

Tango 23

Bluetooth, Cellular (4G,5G) & Dual Band Wi-Fi Puck Antenna



Key Features

- Supports some 5G NR / 4G LTE bands
- Supports some LTE Cat M, LTE Cat NB, NR Cat NB bands
- Supports Dual band Wi-Fi 2.4 GHz and 5 GHz spectrum
- Supports Bluetooth, Zigbee, WLAN2400, WLAN5800, ISM 2.4 GHz, ISM 5.8 GHz

General Description

The Tango 23 is a compact, puck antenna, tuned to dual band 2.4/5.8 GHz – Wi-Fi / WLAN, Bluetooth and Zigbee frequencies. With dual band compatibility, it can be used with most modern-day Wi-Fi single and dual band modems such as NetGear and TP-link thereby benefiting from the less congested upper band.

In addition to the Wi-Fi bands some LTE and NR bands for 4G, 5G, Cat M and NB IoT are also supported. Refer to the band coverage tables for performance details.

The Tango 23 is supplied as standard with low loss CLF100 cable and terminated with a reverse polarity SMA male connector.

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

Additional Considerations

- Made with a rubber seal gasket to resist water ingress
- Supplied with a low loss cable for enhanced performance
- Omni-directional radiation

T Through	2G GSM	3G UMTS	4G LTE	5G New Radio
LTE Cat M	LTE NB IoT	NR NB IoT	ISM 2.4G	ISM 5.8G
IEEE 802.15.4	WiFi 2.4G & 5G	WiFi 4 802.11n	WiFi 5 802.11ac	WiFi 6 802.11ax
ZB Zigbee	WLAN 2400	WLAN 5800	BLE Bluetooth	AoA Bluetooth
AoD Bluetooth	IP 67			



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Electrical Specifications

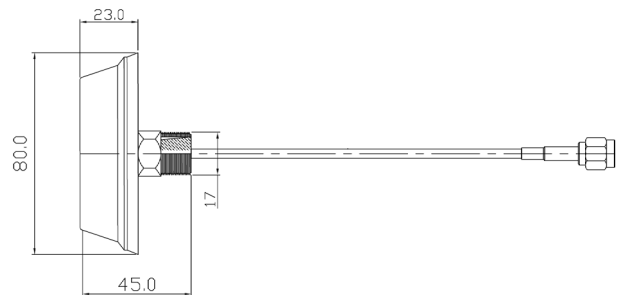
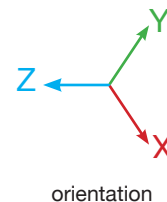
Impedance:	50 Ohm
Polarization:	Vertical
Max Input Power:	50 W
Ground plane independent:	Yes

Environmental Specifications

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

Mechanical Specifications

Dimensions:	23 mm height x 80 mm diameter
Weight:	80 g
Connector:	SMA Male with Reverse Polarity
Cable:	Low Loss CFL100
Mounting method:	M17 Screw Mount
Mounting Screw Length:	22 mm
Max Panel Thickness:	13 mm
Radome materials:	Nylon PA6

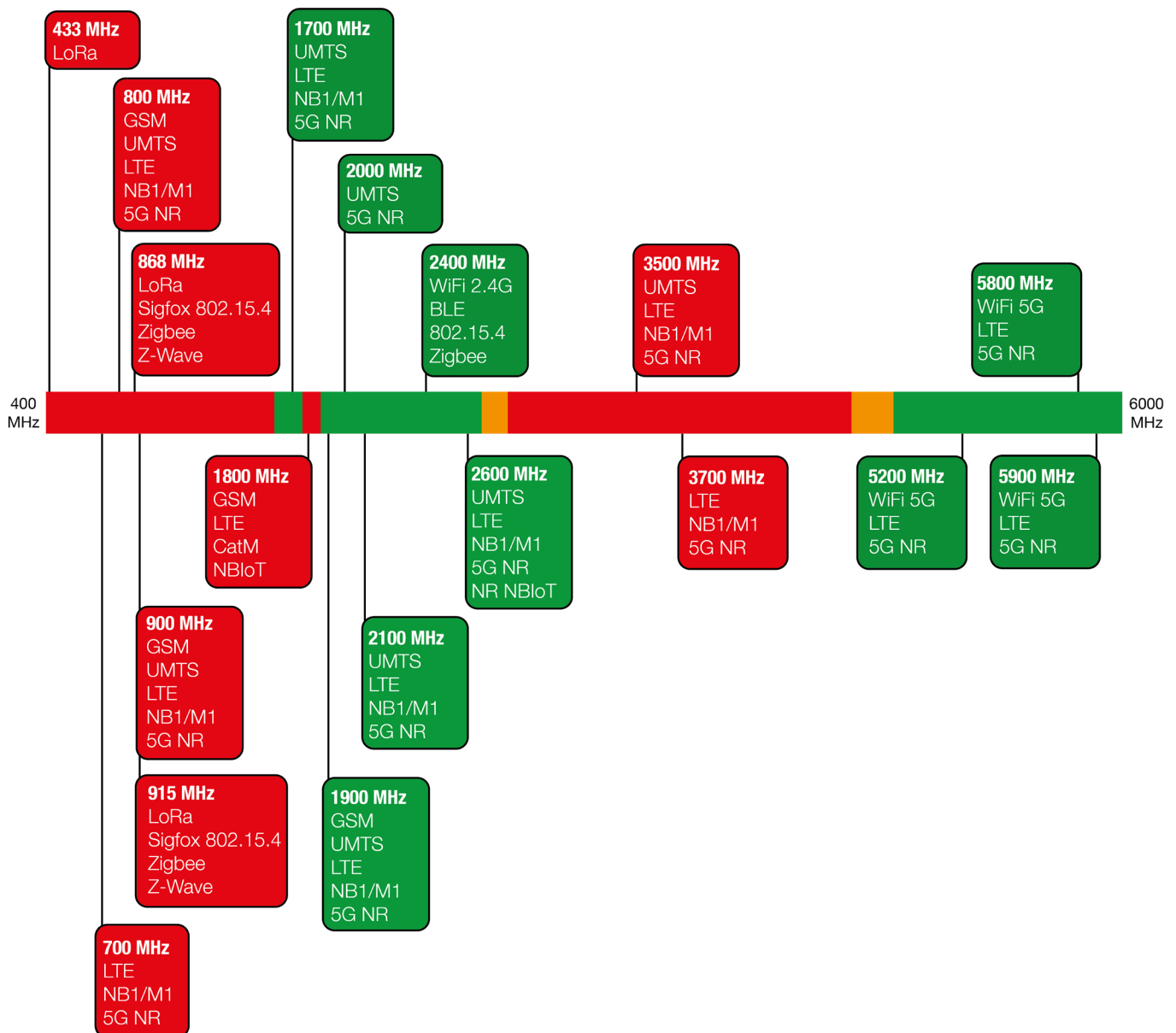




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Spectrum Coverage



● Suitable band

● Adequate band in good signal conditions

● Likely to be unsuitable



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Usable Cellular Frequency Support (410 MHz – 1900 MHz)

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

Usable Cellular Frequency Support (2000 MHz – 5900 MHz)

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

Usable ISM Frequency Support (433 MHz - 5800 MHz)

