

# **Winmate Inc.**

## **AntennaSpecification**

**Project :M140TG**  
**Version :20220606**  
**Issue Date : 2022/07/22**

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## **1. Wi-Fi Main Antenna Specification**

**Winmate Part Number:** 90RF0500001V

### **1.1. Electrical Characteristics**

Frequency(MHz): 2400-2500 / 5150-7150

SWR:  $\leq 1.45@2400-2500\text{MHz}$

$\leq 2.25@5150-7150\text{MHz}$

Return Loss:  $\leq -19.84\text{dB}@2400-2500\text{MHz}$

$\leq -13.8\text{dB}@5150-7150\text{MHz}$

Peak Gain:  $1.89\text{dBi}@2400-2500\text{MHz}$

$3.48\text{dBi}@5150-7150\text{MHz}$

Impedance: 50ohm

Polarization: Linear

### **1.2. Mechanical Characteristics**

Cable:  $50\Omega$   $\varnothing 0.81$  RF cable

Connector: MHF4

PCB: FR4 /Thickness 0.8mm

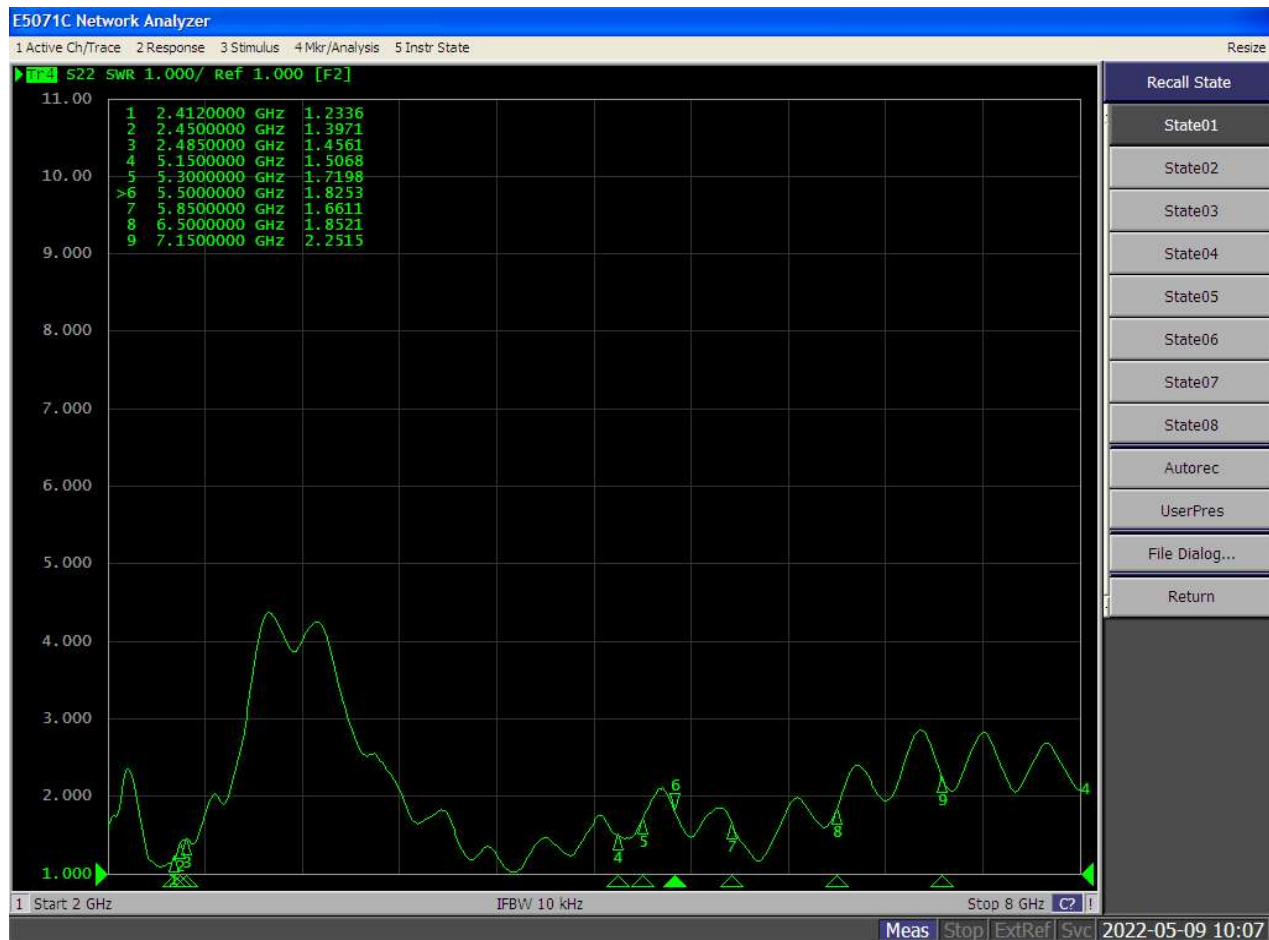
Type:Dipole

### **1.3. Environmental Characteristics**

Operating Temperature:  $-30^{\circ}\text{C}$  to  $80^{\circ}\text{C}$

