

M-1RA2

2G GSM Antenna

CELLULAR

SIGFOX

The M-1RA2 is a compact and durable 2G GSM antenna with a wide band and high efficiency. It's an ideal solution for cellular IoT applications requiring a durable and cost-effective external antenna.

The M-1RA2 allows the antenna to be positioned for optimum performance compared to a fixed whip design. The antenna attaches with an SMA connector.



50 x 8 mm

Document Information

Product	M-1RA2
Part Number	M-1RA2
Description	2G GSM Antenna
Version	2.0 (current)
Date	15-Sep-2023
Status	Released

Revision History

Version	Date	Author	Changes
1.0	16-Dec-2020	Amy Li	Initial Release
1.1	06-July-2023	Hazel Xu	New layout and design
2.0	15-Sep-2023	Ivy Liao	New layout and design

Product Overview

Product Description

The M-1RA2 is a compact and durable 2G GSM antenna with an ultra-wide range and high efficiency. It's an ideal solution for cellular IoT applications requiring a durable and cost-effective external antenna.

The hinged swivel design allows the antenna to be positioned for optimum performance and reduces the potential for damage from impact compared to a fixed blade design. The antenna attaches with an SMA plug (male pin) connector.

Key Features

- Operates in 824-960/1710-1990 MHz
- VSWR 3.7
- Vertical polarization
- High gain of 2.8 dBi

Applications

- 2G/GSM radios
- Gateways
- Set-Top Boxes
- Security
- Transportation
- Smart agriculture

Electrical Specifications

Frequency			VSWR	Peak Gain	Efficiency
LORA	824-960/ 1710-1990	MHz	3.7	2.8 d Bi	45%

Frequency Range	824-960/1710-1990 MHz	Radiation	Omnidirectional
Impedance	50 Ω	Power Handling Capacity	50W
Polarization	Vertical	Lighting Protection	Direct Current earth

Mechanical Specifications

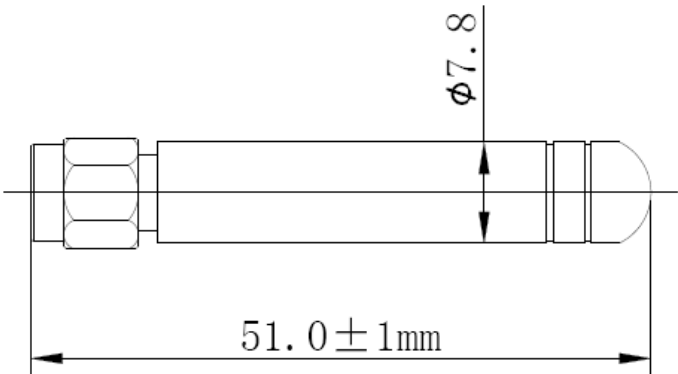
Cable Type	RG-178	Casing	Yes
Dimensions	50 x 8 mm	Color	Black

Connector (Termination)	SMA	Material	PBT + PC
Mounting Type	Connector Mount	Radiator	Cuprum

