

## Part No. 1004795

### Universal Broadband FR4 Embedded LTE / LPWA Antenna

700 / 750 / 850 / 900 / 1800 / 1900 / 2100 / 2700 MHz

Supports: Broadband LTE (OCTA-BAND), LTE CAT-M, NB-IoT, SigFox, LoRa, Cellular LPWA, RPMA



#### Universal Broadband FR4 Embedded LTE Antenna

Low Band 700 – 1000 MHz

High Band 1700 - 2200 MHz

High High Band 2500 - 2700 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.

##### Reliability

Comply with latest RoHS requirements

#### APPLICATIONS

- Medical applications
- Wearables
- Smart metering
- M2M, Industrial devices
- IoT
- Firstnet
- Automotive
- Healthcare
- Point of Sale
- Tracking
- NB-IoT
- Sigfox
- LoRa
- Cellular LPWA
- RPMA
- LTE CAT-M

Ethertronics' Universal Broadband Embedded LTE/LPWA antennas utilize IMD technology, which offers a reduced electrical footprint on any circuit board and independent tuning capabilities for performance optimization. This low profile FR4 antenna encapsulates IMD's high performance and isolation characteristics offering better connectivity and minimal interference

#### High Performance LTE in Small form factor

The 1004795 LTE antenna is designed to support CAT-M and Narrowband-IoT applications. This antenna is the perfect solution CAT-M and NB-IoT enabled devices, offering high efficiency and peak gain in a miniature form factor, and with a reduced ground plane size requirement. The 1004795 LTE CAT-M and NB-IoT antenna allows wideband coverage, supporting all US and Worldwide major carriers and offers multiple tuning features for optimum results in any application.

#### Electrical Specifications

Typical 1004795 performance 125 x 45 mm PCB

Frequency (MHz)	698-960	1710-2200	2500-2700
Peak Gain	1.6 dBi	3.1 dBi	1.7 dBi
Average Efficiency	64%	55%	53%
VSWR Match	< 2.5:1		< 3.0:1
Polarization	Linear		
Power Consumption	2 Watt CW		
Feed Point Impedance	50 $\Omega$ unbalanced		

#### Mechanical Specifications & Ordering Part Number

Ordering Part #	1004795
Dimensions (mm)	36.0 x 9.0 x 3.2
Mounting Type	SMT (P&P)
Weight (grams)	2.1
Packaging	Tape and Reel
Demo Board	1004795-01

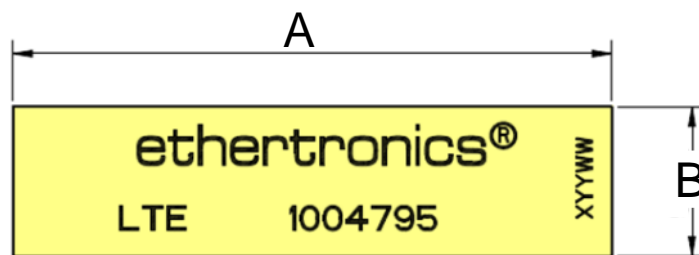


1004795 Universal Broadband Embedded LTE Antenna Specifications.  
Ethertronics produces a wide variety of standard and custom antennas to meet user needs.

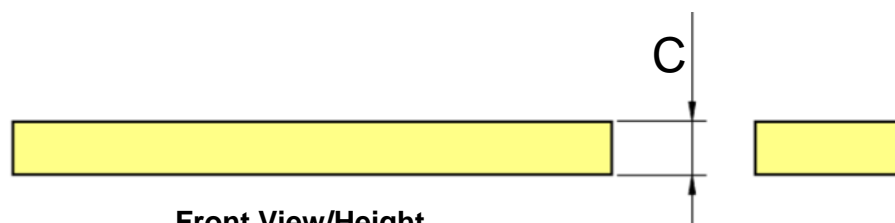
### Antenna Dimensions (1004795)

Typical antenna dimensions (mm)

Part Number	A (mm)	B (mm)	C (mm)
1004795	36.0 ± 0.3	9.0 ± 0.2	3.2 ± 0.3

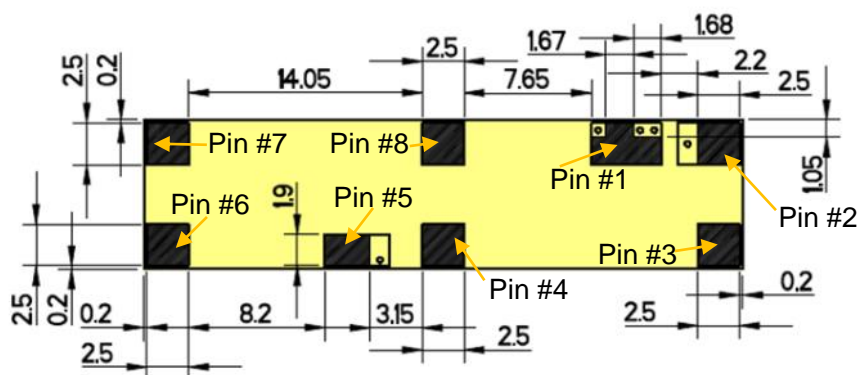


Top View



Front View/Height

Pin#	Description
1	Feed
2	Antenna Tuning
3	Dummy Pad
4	Dummy Pad
5	Antenna Tuning
6	Dummy Pad
7	Dummy Pad
8	Dummy Pad



