

# Specification for Approval

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<b>Customer:</b>	HL Tronics (Kunshan) Co., Ltd.	<b>Vendor:</b>	HL Tronics
<b>Customer P/N:</b>	-	<b>HL P/N:</b>	-
<b>Customer Device Name:</b>	-	<b>HL Device Name:</b>	P-2458-12M8-QJ-8530X
<b>Version:</b>	A	<b>Approval Date:</b>	2020-05-15

<b>Internal Approval</b>		
<b>Approved By:</b>	<b>Checked By:</b>	<b>Prepared By:</b>
Tking Zhang	Tking Zhang	Yuanyuan Wu
<b>Customer Approval</b>		

Revision:

Date	Rev	Description of Changes
2020-05-15	A	Initial Release

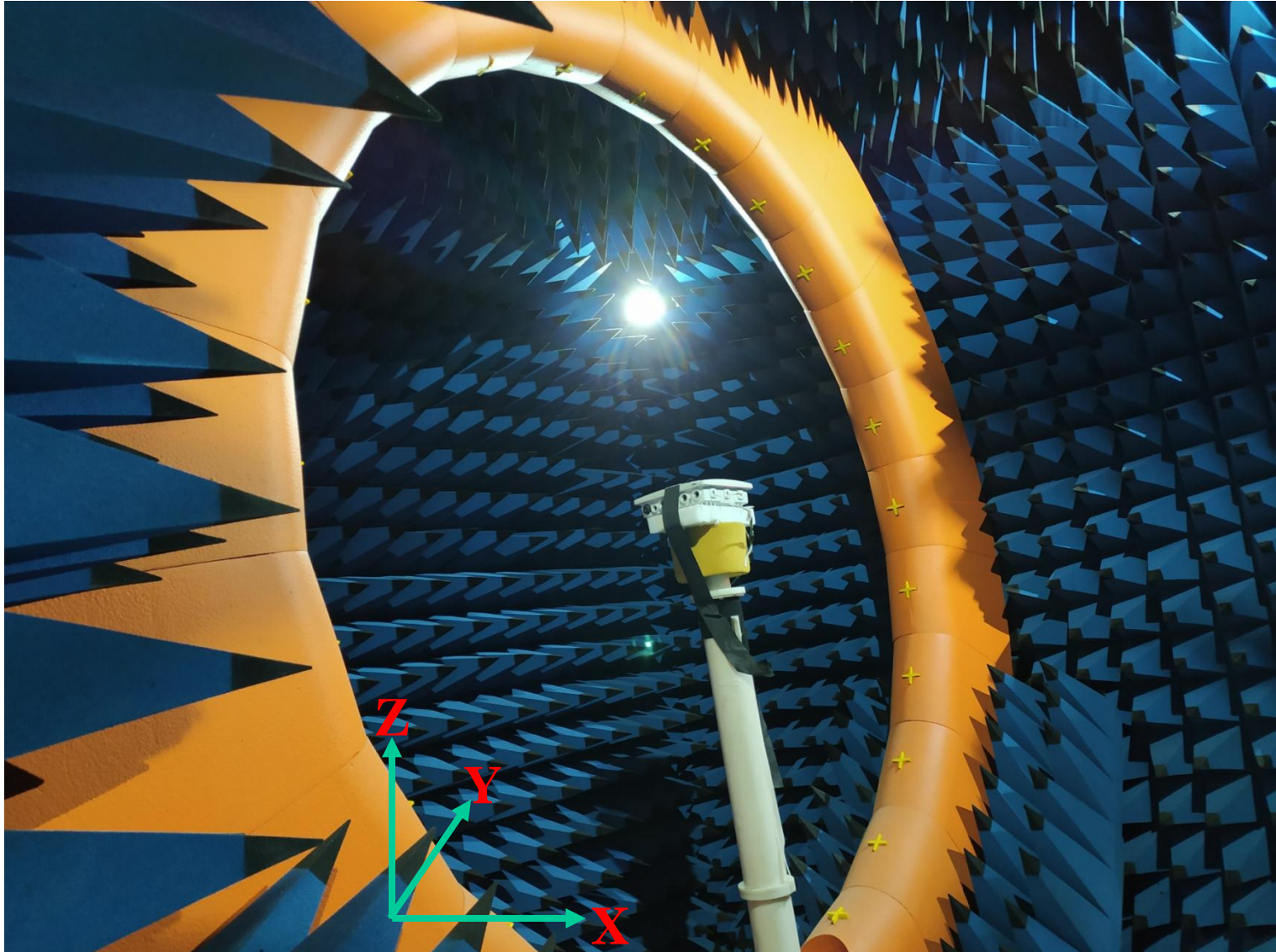
**Electrical characteristics:**

<b>Model No.</b>	P-2458-12M8-QJ-8530X	
<b>Frequency range (MHz)</b>	2400-2500	5150-5850
<b>VSWR(antenna without cover test)</b>	<3.0	<2.3
<b>Working Temperature</b>	-30°C~+70°C	
<b>Working Humidity</b>	20%RH~70%RH	

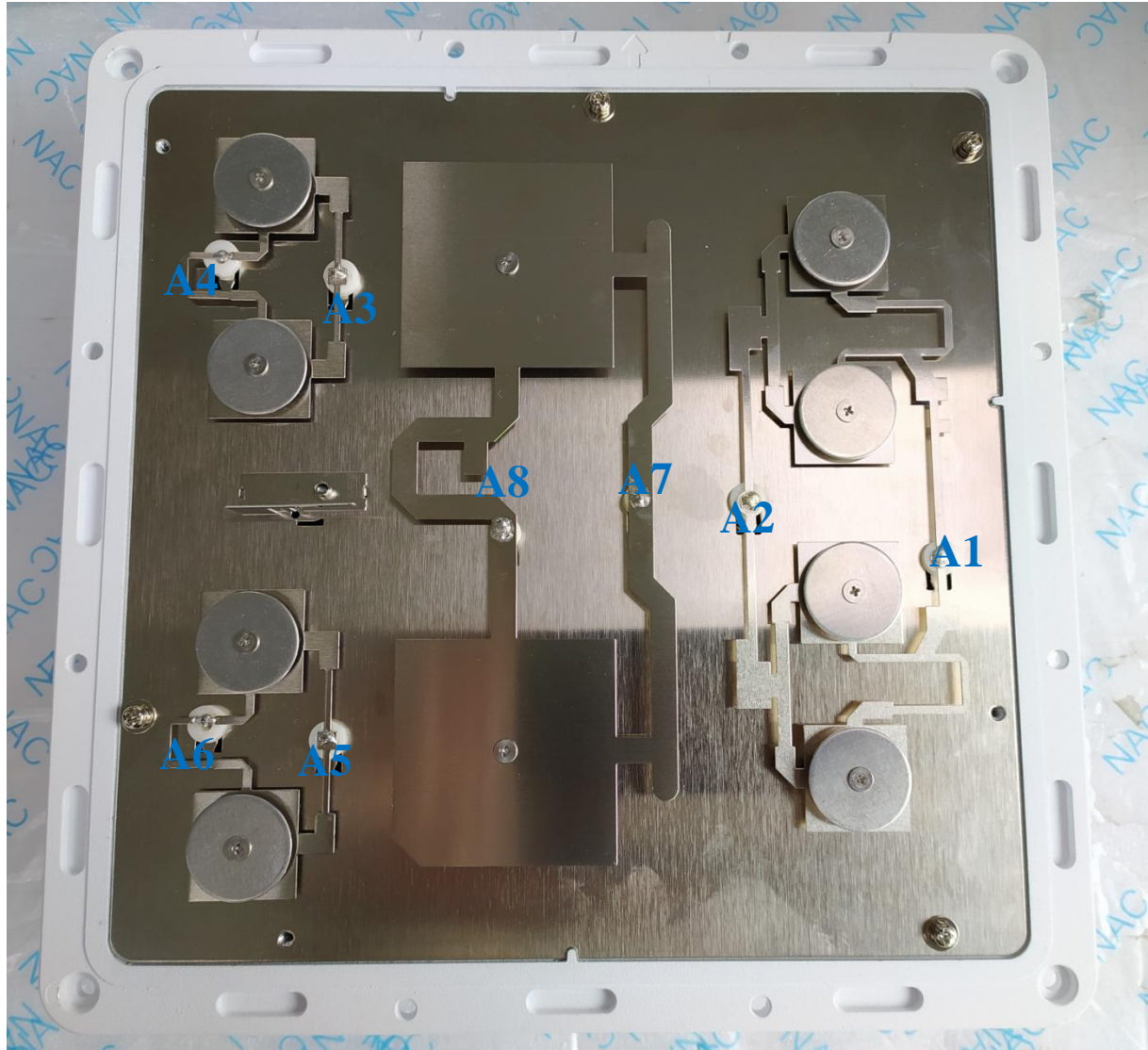
**Outline**

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- 2.S-Parameters(VSWR & isolation)
- 3.Antenna Efficiency& Peak Gain
- 4.Radiation patterns
- 5.Summary

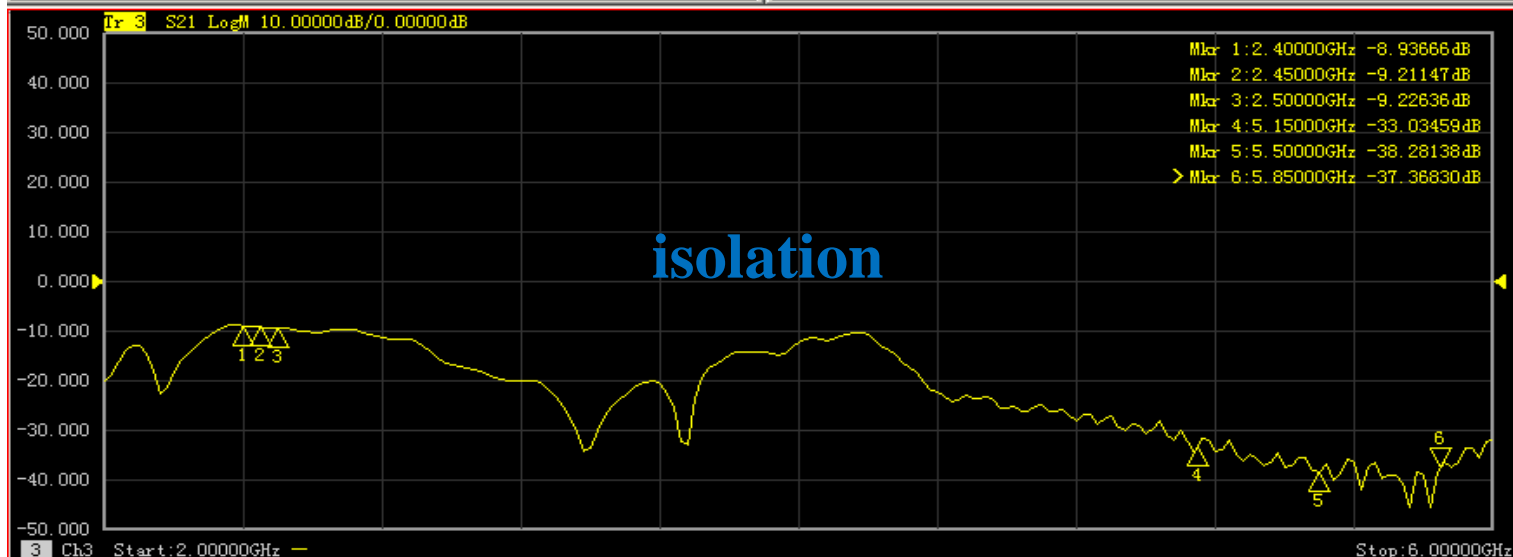
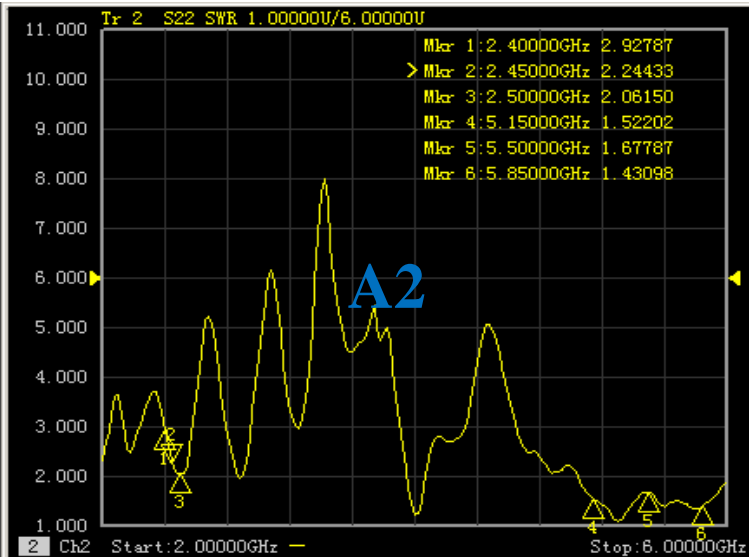
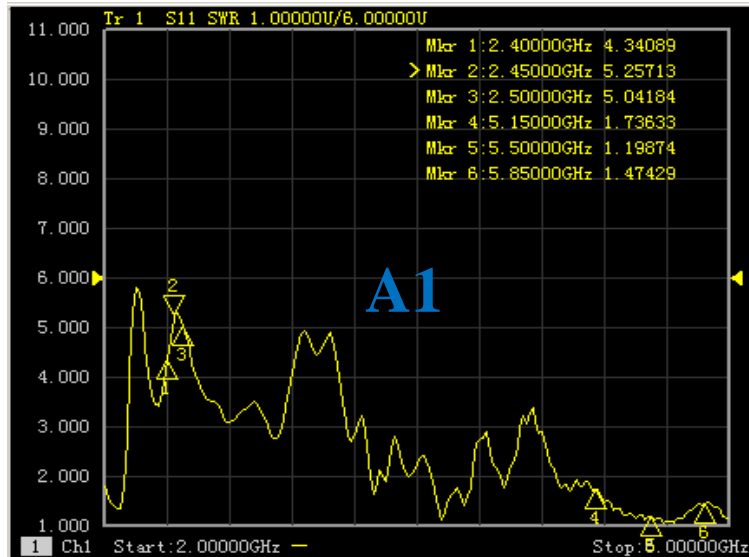
# 1.Benchmark



