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#### Smart Technology. Delivered.

## **Vehicular 5-Port MIMO Antenna**

### VHP69273x22G



Patent Pending VHP96273x22G

### 698-960 / 1710-2700 / 2300-2700 / 4900-5900 MHz + GPS MIMO ANTENNA

The Laird vehicular 5-port MIMO antenna covers the 698-960 / 1710-2700 MHz, 2300-2700 / 4900-5900 MHz as well as GPS (1575.42 MHz) frequency ranges. Configured with 4-port, dual-band elements in addition to 1-port with integrated GPS.

Connector options include SMA male connectors for 3G/4G LTE and GPS ports with an RPSMA male connector for the WiFi port. The housing incorporates a low-profile, rugged design that meets IP67 standards. The antenna also features high impact, UV-resistant polycarbonate plastic available in black or white.

#### **SPECIFICATIONS**

No. of Ports   S (2-ports 3G/4G LTE, 2-ports WiFi, 1-port GPS)	PARAMETER		PERFORMANCE				
Signature   Si	Model Number VHP	69273B22G-51	8A (Black)	VHP69273W22G-518A (White)			
Frequency Bands (MHz)         698-960 MHz         1710-2700 MHz         2300-2700 MHz         4900-5900 MHz           Peak Gain * dBi         4.1         5.9         6.2         6.5           Max Gain */- 30 above horizon         N/A         N/A         N/A         6.2           VSWR* Typical         < 1.7:1	No. of Ports	5 (2-pc	5 (2-ports 3G/4G LTE, 2-ports WiFi, 1-port GPS)				
Peak Gain * dBi         4.1         5.9         6.2         6.5           Max Gain +/- 30 above horizon         N/A         N/A         N/A         6.2           VSWR* Typical         < 1.7:1		3G/4	1G Port	WiFi Port			
Max Gain +/- 30 above horizon         N/A         N/A         N/A         6.2           VSWR* Typical         < 1.7:1	Frequency Bands (MHz)	698-960 MHz	1710-2700 MHz	2300-2700 MHz	4900-5900 MHz		
VSWR* Typical         < 1.7:1	Peak Gain * dBi	4.1	5.9	6.2	6.5		
VSWR * Max         < 2.0:1         < 2.0:1         < 2.0:1         < 2.0:1           Typical Port-to-Port Isolation *         698-960         1710-2700         2300-2700         4900-5900           LTE 1-to-LTE 2         > 14 dB         > 26 dB         > 28 dB         N/A           LTE 1-to-WiFi 1         > 27 dB         > 18 dB         > 20 dB         > 31 dB           LTE 1-to-WiFi 2         > 26 dB         > 23 dB         > 23 dB         > 29 dB           LTE 2-to-WiFi 1         > 27 dB         > 23 dB         > 23 dB         > 28 dB           LTE 2-to-WiFi 2         > 26 dB         > 18 dB         > 20 dB         > 33 dB           WiFi 1-to-WiFi 2         > 26 dB         > 18 dB         > 20 dB         > 33 dB           WiFi 1-to-WiFi 2         > 26 dB         > 18 dB         > 20 dB         > 33 dB           WiFi 1-to-WiFi 2         > 26 dB         > 18 dB         > 20 dB         > 33 dB           Vertical Linear         Vertical Linear           Azimuth Beam Width         Omnidirectional           Input Power, Max         50 watts (ambient temp of 25°C/ 77°F)           Operating Temperature         -30° C - +70° C (-22°F to +158°F)           Dimensions (dia. x hgt)         132 mm x 87 mm (5.2" x 3.4")	Max Gain +/- 30 above horiz	on N/A	N/A	N/A	6.2		
Typical Port-to-Port Isolation * 698-960 1710-2700 2300-2700 4900-5900  LTE 1-to-LTE 2 > 14 dB	VSWR* Typical	< 1.7:1	< 1.6:1	< 1.7:1	< 1.4:1		
LTE 1-to-LTE 2       > 14 dB       > 26 dB       > 28 dB       N/A         LTE 1-to-WiFi 1       > 27 dB       > 18 dB       > 20 dB       > 31 dB         LTE 1-to-WiFi 2       > 26 dB       > 23 dB       > 23 dB       > 29 dB         LTE 2-to-WiFi 1       > 27 dB       > 23 dB       > 23 dB       > 28 dB         LTE 2-to-WiFi 2       > 26 dB       > 18 dB       > 20 dB       > 33 dB         WiFi 1-to-WiFi 2       N/A       N/A       > 21 dB       > 29 dB         Nominal Impedance       50 Ω         Polarization       Vertical Linear         Azimuth Beam Width       Omnidirectional         Input Power, Max       50 watts (ambient temp of 25°C/77°F)         Operating Temperature       -30°C - +70°C (-22°F to +158°F)         Dimensions (dia. x hgt)       132 mm x 87 mm (5.2" x 3.4")         Weight       Approximately 1.16kg (2.56lbs)         RF Connector       SMA-Male (3G/4G LTE port) RPSMA-Male (WiFi port)         Cable (exposed length)       LMR195M-518.2 cm (17 ft)         Radome / Baseplate Material       PC, UL94 - VO Rating, UV Stable (Black & White)         Material Compliance       ROHS compliant	VSWR * Max	< 2.0:1	< 2.0:1	< 2.0:1	< 2.0:1		
