

2.4G Monopole Antenna Test Report

Antenna Test Report

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Antenna Test Report

Customer: 35mm Transparent PVC Monopole Antenna

Project: Antenna Matching the 2.4G Receiver Board of RC Car (for
TELEC certification)

Report Date: 2026.07.25

Basic Information of Customer Project

No.	Project Configuration	Parameter Details
1	Operating frequency band (MHz)	2400 - 2483.5 MHz (2.4G ISM band)
2	Terminal device type	RC car 2.4G wireless receiver complete unit

3	Antenna type	Transparent PVC insulated monopole wire antenna
4	Total antenna length	35 mm (excluding the stripped/soldering section)
5	Antenna feed configuration	Single-wire stripped, directly soldered to the PCB RF pad; no coaxial cable
6	Antenna construction type	Passive flexible monopole radiating antenna

Antenna Design and Test Report

1. Technical Specifications and Test Equipment

Product Electrical Performance Specifications

Item	Specification
Operating frequency range	2400 ~ 2483.5MHz
VSWR	2400~2483.5MHz: ≤ 2.0
Peak antenna gain	2400 ~ 2483.5MHz: 0 dBi

	± 0.3dBi
Radiation efficiency	2400~2483.5MHz: ≥45 %
Nominal impedance	50 ohm

Product Material Description

Component	Material
Radiating inner conductor	Tinned pure copper single-core wire
Outer insulation jacket	Transparent PVC plastic

Product Environmental Specifications

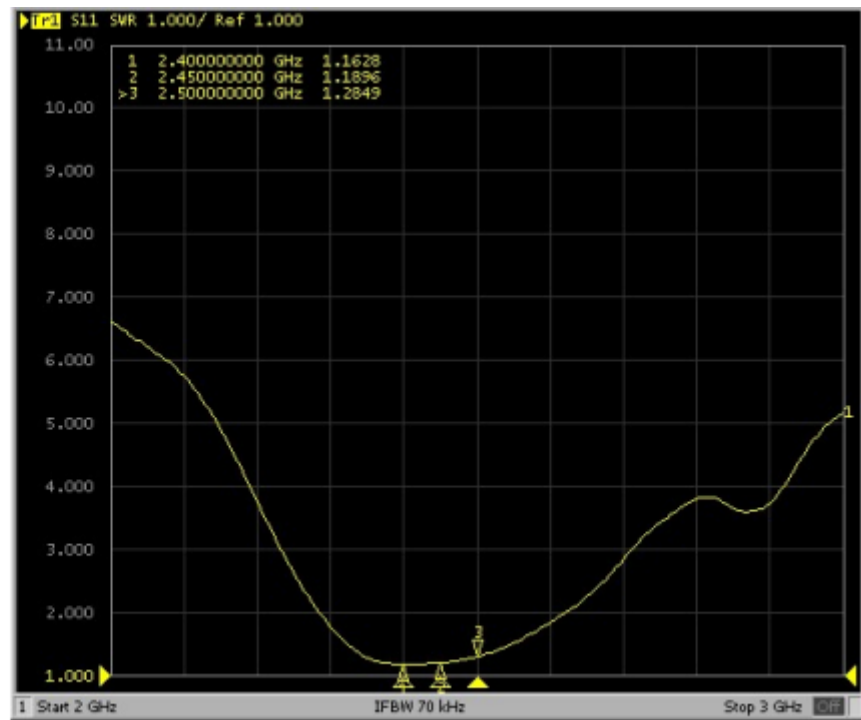
Item	Parameter
Operating temperature	-20℃ ~ + 70 ℃
Storage temperature	-30℃ ~ + 80 ℃

sss2. Passive Test Data (Passive Test For WIFI2.4)

Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)	Gain (dBd)	UHS (%)	DHS (%)	Max (dB)	Min (dB)	Direct iv (dBi)
2400	46.2	-3.35	0.02	0.11	20.15	24.88	2.37	- 16.82	5.61
2410	45.7	-3.40	0.08	0.17	20.03	24.71	2.41	- 16.91	5.63
2420	45.1	-3.46	0.14	0.23	20.11	24.65	2.43	- 16.77	5.62
2430	44.8	-3.49	0.18	0.27	20.22	24.52	2.46	- 16.63	5.64
2440	44.3	-3.54	0.22	0.31	20.36	24.41	2.48	- 16.55	5.63
2450	43.9	-3.58	0.16	0.25	20.21	24.33	2.44	- 16.69	5.61
2460	43.2	-3.65	0.09	0.18	20.08	24.26	2.40	- 16.84	5.60
2470	42.7	-3.70	0.03	0.12	19.97	24.12	2.36	- 16.97	5.58
2480	42.1	-3.76	-0.05	0.04	19.82	23.95	2.32	- 17.12	5.56

