Datasheet

# L-5RA5

## Adhesive Ground Plane Independent 5G Antenna

CELLULAR | 5G

The L-5RA5 is a ground-plane independent antenna offered by MIOT. This peel-and-stick antenna is designed to provide reliable wireless connectivity for 5G, LTE, 3G and 2G cellular networks. It offers a compact and convenient solution for various applications.

With its wide frequency range and high-performance capabilities,the L-5RA5 antenna supports reliable wireless connectivity across multiple cellular networks. It enables efficient data transfer, voice communication, and IoT applications.

88 × 30 mm

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# Document Information

| Product | L-5RA5 |
|---|---|
| Part Number | L-5RA5 |
| Description | Adhesive Ground Plane Independent 5G Antenna |
| Version | 2.0 (current) |
| Date | 30-Mar-2023 |
| Status | Released |

# Revision History

| Version | Date | Author | Changes |
|---|---|---|---|
| 1.0 | 16-Dec-2020 | Amy li | Initial Release |
| 2.0 | 30-Mar-2023 | Amy li | New layout and design |

# Product Overview

## Product Description

The L-5RA5 is a ground-plane independent antenna offered by MIOT. This peel-and-stick antenna is designed to provide reliable wireless connectivity for 5G, LTE, 3G and 2G cellular networks. It offers a compact and convenient solution for various applications.

With its wide frequency range and high-performance capabilities, the L-5RA5 antenna supports reliable wireless connectivity across multiple cellular networks. It enables efficient data transfer, voice communication, and IoT applications.

## Key Features

- Support the 5G/ LTE / WCDMA/WIFI network
- Wide Application
- High Reliability/Sensitivity
- Compact Size, Easy to install.
- RoHS Compliant

## Applications

- LTE/ radios
- Gateways
- Set-top Boxes.
- Security
- Transportation
- Smart Agriculture

# Electrical Specifications

| Frequency | | | VSWR | Peak Gain | Efficiency |
|---|---|---|---|---|---|
| LTE | 700 - 960 | MHz | 2.6 | 2.0 d Bi | 40% |
| LTE/WiFi | 1710 - 2700 | MHz | 1.8 | 4.5 d Bi | 60% |
| 5G | 3000 5000 | MHz | 1.5 | 5.0 d Bi | 60% |

| | | | |
|---|---|---|---|
| Frequency Range | 700 – 5000 MHz | Radiation | Omnidirectional |
| Impedance | 50 Ω | Polarization | Linear |

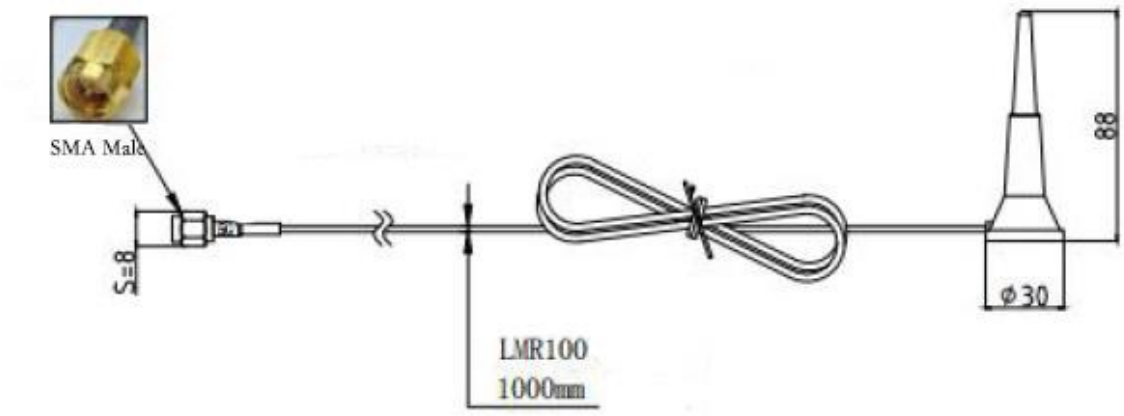
# Mechanical Specifications

| | | | |
|---|---|---|---|
| Type | External | Mounting Type | Connector Mount |
| Dimensions | 88 x 30mm | Casing | YES |
| Connector | SMA Male | Color | Black |
| Cable type | LMR100 | Material | ABS |
| Cable Length | 1m (default) | | |

Caution:

1. Do not apply excess mechanical stress to the component body or terminations. Do not attempt to re-form or bend the components, as this will cause damage to the component.
2. Do not expose the component to an open flame.
3. This specification applies to the functionality of the component as a single unit. Please ensure the component is thoroughly evaluated in the application circuit.

