Datasheet

L-1RA9

Multiband 2G 3G 4G/2.4G WIFI Antenna

CELLULAR WIFI

The L-1RA9 is a cellular antenna for 4G, LTE, and WCDMA that can also cover Wi-Fi frequencies. It has a strong magnetic suction cup and is very convenient to install and fix. It's a durable external antenna with wide-band and high efficiency.

With good flexibility and easy installation, the L-1RA9 is suitable for vehicles such as cars, ships, aircraft and buildings, etc., which can meet the communication needs of different fields.

176*30 mm

www.miotsolutions.com
info@miotsolutions.com

Document Information

Product	L-1RA9
Part Number	L-1RA9
Description	Multiband 2G 3G 4G/2.4G WIFI Antenna
Version	2.0 (current)
Date	8-Sep-2023
Status	Released

Revision History

Version	Date	Author	Changes
1.0	16-Dec-2020	Amy li	Initial Release
1.1	26-Jul-2023	Ivy liao	New layout and design
2.0	8-Sep-2023	Ivy liao	New layout and design

Product Overview

Product Description

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Key Features

- Operates in 824-960/1710-2170 /2400-2690MHz
- Dual band antenna
- Vertical polarization
- High gain of 2.0 dBi
- VSWR 1.6
- Omni-directional pattern

Applications

- 4G /LTE/ radios
- Gateways
- Set-Top Boxes
- Security
- Transportation
- Smart agriculture

Electrical Specifications

Frequency			VSWR	Peak Gain	Efficiency
4G/LTE	824 - 960	MHz	1.7	0.02 d Bi	41%
4G/LTE	1710 - 2170	MHz	2.2	-0.17 d Bi	35%
4G/LTE	2400 - 2690	MHz	2.0	0.25 d Bi	22%

Frequency Range	824 – 2690 MHz	Radiation	Omnidirectional
Impedance	50 Ω	Electrical Type	Dipole
		Polarization	Vertical

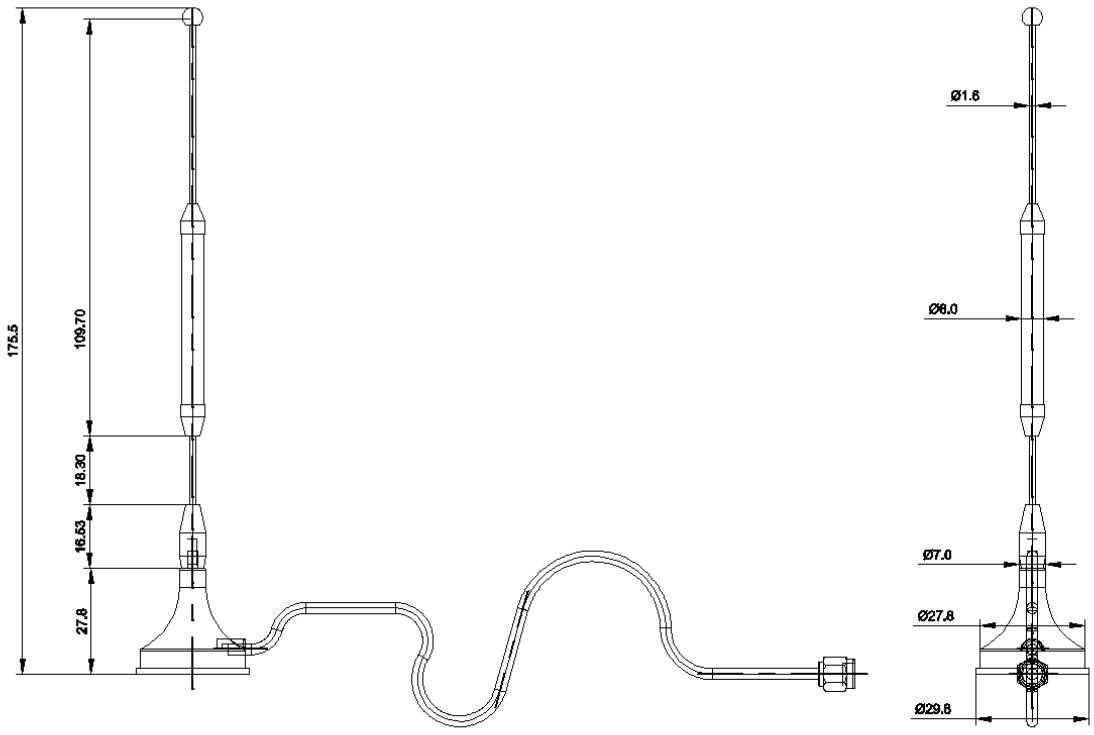
Mechanical Specifications

Type	Sucker Antenna	Mounting Type	Connector Mount
Dimensions	176 x 30mm	Casing	N/A
Connector	SMA male	Color	Black
Cable type	RG-178（1.5M）	Material	PBT + PC

