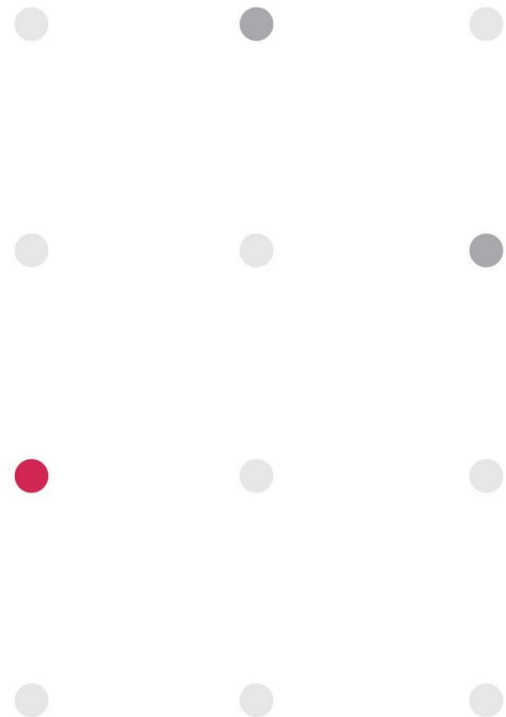




PASSIVE SYSTEM ALLIANCE  
INPAQ TECHNOLOGY CO., LTD.



# Smart Ring (US 10)

Presented by

Zheng Chang

2025/04/24



Version	Date	Description	Author
V01	2025/04/24	New Release	Zheng Chong

# OUTLINE

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## 2. Antenna Characteristics

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2.3 3 views of antenna & 2D Radiation Patterns

