



# STANDARD AND CUSTOM ANTENNAS FOR IOT

## OVERVIEW AND SELECTION GUIDE

### CREATING A SAFER, SUSTAINABLE, PRODUCTIVE AND CONNECTED FUTURE

TE Connectivity (TE) is a leading developer and manufacturer of high performance embedded and external antenna solutions addressing the needs of exponentially-growing wireless traffic. From the advent of mobile phones to the IoT devices of today, TE engineers have been developing antenna solutions for some of the most challenging applications, integrating multiple antennas into small form-factor devices and solving some complex design challenges in multi-radio environments.

TE's antenna portfolio includes standard and custom solutions in the following categories: Cellular, GNSS, Wi-Fi/Bluetooth/Zigbee, ISM, LPWAN and RF accessories. With our rich antenna portfolio, we thrive on opportunities to solve problems together with our customers.

Across industries TE can provide safe, sustainable, and productive antenna solutions along with implementation and optimization services to enable a more connected world. TE can provide advanced antenna solutions for most wireless devices, with many combinations to address customer required features. Our antenna designs can accommodate a broad range of frequency bands for operation on any network in both regional and global markets.



Recognized as a **GLOBAL INNOVATION LEADER** by several leading indices

**COMMUNITY LEADER** listed on Dow Jones Sustainability Index and named as one of **WORLD'S MOST ETHICAL COMPANIES** by Ethisphere Institute

Recognized by Fortune in companies that **CHANGE THE WORLD** and **WORLD'S MOST ADMIRABLE COMPANIES**

# YOUR TRUSTED PARTNER



## KEY BENEFITS

- High reliability: high performance and isolation
- High efficiency: optimized throughput, minimal losses
- State of the art antenna laboratories and global footprint
- In-house testing and validation
- Implementation services
- An innovation leader
- Quick-turn designs and prototypes
- World class fully-integrated manufacturing capabilities



## WIRELESS PROTOCOLS

- Cellular, sub 6GHz (2G-5G, NB-IoT, LTE-M)
- LPWAN for IoT
- Wi-Fi, Bluetooth, ISM
- GNSS, GPS, Positioning
- Ultra-wideband
- LoRa, Sigfox, Z-wave/ ZigBee
- Combination antennas
- 5G mmWave

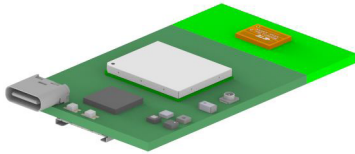


## FOCUS APPLICATIONS

- Security & surveillance
- Indoor lighting, street lighting
- Home and building automation
- Smart metering, energy management
- Industrial IoT, predictive maintenance
- Health and medical devices
- Telematics, OBD, asset tracking
- Audio and entertainment
- Agriculture

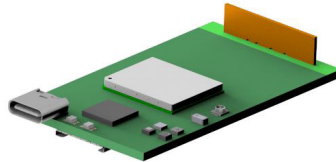
# MOUNTING TYPES

## Board Mount Antennas



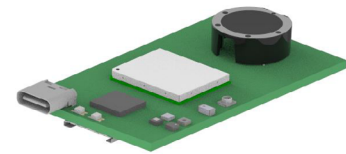
Surface mount

- Consist of: Element + Keep out + Ground
- Small size, low profile
- Ideal for devices with very low height requirement
- Relatively large PCB ground keep out of 10 mm to 20 mm is required



Tab mount

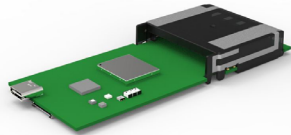
- Consist of: Element + Keep out + Ground
- Higher profile of 10 mm to 20 mm
- Smaller PCB ground keep out of 5 mm to 10 mm is required
- Can save PCB space and offer good antenna performance



Surface mount on ground

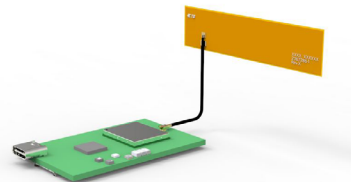
- Consist of: Element + Ground
- Higher profile of 5 mm to 25 mm
- No PCB ground keep out is required
- Can save PCB space
- On-ground type ideal for single/dual high band antennas

## Embedded Antennas



Chassis mount, direct feed

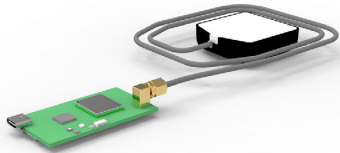
- Compact Antenna
- Use existing ground plane
- Ground plane design + components/routing can have strong RF impact
- Automatic and repeatable assembly



Chassis mount, cable feed

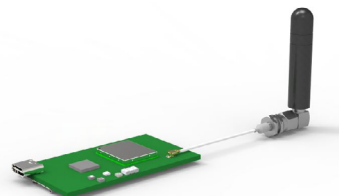
- Larger Antenna
- Ground plane independent antenna
- Ground plane + components having little impact on RF
- Manual assembly

## External & Terminal Antennas



External

- Stand-alone antenna
- Little to no dependency on device ground
- Preferred option for metal cases
- Option where antenna position different from device position
- Minimal RF design effort, ready to use



Terminal mount

- Stand-alone antenna
- Dependency on device ground increases with lower frequencies
- Preferred option for metal cases
- Higher gain options available
- Adapter cable = adding cost
- Easy manipulation with minimal RF design effort

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# MANUFACTURING TECHNOLOGIES

## Laser Direct Structuring (LDS)

TE is a leading supplier of molded interconnect device (MID) technology with more than 25 years mass production experience. LDS is an exciting technology used to create MIDs.

LDS can save valuable space in your application by integrating high frequency, mechanical and electrical functionality into one component. Laser structuring enables 3-dimensional (3D) design/routing capability, versus the limiting 2-dimensional (2D) capability on a printed circuit board (PCB) or other common substrates.

LDS technology also allows for improved antenna performance because antennas can be placed in the design where they have more room for better bandwidth and efficiency.

TE has been a leader in early adoption of LDS manufacturing process technology, giving us the experience to help get the design solution correct with minimal effort. Our in-house development and fully integrated manufacturing means we can better control the process and timing from end-to-end and can transition quickly from prototype to mass production – helping delivering your product fast to increase your speed to market.

The use of LDS technology is not limited to antennas, and also includes electro-mechanical, shielding, and other components used in a wide variety of applications.

### Key benefits

- Ability to selectively and repeatably plate
- 3 dimensionally
- Space savings
- Ability to produce thin (0.15 mm) traces
- Improved antenna performance
- Applied cost savings
- Fast time to market
- Flexibility for pattern changes during production
- Simple/fast/low cost tooling



## Printed Electronics

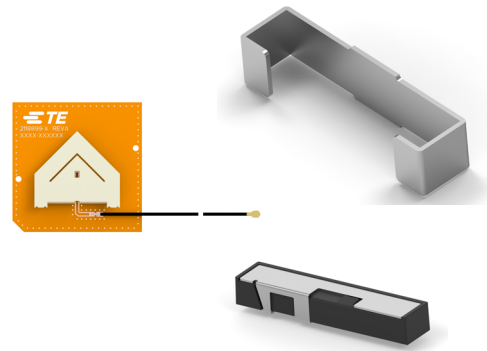
TE has deep experience in various printed electronics technologies, covering ink technologies and printing techniques. Our ink technology research includes custom ink formulation in conductive, magnetic, and other functional inks, in addition to access and experience with various commercially available inks. Our printing capabilities can cover analog and digital printing techniques of 2D and 3D surfaces. TE's process and product development focus areas include antennas, sensors, passive components, in-mold electronics, electrodes & contacts, and medical devices.

Contact TE for more information.

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## Stamped Metal Antennas

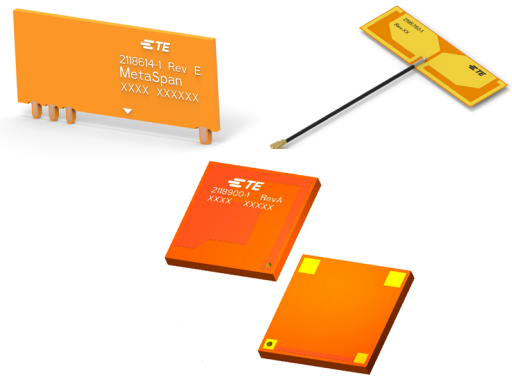
Formed metal embedded antennas can offer high efficiency and may be appropriate for smaller devices where there is limited internal space. TE's standard off-the-shelf offering of low profile, high performance stamped antennas can deliver a low cost and highly repeatable manufacturing solution. Custom designs can also be provided, however, this is typically only suitable for higher volume applications, as tooling is necessary for stamping and forming. Various mounting options are available.



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## PCB & FPC Antennas

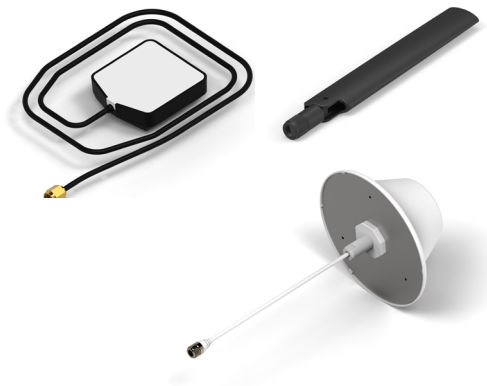
Useful for multi-band antennas, flexible printed circuits (FPCs) and printed circuit boards (PCBs) can allow a wide variety of wireless devices to operate at different frequencies without multiple antennas. TE's innovative MetaSpan antenna technology makes wireless connections more reliable by using metamaterials to cover an extensive range of frequency bands. A broad range of standard offerings include low profile and miniaturized antennas. Additional benefits include enhanced bandwidth, reduced size, excellent efficiency, and a smaller keep out zone. Custom solutions are quickly available due to short lead time and smaller investment for tooling, while allowing flexibility for pattern changes. Various mounting options are available.



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## External & Terminal Antennas

TE can offer a broad range of external and terminal antennas. As external antennas generally do not require additional tuning, they are easy to implement and therefore may reduce the total cost of ownership. External antennas also have the advantage of improved sensitivity due to farther distance from device noise, which can enable excellent coverage and gain for a wide variety of applications and design possibilities. Most of TE's external antennas are offered as standard off-the-shelf solutions which supports very rapid time to market. Additionally, TE can offer supplementary cable assemblies and mating RF receptacles (see page 15) that seamlessly connect to the terminated interfaces of the external antennas, which can provide great flexibility for design.



