Datasheet

L-5NA1

Multiband 5G/LTE ultra-thin FPC Adhesive Antenna

CELLULAR | 5G

The L-5NA1 is a flexible printed circuit (FPC) antenna designed to operate at frequencies ranging from 698 MHz to 4000 MHz. With its compact dimensions, it offers a space-efficient solution for wireless communication applications.

One of the key advantages of the L-5NA1 is its customizable connector and cable length options, allowing for seamless integration into various devices and configurations. This flexibility enables easy installation and optimal positioning for improved signal reception. Whether you require a specific connector type or a custom cable length, the L-5NA1 FPC antenna can be tailored to meet your unique requirements.

85 x 14.5 x 0.2 mm

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Document Information

Product	L-5NA1
Part Number	L-5NA1
Description	Multiband 5G/LTE ultra-thin FPC Adhesive Antenna
Version	2.0 (current)
Date	07-Jun-2023
Status	Released

Revision History

Version	Date	Author	Changes
1.0	16-Dec-2020	Amy Li	Initial Release
2.0	07-Jun-2023	Amy Li	New layout and design

Product Overview

Product Description

The L-5NA1 is a flexible printed circuit (FPC) antenna designed to operate at frequencies ranging from 698 MHz to 4000 MHz. With its compact dimensions, it offers a space-efficient solution for wireless communication applications.

One of the key advantages of the L-5NA1 is its customizable connector and cable length options, allowing for seamless integration into various devices and configurations. This flexibility enables easy installation and optimal positioning for improved signal reception. Whether you require a specific connector type or a custom cable length, the L-5NA1 FPC antenna can be tailored to meet your unique requirements.

Key Features

- Supports 5G / LTE / WCDMA & Wi-Fi
- High Reliability/Sensitivity
- Adhesive Mount Flexible
- Compact Size, Easy to integrate
- Ideal for MIMO systems
- RoHS Compliant

Applications

- Mi-Fi routers
- Medical equipment
- Tablets
- OBD++ system
- Femtocell / Pico stations
- Remote monitoring

Electrical Specifications

Frequency			VSWR	Peak Gain	Efficiency
LTE	698 - 960	MHz	2.5	3.5 d Bi	50%
5G/LTE	1710 - 4000	MHz	2.5	3.0 d Bi	40%

Frequency Range	698 – 4000 MHz	Radiation	Omnidirectional
Impedance	50 Ω	Electrical Type	Monopole
Polarization	Linear		

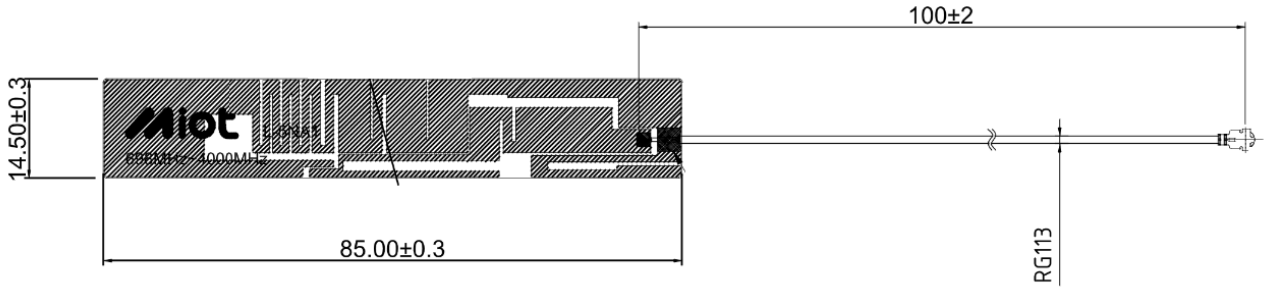
Mechanical Specifications

Type	FPC	Casing	NA
Dimensions	85 x 14.5 x 0.2 mm	Color	Black
Connector (Termination)	U.FL (standard)	Material	Flexible Polymer
Cable Type	1.13mm (standard)	Cable Length	100mm (standard)
Mounting Type	Adhesive	Weight	TBC (to be confirmed)

