
Antenna Certification Information

1. Manufacturer and Address

JOYFORCE PRECISION MANUFACTURING CO. LTD

No. 37, Xiangjiang Road, Weifang City, Anqiu City, Shandong, P. R.
China

2. Antenna Model and Type

Model: Left-316000307952 Right-316000307951

Types: IFA

3. Test instrument software versions

Agilent E5071C ENA Series Network Analyzer 11.31

4. Antenna test laboratory, test instruments and calibration dates

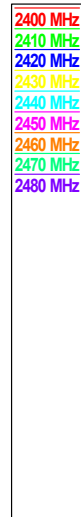
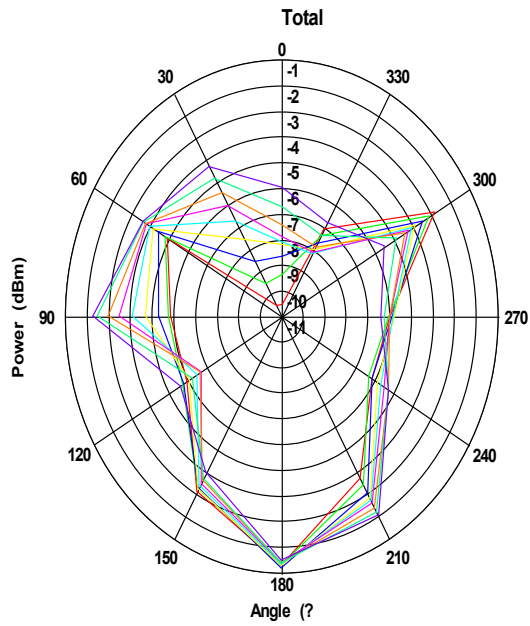
AMS8923 、 2023/4/18

5. Peak gain and 2D radiation pattern

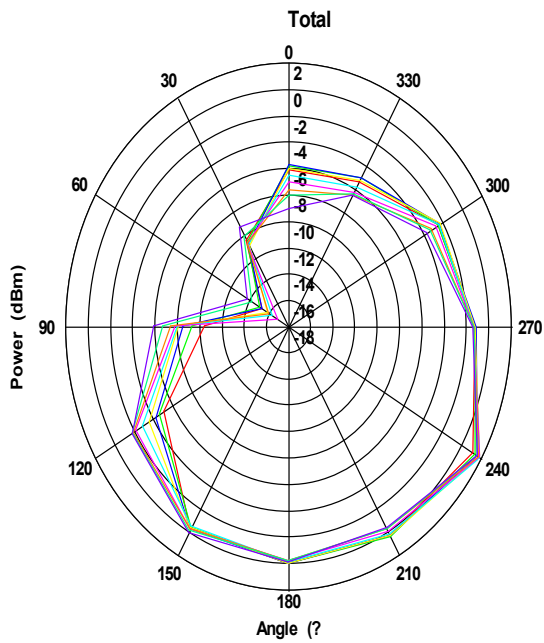
| Peak Gain(dBi) | ANT-L | ANT-R |
|----------------|-------|-------|
| 2.4G/BT | 1.9 | 2.2 |
| 5G | 3.9 | 3.3 |

Left antenna

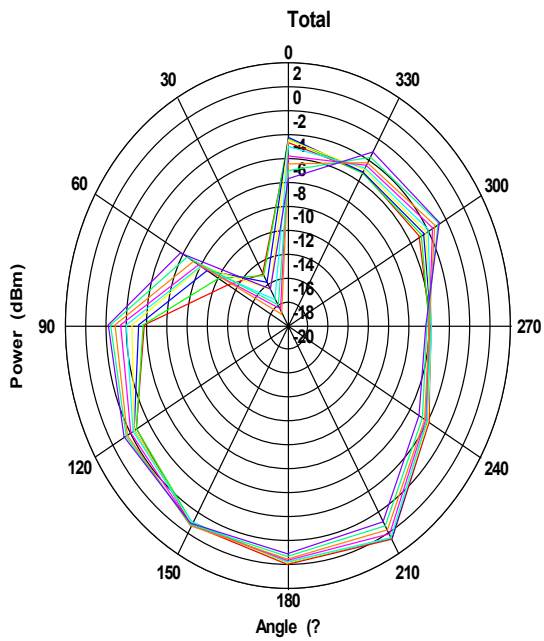
2.4G



XOY:

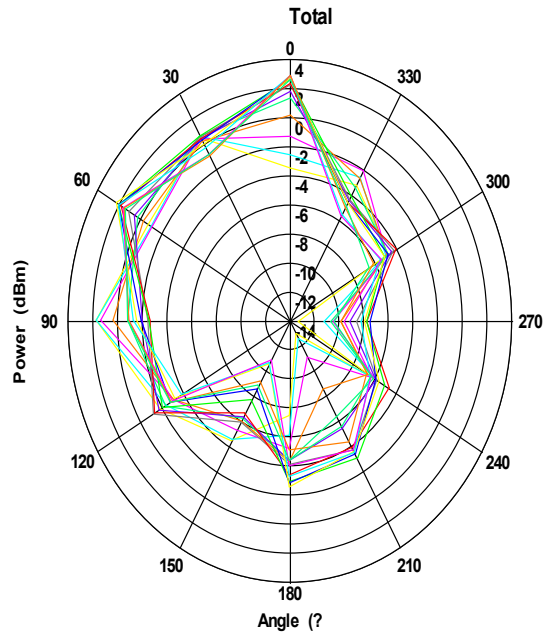


XOZ:

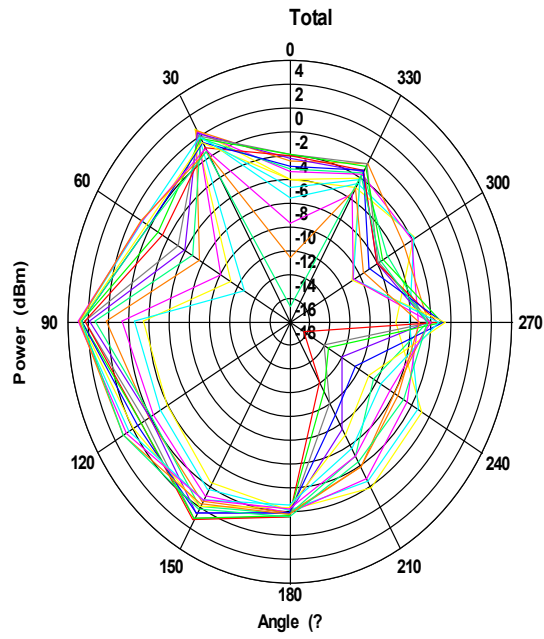


YOZ:

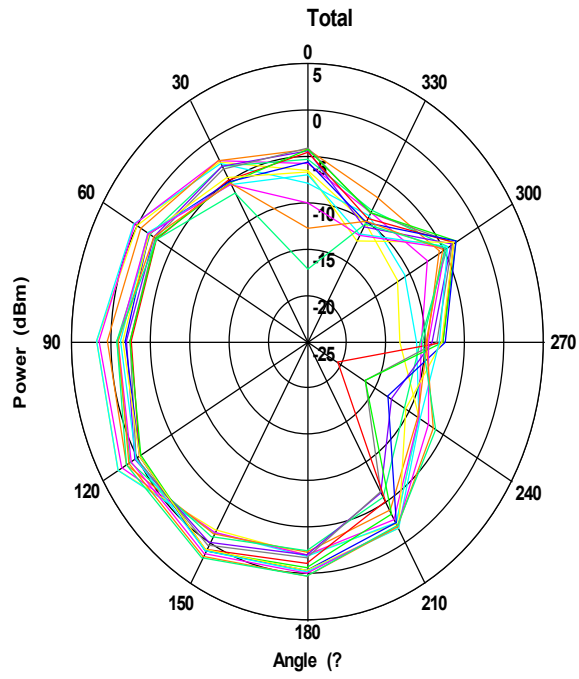
5G



XOY:



XOZ:

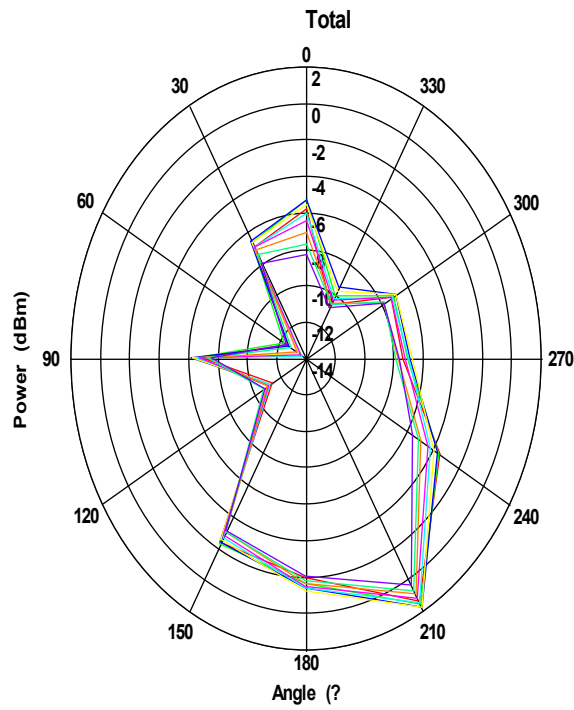


| |
|----------|
| 5150 MHz |
| 5200 MHz |
| 5250 MHz |
| 5300 MHz |
| 5350 MHz |
| 5400 MHz |
| 5450 MHz |
| 5500 MHz |
| 5550 MHz |
| 5600 MHz |
| 5650 MHz |
| 5700 MHz |
| 5750 MHz |
| 5800 MHz |
| 5850 MHz |