# TE RF IMPLEMENTATION SUPPORT

- Customer project baseline evaluation
- Tuning of standard antenna solution
- Custom specific antenna solution
- Throughput optimization
- Efficiency optimization
- Coexistence optimization
- Active and passive antenna performance
- Radiation pattern/SAR optimization
- Design for manufacturing
- World class fully-integrated manufacturing capabilities

Antenna Design

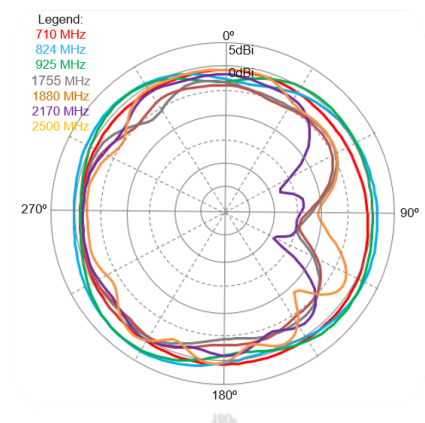
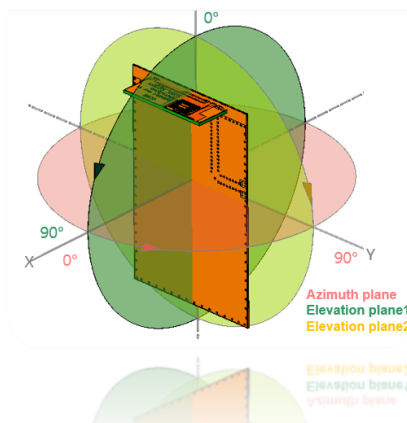
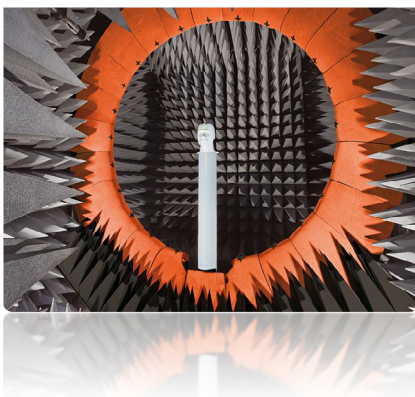
RF Engineering  
Prototyping  
Verification

System Design Guide

RF Engineering  
Quality of Service  
Verification















OTA Optimization

Benchmarking  
Throughput Optimization  
Industry Compliance












# STANDARD ANTENNA PART NUMBER DETAIL

## Cellular, NB-IoT, CAT-M, 2G-5G










| TE Part Number                                 | Product Image   | Frequency Band (MHz)                    | Wireless Application                                     | Mounting Type            | VSWR                | Peak Gain (dBi)     | Product Length (mm) | Product Width (mm) | Product Height (mm)   | Remarks  |
|--|---|---|--|--------------------------|---------------------|---------------------|---------------------|--------------------|---|--|
| <a href="#">2195851-1</a>                      |    | 698 - 7125                              | 5G, 4G, 3G, 2G, NB-IoT, Cat-M, GNSS, Wi-Fi 6E            | Tab mount (Through-hole) | Refer to data sheet | Refer to data sheet | 60                  | 20                 | 1   | <ul style="list-style-type: none"> <li>METASPAN</li> <li>Combination antenna</li> <li>Omnidirectional coverage</li> <li>Tab mount PCB antenna</li> </ul>   |
| <a href="#">2195852-1</a>                      |    | 698 - 5875                              | 5G, 4G, 3G, 2G, NB-IoT, Cat-M, GNSS, Wi-Fi 6E            | Tab mount (Through-hole) | Refer to data sheet | Refer to data sheet | 55                  | 20                 | 1   | <ul style="list-style-type: none"> <li>METASPAN</li> <li>Combination antenna</li> <li>Omnidirectional coverage</li> <li>Tab mount PCB antenna</li> </ul>   |
| <a href="#">2195846-1/-2/-3/-4/-5/-6/-7/-8</a> |    | 698 - 7125                              | 5G, 4G, 3G, 2G, NB-IoT, Cat-M, GNSS, Wi-Fi 6E            | Adhesive mount           | Refer to data sheet | Refer to data sheet | 80                  | 15                 | 0.2   | <ul style="list-style-type: none"> <li>Omnidirectional coverage</li> <li>Cabled FPC antenna</li> <li>Cable lengths: 50, 100, 150, 200mm, or custom</li> <li>Mating connector type: MHF, MHF4 (or available on request)</li> </ul>  |
| <a href="#">2108823-1</a>                      |    | 617 - 7125                              | 5G, 4G, 3G, 2G, NB-IoT, Cat-M, GNSS, Wi-Fi 6E            | Surface Mount            | Refer to data sheet | Refer to data sheet | 52                  | 22                 | 15  | <ul style="list-style-type: none"> <li>Combination antenna</li> <li>Omnidirectional coverage</li> <li>On Board Stamping Element</li> </ul>   |
| <a href="#">2108783-1/-2</a>                   |    | 617 - 3800                              | 5G, 4G, 3G, 2G, NB-IoT, Cat-M, GNSS, Wi-Fi, LoRa, Sigfox | Surface mount            | Refer to data sheet | Refer to data sheet | 38                  | 7.5                | 3.2   | <ul style="list-style-type: none"> <li>Combination antenna</li> <li>On board PCB</li> <li>Small form factor</li> <li>Packaging                             <ul style="list-style-type: none"> <li>-1: bulk packaged</li> <li>-2: T&amp;R packaged</li> </ul> </li> </ul> |
| <a href="#">2108784-1/-2</a>                   |   | 698 - 6000                              | 5G, 4G, 3G, 2G, NB-IoT, Cat-M, GNSS, Wi-Fi, LoRa, Sigfox | Surface mount            | Refer to data sheet | Refer to data sheet | 38                  | 7.5                | 3.2   | <ul style="list-style-type: none"> <li>Combination antenna</li> <li>On board PCB</li> <li>Small form factor</li> <li>Packaging                             <ul style="list-style-type: none"> <li>-1: bulk packaged</li> <li>-2: T&amp;R packaged</li> </ul> </li> </ul> |
| <a href="#">2195728-1</a>                      |  | 698 - 2700                              | 5G, 4G, 3G, 2G, NB-IoT, Cat-M, GNSS, Wi-Fi, LoRa, Sigfox | Tab mount (Through-hole) | <3.0:1              | Refer to data sheet | 55                  | 1.6                | 20  | <ul style="list-style-type: none"> <li>Combination antenna</li> <li>On board PCB</li> </ul>  |
| <a href="#">2108994-1</a>                      |  | 698 - 960<br>1710 - 2170<br>2300 - 2700 | 4G, 3G, 2G, NB-IoT, Cat-M, Wi-Fi                         | Surface mount            | <3.0:1              | 2.3                 | 40                  | 10                 | 3.2   | <ul style="list-style-type: none"> <li>On board PCB</li> </ul>   |
| <a href="#">2118903-1</a>                      |  | 698 - 960<br>1710 - 2170<br>2300 - 2700 | 4G, 3G, 2G, NB-IoT, Cat-M                                | Surface mount            | <3.0:1              | 2.3                 | 75                  | 11.9               | 1.64  | <ul style="list-style-type: none"> <li>On board PCB</li> </ul>   |
| <a href="#">2118614-1</a>                      |  | 698 - 960<br>1710 - 2170<br>2300 - 2700 | 4G, 3G, 2G, NB-IoT, Cat-M                                | Tab mount (Through-hole) | Refer to data sheet | Refer to data sheet | 50                  | 20                 | 1.64  | <ul style="list-style-type: none"> <li>On board PCB</li> </ul>   |
| <a href="#">2118898-1/-2</a>                   |  | 902 - 928<br>2400 - 2483.5              | ISM, ZigBee, Bluetooth, Wi-Fi                            | Adhesive mount           | <2.0:1              | 2.3                 | 140                 | 20                 | 0.25  | <ul style="list-style-type: none"> <li>Embedded flexible PCB</li> <li>Cable lengths: 185, 255 mm, or custom</li> <li>Mating connector type: MMCX</li> </ul>  |
| <a href="#">2361492-1/-2</a>                   |  | 698 - 960<br>1710 - 2170<br>2300 - 2700 | 4G, 3G, 2G, NB-IoT, Cat-M                                | Adhesive mount           | Refer to data sheet | Refer to data sheet | 65                  | 15                 | 1   | <ul style="list-style-type: none"> <li>Embedded PCB</li> <li>Cable lengths: 50, 200 mm, or custom</li> <li>Mating connector type: MHF (MHF4 available on request)</li> </ul>   |
| <a href="#">2372105-1/-2</a>                   |   | Refer to data sheet                     |  |                          | Refer to data sheet | 65                  | 15                  | 1                  | <ul style="list-style-type: none"> <li>Embedded PCB</li> <li>Cable lengths: 100, 150 mm, or custom</li> <li>Mating connector type: MHF (MHF4 available on request)</li> </ul> |  |
| <a href="#">2367286-1/-2</a>                   |  | 698 - 960<br>1710 - 2170<br>2300 - 2700 | 4G, 3G, 2G, NB-IoT, Cat-M                                | Adhesive mount           | Refer to data sheet | Refer to data sheet | 65                  | 15                 | 0.14  | <ul style="list-style-type: none"> <li>Embedded FPC</li> <li>Cable lengths: 50, 200 mm, or custom</li> <li>Mating connector type: MHF (MHF4 available on request)</li> </ul>   |
| <a href="#">2372112-1/-2</a>                   |   |   |  |                          | Refer to data sheet | Refer to data sheet | 65                  | 15                 | 0.14  | <ul style="list-style-type: none"> <li>Embedded FPC</li> <li>Cable lengths: 100, 150 mm, or custom</li> <li>Mating connector type: MHF (MHF4 available on request)</li> </ul>  |
| <a href="#">2118879-1/-2/-4</a>                |  | 698-960<br>1560-2200<br>2300-2700       | 4G, 3G, 2G, NB-IoT, Cat-M, Wi-Fi, LoRa, Sigfox           | Adhesive mount           | Refer to data sheet | Refer to data sheet | 110                 | 14                 | 1.6   | <ul style="list-style-type: none"> <li>Combination antenna</li> <li>Embedded PCB</li> <li>Cable length can be customized</li> <li>Mating connector type: SMA</li> </ul>  |

## Cellular, NB-IoT, CAT-M, 2G-5G (continued)

| TE Part Number                                 | Product Image   | Frequency Band (MHz)   | Wireless Application                                 | Mounting Type               | VSWR                | Peak Gain (dBi)     | Product Length (mm) | Product Width (mm) | Product Height (mm) | Remarks  |
|--|---|--|--|-----------------------------|---------------------|---------------------|---------------------|--------------------|---------------------|--|
| <a href="#">2108788-1</a>                      |    | 824 - 960<br>1710 - 1990   | 3G, 2G, ISM  | Surface mount               | <3.0:1              | 1.0                 | 37.59               | 11.94              | 1.57                | <ul style="list-style-type: none"> <li>On board PCB</li> <li>Packaging                             <ul style="list-style-type: none"> <li>-1: Bulk packaged</li> <li>-2: T&amp;R packaged</li> </ul> </li> </ul> |
| <a href="#">2118310-1</a>                      |    | 698 - 960<br>1710 - 2700   | 4G, 3G, 2G,<br>NB-IoT, Cat-M,<br>Wi-Fi               | Tab mount<br>(Through-hole) | <3.0:1              | 3.5                 | 74                  | 10.56              | 1.57                | <ul style="list-style-type: none"> <li>On board PCB</li> </ul>   |
| <a href="#">2118308-1/-2/-3/-4/-5/-6/-8/-9</a> |    | 698 - 960<br>1710 - 2170<br>2300 - 2700  | 4G, 3G, 2G,<br>NB-IoT, Cat-M,<br>Wi-Fi               | Adhesive mount              | <3.0:1              | 3.9                 | 110                 | 14                 | 0.51                | <ul style="list-style-type: none"> <li>Embedded PCB</li> <li>Cable lengths: 120, 150, 193, 203, 290, 500 mm, or custom</li> <li>Mating connector types: MHF, MHF4L, MCX</li> </ul>                               |
| <a href="#">1513317-1</a>                      |    | 824 - 960<br>1710 - 2170   | 3G, 2G, ISM,<br>NB-IoT, Cat-M                        | Tab mount<br>(Through-hole) | <3.0:1              | 2.0                 | 49.9                | 20.27              | 1.58                | <ul style="list-style-type: none"> <li>On board PCB</li> </ul>   |
| <a href="#">1513273-1</a>                      |    | 824 - 960<br>1710 - 1990   | 3G, 2G, ISM  | Tab mount<br>(Through-hole) | <3.0:1              | 2.0                 | 37.59               | 15.11              | 1.57                | <ul style="list-style-type: none"> <li>On board PCB</li> </ul>   |
| <a href="#">1513247-1</a>                      |    | 824 - 894<br>1850 - 1990   | 3G, 2G, ISM  | Tab mount<br>(Through-hole) | <3.0:1              | Refer to data sheet | 38.1                | 15.24              | 1.63                | <ul style="list-style-type: none"> <li>On board PCB</li> </ul>   |
| <a href="#">1513169-1</a>                      |    | 824 - 894  | 2G, ISM  | Tab mount<br>(Through-hole) | <2.5:1              | 2.0                 | 38.1                | 15.24              | 1.57                | <ul style="list-style-type: none"> <li>On board PCB</li> </ul>   |
| <a href="#">1513381-1</a>                      |    | 3100 - 6000  | 5G   | Chassis mount               | <3.0:1              | 2.0                 | 29                  | 12                 | 10                  | <ul style="list-style-type: none"> <li>Embedded</li> <li>Cable lengths: 365 mm or custom</li> <li>Mating connector type: MHF</li> </ul>  |
| <a href="#">2108851-1</a>                      |  | 6000 - 8100  | UWB  | Surface mount               | Refer to data sheet | Refer to data sheet | 4                   | 2                  | 1.2                 | <ul style="list-style-type: none"> <li>On board Ceramic Chip</li> <li>Packaging: T&amp;R packaged</li> </ul>   |
| <a href="#">2195889-1/-2</a>                   |  | 617 - 960<br>1427 - 1661<br>1710 - 2700<br>3300 - 4200<br>4400 - 5000<br>5150 - 5925 | 5G, 4G, 3G, 2G,<br>NB-IoT, Cat-M,<br>GNSS world band | Terminal mount              | Refer to data sheet | Refer to data sheet | 135.8               | 19.91              | -                   | <ul style="list-style-type: none"> <li>Terminal dipole</li> <li>-1 = black, -2 = white</li> <li>Mating connector type: SMA</li> </ul>  |
| <a href="#">2195890-1</a>                      |  | 698 - 960<br>1710 - 2700   | 4G, 3G, 2G,<br>Lora, Sigfox,<br>BT/Wi-Fi,<br>ZigBee  | Terminal mount              | Refer to data sheet | Refer to data sheet | 115                 | 10                 | -                   | <ul style="list-style-type: none"> <li>Terminal monopole</li> <li>Mating connector type: SMA</li> </ul>  |
| <a href="#">2195736-1</a>                      |  | 700 - 2700   | 4G, 3G, 2G   | Terminal mount              | <2.5:1              | 2.5                 | 157                 | 17.7               | -                   | <ul style="list-style-type: none"> <li>Terminal dipole</li> <li>Mating connector type: SMA</li> </ul>  |
| <a href="#">2195632-1</a>                      |  | 880 - 960<br>1710 - 2330   | 3G, 2G   | Terminal mount              | <3.0:1              | 2.5                 | 47                  | 7.8                | -                   | <ul style="list-style-type: none"> <li>Terminal dipole</li> <li>Mating connector type: SMA</li> </ul>  |
| <a href="#">2195771-1</a>                      |  | 698 - 960<br>1710 - 2700<br>3400 - 3800  | 5G, 4G, 3G, 2G,<br>Wi-Fi                             | External mount              | <2.0:1              | Refer to data sheet | 90                  | 185.5              | 90                  | <ul style="list-style-type: none"> <li>External DAS dipole</li> <li>Ceiling/Support mount</li> <li>Cable lengths: 320 mm or custom</li> <li>Mating connector type: N female (mounting clinch nuts)</li> </ul>    |