# Product Image and Dimensions




# Radiation Pattern

A radiation pattern is a graphical representation of the directional properties of an antenna. It shows how electromagnetic waves are distributed in space in relation to the direction of propagation.

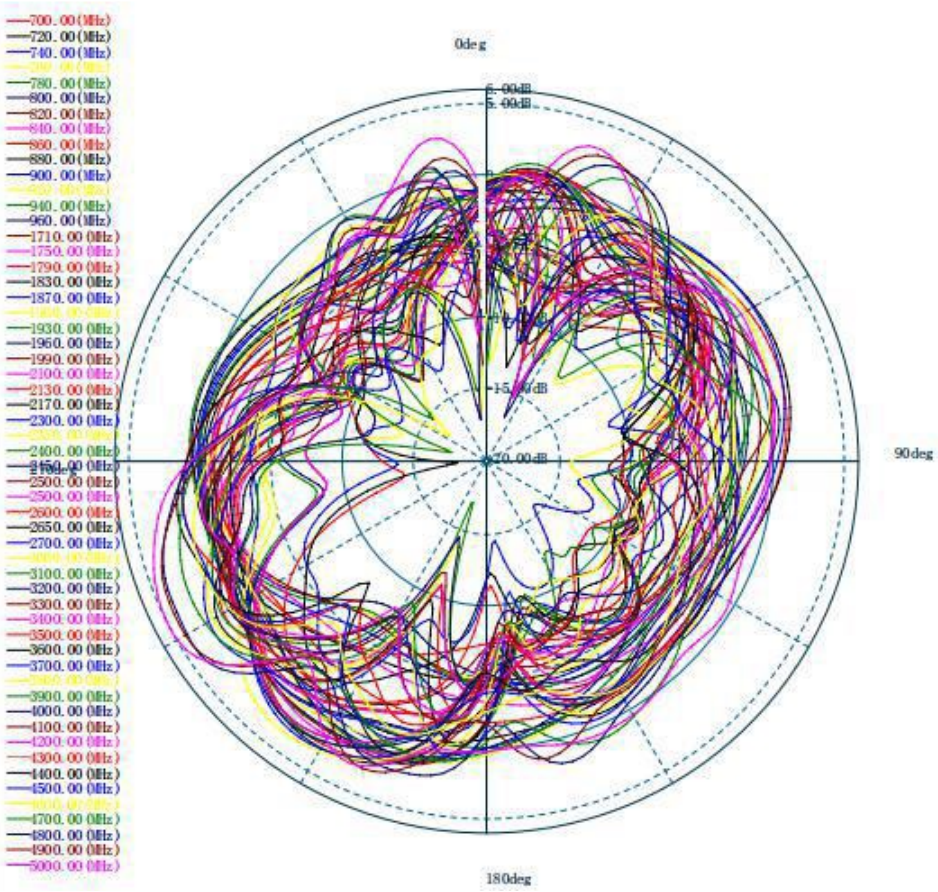
By understanding the information provided by a radiation pattern, it is possible to optimize the design and performance of an antenna for specific applications.

## Test Setup

| | | | |
|---|---|---|---|
| Equipment | XYZ Testing Machine | Conditions | Free space Bend |

