

Part No.1005392F0-AA10L0600

5G/4G & Dual-band Wi-Fi FPC Embedded Combo Antenna

600 / 700 / 750 / 850 / 900 / 1800 / 1900 / 2100 / 2700 / 3400 / 4400MHz & 2400 - 2500MHz / 4900 - 5850MHz

Supports: Broadband LTE, Sub-6G, LTE CAT-M, NB-IoT, SigFox, LoRa, Cellular LPWA & 802.11a, 11b, 11g, 11n, 11ac



Ethertronics 5G/4G embedded antenna 1005392F0 address the challenges facing today's product designers. Based on a flexible substrate for easier integration, high performance and isolation characteristics, this antenna offers better connectivity. In addition, 1005392F0 supports all the worldwide cellular bands for 5G/4G with backward compatibility and dual-band Wi-Fi. The 1005392F0 is offered in many standard cable lengths and it is designed to perform efficiently for long cable lengths, when the antenna is far from the ground plane.

Electrical Specifications

Typical Characteristics, using with 600 mm cable in free space. Antenna is mounted directly on plastic material.

5G/4G Antenna (with Grey Cable)

Frequency (MHz)	617 - 960	1400 - 2200	2300 - 2690	3300 - 5000
Average Efficiency	60%	50%	40%	34%
Peak Gain	3.1 dBi	2.7 dBi	2.2 dBi	2.3 dBi

Dual-band Wi-Fi Antenna (with Black Cable)

Frequency (MHz)	2400 - 2500	4900 - 5850
Average Efficiency	36%	30%
Peak Gain	2.2 dBi	1.3dBi

	5G/4G	Dual-band Wi-Fi
VSWR Match	2.8:1 max	2.2:1 max
Feed Point Impedance	50 ohms unbalanced	
Polarization	Linear	
Power Handling	2 Watts CW	
Radiation Pattern	Omni-directional	

Mechanical Specifications & Ordering Part Number

Ordering Part #	1005392F0-AA10L0600
Dimensions (mm)	114.0 x 30.0 x 0.2 (1.6 high at cable solder connection)
Weight (grams)	1.23
Connector / Cable (mm)	U.FL compatible connector Length: 600mm, Cable diameter: 1.13, Color: Black & Grey
Mounting	using 3M467 Adhesive

*Additional variations with different cable lengths, colors and connectors are available.

5G/4G FPC Embedded Antenna

617 - 960 MHz 1400 - 2200 MHz
2300 - 2690 MHz 3300 - 5000 MHz

Dual Band Wi-Fi FPC Embedded Antenna

2400 - 2500 & 4900 - 5850 MHz

KEY BENEFITS

Reduced Costs and Time-to-Market

Standard antenna eliminates design fees and cycle time associated with a custom solution; getting products to market faster.

Greater Flexibility with Unique Form Factors

Ethertronics' technology helps you deliver more advanced ergonomic designs without adverse impact on product performance.

RoHS Compliant

Products are the latest RoHS version compliant.

APPLICATIONS

- Medical applications
- Home automation
- M2M, Industrial devices
- IoT
- Healthcare Tracking
- NB-IoT
- Sigfox
- LoRa
- Cellular LPWA
- LTE CAT-M



5G/4G Band & Dual Band Wi-Fi Ethertronics' Embedded Antenna Specifications.
Ethertronics produces a wide variety of standard and custom antennas to meet user needs.

LTE Bands covered by 1005392F0

LTE Band	Frequency Band (MHz)	Uplink (UL) (MHz)	Downlink (DL) (MHz)	Region	Covered
1	2100	1920 - 1980	2110 - 2170	Global	Yes
2	1900	1850 - 1910	1930 - 1990	NAM	
3	1800	1710 - 1785	1805 - 1880	Global	
4	1700	1710 - 1755	2110 - 2155	NAM	
5	850	824 - 849	869 - 894	NAM	
6	850	830 - 840	875 - 885	APAC	
7	2600	2500 - 2570	2620 - 2690	EMEA	
8	900	880 - 915	925 - 960	Global	
9	1800	1749.9 - 1784.9	1844.9 - 1879.9	APAC	
10	1700	1710 - 1770	2110 - 2170	NAM	
11	1500	1427.9 - 1447.9	1475.9 - 1495.9	Japan	Yes
12	700	699 - 716	729 - 746	NAM	
13	700	777 - 787	746 - 756	NAM	
14	700	788 - 798	758 - 768	NAM	
17	700	704 - 716	734 - 746	NAM	
18	850	815 - 830	860 - 875	Japan	Yes
19	850	830 - 845	875 - 890	Japan	
20	800	832 - 862	791 - 821	EMEA	
21	1500	1447.9 - 1462.9	1495.9 - 1510.9	Japan	Yes
22	3500	3410 - 3490	3510 - 3590	EMEA	Yes
23	2000	2000 - 2020	2180 - 2200	NAM	Yes
24	1600	1626.5 - 1660.5	1525 - 1559	NAM	Yes
25	1900	1850 - 1915	1930 - 1995	NAM	Yes
26	850	814 - 849	859 - 894	NAM	
27	850	807 - 824	852 - 869	NAM	Yes
28	700	703 - 748	758 - 803	APAC,EU	
29	700	N/A	717 - 728	NAM	Yes
30	2300	2305 - 23151	2350 - 2360	NAM	Yes
31	450	452.5 - 457.5	462.5 - 467.5	Global	No
32	1500	N/A	1452 - 1496	EMEA	Yes
33	1900		1900 - 1920		
34	2000		2010 - 2025		
35	1850		1850 - 1910		
36	1900		1930 - 1990		
37	1900		1910 - 1930		
38	2600		2570 - 2620		
39	1900		1880 - 1920		
40	2300		2300 - 2400		
41	2500		2496 - 2690		
42	3500		3400 - 3600		
43	3700		3600 - 3800		