# GNSS

| TE Part Number                  | Product Image   | Frequency Band (MHz)   | Wireless Application                                    | Mounting Type            | VSWR                | Peak Gain (dBi)     | Product Length (mm) | Product Width (mm) | Product Height (mm) | Remarks  |
|---------------------------------|---|--|---|--------------------------|---------------------|---------------------|---------------------|--------------------|---------------------|--|
| <a href="#">2195760-1</a>       |    | 1559 - 1606<br>2400 - 2500<br>5150 - 5875  | GNSS, Wi-Fi dual, Combo                                 | Adhesive mount           | <2.5:1              | 3.0                 | 50                  | 15                 | 0.15                | <ul style="list-style-type: none"> <li>Embedded FPC</li> <li>Cable lengths: 150 mm or custom</li> <li>Combo (GNSS &amp; WiFi)</li> <li>Mating connector type: MHF</li> </ul>   |
| <a href="#">2108824-1</a>       |    | 1559 - 1610  | L1+G1 bands for GNSS                                    | Surface mount            | Refer to data sheet | Refer to data sheet | 10                  | 3                  | 1.5                 | <ul style="list-style-type: none"> <li>On board Ceramic Chip</li> <li>Packaging: T&amp;R packaged</li> </ul>   |
| <a href="#">2118900-1</a>       |    | 1560 - 1602  | GNSS  | Surface mount            | <2.0:1              | 3.5                 | 10                  | 10                 | 1                   | <ul style="list-style-type: none"> <li>On board PCB</li> <li>Isotropic</li> </ul>  |
| <a href="#">1513634-1</a>       |    | 1565 - 1585  | GPS   | Surface mount            | <3.0:1              | 0                   | 16 dia.             | 16 dia.            | 6.05                | <ul style="list-style-type: none"> <li>On board puck</li> <li>Isotropic</li> <li>On ground (no cut out on the ground plane)</li> </ul>   |
| <a href="#">2108783-1/-2</a>    |    | 617 - 3800   | 5G, 4G, 3G, 2G, NB-IoT, Cat-M, GNSS Wi-Fi, LoRa, Sigfox | Surface mount            | Refer to data sheet | Refer to data sheet | 38                  | 7.5                | 3.2                 | <ul style="list-style-type: none"> <li>Combination antenna</li> <li>On board PCB</li> <li>Small form factor</li> <li>Packaging                             <ul style="list-style-type: none"> <li>-1: bulk packaged</li> <li>-2: T&amp;R packaged</li> </ul> </li> </ul> |
| <a href="#">2108784-1/-2</a>    |    | 698 - 6000   | 5G, 4G, 3G, 2G, NB-IoT, Cat-M, GNSS Wi-Fi, LoRa, Sigfox | Surface mount            | Refer to data sheet | Refer to data sheet | 38                  | 7.5                | 3.2                 | <ul style="list-style-type: none"> <li>Combination antenna</li> <li>On board PCB</li> <li>Small form factor</li> <li>Packaging                             <ul style="list-style-type: none"> <li>-1: bulk packaged</li> <li>-2: T&amp;R packaged</li> </ul> </li> </ul> |
| <a href="#">2195728-1</a>       |   | 698 - 2700   | 5G, 4G, 3G, 2G, NB-IoT, Cat-M, GNSS Wi-Fi, LoRa, Sigfox | Tab mount (Through-hole) | <3.0:1              | Refer to data sheet | 55                  | 1.6                | 20                  | <ul style="list-style-type: none"> <li>Combination antenna</li> <li>On board PCB</li> </ul>  |
| <a href="#">2118879-1/-2/-4</a> |  | 698 - 960<br>1710 - 2170<br>2300 - 2700  | 4G, 3G, 2G, NB-IoT, Cat-M, GNSS, Wi-Fi, LoRa, Sigfox    | Adhesive mount           | Refer to data sheet | Refer to data sheet | 110                 | 14                 | 1.6                 | <ul style="list-style-type: none"> <li>Combination antenna</li> <li>Embedded PCB</li> <li>Cable length can be customized</li> <li>Mating connector type: SMA</li> </ul>  |
| <a href="#">2195889-1/-2</a>    |  | 617 - 960<br>1427 - 1661<br>1710 - 2700<br>3300 - 4200<br>4400 - 5000<br>5150 - 5925 | 5G, 4G, 3G, 2G, NB-IoT, Cat-M, GNSS world band          | Terminal mount           | Refer to data sheet | Refer to data sheet | 135.8               | 19.91              | -                   | <ul style="list-style-type: none"> <li>Terminal dipole</li> <li>-1 = black, -2 = white</li> <li>Mating connector type: SMA</li> </ul>  |



















## GNSS (continued)

| TE Part Number                 | Product Image   | Frequency Band (MHz)       | Wireless Application | Mounting Type                 | VSWR                | Peak Gain (dBi)     | Product Length (mm) | Product Width (mm) | Product Height (mm) | Remarks  |
|--------------------------------|---|----------------------------|----------------------|-------------------------------|---------------------|---------------------|---------------------|--------------------|---------------------|--|
| <b>L1/L2/L5 High Precision</b> |   |                            |                      |                               |                     |                     |                     |                    |                     |  |
| <a href="#">2108840-1</a>      |    | 1194 - 1255<br>1559 - 1610 | GNSS                 | Adhesive mount (Through-hole) | Refer to data sheet | Refer to data sheet | 41                  | 41                 | 13                  | <ul style="list-style-type: none"> <li>L1 + G1 &amp; L2 + E5b + G2 bands</li> <li>Dual Port Patch Antenna</li> <li>Through-hole assembly</li> </ul>  |
| <a href="#">2108844-1</a>      |    | 1164 - 1255<br>1559 - 1610 | GNSS                 | Adhesive mount (Through-hole) | Refer to data sheet | Refer to data sheet | 41                  | 41                 | 13                  | <ul style="list-style-type: none"> <li>L1 + G1 &amp; L2 + L5 + E5b + G2 bands</li> <li>Dual Port Patch Antenna</li> <li>Through-hole assembly</li> </ul>   |
| <a href="#">2108847-1</a>      |    | 1215 - 1250<br>1559 - 1610 | GNSS                 | Adhesive mount (Through-hole) | Refer to data sheet | Refer to data sheet | 41                  | 41                 | 8                   | <ul style="list-style-type: none"> <li>L1 + G1 &amp; L2 + G2 bands</li> <li>Dual Port Patch Antenna</li> <li>Through-hole assembly</li> </ul>  |
| <a href="#">2108848-1</a>      |    | 1215 - 1250<br>1559 - 1610 | GNSS                 | Adhesive mount (Through-hole) | Refer to data sheet | Refer to data sheet | 33                  | 33                 | 15                  | <ul style="list-style-type: none"> <li>L1 + G1 &amp; L2 + G2 bands</li> <li>Dual Port Patch Antenna</li> <li>Through-hole assembly</li> </ul>  |
| <b>Active</b>                  |   |                            |                      |                               |                     |                     |                     |                    |                     |  |
| <a href="#">2108852-1</a>      |    | 1559 - 1610                | GNSS                 | Adhesive mount                | Refer to data sheet | Refer to data sheet | 25                  | 25                 | 10.5                | <ul style="list-style-type: none"> <li>L1 + G1 band</li> <li>Embedded patch</li> <li>Cable lengths: 100 mm or custom</li> <li>Mating connector type: MHF</li> </ul>                                  |
| <a href="#">2108853-1</a>      |    | 1194 - 1255<br>1559 - 1610 | GNSS                 | Adhesive mount                | Refer to data sheet | Refer to data sheet | 43                  | 43                 | 13                  | <ul style="list-style-type: none"> <li>L1 + G1 &amp; L2 + E5b + G2 bands</li> <li>Embedded patch</li> <li>Cable lengths: 100 mm or custom</li> <li>Mating connector type: MHF</li> </ul>             |
| <a href="#">2108854-1</a>      |    | 1194 - 1255<br>1559 - 1610 | GNSS                 | Adhesive mount                | Refer to data sheet | Refer to data sheet | 43                  | 43                 | 18                  | <ul style="list-style-type: none"> <li>L1 + G1 &amp; L2 + E5b + G2 bands</li> <li>Embedded patch</li> <li>Cable lengths: 100 mm or custom</li> <li>Mating connector type: MHF</li> </ul>             |
| <a href="#">2108855-1</a>      |   | 1164 - 1255<br>1559 - 1610 | GNSS                 | Magnetic                      | Refer to data sheet | Refer to data sheet | 82                  | 60                 | 22.5                | <ul style="list-style-type: none"> <li>L1 + G1 &amp; L2 + L5 + E5b + G2 bands</li> <li>Embedded patch</li> <li>Cable lengths: 5000 mm or custom</li> <li>Mating connector type: SMA(Male)</li> </ul> |
| <a href="#">2108912-1</a>      |  | 1575.42                    | GNSS                 | Adhesive mount                | Refer to data sheet | Refer to data sheet | 12                  | 12                 | 5.2                 | <ul style="list-style-type: none"> <li>L1 band</li> <li>Embedded patch</li> <li>Cable lengths: 55 mm or custom</li> <li>Mating connector type: MHF</li> </ul>  |
| <a href="#">2195891-1</a>      |  | 1559 - 1610                | GNSS                 | External                      | Refer to data sheet | Refer to data sheet | 55                  | 38                 | 17                  | <ul style="list-style-type: none"> <li>External patch in plastic housing</li> <li>Cable lengths: 3000 mm or custom</li> <li>Active</li> <li>Mating connector type: SMA</li> </ul>                    |