YOZ:

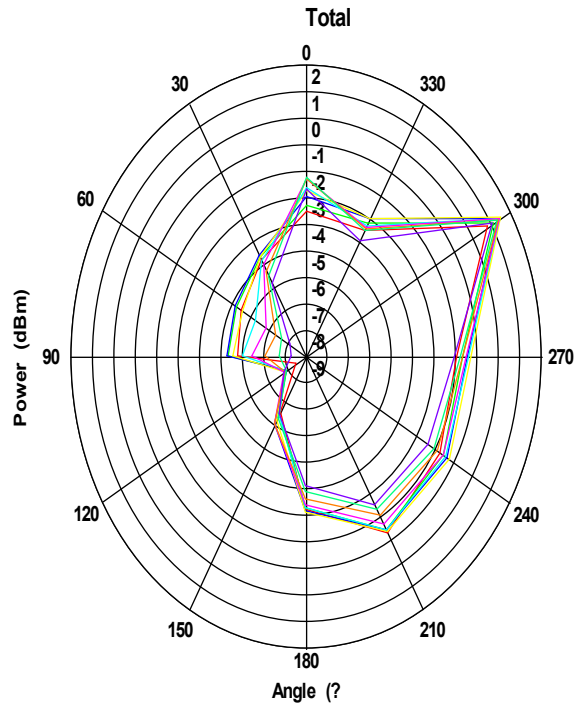
Right antenna

2.4G

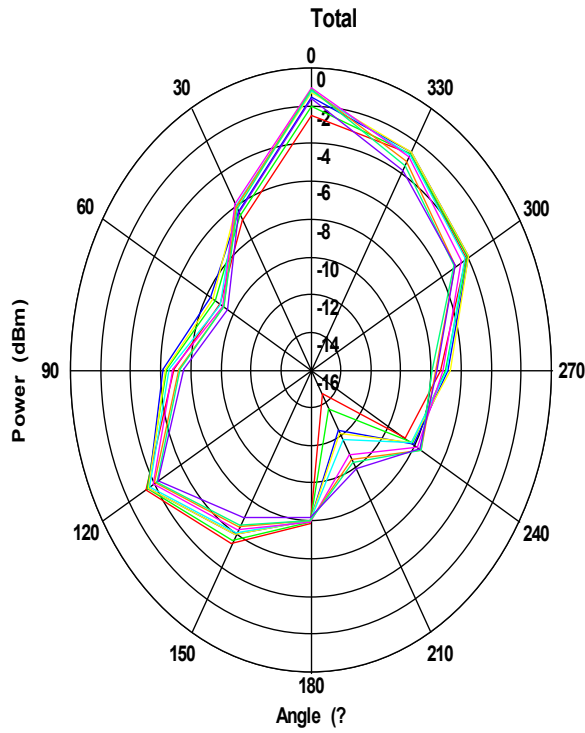


| |
|----------|
| 2400 MHz |
| 2410 MHz |
| 2420 MHz |
| 2430 MHz |
| 2440 MHz |
| 2450 MHz |
| 2460 MHz |
| 2470 MHz |
| 2480 MHz |

XOY:

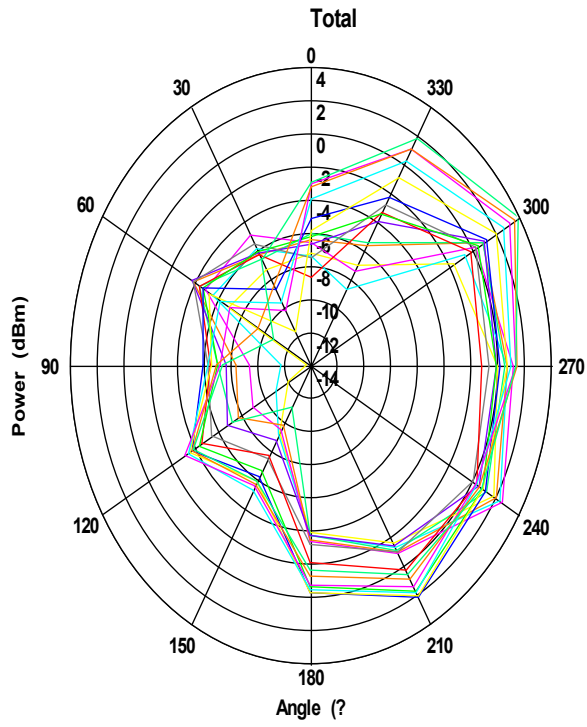


XOZ:



YOZ:

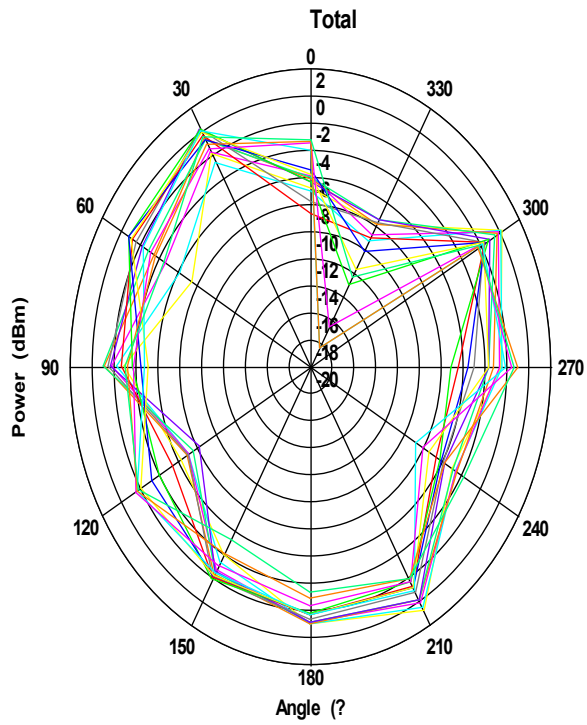
5G



- 5150 MHz
- 5200 MHz
- 5250 MHz
- 5300 MHz
- 5350 MHz
- 5400 MHz
- 5450 MHz
- 5500 MHz
- 5550 MHz
- 5600 MHz
- 5650 MHz
- 5700 MHz
- 5750 MHz
- 5800 MHz
- 5850 MHz

Max: 4
 Min: -14
 Scale: 2/div

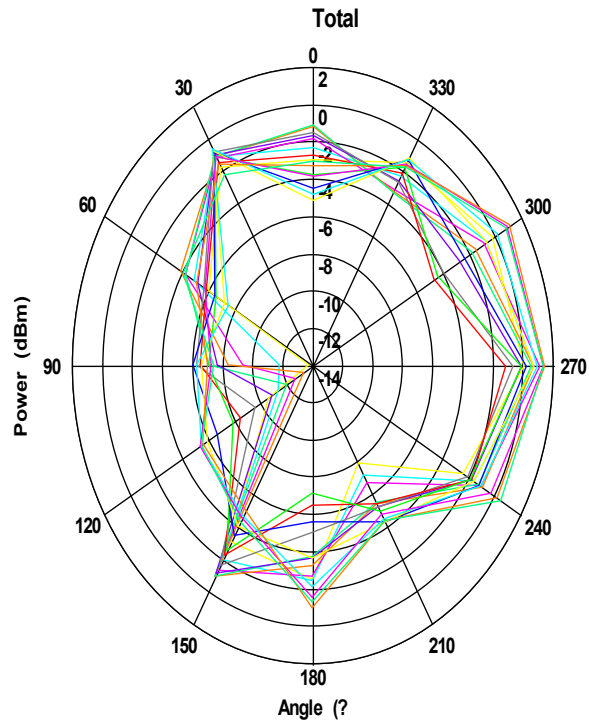
XOY:



- 5150 MHz
- 5200 MHz
- 5250 MHz
- 5300 MHz
- 5350 MHz
- 5400 MHz
- 5450 MHz
- 5500 MHz
- 5550 MHz
- 5600 MHz
- 5650 MHz
- 5700 MHz
- 5750 MHz
- 5800 MHz
- 5850 MHz

Max: 2
 Min: -20
 Scale: 2/div

XOZ:



6. Peak Gain values for supported bands

| Peak Gain(dBi) | ANT-L | ANT-R |
|----------------|-------|-------|
| 2.4G/BT | 1.9 | 2.2 |
| 5G | 3.9 | 3.3 |

Xing Liu

24G Radar Antenna Certification Information

1. Manufacturer

Socionext Inc.