Bottom View

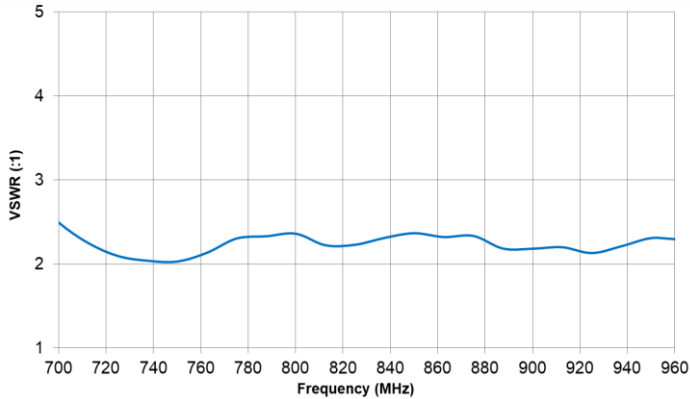


1004795 Universal Broadband Embedded LTE Antenna Specifications.  
Ethertronics produces a wide variety of standard and custom antennas to meet user needs.

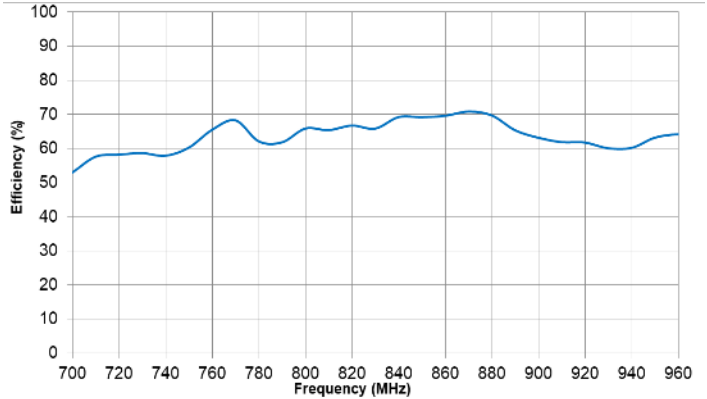
### VSWR and Efficiency Plots

Typical 1004795 performance 125 x 45 mm PCB

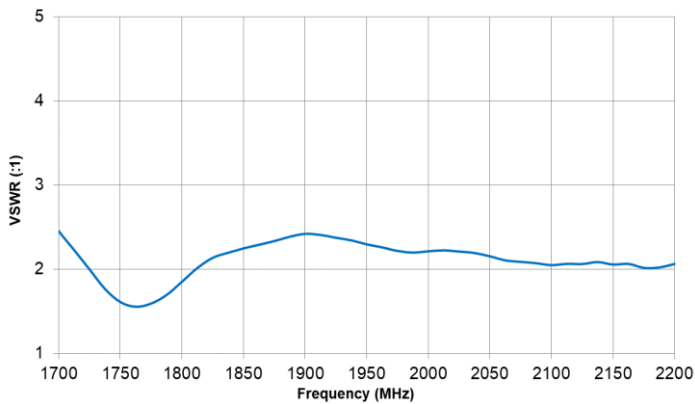
Low Band VSWR



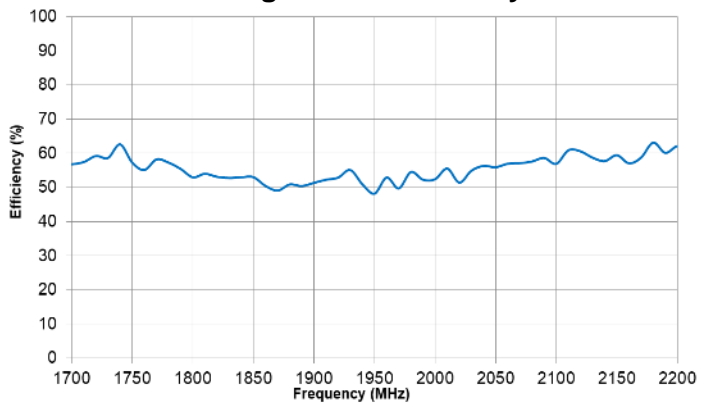
Low Band Efficiency



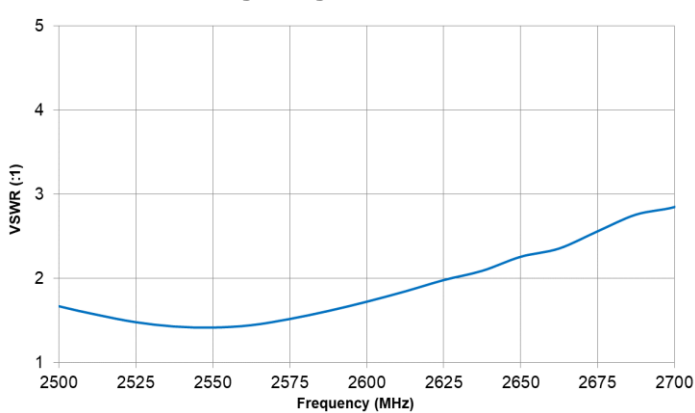