# Wi-Fi, Bluetooth, Zigbee

| TE Part Number                                    | Product Image   | Frequency Band (MHz)                        | Wireless Application                           | Mounting Type            | VSWR                | Peak Gain (dBi)     | Product Length (mm) | Product Width (mm) | Product Height (mm) | Remarks   |
|---|---|---|--|--------------------------|---------------------|---------------------|---------------------|--------------------|---------------------|---|
| <a href="#">2118907-1/-2/-3/-4/-5/-6/-7/-8/-9</a> |    | 2400 - 2500<br>5150 - 5875<br>5925 - 7125   | Wi-Fi triple band, Wi-Fi 6E                    | Adhesive mount           | Refer to data sheet | Refer to data sheet | 29.6                | 41.24              | 0.36                | <ul style="list-style-type: none"> <li>Embedded flexible PCB</li> <li>Cable lengths: 50, 100, 150, 200 mm or custom</li> <li>Mating connector types: MHF, MHF4</li> </ul>   |
| <a href="#">2118908-1/-2</a>                      |    | 2400 - 2500<br>5150 - 5875<br>5925 - 7125   | Wi-Fi triple band, Wi-Fi 6E                    | Surface mount            | Refer to data sheet | Refer to data sheet | 18.9                | 6.2                | 0.76                | <ul style="list-style-type: none"> <li>On board PCB</li> <li>Packaging                             <ul style="list-style-type: none"> <li>-1: Bulk packaged</li> <li>-2: T&amp;R packaged</li> </ul> </li> </ul>                                      |
| <a href="#">1-2118909-1/-2/-3/-4/-5/-6/-7/-8</a>  |    | 2400 - 2500<br>5150 - 5875<br>5925 - 7125   | Wi-Fi triple band, Wi-Fi 6E                    | Adhesive mount           | Refer to data sheet | Refer to data sheet | 40                  | 8                  | 2.6                 | <ul style="list-style-type: none"> <li>Embedded PCB</li> <li>Cable lengths: 50, 100, 150, 200 mm or custom</li> <li>Mating Connector types: MHF, MHF4</li> </ul>  |
| <a href="#">2108792-1/-2/-3/-4/-5/-6/-7/-8/-9</a> |    | 2400 - 2500<br>5150 - 5875<br>5925 - 7125   | Wi-Fi triple band, Wi-Fi 6E                    | Adhesive mount           | Refer to data sheet | Refer to data sheet | 40                  | 10                 | 0.12                | <ul style="list-style-type: none"> <li>Embedded FPC</li> <li>Cable lengths: 50, 100, 150, 200 mm or custom</li> <li>Mating Connector types: MHF, MHF4</li> </ul>  |
| <a href="#">2108891-1</a>                         |    | 2400 - 2500<br>5150 - 5875<br>5925 - 7125   | Wi-Fi triple band, Wi-Fi 6E                    | Tab mount (Through-hole) | Refer to data sheet | Refer to data sheet | 30                  | 10                 | 0.78                | <ul style="list-style-type: none"> <li>On board PCB</li> </ul>  |
| <a href="#">2108857-1/-2/-3/-4/-5/-6/-7/-8</a>    |    | 2400 - 2500<br>5150 - 5875<br>5925 - 7125   | Wi-Fi triple band, Wi-Fi 6E                    | Adhesive mount           | Refer to data sheet | Refer to data sheet | 30                  | 7                  | 0.78                | <ul style="list-style-type: none"> <li>Embedded PCB</li> <li>Cable lengths: 50, 100, 150, 200 mm or custom</li> <li>Mating Connector types: MHF, MHF4</li> </ul>  |
| <a href="#">2108858-1/-2/-3/-4/-5/-6/-7/-8</a>    |    | 2400 - 2500<br>5150 - 5875<br>5925 - 7125   | Wi-Fi triple band, Wi-Fi 6E                    | Adhesive mount           | Refer to data sheet | Refer to data sheet | 32                  | 7                  | 0.78                | <ul style="list-style-type: none"> <li>Embedded PCB</li> <li>Cable lengths: 50, 100, 150, 200 mm or custom</li> <li>Mating Connector types: MHF, MHF4</li> </ul>  |
| <a href="#">2108923-1/-2/-3/-4</a>                |  | 2400 - 2500<br>5150 - 5875<br>5925 - 7125   | Wi-Fi 6E                                       | Terminal mount           | Refer to data sheet | Refer to data sheet | 135.8               | 19.91              | -                   | <ul style="list-style-type: none"> <li>Terminal dipole                             <ul style="list-style-type: none"> <li>-1 = black + SMA</li> <li>-2 = white + SMA</li> <li>-3 = black + RP-SMA</li> <li>-4 = white + RP-SMA</li> </ul> </li> </ul> |
| <a href="#">2108832-1</a>                         |  | 2400 - 2500                                 | Wi-Fi band, Bluetooth, ZigBee                  | Surface mount            | Refer to data sheet | Refer to data sheet | 3                   | 1.5                | 1.2                 | <ul style="list-style-type: none"> <li>On board Ceramic Chip</li> <li>PIFA</li> <li>Packaging: T&amp;R packaged</li> </ul>  |
| <a href="#">2108838-1</a>                         |  | 2400 - 2500                                 | Wi-Fi band, Bluetooth, ZigBee                  | Surface mount            | Refer to data sheet | Refer to data sheet | 3.2                 | 1.6                | 1.2                 | <ul style="list-style-type: none"> <li>On board Ceramic Chip</li> <li>Helical</li> <li>Packaging: T&amp;R packaged</li> </ul>   |
| <a href="#">2246667-1/-2</a>                      |  | 2400 - 2483.5<br>5150 - 5875                | Wi-Fi dual band, Bluetooth, Zigbee             | Chassis mount            | <3.5:1              | Refer to data sheet | 144                 | 34                 | 6.1                 | <ul style="list-style-type: none"> <li>Embedded PCB assembly</li> <li>MIMO 2X2 dual band</li> <li>Cable length can be customized</li> <li>Mating connector types: MHF, MHF4L</li> </ul>   |
| <a href="#">2108994-1</a>                         |  | 698 - 960<br>1710 - 2170<br>2300 - 2700     | 4G, 3G, 2G, NB-IoT, Cat-M, Wi-Fi               | Surface mount            | <3.0:1              | 2.3                 | 40                  | 10                 | 3.2                 | <ul style="list-style-type: none"> <li>On board PCB</li> </ul>  |
| <a href="#">2118899-1/-2/-3/-4</a>                |  | 2400 - 2483.5<br>5150 - 5875                | Wi-Fi dual band, Bluetooth, Zigbee             | Chassis mount            | <3.0:1              | 2.3                 | 54.5                | 54.5               | 3.8                 | <ul style="list-style-type: none"> <li>Embedded metal stamping assembly</li> <li>Cable lengths: 278, 480 mm</li> <li>Mating connector types: MHF, MHF4L</li> </ul>  |
| <a href="#">2344654-1/-2/-3/-4/-5/-6/-7/-8</a>    |  | 2400 - 2483.5<br>5150 - 5875                | Wi-Fi dual band, Bluetooth, Zigbee             | Adhesive mount           | <2.0:1              | Refer to data sheet | 30                  | 9.5                | 1                   | <ul style="list-style-type: none"> <li>Embedded PCB</li> <li>Cable lengths: 50, 100, 150, 200 mm or custom</li> <li>Mating connector types: MHF, MHF4</li> </ul>  |
| <a href="#">2344655-1/-2/-3/-4/-5/-6/-7/-8</a>    |  | 2400 - 2483.5<br>5150 - 5875<br>5925 - 7125 | Wi-Fi triple band, Wi-Fi 6E, Bluetooth, Zigbee | Adhesive mount           | <3.0:1              | Refer to data sheet | 33                  | 8                  | 1                   | <ul style="list-style-type: none"> <li>Embedded PCB</li> <li>Cable lengths: 50, 100, 150, 200 mm or custom</li> <li>Mating connector types: MHF, MHF4</li> </ul>  |
| <a href="#">2344656-1/-2/-3/-4/-5/-6/-7/-8</a>    |  | 2400 - 2483.5<br>5150 - 5875                | Wi-Fi dual band, Bluetooth, Zigbee             | Adhesive mount           | <3.0:1              | Refer to data sheet | 30                  | 9.5                | 0.2                 | <ul style="list-style-type: none"> <li>Embedded FPC</li> <li>Cable lengths: 50, 100, 150, 200 mm or custom</li> <li>Mating connector types: MHF, MHF4</li> </ul>  |
| <a href="#">2344657-1/-2/-3/-4/-5/-6/-7/-8</a>    |  | 2400 - 2483.5<br>5150 - 5875<br>5925 - 7125 | Wi-Fi triple band, Wi-Fi 6E, Bluetooth, Zig    | Adhesive mount           | <3.0:1              | Refer to data sheet | 35                  | 8                  | 0.2                 | <ul style="list-style-type: none"> <li>Embedded FPC</li> <li>Cable lengths: 50, 100, 150, 200 mm or custom</li> <li>Mating connector types: MHF, MHF4</li> </ul>  |
| <a href="#">2118898-1/-2</a>                      |  | 902 - 928<br>2400 - 2483.5                  | ISM, Wi-Fi, Bluetooth, Zigbee                  | Adhesive mount           | <2.0:1              | 2.3                 | 140                 | 20                 | 0.25                | <ul style="list-style-type: none"> <li>Flexible Embedded FPC</li> <li>Cable lengths: 185, 255 mm or custom</li> <li>Mating connector type: MMCX</li> </ul>  |