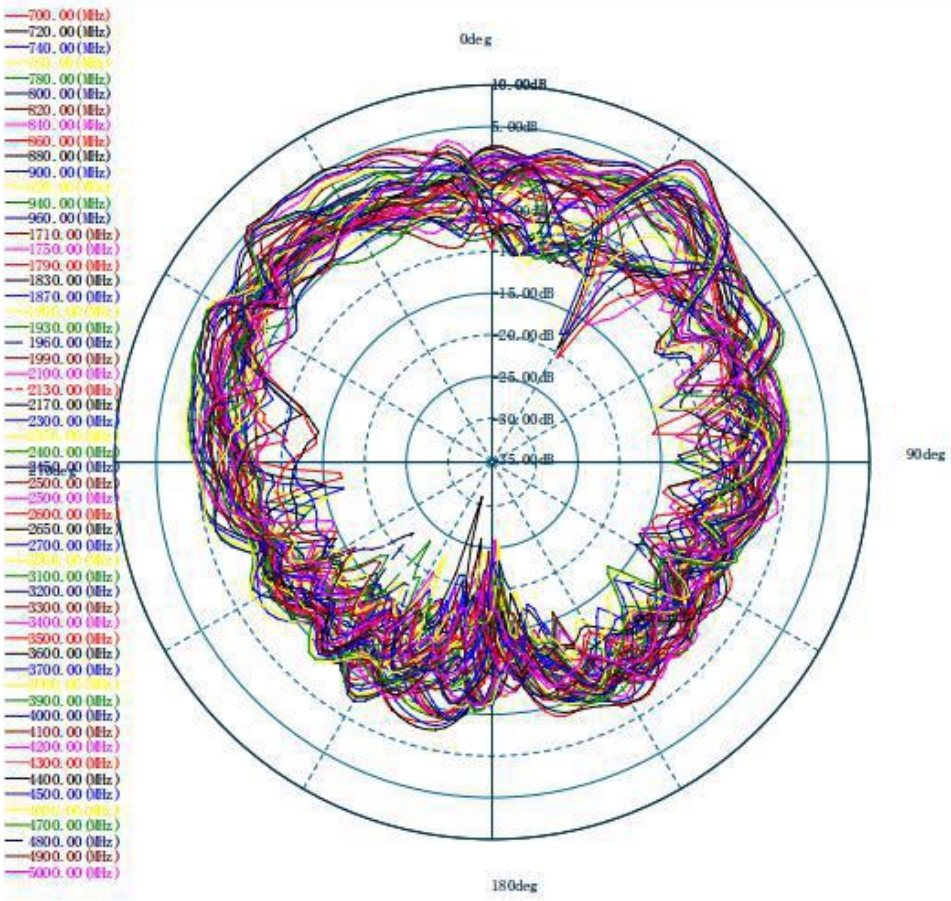
### XY Plane (H)