# 1.Benchmark

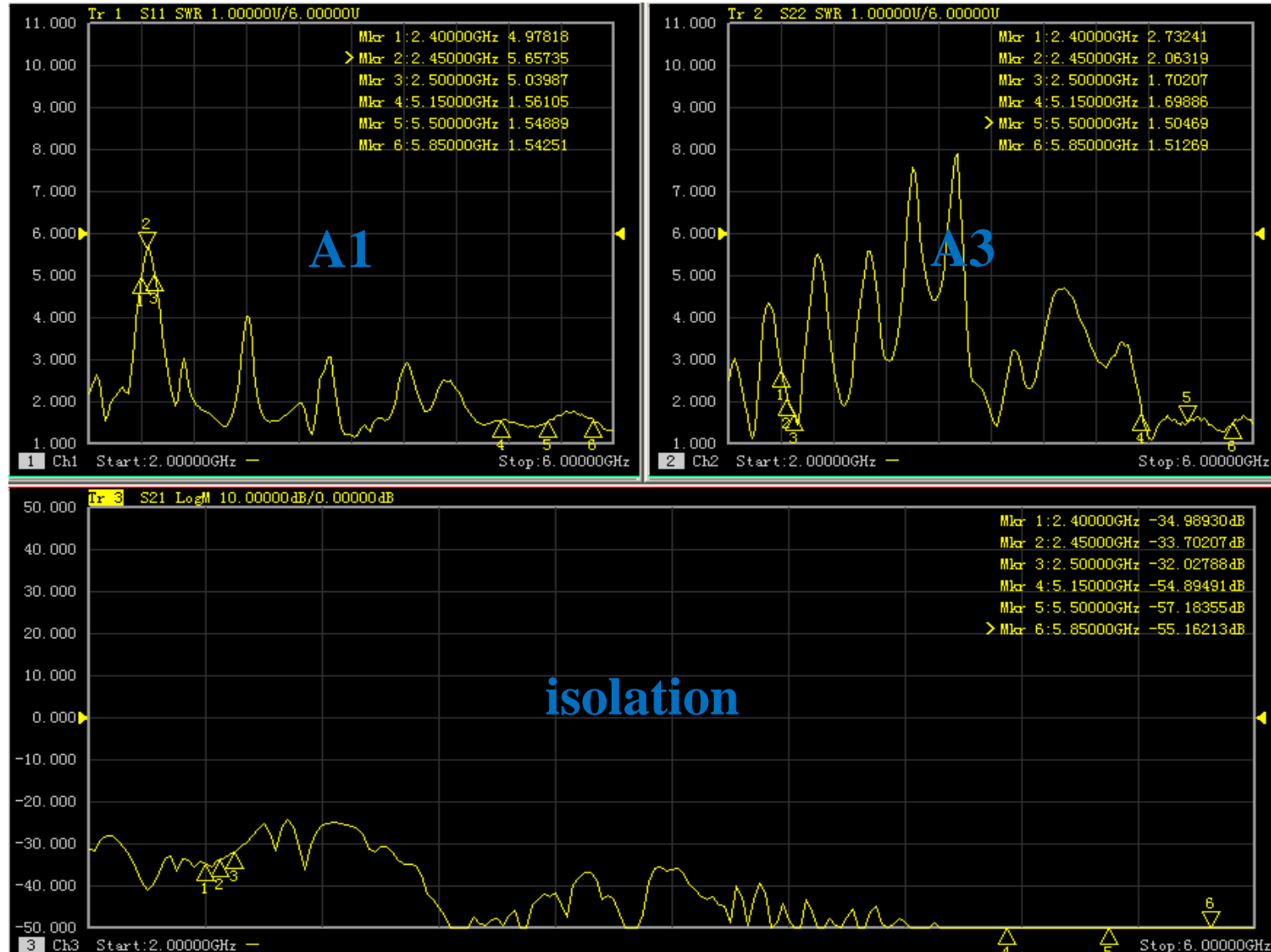


## 2.S-Parameters(VSWR&isolation)(A1 A2)

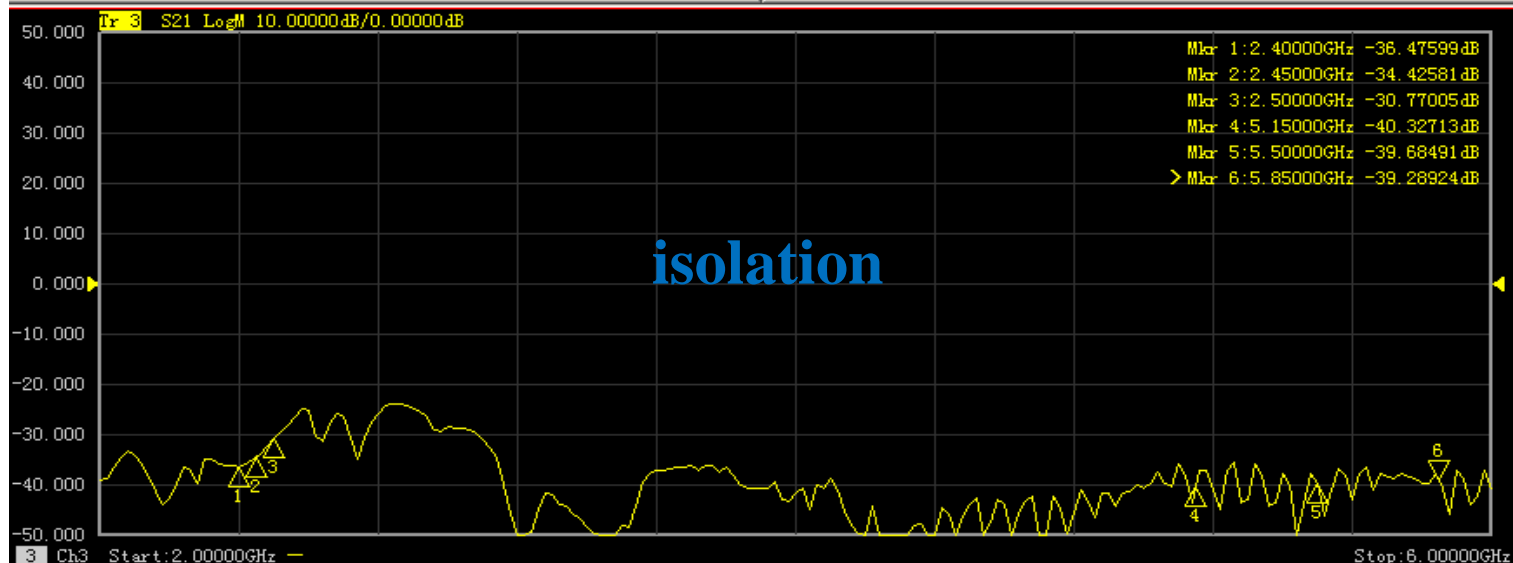
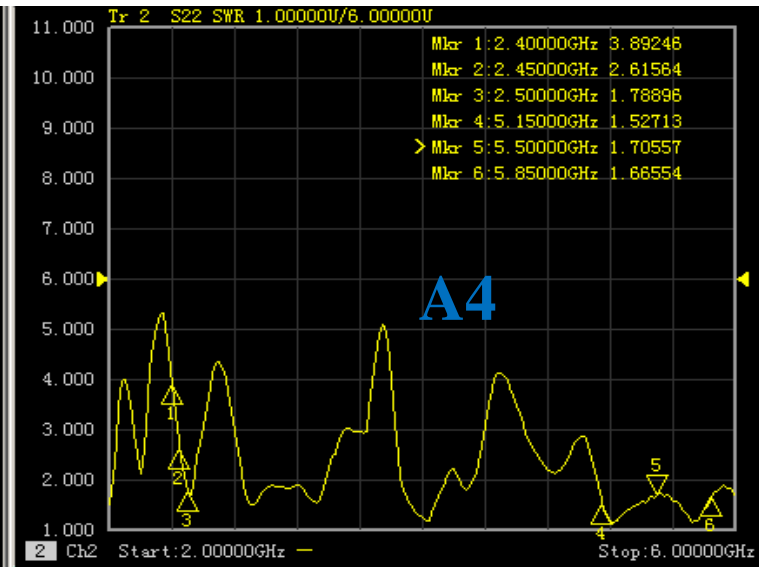
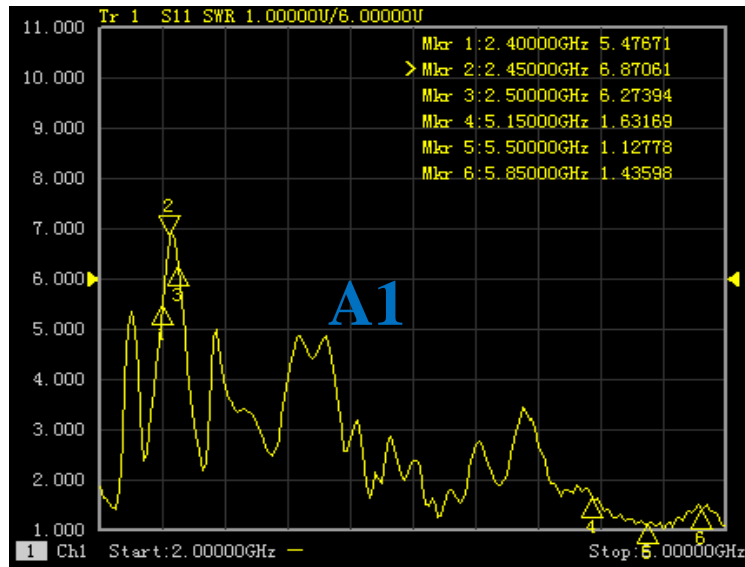