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



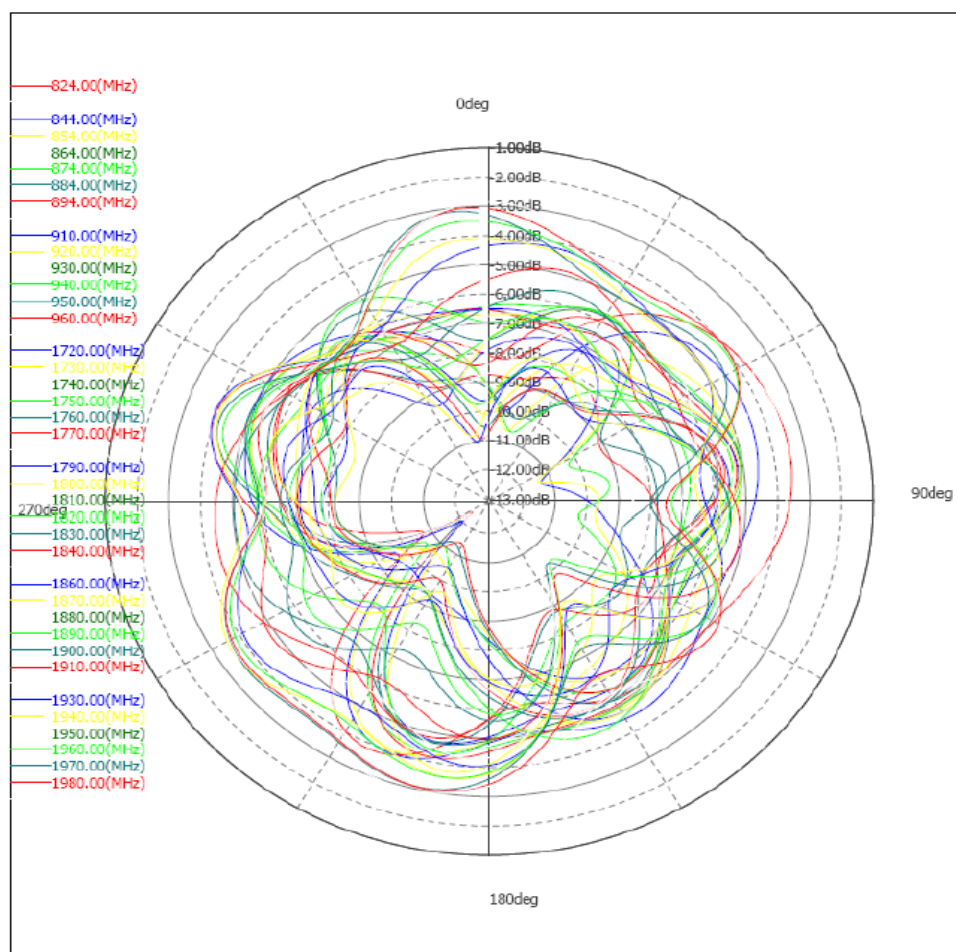
Radiation Pattern

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.