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



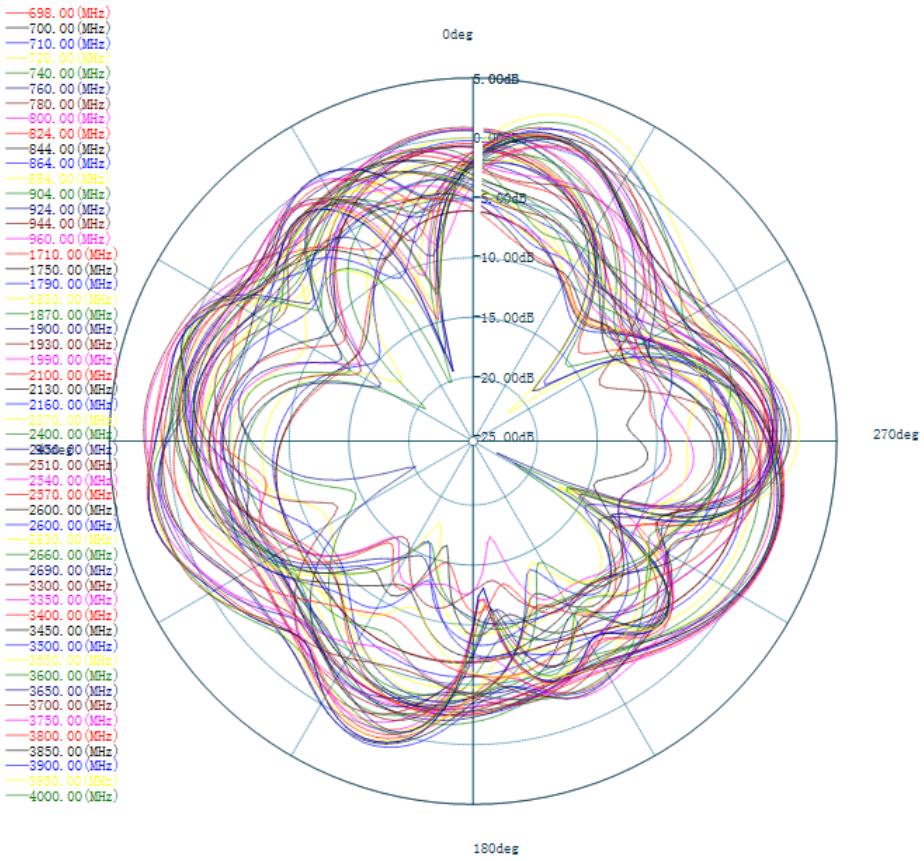
Radiation Pattern

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.

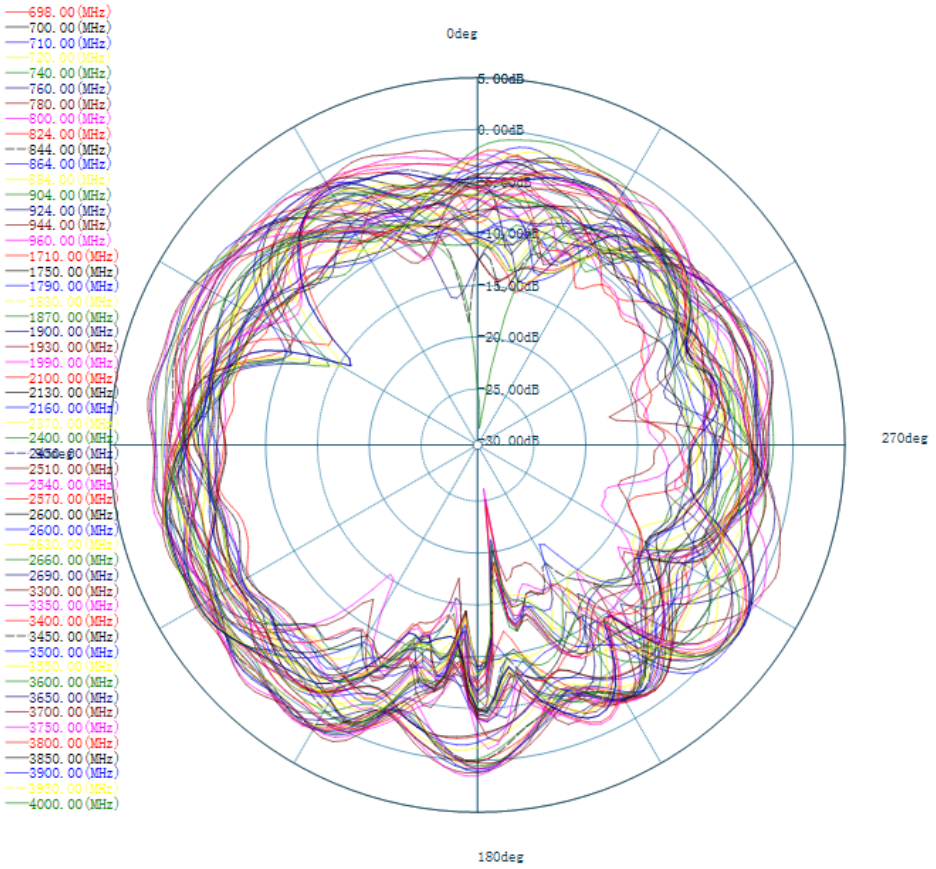
XY Plane (H)