NAM: North America, EMEA: Europe, Middle East, and Africa, APAC: Asia-Pacific, EU: Europe



5G/4G Band & Dual Band Wi-Fi Ethertronics' Embedded Antenna Specifications.
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5G Bands covered by 1005392F0

5G Band	Uplink (UL) (MHz)	Downlink (DL) (MHz)	Bandwidth (MHz)	Duplexing Mode	Covered
n1	1920 - 1980	2110 - 2170	60	FDD	Yes
n2	1850 - 1910	1930 - 1990	60	FDD	
n3	1710 - 1785	1805 - 1880	75	FDD	
n5	824 - 849	869 - 894	25	FDD	
n7	2500 - 2570	2620 - 2690	70	FDD	
n8	880 - 915	925 - 960	35	FDD	
n20	832 - 862	791 - 821	30	FDD	
n28	703 - 748	758 - 803	45	FDD	
n38	2570 - 2620		50	TDD	Yes
n41	2496 - 2690		194	TDD	
n50	1432 - 1517		85	TDD	
n51	1427 - 1432		5	TDD	
n66	1710 - 1780	2110 - 2200	70/90	FDD	Yes
n70	1695 - 1710	1995 - 2020	15/25	FDD	
n71	663 - 698	617 - 652	35	FDD	
n74	1427 - 1470	1475 - 1518	43	FDD	
n75	N/A	1432 - 1517	85	SDL	Yes
n76	N/A	1427 - 1432	5	SDL	Yes
n77	3300 - 4200		900	TDD	Yes
n78	3300 - 3800		500	TDD	
n79	4400 - 5000		600	TDD	
n80	1710 - 1785	N/A	75	SUL	Yes
n81	880 - 915	N/A	35	SUL	
n82	832 - 862	N/A	30	SUL	
n83	703 - 748	N/A	45	SUL	
n84	1920 - 1980	N/A	60	SUL	

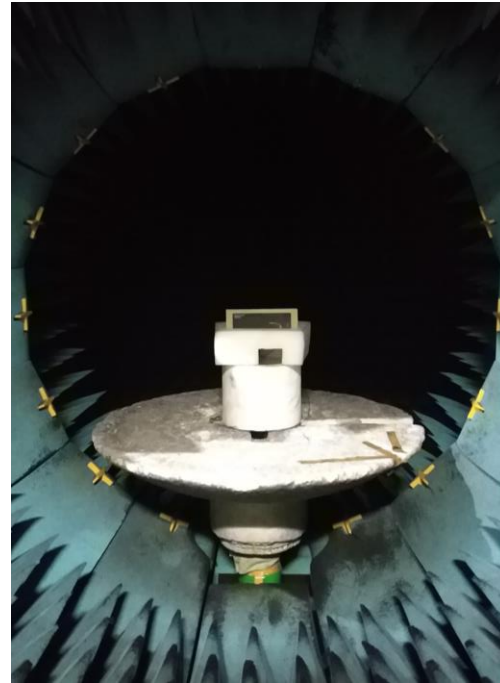
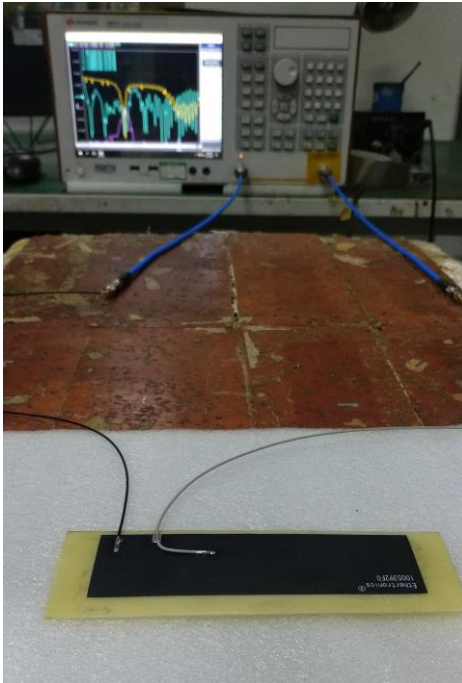