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

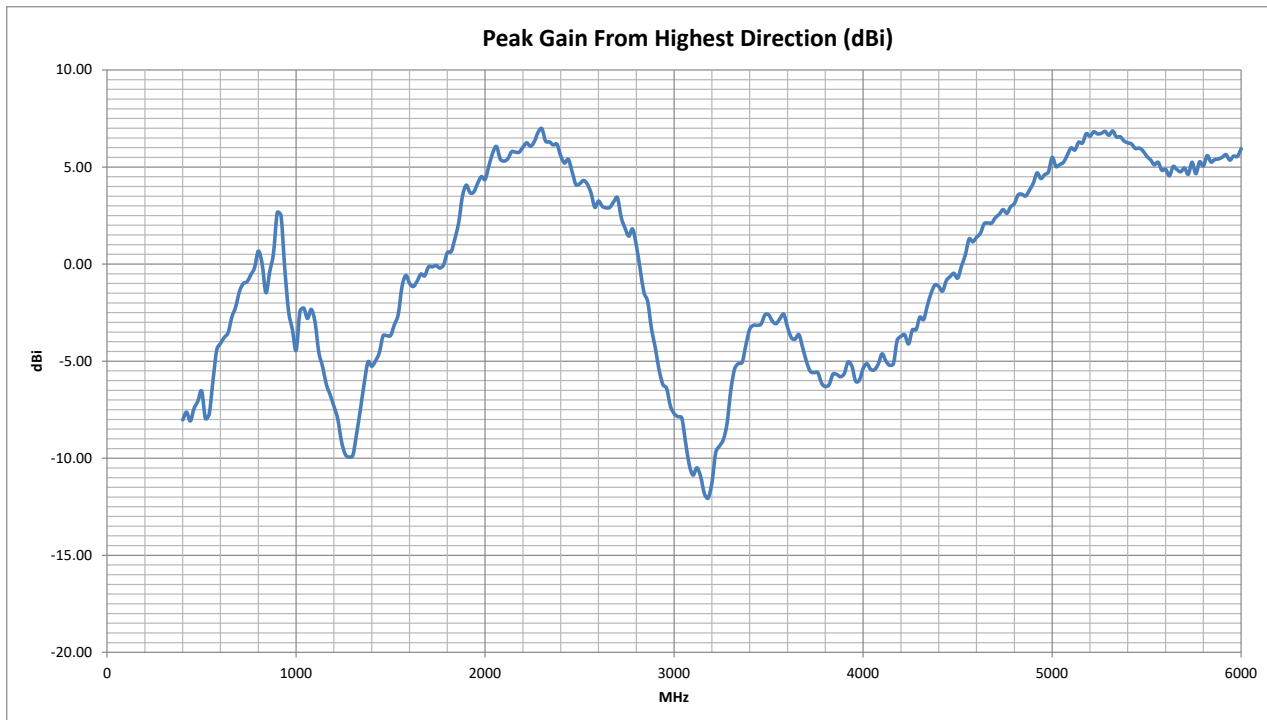




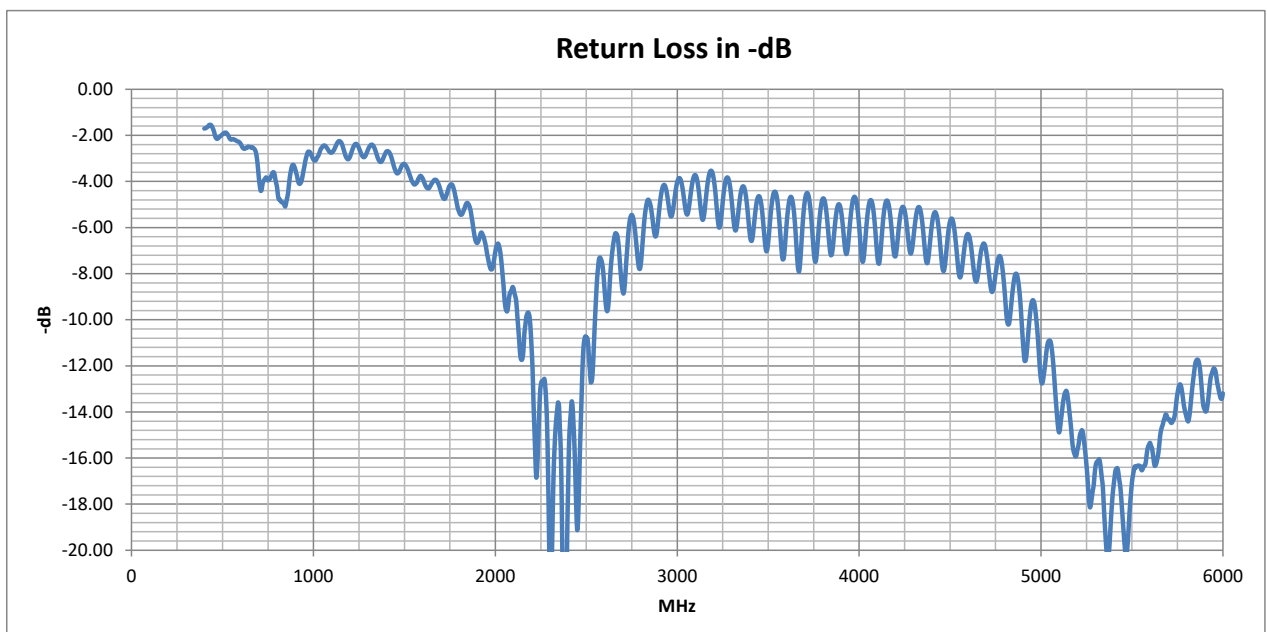
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Peak Gain vs. Frequency