698 – 4000 MHz

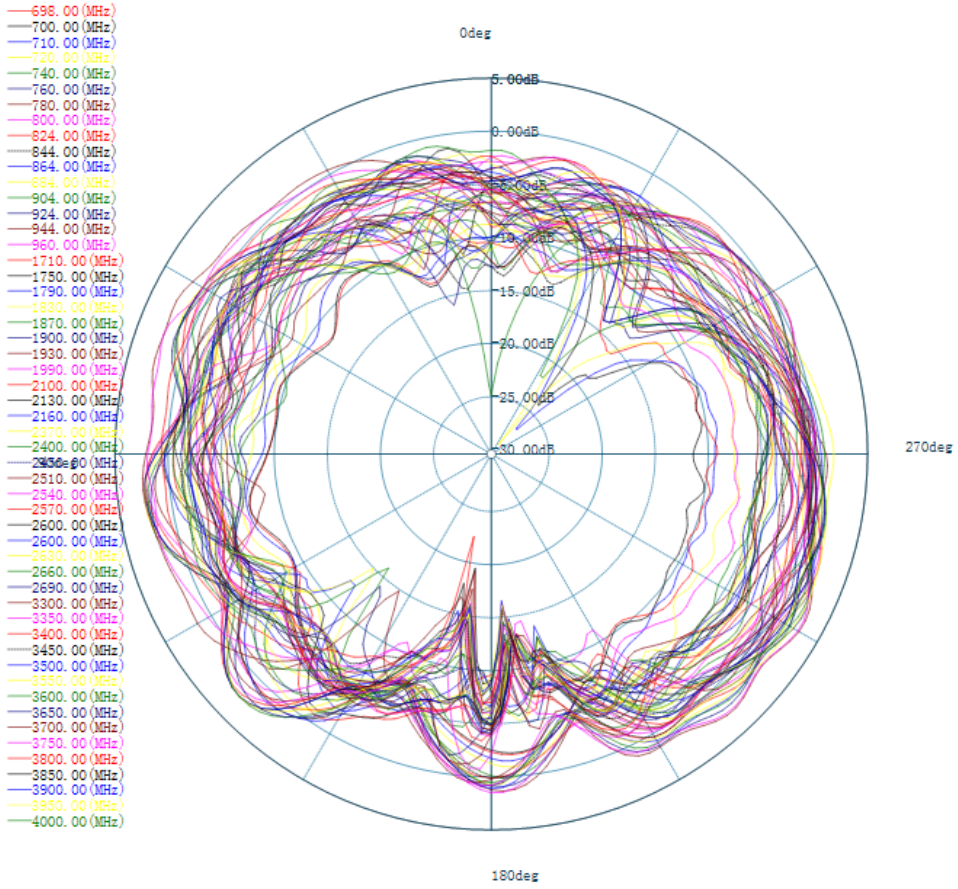


YZ Plane (E1)