## Wi-Fi, Bluetooth, Zigbee (continued)

| TE Part Number                     | Product Image   | Frequency Band (MHz)                      | Wireless Application                                    | Mounting Type            | VSWR                | Peak Gain (dBi)     | Product Length (mm) | Product Width (mm) | Product Height (mm) | Remarks  |
|------------------------------------|---|---|---|--------------------------|---------------------|---------------------|---------------------|--------------------|---------------------|--|
| <a href="#">2108790-1/-2</a>       |    | 2400 - 2483.5                             | Wi-Fi band, Bluetooth, Zigbee                           | Surface mount            | <2.0:1              | 2.0                 | 18.03               | 3.76               | 1.57                | <ul style="list-style-type: none"> <li>On board PCB</li> </ul>   |
| <a href="#">2108789-1/-2</a>       |    | 2400 - 2483.5                             | Wi-Fi band, Bluetooth, Zigbee                           | Surface mount            | <2.5:1              | 1.0                 | 8.46                | 6.4                | 0.79                | <ul style="list-style-type: none"> <li>On board PCB</li> <li>Packaging                             <ul style="list-style-type: none"> <li>-1: Bulk packaged</li> <li>-2: T&amp;R packaged</li> </ul> </li> </ul>   |
| <a href="#">2118879-1/-2/-4</a>    |    | 698-960<br>1710-2170<br>2300-2700         | 4G, 3G, 2G, NB-IoT, Cat-M, GNSS, Wi-Fi, LoRa, Sigfox    | Adhesive mount           | Refer to data sheet | Refer to data sheet | 110                 | 14                 | 1.6                 | <ul style="list-style-type: none"> <li>Combination antenna</li> <li>Embedded PCB</li> <li>Cable length can be customized</li> <li>Mating connector type: SMA</li> </ul>  |
| <a href="#">2108783-1/-2</a>       |    | 617 - 3800                                | 5G, 4G, 3G, 2G, NB-IoT, Cat-M, GNSS Wi-Fi, LoRa, Sigfox | Surface mount            | Refer to data sheet | Refer to data sheet | 38                  | 7.5                | 3.2                 | <ul style="list-style-type: none"> <li>Combination antenna</li> <li>On board PCB</li> <li>Small form factor</li> <li>Packaging                             <ul style="list-style-type: none"> <li>-1: Bulk packaged</li> <li>-2: T&amp;R packaged</li> </ul> </li> </ul>   |
| <a href="#">2108784-1/-2</a>       |    | 698 - 6000                                | 5G, 4G, 3G, 2G, NB-IoT, Cat-M, GNSS Wi-Fi, LoRa, Sigfox | Surface mount            | Refer to data sheet | Refer to data sheet | 38                  | 7.5                | 3.2                 | <ul style="list-style-type: none"> <li>Combination antenna</li> <li>On board PCB</li> <li>Small form factor</li> <li>Packaging                             <ul style="list-style-type: none"> <li>-1: Bulk packaged</li> <li>-2: T&amp;R packaged</li> </ul> </li> </ul>   |
| <a href="#">2195728-1</a>          |    | 698 - 2700                                | 5G, 4G, 3G, 2G, NB-IoT, Cat-M, GNSS Wi-Fi, LoRa, Sigfox | Tab mount (Through-hole) | <3.0:1              | Refer to data sheet | 55                  | 1.6                | 20                  | <ul style="list-style-type: none"> <li>Combination antenna</li> <li>On board PCB</li> </ul>  |
| <a href="#">2195760-1</a>          |   | 1559 - 1606<br>2400 - 2500<br>5150 - 5875 | GNSS, Wi-Fi dual, Combo                                 | Adhesive mount           | <2.5:1              | 3.0                 | 50                  | 15                 | 0.15                | <ul style="list-style-type: none"> <li>Embedded FPC</li> <li>Cable lengths: 150 mm or custom</li> <li>Combo (GNSS &amp; WiFi)</li> <li>Mating connector type: MHF</li> </ul>   |
| <a href="#">2108964-1</a>          |  | 2400 - 2500<br>4900 - 5875                | Wi-Fi dual band, Bluetooth, Zigbee                      | Surface mount            | <2.0:1              | Refer to data sheet | 10                  | 2.2                | 2.5                 | <ul style="list-style-type: none"> <li>On board metal stamping</li> <li>Single or dual band use</li> </ul>   |
| <a href="#">2108517-2</a>          |  | 2400 - 2500<br>4900 - 5875                | Wi-Fi dual band, Bluetooth, Zigbee                      | Surface mount            | <2.5:1              | 3.0                 | 22.75               | 2.4                | 4.8                 | <ul style="list-style-type: none"> <li>On board metal stamping</li> </ul>  |
| <a href="#">2118788-1/-2</a>       |  | 2400 - 2483.5<br>4900 - 5875              | Wi-Fi dual band Bluetooth, Zigbee                       | Surface mount            | <2.5:1              | Refer to data sheet | 28.6                | 6.05               | 4.28                | <ul style="list-style-type: none"> <li>On board metal stamping</li> <li>No ground keep out zone required</li> <li>Packaging                             <ul style="list-style-type: none"> <li>-1: T&amp;R packaged</li> <li>-2: Tray packaged</li> </ul> </li> </ul>  |
| <a href="#">2118316-1</a>          |  | 4900 - 5875                               | Wi-Fi   | Surface mount            | <2.5:1              | 4.9                 | 10.9982             | 4.25               | 4.9                 | <ul style="list-style-type: none"> <li>On board metal stamping with standoff</li> <li>No ground keep out zone required</li> </ul>  |
| <a href="#">2118326-1</a>          |  | 4900 - 5875                               | Wi-Fi   | Adhesive mount           | <2.5:1              | 2.4                 | 15.0114             | 10                 | 1                   | <ul style="list-style-type: none"> <li>Embedded PCB</li> <li>Cable lengths: 120 mm or custom</li> <li>Mating connector type: MHF</li> </ul>  |
| <a href="#">1513472-1/-5/-7/-8</a> |  | 2400 - 2483.5<br>5150 - 5875              | Wi-Fi dual band Bluetooth, Zigbee                       | Chassis mount            | <3.0:1              | 3.0                 | 29                  | 13                 | 10                  | <ul style="list-style-type: none"> <li>Embedded</li> <li>Acoustic version available</li> <li>Cable lengths: 80 - 830 mm or custom</li> <li>Mating connector types: MHF, MHF4L</li> </ul>   |
| <a href="#">1513430-1/-2</a>       |  | 2400 - 2483.5                             | Wi-Fi, Bluetooth, Zigbee                                | Surface mount            | <2.0:1              | 2.0                 | 12.85               | 3.76               | 0.79                | <ul style="list-style-type: none"> <li>On board PCB</li> <li>Diversity antennas for WLAN 2.4 to be used together</li> <li>Mirrored patterns for pattern and spatial diversity</li> <li>Left and right side feed points:                             <ul style="list-style-type: none"> <li>1513430-1 = right hand feed</li> <li>1513431-1 = left hand feed</li> </ul> </li> <li>Packaging: -1 T&amp;R / -2 Bulk</li> </ul> |
| <a href="#">1513431-1/-2</a>       |  |   |   |                          |                     |                     |                     |                    |                     |  |
| <a href="#">1513168-1</a>          |  | 902 - 928                                 | ISM, ZigBee   | Tab mount (Through-hole) | <2.0:1              | 0                   | 38.1                | 15.24              | 1.57                | <ul style="list-style-type: none"> <li>On board PCB</li> </ul>   |
| <a href="#">2118310-1</a>          |  | 698 - 960<br>1710 - 2700                  | 4G, 3G, 2G, NB-IoT, Cat-M, Wi-Fi                        | Tab mount (Through-hole) | <3.0:1              | 3.5                 | 74                  | 10.56              | 1.57                | <ul style="list-style-type: none"> <li>On board PCB</li> </ul>   |
| <a href="#">2118059-1/-4</a>       |  | 2300 - 3800                               | Wi-Fi, Bluetooth, Zigbee                                | Adhesive mount           | <3.0:1              | 4.0                 | 30.607              | 36.85              | 0.304               | <ul style="list-style-type: none"> <li>Embedded flexible PCB</li> <li>Cable lengths: 350 mm or custom</li> <li>Mating connector type: MHF</li> </ul>   |


## Wi-Fi, Bluetooth, Zigbee (continued)

| TE Part Number                              | Product Image   | Frequency Band (MHz)         | Wireless Application                     | Mounting Type               | VSWR   | Peak Gain (dBi) | Product Length (mm) | Product Width (mm) | Product Height (mm) | Remarks  |
|---|---|------------------------------|--|-----------------------------|--------|-----------------|---------------------|--------------------|---------------------|--|
| <a href="#">2118060-1/-3</a>                |    | 2300 - 3800<br>5150 - 5875   | Wi-Fi dual band,<br>Bluetooth,<br>Zigbee | Adhesive mount              | <3.0:1 | 2.0             | 29.591              | 41.24              | 0.304               | <ul style="list-style-type: none"> <li>Embedded flexible PCB</li> <li>Cable lengths: 60, 80, 350 mm or custom</li> <li>Mating connector type: MHF</li> </ul>   |
| <a href="#">1513353-1</a>                   |    | 2400 - 2483.5                | Wi-Fi,<br>Bluetooth,<br>Zigbee           | Tab mount<br>(Through-hole) | <2.0:1 | 2.0             | 12.7                | 12.7               | 0.78                | <ul style="list-style-type: none"> <li>On board PCB</li> </ul>   |
| <a href="#">1513504-1</a>                   |    | 2400 - 2483.5                | Wi-Fi,<br>Bluetooth,<br>Zigbee           | Surface mount               | <2.5:1 | 2.0             | 16 dia.             | 16 dia.            | 6.05                | <ul style="list-style-type: none"> <li>On board puck</li> <li>Isotropic radiation pattern</li> <li>No ground keep out zone required</li> </ul>   |
| <a href="#">2118309-1/-2/-3/-4/-5/-6/-8</a> |    | 2400 - 2483.5<br>4900 - 5875 | Wi-Fi dual band,<br>Bluetooth,<br>Zigbee | Adhesive mount              | <2.0:1 | 3.7             | 40.1625             | 8                  | 1                   | <ul style="list-style-type: none"> <li>Embedded PCB</li> <li>Cable lengths: 120 mm - 375 mm or custom</li> <li>Mating connector types: MHF, MHF4</li> </ul>  |
| <a href="#">1513164-1</a>                   |    | 2400 - 2483.5<br>5150 - 5875 | Wi-Fi dual band,<br>Bluetooth,<br>Zigbee | Surface mount               | <2.5:1 | 4.0             | 16 dia.             | 16 dia.            | 6.05                | <ul style="list-style-type: none"> <li>On board puck</li> <li>Isotropic radiation pattern</li> <li>No ground keep out zone required</li> </ul>   |
| <a href="#">2118016-1/-2</a>                |    | 2400 - 2483.5<br>5150 - 5875 | Wi-Fi dual band,<br>Bluetooth,<br>Zigbee | Surface mount               | <3.0:1 | 2.0             | 18.9                | 6.2                | 0.79                | <ul style="list-style-type: none"> <li>On board PCB</li> <li>Packaging                             <ul style="list-style-type: none"> <li>-1: Bulk packaged</li> <li>-2: T&amp;R packaged</li> </ul> </li> </ul> |
| <a href="#">2195772-1</a>                   |    | 2400 - 2500                  | Wi-Fi IoT                                | Terminal mount              | <2.0:1 | 5.0             | 196                 | 13                 | -                   | <ul style="list-style-type: none"> <li>Terminal dipole</li> <li>Mating connector type: RP-SMA</li> </ul>   |
| <a href="#">2195630-1</a>                   |    | 2400 - 2500<br>5150 - 5875   | Wi-Fi IoT                                | Terminal mount              | <2.0:1 | 2.0             | 30                  | 10                 | -                   | <ul style="list-style-type: none"> <li>Terminal dipole</li> <li>Mating connector type: RP-SMA</li> </ul>   |
| <a href="#">4-1982564-1</a>                 |  | 2400 - 2500<br>5150 - 5875   | Wi-Fi IoT                                | Terminal mount              | <2.0:1 | 2.0             | 35                  | 9.4                | -                   | <ul style="list-style-type: none"> <li>Terminal dipole</li> <li>Cable lengths: multiple lengths available or custom</li> <li>Mating connector type: MHF</li> </ul>   |