LTE 1-to-WiFi 1       > 27 dB       > 18 dB       > 20 dB       > 31 dB         LTE 1-to-WiFi 2       > 26 dB       > 23 dB       > 23 dB       > 29 dB         LTE 2-to-WiFi 1       > 27 dB       > 23 dB       > 23 dB       > 28 dB         LTE 2-to-WiFi 2       > 26 dB       > 18 dB       > 20 dB       > 33 dB         WiFi 1-to-WiFi 2       N/A       N/A       > 21 dB       > 29 dB         Nominal Impedance       50 Ω         Polarization       Vertical Linear         Azimuth Beam Width       Omnidirectional         Input Power, Max       50 watts (ambient temp of 25°C/77°F)         Operating Temperature       -30° C - +70° C (-22°F to +158°F)         Dimensions (dia. x hgt)       132 mm x 87 mm (5.2" x 3.4")         Weight       Approximately 1.16kg (2.56lbs)         RF Connector       SMA-Male (3G/4G LTE port) RPSMA-Male (WiFi port)         Cable (exposed length)       LMR195M-518.2 cm (17 ft)         Radome / Baseplate Material       PC, UL94 - VO Rating, UV Stable (Black & White)         Material Compliance       ROHS compliant	Typical Port-to-Port Isolation	* 698-960	1710-2700	2300-2700	4900-5900		
LTE 1-to-WiFi 2 > 26 dB > 23 dB > 23 dB > 29 dB  LTE 2-to-WiFi 1 > 27 dB > 23 dB > 23 dB > 28 dB  LTE 2-to-WiFi 2 > 26 dB > 18 dB > 20 dB > 33 dB  WiFi 1-to-WiFi 2 N/A N/A > 21 dB > 29 dB  Nominal Impedance 50 Ω  Polarization Vertical Linear  Azimuth Beam Width Omnidirectional  Input Power, Max 50 watts (ambient temp of 25°C/77°F)  Operating Temperature -30°C -+70°C (-22°F to +158°F)  Dimensions (dia. x hgt) 132 mm x 87 mm (5.2" x 3.4")  Weight Approximately 1.16kg (2.56lbs)  RF Connector SMA-Male (3G/4G LTE port) RPSMA-Male (WiFi port)  Cable (exposed length) LMR195M-518.2 cm (17 ft)  Radome / Baseplate Material PC, UL94 - VO Rating, UV Stable (Black & White)  Material Compliance ROHS compliant	LTE 1-to-LTE 2	> 14 dB	> 26 dB	> 28 dB	N/A		
LTE 2-to-WiFi 1 > 27 dB > 23 dB > 23 dB > 28 dB  LTE 2-to-WiFi 2 > 26 dB > 18 dB > 20 dB > 33 dB  WiFi 1-to-WiFi 2 N/A N/A > 21 dB > 29 dB  Nominal Impedance 50 Ω  Polarization Vertical Linear  Azimuth Beam Width Omnidirectional  Input Power, Max 50 watts (ambient temp of 25°C/ 77°F)  Operating Temperature -30° C - +70° C (-22°F to +158°F)  Dimensions (dia. x hgt) 132 mm x 87 mm (5.2" x 3.4")  Weight Approximately 1.16kg (2.56lbs)  RF Connector SMA-Male (3G/4G LTE port) RPSMA-Male (WiFi port)  Cable (exposed length) LMR195M-518.2 cm (17 ft)  Radome / Baseplate Material PC, UL94 - V0 Rating, UV Stable (Black & White)  Material Compliance ROHS compliant	LTE 1-to-WiFi 1	> 27 dB	> 18 dB	> 20 dB	> 31 dB		
LTE 2-to-WiFi 2 > 26 dB > 18 dB > 20 dB > 33 dB WiFi 1-to-WiFi 2 N/A N/A > 21 dB > 29 dB  Nominal Impedance 50 Ω  Polarization Vertical Linear  Azimuth Beam Width Omnidirectional  Input Power, Max 50 watts (ambient temp of 25°C/77°F)  Operating Temperature -30°C - +70°C (-22°F to +158°F)  Dimensions (dia. x hgt) 132 mm x 87 mm (5.2" x 3.4")  Weight Approximately 1.16kg (2.56lbs)  RF Connector SMA-Male (3G/4G LTE port) RPSMA-Male (WiFi port)  Cable (exposed length) LMR195M-518.2 cm (17 ft)  Radome / Baseplate Material PC, UL94 - V0 Rating, UV Stable (Black & White)  Material Compliance ROHS compliant	LTE 1-to-WiFi 2	> 26 dB	> 23 dB	> 23 dB	> 29 dB		
WiFi 1-to-WiFi 2N/AN/A> 21 dB> 29 dBNominal Impedance50 ΩPolarizationVertical LinearAzimuth Beam WidthOmnidirectionalInput Power, Max50 watts (ambient temp of 25°C/77°F)Operating Temperature-30° C - +70° C (-22°F to +158°F)Dimensions (dia. x hgt)132 mm x 87 mm (5.2" x 3.4")WeightApproximately 1.16kg (2.56lbs)RF ConnectorSMA-Male (3G/4G LTE port) RPSMA-Male (WiFi port)Cable (exposed length)LMR195M-518.2 cm (17 ft)Radome / Baseplate MaterialPC, UL94 - VO Rating, UV Stable (Black & White)Material ComplianceROHS compliant	LTE 2-to-WiFi 1	> 27 dB	> 23 dB	> 23 dB	> 28 dB		