698 – 4000 MHz



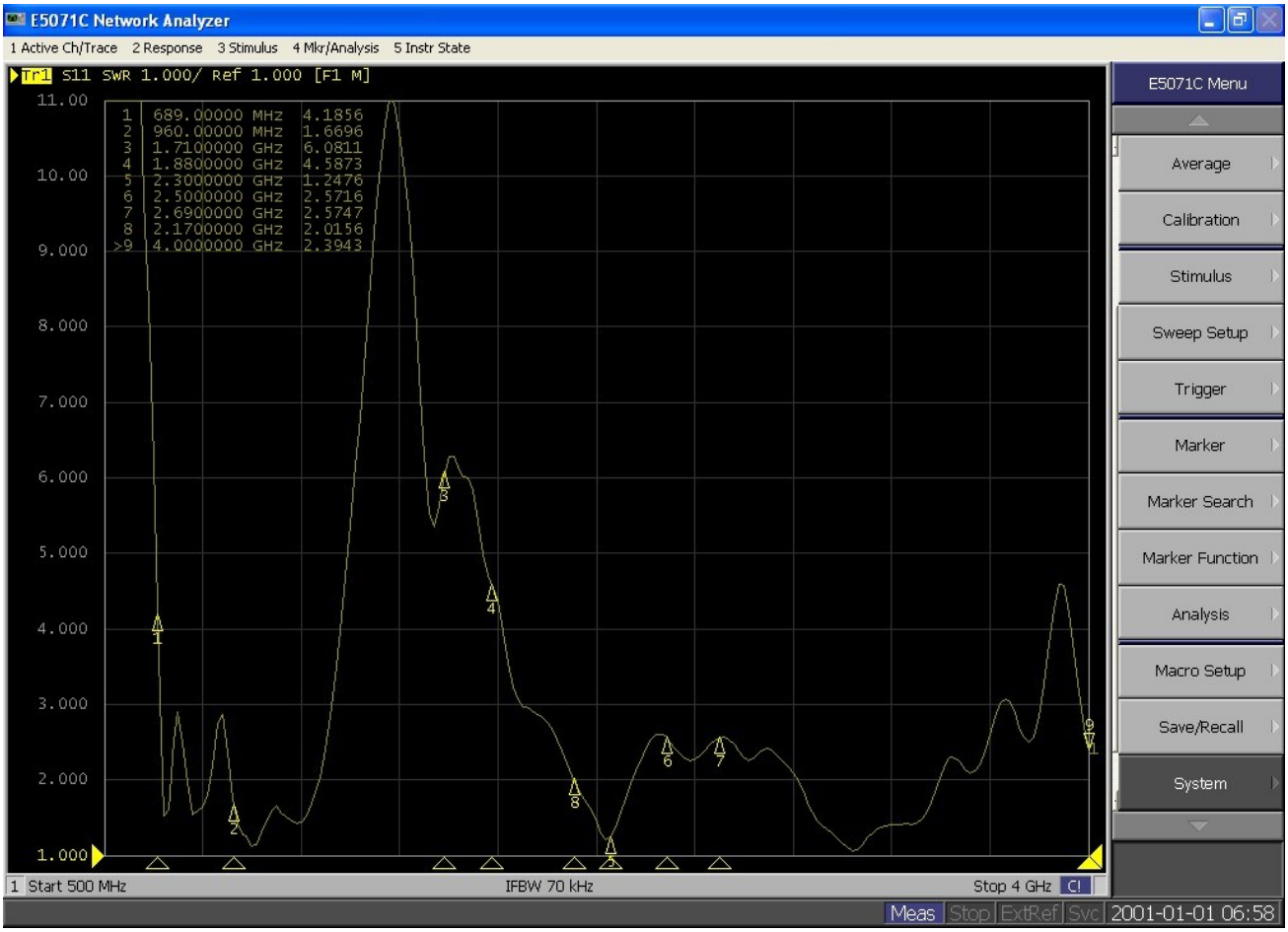
XZ Plane (E2) 698 – 4000 MHz