5G/4G Band & Dual Band Wi-Fi Ethertronics' Embedded Antenna Specifications.
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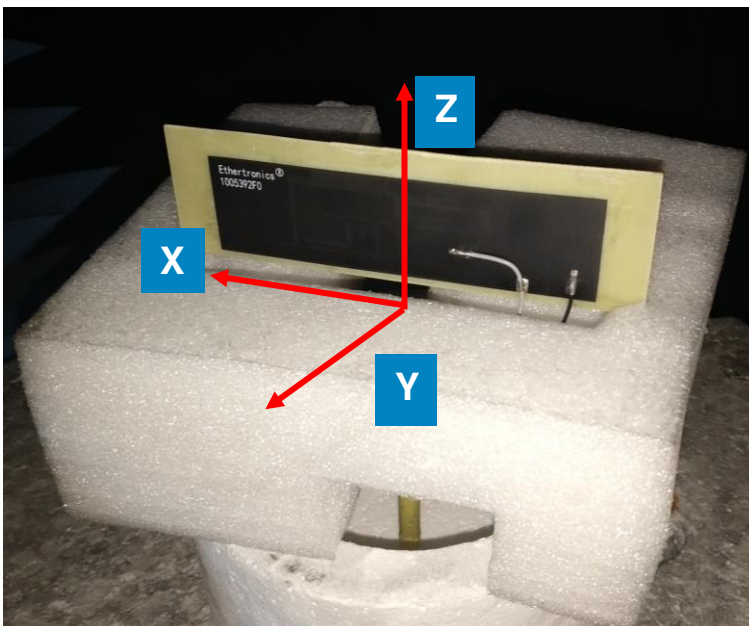
Test Setup

Typical performance with 600 mm cable

Antenna in Free Space



***All measurement in Free Space & under a substrate (FR4) with 0.8mm thickness**



***Description of Chamber Spherical Coordinate System**

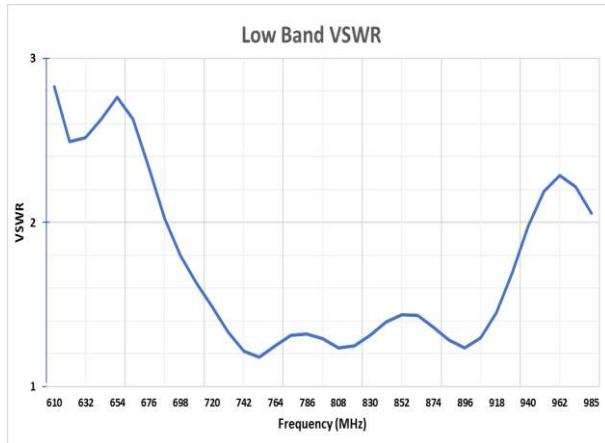


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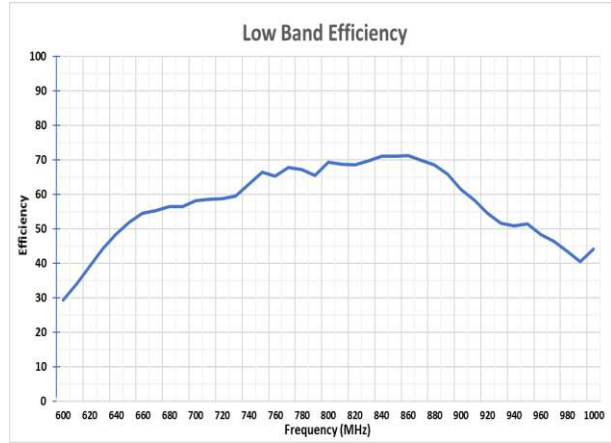
VSWR and Efficiency Plots

Typical performance with 600 mm (Free Space)