High Band VSWR



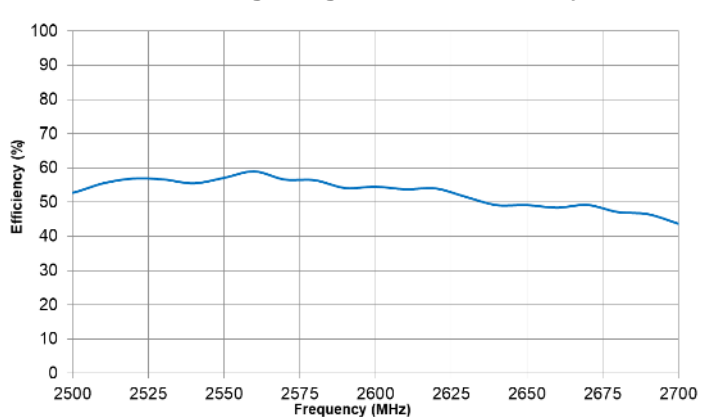
High Band Efficiency



High High Band VSWR



High High Band Efficiency

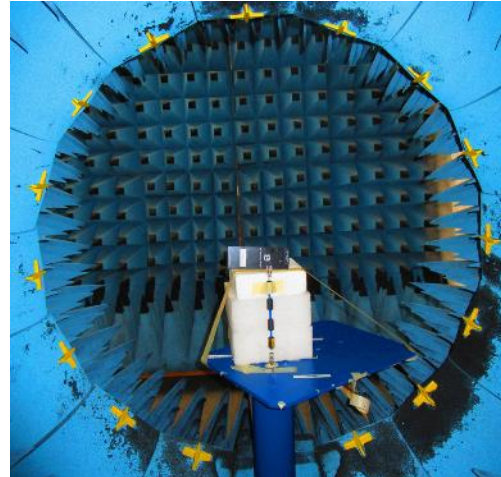
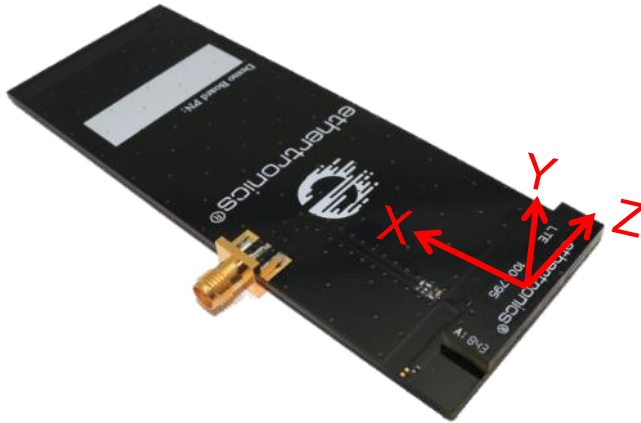




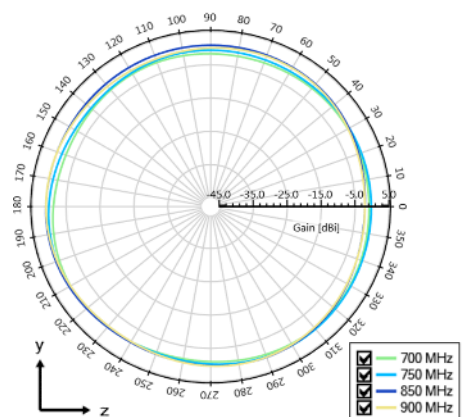
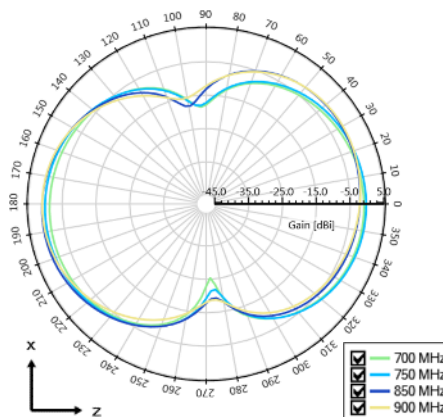
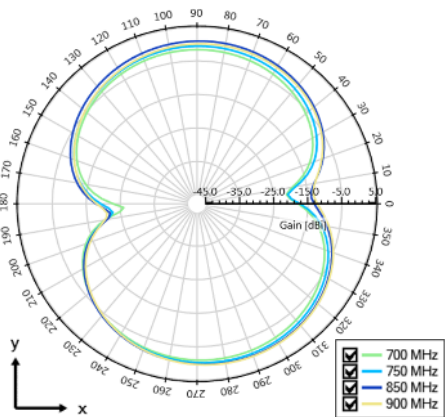
1004795 Universal Broadband Embedded LTE Antenna Specifications.  
Ethertronics produces a wide variety of standard and custom antennas to meet user needs.