Return Loss

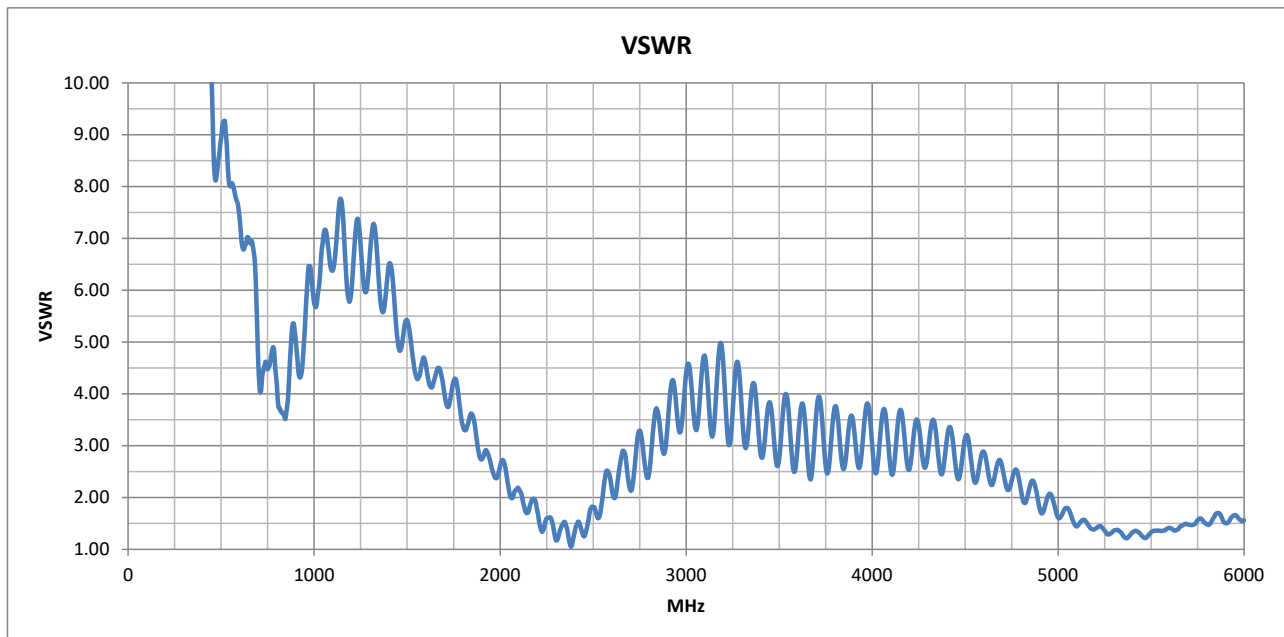




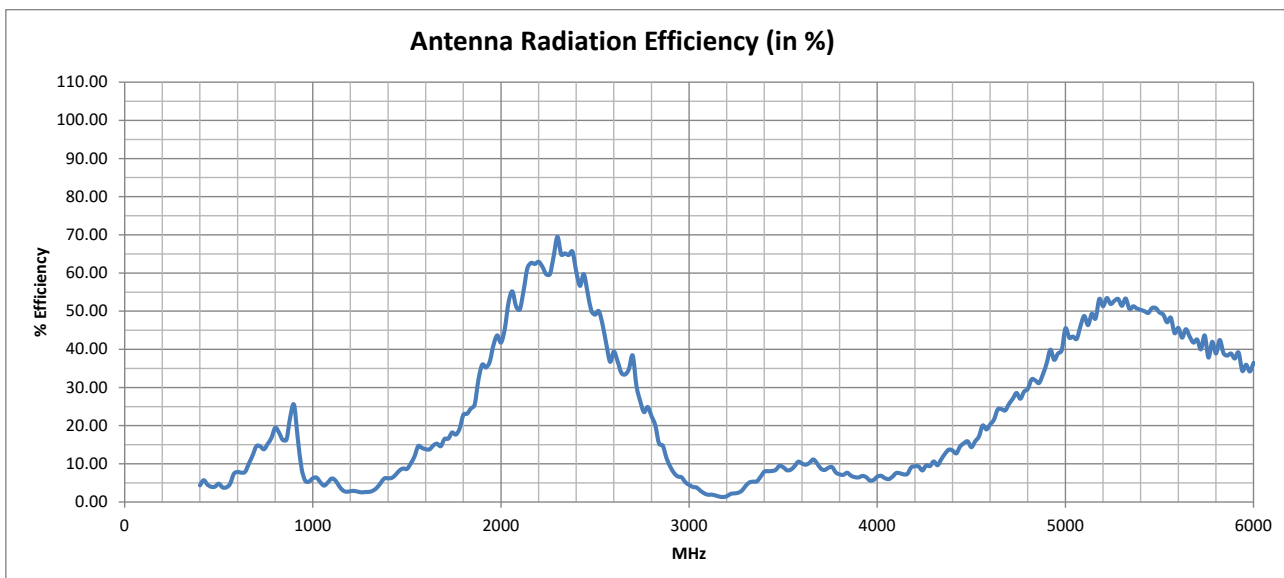
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VSWR



Radiation Efficiency





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Cellular Standards Band Support

GSM (2G) Band	UMTS (3G) Band	E-UTRA (4G) Band	Cat M E-UTRA Band	Cat NB E-UTRA Band	NR (5G) Band	Cat NB NR (5G) Band	Uplink	Downlink	Average Upload Efficiency (%)	Average Download Efficiency (%)	Maximum Upload VSWR	Maximum Download VSWR	Use Indicator
	1	1	1	1	n1	n1	1920 - 1980 MHz	2110 - 2170 MHz	39.10	59.53	2.91	2.10	●
PCS-1900	2	2	2	2	n2	n2	1850 - 1910 MHz	1930 - 1990 MHz	31.07	40.36	3.60	2.87	●
DCS-1800	3	3	3	3	n3	n3	1710 - 1785 MHz	1805 - 1880 MHz	17.85	25.28	4.29	3.62	●
	4	4	4	4			1710 - 1755 MHz	2110 - 2155 MHz	17.41	58.52	4.28	2.10	●
GSM-850	5	5	5	5	n5	n5	824 - 849 MHz	869 - 894 MHz	16.76	22.19	3.65	5.36	●
	6						830 - 840 MHz	875 - 885 MHz	16.74	22.11	3.64	5.35	●
	7	7	7	7	n7	n7	2500 - 2570 MHz	2620 - 2690 MHz	46.21	34.55	2.50	2.90	●
E-GSM-900	8	8	8	8	n8	n8	880 - 915 MHz	925 - 960 MHz	23.13	9.13	5.36	5.93	●
	9	9					1749.9 - 1784.9 MHz	1844.9 - 1879.9 MHz	18.41	27.16	4.29	3.62	●
	10	10					1710 - 1770 MHz	2110 - 2170 MHz	17.54	59.53	4.29	2.10	●
	11	11	11	11			1427.9 - 1447.9 MHz	1475.9 - 1495.9 MHz	7.06	8.72	5.97	5.42	●
	12	12	12	12	n12	n12	699 - 716 MHz	729 - 746 MHz	14.61	14.02	4.69	4.62	●
	13	13	13	13	n13	n13	777 - 787 MHz	746 - 756 MHz	17.08	14.57	4.90	4.53	●
	14	14	14	14	n14		788 - 798 MHz	758 - 768 MHz	18.52	15.44	4.66	4.70	●
		17		17			704 - 716 MHz	734 - 746 MHz	14.60	13.97	4.30	4.62	●
		18	18	18	n18	n18	815 - 830 MHz	860 - 875 MHz	17.93	18.56	3.73	4.92	●
	19	19	19	19			830 - 845 MHz	875 - 890 MHz	16.58	22.57	3.64	5.36	●
	20	20	20	20	n20	n20	832 - 862 MHz	791 - 821 MHz	16.41	18.81	4.06	4.51	●
	21	21	21	21			1447.9 - 1462.9 MHz	1495.9 - 1510.9 MHz	7.96	8.93	5.07	5.42	●
	22	22					3410 - 3490 MHz	3510 - 3590 MHz	8.49	9.18	3.84	3.99	●
		24	24	24	n24		1626.5 - 1660.5 MHz	1525 - 1559 MHz	14.80	12.31	4.45	4.86	●
	25	25	25	25	n25	n25	1850 - 1915 MHz	1930 - 1995 MHz	31.41	40.52	3.60	2.87	●
	26	26	26	26	n26		814 - 849 MHz	859 - 894 MHz	17.18	20.86	3.73	5.36	●
		27	27				807 - 824 MHz	852 - 869 MHz	18.46	17.04	3.80	4.55	●
		28	28	28	n28	n28	703 - 748 MHz	758 - 803 MHz	14.33	17.13	4.62	4.90	●