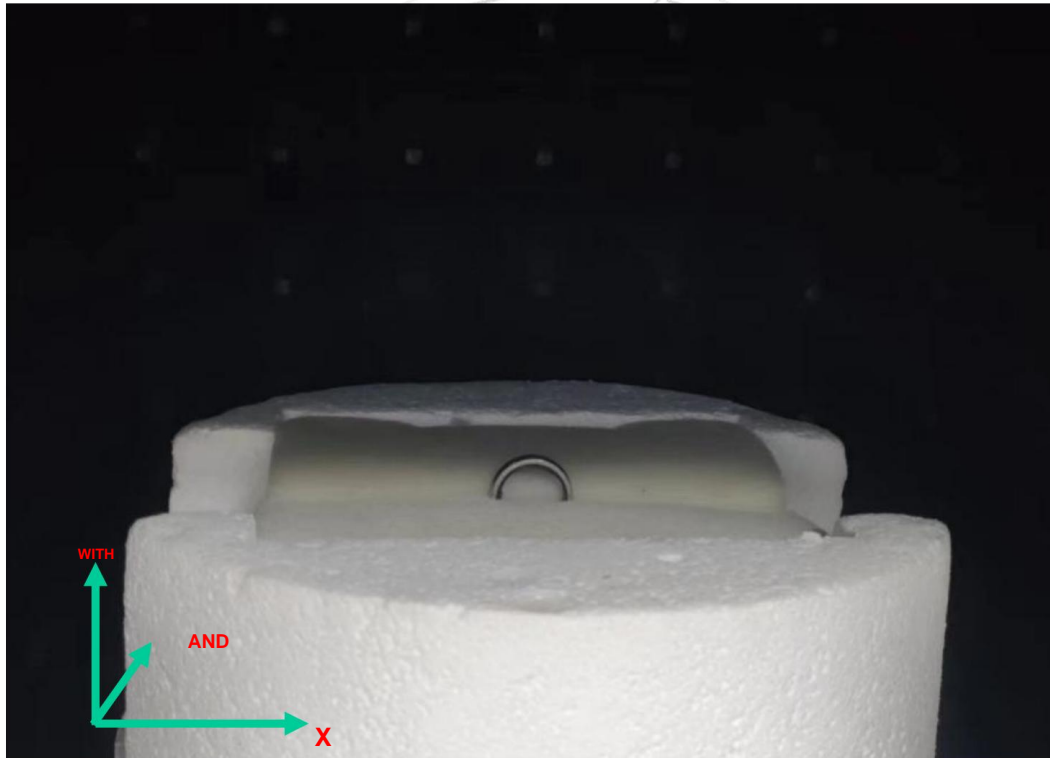
2.4 3D Radiation Patterns

## 3. Summary

# 1. Measurement Information

Free Space

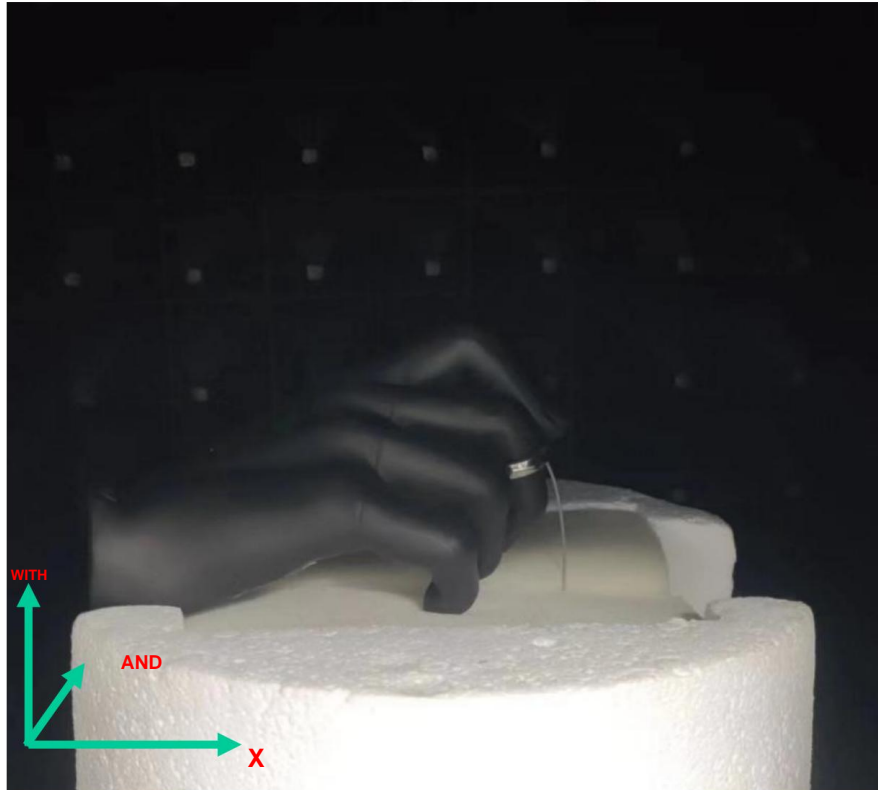
## 1.1 Experimental Setup



# 1. Measurement Information

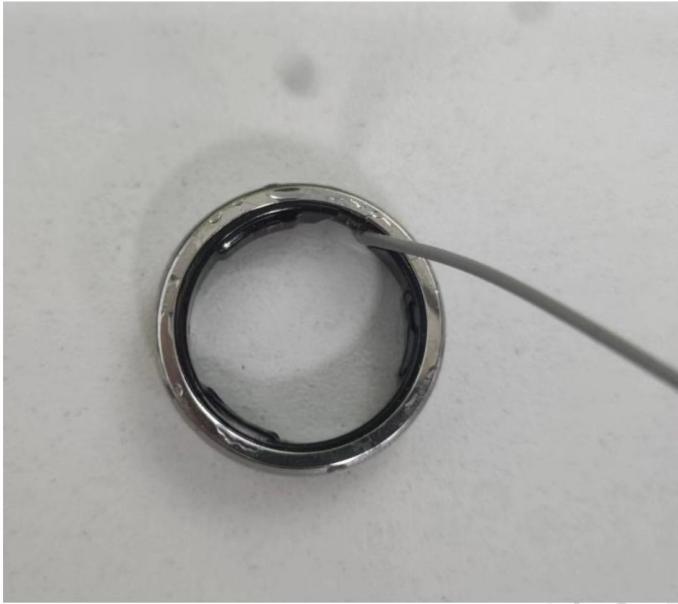
Hand Model

## 1.1 Experimental Setup



# 1. Measurement Information

## 1.2 Antenna Solution Detail



Shell diameter: 25.8mm Metal

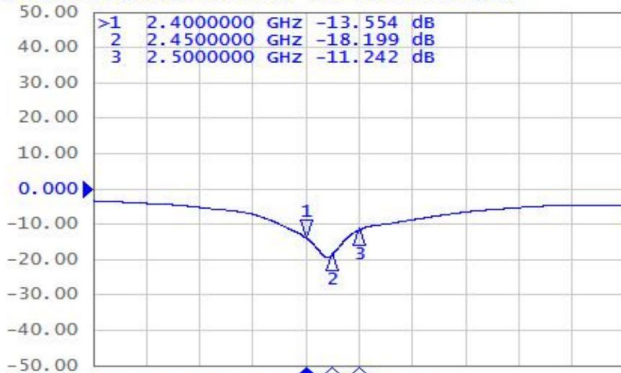
shell antenna, use internal screws to fix the motherboard and the outer frame

## 2. Antenna Characteristics

Free Space

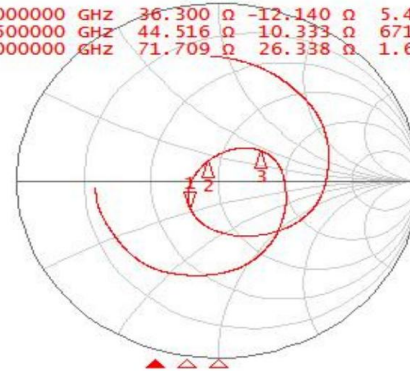
### 2.1 S-Parameter

Tr1 S22 Log Mag 10.00 dB/ Ref 0.000 dB [F1]