## Antenna Radiation Patterns – Low / High Band

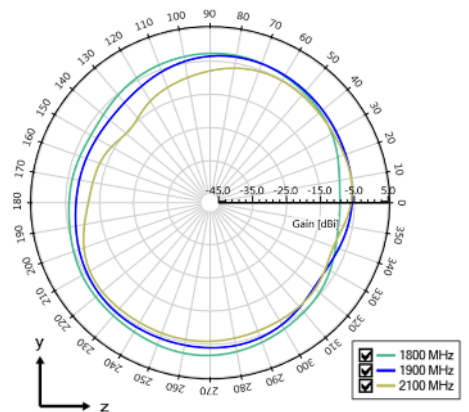
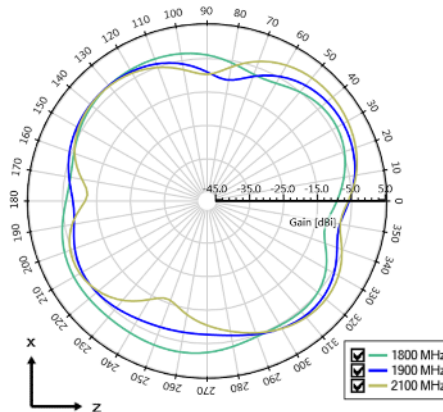
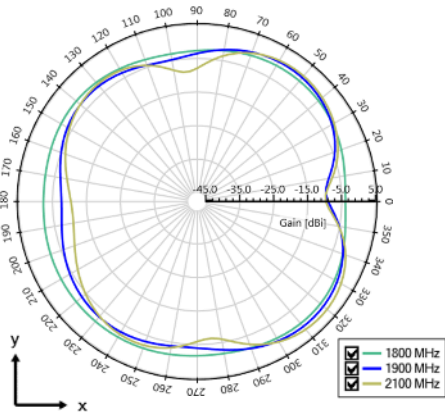
Typical 1004795 performance 125 x 45 mm PCB



Low Band measured at  
700, 750, 850, 900 MHz



High Band measured at  
1800, 1900, 2100 MHz



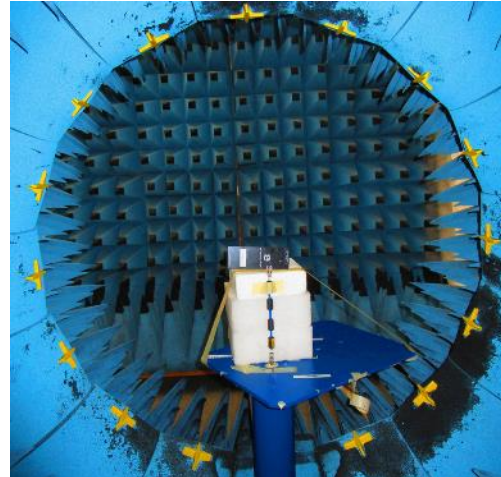
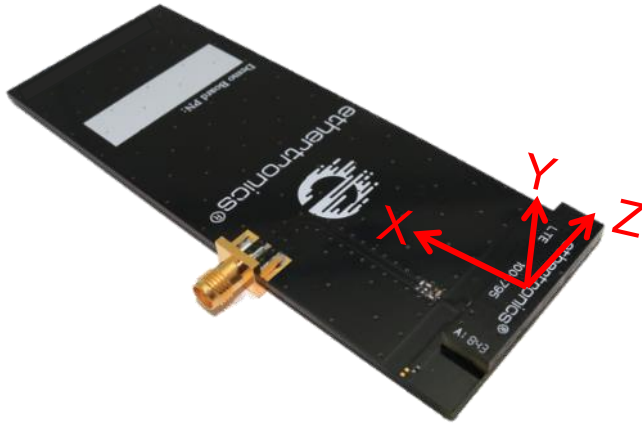