## 2.S-Parameters(VSWR&isolation)(A1 A3)

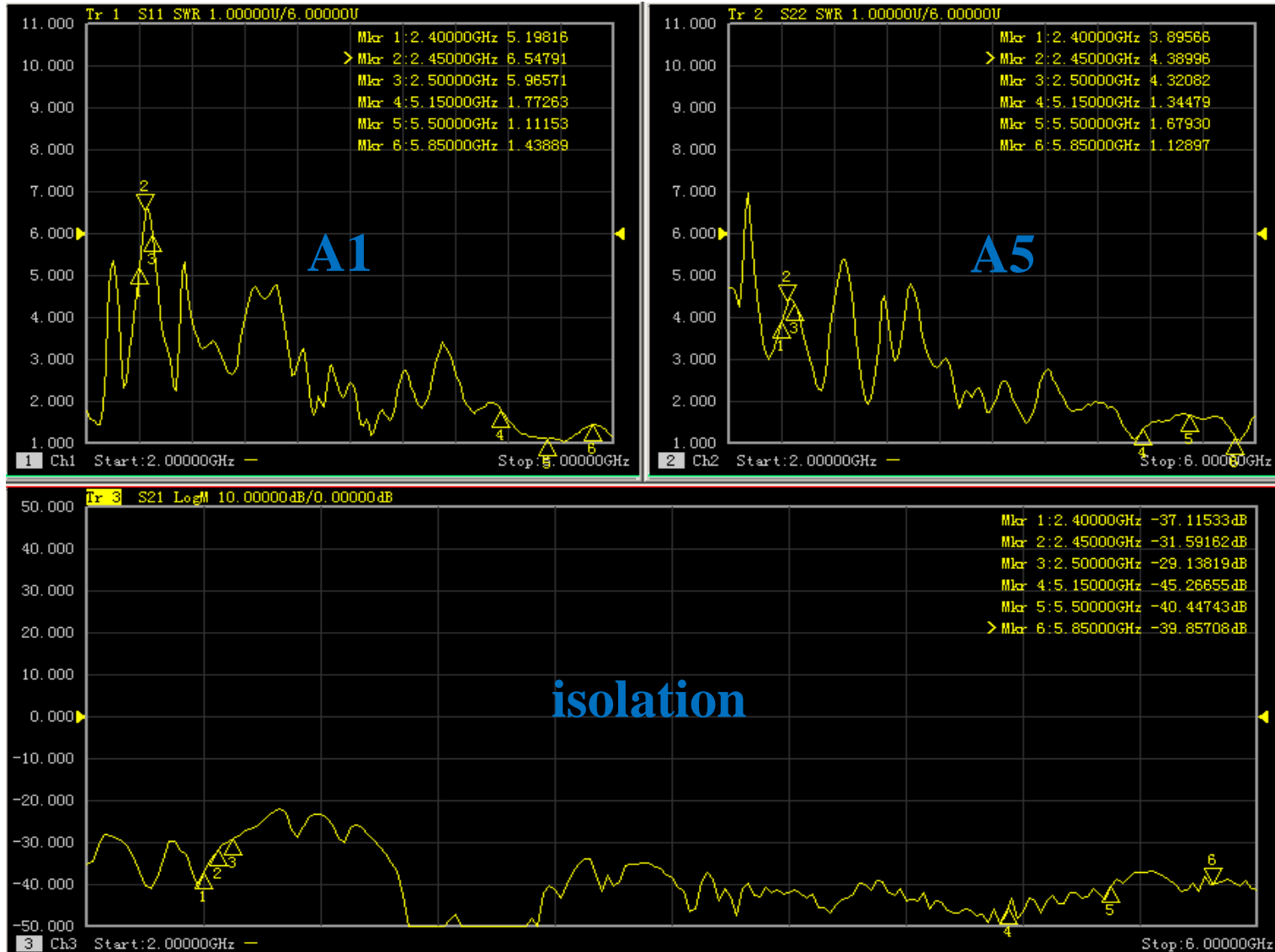


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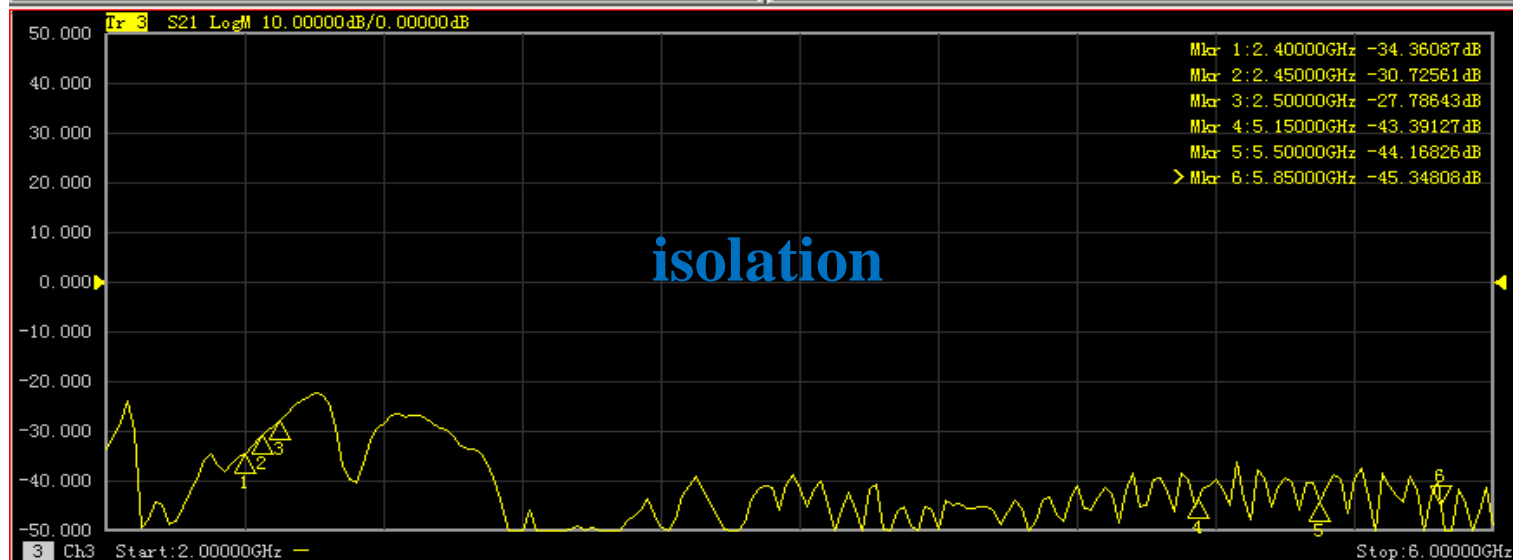
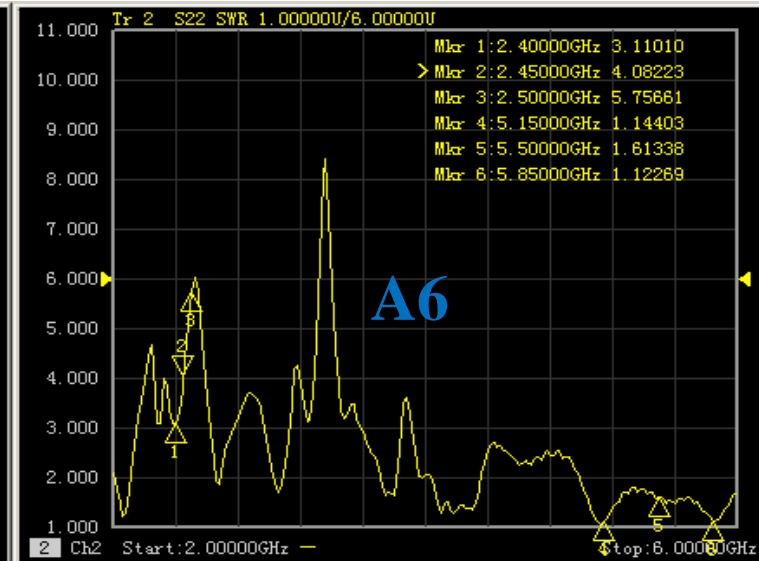
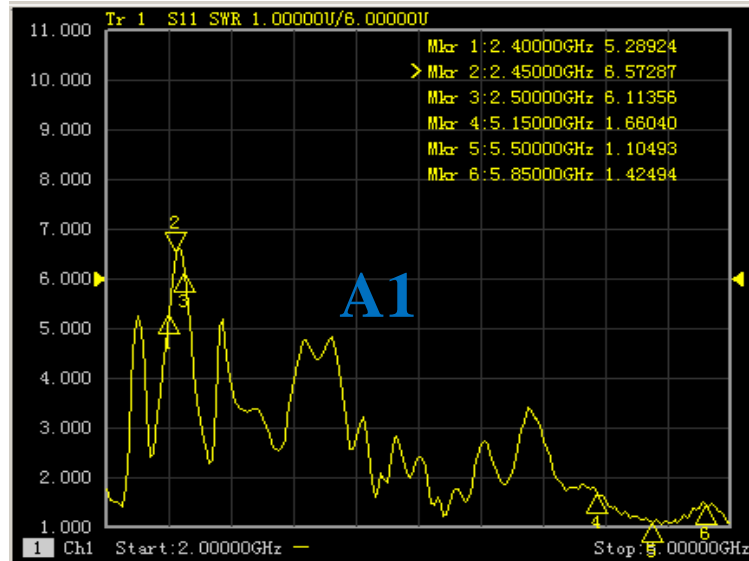




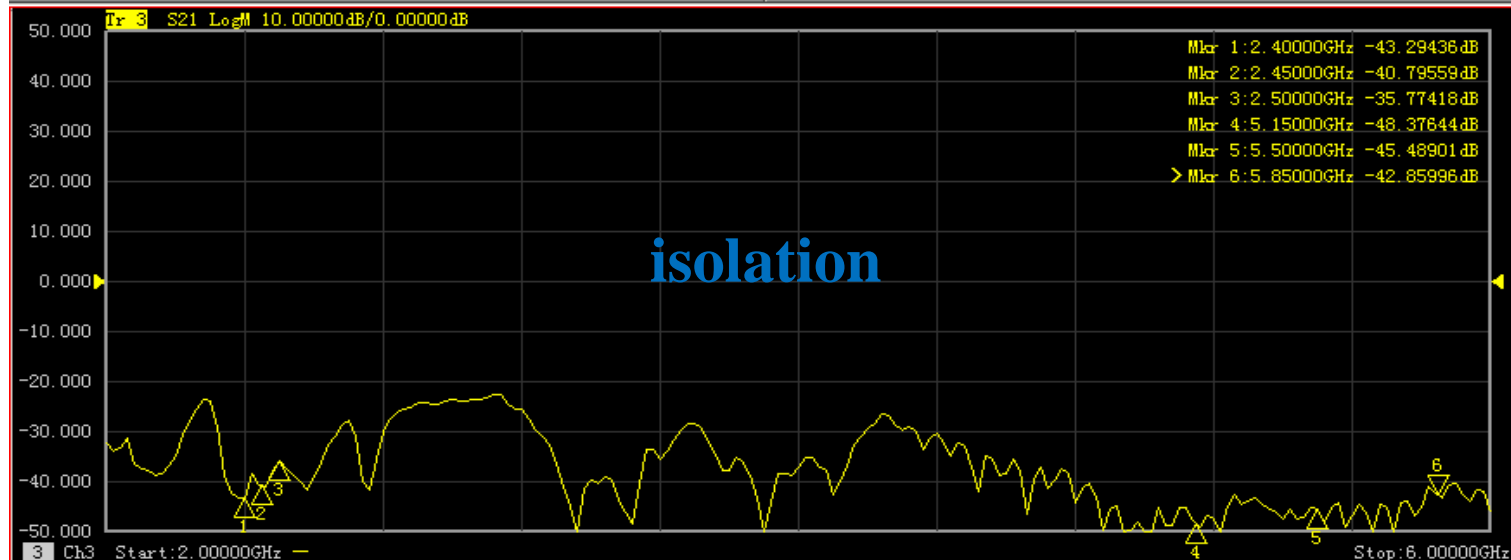
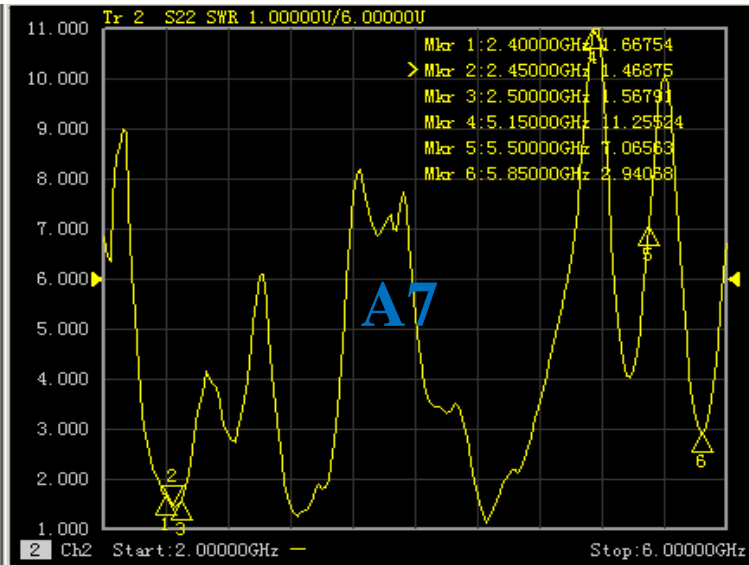
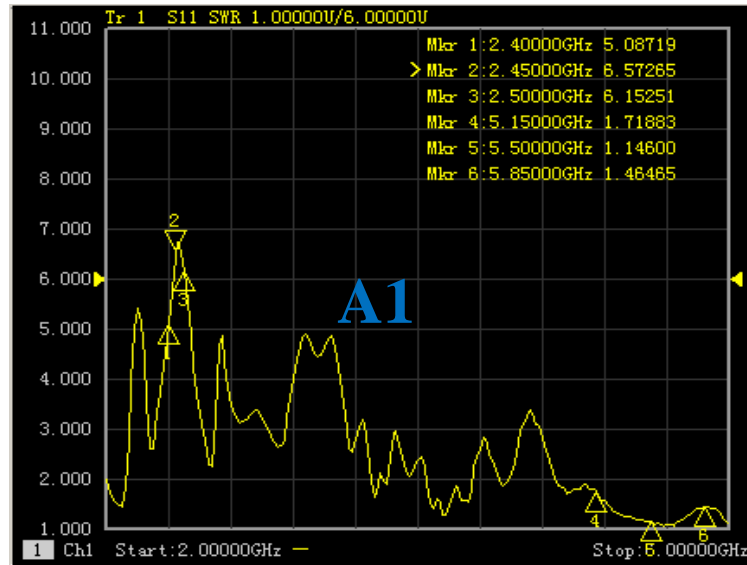
## 2.S-Parameters(VSWR&isolation)(A1 A5)