● 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	14.49	16.29	4.54	4.90	●
		29			n29		N/A	717 - 728 MHz	N/A	14.47	N/A	4.47	●
		30			n30		2305 - 2315 MHz	2350 - 2360 MHz	67.18	64.83	1.27	1.52	●
		31	31	31			452.5 - 457.5 MHz	462.5 - 467.5 MHz	4.12	3.98	9.59	8.39	●
	32	32					N/A	1452 - 1496 MHz	N/A	8.49	N/A	5.42	●
		33					1900 - 1920 MHz	1900 - 1920 MHz	35.61	35.61	2.90	2.90	●
		34			n34		2010 - 2025 MHz	2010 - 2025 MHz	45.00	45.00	2.72	2.72	●
		35					1850 - 1910 MHz	1850 - 1910 MHz	31.07	31.07	3.60	3.60	●
		36					1930 - 1990 MHz	1930 - 1990 MHz	40.36	40.36	2.87	2.87	●
		37					1910 - 1930 MHz	1910 - 1930 MHz	35.52	35.52	2.91	2.91	●
		38			n38		2570 - 2620 MHz	2570 - 2620 MHz	38.06	38.06	2.52	2.52	●
		39	39		n39		1880 - 1920 MHz	1880 - 1920 MHz	34.79	34.79	2.97	2.97	●
		40	40		n40		2300 - 2400 MHz	2300 - 2400 MHz	65.06	65.06	1.53	1.53	●
		41	41	41	n41	n41	2496 - 2690 MHz	2496 - 2690 MHz	39.96	39.96	2.90	2.90	●
		42	42	42			3400 - 3600 MHz	3400 - 3600 MHz	8.88	8.88	3.99	3.99	●
		43	43	43			3600 - 3800 MHz	3600 - 3800 MHz	9.28	9.28	3.95	3.95	●
		44					703 - 803 MHz	703 - 803 MHz	15.63	15.63	4.90	4.90	●
		45					1447 - 1467 MHz	1447 - 1467 MHz	8.02	8.02	5.10	5.10	●
		46			n46		5150 - 5925 MHz	5150 - 5925 MHz	46.47	46.47	1.70	1.70	●
		47			n47		5855 - 5925 MHz	5855 - 5925 MHz	38.43	38.43	1.70	1.70	●
		48			n48		3550 - 3700 MHz	3550 - 3700 MHz	10.07	10.07	3.81	3.81	●
		49					3550 - 3700 MHz	3550 - 3700 MHz	10.07	10.07	3.81	3.81	●
		50			n50		1432 - 1517 MHz	1432 - 1517 MHz	8.36	8.36	5.77	5.77	●
		51			n51		1427 - 1432 MHz	1427 - 1432 MHz	6.70	6.70	6.01	6.01	●
		52					3300 - 3400 MHz	3300 - 3400 MHz	5.71	5.71	4.20	4.20	●

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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
		53			n53		2483.5 - 2495 MHz	2483.5 - 2495 MHz	49.64	49.64	1.82	1.82	●
		65		65	n65	n65	1920 - 2010 MHz	2110 - 2200 MHz	40.30	60.55	2.91	2.10	●
		66	66	66	n66	n66	1710 - 1780 MHz	2110 - 2200 MHz	17.73	60.55	4.29	2.10	●
		67			n67		N/A	738 - 758 MHz	N/A	14.38	N/A	4.62	●
		68					698 - 728 MHz	753 - 783 MHz	14.55	15.85	4.81	4.90	●
		69					N/A	2570 - 2620 MHz	N/A	38.06	N/A	2.52	●
		70		70	n70	n70	1695 - 1710 MHz	1995 - 2020 MHz	16.45	43.23	4.14	2.72	●
		71	71	71	n71		663 - 698 MHz	617 - 652 MHz	12.33	8.03	6.95	7.02	●
		72	72	72			451 - 456 MHz	461 - 466 MHz	4.16	3.98	9.78	8.49	●
		73	73	73			450 - 455 MHz	460 - 465 MHz	4.19	3.98	9.91	8.55	●
		74	74	74	n74		1427 - 1470 MHz	1475 - 1518 MHz	7.59	8.95	6.01	5.42	●
		75			n75		N/A	1432 - 1517 MHz	N/A	8.36	N/A	5.77	●
		76			n76		N/A	1427 - 1432 MHz	N/A	6.70	N/A	6.01	●
					n77		3300 - 4200 MHz	3300 - 4200 MHz	7.75	7.75	4.20	4.20	●
					n78		3300 - 3800 MHz	3300 - 3800 MHz	8.41	8.41	4.20	4.20	●
					n79		4400 - 5000 MHz	4400 - 5000 MHz	25.88	25.88	3.36	3.36	●
					n80		1710 - 1785 MHz	N/A	17.85	N/A	4.29	N/A	●
					n81		880 - 915 MHz	N/A	23.13	N/A	5.36	N/A	●
					n82		832 - 862 MHz	N/A	16.41	N/A	4.06	N/A	●
					n83		703 - 748 MHz	N/A	14.33	N/A	4.62	N/A	●
					n84		1920 - 1980 MHz	N/A	39.10	N/A	2.91	N/A	●
		85	85	85	n85		698 - 716 MHz	728 - 746 MHz	14.60	14.03	4.81	4.62	●
					n86		1710 - 1780 MHz	N/A	17.73	N/A	4.29	N/A	●
		87	87	87			410 - 415 MHz	420 - 425 MHz	5.19	5.56	10.63	11.15	●
		88	88	88			412 - 417 MHz	422 - 427 MHz	5.33	5.44	10.68	11.22	●

● 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
					n89		824 - 849 MHz	N/A	16.76	N/A	3.65	N/A	●
					n90	n90	2496 - 2690 MHz	2496 - 2690 MHz	39.96	39.96	2.90	2.90	●
					n91		832 - 862 MHz	1427 - 1432 MHz	16.41	6.70	4.06	6.01	●
					n92		832 - 862 MHz	1432 - 1517 MHz	16.41	8.36	4.06	5.77	●
					n93		880 - 915 MHz	1427 - 1432 MHz	23.13	6.70	5.36	6.01	●
					n94		880 - 915 MHz	1432 - 1517 MHz	23.13	8.36	5.36	5.77	●
					n95		2010 - 2025 MHz	N/A	45.00	N/A	2.72	N/A	●
					n97		2300 - 2400 MHz	N/A	65.06	N/A	1.53	N/A	●
					n98		1880 - 1920 MHz	N/A	34.79	N/A	2.97	N/A	●
					n99		1626.5 - 1660.5 MHz	N/A	14.80	N/A	4.45	N/A	●
					n101		1900 - 1910 MHz	1900 - 1910 MHz	35.79	35.79	2.79	2.79	●
				103			787 - 788 MHz	757 - 758 MHz	17.79	15.03	4.72	4.54	●

● Suitable band

● Adequate band in good signal conditions

● Likely to be unsuitable

NOTE: For each frequency band, Siretta provides a traffic light indication to show the suitability of the antenna for use at that frequency band. Determination of exactly what makes an antenna good or bad at any frequency is subjective.

The view presented is that of Siretta's engineering team having taken into account the efficiency and VSWR measurements. The end user is advised to use their own criteria and/or testing to confirm suitability.



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ISM Standards Frequency Support

Application	Frequency Range	Efficiency (%)	Maximum VSWR	Peak Gain from highest direction (dBi)	Use Indicator
ISM 433 MHz	433.05 - 434.79 MHz	4.90	11.29	-7.919	●
IMT 868 MHz	863 - 870 MHz	18.27	4.62	0.08	●
ISM 915 MHz	902 - 928 MHz	18.91	4.98	2.643	●
ISM 2.4 GHz	2400 - 2500 MHz	55.23	1.82	5.57	●
Wi-Fi 2.4G	2401 - 2483 MHz	56.35	1.73	5.552	●
Wi-Fi 2.4G (USA)	2401 - 2473 MHz	57.13	1.53	5.552	●
Wi-Fi 2.4G (Japan)	2401 - 2495 MHz	55.49	1.82	5.552	●
Wi-Fi 5G (all channels)	5150 - 5990 MHz	45.61	1.70	6.86	●
Wi-Fi 5G (Ch 32-48)	5150 - 5250 MHz	51.63	1.53	6.82	●
Wi-Fi 5G (Ch 32-64)	5150 - 5330 MHz	52.04	1.53	6.86	●
Wi-Fi 5G (Ch 32-161)	5150 - 5815 MHz	47.70	1.59	6.86	●
Wi-Fi 5G (Ch 32-173)	5150 - 5875 MHz	47.03	1.70	6.86	●
ISM 5.8 GHz	5725 - 5875 MHz	40.24	1.70	5.59	●

● 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.