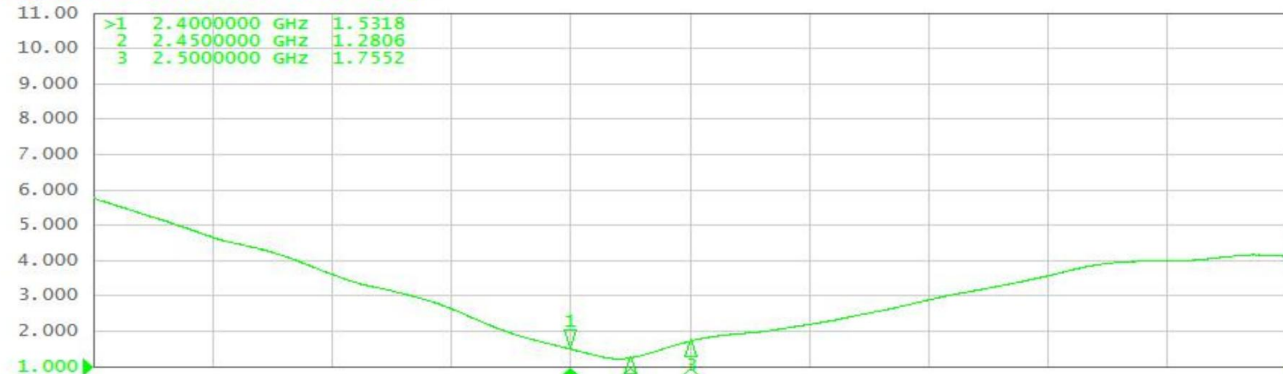


Tr2 S22 Smith (R+jX) Scale 1.000 u [F1]

>1 2.4000000 GHz 36.300  $\Omega$  -12.140  $\Omega$  5.4623 pF  
 2 2.4500000 GHz 44.516  $\Omega$  10.333  $\Omega$  671.26 pF  
 3 2.5000000 GHz 71.709  $\Omega$  26.338  $\Omega$  1.6767 nH



Tr3 S22 SWR 1.000 / Ref 1.000 [F1]

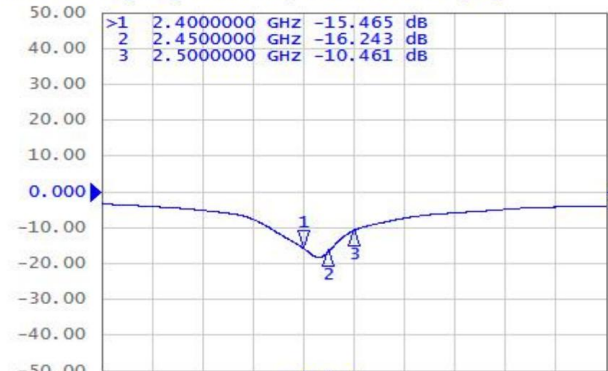


## 2. Antenna Characteristics

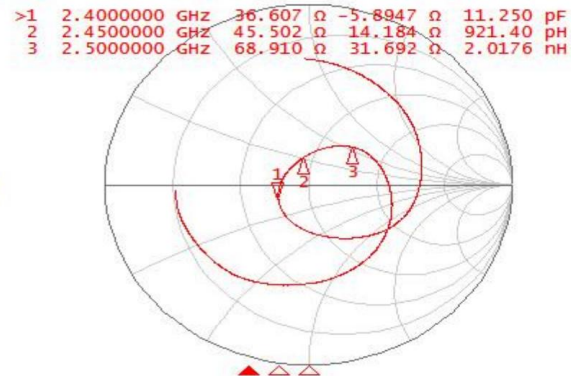
Hand Model

### 2.1 S-Parameter

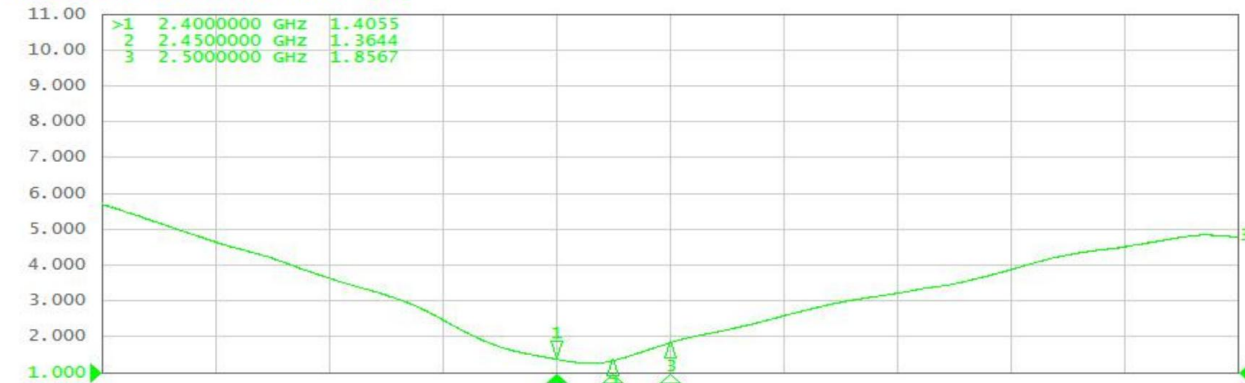
Tr1 S22 Log Mag 10.00 dB/ Ref 0.000 dB [F1]



Tr2 S22 Smith (R+jX) Scale 1.000 u [F1]