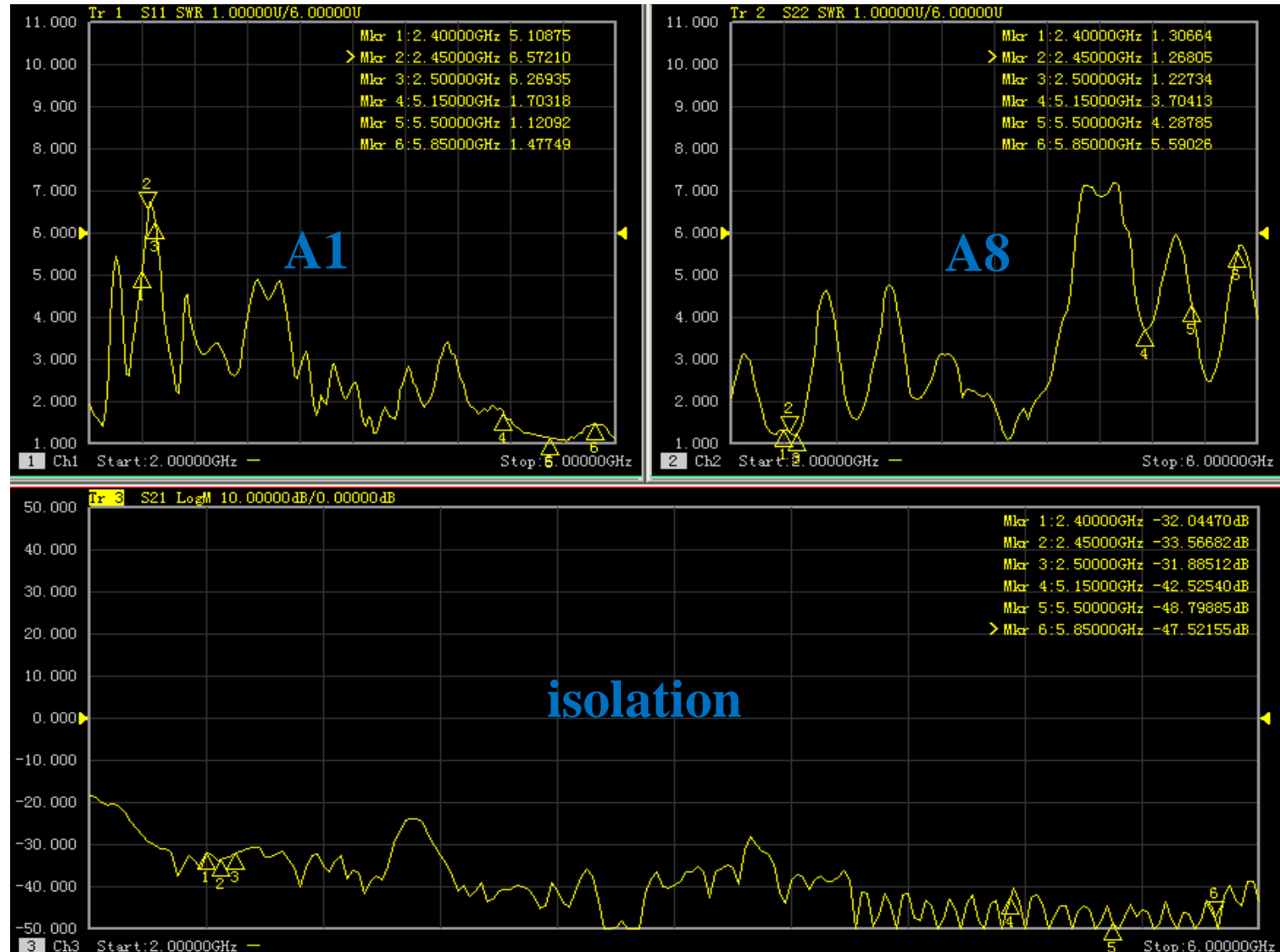
## 2.S-Parameters(VSWR&isolation)(A1 A6)



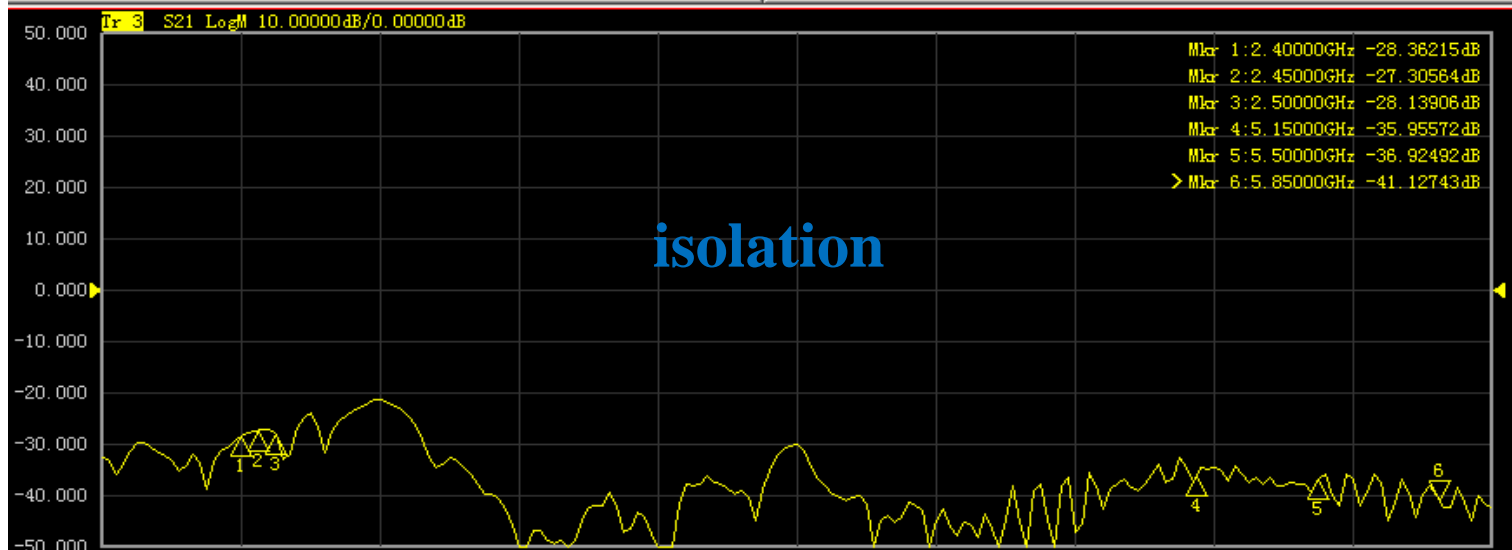
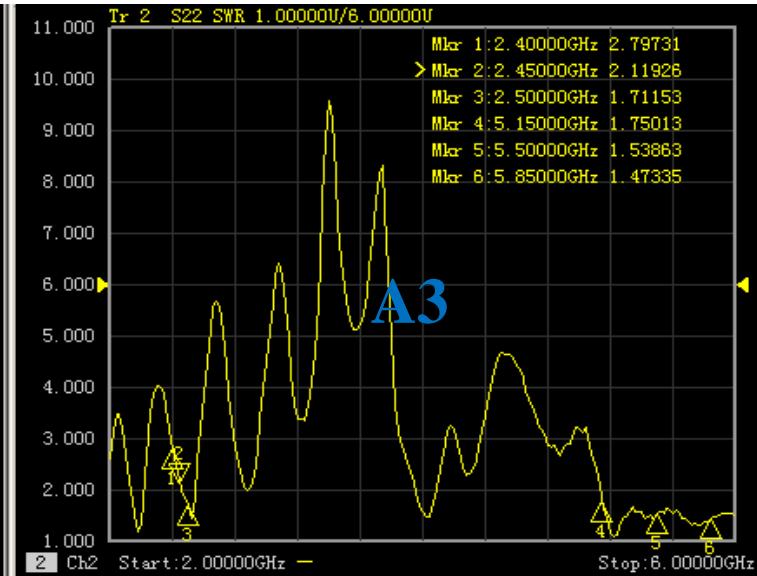
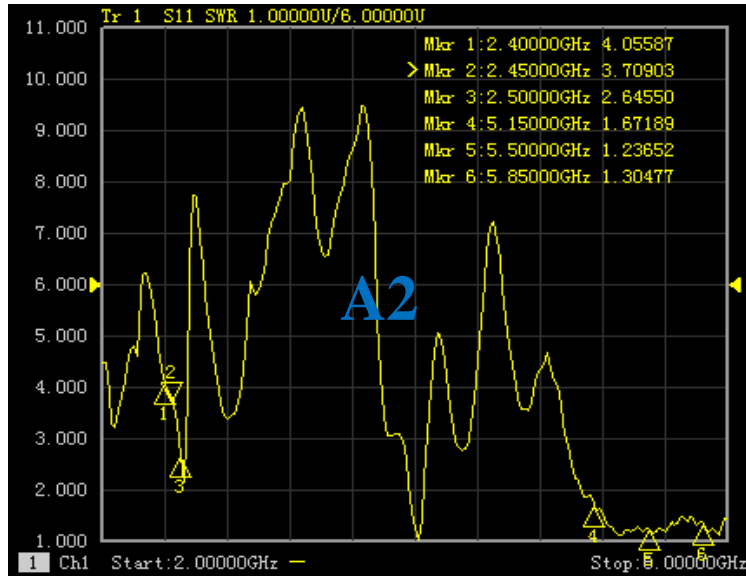
## 2.S-Parameters(VSWR&isolation)(A1 A7)



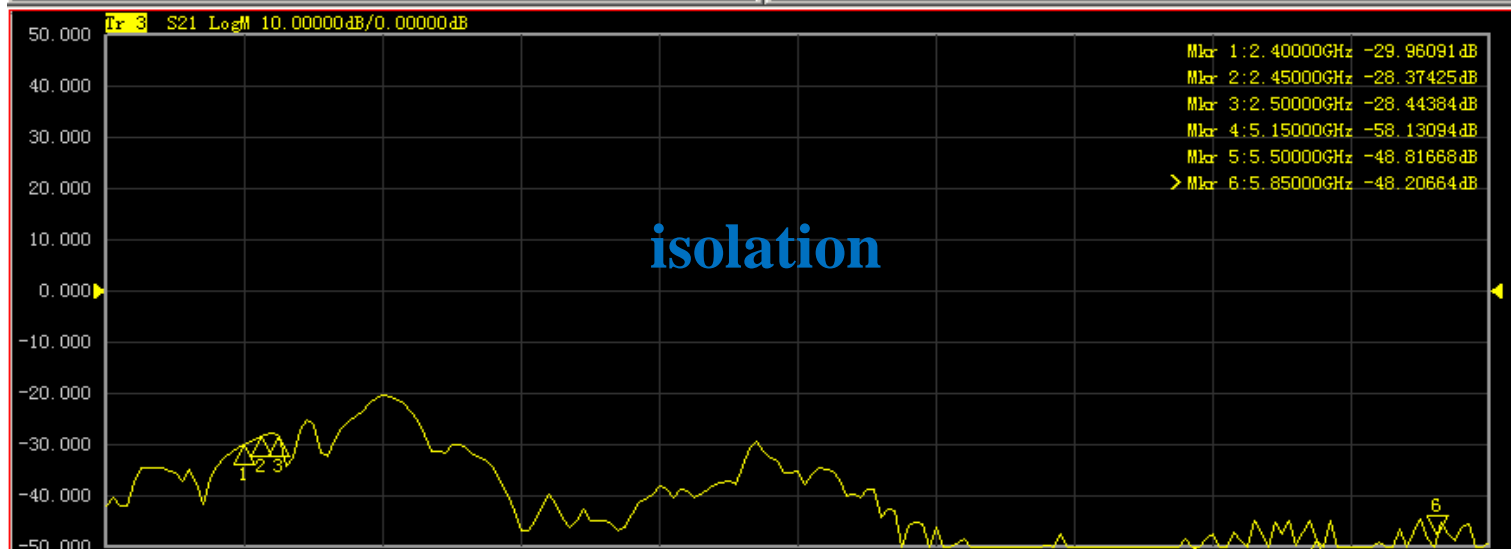
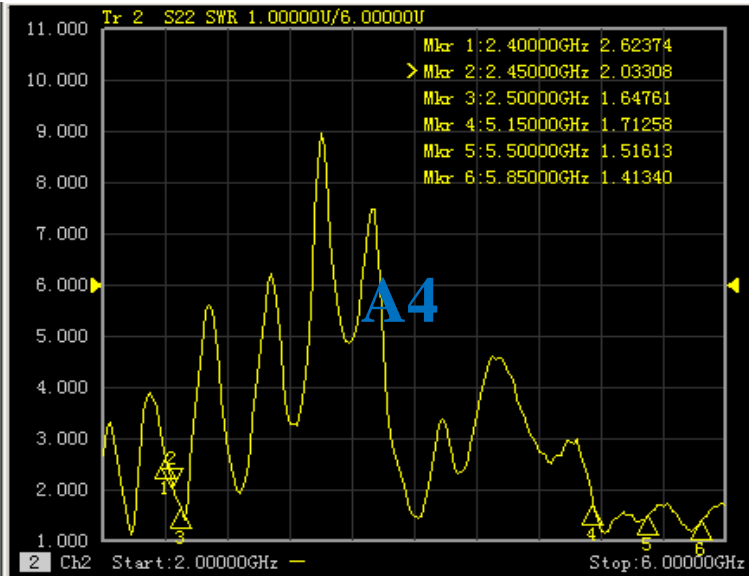
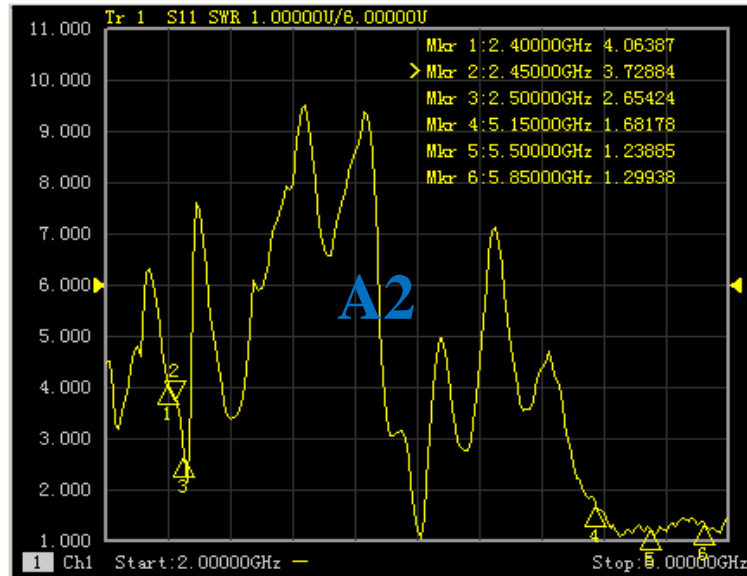
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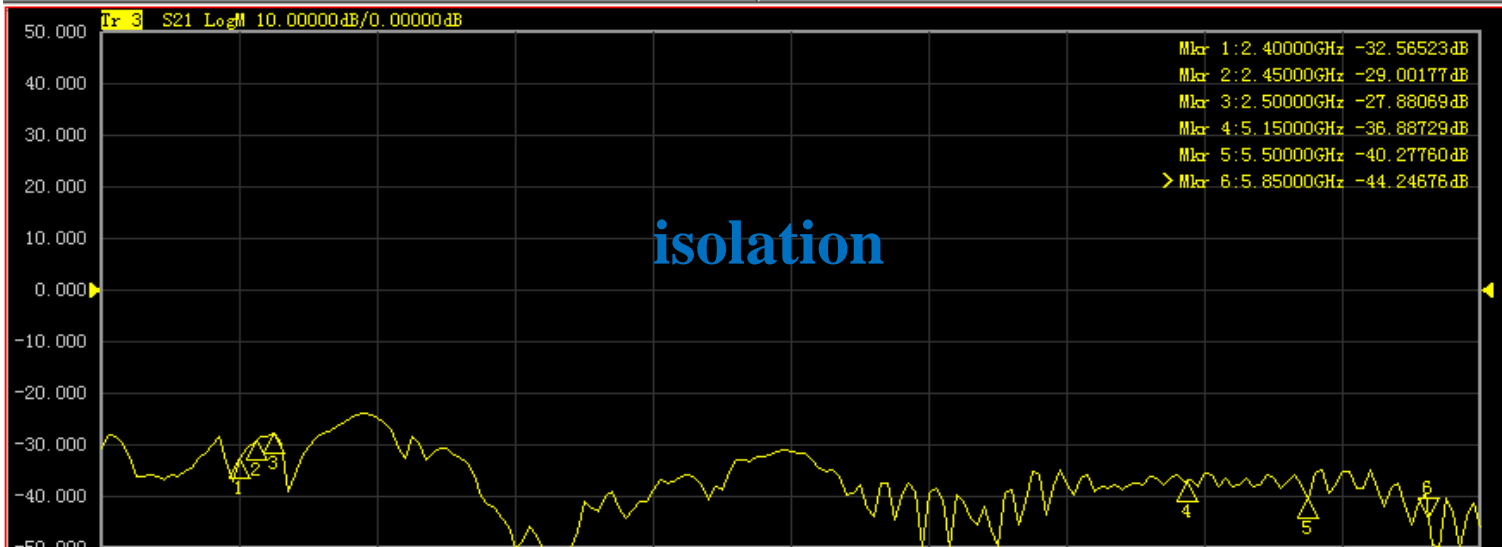
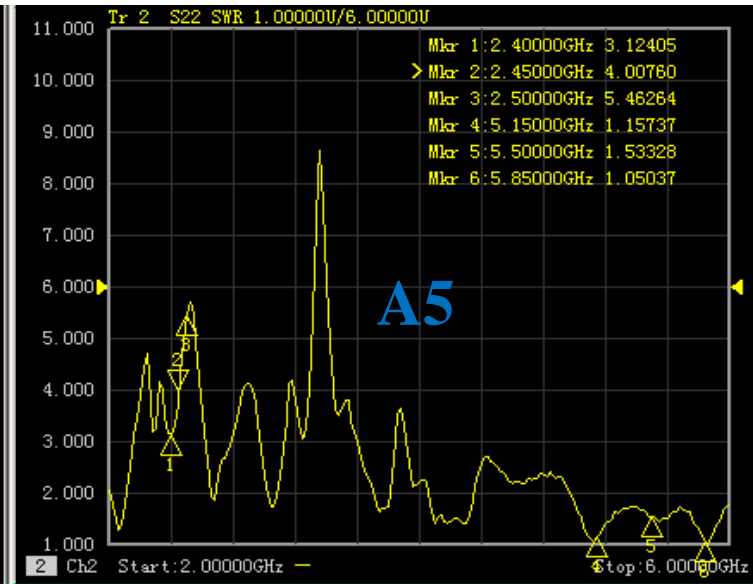
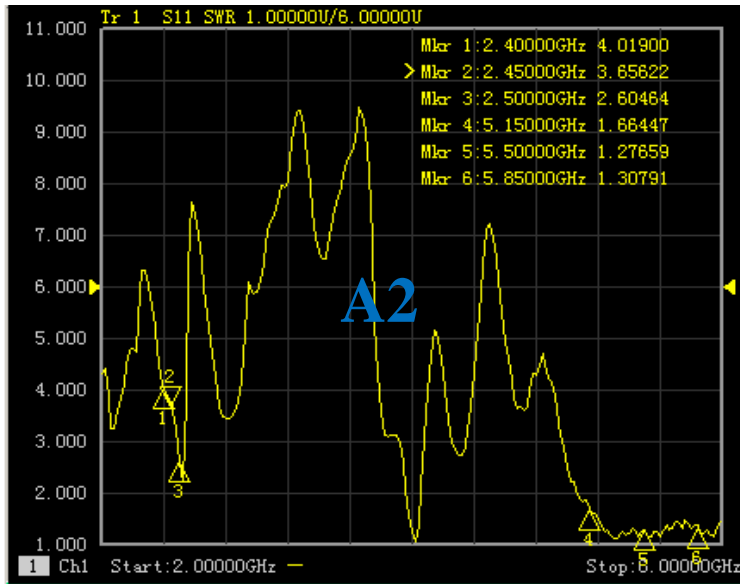
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## 2.S-Parameters(VSWR&isolation)(A2 A4)