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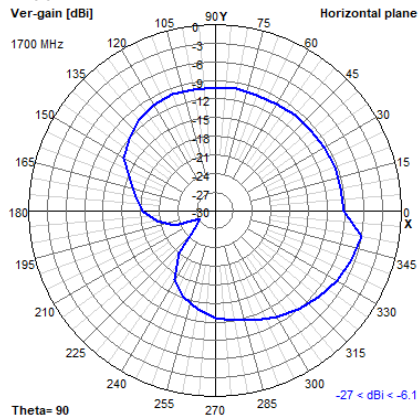


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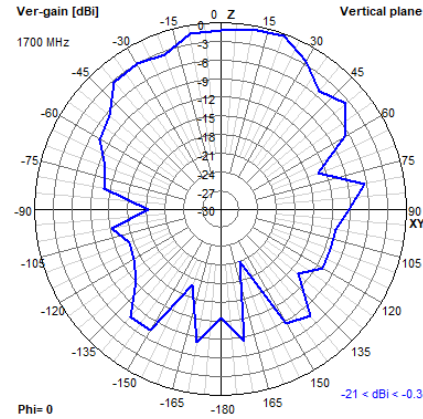
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2D Radiation Plots

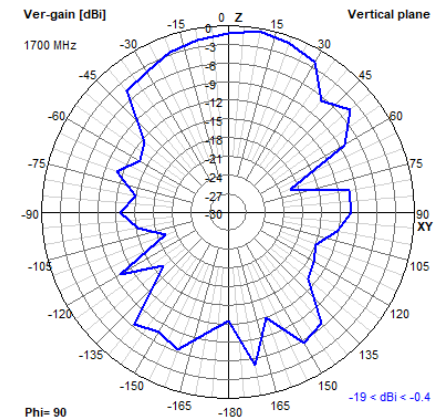
1700 MHz XY



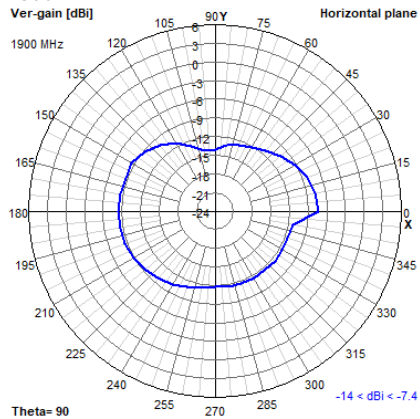
XZ



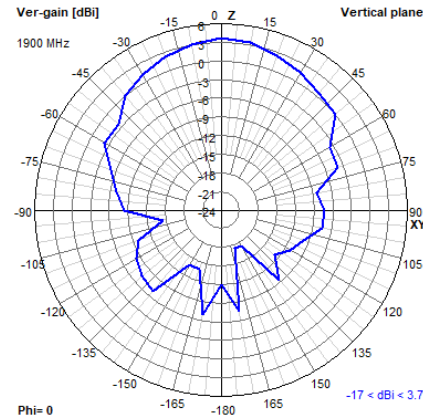
YZ



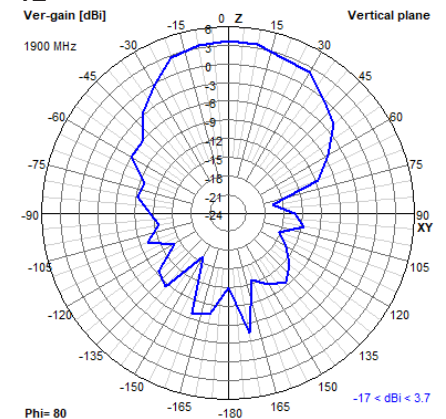
1900 MHz XY



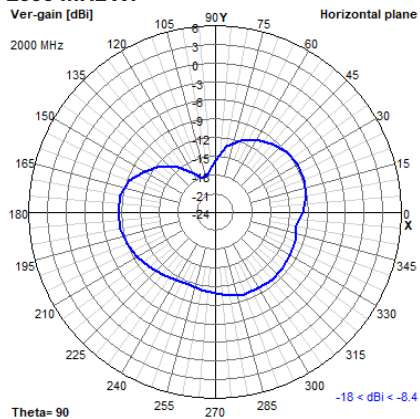
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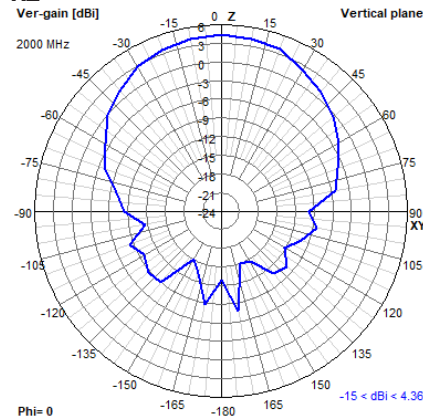
YZ



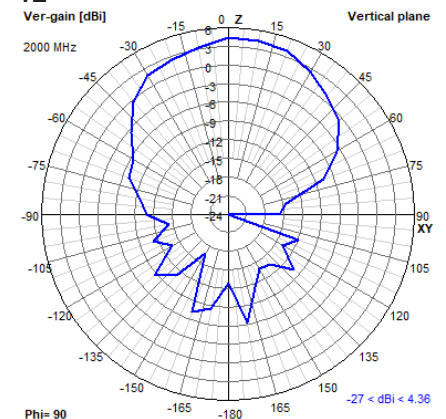
2000 MHz XY



XZ



YZ



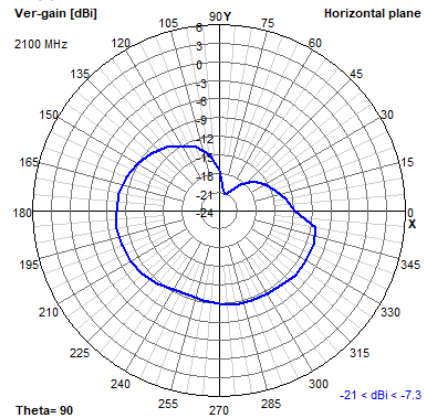


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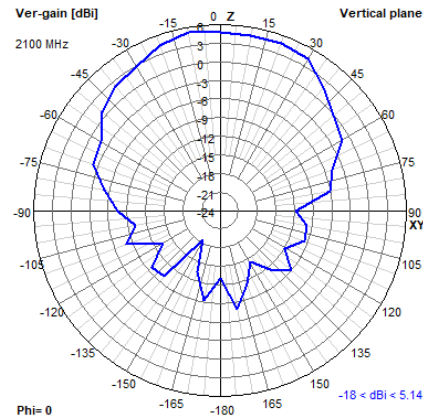
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2D Radiation Plots