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



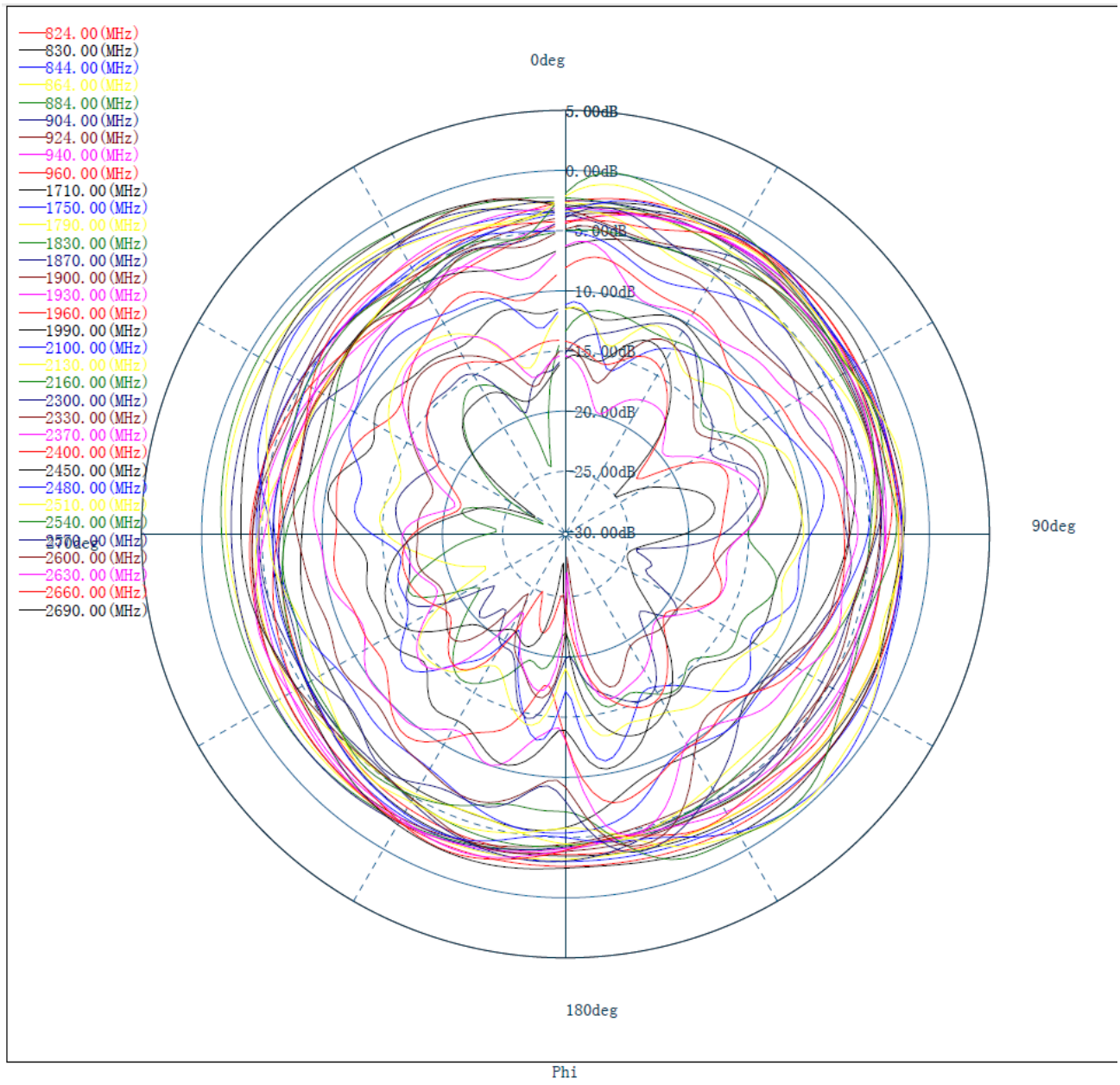
Radiation Pattern

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.

