



ANTENNA SOLUTIONS

Supporting Automotive Infotainment Connectivity

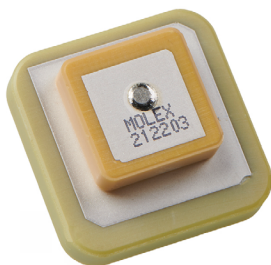
Molex creates top-class products for internet of things applications, specializing in developing sub-6 GHz external and internal antennas for smart consumer and home devices as well as industrial and connected health equipment. Drawing from the know-how achieved by more than 2 decades of developing and manufacturing antennas for the most popular mobile devices, Molex is creating high-performing antennas to enable automotive infotainment connectivity and seamless in-vehicle consumer device integration.

Molex is rapidly expanding its robust external antenna product portfolio with multi-band x-in-1 products to provide multifunctional communication solutions in one package for commercial vehicle applications. Furthermore, advanced design practices allowed the creation of a series of Molex internal and external antennas that can be attached directly on metal surfaces. Finally, our latest generation of high-accuracy GNSS and GPS antennas is expanding to include active products.

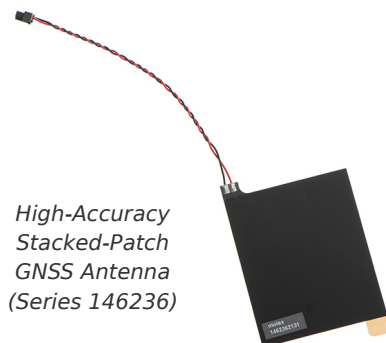
Close Collaboration for Optimal Performance

Molex engineers take into account the use case of the planned wireless device and work closely with our customers. They do this to determine which Molex antenna best fulfills the functional requirements, and they also offer guidance for its optimal implementation in the design.

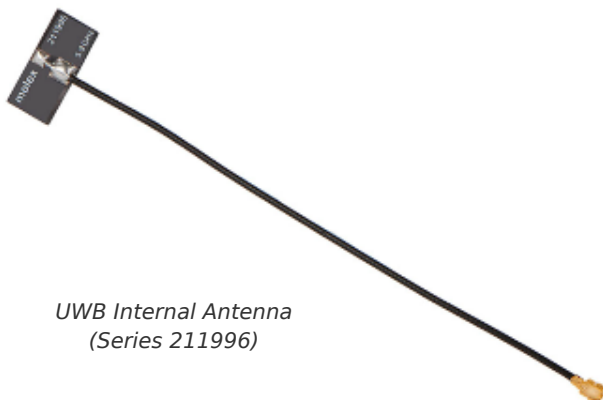
Utilizing a variety of manufacturing technologies — from metallized plastic to flexible circuits and stamping — Molex can provide the appropriate antenna for each application.



*Near-Field
Communication
Antenna (NFC)
(Series 212203)*



*High-Accuracy
Stacked-Patch
GNSS Antenna
(Series 146236)*



*UWB Internal Antenna
(Series 211996)*

Ready-to-Use Antennas (sub 6-GHz)

INTERNAL ANTENNAS

Ultra Wideband (UWB) Flexible Antenna (Series 211996)

- 5.8 to 8.5 GHz
- 7.60mm width
- 16.4mm length
- 100.00mm cable length
- Compatible with U.FL/I-PLX MHF Connectors

EXTERNAL ANTENNAS

On-Metal 2.4/5 GHz Antenna 5-in-1 Antenna (Coming Q4 2020)

- 5G, 2x2 MiMo
- WiFi, 2x2 MiMo
- GPS


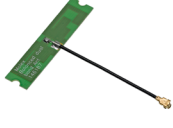




Discover more about the following Molex antennas:



- High-Accuracy Stacked Patch GNSS Antenna
- Combo External Antennas
- Rectangular Near Field Communication (NFC) Antenna
- Multi-Hub 5-in-1 Antenna (5G MIMO/Wi-Fi MIMO/GPS)

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2.4, 5, 6 GHz WI-FI 6E FLEXIBLE AND PCB ANTENNAS

Series	146153	146187	204281	208482	212330	206994
Key Features	Balanced RF transmission, multiple cable lengths, center-fed/side-fed cables			2x2, 4x4 MIMO		Smallest flexible antenna
Size (mm)	34.90 by 9.00	40.95 by 9.00	35.00 by 11.00	40.40 by 15.40 by 0.10	70.00 by 20.00	15.00 by 6.00
Material	Flexible	PCB	Flexible	Flexible	Flexible	Flexible
Frequency Range (GHz)	2.4 to 2.5 / 5.15 to 5.85 / 6.0 to 7.125					
Return Loss (dB)	<-10 / <-10 / <-10	<-10 / <-10 / <-7	<-10 / <-10 / <-4	Port1, 2: <-8 / <-13 / <-5	Port1, 3, 4: <-10 / <-10 / <-5 Port2: <-10 / <-9 / <-5	<-10 / <-5 / <-4
Peak Gain (dBi)	3.0 / 4.0 / 5.5	3.2 / 4.5 / 4.5	2.0 / 3.3 / 4.5	Port1: 2.9 / 5.0 / 4.5 Port2: 3.4 / 5.9 / 4.0	Port1:2.4 / 3.3 / 6.5, Port2:2.6 / 2.3 / 2.3 Port3:3.0 / 3.4 / 5.5, Port4:3.5 / 3.9 / 5.5	4.0 / 3.6 / 2.7
Total Radiation Efficiency	>75% / >75% / >80%	>80% / >75% / >75%	>65% / >68% / >55%	Port1: 65% / 75% / >75% Port2: 75% / 70% / >80%	Port1: 55% / 70% / 75% Port2: 55% / 60% / 65% Port3: 50% / 70% / 75% Port4: 55% / 65% / 75%	>55% / >70% / >40%
Product Image						