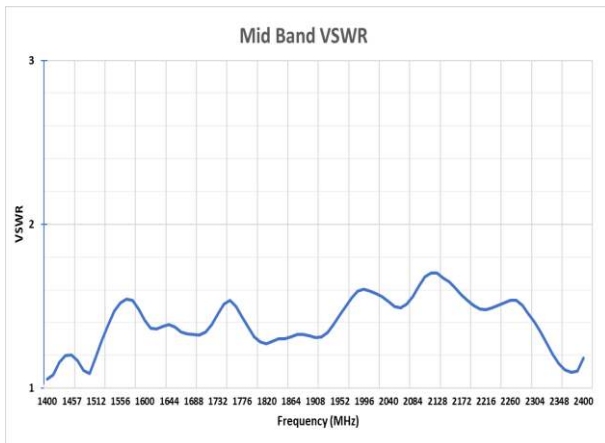
Low Band VSWR



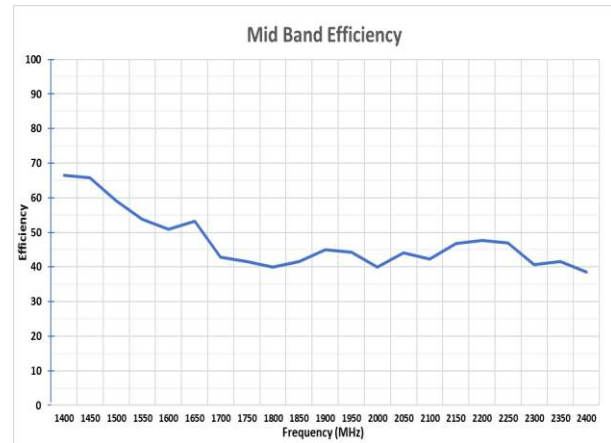
Low Band Efficiency



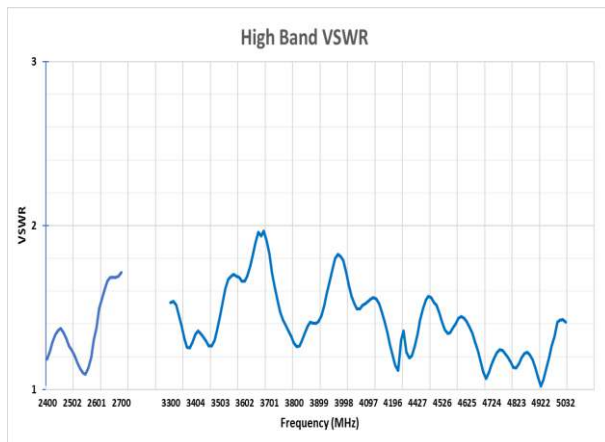
Mid Band VSWR



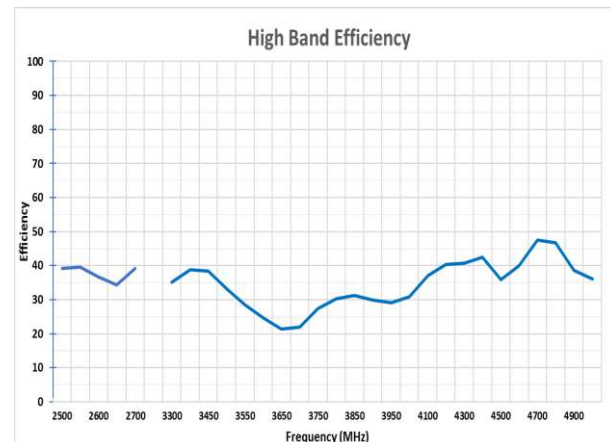
Mid Band Efficiency



High Band VSWR



High Band Efficiency





5G/4G Band & Dual Band Wi-Fi Ethertronics' Embedded Antenna Specifications.
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Radiation Patterns