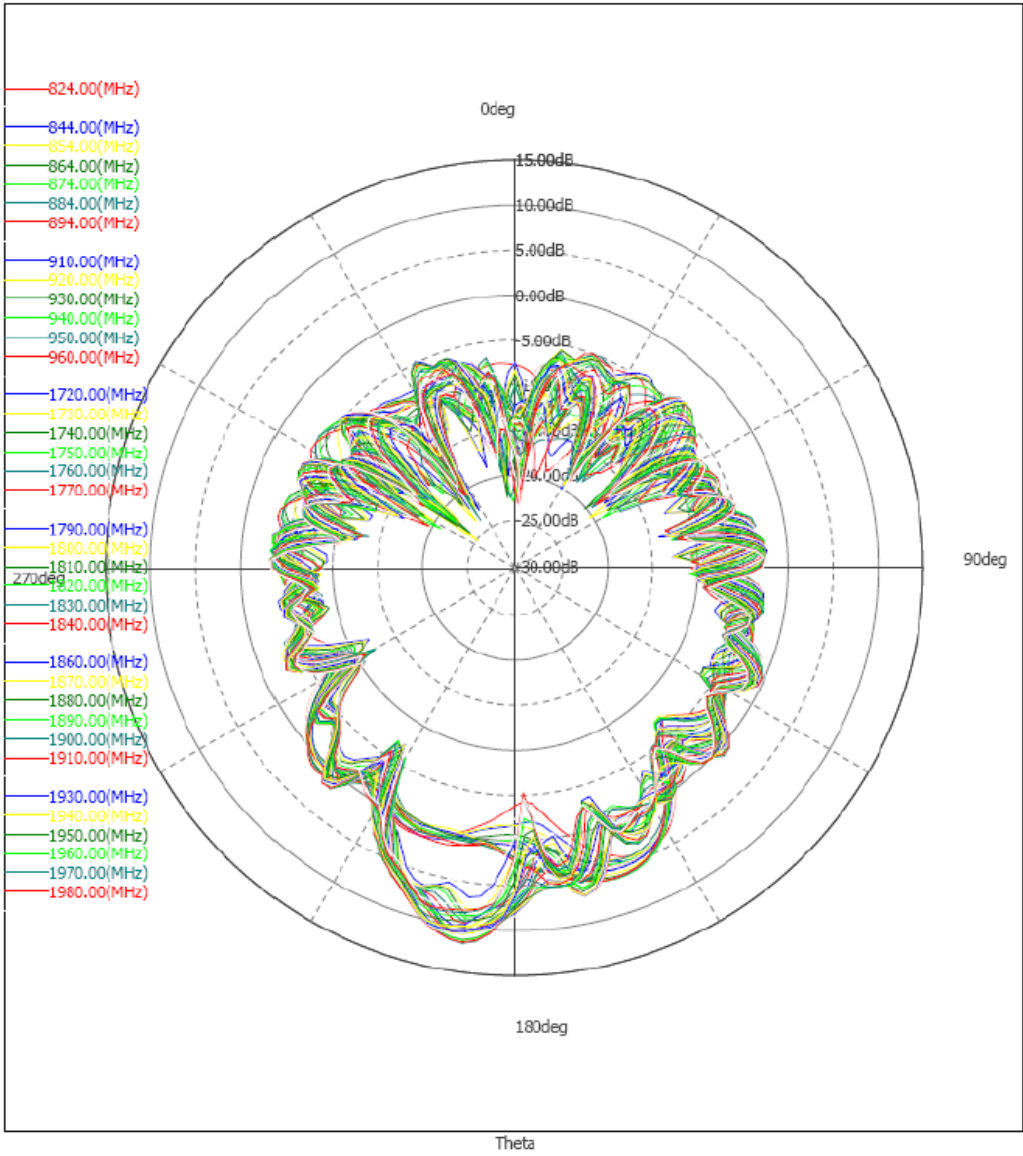
XY Plane (H)