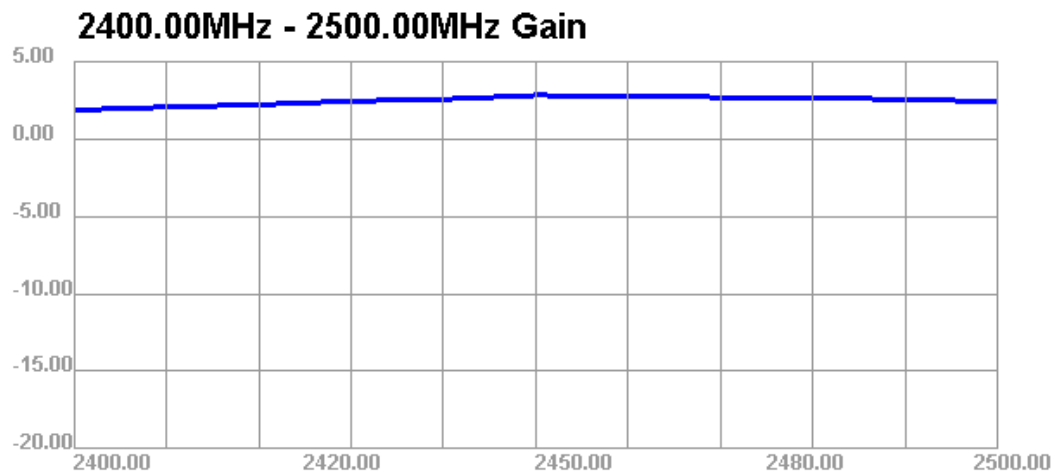
3. Description of Test Figures

1. Voltage Standing Wave Ratio (VSWR) curve: 2400 – 2500 MHz, VSWR < 2.0 across the full band, resonant point at 2442 MHz.



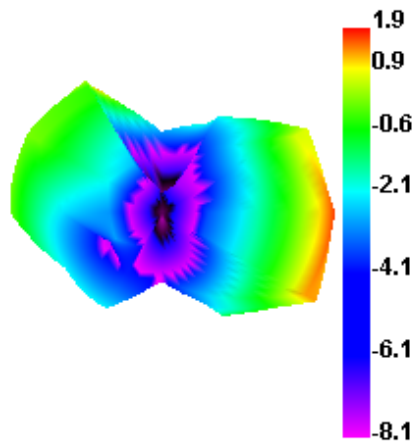
电压驻波比 (VSWR)

2. Gain flatness curve over 2400 - 2500 MHz: the overall gain fluctuates slightly around 0 dBi.

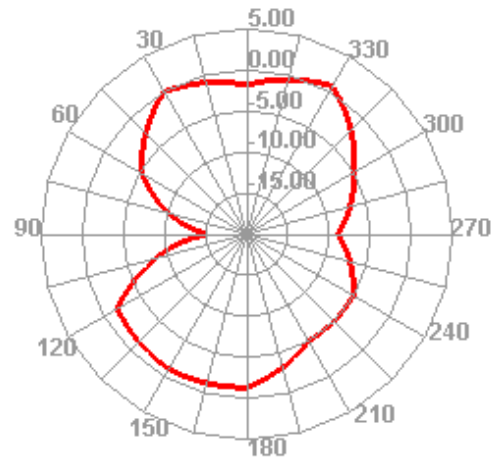


3. 2400 MHz 3D radiation pattern, horizontal H-plane cut, vertical E1/E2-plane cuts.