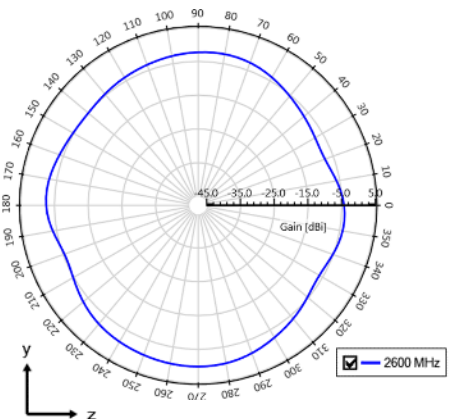
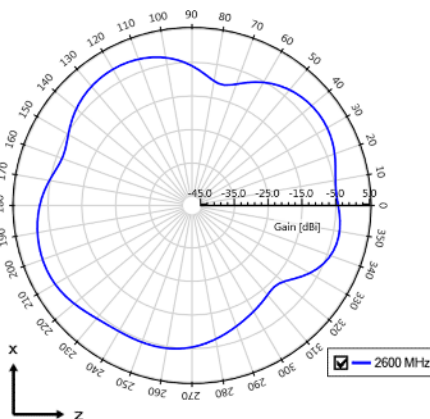
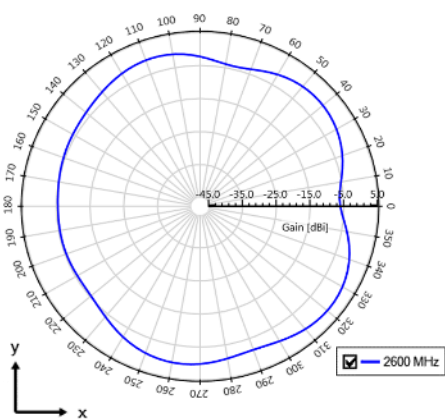
1004795 Universal Broadband Embedded LTE Antenna Specifications.  
Ethertronics produces a wide variety of standard and custom antennas to meet user needs.

### Antenna Radiation Patterns – High High Band

Typical 1004795 performance 125 x 45 mm PCB



High High Band measured at  
2600 MHz

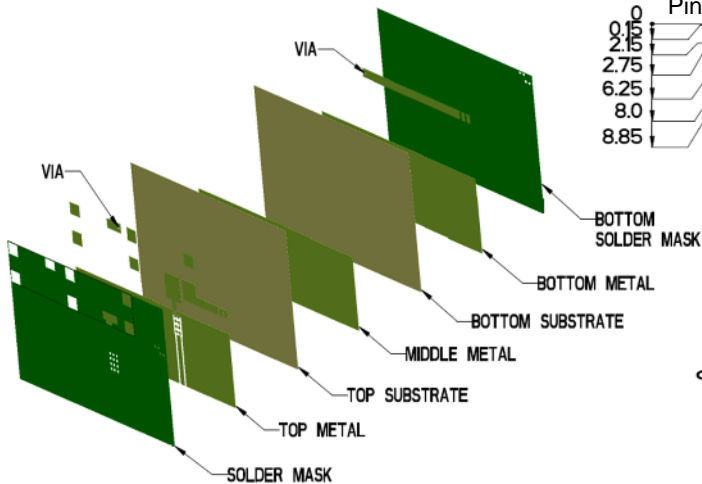




1004795 Universal Broadband Embedded LTE Antenna Specifications.  
Ethertronics produces a wide variety of standard and custom antennas to meet user needs.

## Antenna Layout

Typical layout dimensions (mm)