824-960/1710-1990 MHz



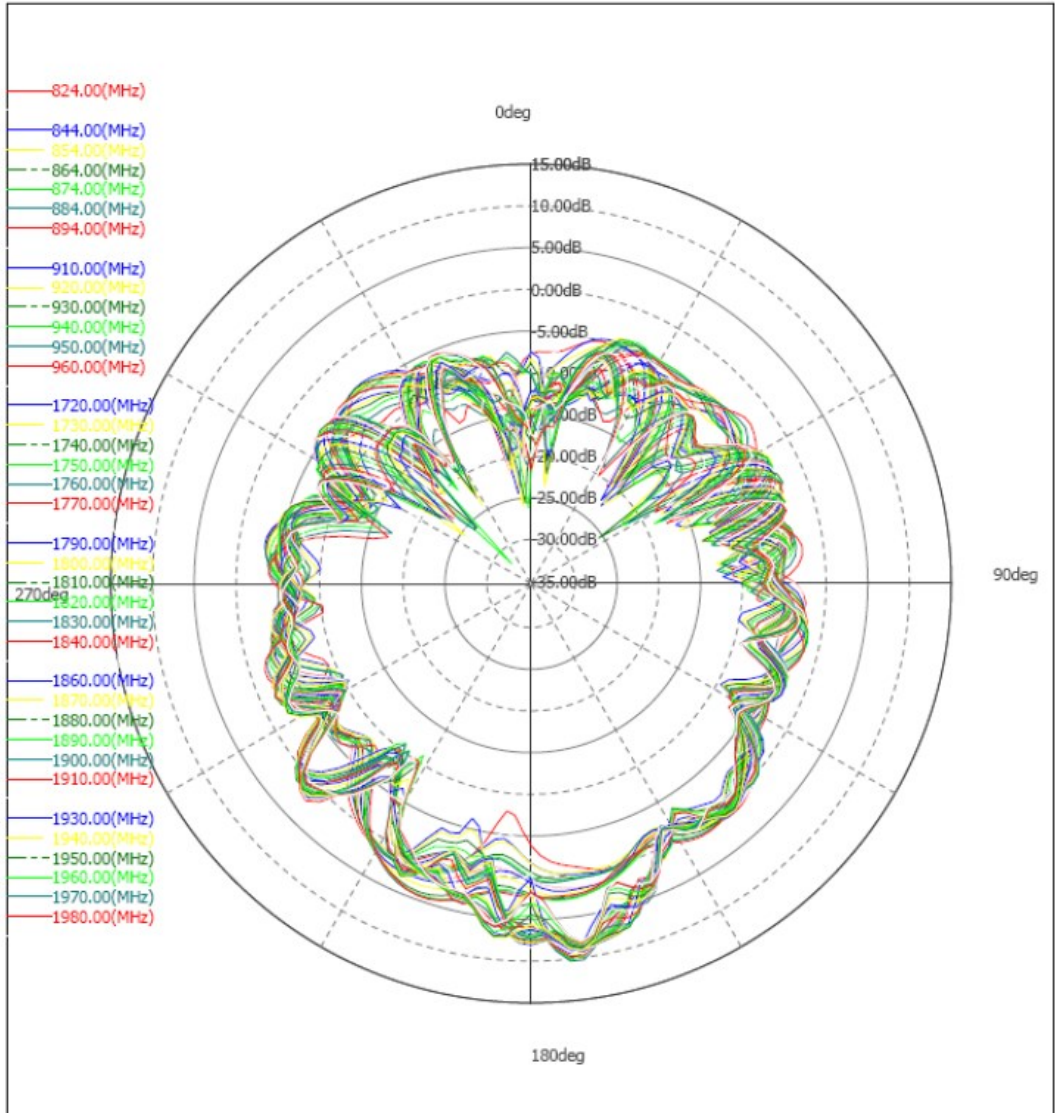
YZ Plane (E1)

824-960/1710-1990 MHz



YZ Plane (E2)