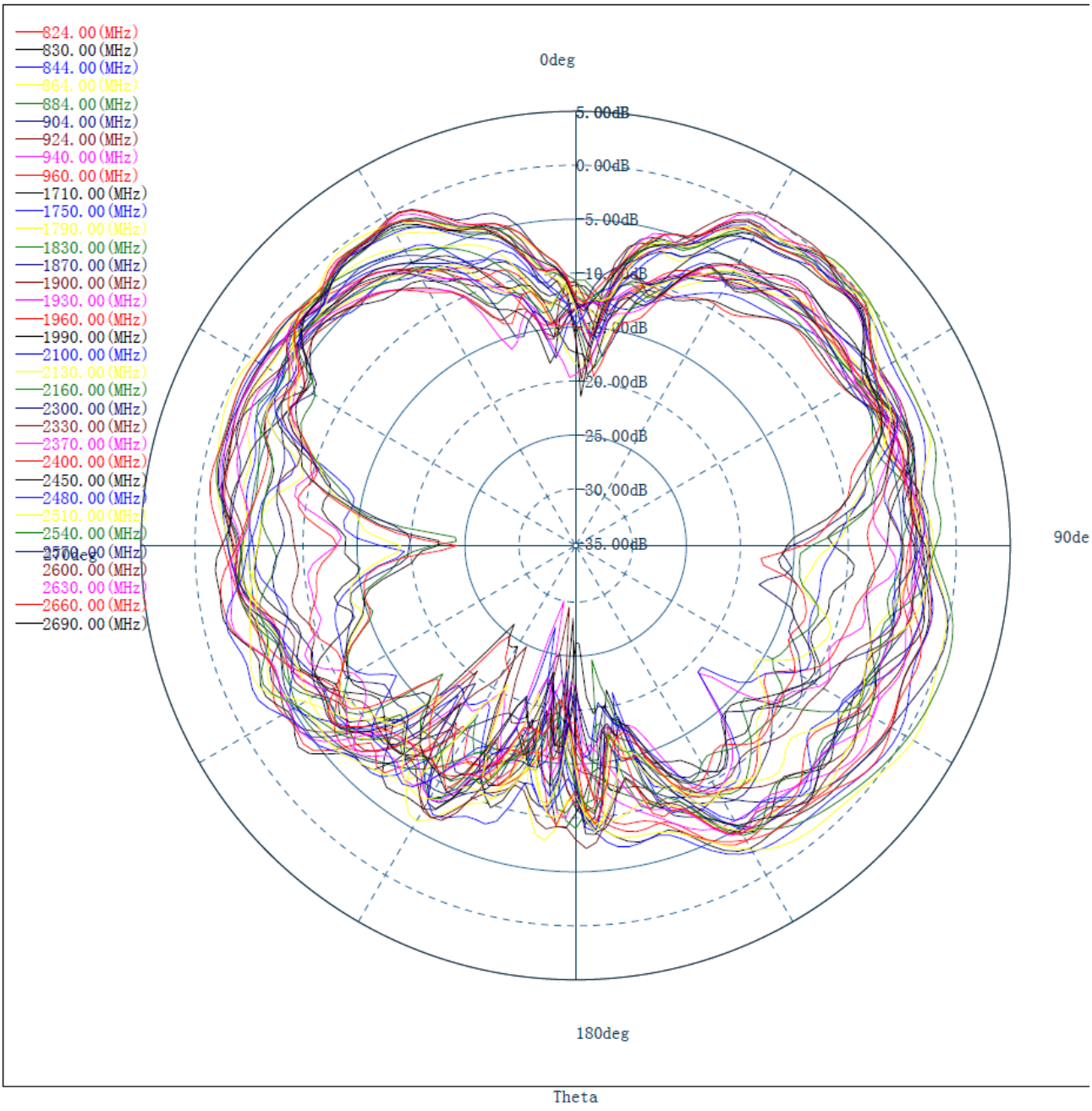
XY Plane (H)

824 – 2690 MHz



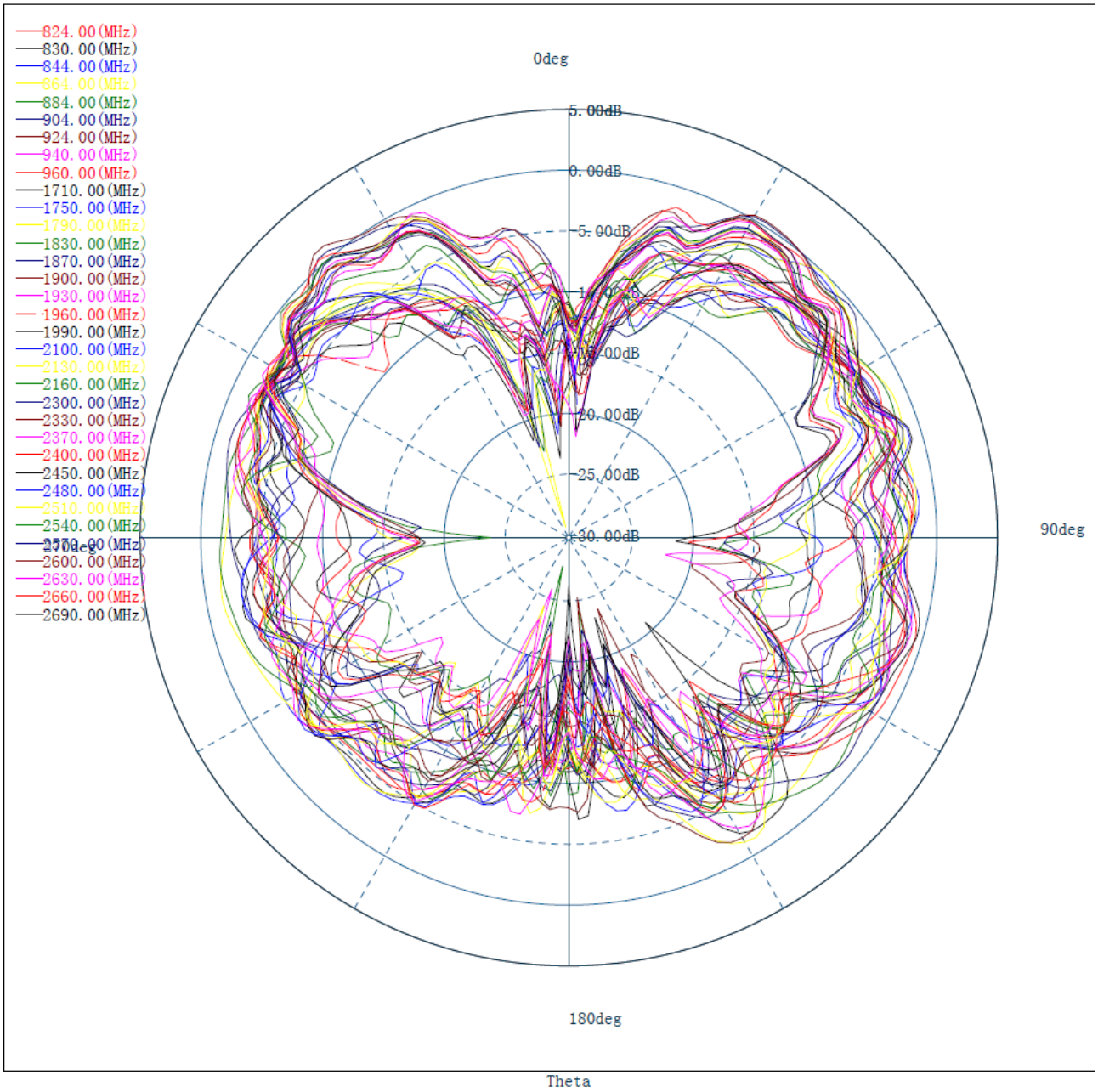
XZ Plane (E1)