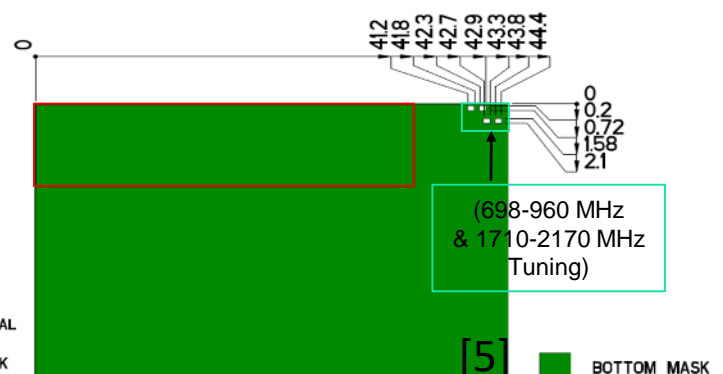
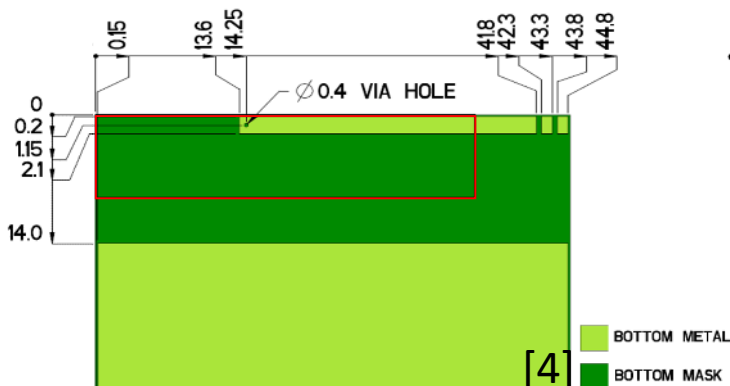
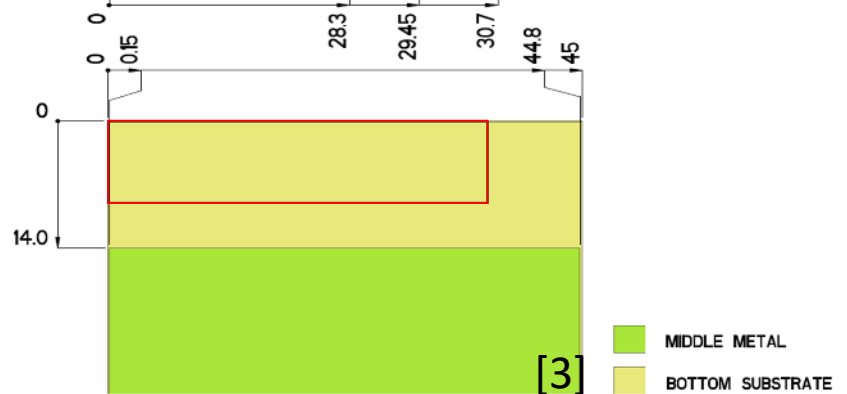
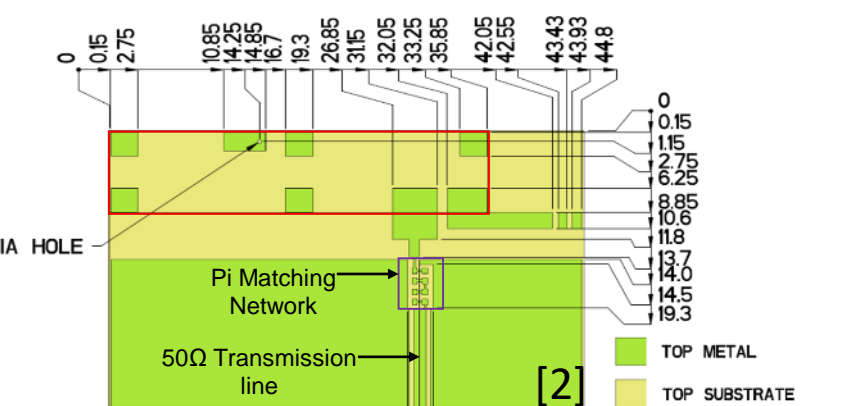
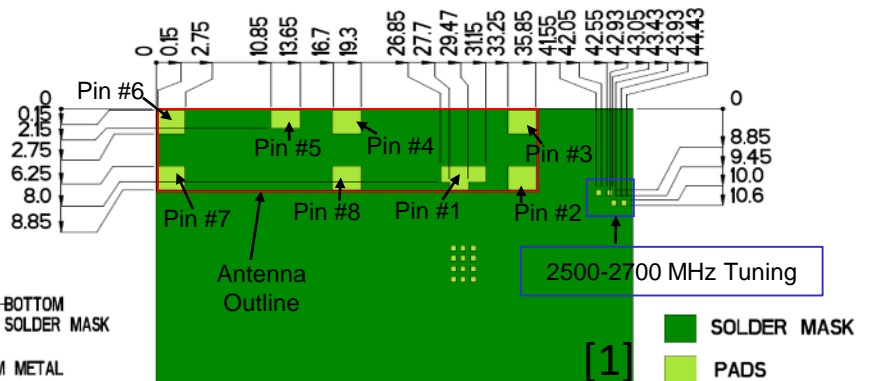


- Additional VIAS: Diam. 0.4mm to be placed around antenna, (no vias on transmission lines).
- Via holes must be covered by solder mask

## Pin Descriptions

Pin#	Description
1	Feed
2	Antenna Tuning
3	Dummy Pad
4	Dummy Pad
5	Antenna Tuning
6	Dummy Pad
7	Dummy Pad
8	Dummy Pad

Default Pi Matching Network values with instructions can be found under Antenna Matching Network.



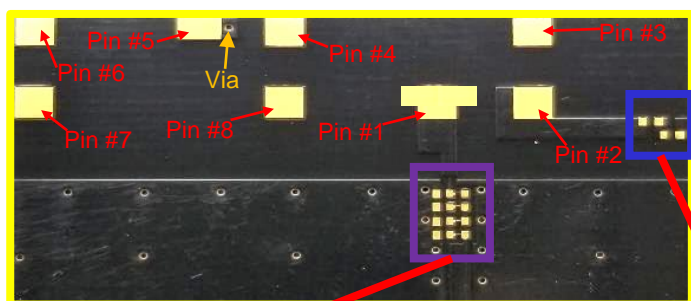


1004795 Universal Broadband Embedded LTE Antenna Specifications.  
Ethertronics produces a wide variety of standard and custom antennas to meet user needs.