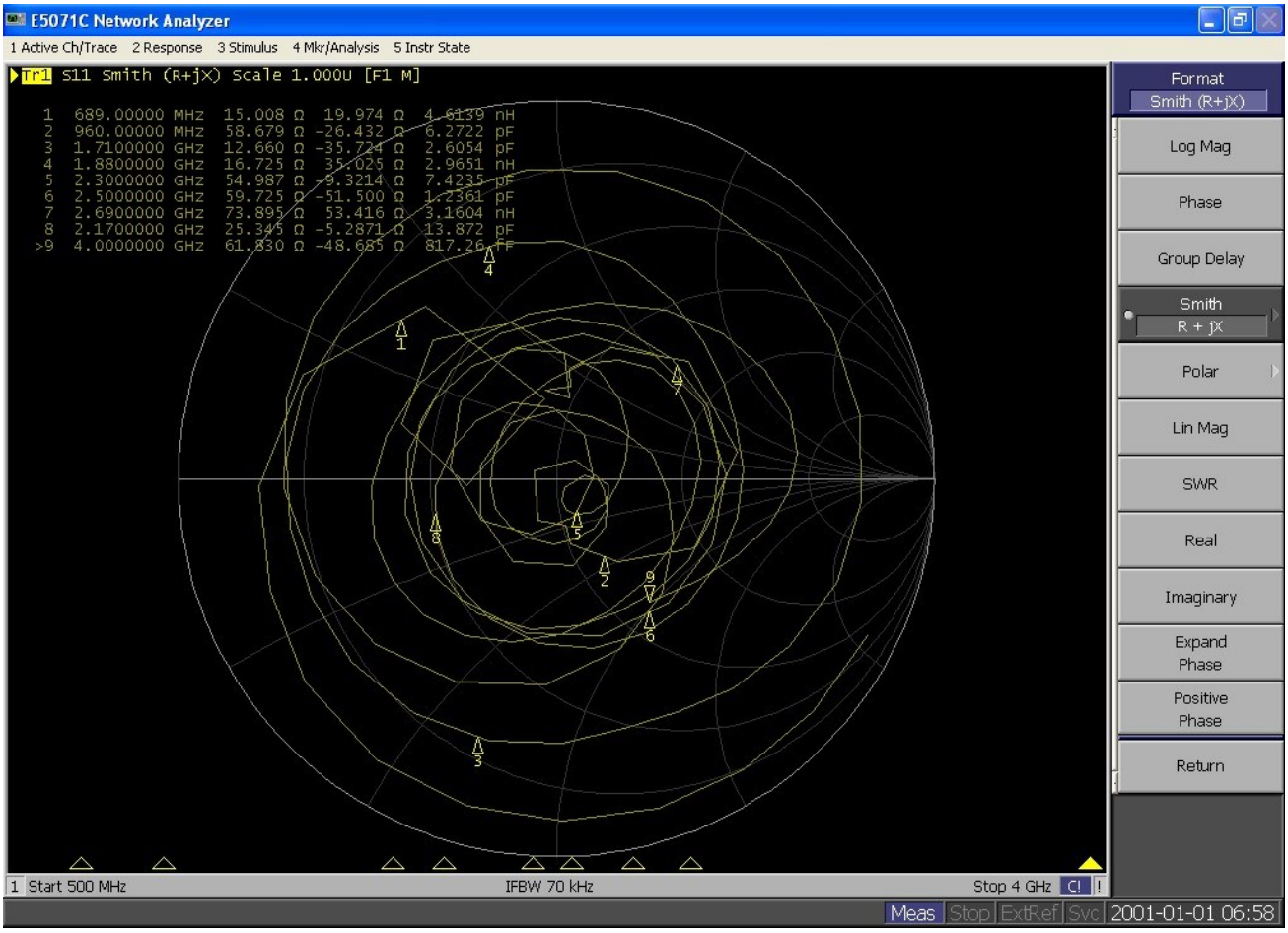


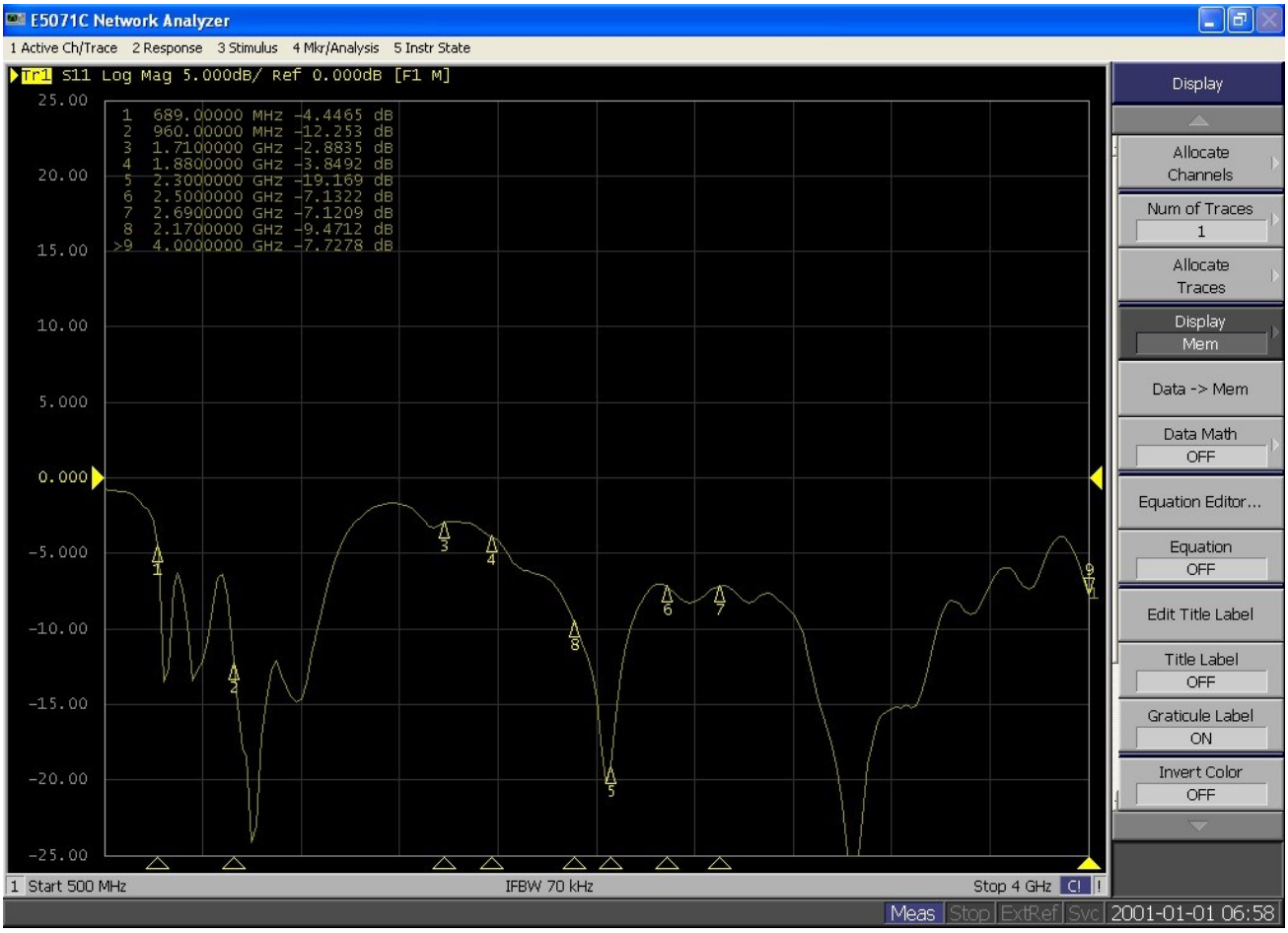
Antenna Smith and VSWR

Frequency		VSWR
689	MHz	4.19
960	MHz	1.67
1710	MHz	6.08
1880	MHz	4.59
2300	MHz	1.25