824 – 2690 MHz



YZ Plane (E2)

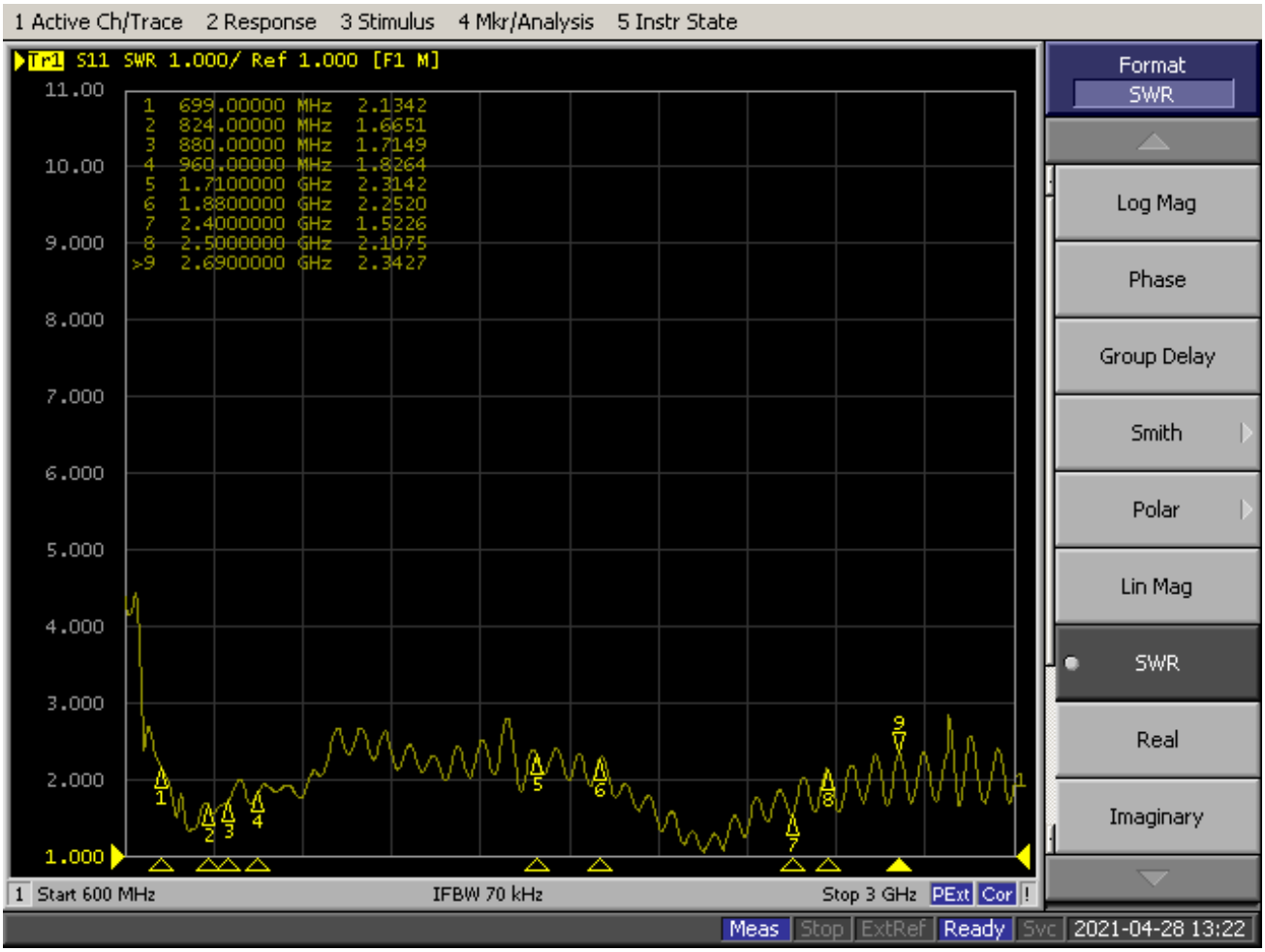
824 – 2690 MHz



Antenna Smith and VSWR

Frequency		VSWR
824	MHz	1.66
880	MHz	1.71
960	MHz	1.82
1710	MHz	2.31
1880	MHz	2.25