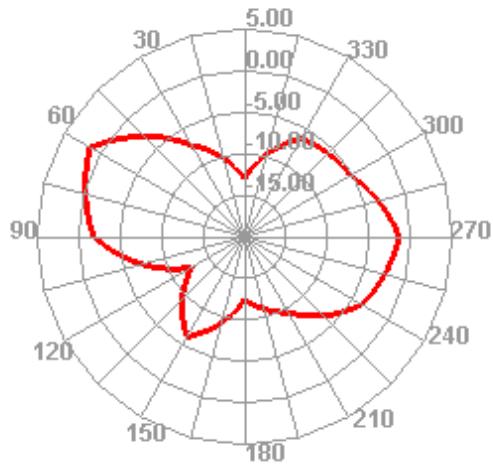
2400.000MHz



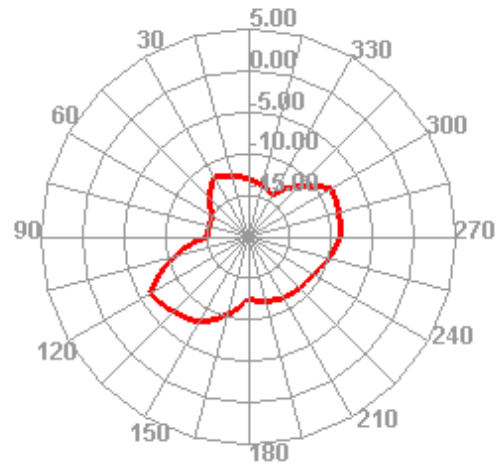
2400.000MHz H



2400.000MHz E1

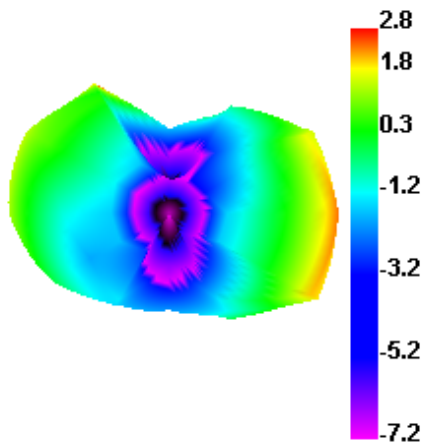


2400.000MHz E2

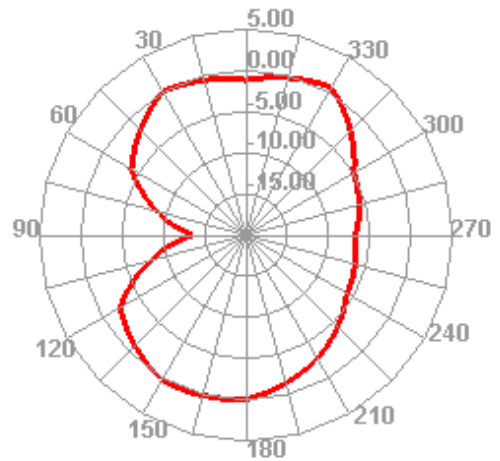


4. 2450 MHz 3D radiation pattern, horizontal H-plane cut, vertical E1/E2-plane cuts.

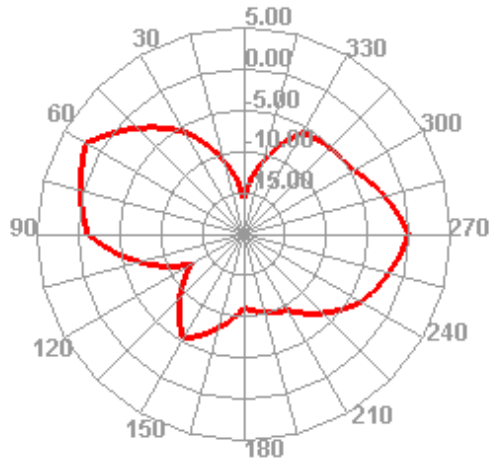
2450.000MHz



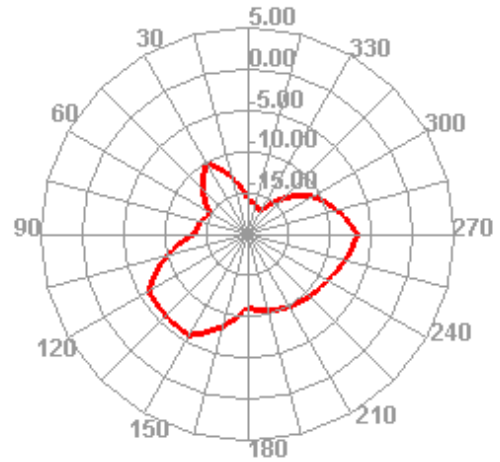
2450.000MHz H



2450.000MHz E1



2450.000MHz E2



4. Compliance Statement

This antenna is a passive 35 mm transparent PVC monopole wire antenna, used with the 2.4G receiver module of the RC car. Its operating band covers the 2400 - 2483.5 MHz ISM wireless device standard under the Japanese TELEC regulations. The passive test data of this antenna complies with the RF test requirements of MIC Notice No. 88 Annex 43, and it can be used for submission in the whole-unit TELEC type-approval testing.

5. Assembly and Usage Requirements

- 1.The stripped end of the antenna is directly soldered to the ANT RF pad on the receiver board; the soldering length shall be ≤ 2 mm.
- 2.During assembly, keep the antenna away from the motor power wires and the drive power loop to reduce electromagnetic interference.
- 3.The antenna should be laid as straight as possible and must not be in close contact with the metal chassis or the metal battery casing