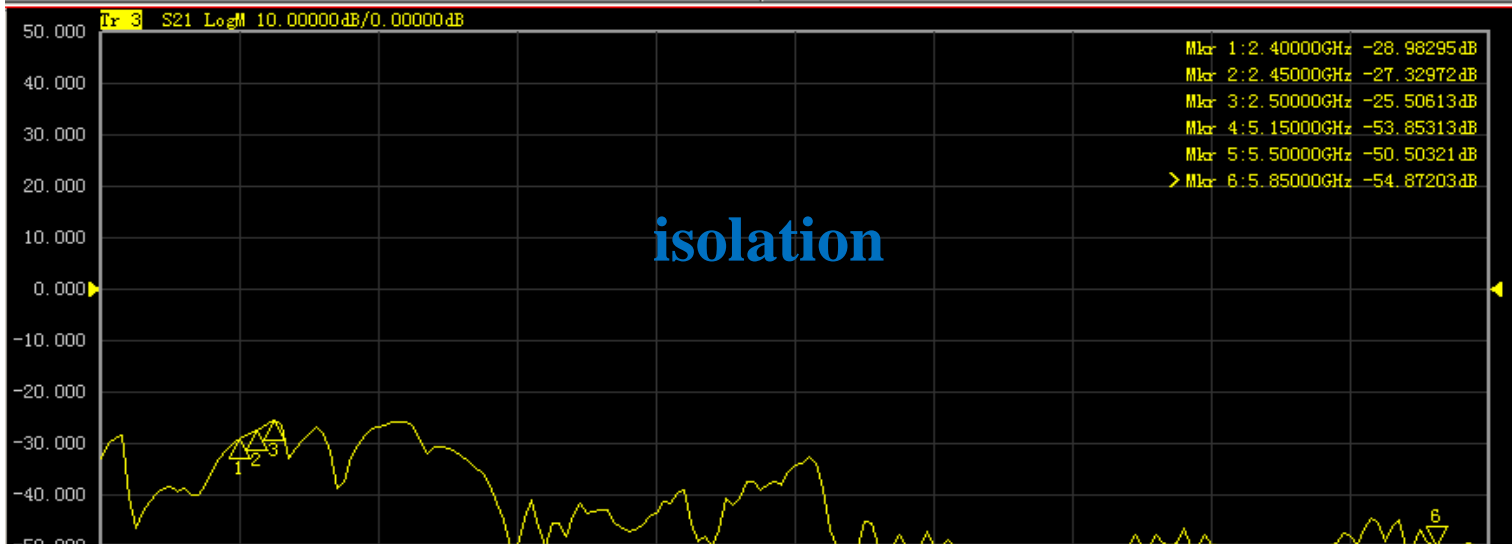
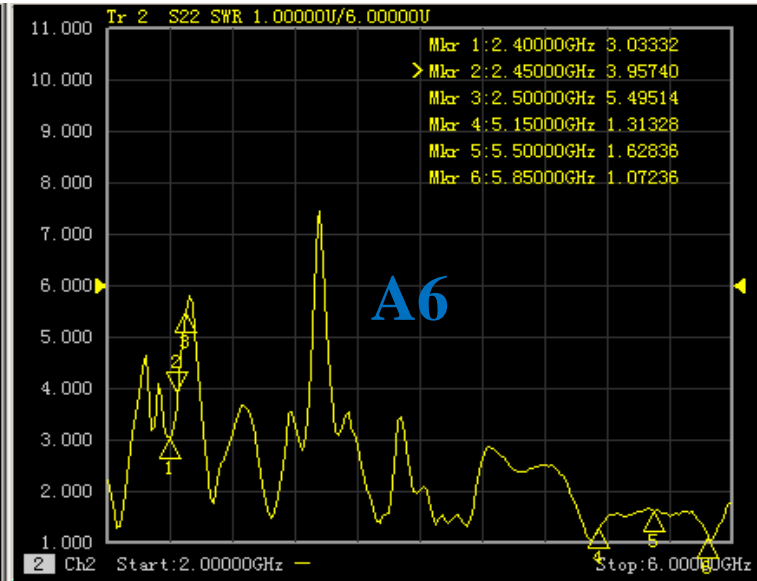
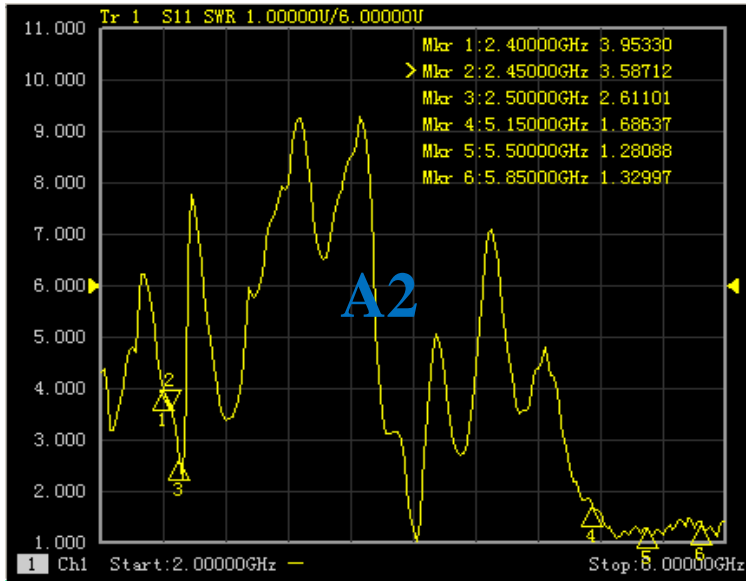


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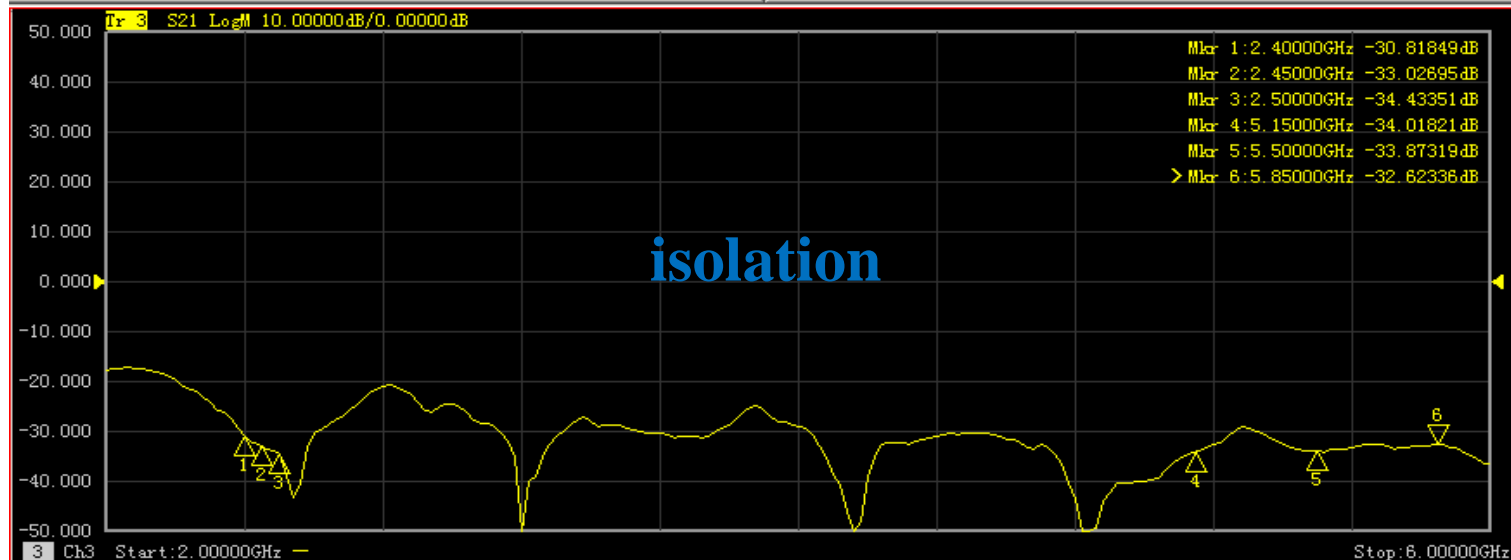
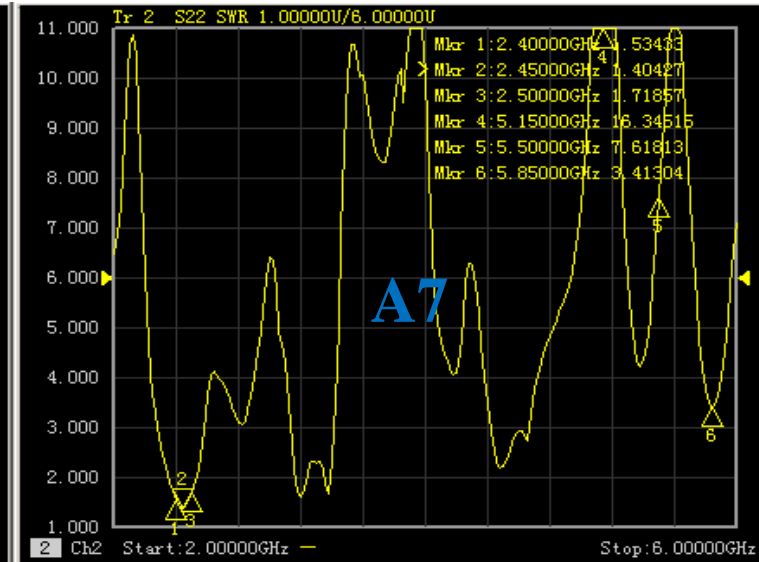
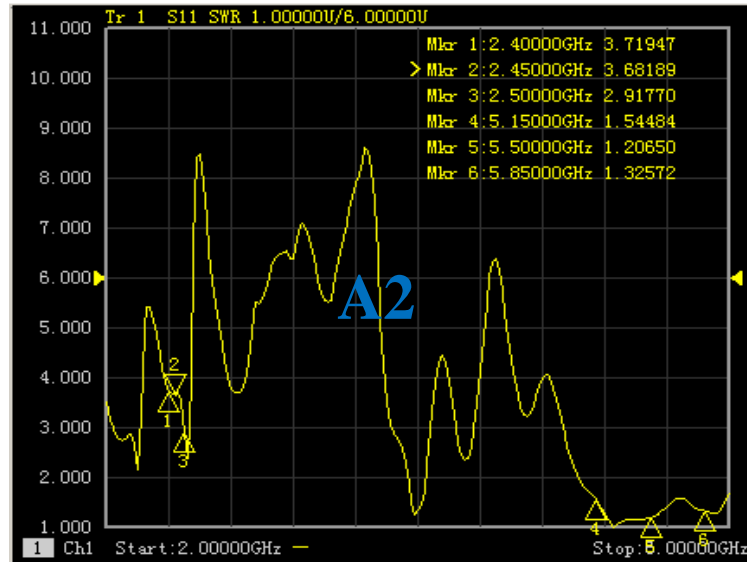