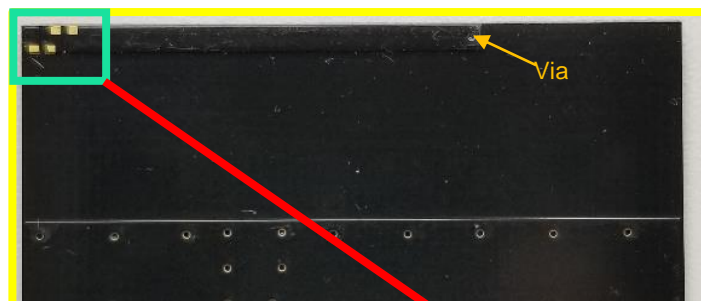
### Antenna Matching Structure

Typical 1004795 performance 125 x 45 mm PCB

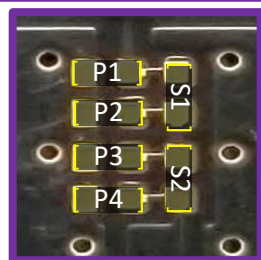
Demo Board Front View



Demo Board Back View

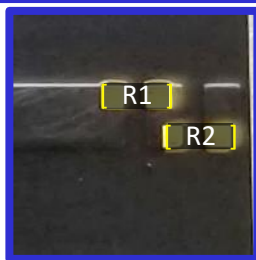


Antenna Matching

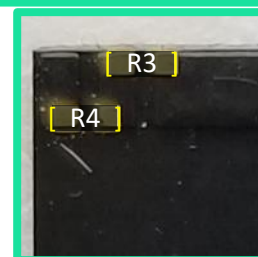


(Antenna Matching):  
pads are directly inline with  
the antenna feed trace.

2500-2700 MHz Tuning

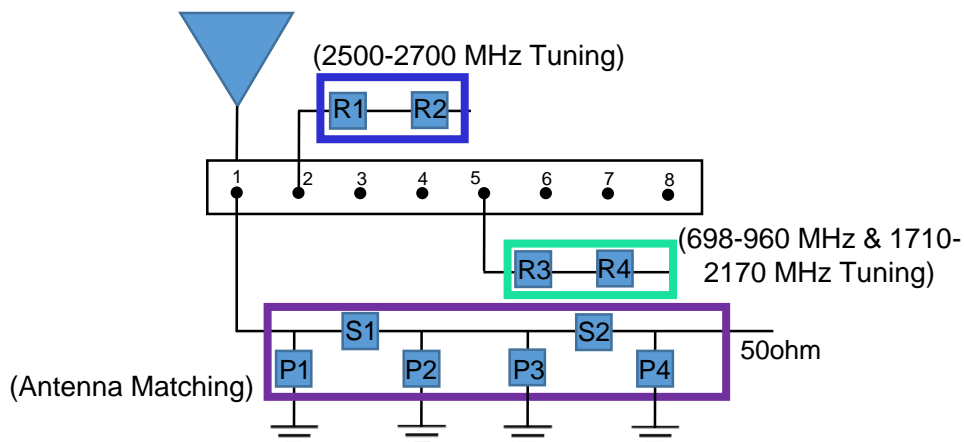


698-960 MHz  
& 1710-2170 MHz Tuning



### Pin Descriptions

Pin#	Description
1	Feed
2	Antenna Tuning
3	Dummy Pad
4	Dummy Pad
5	Antenna Tuning
6	Dummy Pad
7	Dummy Pad
8	Dummy Pad



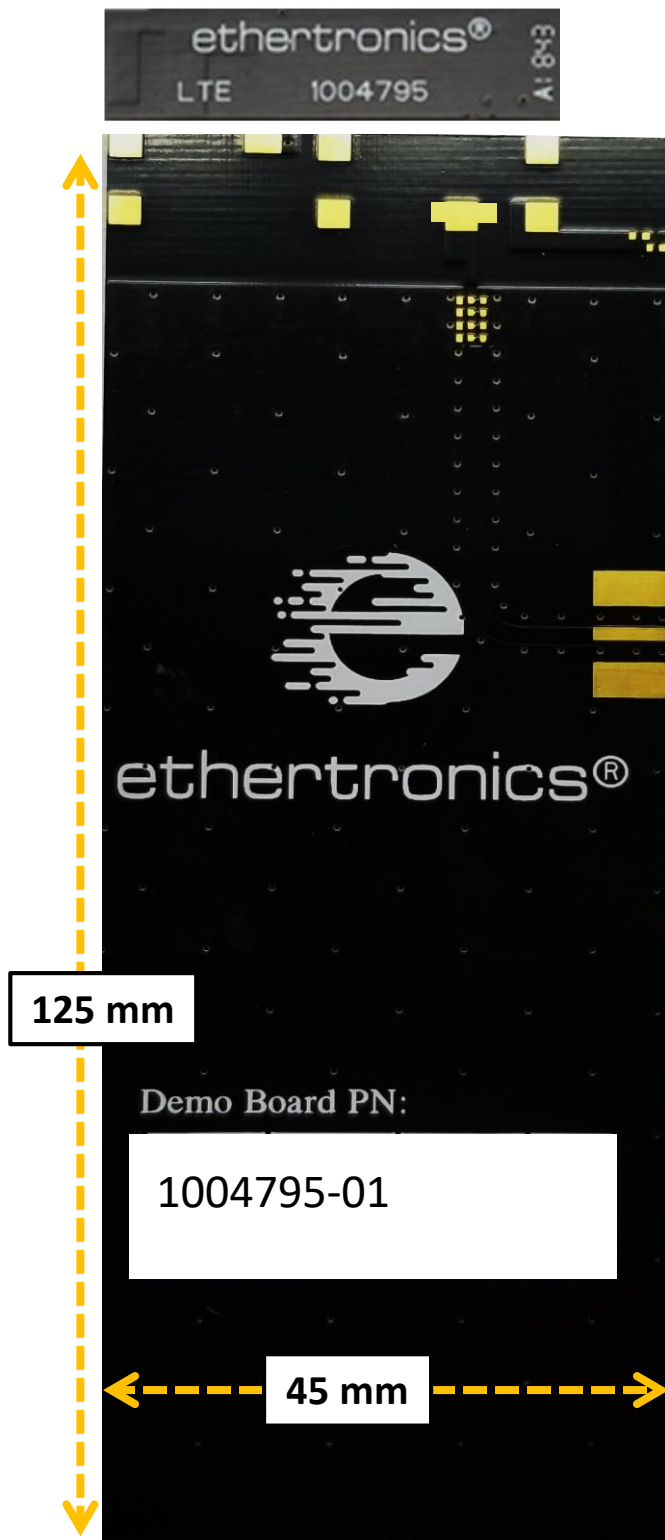
	P1	S1	P2	P3	S2	P4	R1	R2	R3-R4
<b>Default Matching</b>	8.2nH	4.7pF	0.3pF	DNI	0 Ohm	0.5pF	0 Ohm	DNI	0 Ohm
<b>Tolerance</b>	± 0.1nH	± 0.05pF	± 0.05pF	N/A		± 0.05pF		N/A	