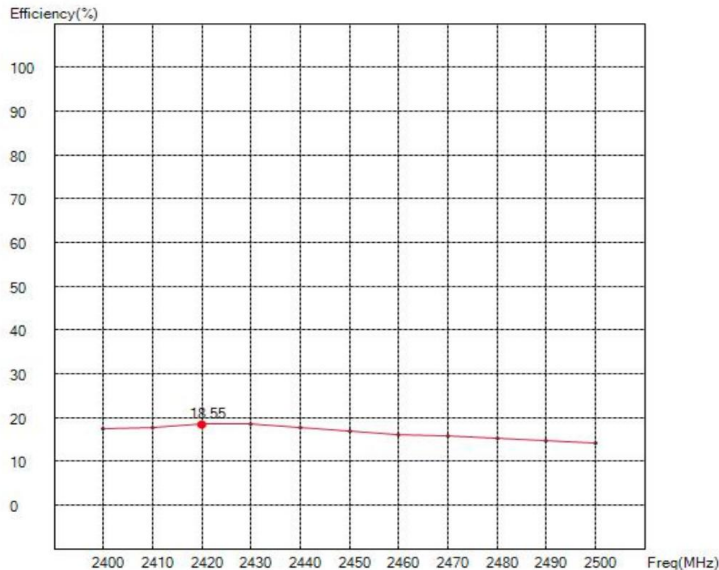
Tr3 S22 SWR 1.000 / Ref 1.000 [F1]