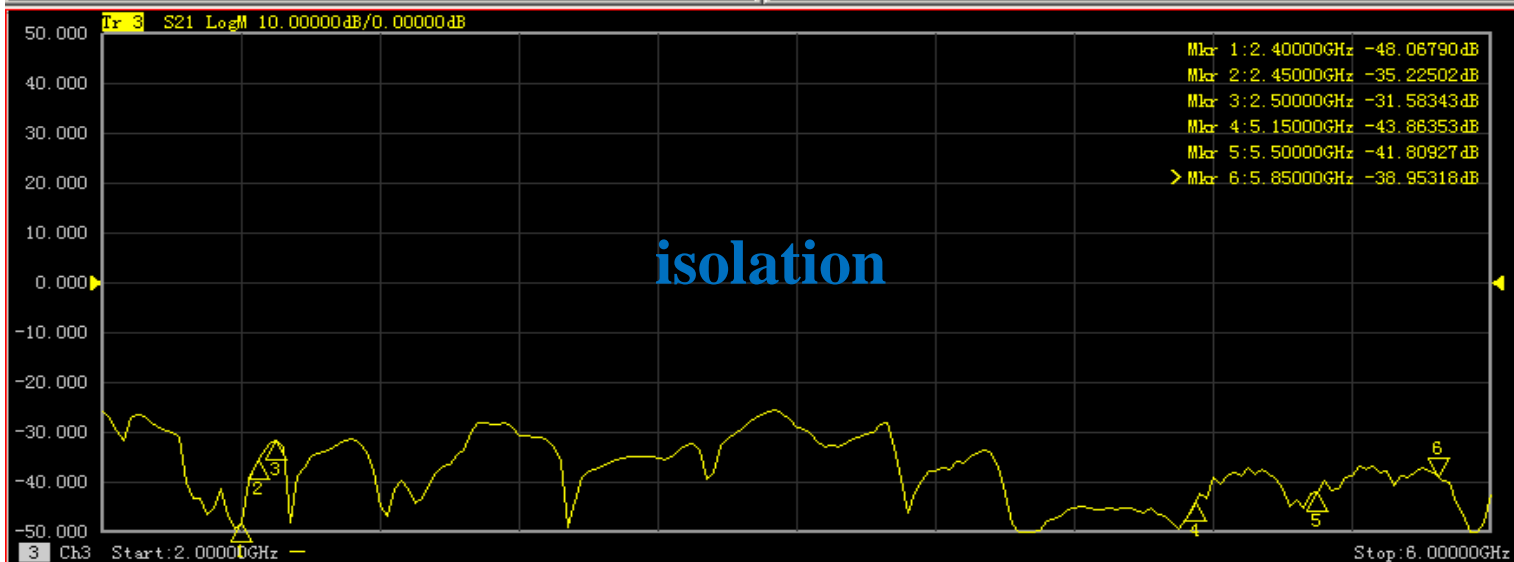
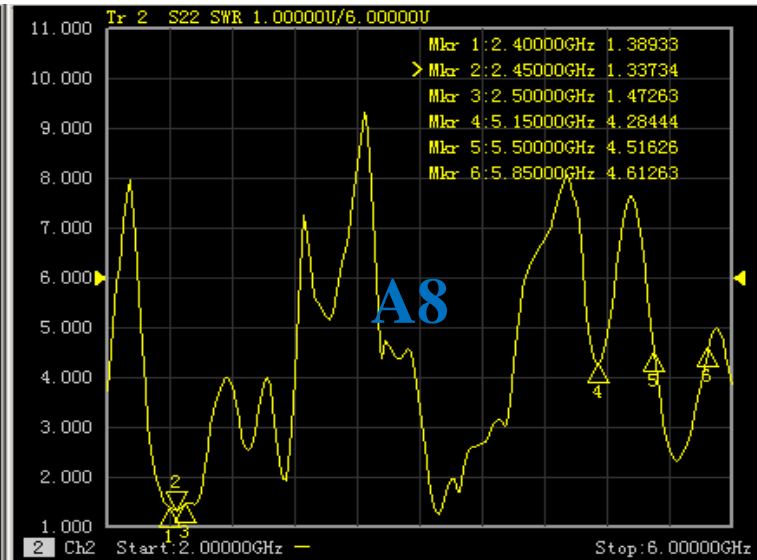
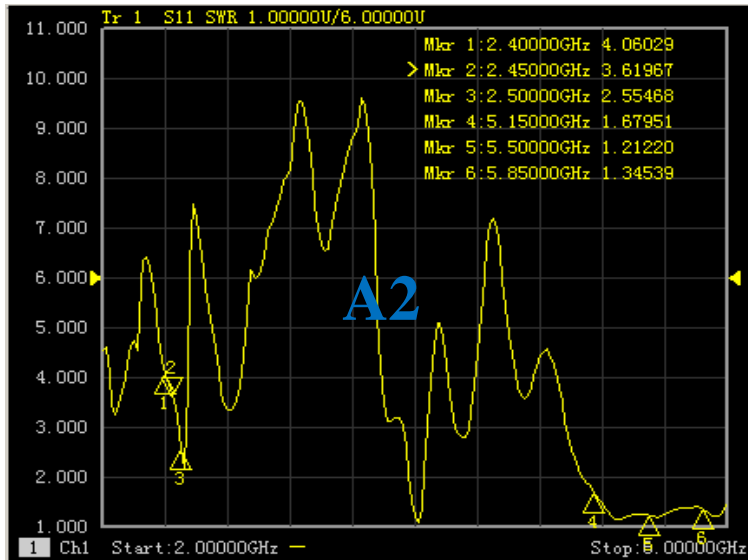
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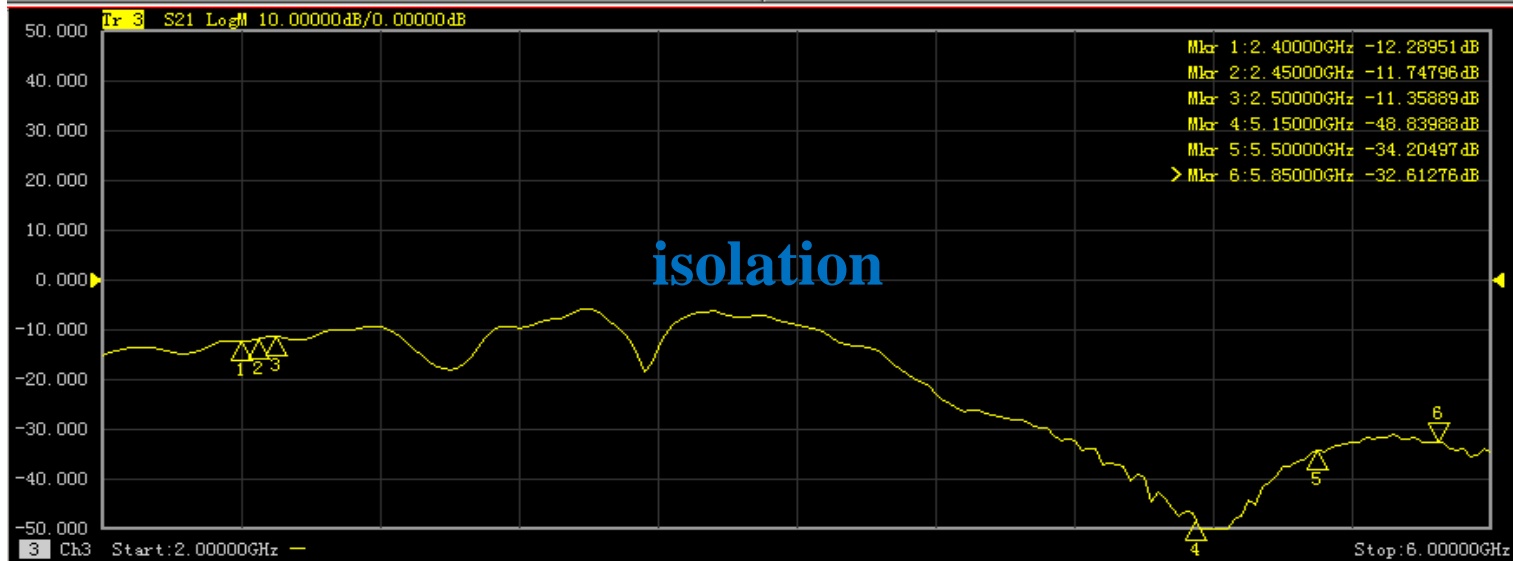
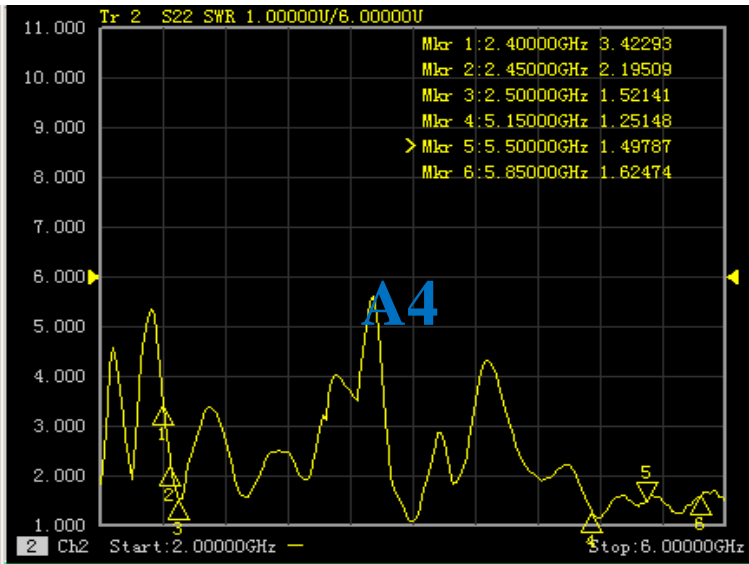
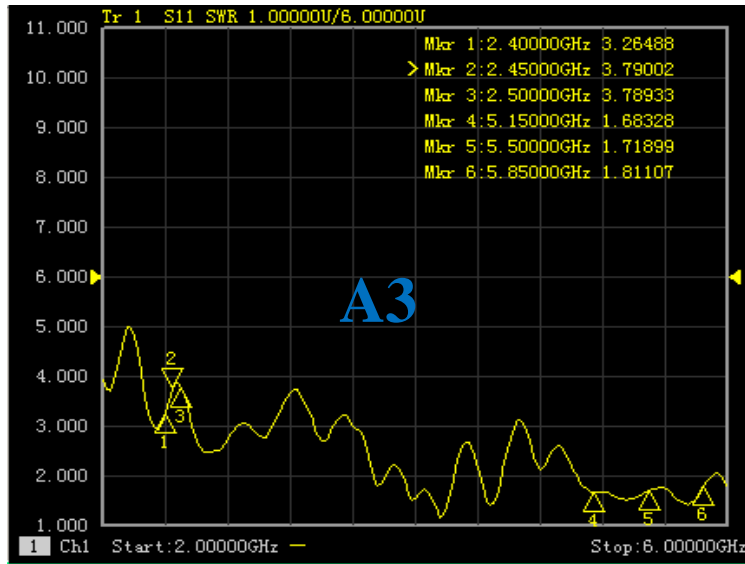
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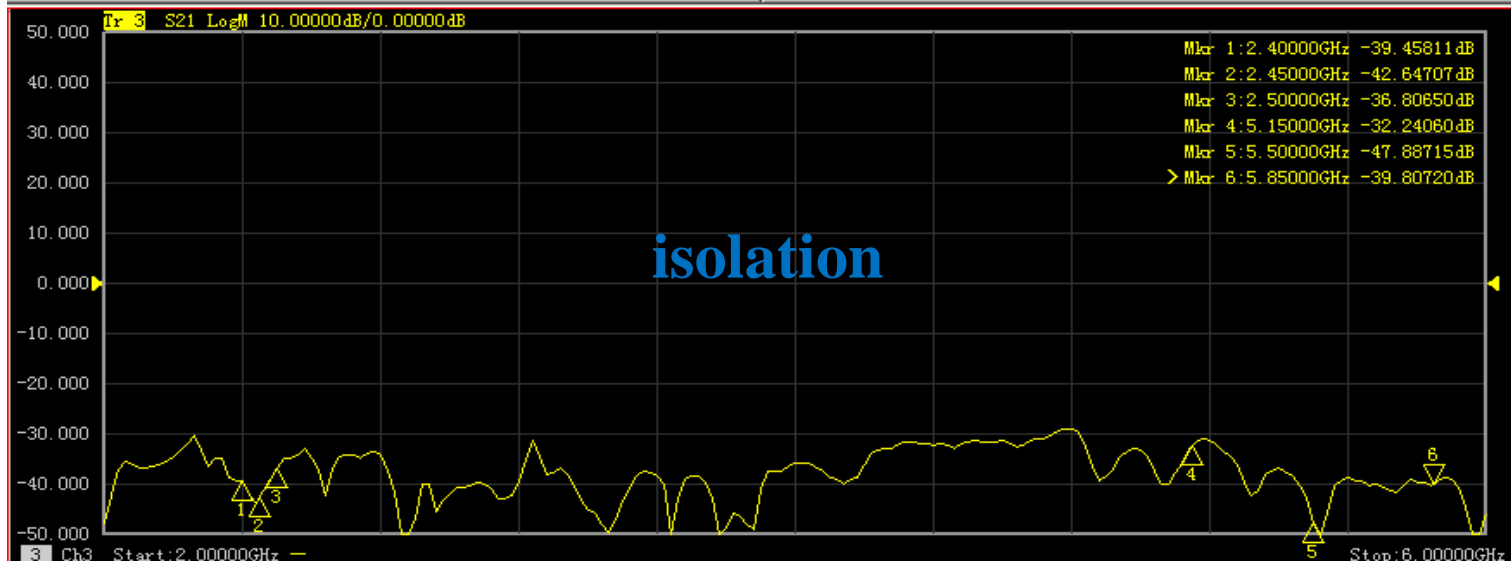
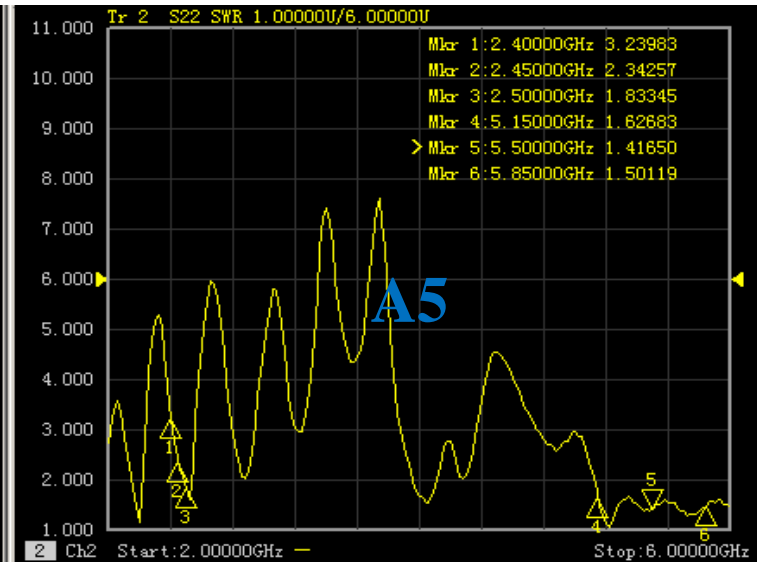