700 – 5000 MHz

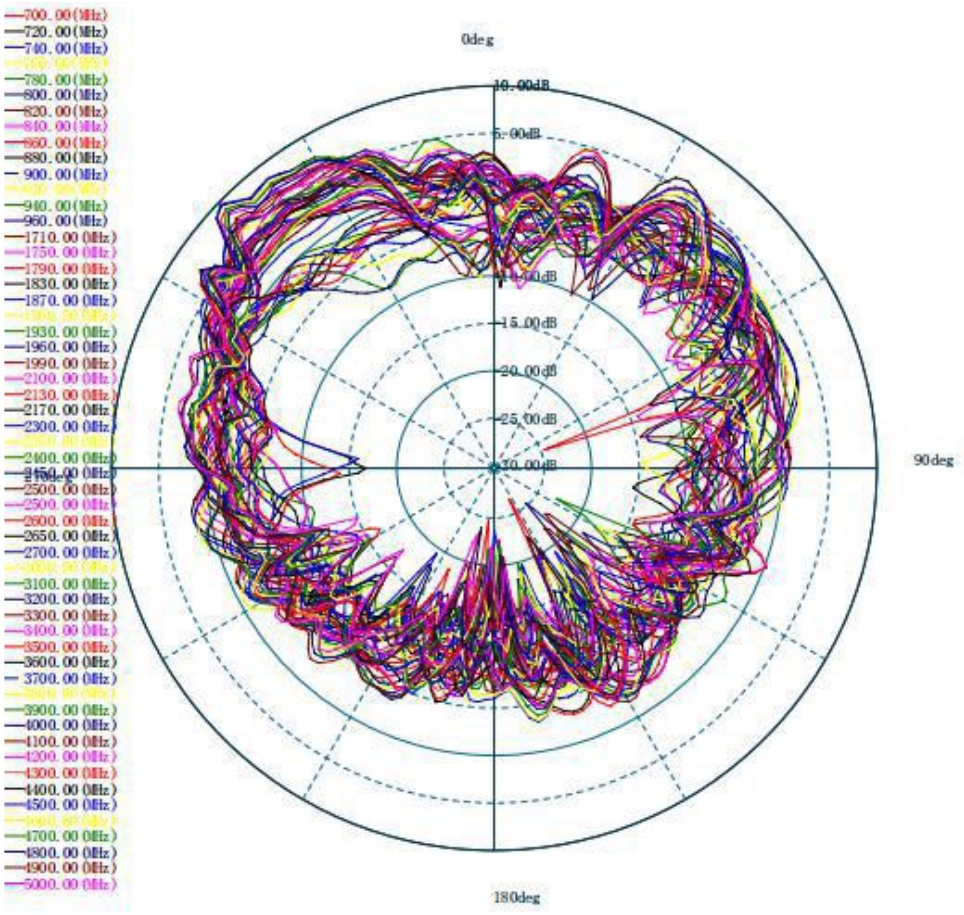



### XZ Plane (E1)

700 – 5000 MHz



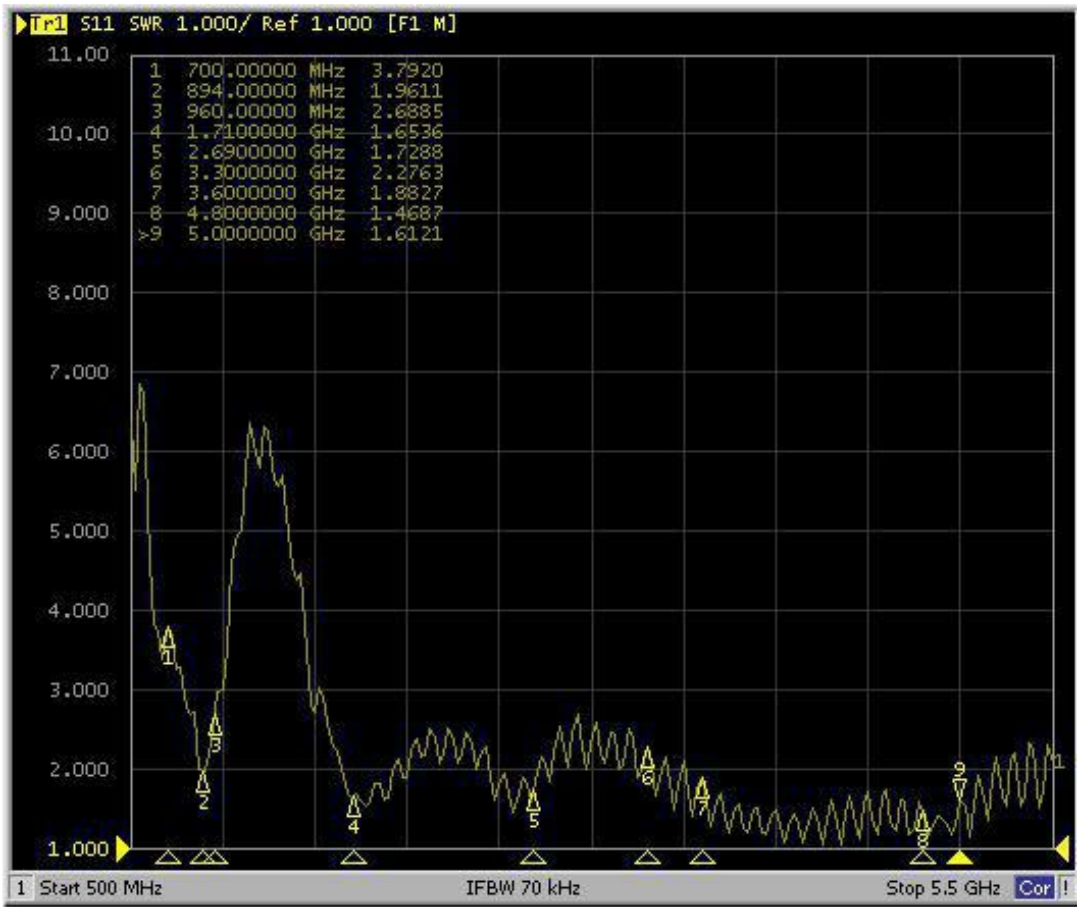

YZ Plane (E2) 700 – 5000 MHz

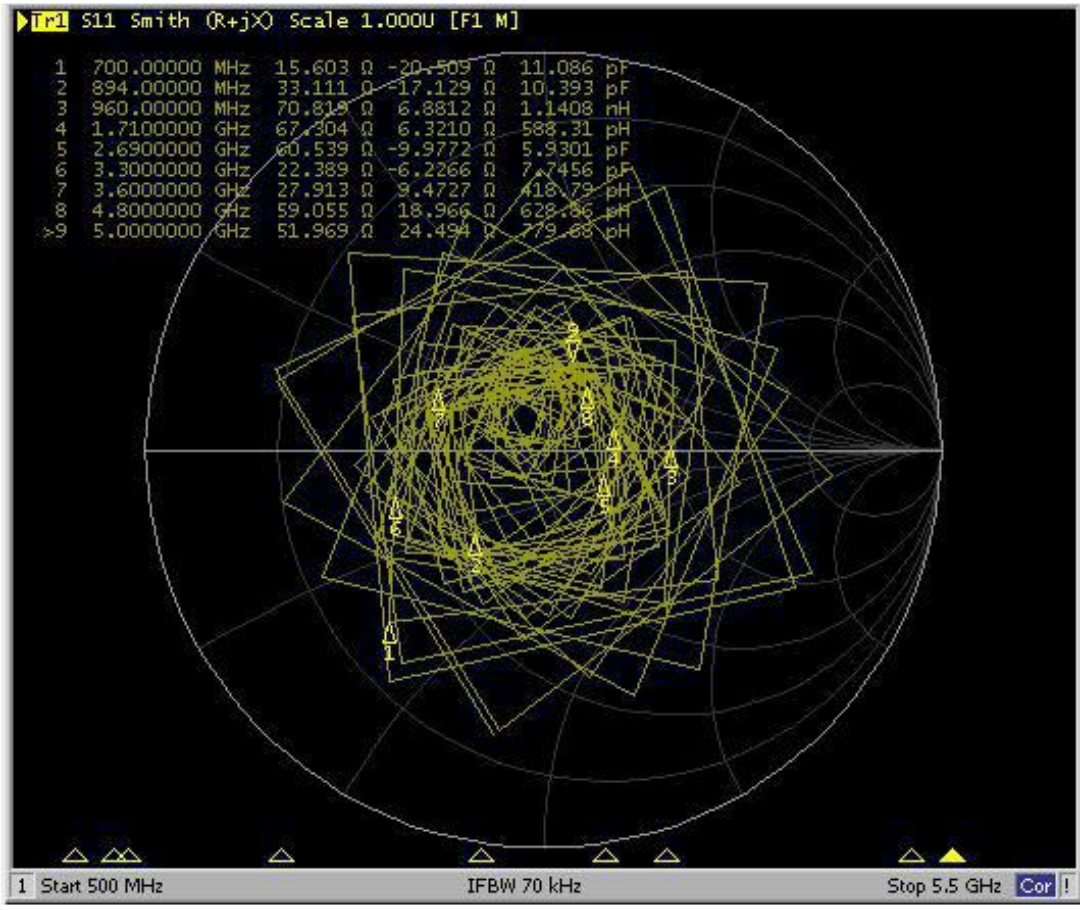



# Antenna Smith and VSWR

| Frequency | | VSWR |
|---|---|---|
| 700 | MHz | 3.79 |
| 894 | MHz | 1.96 |
| 960 | MHz | 2.69 |
| 1710 | MHz | 1.65 |
| 2690 | MHz | 1.73 |

| Frequency | | VSWR |
|---|---|---|
| 3300 | MHz | 2.28 |
| 3600 | MHz | 1.88 |
| 4800 | MHz | 1.47 |
| 5000 | MHz | 1.61 |