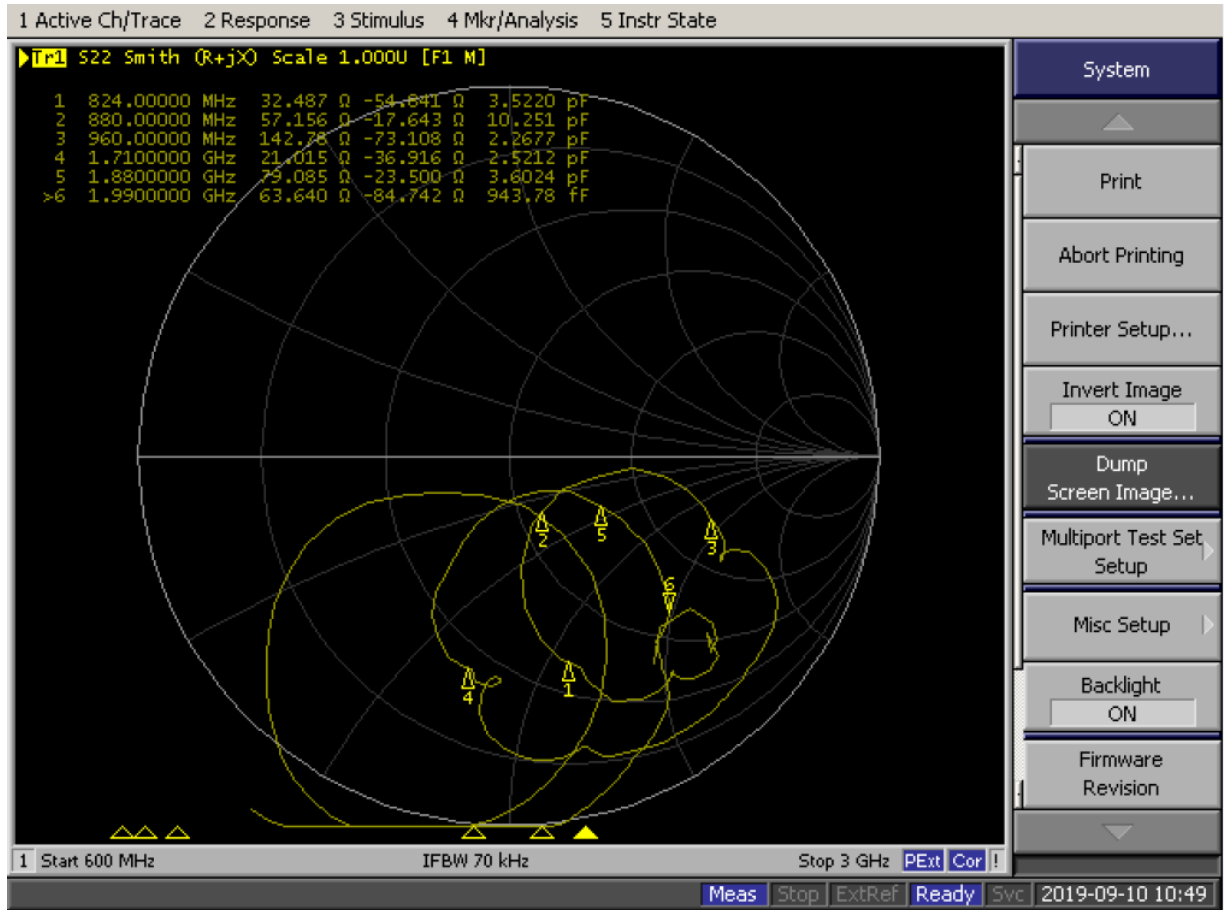
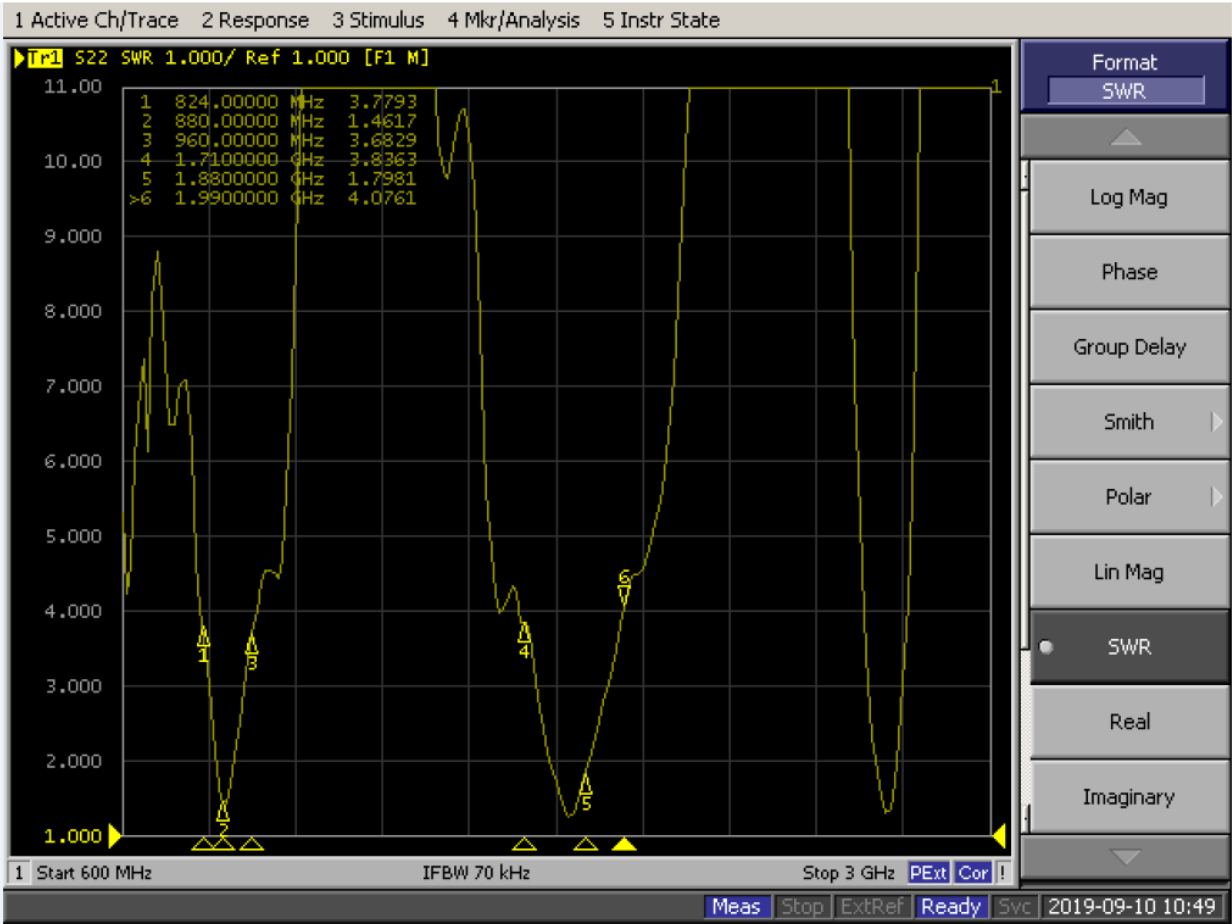
824-960/1710-1990 MHz