Frequency		VSWR
2500	MHz	2.57
2690	MHz	2.57
2170	MHz	2.02
4000	MHz	2.39



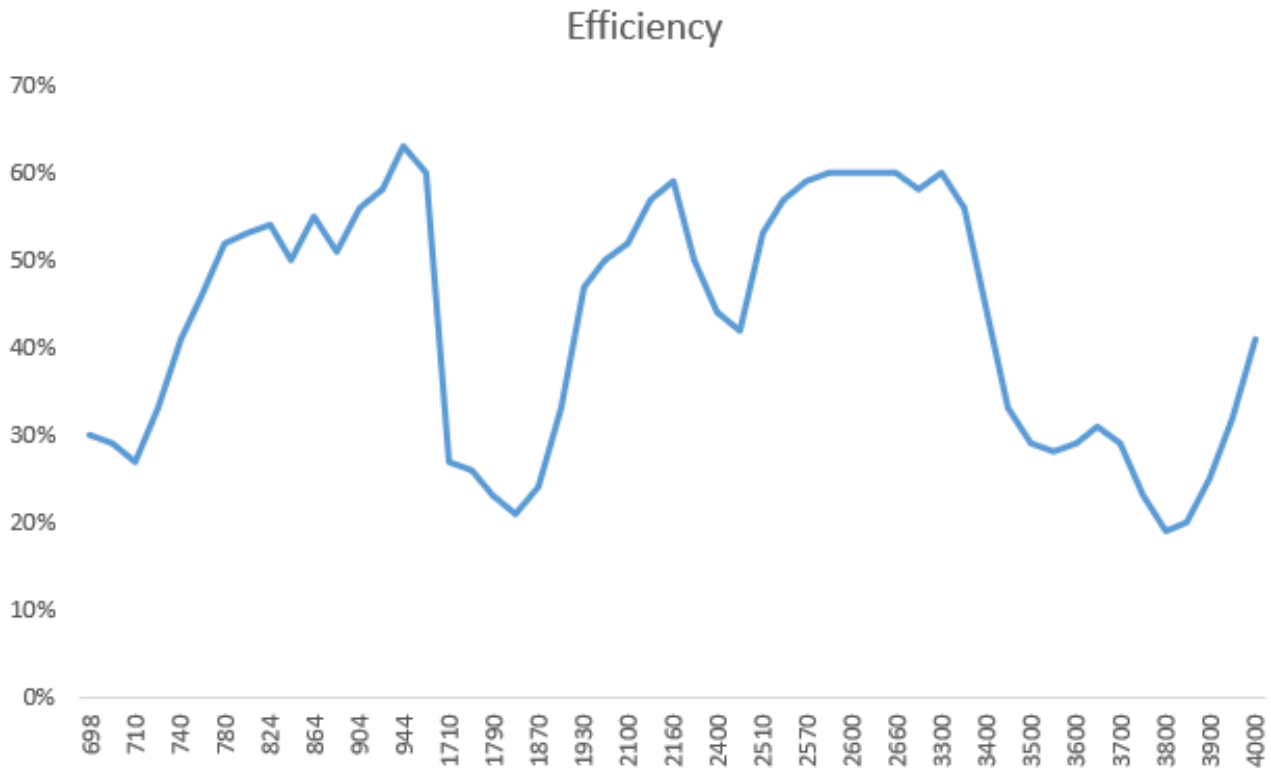

E5071C Network Analyzer
1 Active Ch/Trace 2 Response 3 Stimulus 4 Mkr/Analysis 5 Instr State
Tr1 S11 Smith (R+jX) Scale 1.000U [F1 M]
1 689.00000 MHz 15.008 Ω 19.974 Ω 4.6139 nH
2 960.00000 MHz 58.679 Ω -26.432 Ω 6.2722 pF
3 1.7100000 GHz 12.660 Ω -35.724 Ω 2.6054 pF
4 1.8800000 GHz 16.725 Ω 35.025 Ω 2.9651 nH
5 2.3000000 GHz 54.987 Ω -9.3214 Ω 7.4235 pF
6 2.5000000 GHz 59.725 Ω -51.500 Ω 1.2361 pF
7 2.6900000 GHz 73.895 Ω 53.416 Ω 3.1604 nH
8 2.1700000 GHz 25.345 Ω -5.2871 Ω 13.872 pF
>9 4.0000000 GHz 61.830 Ω -48.685 Ω 817.26 fF
Format
Smith (R+jX)
Log Mag
Phase
Group Delay
Smith
R + jX
Polar
Lin Mag
SWR
Real
Imaginary
Expand Phase
Positive Phase
Return
1 Start 500 MHz
IFBW 70 kHz
Stop 4 GHz
Meas Stop ExtRef Svc 2001-01-01 06:58