## 1.4. RF Performance Characteristics

### 1.4.1. SWR



## 1.4.2. Return Loss



### 1.4.3. Gain / Efficiency

| Frequency         | 2400  | 2427  | 2450  | 2472  | 2500  | 5150  | 5250  | 5350  | 5470  | 5540  |
|-------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Directivity (dBi) | 5.90  | 6.09  | 5.84  | 5.50  | 5.46  | 7.01  | 6.94  | 7.56  | 7.68  | 8.04  |
| Efficiency (dB)   | -4.42 | -4.20 | -4.04 | -4.06 | -4.14 | -4.26 | -4.41 | -4.93 | -5.02 | -4.80 |
| Efficiency (%)    | 36.11 | 38.01 | 39.42 | 39.28 | 38.52 | 37.47 | 36.24 | 32.15 | 31.46 | 33.12 |
| Peak Gain (dBi)   | 1.47  | 1.89  | 1.80  | 1.44  | 1.31  | 2.75  | 2.53  | 2.64  | 2.66  | 3.24  |

| Frequency         | 5600  | 5725  | 5850  | 5925  | 6000  |  |  |  |  |  |
|-------------------|-------|-------|-------|-------|-------|--|--|--|--|--|
| Directivity (dBi) | 8.17  | 8.06  | 8.35  | 8.15  | 8.21  |  |  |  |  |  |
| Efficiency (dB)   | -4.69 | -4.61 | -4.36 | -4.22 | -4.14 |  |  |  |  |  |
| Efficiency (%)    | 33.96 | 34.60 | 36.66 | 37.87 | 38.55 |  |  |  |  |  |
| Peak Gain (dBi)   | 3.48  | 3.45  | 3.26  | 3.20  | 3.22  |  |  |  |  |  |