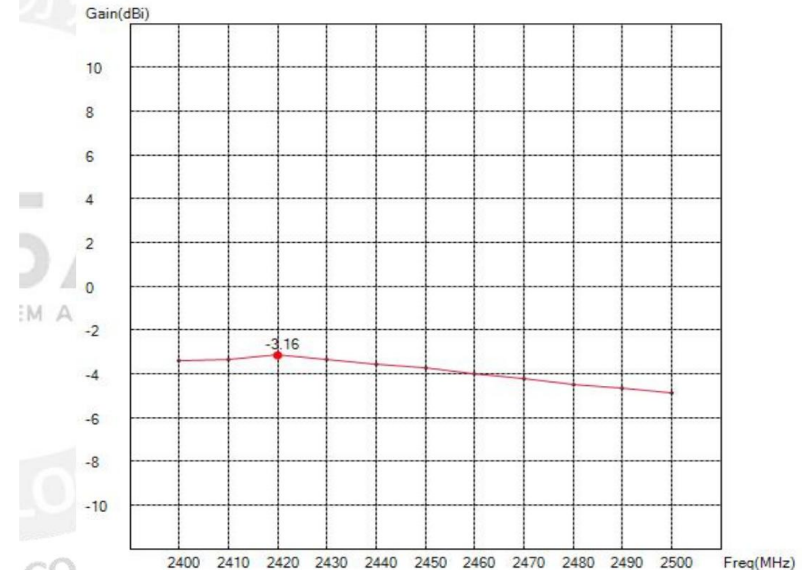
## 2. Antenna Characteristics

Free Space

### 2.2 Antenna Efficiency and Peak Gain



Maximum Efficiency at 2420MHz : 18.55%

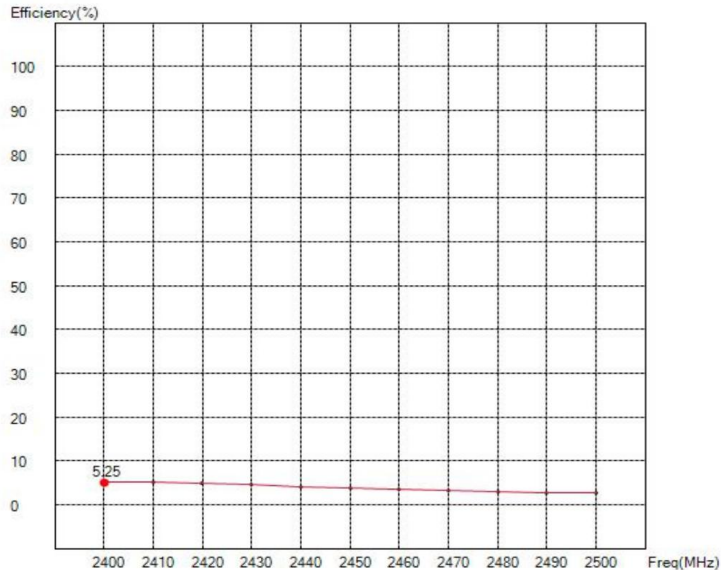


Maximum Peak Gain at 2420MHz :-3.16 dBi

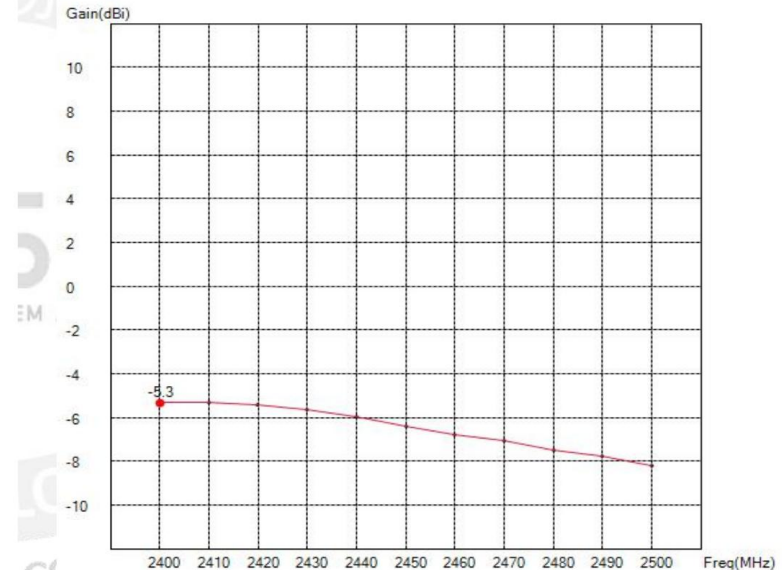
## 2. Antenna Characteristics

Hand Model

### 2.2 Antenna Efficiency and Peak Gain



Maximum Efficiency at 2400MHz : 5.25%



Maximum Peak Gain at 2400MHz : -5.3 dBi

## 2. Antenna Characteristics

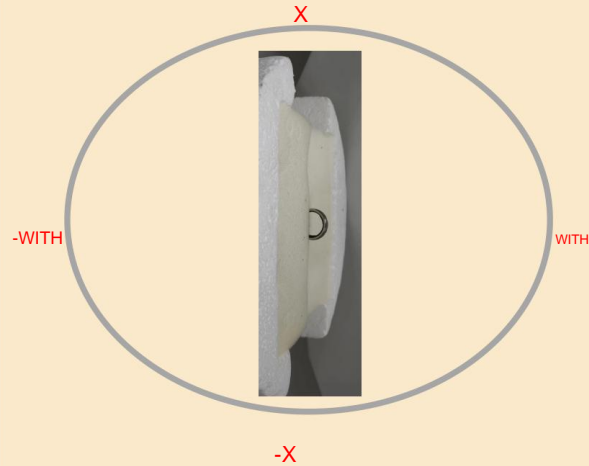