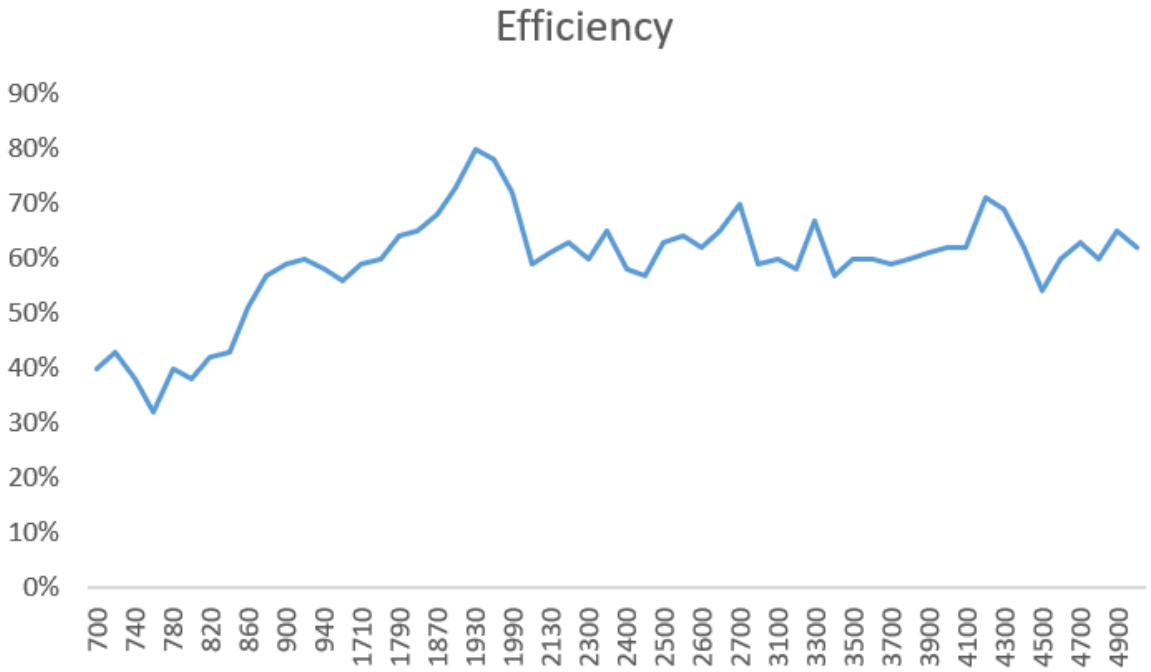

Tr1 S11 SWR 1.000/ Ref 1.000 [F1 M]
1 700.00000 MHz 3.7920
2 894.00000 MHz 1.9611
3 960.00000 MHz 2.6885
4 1.7100000 GHz 1.6536
5 2.6900000 GHz 1.7288
6 3.3000000 GHz 2.2763
7 3.6000000 GHz 1.8827
8 4.8000000 GHz 1.4687
>9 5.0000000 GHz 1.6121
11.00
10.00
9.000
8.000
7.000
6.000
5.000
4.000
3.000
2.000
1.000
1 Start 500 MHz
IFBW 70 kHz
Stop 5.5 GHz
Cor

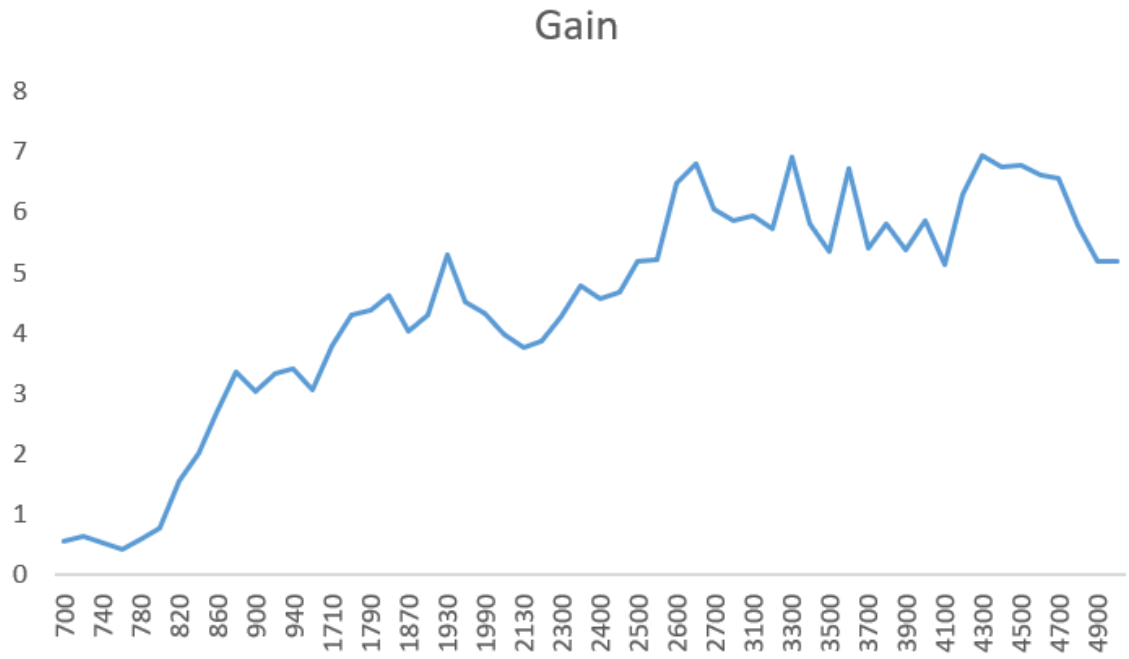

Tr1 S11 Smith (R+jX) Scale 1.000U [F1 M]
1 700.00000 MHz 15.603 Ω -20.509 Ω 11.086 pF
2 894.00000 MHz 33.111 Ω -17.129 Ω 10.393 pF
3 960.00000 MHz 70.819 Ω 6.8812 Ω 1.1408 nH
4 1.7100000 GHz 67.304 Ω 6.3210 Ω 588.31 pH
5 2.6900000 GHz 60.539 Ω -9.9772 Ω 5.9301 pF
6 3.3000000 GHz 22.389 Ω -6.2266 Ω 7.7456 pF
7 3.6000000 GHz 27.913 Ω 9.4727 Ω 418.79 pH
8 4.8000000 GHz 59.055 Ω 18.966 Ω 628.56 pH
>9 5.0000000 GHz 51.969 Ω 24.494 Ω 779.68 pH
1 Start 500 MHz
IFBW 70 kHz
Stop 5.5 GHz
Cor