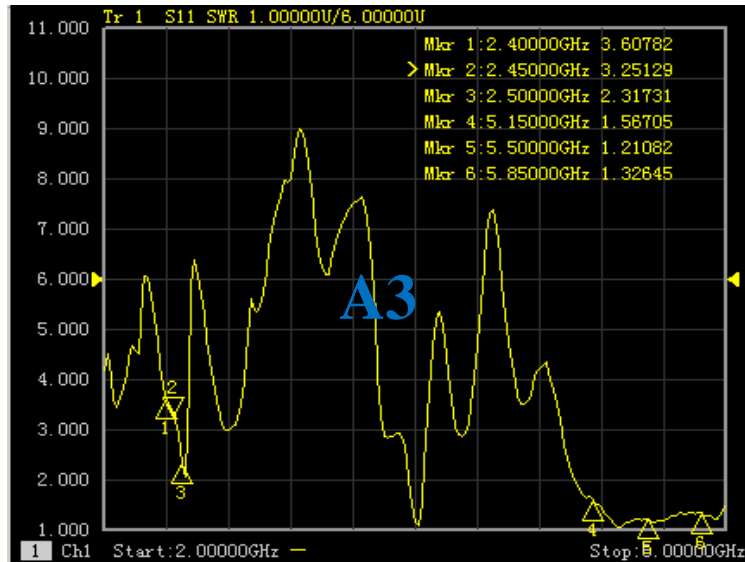
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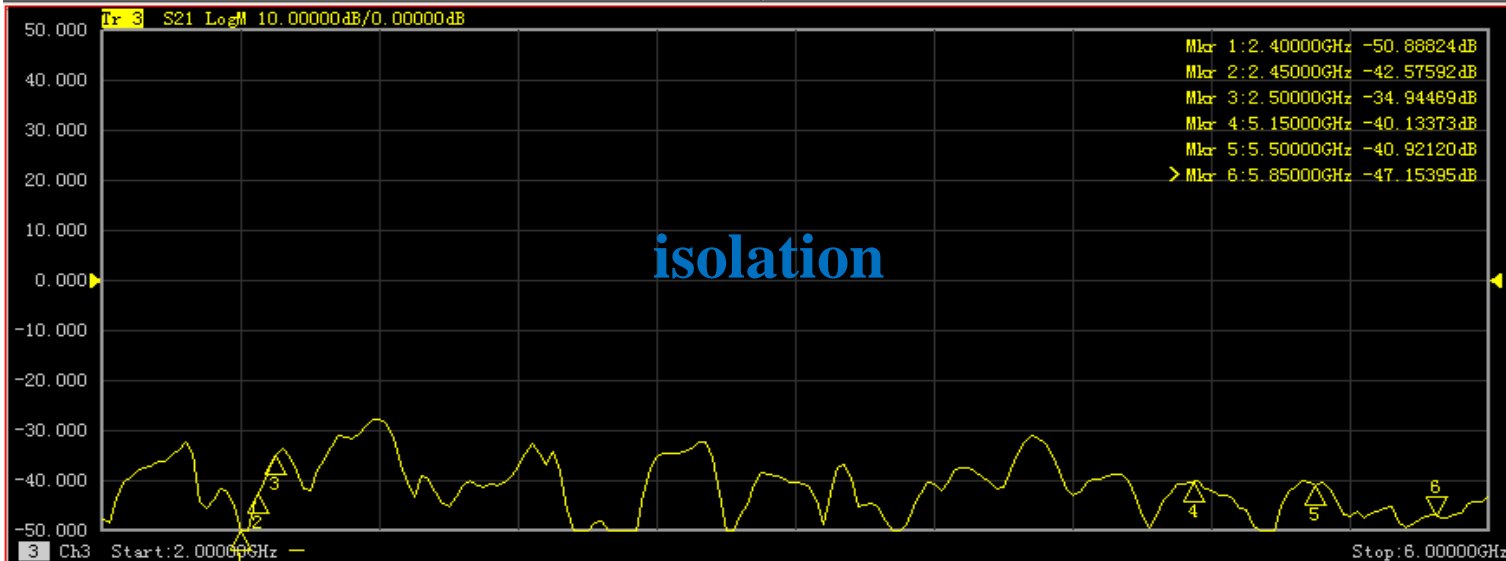
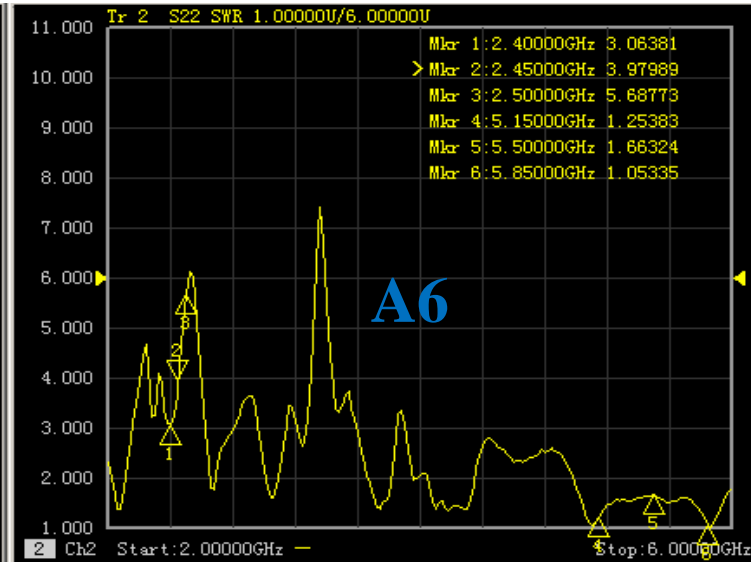
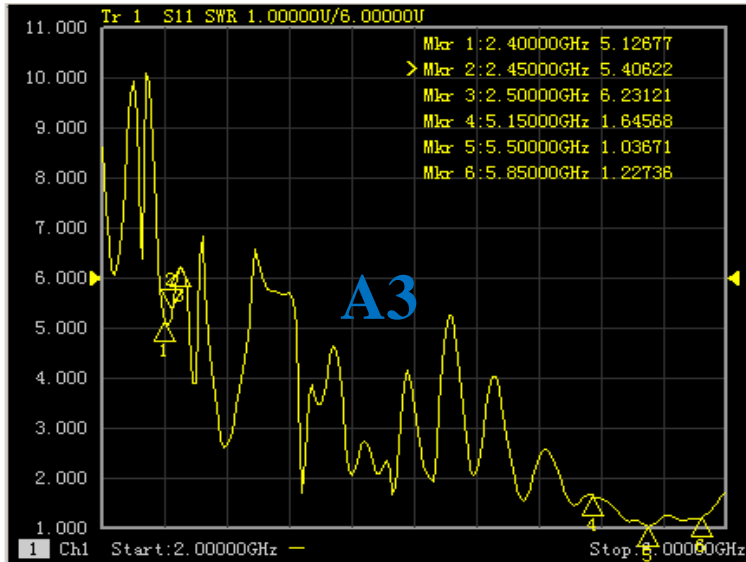
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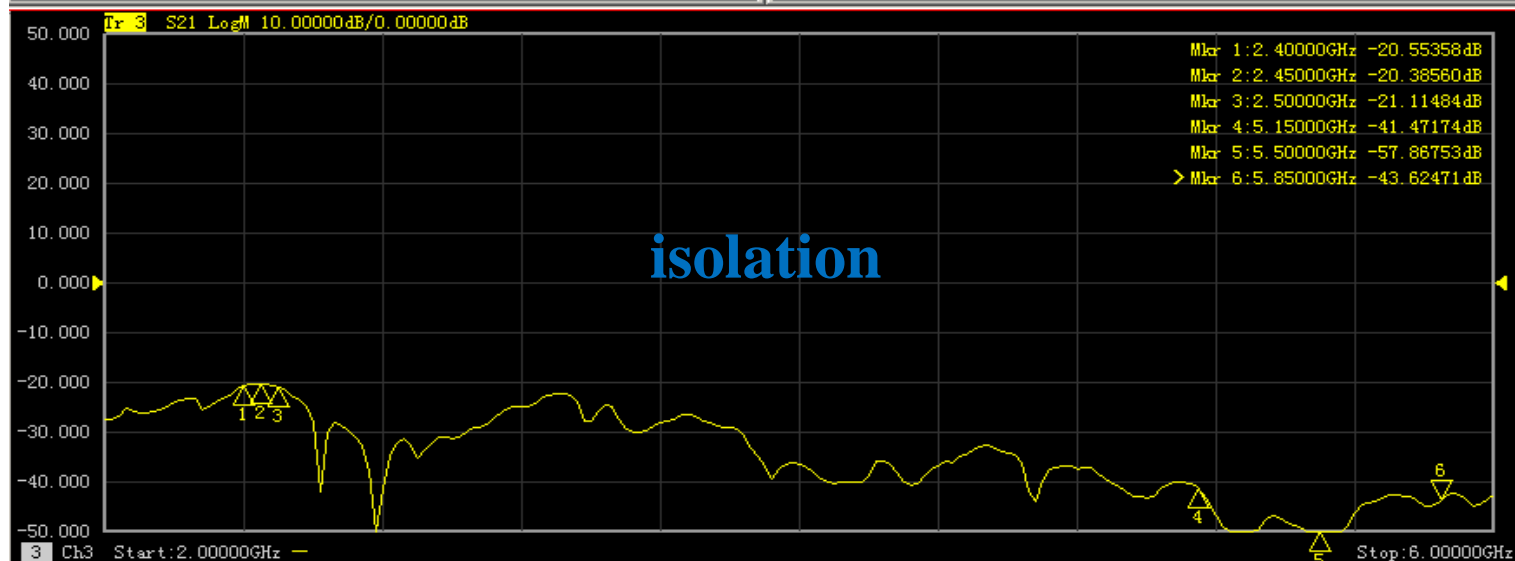
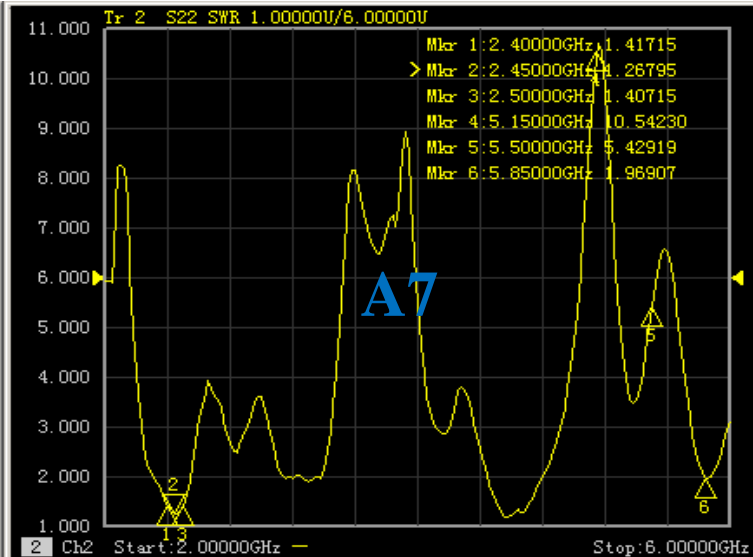
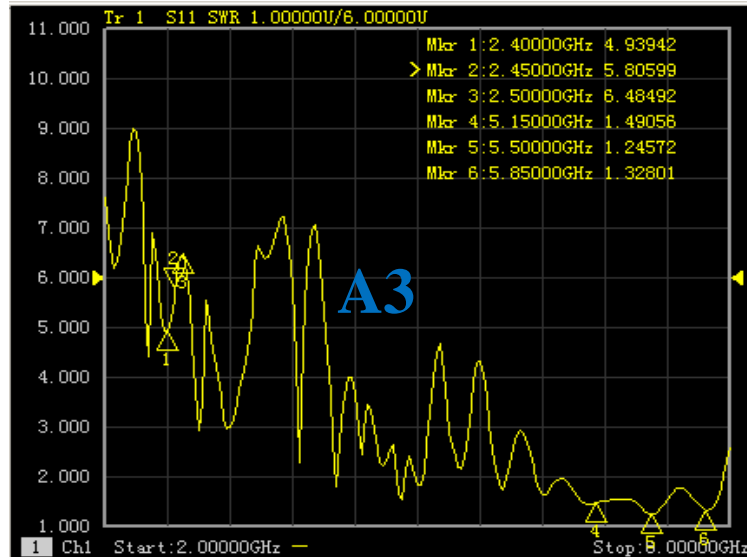
## 2.S-Parameters(VSWR&isolation)(A3 A5)