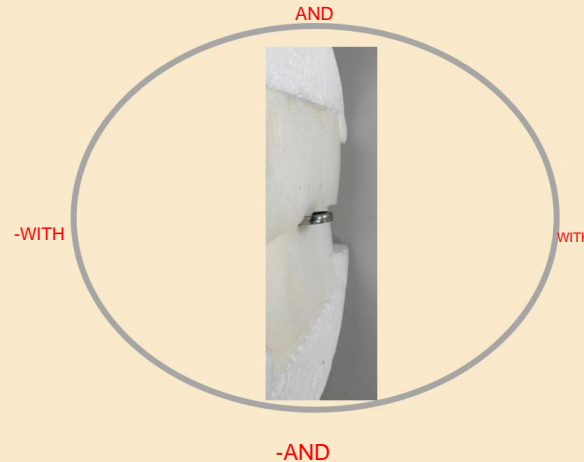
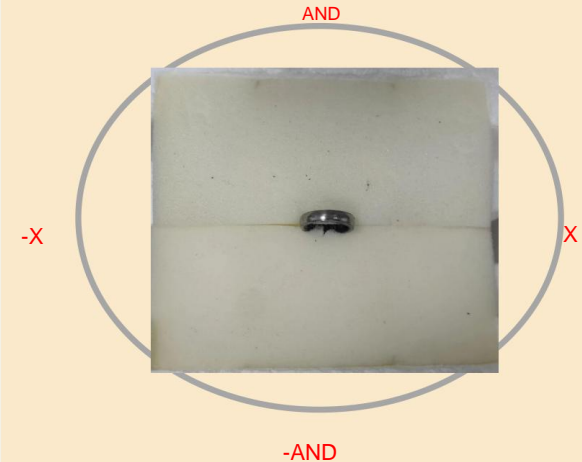
### 2.2 Antenna Efficiency and Peak Gain

	ANT(Free Space)		ANT(Hand Model)	
Frequency (GHz)	Efficiency (%)	Peak gain (dBi)	Efficiency (%)	Peak gain (dBi)
2.4	17.38	-3.41	5.25	-5.99
2.45	16.87	-3.76	3.84	-7.43
2.5	14.10	-4.88	2.60	-9.15

## 2. Antenna Characteristics

Free Space

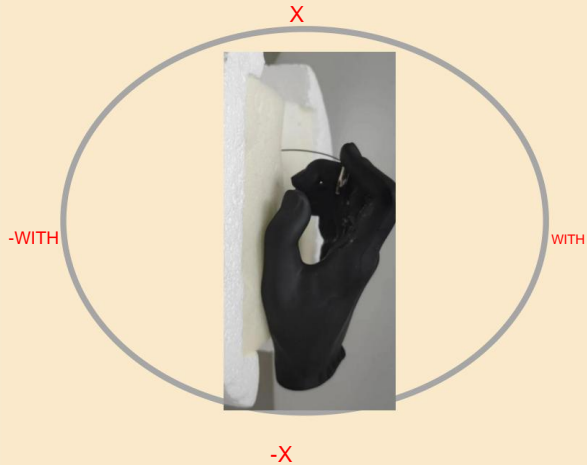
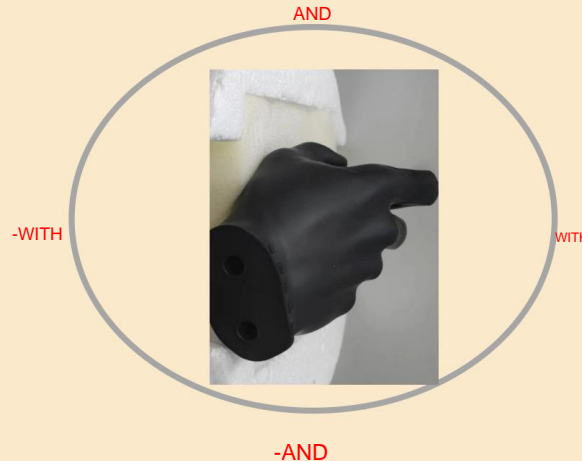
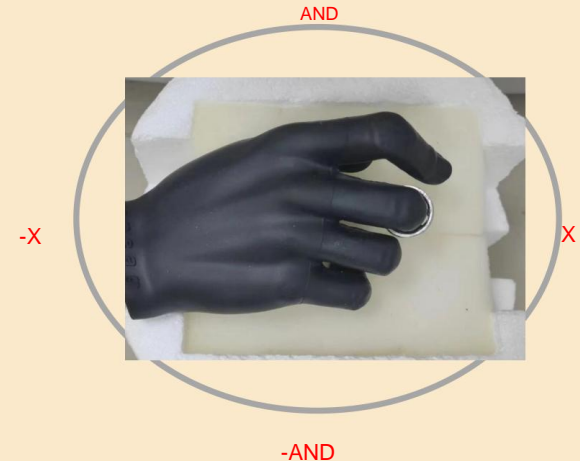
### 2.3 3 views of antenna