	NFC Antenna Without Ferrite	NFC Antenna With Ferrite
Series No.	146236	
Sizes (mm)	15.00 by 15.00 23.00 by 27.00 34.00 by 46.00 45.00 by 55.00	
Material	FPC	FPC + Ferrite
Antenna Type	Near Field Coupling	
Frequency Range	13.56 Mhz	
Inductance @ 13.56 Mhz	2.11 μ H 2.09 μ H 2.76 μ H 2.59 μ H	3.32 μ H 3.22 μ H 4.25 μ H 4.92 μ H
Product Image		

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2.4 AND 2.4, 5 GHz CERAMIC AND MID CHIP ANTENNAS					
Series	146175	47948	206513	206514	211964
Key Features	Highest performance in the market		Lower cost than LDS plastic		Low profile
Size (mm)	3.00 by 5.00 by 4.00	3.00 by 3.00 by 4.00	3.00 by 3.00 by 4.00	3.00 by 4.00 by 4.00	3.20 by 1.60 by 1.20
Material	LDS-MID	LDS-MID	Ceramic	Ceramic	Ceramic
PCB Mounting Recommendation	Corner mounting	Corner mounting	Corner mounting	Corner mounting	Center-edge mounting
Frequency Range (GHz)	2.4 to 2.5 5.15 to 5.85	2.4 to 2.5	2.4 to 2.5	2.4 to 2.5 5.15 to 5.85	2.4 to 2.5 5.15 to 5.85
Return Loss (dB)	<-6	<-7	<-6	<-8 / <-5	Config.1 (2.4 GHz): <-6 Config.2 (2.4/5 GHz): <-5
Peak Gain (dBi)	3.0 / 4.2	3	3.6	3.5 / 6.2	Config.1: 2.7 Config.2: 2.1 / 2.2
Total Radiation Efficiency	>70%	>70%	>55%	>75%	Config.1: >80% Config.2: >70% / >65%
Product Image					

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	High-Accuracy Stacked-Patch GNSS Antennas			Ext. GNSS Antenna	x-in-1 External Combo Antennas	
Series Number	211624	212203	213602	213499	206866	211297
Size (mm)	36.00 by 36.00 by 7.00	25.00 by 25.00 by 8.00	36.00 by 36.00 by 7.00	55.00 by 47.00 by 16.70 (cable not included)	External Antenna (Diameter: 77.00mm; Height: 15.00mm)	External Antenna (Diameter: 77.00mm; Height: 15.00mm)
Material	Ceramic	Ceramic	Ceramic	Housing: ABS	Housing: ABS	Housing: ABS
Frequency Range	1176.45 MHz 1575.42 MHz 1602 MHz	1176.45 MHz 1575.42 MHz	1227.6 MHz 1575.42 MHz	1561.098 MHz 1575.42 MHz 1602 MHz	<ul style="list-style-type: none"> GPS: 1575.42 ± 1.023 MHz 4G: 824 to 960 MHz, 1.71 to 2.60 GHz WiFi: 2.4 to 2.5 GHz 	<ul style="list-style-type: none"> GPS: 1561.098 ± 2.046 MHz; 1575.42 ± 1.023 MHz 4G: 824 to 960 MHz; 1.71 to 2.60 GHz
Return Loss	<-10dB	L5: <-20dB L1: <-15dB	L5: <-20dB L1: <-15dB	<-10dB	4G VSWR 3: < -6dB GPS, WiFi VSWR 2: < -10dB	4G VSWR 2.5: < -8dB GPS VSWR 2: < -10dB
Peak Gain	L1: 4.5dBi L5: 2.1dBi GLONASS: 4.2dBi	L1: 4.9dBi L5: 3.1dBi	L1: 5.3dBi L2: 2.1dBi	-1.7 -0.4 -1.4	<ul style="list-style-type: none"> GPS: 3dBi 4G: -0.5 dBi type (824 to 960 MHz), 0 dBi type (1.71 to 2.60 GHz) WiFi and Bluetooth: -2.7 dBi 	<ul style="list-style-type: none"> GPS: -2.1dBi 4G: -0.8dBi type (824 to 960 MHz), 0.4 dBi type (1.71 to 2.60 GHz) WiFi and Bluetooth: -2.7 dBi
Total Radiation Efficiency	L1: >75%	L1: >75%	L1: >80%	>20%	GPS: 26.2%	GPS: 22.3% (1561.098 ± 2.046 MHz), 22.1% (1575.42 ± 1.023 MHz)
	L5: >60% GLONASS: >70%	L5: >65%	L2: >50%	>30% >25%	4G: 21.6% (824 to 960 MHz), 27.2% (1.71 to 2.60 GHz) WiFi and Bluetooth: 23.3%	4G: 33.6% (824 to 960 MHz), 26.8% (1.71 to 2.60 GHz) WiFi and Bluetooth: 23.3%
Product Image						

COMPLETE SOLUTIONS TO ACHIEVE YOUR VISION

Our capabilities are constantly evolving to meet the demanding requirements for autonomous driving, infotainment and connectivity.



www.molex.com/cm/standardantenna.html

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