Frequency		VSWR
2400	MHz	1.52
2500	MHz	2.10
2690	MHz	2.34


1 Active Ch/Trace
2 Response
3 Stimulus
4 Mkr/Analysis
5 Instr State
Tr1 S11 SWR 1.000/ Ref 1.000 [F1 M]
1 699.00000 MHz 2.1342
2 824.00000 MHz 1.6651
3 880.00000 MHz 1.7149
4 960.00000 MHz 1.8264
5 1.7100000 GHz 2.3142
6 1.8800000 GHz 2.2520
7 2.4000000 GHz 1.5226
8 2.5000000 GHz 2.1075
>9 2.6900000 GHz 2.3427
11.00
10.00
9.000
8.000
7.000
6.000
5.000
4.000
3.000
2.000
1.000
1 Start 600 MHz
IFBW 70 kHz
Stop 3 GHz
PExt
Cor
Format
SWR
Log Mag
Phase
Group Delay
Smith
Polar
Lin Mag
SWR
Real
Imaginary
Meas
Stop
ExtRef
Ready
Svc
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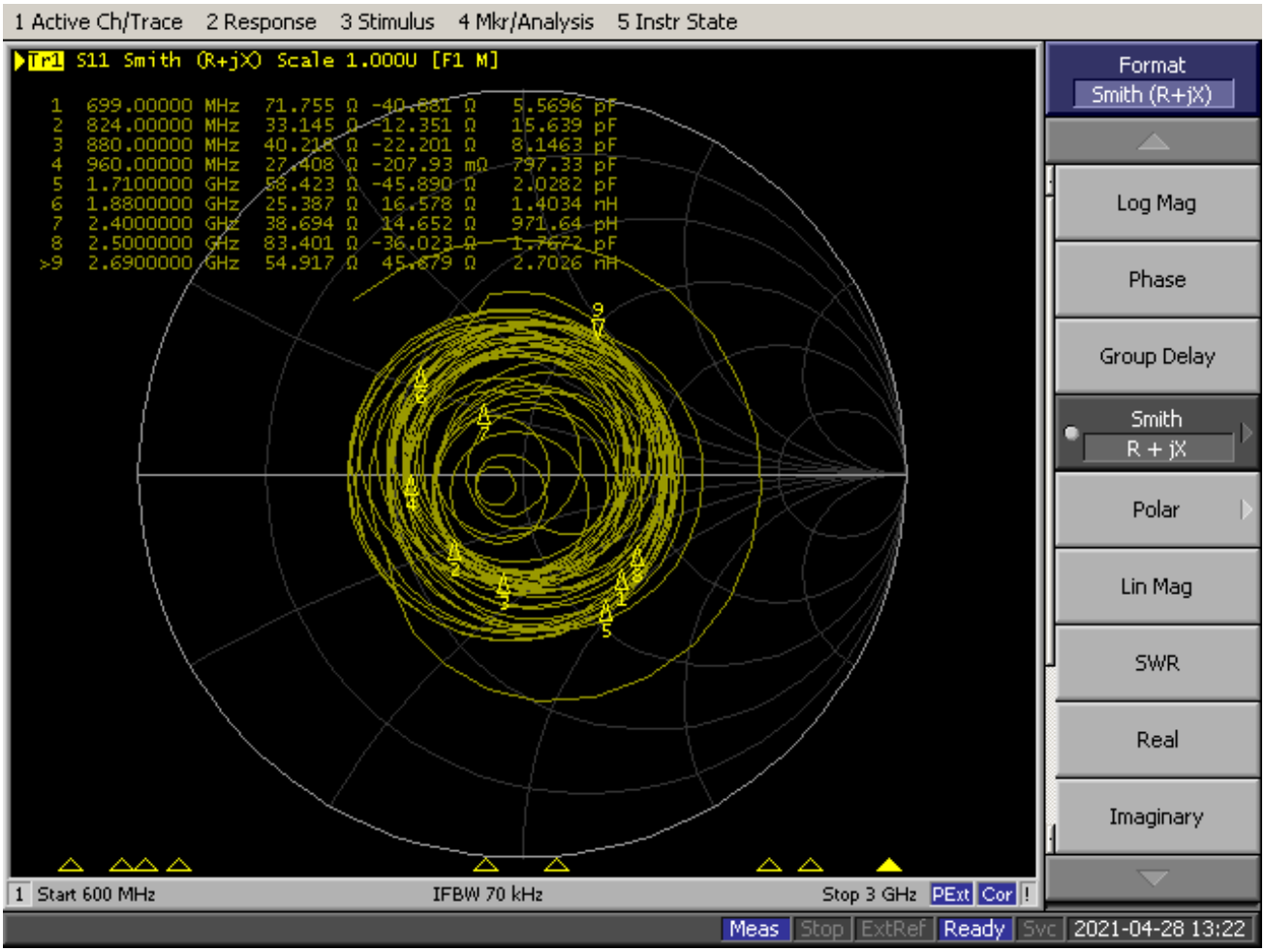
1 Active Ch/Trace
2 Response
3 Stimulus