**X-Z plane****Y-Z plane****X-Y plane**

## 2. Antenna Characteristics

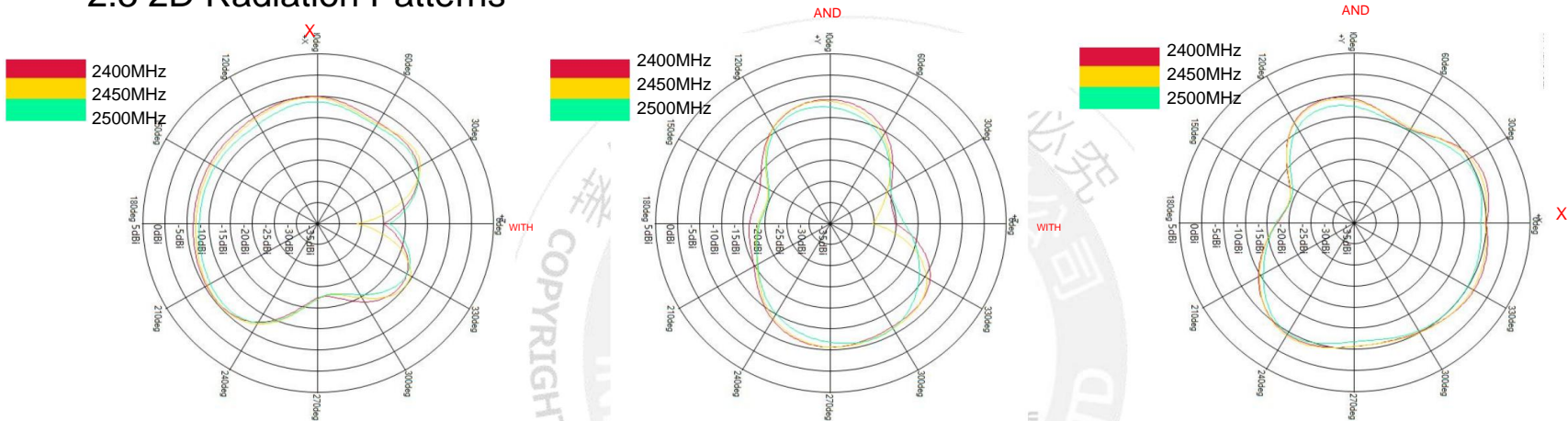
Hand Model

### 2.3 3 views of antenna

**X-Z plane****Y-Z plane****X-Y plane**

## 2. Antenna Characteristics

### 2.3 2D Radiation Patterns

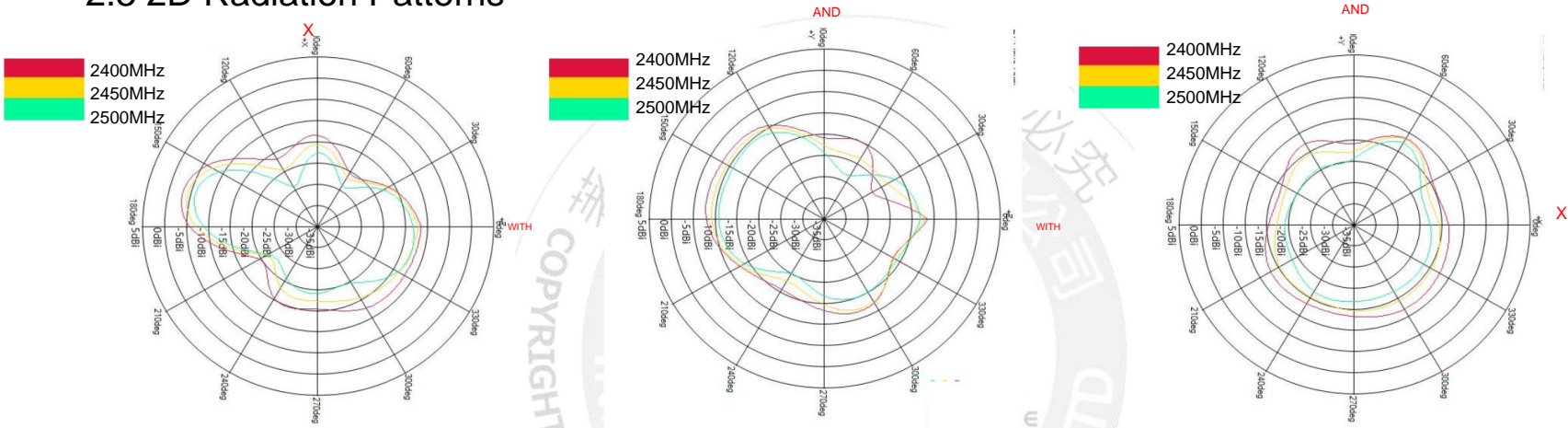


	ZX plane		ZY plane		XY plane	
Frequency [MHz]	Max Value [dBi]	Average [dBi]	Max Value [dBi]	Average [dBi]	Max Value [dBi]	Average [dBi]
2400	-4.89	-8.73	-5.66	-9.27	-3.41	-6.33
2450	-5.19	-8.87	-5.84	-9.56	-3.76	-6.48
2500	-6.18	-9.60	-6.43	-10.34	-4.88	-7.47

# 2. Antenna Characteristics

## 2.3 2D Radiation Patterns

Hand Model



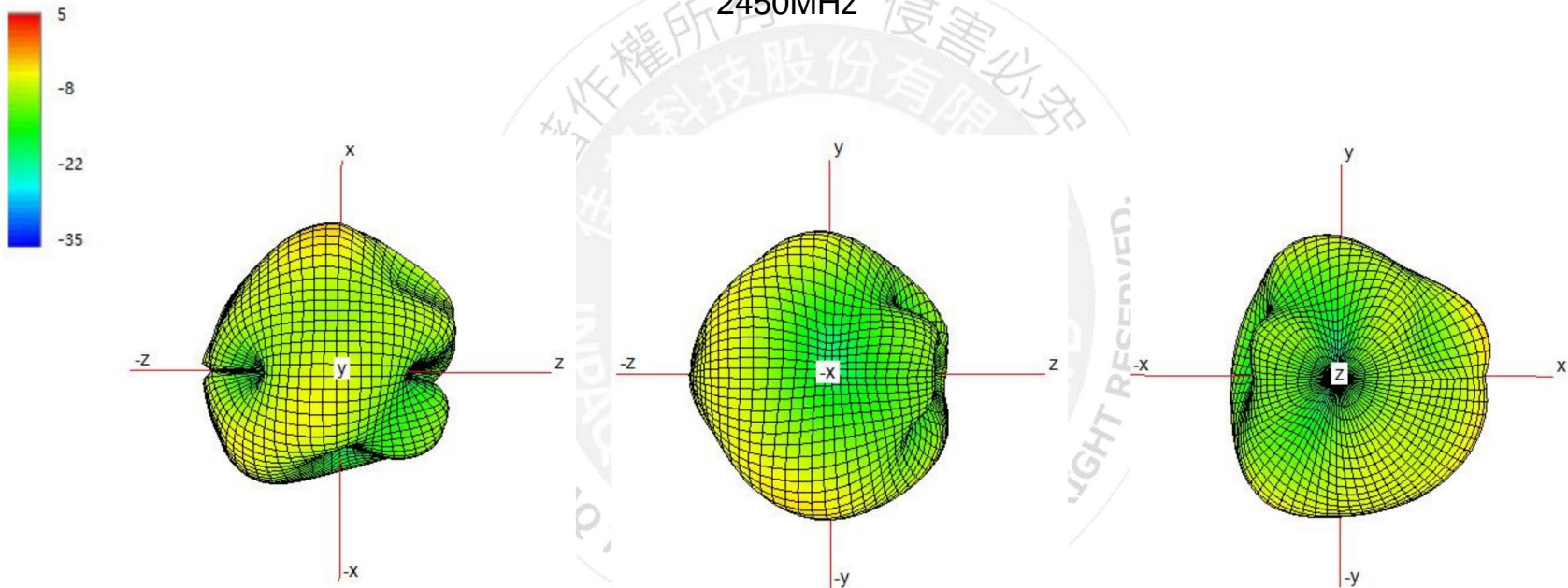
	ZX plane		ZY plane		XY plane	
Frequency [MHz]	Max Value [dBi]	Average [dBi]	Max Value [dBi]	Average [dBi]	Max Value [dBi]	Average [dBi]
2400	-5.99	-14.07	-8.20	-13.21	-11.36	-13.44
2450	-7.34	-15.58	-9.45	-13.96	-11.65	-15.16
2500	-9.15	-17.02	-11.00	-15.14	-12.62	-17.15