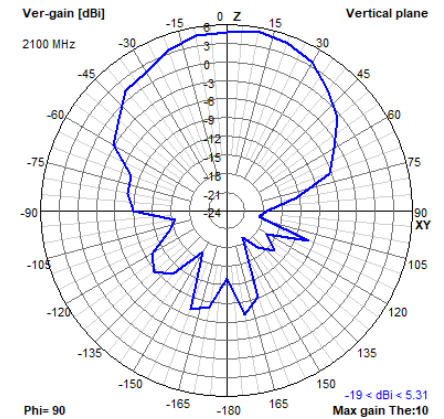
2100 MHz XY



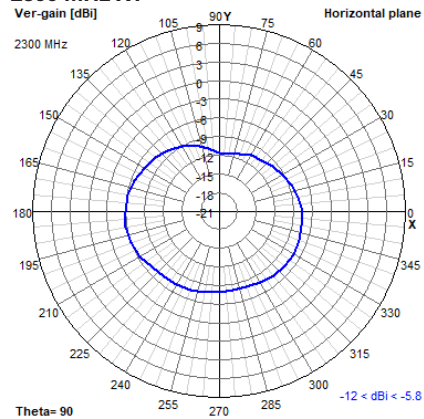
XZ



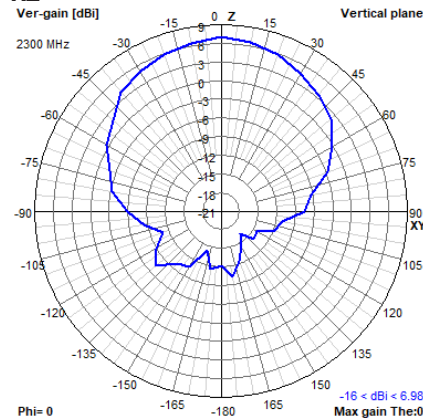
YZ



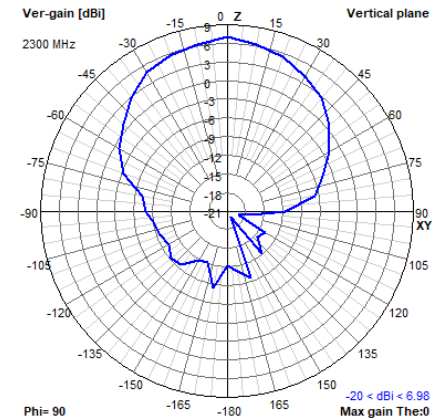
2300 MHz XY



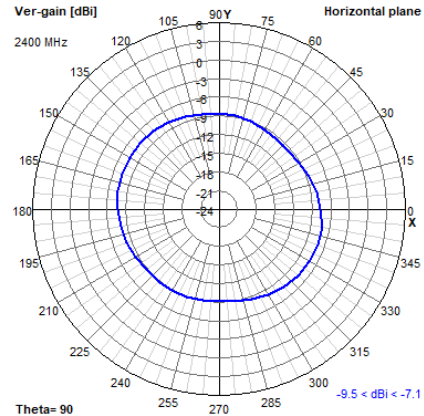
XZ



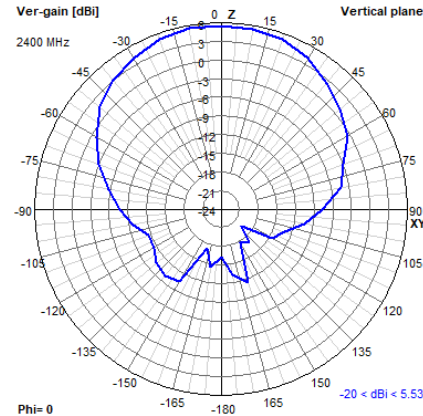
YZ



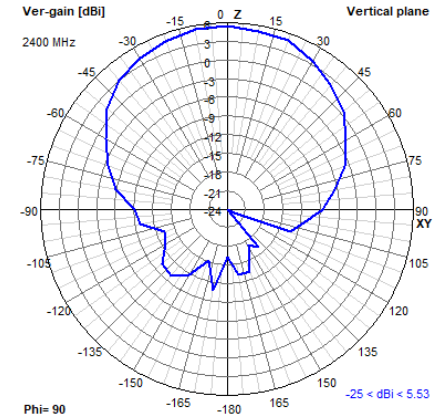
2400 MHz XY



XZ



YZ



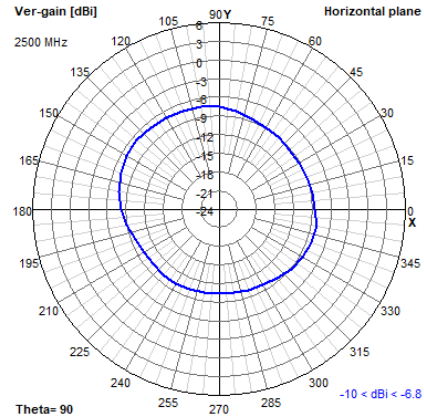


Tango 23

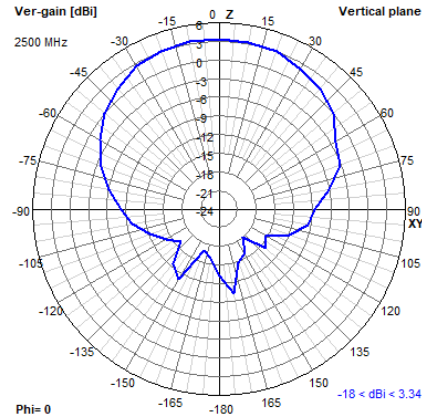
Bluetooth, Cellular (4G,5G) & Dual Band Wi-Fi Puck Antenna