Nominal Impedance50 ΩPolarizationVertical LinearAzimuth Beam WidthOmnidirectionalInput Power, Max50 watts (ambient temp of 25°C/ 77°F)Operating Temperature-30° C - +70° C (-22°F to +158°F)Dimensions (dia. x hgt)132 mm x 87 mm (5.2" x 3.4")WeightApproximately 1.16kg (2.56lbs)RF ConnectorSMA-Male (3G/4G LTE port) RPSMA-Male (WiFi port)Cable (exposed length)LMR195M-518.2 cm (17 ft)Radome / Baseplate MaterialPC, UL94 - VO Rating, UV Stable (Black & White)Material ComplianceROHS compliant	LTE 2-to-WiFi 2	> 26 dB	> 18 dB	> 20 dB	> 33 dB		
Polarization  Vertical Linear  Azimuth Beam Width  Omnidirectional  Input Power, Max  50 watts (ambient temp of 25°C/77°F)  Operating Temperature  -30°C-+70°C(-22°F to +158°F)  Dimensions (dia. x hgt)  132 mm x 87 mm (5.2" x 3.4")  Weight  Approximately 1.16kg (2.56lbs)  RF Connector  SMA-Male (3G/4G LTE port) RPSMA-Male (WiFi port)  Cable (exposed length)  LMR195M-518.2 cm (17 ft)  Radome / Baseplate Material  PC, UL94 - VO Rating, UV Stable (Black & White)  Material Compliance  ROHS compliant	WiFi 1-to-WiFi 2	N/A	N/A	> 21 dB	> 29 dB		
Azimuth Beam Width Omnidirectional  Input Power, Max 50 watts (ambient temp of 25°C/77°F)  Operating Temperature -30°C-+70°C (-22°F to +158°F)  Dimensions (dia. x hgt) 132 mm x 87 mm (5.2" x 3.4")  Weight Approximately 1.16kg (2.56lbs)  RF Connector SMA-Male (3G/4G LTE port) RPSMA-Male (WiFi port)  Cable (exposed length) LMR195M-518.2 cm (17 ft)  Radome / Baseplate Material PC, UL94 - V0 Rating, UV Stable (Black & White)  Material Compliance ROHS compliant	Nominal Impedance		50 Ω				
Input Power, Max  50 watts (ambient temp of 25°C/77°F)  Operating Temperature  -30°C-+70°C (-22°F to +158°F)  Dimensions (dia. x hgt)  132 mm x 87 mm (5.2" x 3.4")  Weight  Approximately 1.16kg (2.56lbs)  RF Connector  SMA-Male (3G/4G LTE port) RPSMA-Male (WiFi port)  Cable (exposed length)  LMR195M-518.2 cm (17 ft)  Radome / Baseplate Material  PC, UL94 - VO Rating, UV Stable (Black & White)  Material Compliance  ROHS compliant	Polarization		Vertical Linear				
Operating Temperature -30° C - +70° C (-22°F to +158°F)  Dimensions (dia. x hgt) 132 mm x 87 mm (5.2" x 3.4")  Weight Approximately 1.16kg (2.56lbs)  RF Connector SMA-Male (3G/4G LTE port) RPSMA-Male (WiFi port)  Cable (exposed length) LMR195M-518.2 cm (17 ft)  Radome / Baseplate Material PC, UL94 - VO Rating, UV Stable (Black & White)  Material Compliance ROHS compliant	Azimuth Beam Width		Omnidirectional				
Dimensions (dia. x hgt)  132 mm x 87 mm (5.2" x 3.4")  Weight  Approximately 1.16kg (2.56lbs)  RF Connector  SMA-Male (3G/4G LTE port) RPSMA-Male (WiFi port)  Cable (exposed length)  LMR195M-518.2 cm (17 ft)  Radome / Baseplate Material  PC, UL94 - V0 Rating, UV Stable (Black & White)  Material Compliance  ROHS compliant	Input Power, Max	į	50 watts (ambient temp of 25°C/ 77°F)				
WeightApproximately 1.16kg (2.56lbs)RF ConnectorSMA-Male (3G/4G LTE port) RPSMA-Male (WiFi port)Cable (exposed length)LMR195M-518.2 cm (17 ft)Radome / Baseplate MaterialPC, UL94 - V0 Rating, UV Stable (Black & White)Material ComplianceROHS compliant	Operating Temperature		-30° C - +70° C (-22°F to +158°F)				
RF Connector SMA-Male (3G/4G LTE port) RPSMA-Male (WiFi port) Cable (exposed length) LMR195M- 518.2 cm (17 ft) Radome / Baseplate Material PC, UL94 - V0 Rating, UV Stable (Black & White) Material Compliance ROHS compliant	Dimensions (dia. x hgt)		132 mm x 87 mm (5.2" x 3.4")				
Cable (exposed length)  Radome / Baseplate Material  Material Compliance  LMR195M- 518.2 cm (17 ft)  PC, UL94 - V0 Rating, UV Stable (Black & White)  ROHS compliant	Weight		Approximately 1.16kg (2.56lbs)				
Radome / Baseplate Material PC, UL94 - V0 Rating, UV Stable (Black & White)  Material Compliance ROHS compliant	RF Connector	SMA-I	SMA-Male (3G/4G LTE port) RPSMA-Male (WiFi port)				
Material Compliance ROHS compliant	Cable (exposed length)		LMR195M- 518.2 cm (17 ft)				
	Radome / Baseplate Materia	al PC,	PC, UL94 - V0 Rating, UV Stable (Black & White)				
	Material Compliance		·				
IP Dust & Water Ingress Rating IP67	IP Dust & Water Ingress Rat	ing	IP67				