## 2. WiFi AuxAntenna Specification

**Winmate Part Number:90RF0600001J**

### 2.1. Electrical Characteristics

Frequency(MHz): 2400-2500 / 5150-7150

SWR:  $\leq 1.76@2400-2500\text{MHz}$

$\leq 2.14@5150-7150\text{MHz}$

Return Loss:  $\leq -14.9@2400-2500\text{MHz}$

$\leq -13.3\text{dB}@5150-7150\text{MHz}$

Peak Gain: 1.41dBi@2400-2500MHz

3.33dBi@5150-7150MHz

Impedance: 50ohm

Polarization: Linear

### 2.2. Mechanical Characteristics

Cable: 50  $\Omega$   $\varphi$  0.81 RF cable

Connector: MHF4

PCB: FR4 /Thickness 0.4mm

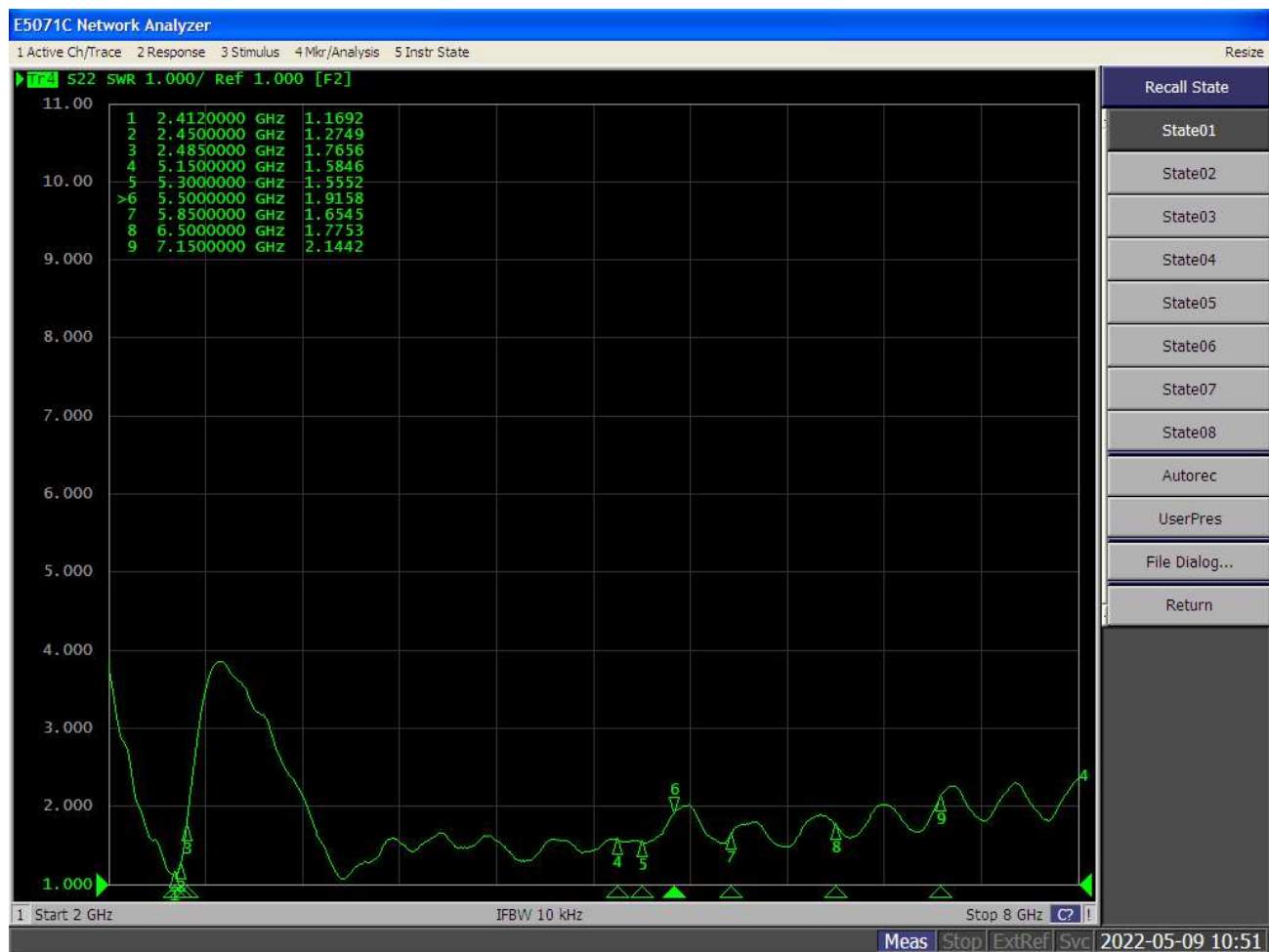
Type:Dipole

### 2.3. Environmental Characteristics

Operating Temperature: -30°C to 80°C

## 2.4. RF Performance Characteristics

### 2.4.1 SWR



## 2.4.2 Return Loss



### 2.4.3. Gain / Efficiency

| Frequency         | <b>2400</b> | <b>2427</b> | <b>2450</b> | <b>2472</b> | <b>2500</b> | <b>5150</b> | <b>5250</b> | <b>5350</b> | <b>5470</b> | <b>5540</b> |
|-------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Directivity (dBi) | 5.49        | 5.30        | 5.31        | 5.06        | 5.37        | 6.30        | 5.88        | 5.49        | 7.28        | 6.78        |
| Efficiency (dB)   | -4.08       | -4.23       | -4.54       | -4.92       | -5.45       | -3.58       | -3.89       | -3.96       | -3.95       | -4.06       |
| Efficiency (%)    | 39.07       | 37.78       | 35.17       | 32.22       | 28.53       | 43.88       | 40.82       | 40.17       | 40.32       | 39.29       |
| Peak Gain (dBi)   | 1.41        | 1.07        | 0.77        | 0.14        | -0.08       | 2.72        | 1.98        | 1.53        | 3.33        | 2.73        |

| Frequency         | <b>5600</b> | <b>5725</b> | <b>5850</b> | <b>5925</b> | <b>6000</b> |  |  |  |  |  |
|-------------------|-------------|-------------|-------------|-------------|-------------|--|--|--|--|--|
| Directivity (dBi) | 6.17        | 6.37        | 6.51        | 6.21        | 6.09        |  |  |  |  |  |
| Efficiency (dB)   | -4.32       | -4.20       | -3.77       | -3.89       | -3.91       |  |  |  |  |  |
| Efficiency (%)    | 36.96       | 37.98       | 41.96       | 40.79       | 40.69       |  |  |  |  |  |
| Peak Gain (dBi)   | 1.85        | 2.17        | 2.74        | 2.32        | 2.19        |  |  |  |  |  |