2D Radiation Plots

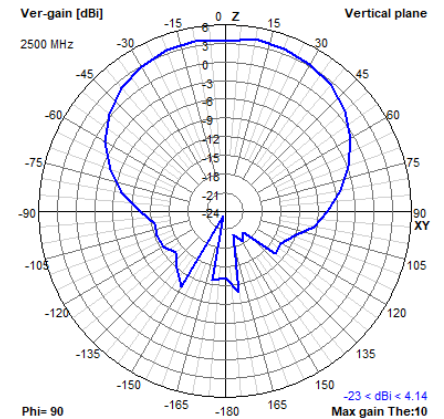
2500 MHz XY



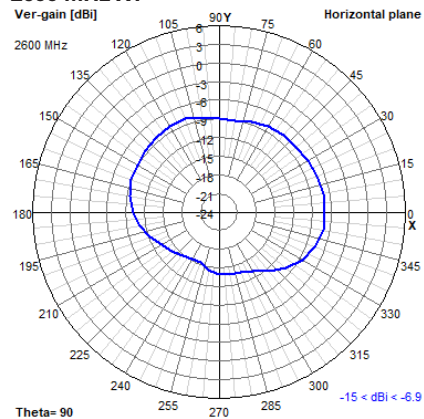
XZ



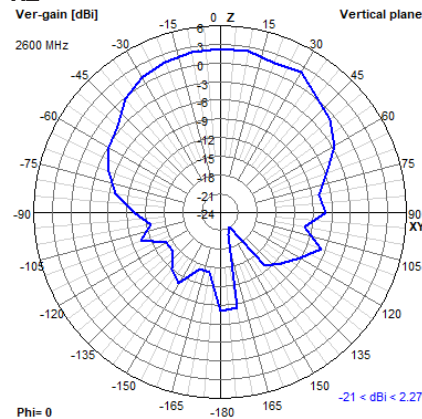
YZ



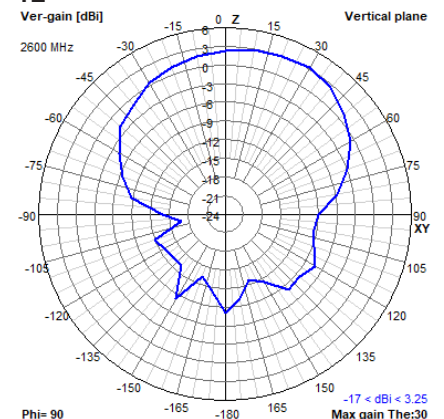
2600 MHz XY



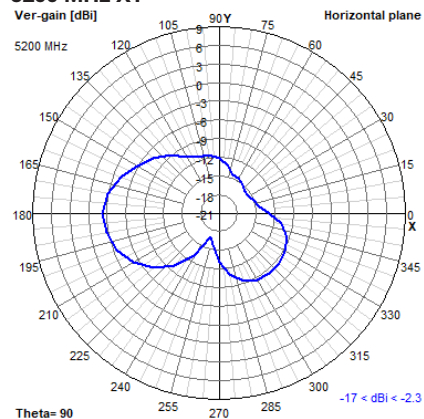
XZ



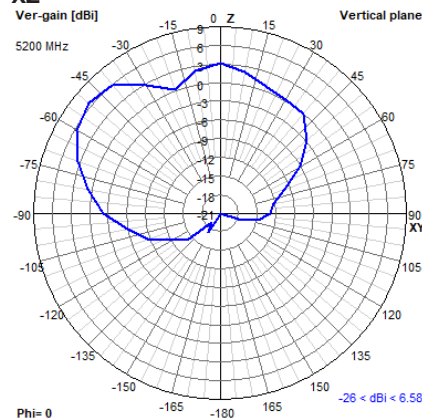
YZ



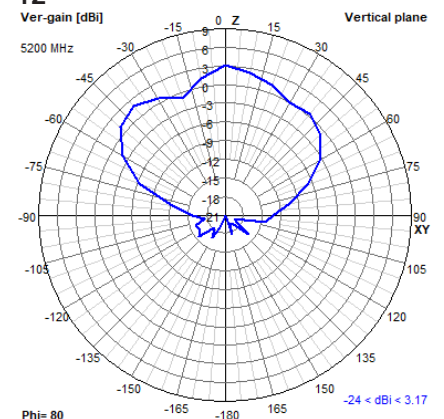
5200 MHz XY



XZ



YZ



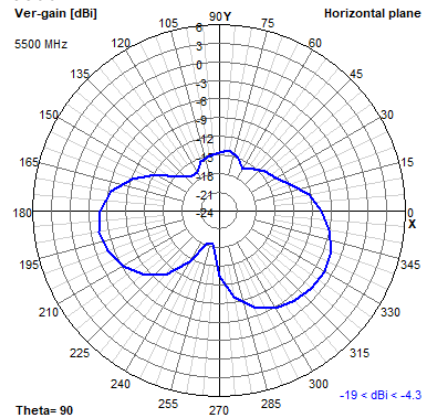


Tango 23

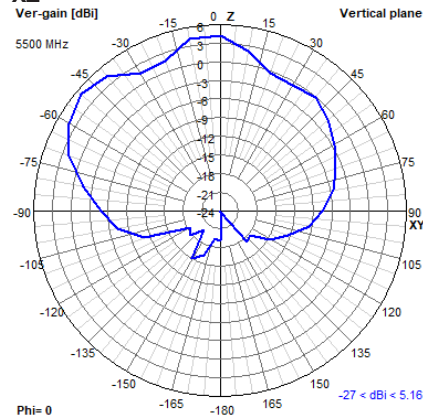
Bluetooth, Cellular (4G,5G) & Dual Band Wi-Fi Puck Antenna

2D Radiation Plots

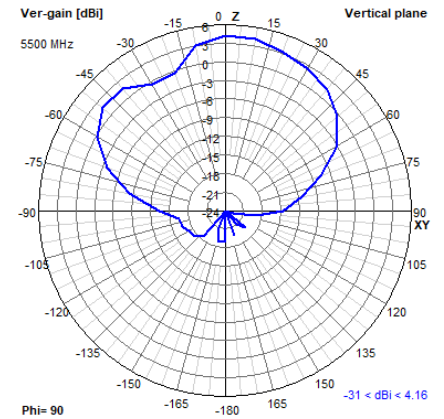
5500 MHz XY



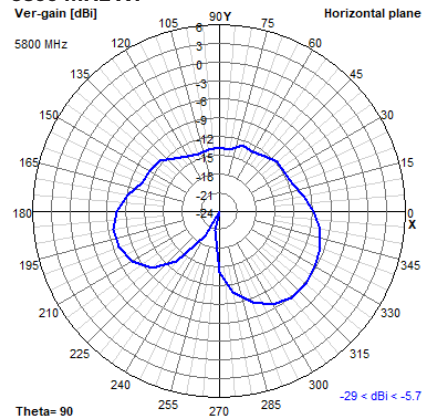
XZ



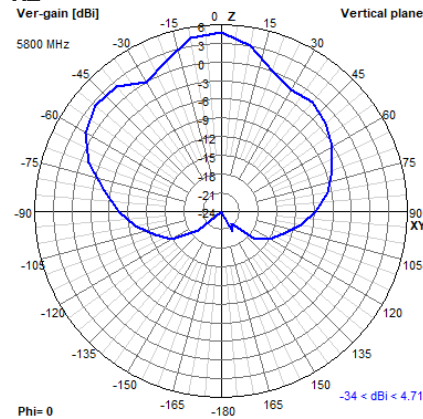
YZ



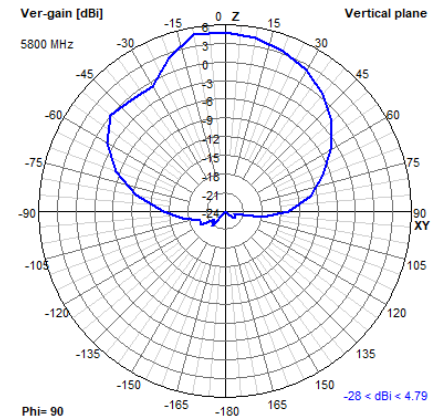
5800 MHz XY



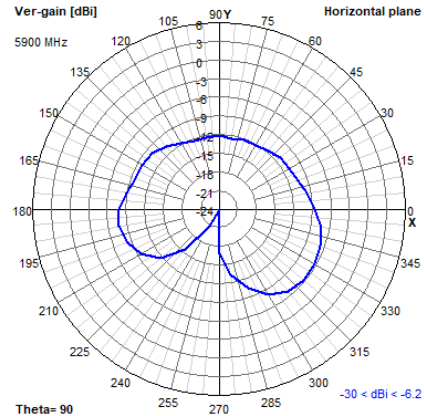
XZ



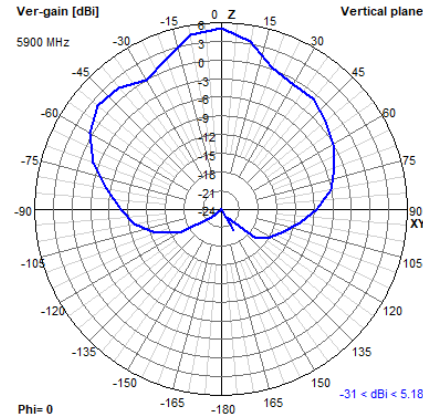
YZ



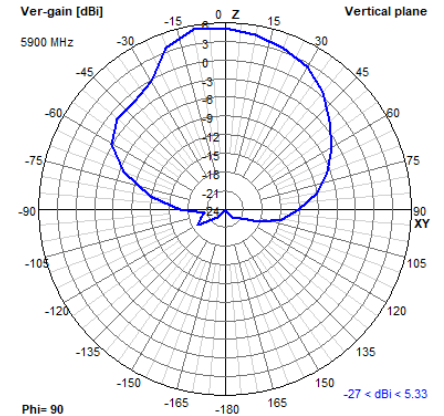
5900 MHz XY



XZ



YZ



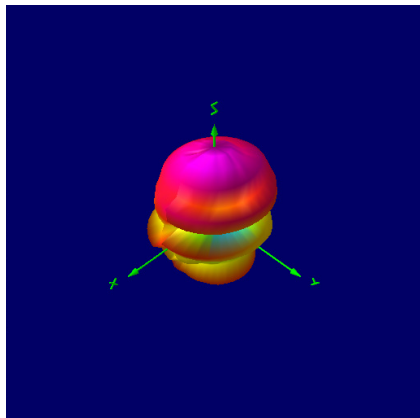


Tango 23

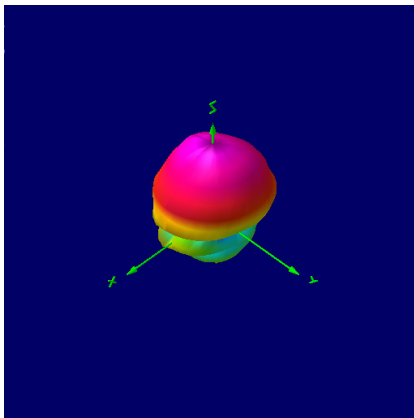
Bluetooth, Cellular (4G,5G) & Dual Band Wi-Fi Puck Antenna