1004795 Universal Broadband Embedded LTE Antenna Specifications.  
Ethertronics produces a wide variety of standard and custom antennas to meet user needs.

### Antenna Demo Board

Demo Board Front/Back View (mm)



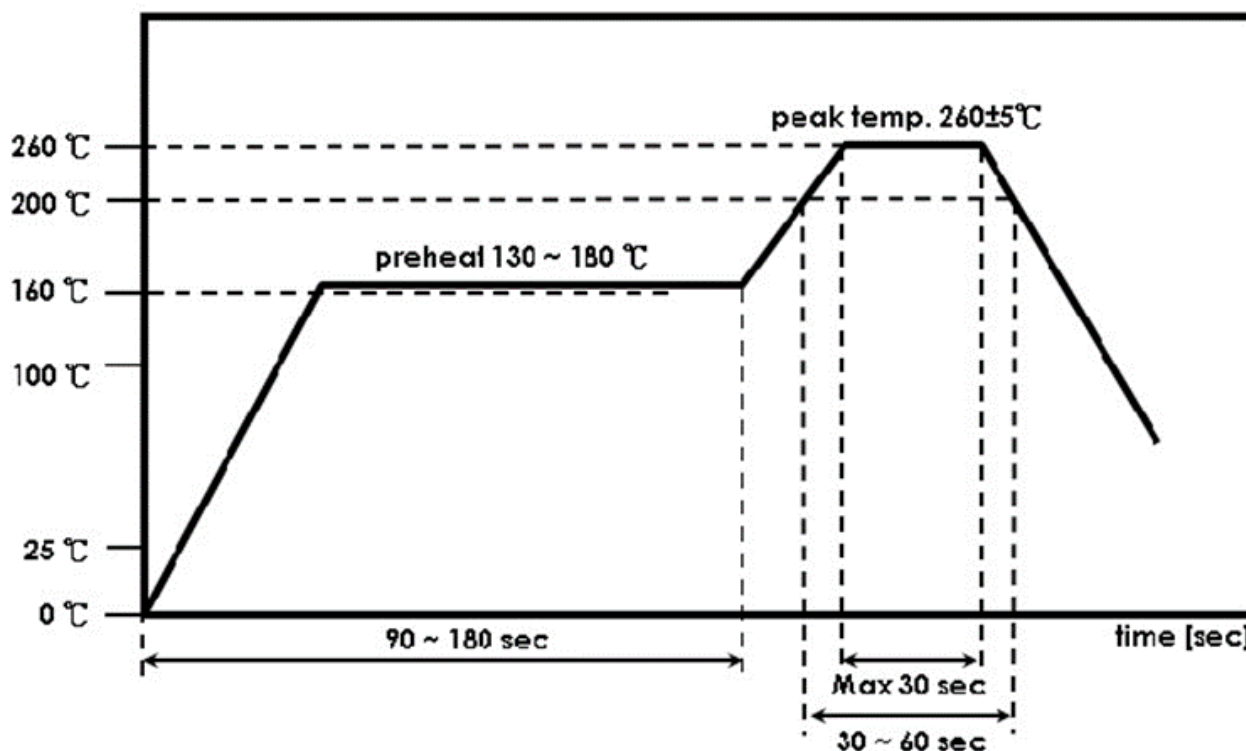




1004795 Universal Broadband Embedded LTE Antenna Specifications.  
Ethertronics produces a wide variety of standard and custom antennas to meet user needs.

### Recommended Reflow Soldering Profile

The recommended method for soldering the antenna to the board is forced convection reflow soldering. The following suggestions provide information on how to optimize the reflow process for the FR4 antenna:



\*Adjust the reflow duration to create good solder joints without raising the antenna temperature beyond the allowed maximum of 260° C.