## ISM, LPWAN

| TE Part Number                                 | Product Image   | Frequency Band (MHz)     | Wireless Application                       | Mounting Type            | VSWR                | Peak Gain (dBi)     | Product Length (mm) | Product Width (mm) | Product Height (mm) | Remarks  |
|--|---|--------------------------|--|--------------------------|---------------------|---------------------|---------------------|--------------------|---------------------|--|
| <a href="#">2195835-1/-2/-3/-4/-5/-6/-7/-8</a> |    | 868 / 915                | ISM  | Adhesive mount           | Refer to data sheet | Refer to data sheet | 38                  | 9                  | 0.2                 | <ul style="list-style-type: none"> <li>Embedded FPC</li> <li>Cable length can be customized</li> <li>Mating connector types: MHF, MHF4 (SMA available on request)</li> </ul>                                     |
| <a href="#">2195849-1/-2/-3/-4/-5/-6/-7/-8</a> |    | 868 / 915                | ISM  | Adhesive mount           | Refer to data sheet | Refer to data sheet | 38                  | 9                  | 0.2                 | <ul style="list-style-type: none"> <li>Embedded FPC</li> <li>Cable length can be customized</li> <li>Mating connector types: MHF, MHF4 (SMA available on request)</li> </ul>                                     |
| <a href="#">1513156-1/-2</a>                   |    | 915                      | ISM  | Surface mount            | <2.5:1              | 1.0                 | 38.1                | 6.6                | 1.57                | <ul style="list-style-type: none"> <li>On board PCB</li> <li>Packaging                             <ul style="list-style-type: none"> <li>-1: T&amp;R packaged</li> <li>-2: Bulk packaged</li> </ul> </li> </ul> |
| <a href="#">1513168-1</a>                      |    | 915                      | ISM  | Tab mount (Through-hole) | <2.0:1              | 0                   | 38.1                | 15.24              | 1.57                | <ul style="list-style-type: none"> <li>On board PCB</li> </ul>   |
| <a href="#">2118898-1/-2</a>                   |    | 915<br>2.4 GHz           | ISM, Wi-Fi, Bluetooth, ZigBee              | Adhesive mount           | <2.0:1              | 2.3                 | 140                 | 20                 | 0.25                | <ul style="list-style-type: none"> <li>Embedded flexible PCB</li> <li>Cable lengths: 185, 255 mm, or custom</li> <li>Mating connector type: MMCX</li> </ul>  |
| <a href="#">2108793-1/-2</a>                   |    | 915<br>2.4 GHz           | ISM, Wi-Fi, Bluetooth, ZigBee              | Adhesive mount           | Refer to data sheet | Refer to data sheet | 140                 | 20                 | 0.17                | <ul style="list-style-type: none"> <li>Embedded FPC</li> <li>Cable lengths: 185, 255 mm, or custom</li> <li>Mating connector type: MMCX</li> </ul>   |
| <a href="#">2108991-1</a>                      |    | 698 - 960                | IoT, LPWAN, ISM                            | Surface Mount            | <2.0:1              | Refer to data sheet | 18                  | 9                  | 1.57                | <ul style="list-style-type: none"> <li>On board PCB</li> <li>Packaging                             <ul style="list-style-type: none"> <li>-1: T&amp;R packaged</li> <li>-2: Bulk packaged</li> </ul> </li> </ul> |
| <a href="#">1513317-1</a>                      |   | 824 - 960<br>1710 - 2170 | 3G, 2G, ISM, NB-IoT, Cat-M                 | Tab mount (Through-hole) | <2.5:1              | 2.0                 | 49.9                | 20.27              | 1.58                | <ul style="list-style-type: none"> <li>On board PCB</li> </ul>   |
| <a href="#">2108788-1</a>                      |  | 824 - 960<br>1710 - 1990 | 3G, 2G, ISM                                | Surface mount            | <3.0:1              | 1.0                 | 37.59               | 11.94              | 1.57                | <ul style="list-style-type: none"> <li>On board PCB</li> <li>Packaging                             <ul style="list-style-type: none"> <li>-1: Bulk packaged</li> <li>-2: T&amp;R packaged</li> </ul> </li> </ul> |
| <a href="#">1513273-1</a>                      |  | 824 - 960<br>1710 - 1990 | 3G, 2G, ISM                                | Tab mount (Through-hole) | <3.0:1              | 2.0                 | 37.59               | 15.11              | 1.57                | <ul style="list-style-type: none"> <li>On board PCB</li> </ul>   |
| <a href="#">1513247-1</a>                      |  | 824 - 894<br>1850 - 1990 | 3G, 2G, ISM                                | Tab mount (Through-hole) | <3.0:1              | Refer to data sheet | 38.1                | 15.24              | 1.63                | <ul style="list-style-type: none"> <li>On board PCB</li> </ul>   |
| <a href="#">1513169-1</a>                      |  | 824 - 894                | 2G, ISM                                    | Tab mount (Through-hole) | <2.5:1              | 2.0                 | 38.1                | 15.24              | 1.57                | <ul style="list-style-type: none"> <li>On board PCB</li> </ul>   |
| <a href="#">2195892-1</a>                      |  | 423-433                  | ISM  | Terminal mount           | Refer to data sheet | Refer to data sheet | 47                  | 7.8                |                     | <ul style="list-style-type: none"> <li>Terminal monopole</li> <li>Mating connector type: SMA</li> </ul>  |
| <a href="#">2195890-1</a>                      |  | 698 - 960<br>1710 - 2700 | 4G, 3G, 2G, Lora, Sigfox, BT/Wi-Fi, ZigBee | Terminal mount           | Refer to data sheet | Refer to data sheet | 115                 | 10                 |                     | <ul style="list-style-type: none"> <li>Terminal monopole</li> <li>Mating connector type: SMA</li> </ul>  |

## mmWave

| TE Part Number            | Product Image   | Frequency Band (GHz) | Wireless Application | Mounting Type | VSWR                | Peak Gain (dBi)     | Product Length (mm) | Product Width (mm) | Product Height (mm) | Remarks  |
|---------------------------|---|----------------------|----------------------|---------------|---------------------|---------------------|---------------------|--------------------|---------------------|--|
| <a href="#">2108728-1</a> |  | 24 - 44              | 5G mm Wave           | Screw mount   | Refer to data sheet | Refer to data sheet | 35                  | 35                 | 64                  | <ul style="list-style-type: none"> <li>Mating components                             <ol style="list-style-type: none"> <li>1) Cable assembly: 1-2016661-0 (2.4 mm male straight double end)</li> <li>2) Adapter: 2081552-1 (2.4 mm plug to 1.85 mm jack)</li> </ol> </li> </ul> |

# External

| TE Part Number                     | Product Image   | Frequency Band (MHz)   | Wireless Application                                    | Mounting Type  | VSWR                   | Peak Gain (dBi)        | Product Length (mm) | Product Width (mm) | Product Height (mm) | Remarks   |
|------------------------------------|---|--|---|----------------|------------------------|------------------------|---------------------|--------------------|---------------------|---|
| <a href="#">2195889-1/-2</a>       |    | 617 - 960<br>1427 - 1661<br>1710 - 2700<br>3300 - 4200<br>4400 - 5000<br>5150 - 5925 | 5G, 4G, 3G, 2G,<br>NB-IoT, Cat-M,<br>GNSS world<br>band | Terminal mount | Refer to<br>data sheet | Refer to<br>data sheet | 135.8               | 19.91              | -                   | <ul style="list-style-type: none"> <li>Terminal dipole</li> <li>-1 = black, -2 = white</li> <li>Mating connector type: SMA</li> </ul>   |
| <a href="#">2195892-1</a>          |    | 423 - 433  | ISM   | Terminal mount | Refer to<br>data sheet | Refer to<br>data sheet | 47                  | 7.8                | -                   | <ul style="list-style-type: none"> <li>Terminal monopole</li> <li>Mating connector type: SMA</li> </ul>   |
| <a href="#">2195632-1</a>          |    | 880 - 960<br>1710 - 2330   | 3G, 2G  | Terminal mount | <3.0:1                 | 2.5                    | 47                  | 7.8                | -                   | <ul style="list-style-type: none"> <li>Terminal dipole</li> <li>Mating connector type: SMA</li> </ul>   |
| <a href="#">2195890-1</a>          |    | 698 - 960<br>1710 - 2700   | 4G, 3G, 2G,<br>Lora, Sigfox,<br>BT/Wi-Fi,<br>ZigBee     | Terminal mount | Refer to<br>data sheet | Refer to<br>data sheet | 115                 | 10                 | -                   | <ul style="list-style-type: none"> <li>Terminal monopole</li> <li>Mating connector type: SMA</li> </ul>   |
| <a href="#">2195736-1</a>          |    | 700 - 2700   | 4G, 3G, 2G  | Terminal mount | <2.5:1                 | 2.5                    | 157                 | 17.7               | -                   | <ul style="list-style-type: none"> <li>Terminal dipole</li> <li>Mating connector type: SMA</li> </ul>   |
| <a href="#">2195771-1</a>          |    | 698 - 960<br>1710 - 2700<br>3400 - 3800  | 5G, 4G, 3G, 2G,<br>Wi-Fi                                | External mount | <2.0:1                 | Refer to<br>data sheet | 90                  | 185.5              | 90                  | <ul style="list-style-type: none"> <li>External DAS dipole</li> <li>Ceiling/Support mount</li> <li>Cable lengths: 320 mm or custom</li> <li>Mating connector type: N female (mounting clinch nuts)</li> </ul> |
| <a href="#">2108923-1/-2/-3/-4</a> |   | 2400 - 2500<br>5150 - 5875<br>5925 - 7125  | Wi-Fi 6E  | Terminal mount | Refer to<br>data sheet | Refer to<br>data sheet | 135.8               | 19.91              | -                   | <ul style="list-style-type: none"> <li>Terminal dipole</li> <li>-1 = black + SMA</li> <li>-2 = white + SMA</li> <li>-3 = black + RP-SMA</li> <li>-4 = white + RP-SMA</li> </ul>                               |
| <a href="#">2195772-1</a>          |  | 2400 - 2500  | Wi-Fi IoT   | Terminal mount | <2.0:1                 | 5.0                    | 196                 | 13                 | -                   | <ul style="list-style-type: none"> <li>Terminal dipole</li> <li>Mating connector type: RP-SMA</li> </ul>  |
| <a href="#">2195630-1</a>          |  | 2400 - 2500<br>5150 - 5875   | Wi-Fi IoT   | Terminal mount | <2.0:1                 | 2.0                    | 108                 | 10                 | -                   | <ul style="list-style-type: none"> <li>Terminal dipole</li> <li>Mating connector type: RP-SMA</li> </ul>  |
| <a href="#">4-1982564-1</a>        |  | 2400 - 2500<br>5150 - 5875   | Wi-Fi IoT   | Terminal mount | <2.0:1                 | 2.0                    | 104                 | 9.4                | -                   | <ul style="list-style-type: none"> <li>Terminal dipole</li> <li>Cable lengths: multiple lengths available or custom</li> <li>Mating connector type: MHF</li> </ul>  |
| <a href="#">2195891-1</a>          |  | 1559 - 1610  | GNSS  | External       | Refer to<br>data sheet | Refer to<br>data sheet | 55                  | 38                 | 17                  | <ul style="list-style-type: none"> <li>External patch in plastic housing</li> <li>Cable lengths: 3000 mm or custom</li> <li>Active</li> <li>Mating connector type: SMA</li> </ul>                             |

# Mating Components









| Antennas  |   | Mating components   |   |   |  |  |   |   |  |   |  |   |   |
|-----------|---|---|---|---|--|--|---|---|--|---|--|---|---|
| PN        | Image   | MHF<br><br>2337019-1       | MHF4L<br><br>2334884-1 | MMCX RA<br><br>1-1634010-0 | MMCX<br><br>1-1634009-0 | SMA RA<br><br>5-1814400-2 | SMA<br><br>5-1814832-2 | RP-SMA<br><br>2016504-1 | Cable Assembly<br><br>1-2016661-0 | 2.4mm Adapter<br><br>2081552-1 | SMA to MHF cable Assemblies<br><br>203244Q-1/-4 | SMA to MHF cable Assemblies<br><br>x-2016682-x | SMA to MHF cable Assemblies<br><br>2016694-2 |
| 2195846   |    | <br>(-1, -2, -3, -4)       | <br>(-5, -6, -7, -8)   |   |  |  |   |   |  |   |  |   |   |
| 2118898   |    |   |   | <br>(-1, -2)               | <br>(-1, -2)            |  |   |   |  |   |  |   |   |
| 2108793   |    |   |   | <br>(-1, -2)               | <br>(-1, -2)            |  |   |   |  |   |  |   |   |
| 2361492   |    | <br>(-1, -2)               | <br>(-3, -4)           |   |  |  |   |   |  |   |  |   |   |
| 2372105   |   | <br>(-1, -2)               | <br>(-3, -4)           |   |  |  |   |   |  |   |  |   |   |
| 2367286   |    | <br>(-1, -2)               | <br>(-3, -4)           |   |  |  |   |   |  |   |  |   |   |
| 2372112   |   | <br>(-1, -2)              | <br>(-3, -4)          |   |  |  |   |   |  |   |  |   |   |
| 2118308   |  | <br>(-1, -3, -4, -5, -8) | <br>(-2)             |   |  |  |   |   |  |   |  |   |   |
| 1513381   |  | <br>(-1)                 | <br>(-3)             |   |  |  |   |   |  |   |  |   |   |
| 2108728-1 |  |   |   |   |  |  |   | <br>(-1)             | <br>(-1)                        |   |  |   |   |
| 2118899   |  | <br>(-1, -2)             | <br>(-3, -4)         |   |  |  |   |   |  |   |  |   |   |
| 2344654   |  | <br>(-1, -2, -3, -4)     | <br>(-5, -6, -7, -8) |   |  |  |   |   |  |   |  |   |   |
| 2344655   |  | <br>(-1, -2, -3, -4)     | <br>(-5, -6, -7, -8) |   |  |  |   |   |  |   |  |   |   |
| 2344656   |  | <br>(-1, -2, -3, -4)     | <br>(-5, -6, -7, -8) |   |  |  |   |   |  |   |  |   |   |
| 2344657   |  | <br>(-1, -2, -3, -4)     | <br>(-5, -6, -7, -8) |   |  |  |   |   |  |   |  |   |   |
| 2108792   |  | <br>(-1, -2, -3, -4, -5) | <br>(-6, -7, -8, -9) |   |  |  |   |   |  |   |  |   |   |
| 2108857   |  | <br>(-1, -2, -3, -4)     | <br>(-5, -6, -7, -8) |   |  |  |   |   |  |   |  |   |   |
| 2108858   |  | <br>(-1, -2, -3, -4)     | <br>(-5, -6, -7, -8) |   |  |  |   |   |  |   |  |   |   |
| 2195760   |  | <br>(-1)                 |   |   |  |  |   |   |  |   |  |   |   |
| 2118326   |  | <br>(-1)                 |   |   |  |  |   |   |  |   |  |   |   |