2. Antenna Type

Types: patch antenna

3. Test instrument software versions

Agilent E5071C ENA Series Network Analyzer 11.31

4. Antenna test laboratory, test instruments and calibration dates

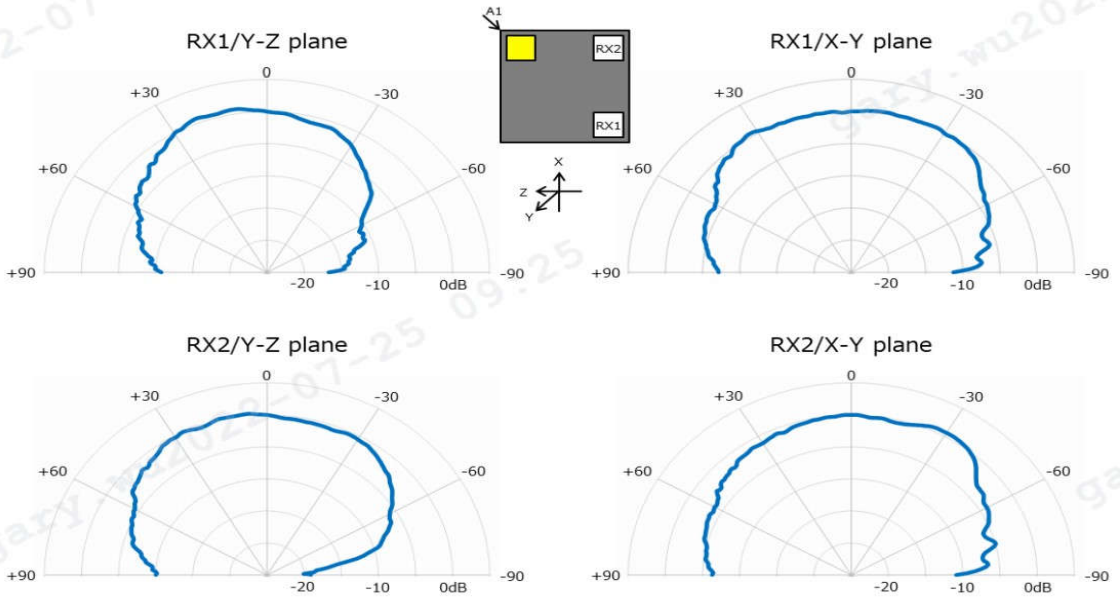
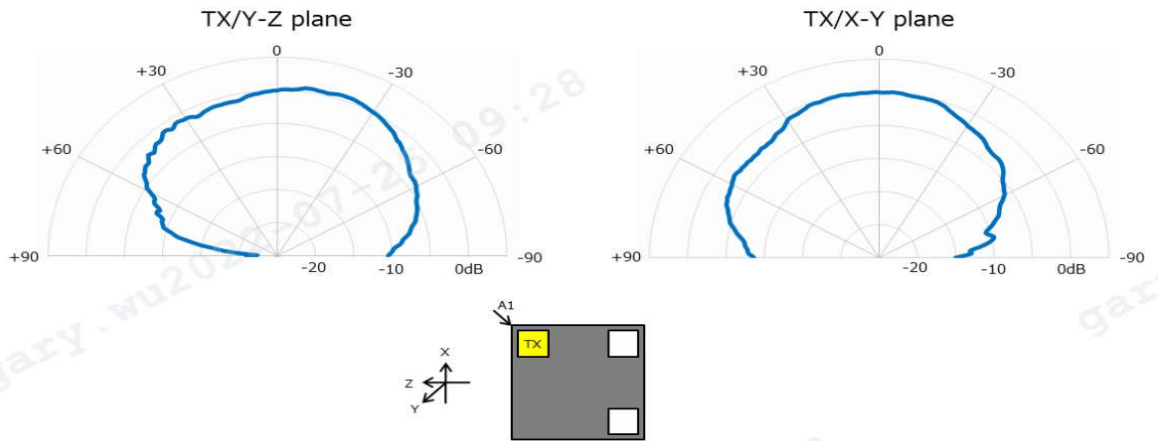
AMS8923 、 2023/4/18

5. Peak gain and pattern

24.06~24.24 GHz : 2.0dBi

| Parameter | | Symbol | Conditions | Limits | | | Unit |
|-----------|-----------------|--------|---------------------------|--------|-----|-----|------|
| | | | | Min | Typ | Max | |
| E1 | RX antenna Gain | Grxa | f _{RF} =24.15GHz | | 2 | | dBi |
| E2 | TX antenna Gain | Gtxa | f _{RF} =24.15GHz | | 2 | | dBi |

Antenna pattern (Reference)



Xing Liu