3D Radiation Plots

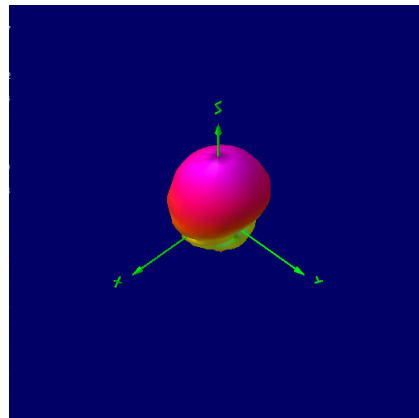
1700 MHz



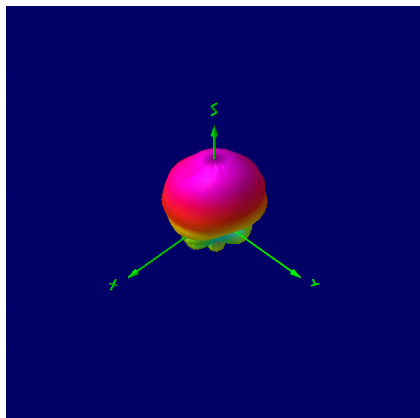
1900 MHz



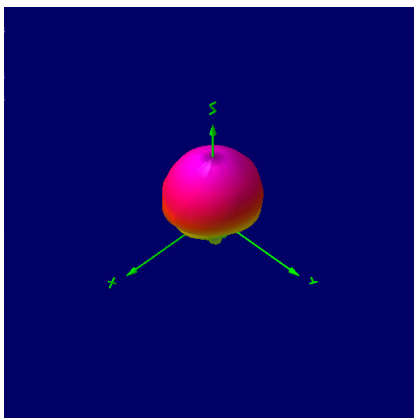
2000 MHz



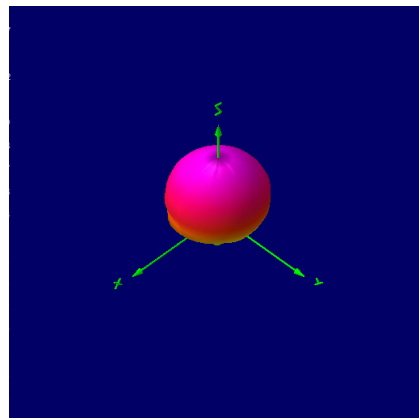
2100 MHz



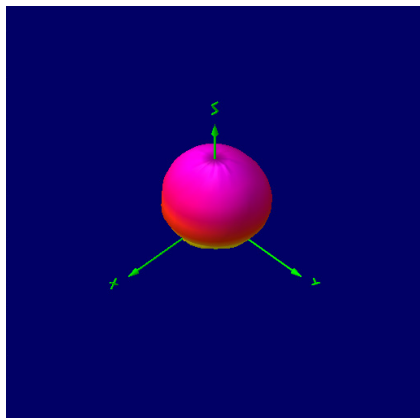
2300 MHz



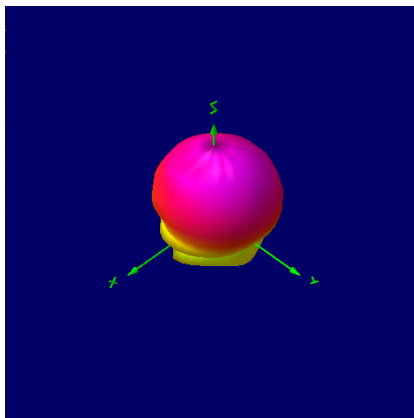
2400 MHz



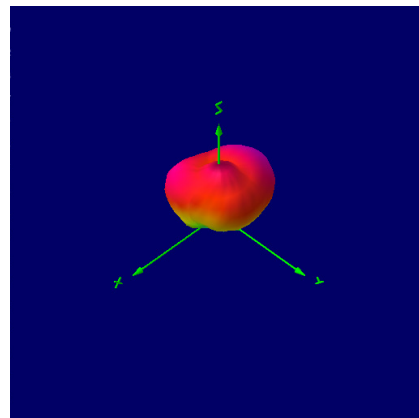
2500 MHz



2600 MHz



5200 MHz



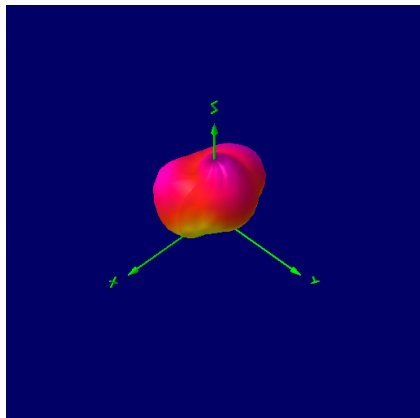


Tango 23

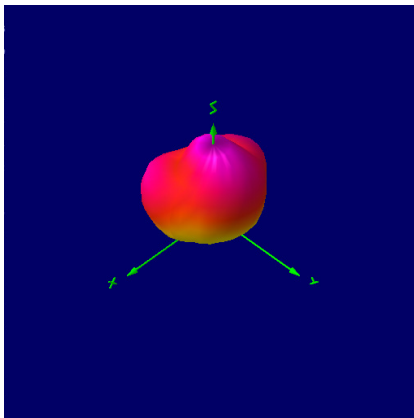
Bluetooth, Cellular (4G,5G) & Dual Band Wi-Fi Puck Antenna

3D Radiation Plots

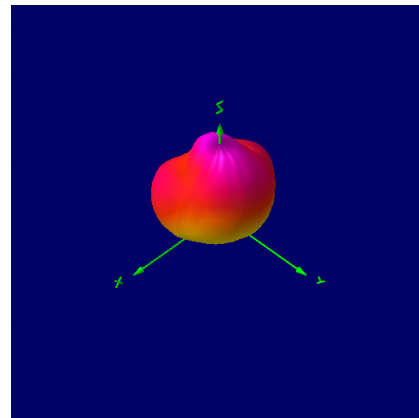
5500 MHz



5800 MHz



5900 MHz



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

Ordering Details:

Part Number	Description
TANGO23/0.5M/SMAM/S/RP/19	Bluetooth, Cellular (4G,5G) & Dual Band Wi-Fi Puck Antenna SMA Male RP Connector 0.5m Cable
TANGO23/1M/SMAM/S/RP/19	Bluetooth, Cellular (4G,5G) & Dual Band Wi-Fi Puck Antenna SMA Male RP Connector 1m Cable
TANGO23/2.5M/SMAM/S/RP/19	Bluetooth, Cellular (4G,5G) & Dual Band Wi-Fi Puck Antenna SMA Male RP Connector 2.5m Cable