Antenna Smith and VSWR

Frequency		VSWR
824	MHz	3.7793
880	MHz	1.4617
960	MHz	3.6829

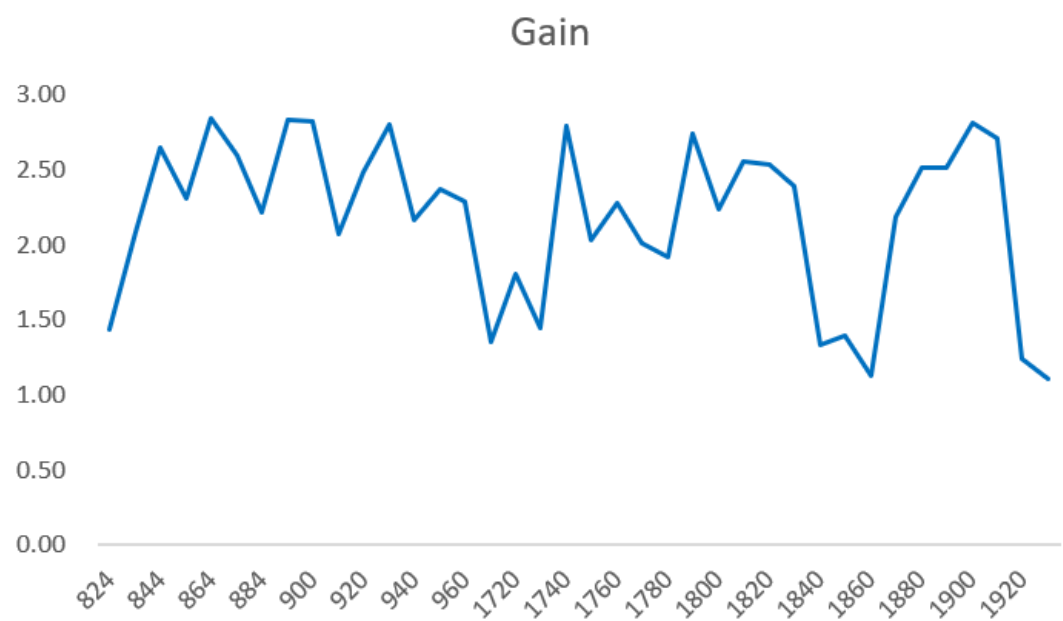
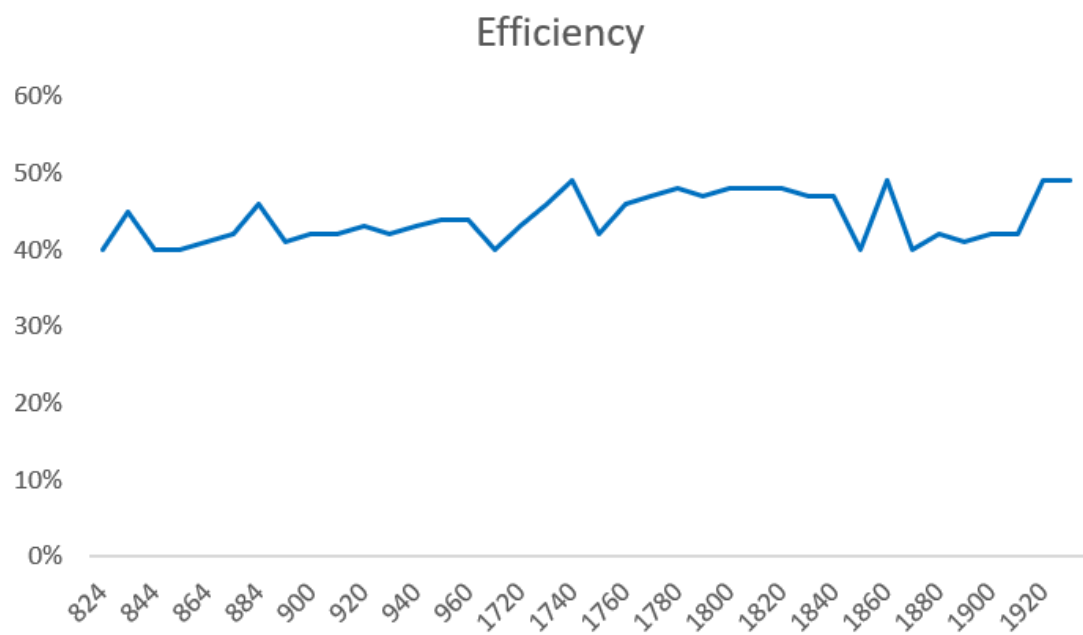
Frequency		VSWR
1710	MHz	3.8363
1880	MHz	1.7981
1990	MHz	4.0761