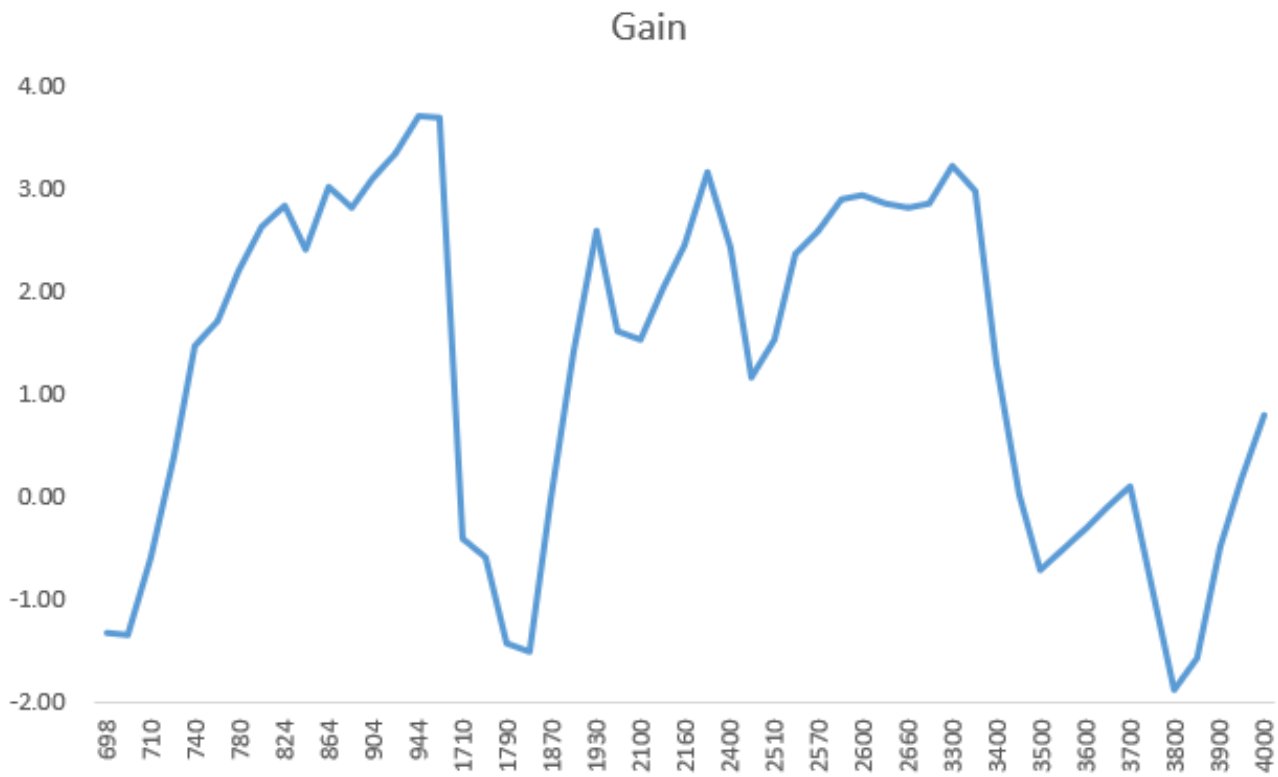

E5071C Network Analyzer
1 Active Ch/Trace 2 Response 3 Stimulus 4 Mkr/Analysis 5 Instr State
Tr1 S11 Log Mag 5.000dB/ Ref 0.000dB [F1 M]
25.00
20.00
15.00
10.00
5.000
0.000
-5.000
-10.00
-15.00
-20.00
-25.00
1 689.00000 MHz -4.4465 dB
2 960.00000 MHz -12.253 dB
3 1.7100000 GHz -2.8835 dB
4 1.8800000 GHz -3.8492 dB
5 2.3000000 GHz -19.169 dB
6 2.5000000 GHz -7.1322 dB
7 2.6900000 GHz -7.1209 dB
8 2.1700000 GHz -9.4712 dB
>9 4.0000000 GHz -7.7278 dB
Display
Allocate Channels
Num of Traces
1
Allocate Traces
Display
Mem
Data -> Mem
Data Math
OFF
Equation Editor...
Equation
OFF
Edit Title Label
Title Label
OFF
Graticule Label
ON
Invert Color
OFF
1 Start 500 MHz
IFBW 70 kHz
Stop 4 GHz
Meas Stop ExtRef Svc 2001-01-01 06:58

Antenna Efficiency and Gain

Frequency		Efficiency	Gain
698	MHz	30%	-1.32125
700	MHz	29%	-1.34955
710	MHz	27%	-0.58079
720	MHz	33%	0.392947
740	MHz	41%	1.467458
760	MHz	46%	1.721375
780	MHz	52%	2.201126
800	MHz	53%	2.638502
824	MHz	54%	2.841069
844	MHz	50%	2.403861
864	MHz	55%	3.014011
884	MHz	51%	2.818379
904	MHz	56%	3.109442
924	MHz	58%	3.353353
944	MHz	63%	3.706285
960	MHz	60%	3.702826
1710	MHz	27%	-0.40607
1750	MHz	26%	-0.59138
1790	MHz	23%	-1.43181
1830	MHz	21%	-1.50171
1870	MHz	24%	-0.04578
1900	MHz	33%	1.40512
1930	MHz	47%	2.597304
1990	MHz	50%	1.616481
2100	MHz	52%	1.527495
2130	MHz	57%	2.040493
2160	MHz	59%	2.452288

Frequency		Efficiency	Gain
2370	MHz	50%	3.158573
2400	MHz	44%	2.419042
2450	MHz	42%	1.162397
2510	MHz	53%	1.527346
2540	MHz	57%	2.371325
2570	MHz	59%	2.597711
2600	MHz	60%	2.904448
2600	MHz	60%	2.946374
2630	MHz	60%	2.85123
2660	MHz	60%	2.808221
2690	MHz	58%	2.859519
3300	MHz	60%	3.217962
3350	MHz	56%	2.974862
3400	MHz	45%	1.301397
3450	MHz	33%	0.018092
3500	MHz	29%	-0.71717
3550	MHz	28%	-0.51486
3600	MHz	29%	-0.30278
3650	MHz	31%	-0.10538
3700	MHz	29%	0.100204
3750	MHz	23%	-0.93023
3800	MHz	19%	-1.88006
3850	MHz	20%	-1.56104
3900	MHz	25%	-0.4965
3950	MHz	32%	0.169967
4000	MHz	41%	0.798207


Efficiency
70%
60%
50%
40%
30%
20%
10%
0%
698
710
740
780
824
864
904
944
1710
1790
1870
1930
2100
2160
2400
2510
2570
2600
2660
3300
3400
3500
3600
3700
3800
3900
4000


Gain
4.00
3.00
2.00
1.00
0.00
-1.00
-2.00
698
710
740
780
824
864
904
944
1710
1790
1870
1930
2100
2160
2400
2510
2570
2600
2660
3300
3400
3500
3600
3700
3800
3900
4000

Environmental Data

Operating Temperature	-40 °C to +85 °C
IP Rating	NA
Compliance	RoHS

Ordering Information

Product Variants

Part Number	Description
L-5NA1	Multiband 5G/LTE ultra-thin FPC Adhesive 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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