# Mating Components (continued)

| Antennas  | Mating components   |   |   |   |   |   |   |   |   |   |  |   |   |   |   |   |
|-----------|---|---|---|---|---|---|---|---|---|---|--|---|---|---|---|---|
|           | PN  | Image   | MHF   | MHF4L   | MMCX RA   | MMCX  | SMA RA  | SMA   | RP-SMA  | Cable Assembly  | 2.4mm Adapter  | SMA to MHF cable Assemblies   | SMA to MHF cable Assemblies   | SMA to MHF4 cable assemblies  | RPSMA to MHF cable Assemblies   | RPSMA to MHF4 cable Assemblies  |
|           |   |   |  |  |  |    |    |    |    |  |  |    |    |    |    |    |
|           |   |   | <a href="#">2337019-1</a>   | <a href="#">2334884-1</a>   | <a href="#">1-1634010-0</a>   | <a href="#">1-1634009-0</a>   | <a href="#">5-1814400-2</a>   | <a href="#">5-1814832-2</a>   | <a href="#">2016504-1</a>   | <a href="#">1-2016661-0</a>   | <a href="#">2081552-1</a>  | <a href="#">2032440-1/-4</a>  | <a href="#">2016682-2/-4</a><br><a href="#">2404800-3</a>                             | <a href="#">2016694-2/-4</a><br><a href="#">2410331-2/-4</a>                          | <a href="#">2016693-2/-4</a>  | <a href="#">2016695-2/-4</a>  |
| 1513472   |    |    | (-1, -5, -7, -8)  |   |   |   |   |   |   |   |  |   |   |   |   |   |
| 2118059   |    |    | (-1)  |   |   |   |   |   |   |   |  |   |   |   |   |   |
| 2118060   |    |    | (-1, -3)  |   |   |   |   |   |   |   |  |   |   |   |   |   |
| 2118309   |    |    | (-1, -2, -3, -8)  |  |   |   |   |   |   |   |  |   |   |   |   |   |
| 2118879   |    |    |   |   |   |    |    |   |   |   |  |   |   |   |   |   |
| 2246667   |    |    | (-1)  |  |   |   |   |   |   |   |  |   |   |   |   |   |
| 2108852   |  |  | (-1)  |   |   |   |   |   |   |   |  |   |   |   |   |   |
| 2108853   |  |  | (-1)  |   |   |   |   |   |   |   |  |   |   |   |   |   |
| 2108854   |  |  | (-1)  |   |   |   |   |   |   |   |  |   |   |   |   |   |
| 2108855   |  |  | (-1)  |   |   |   |   |   |   |   |  |   |   |   |   |   |
| 2108912   |  |  | (-1)  |   |   |   |   |   |   |   |  |   |   |   |   |   |
| 2195889   |  |  |   |   |   |  |  |   |   |   |  |  |  |  |   |   |
| 2108923   |  |  |   |   |   |  |  |  |   |   |  |  |  |  |  |  |
| 2195892   |  |  |   |   |   |  |  |   |   |   |  |  |  |  |   |   |
| 2195632   |  |  |   |   |   |  |  |   |   |   |  |  |  |  |   |   |
| 2195890   |  |  |   |   |   |  |  |   |   |   |  |  |  |  |   |   |
| 2195736   |  |  |   |   |   |  |  |   |   |   |  |  |  |  |   |   |
| 2195772   |  |  |   |   |   |   |   |  |   |   |  |   |   |   |  |  |
| 2195630   |  |  |   |   |   |   |   |  |  |   |  |   |   |   |  |  |
| 4-1982564 |  |  | (-1)  |   |   |   |   |   |   |   |  |   |   |   |   |   |
| 2195891   |  |  |   |   |   |  |  |   |   |   |  |  |  |  |   |   |

## Mating RF Connectors

| TE Part Number              | Product Image  | Product Description                             | Frequency Band (GHz) | Mounting Type            | VSWR | Product Length (mm) | Product Width (mm) | Product Height (mm) |
|-----------------------------|--|---|----------------------|--------------------------|------|---------------------|--------------------|---------------------|
| <a href="#">2337019-1</a>   |   | UMCC Gen 1 surface-mount receptacle (MHF type)  | 0 - 9                | Surface mount            | 1.30 | 3.1                 | 3                  | 1.25                |
| <a href="#">2334884-1</a>   |   | UMCC Gen 4 surface-mount receptacle (MHF4 type) | 0 - 9                | Surface mount            | 1.40 | 2                   | 2                  | 0.6                 |
| <a href="#">5-1814400-2</a> |   | SMA jack, right-angle, PCB-mount                | 0 - 6                | Tab mount (Through-hole) | N/A  | 14.2                | 6.3                | 10.43               |
| <a href="#">5-1814832-2</a> |   | SMA jack, vertical, PCB-mount                   | 0 - 6                | Tab mount (Through-hole) | 1.30 | 6.4                 | 6.4                | 9.5                 |
| <a href="#">2016504-1</a>   |   | RP-SMA jack, right-angle, PCB-mount             | 0 - 6                | Tab mount (Through-hole) | N/A  | 14.2                | 6.3                | 10.43               |
| <a href="#">1-1634010-0</a> |   | MMCX jack, right-angle, PCB-mount               | 0 - 6                | Tab mount (Through-hole) | 1.35 | 6.5                 | 3.5                | 3.8                 |
| <a href="#">1-1634009-0</a> |   | MMCX jack, vertical, PCB-mount                  | 0 - 6                | Tab mount (Through-hole) | N/A  | 3.5                 | 3.5                | 6.5                 |
| <a href="#">2081552-1</a>   |  | Adapter 2.4 mm plug to 1.85 mm jack             | 0 - 50               | N/A                      | 1.20 | 19.13               | 8                  | 8                   |











# Mating RF Cable Assemblies

| Product Type                         | TE Part Number              | Product Image   | Product Description   | Frequency Band (GHz)                       | Connector A Type | Connector B Type | Cable Diameter (mm) | Cable length (mm) | Cable Color (mm) |       |
|--------------------------------------|-----------------------------|---|---|--|------------------|------------------|---------------------|-------------------|------------------|-------|
| Pigtail-UMCC cable assembly          | <a href="#">2411050-2</a>   |    | RF CA, UMCC GEN1, 1.37MM, L100MM PIGTAIL  | 9  | UMCC-GEN1        | N/A              | 1.37                | 100               | Black            |       |
|                                      | <a href="#">2411050-4</a>   |   | RF CA, UMCC GEN1, 1.37MM, L200MM PIGTAIL  | 9  | UMCC-GEN1        | N/A              | 1.37                | 200               | Black            |       |
|                                      | <a href="#">2411062-2</a>   |    | RF CA, UMCC GEN1, 1.13MM, L100MM PIGTAIL  | 9  | UMCC-GEN1        | N/A              | 1.13                | 100               | Black            |       |
|                                      | <a href="#">2411062-4</a>   |   | RF CA, UMCC GEN1, 1.13MM, L200MM PIGTAIL  | 9  | UMCC-GEN1        | N/A              | 1.13                | 200               | Black            |       |
|                                      | <a href="#">2411069-2</a>   |    | RF CA, UMCC GEN4, 1.13MM, L100MM PIGTAIL  | 9  | UMCC-GEN4        | N/A              | 1.13                | 100               | Black            |       |
|                                      | <a href="#">2411069-4</a>   |   | RF CA, UMCC GEN4, 1.13MM, L200MM PIGTAIL  | 9  | UMCC-GEN4        | N/A              | 1.13                | 200               | Black            |       |
|                                      | <a href="#">2148999-2</a>   |    | RF CA, UMCC GEN1, 1.13MM, L100MM STRIPPED   | 9  | UMCC-GEN1        | N/A              | 1.13                | 100               | Black            |       |
|                                      | <a href="#">2148999-4</a>   |   | RF CA, UMCC GEN1, 1.13MM, L200MM STRIPPED   | 9  | UMCC-GEN1        | N/A              | 1.13                | 200               | Black            |       |
| Jumper cable assembly-UMCC with UMCC | <a href="#">2410329-2</a>   |  | RF CA,UMCC GEN1-GEN1,1.37MM CABLE ,L100MM   | 9  | UMCC-GEN1        | UMCC-GEN1        | 1.37                | 100               | Black            |       |
|                                      | <a href="#">2410329-4</a>   |   | RF CA,UMCC GEN1-GEN1,1.37MM CABLE,L200MM  | 9  | UMCC-GEN1        | UMCC-GEN1        | 1.37                | 200               | Black            |       |
|                                      | <a href="#">2118651-2</a>   |  | RF CA,UMCC GEN1-GEN1, 1.13MM CABLE,L30MM  | 9  | UMCC-GEN1        | UMCC-GEN1        | 1.13                | 30                | Black            |       |
|                                      | <a href="#">1-2118651-0</a> |   | RF CA,UMCC GEN1-GEN1, 1.13MM CABLE,L60MM  | 9  | UMCC-GEN1        | UMCC-GEN1        | 1.13                | 60                | Black            |       |
|                                      | <a href="#">2118651-6</a>   |   | RF CA,UMCC GEN1-GEN1, 1.13MM,L90MM, GREY  | 9  | UMCC-GEN1        | UMCC-GEN1        | 1.13                | 90                | Grey             |       |
|                                      | <a href="#">2118651-1</a>   |   | RF CA,UMCC GEN1-GEN1, 1.13MM CABLE,L140MM   | 9  | UMCC-GEN1        | UMCC-GEN1        | 1.13                | 140               | Black            |       |
|                                      | <a href="#">2118651-8</a>   |   | RF CA,UMCC GEN1-GEN1, 1.13MM CABLE,L200MM   | 9  | UMCC-GEN1        | UMCC-GEN1        | 1.13                | 200               | Black            |       |
|                                      | <a href="#">1-2118651-1</a> |   | RF CA,UMCC GEN1-GEN1, 1.13MM CABLE,L509MM   | 9  | UMCC-GEN1        | UMCC-GEN1        | 1.13                | 509               | Black            |       |
|                                      | <a href="#">2015699-1</a>   |   |  | RF CA,UMCC GEN1-GEN1, 0.81MM CABLE, L100MM | 9                | UMCC-GEN1        | UMCC-GEN1           | 0.81              | 100              | Black |
|                                      | <a href="#">2015698-2</a>   |   |   | RF CA, UMCC GEN2-GEN2,0.81MM CABLE,L100M   | 9                | UMCC-GEN2        | UMCC-GEN2           | 0.81              | 100              | Black |