Antenna Efficiency and Gain

Frequency		Efficiency	Gain
824	MHz	40%	1.439752
834	MHz	45%	2.080633
844	MHz	40%	2.645296
854	MHz	40%	2.307474
864	MHz	41%	2.843364
874	MHz	42%	2.59297
884	MHz	46%	2.212029
894	MHz	41%	2.829435
900	MHz	42%	2.824599
910	MHz	42%	2.075747
920	MHz	43%	2.479706
930	MHz	42%	2.798386
940	MHz	43%	2.165154
950	MHz	44%	2.373603
960	MHz	44%	2.285154
1710	MHz	40%	1.349801
1720	MHz	43%	1.800888
1730	MHz	46%	1.45037
1740	MHz	49%	2.79111

Frequency		Efficiency	Gain
1750	MHz	42%	2.02899
1760	MHz	46%	2.28204
1770	MHz	47%	2.00783
1780	MHz	48%	1.92055
1790	MHz	47%	2.741161
1800	MHz	48%	2.23738
1810	MHz	48%	2.55509
1820	MHz	48%	2.52949
1830	MHz	47%	2.38959
1840	MHz	47%	1.33073
1850	MHz	40%	1.39877
1860	MHz	49%	1.12741
1870	MHz	40%	2.18244
1880	MHz	42%	2.51234
1890	MHz	41%	2.50999
1900	MHz	42%	2.80707
1910	MHz	42%	2.70868
1920	MHz	49%	1.23547
1930	MHz	49%	1.10675



Environmental Data

Operating Temperature	-20 °C to +85 °C
Storage Temperature	-20 °C to +85 °C
Compliance	RoHS

Ordering Information

Product Variants

Part Number	Description
M-1RA2	2G GSM 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.

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