# Antenna Efficiency and Gain

| Frequency | | Efficiency | Gain |
|---|---|---|---|
| 700 | MHz | 40% | 0.55 |
| 720 | MHz | 43% | 0.63 |
| 740 | MHz | 38% | 0.52 |
| 760 | MHz | 32% | 0.41 |
| 780 | MHz | 40% | 0.59 |
| 800 | MHz | 38% | 0.77 |
| 820 | MHz | 42% | 1.55 |
| 840 | MHz | 43% | 2.01 |
| 860 | MHz | 51% | 2.68 |
| 880 | MHz | 57% | 3.37 |
| 900 | MHz | 59% | 3.04 |
| 920 | MHz | 60% | 3.32 |
| 940 | MHz | 58% | 3.40 |
| 960 | MHz | 56% | 3.05 |
| 1710 | MHz | 59% | 3.79 |
| 1750 | MHz | 60% | 4.29 |
| 1790 | MHz | 64% | 4.37 |
| 1830 | MHz | 65% | 4.61 |
| 1870 | MHz | 68% | 4.04 |
| 1900 | MHz | 73% | 4.30 |
| 1930 | MHz | 80% | 5.29 |
| 1960 | MHz | 78% | 4.52 |
| 1990 | MHz | 72% | 4.33 |
| 2100 | MHz | 59% | 3.99 |
| 2130 | MHz | 61% | 3.76 |
| 2170 | MHz | 63% | 3.88 |
| 2300 | MHz | 60% | 4.27 |
| 2350 | MHz | 65% | 4.78 |

| Frequency | | Efficiency | Gain |
|---|---|---|---|
| 2400 | MHz | 58% | 4.57 |
| 2450 | MHz | 57% | 4.68 |
| 2500 | MHz | 63% | 5.19 |
| 2550 | MHz | 64% | 5.22 |
| 2600 | MHz | 62% | 6.48 |
| 2650 | MHz | 65% | 6.81 |
| 2700 | MHz | 70% | 6.06 |
| 3000 | MHz | 59% | 5.85 |
| 3100 | MHz | 60% | 5.94 |
| 3200 | MHz | 58% | 5.72 |
| 3300 | MHz | 67% | 6.91 |
| 3400 | MHz | 57% | 5.82 |
| 3500 | MHz | 60% | 5.36 |
| 3600 | MHz | 60% | 6.73 |
| 3700 | MHz | 59% | 5.41 |
| 3800 | MHz | 60% | 5.82 |
| 3900 | MHz | 61% | 5.37 |
| 4000 | MHz | 62% | 5.86 |
| 4100 | MHz | 62% | 5.14 |
| 4200 | MHz | 71% | 6.29 |
| 4300 | MHz | 69% | 6.95 |
| 4400 | MHz | 62% | 6.76 |
| 4500 | MHz | 54% | 6.78 |
| 4600 | MHz | 60% | 6.61 |
| 4700 | MHz | 63% | 6.57 |
| 4800 | MHz | 60% | 5.79 |
| 4900 | MHz | 65% | 5.19 |
| 5000 | MHz | 62% | 5.18 |


Efficiency
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
700
740
780
820
860
900
940
1710
1790
1870
1930
1990
2130
2300
2400
2500
2600
2700
3100
3300
3500
3700
3900
4100
4300
4500
4700
4900


Gain
8
7
6
5
4
3
2
1
0
700
740
780
820
860
900
940
1710
1790
1870
1930
1990
2130
2300
2400
2500
2600
2700
3100
3300
3500
3700
3900
4100
4300
4500
4700
4900

# Environmental Data

| | |
|---|---|
| Operating Temperature | -40°C to +85°C |
| Vibration | N/A |

# Ordering Information

## Product Variants

| Part Number | Description |
|---|---|
| L-5RA5 | Adhesive Ground Plane Independent 5G Antenna |

# About MIOT

Miot Wireless Solutions, headquartered in Suzhou, China, was established in 2017. It has subsidiaries in Canada, the United States, Brazil, and EMEA. MIOT is a professional designer and manufacturer of Antennas and IoT PCBA products, providing turn-key service to customers worldwide.