## Mating RF Cable Assemblies

| Product Type                         | TE Part Number              | Product Image   | Product Description                       | Frequency Band (GHz) | Connector A Type | Connector B Type | Cable Diameter (mm) | Cable length (mm) | Cable Color (mm) |
|--------------------------------------|-----------------------------|---|---|----------------------|------------------|------------------|---------------------|-------------------|------------------|
| Jumper cable assembly-UMCC with UMCC | <a href="#">2015698-3</a>   |  | RF CA, UMCC GEN2-GEN2,0.81MM CABLE,L200MM | 9                    | UMCC-GEN2        | UMCC-GEN2        | 0.81                | 200               | Black            |
|                                      | <a href="#">2016677-3</a>   |  | RF CA,UMCC GEN2-GEN4,0.81,L50,BLACK       | 9                    | UMCC-GEN2        | UMCC-GEN4        | 0.81                | 50                | Black            |
|                                      | <a href="#">2016677-4</a>   |   | RF CA,UMCC GEN2-GEN4,0.81,L80,BLACK       | 9                    | UMCC-GEN2        | UMCC-GEN4        | 0.81                | 80                | Black            |
|                                      | <a href="#">1-2016698-0</a> |  | UMCC CA, GEN4-GEN4,1.13,L45MM,BK          | 9                    | UMCC-GEN4        | UMCC-GEN4        | 1.13                | 45                | Black            |
|                                      | <a href="#">1-2016698-1</a> |   | UMCC CA, GEN4-GEN4,1.13,L55MM,BK          | 9                    | UMCC-GEN4        | UMCC-GEN4        | 1.13                | 55                | Black            |
|                                      | <a href="#">1-2016698-2</a> |   | UMCC CA, GEN4-GEN4,1.13,L100MM,BK         | 9                    | UMCC-GEN4        | UMCC-GEN4        | 1.13                | 100               | Black            |
|                                      | <a href="#">1-2016698-3</a> |   | UMCC CA, GEN4-GEN4,1.13,L150MM,BK         | 9                    | UMCC-GEN4        | UMCC-GEN4        | 1.13                | 150               | Black            |
|                                      | <a href="#">1-2016698-6</a> |   | UMCC CA, GEN4-GEN4,1.13,L200MM,BK         | 9                    | UMCC-GEN4        | UMCC-GEN4        | 1.13                | 200               | Black            |
|                                      | <a href="#">1-2016698-4</a> |   | UMCC CA, GEN4-GEN4,1.13,L250MM,BK         | 9                    | UMCC-GEN4        | UMCC-GEN4        | 1.13                | 250               | Black            |
|                                      | <a href="#">1-2016698-5</a> |   | UMCC CA, GEN4-GEN4,1.13,L45MM,BK          | 9                    | UMCC-GEN4        | UMCC-GEN4        | 1.13                | 460               | Black            |

# Mating RF Cable Assemblies

| Product Type                                  | TE Part Number            | Product Image   | Product Description                         | Frequency Band (GHz) | Connector A Type | Connector B Type | Cable Diameter (mm) | Cable length (mm) | Cable Color (mm) |
|---|---------------------------|---|---|----------------------|------------------|------------------|---------------------|-------------------|------------------|
| Jumper cable assembly-UMCC with RF connectors | <a href="#">2016692-2</a> |    | RF CA, TNC BULKHEAD TO UMCC I, L100MM       | 6                    | UMCC-GEN1        | TNC              | 1.37                | 100               | Black            |
|   | <a href="#">2016691-2</a> |    | RF CA, 1.0-2.3 BULKHEAD TO UMCC I, L100MM   | 6                    | UMCC-GEN1        | Din 1.0-2.3      | 1.37                | 100               | Black            |
|   | <a href="#">2032439-1</a> |    | RF CA, UMCC1 TO SMA PLUG, 1.37MM, L200MM    | 9                    | UMCC-GEN1        | SMA-PLUG         | 1.37                | 200               | Black            |
|   | <a href="#">2032440-1</a> |    | C/A, UMCC TO SMA BHD JACK, 1.37MM L200MM    | 9                    | UMCC-GEN1        | SMA-JACK         | 1.37                | 200               | Black            |
|   | <a href="#">2016682-2</a> |    | RF CA, UMCC1 TO SMA JACK, 1.13MM, L100MM    | 9                    | UMCC-GEN1        | SMA-JACK         | 1.13                | 100               | Black            |
|   | <a href="#">2016682-4</a> |   | RF CA, UMCC1 TO SMA JACK, 1.13MM, L200MM    | 9                    | UMCC-GEN1        | SMA-JACK         | 1.13                | 200               | Black            |
|   | <a href="#">2016694-2</a> |    | RF CA, UMCC4 TO SMA JACK, 1.13MM, L100MM    | 9                    | UMCC-GEN4        | SMA-JACK         | 1.13                | 100               | Black            |
|   | <a href="#">2016694-4</a> |   | RF CA, UMCC4 TO SMA JACK, 1.13MM, L200MM    | 9                    | UMCC-GEN4        | SMA-JACK         | 1.13                | 200               | Black            |
|   | <a href="#">2404600-3</a> |    | RF CA, UMCC1 TO SMA JACK-WP, 1.13MM, L150MM | 9                    | UMCC-GEN1        | SMA-JACK-WP      | 1.13                | 150               | Black            |
|   | <a href="#">2410331-2</a> |   | CA, UMCC4 TO SMA JACK WP, 0.81MM, L100MM    | 9                    | UMCC-GEN4        | SMA-JACK-WP      | 0.81                | 100               | Black            |
|   | <a href="#">2410331-4</a> |   | CA, UMCC4 TO SMA JACK WP, 0.81MM, L200MM    | 9                    | UMCC-GEN4        | SMA-JACK-WP      | 0.81                | 200               | Black            |
|   | <a href="#">2016693-2</a> |  | RF CA, UMCC1 TO RPSMA JACK, 1.13MM, L100MM  | 9                    | UMCC-GEN1        | RPSMA-JACK       | 1.13                | 100               | Black            |
|   | <a href="#">2016693-4</a> |   | RF CA, UMCC1 TO RPSMA JACK, 1.13MM, L200MM  | 9                    | UMCC-GEN1        | RPSMA-JACK       | 1.13                | 200               | Black            |
|   | <a href="#">2016695-2</a> |  | RF CA, UMCC4 TO RPSMA JACK, 1.13MM, L100MM  | 9                    | UMCC-GEN4        | RPSMA-JACK       | 1.13                | 100               | Black            |
|   | <a href="#">2016695-4</a> |   | RF CA, UMCC4 TO RPSMA JACK, 1.13MM, L200MM  | 9                    | UMCC-GEN4        | RPSMA-JACK       | 1.13                | 200               | Black            |

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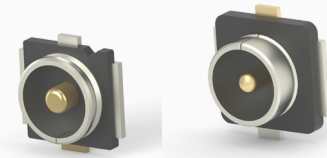
# ASSOCIATED PRODUCTS

## Micro Coax Connectors

TE's micro-coaxial connector can offer excellent electrical performance to connect a RF cable assembly or antenna to a main printed circuit board in very broad range of applications.

Our micro-coaxial connectors can be drop-in replacements for existing RF receptacles in the market so customers may not need to change their PCB layout. Micro-coaxial receptacles can be supplied with competitive price and fast delivery.

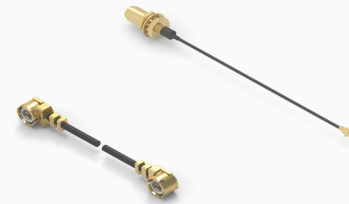
With these standard RF receptacles and connectors, existing antenna and RF cable assembly portfolio, TE can provide a complete RF solution.



## Micro Coax Assemblies

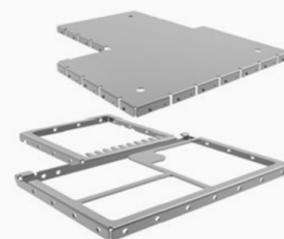
TE's micro-coaxial cable assemblies pair with our micro-coaxial receptacles and antennas to offer an end-to-end RF solution that is competitively priced. These products can provide excellent electrical performance to make a reliable RF or wireless connection to a main printed circuit board in a very broad range of applications, including consumer electronics, wearables, infotainment, medical systems, smart home appliances. TE's global footprint, engineering and manufacturing expertise can enable fast delivery of samples and mass production product.

The cable assemblies can address industry standards and can be mated with micro-coaxial receptacles from other suppliers.



## Board-Level Shielding (BLS)

As complexity and functionality increases, there is a growing need for thinner devices with multiple antennas, higher data rates and increased operating frequencies. EMI (Electromagnetic Interference) shields from TE are stamped one and two piece metal shields that help provide isolation of board level components, minimize crosstalk and reduce EMI susceptibility without impacting system speed.



# LIMITLESS WIRELESS







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# ASSOCIATED PRODUCTS AND RESOURCES

## Antennas

Landing Page: [www.te.com/antennas](http://www.te.com/antennas)  
Catalog – Ruggedized Antennas: 1-1773953-3  
Catalog – Telematics and M2M Antennas: 1-1773960-1

## Board Level Shields (BLS)

Landing Page: [www.te.com/bls](http://www.te.com/bls)  
Quick Reference Guide: 9-1773700-1

## Grounding (Spring Fingers)

Landing Page: [www.te.com/products/spring-fingers](http://www.te.com/products/spring-fingers)  
Quick Reference Guide: 6-1773460-8

## Discrete Wire Connectors

Landing pages: [www.te.com/products/ct](http://www.te.com/products/ct)  
[www.te.com/products/minict](http://www.te.com/products/minict)  
<http://www.te.com/products/hpi>  
<http://www.te.com/lowpowerdrawer>  
Quick Reference Guides: 1-1773455-8, 6-1773454-5,  
1-1773713-2, 1-1773888-2

## SIM Card Connectors

Landing page: [www.te.com/products/sim](http://www.te.com/products/sim)  
Quick Reference Guide: 2\_1773464\_0

## Fine Pitch Board-to-Board Connectors

Landing page: [www.te.com/products/fine-pitch](http://www.te.com/products/fine-pitch)  
Quick Reference Guide: 1-1773839-9

## RF & Coax Connectors

Landing page: [www.te.com/rf](http://www.te.com/rf)  
Quick Reference Guide: 1-1773725-8

## Battery Connectors

Landing Pages: [www.te.com/products/mobile-battery-connector](http://www.te.com/products/mobile-battery-connector)  
[www.te.com/products/batterypack](http://www.te.com/products/batterypack)  
Quick Reference Guides: 1-1773839-5, 1-1773839-4

## Flexible Printed Circuit (FPC) Connectors

Landing page: [www.te.com/products/fpc](http://www.te.com/products/fpc)  
Quick Reference Guides: 5-1773461-0, 8-1773459-2

## High Frequency Relays

Landing page: [www.te.com/hf-relays](http://www.te.com/hf-relays)

## USB-C and micro-USB

Landing pages: [www.te.com/products/micro-usb](http://www.te.com/products/micro-usb)  
[www.te.com/products/usb-type-c](http://www.te.com/products/usb-type-c)  
Quick Reference Guides: 1-1773972-9, 1-1773973-2

## Switches

Landing page: [www.te.com/alcoswitch](http://www.te.com/alcoswitch)  
Catalog: 8-1773450-9

## Sensors

Landing Page: [www.te.com/sensors](http://www.te.com/sensors)

## TE Solution Center

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|------------------|-----------------------|
| USA              | +1 (800) 522-6752     |
| Canada           | +1 (905) 475-6222     |
| Mexico           | +52 (0) 55-1106-0800  |
| Latin/S. America | +54 (0) 11-4733-2200  |
| Germany          | +49 (0) 6251-133-1999 |
| UK               | +44 (0) 800-267666    |
| France           | +33 (0) 1-3420-8686   |
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