## 2. Antenna Characteristics

Free Space

### 2.4 3D Radiation Patterns

2450MHz

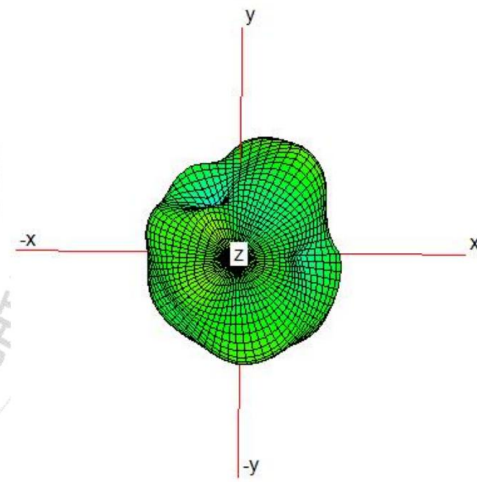
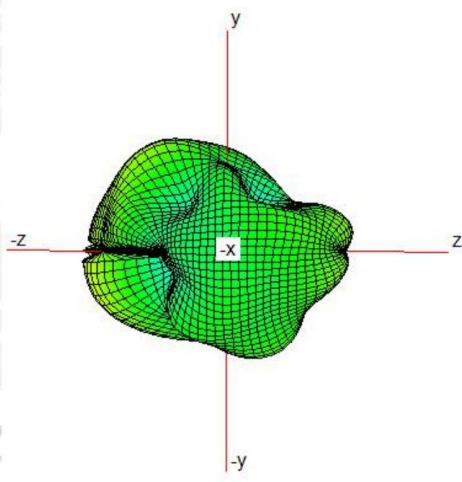
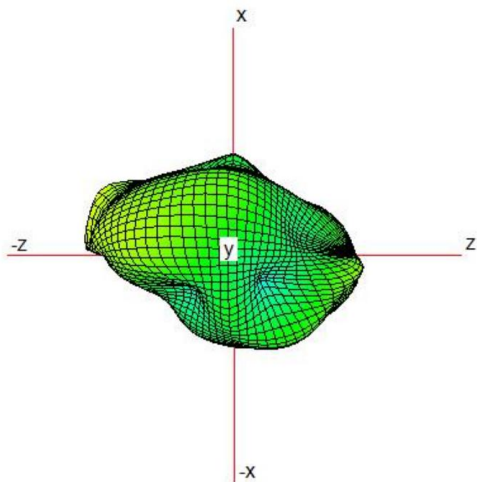
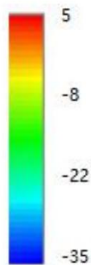


## 2. Antenna Characteristics

Hand Model

### 2.4 3D Radiation Patterns

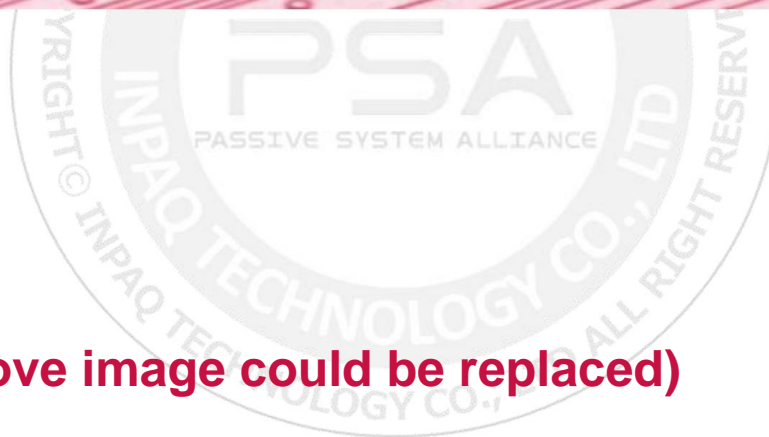
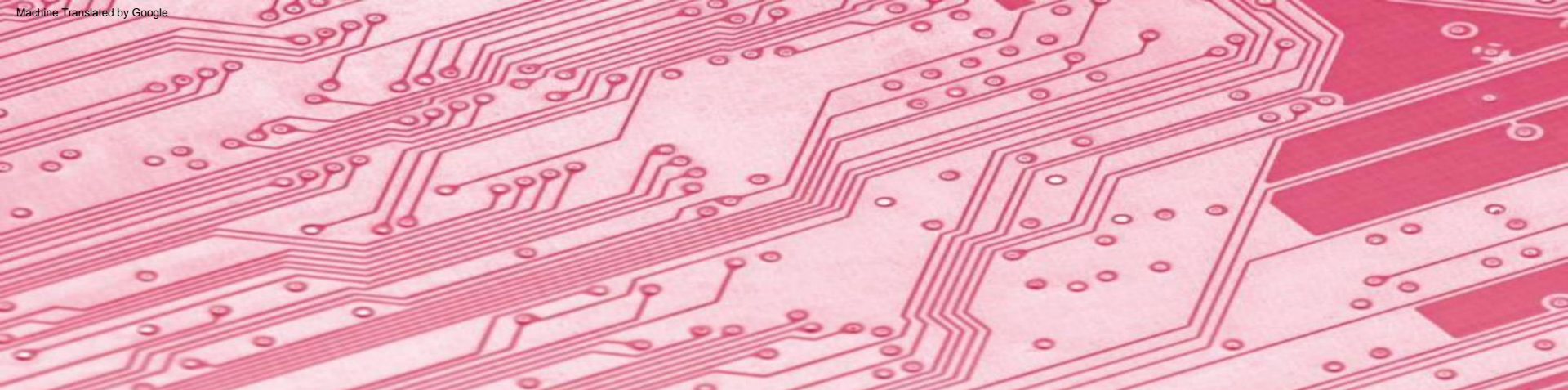
2450MHz



### 3. Summary

- The performance of antennas is shown in table

	ANT(free space)	ANT(hand model)
<b>Maximum Efficiency (%)</b>	<b>18.55</b>	<b>5.25</b>
<b>Maximum Gain (dBi)</b>	<b>-3.16</b>	<b>-5.99</b>



**Title for Image (above image could be replaced)**

## Content Details

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