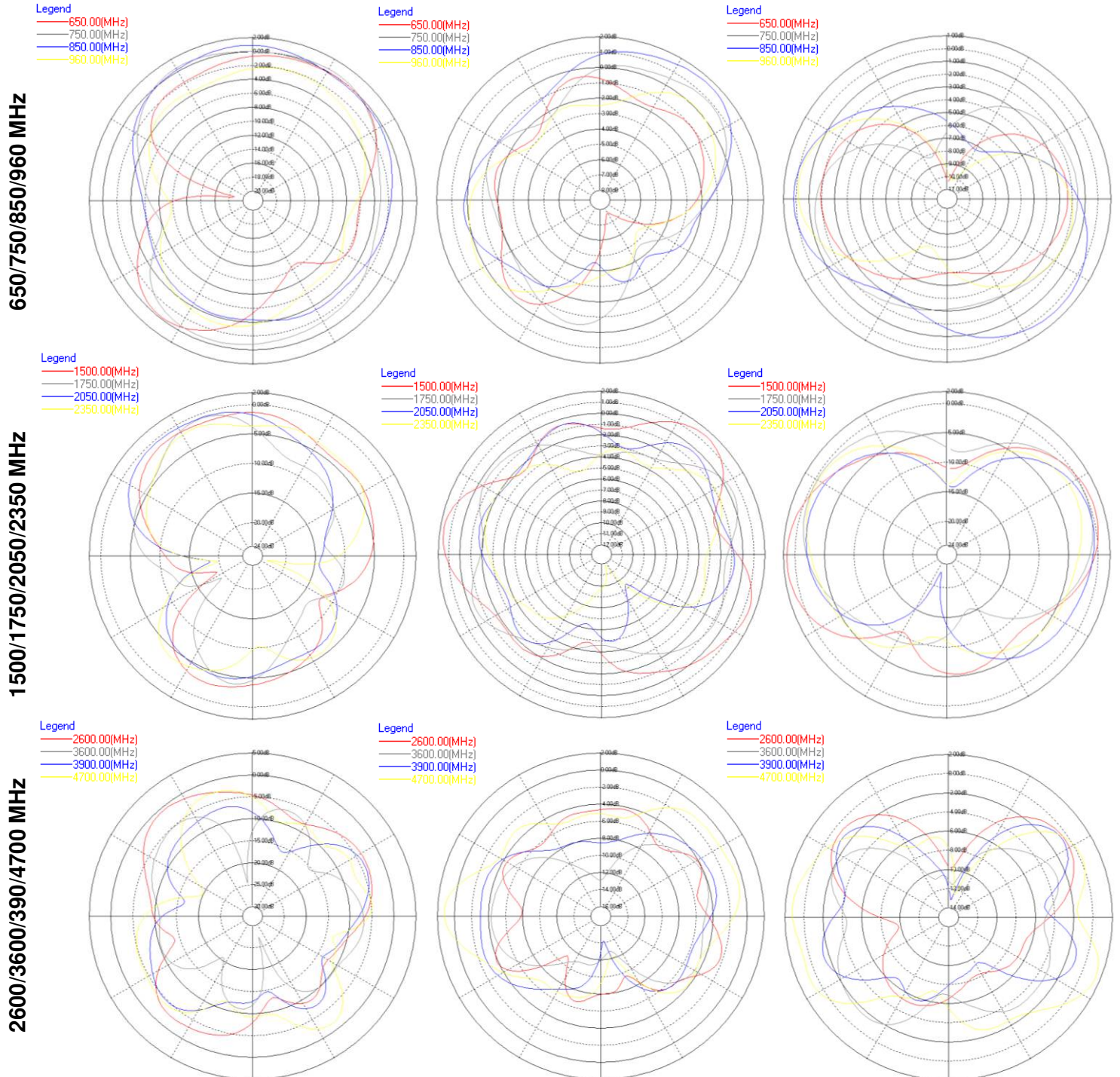
Typical performance with 600 mm cable

Antenna in Free Space

Phi = 0° (XZ) Plane

Phi = 90° (YZ) Plane

Theta = 90° (XY) Plane



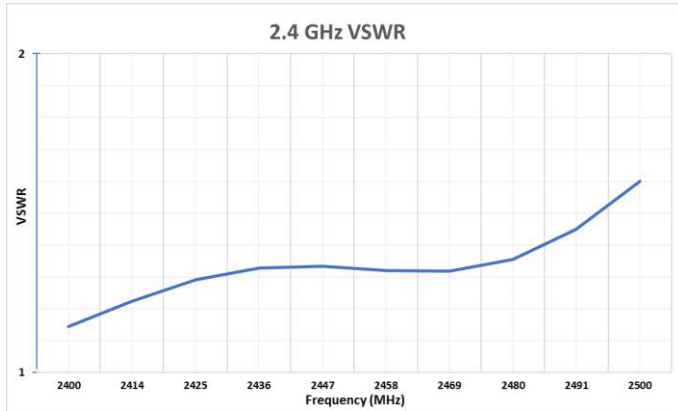


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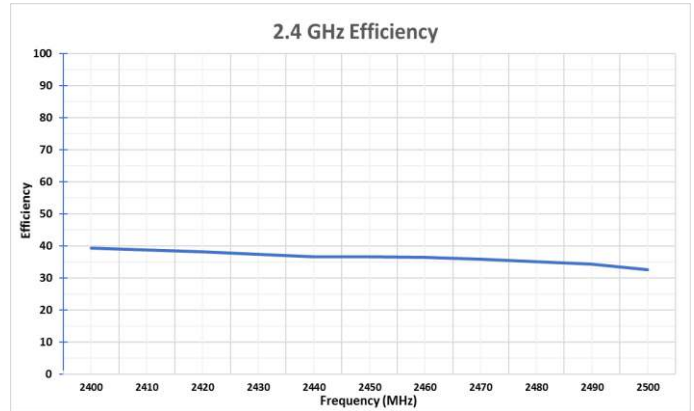
VSWR and Efficiency Plots

Typical performance with 600 mm (Free Space)