4 Mkr/Analysis
5 Instr State
Tr1 S11 Smith (R+jX) Scale 1.000U [F1 M]
1 699.00000 MHz 71.755 Ω -40.681 Ω 5.5696 pF
2 824.00000 MHz 33.145 Ω -12.351 Ω 15.639 pF
3 880.00000 MHz 40.218 Ω -22.201 Ω 8.1463 pF
4 960.00000 MHz 27.408 Ω -207.93 mΩ 797.33 pF
5 1.7100000 GHz 58.423 Ω -45.890 Ω 2.0282 pF
6 1.8800000 GHz 25.387 Ω 16.578 Ω 1.4034 nH
7 2.4000000 GHz 38.694 Ω 14.652 Ω 971.64 pH
8 2.5000000 GHz 83.401 Ω -36.023 Ω 1.7672 pF
>9 2.6900000 GHz 54.917 Ω 45.679 Ω 2.7026 nH
Format
Smith (R+jX)
Log Mag
Phase
Group Delay
Smith
R + jX
Polar
Lin Mag
SWR
Real
Imaginary
1 Start 600 MHz
IFBW 70 kHz
Stop 3 GHz
PExt
Cor
Meas
Stop
ExtRef
Ready
Svc
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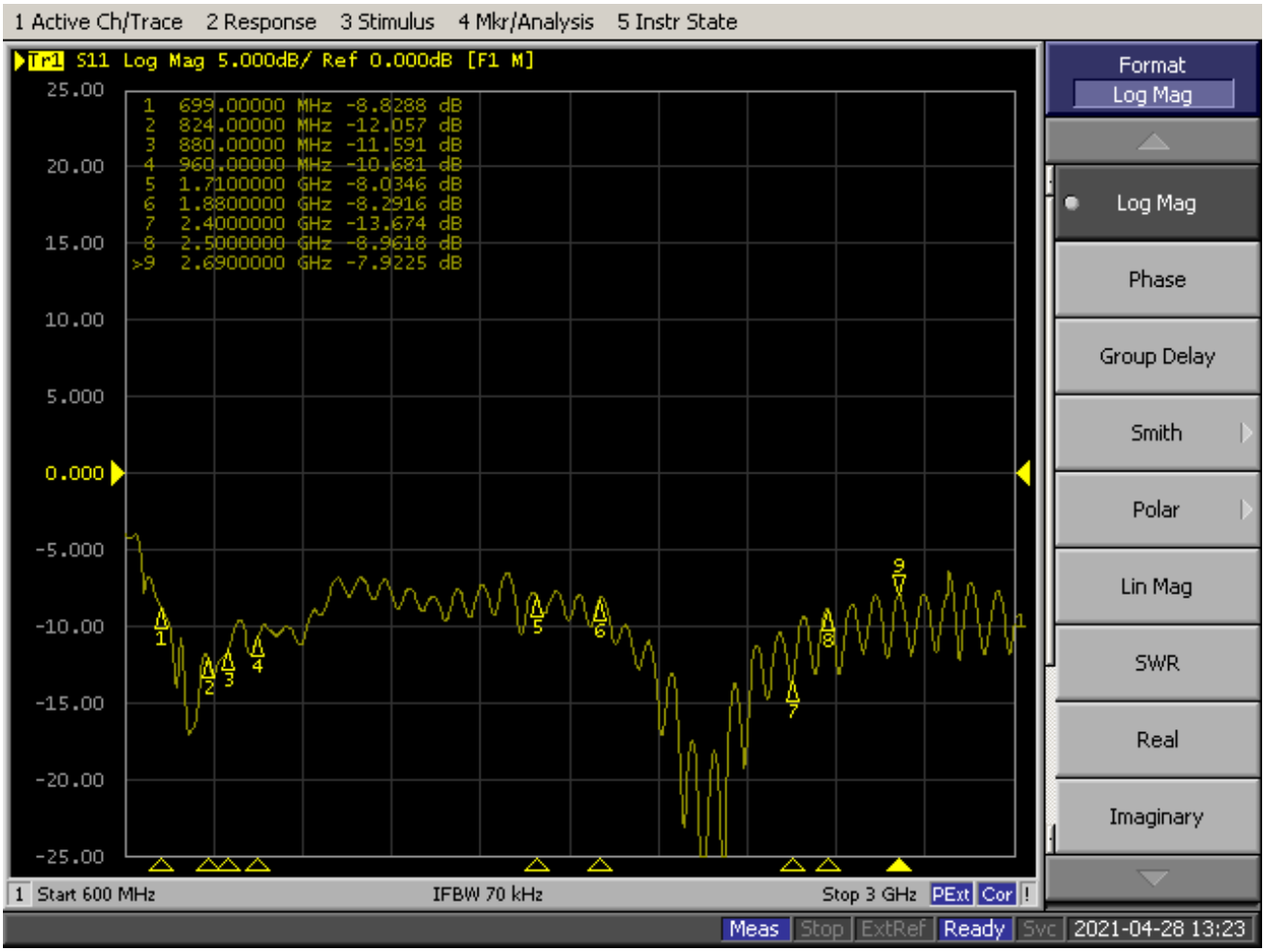