<sup>\*</sup>Measured on 1 ft. (30.48 cm) diameter ground plane

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# **Vehicular 5-Port MIMO Antenna**

### VHP69273x22G

#### **GPS ANTENNA SPECIFICATIONS**

PARAMETER	PERFORMANCE					
Frequency Band	1575.42 MHz (GPS L1)					
Band Width	6 MHz (Typical)					
Amplier Gain		27 dB ± 3 dBc				
Nominal Impedance		50 Ω				
Output VSWR	< 1.5:1					
DC Voltage	2.7 - 12 Vdc					
DC Current	20 mA (Nominal); < 30 mA ( -40°C - +85°C)					
Out-of-Band Signal Rejection	> 40 dB rejection @ ± 50 MHz from center frequency					
Intermodulation@ CW Mode	9					
(-40°C - +85°C)	Int1	Int2	IM3			
Power, dBm	-10(1842.8 MHz)	-10(2110 MHz)	-100(1575.6 MHz)			
Power, dBm	-10(829.58 MHz)	-10(2405 MHz)	-100(1575.42 MHz)			
Power, dBm	-10(755.42 MHz)	-10(820 MHz)	-100(1575.42 MHz)			
Input 1 dB Compression @ 750 MHz, 2000 MHz & 3500 MHz > 10 dBm (-40°C - +85°C)						
RF Connector	SMA-Male					
Cable (exposed length)	RG174-518.2 cm (17ft)					

### **PART NUMBERS**

### PART NUMBER

VHP69273B22G-518A 2-Ports 4G/LTE, 1-Port GPS: SMA Male; 2 Ports WiFi:RPSMA Male(Black) VHP69273W22G-518A 2-Ports 4G/LTE, 1-Port GPS: SMA Male; 2 Ports WiFi:RPSMA Male(White)