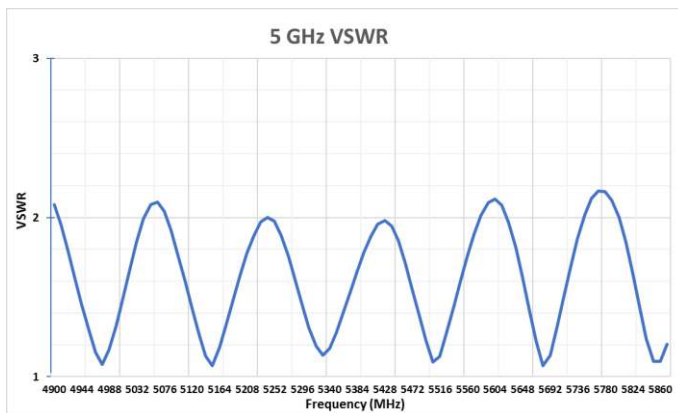
2.4 GHz VSWR



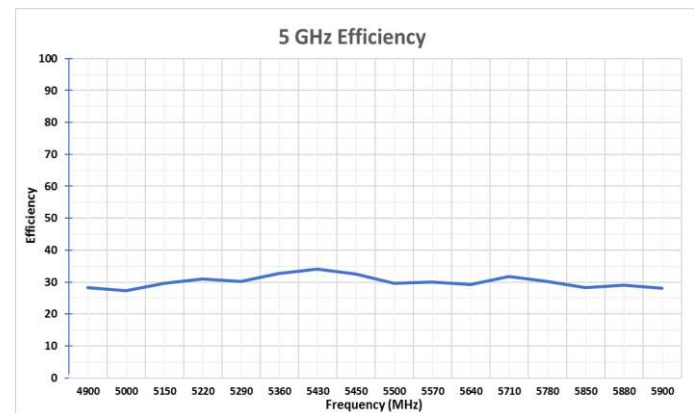
2.4 GHz Efficiency



5 GHz VSWR



5 GHz Efficiency





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Radiation Patterns

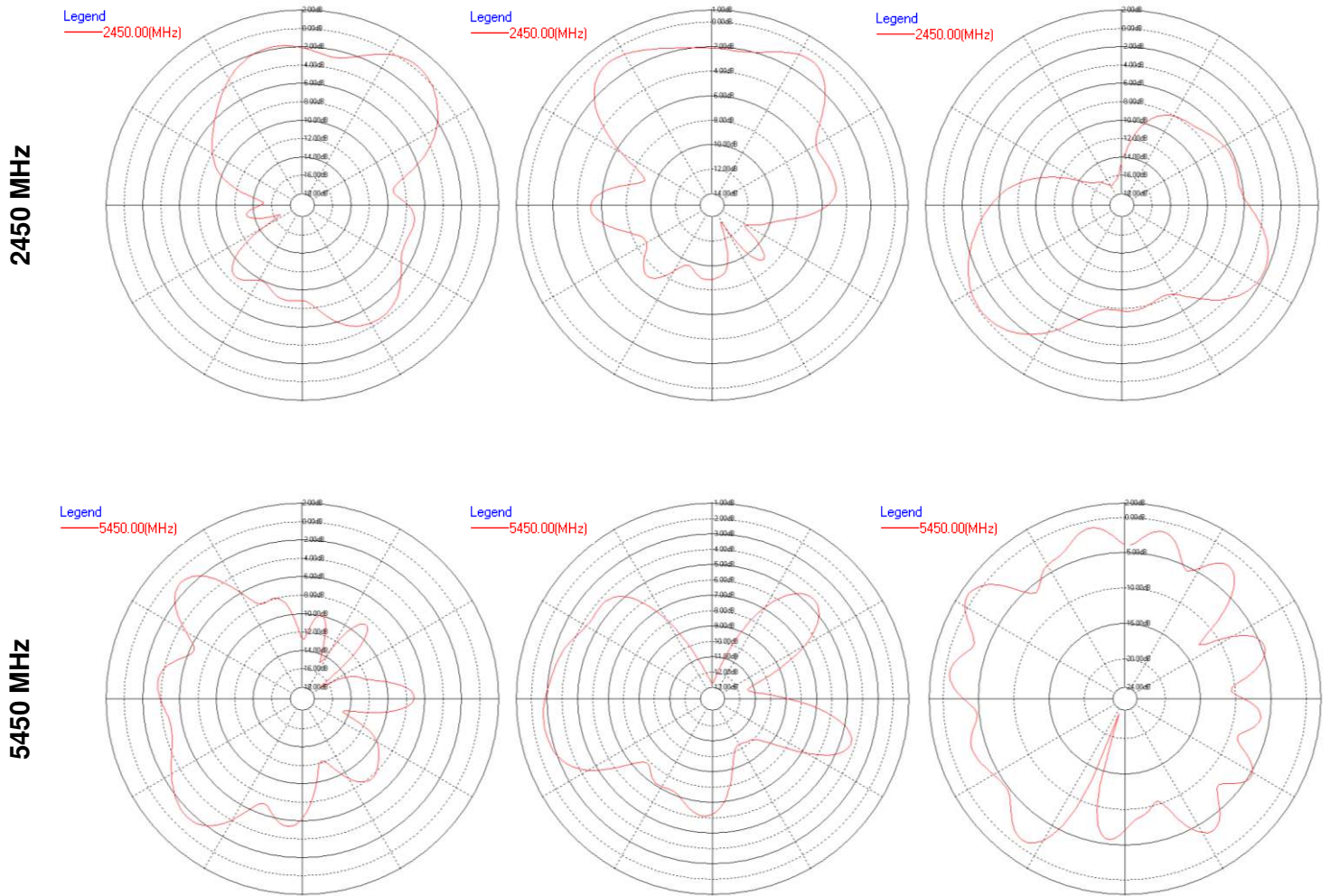
Typical performance with 600 mm cable