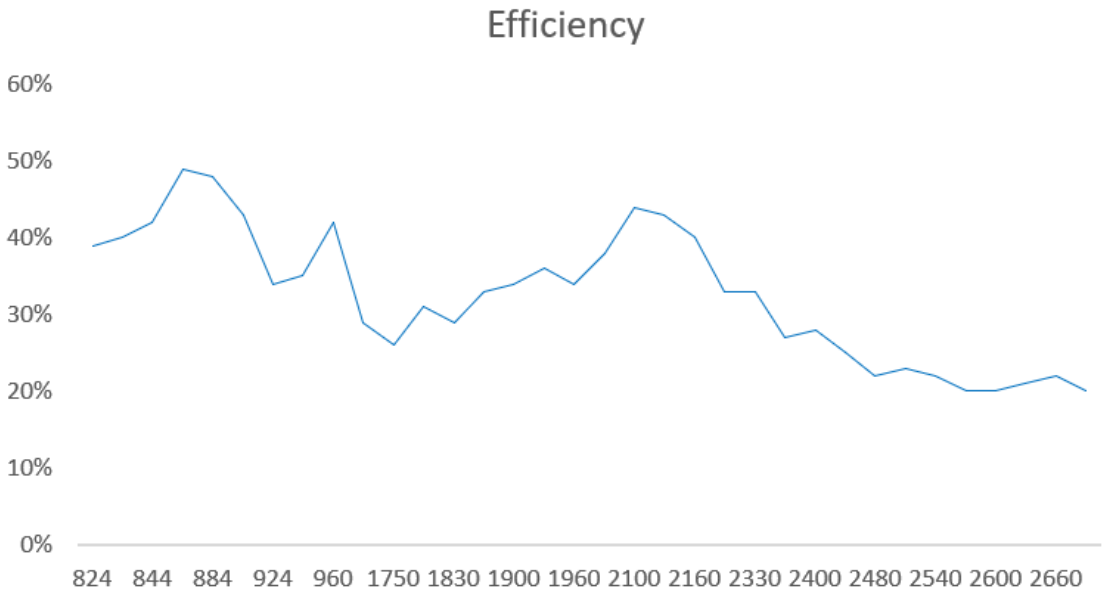
Antenna Efficiency and Gain

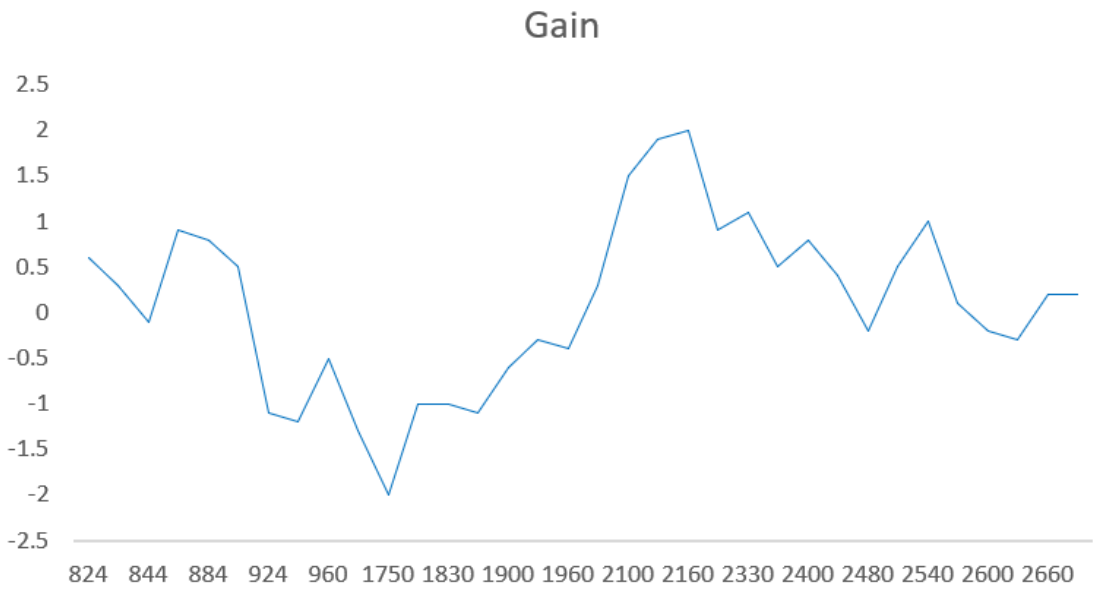
Frequency		Efficiency	Gain
824	MHz	39%	0.6
830	MHz	40%	0.3
844	MHz	42%	-0.1
864	MHz	49%	0.9
884	MHz	48%	0.8
904	MHz	43%	0.5
924	MHz	34%	-1.1
940	MHz	35%	-1.2
960	MHz	42%	-0.5
1710	MHz	29%	-1.3
1750	MHz	26%	-2

Frequency		Efficiency	Gain
1990	MHz	38%	0.3
2100	MHz	44%	1.5
2130	MHz	43%	1.9
2160	MHz	40%	2
2300	MHz	33%	0.9
2330	MHz	33%	1.1
2370	MHz	27%	0.5
2400	MHz	28%	0.8
2450	MHz	25%	0.4
2480	MHz	22%	-0.2
2510	MHz	23%	0.5