Our talented R&D team has experienced antenna, hardware, and software engineers who can participate in your new project, from something simple like antenna/selection and design, to complete turn-key services, which entails taking your concept and ideas through design, prototyping, debugging, certification, and manufacturing. Miot offers reliable products at reasonable prices with fast delivery times to help you get ahead in the market.

# Contact

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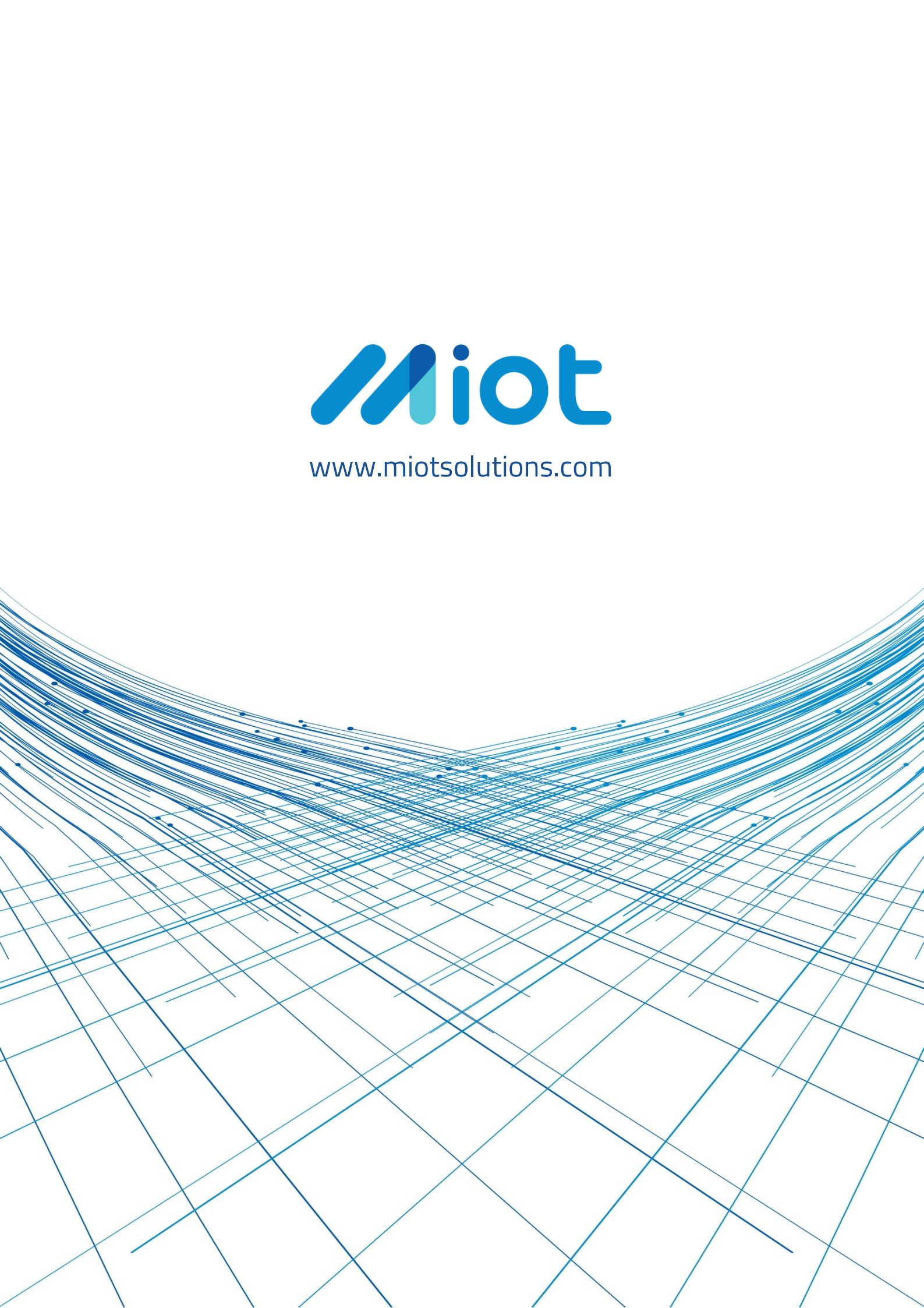
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