Antenna in Free Space

Phi = 0° (XZ) Plane

Phi = 90° (YZ) Plane

Theta = 90° (XY) Plane



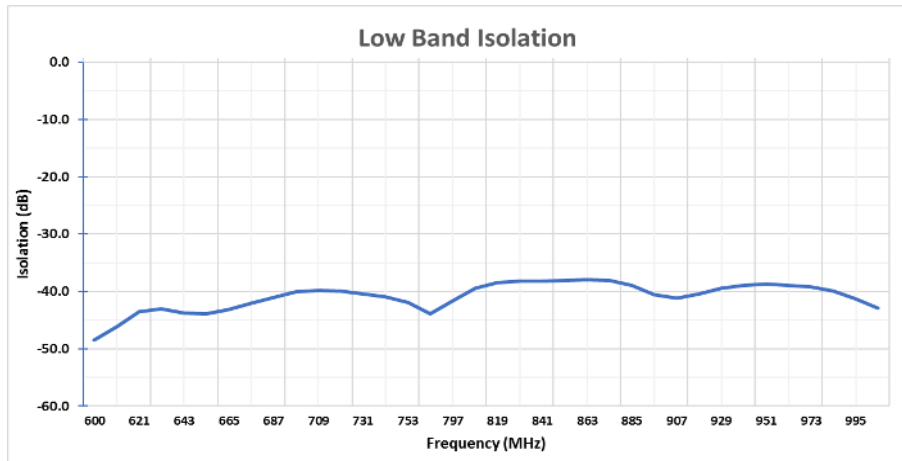


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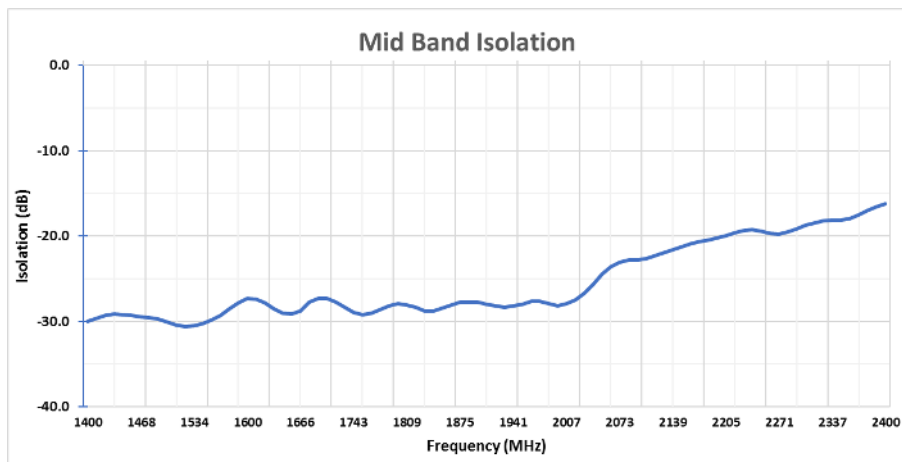
Isolation Plots

Typical performance with 600 mm (Free Space)