1790	MHz	31%	-1
1830	MHz	29%	-1
1870	MHz	33%	-1.1
1900	MHz	34%	-0.6
1930	MHz	36%	-0.3
1960	MHz	34%	-0.4

2540	MHz	22%	1
2570	MHz	20%	0.1
2600	MHz	20%	-0.2
2630	MHz	21%	-0.3
2660	MHz	22%	0.2
2690	MHz	20%	0.2





Environmental Data

Operating Temperature	-40°C to +85°C
Vibration	N/A
Moisture Sensitivity Level	0 (000 hours)

Certifications and Approvals

Type Approvals	N/A	Standards	N/A
Health & Safety	N/A	Compliance	RoHS

Ordering Information

Product Variants

Part Number	Description
L-1RA9	Multiband 2G 3G 4G/2.4G WIFI Antenna

About MIOT

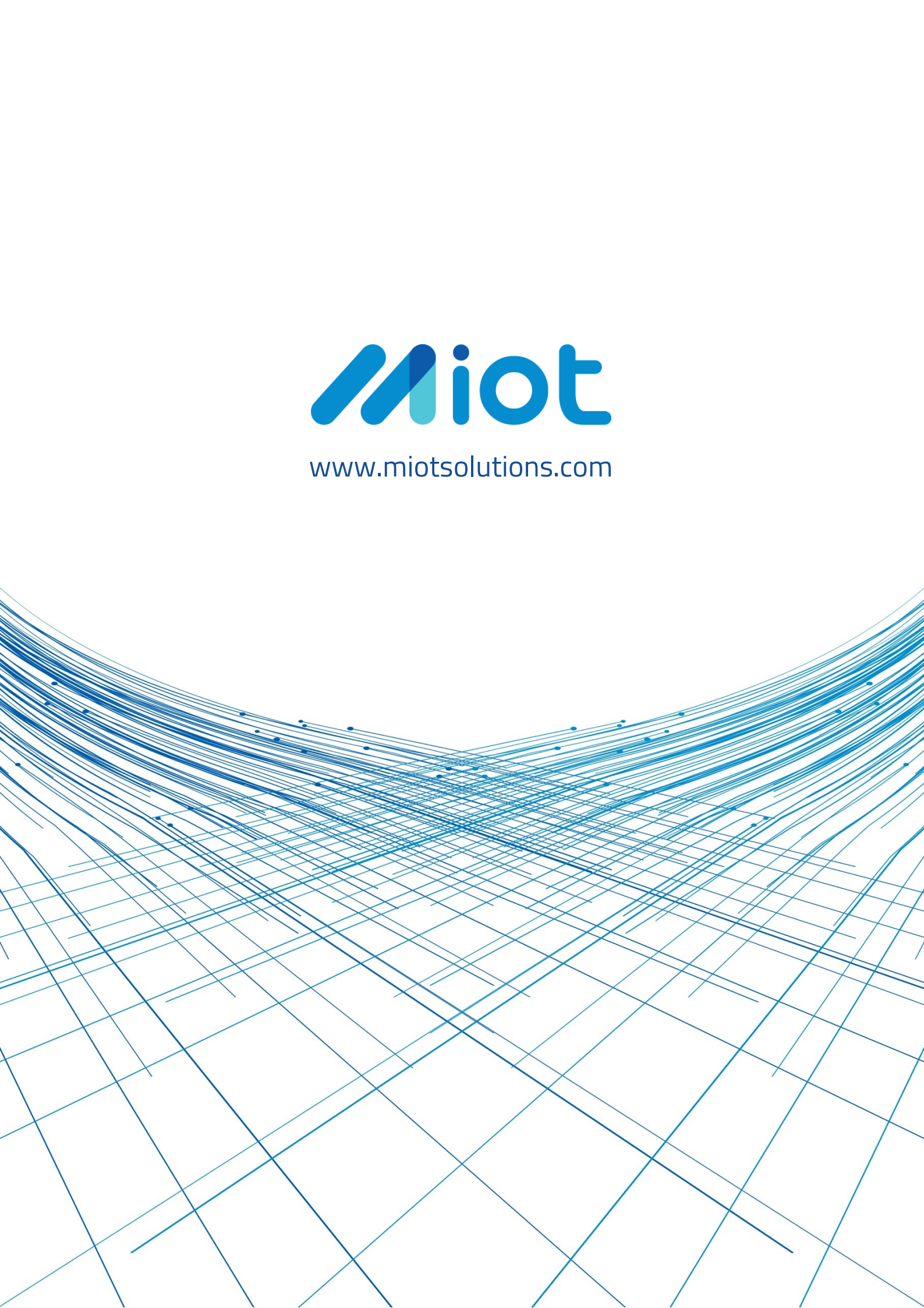
Miot Wireless Solutions, headquartered in Suzhou, China, was established in 2017. It has subsidiaries in Canada, the United States, Brazil, and EMEA. MIOT is a professional designer and manufacturer of Antennas and IoT PCBA products, providing turn-key service to customers worldwide.

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

MIOT Wireless Solutions Co. Ltd.
120-5800 Ambler Dr, MISSISSAUGA
ONTARIO L4W 4J4
Canada

Phone: +123456789
Website: www.miotsolutions.com
Email: info@miotsolutions.com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