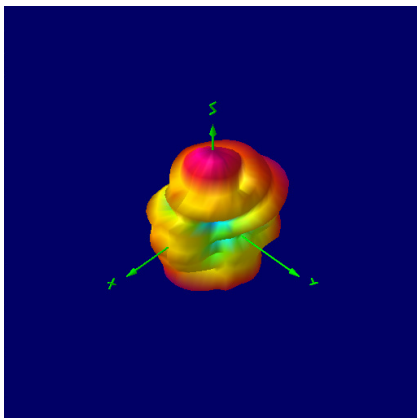
1700 MHz



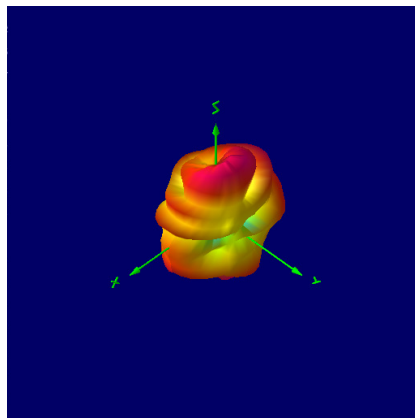
1800 MHz



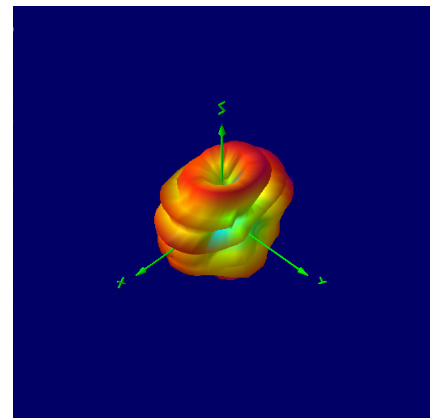
1900 MHz



2000 MHz



2100 MHz



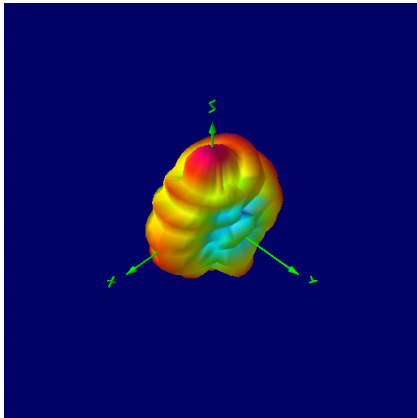


Alpha 40

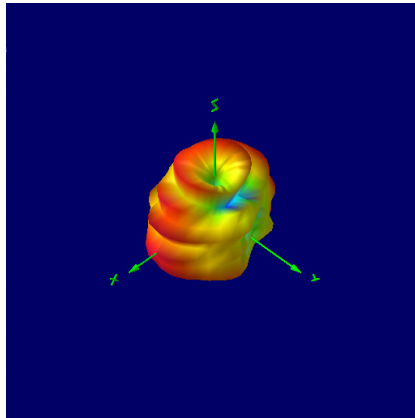
5G/4G/Dual Band Wi-Fi and ISM Adhesive T-bar Antenna

3D Radiation Plots

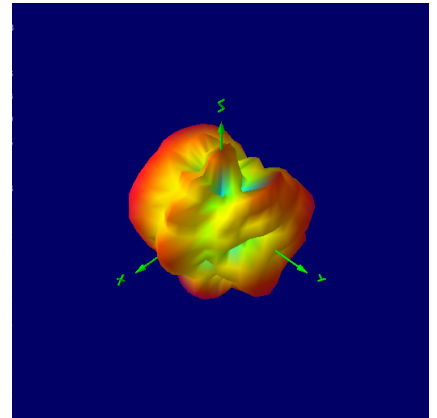
2300 MHz



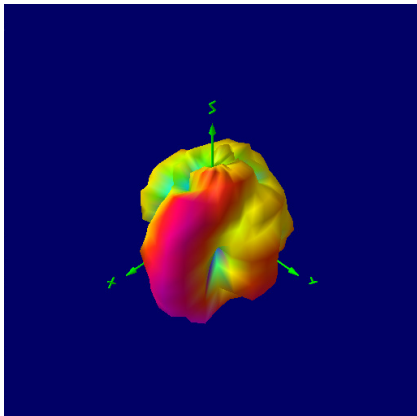
2600 MHz



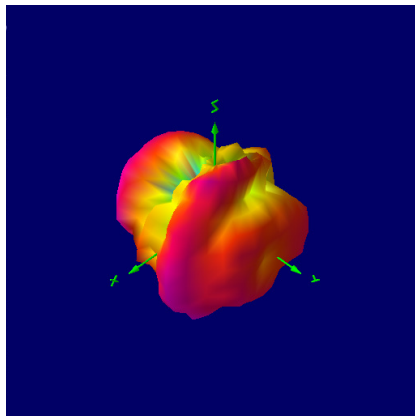
3300 MHz



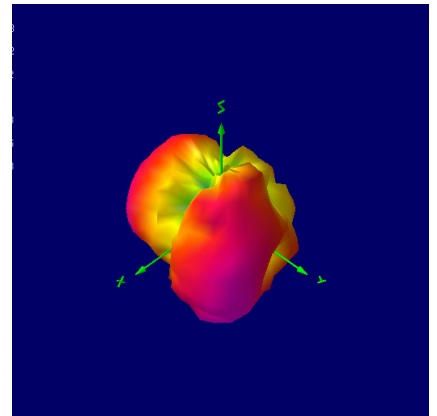
5200 MHz



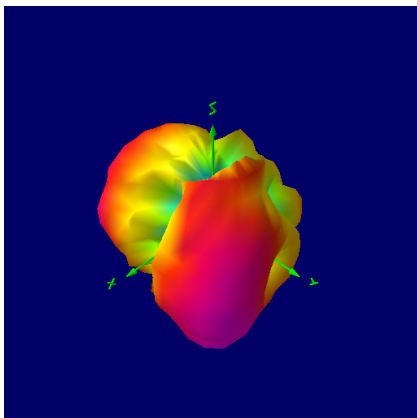
5500 MHz



5800 MHz



5900 MHz



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





Enabling Industrial IoT



Alpha 40

5G/4G/Dual Band Wi-Fi and ISM Adhesive T-bar Antenna

Ordering Details:

Part Number	Description
ALPHA40/1.5M/SMAM/S/S29	5G/4G/Dual Band Wi-Fi and ISM Adhesive T-bar Antenna SMA Male 1.5m Cable
ALPHA40/2.5M/SMAM/S/S29	5G/4G/Dual Band Wi-Fi and ISM Adhesive T-bar Antenna SMA Male 2.5m Cable
ALPHA40/5M/SMAM/S/S29	5G/4G/Dual Band Wi-Fi and ISM Adhesive T-bar Antenna SMA Male 5m Cable

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