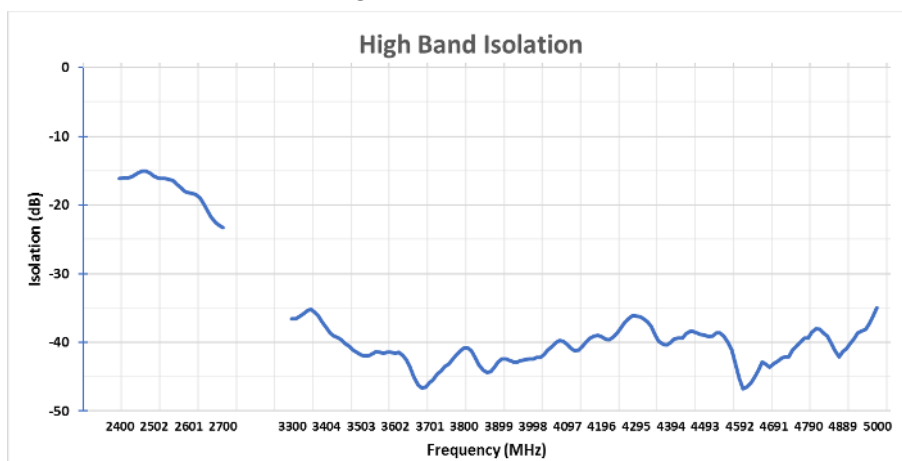
Low Band Isolation



Mid Band Isolation



High Band Isolation





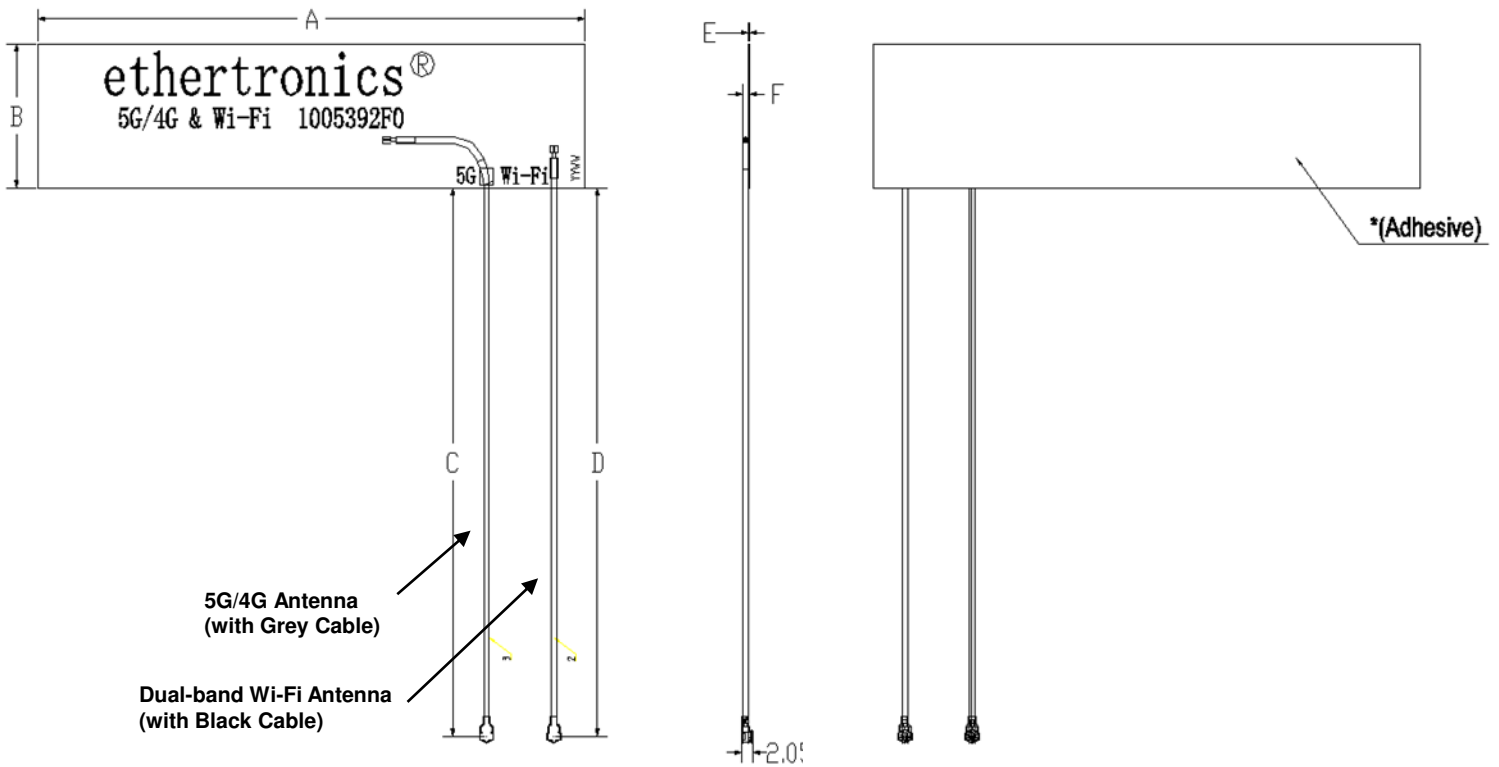
5G/4G Band & Dual Band Wi-Fi Ethertronics' Embedded Antenna Specifications.
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Mechanical Dimensions

Typical antenna dimensions (mm)

Part Number	Connector Type	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)
1005392F0-AA10L0600	I-PEX MHF	114 ± 0.3	30 ± 0.3	600 ± 3.0	600 ± 3.0	0.2 ± 10%	1.6 (max)
1005392F0-AS40L0600	SMA (Male)	114 ± 0.3	30 ± 0.3	600 ± 3.0	600 ± 3.0	0.2 ± 10%	1.6 (max)

- *Total Height of 1.6 mm includes the cable solder connection
- *Height "C" of 0.2 mm includes FPC + adhesive thicknesses
- **"C" is the cable length of 5G/4G Antenna (with color in Grey)
- **"D" is the cable length of Dual-band Wi-Fi Antenna (with color in Black)



Top View

Side View

Bottom View