

5in1 Box Antenna

Part Number: LK1920101

Description: 5in1 box antenna

Frequency: 4G LTE: 698-960MHz/1400-6000MHz

WiFi: 2400-2500MHz/5150-7125MHz GPS/GNSS:1559-1610MHz

Size: 154.5mm x 65mm x 20mm

Features:

- ✧ 2x2 MIMO 4G antenna, 2x2 MIMO WiFi antenna and 1 GPS/GNSS antenna
- ✧ Omni-directional radiation pattern
- ✧ Low Gain with high efficiency for easy certification
- ✧ IPX7
- ✧ Easy integration and flexible placement

RoHS compliant

Revision: B

Mar 15, 2025

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1.0 Product Description

The LK1920101 is a compact and low-profile 5-in-1 box antenna designed for demanding applications in transportation and telematics. This integrated solution seamlessly combines:

1. **2x2 MIMO 4G LTE antenna** for high-speed cellular connectivity and enhanced performance in dense urban environments.
2. **2x2 MIMO WiFi antenna** supporting the latest Wi-Fi 7, 6E, Bluetooth, and all earlier Wi-Fi standards for reliable and high-bandwidth wireless connectivity.
3. **1 GPS/GNSS antenna** for positioning and navigation.

Features:

- Easy integration
- Low Gain for easy certification
- Omni-directional radiation pattern
- Low profile with flexible placement
- IPX7

Applications:

- Tracker
- Transportation
- Healthcare
- Smart homes
- Router

2.0 General Specification

4G LTE Antenna 1

DESCRIPTION		RF PERFORMANCE WITH 1M CABLE				
Frequency Range		698-960MHz	1500-1700MHz	1710-2690MHz	3300-4400MHz	4400-6000MHz
Return Loss/S11		<-5dB				
Average Total Efficiency	in free space	>50%	>55%	>55%	>50%	>40%
	on metal plate	>35%	>35%	>40%	>40%	>35%
Peak Gain (Typ.)	in free space	2.2dBi	3.5dBi	3.6dBi	3.1dBi	2.6dBi
	on metal plate	1.5dBi	3.0dBi	7.1dBi	5.1dBi	6.5dBi
Polarization		Linear				
Input Impedance		50 ohms				

4G LTE Antenna 2

DESCRIPTION		RF PERFORMANCE				
Frequency Range		698-960MHz	1500-1700MHz	1710-2690MHz	3300-4400MHz	4400-6000MHz
Return Loss/S11		<-5dB				
Average Total Efficiency	in free space	>50%	>45%	>55%	>50%	>40%
	on metal plate	>30%	>20%	>40%	>40%	>30%
Peak Gain (Typ.)	in free space	1.5dBi	2.7dBi	3.1dBi	3.6dBi	3.0dBi
	on metal plate	1.2dBi	2.8dBi	6.7dBi	6.4dBi	5.7dBi
Polarization		Linear				
Input Impedance		50 ohms				

WIFI Antenna 1

DESCRIPTION		RF PERFORMANCE	
Frequency Range		2400-2500MHz	5000-7125MHz
Return Loss/S11		<-10dB	<-6dB
Average Total Efficiency	in free space	>50%	>45%
	on metal plate	>40%	>45%
Peak Gain (Typ.)	in free space	3.1dBi	3.2dBi
	on metal plate	7.1dBi	6.9dBi
Polarization		Linear	
Input Impedance		50 ohms	

WIFI Antenna 2

DESCRIPTION		RF PERFORMANCE	
Frequency Range		2400-2500MHz	5000-7125MHz
Return Loss/S11		<-8dB	<-10dB
Average Total Efficiency	in free space	>50%	>50%
	on metal plate	>40%	>40%
Peak Gain (Typ.)	in free space	3.0dBi	3.5dBi
	on metal plate	5.0dBi	6.3dBi
Polarization		Linear	
Input Impedance		50 ohms	

GPS Antenna

GPS/GNSS PASSIVE ANTENNA PERFORMANCE WITHOUT CABLE LOSS				
DESCRIPTION		RF PERFORMANCE		
Frequency Range		1561.098±2.046 MHz	1575.42±1.023 MHz	1602±5 MHz
Return Loss (dB)/S11		<-6		
Average Efficiency (%)	in Free space	>55	>45	>55
	on metal plate	>60	>55	>60
Peak Gain (dBi)	in Free space	3.1	0.3	2.7
	on metal plate	3.6	3.5	4.4
Polarization		RHCP		
Input Impedance		50 ohms		
GPS/GNSS LNA ACTIVE CIRCUIT PERFORMANCE				
DESCRIPTION		RF PERFORMANCE		
Frequency Range		1561.098±2.046 MHz	1575.42±1.023 MHz	1602±5 MHz
DC Voltage		3-5.5V		
Gain		28dB ± 3dB		
VSWR		≤2.0		
Noise Figure		≤3.0dB		
DC Current		9±3m A (at 3.0V)		

3.0 Mechanical and Environmental Specification

3.1 Product Dimension



Connector: SMA Male

Cable length and connector are flexible to customize

Default cable types:

GPS: $\Phi 2.8\text{mm}$ black

4G LTE/WiFi: $\Phi 5\text{mm}$ black

3.2 Environmental Specification

Item	Test item	Test condition	Specifications
1	Temperature Cycling Test	-40°C (30 minutes) to 85°C (30 minutes) 100 cycles	1. No apparent damage 2. Electrical properties within the test Spec.
2	Low temperature test	85°C; 85% RH for 96 hours	1. No apparent damage 2. Electrical properties within the test Spec.
3	High Temperature test	96 hours at -40°C	1. No apparent damage 2. Electrical properties within the test Spec.
4	Salt Mist test	Concentration: 5%±1 Spray time: 24 hours Ambient Temperature: 35 ± 2°C`	1. No apparent damage 2. Electrical properties within the test Spec.
5	Random Vibration	40G at 200Hz 700,00 cycles for each axis.	1. No apparent damage 2. Electrical properties within the test Spec.

4.0 Website and Company Address

Website: www.leankon.com

Address: B1337 1F, Building 3, 5018 Hutai Road, Baoshan District, Shanghai China.

5.0 Revision History

Revision	Date	Description	Issued by:
A	2024-11-17	Preliminary release	Tony Fu
B	2025-03-15	Initial release	Tony Fu

NOTE:

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