## 2.S-Parameters(VSWR&isolation)(A3 A6)

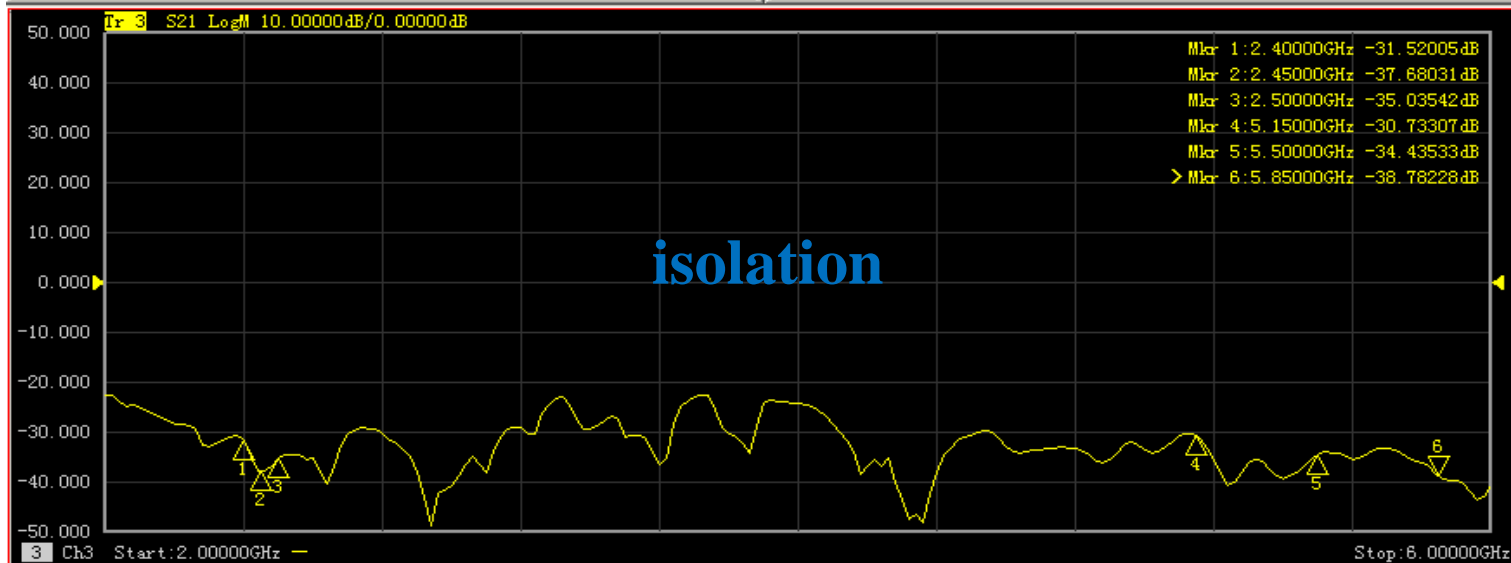
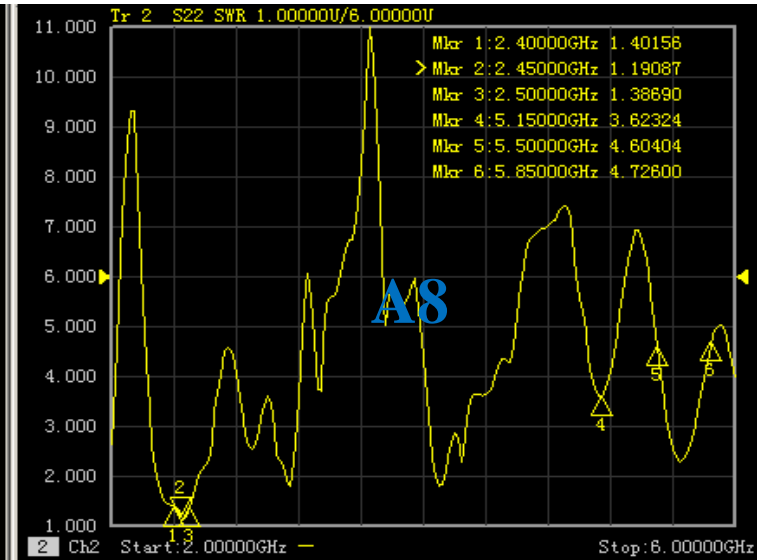
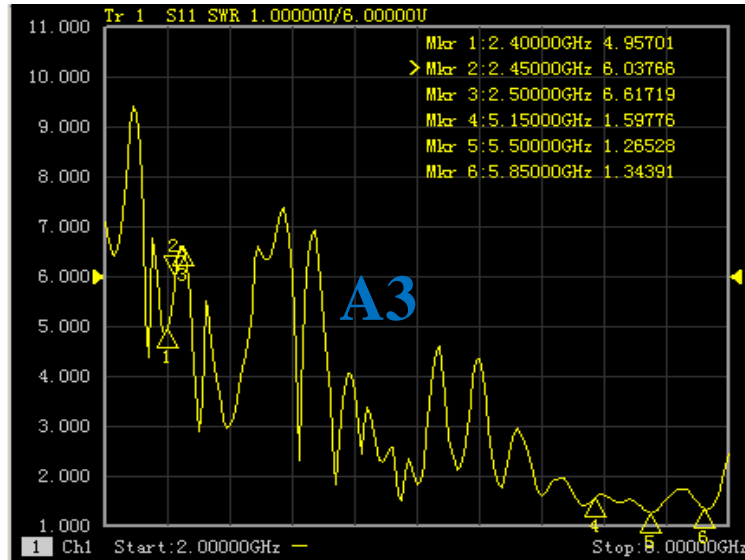


## 2.S-Parameters(VSWR&isolation)(A3 A7)

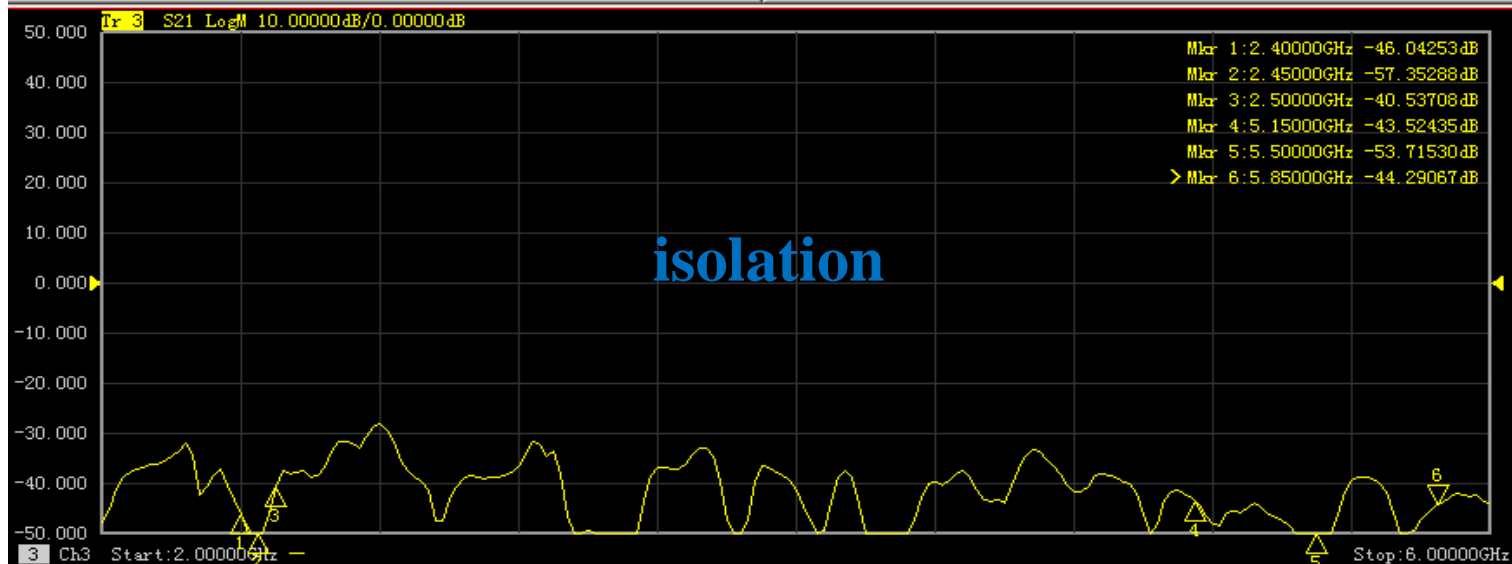
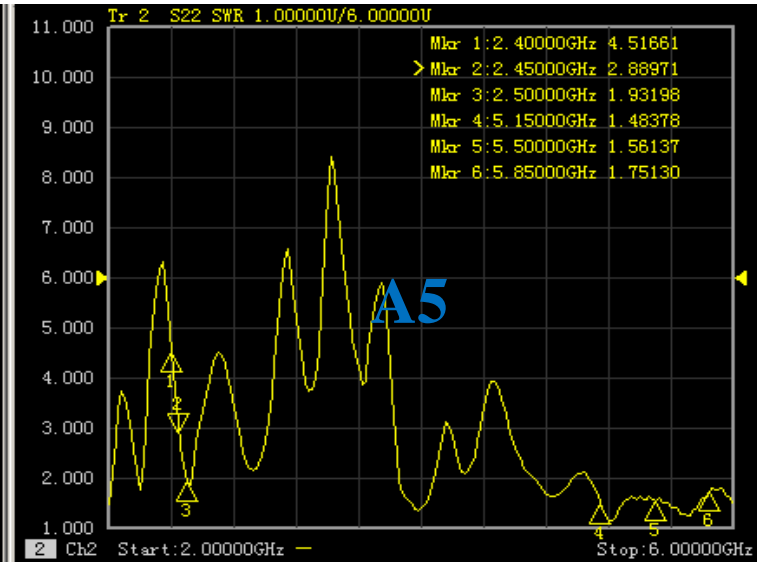
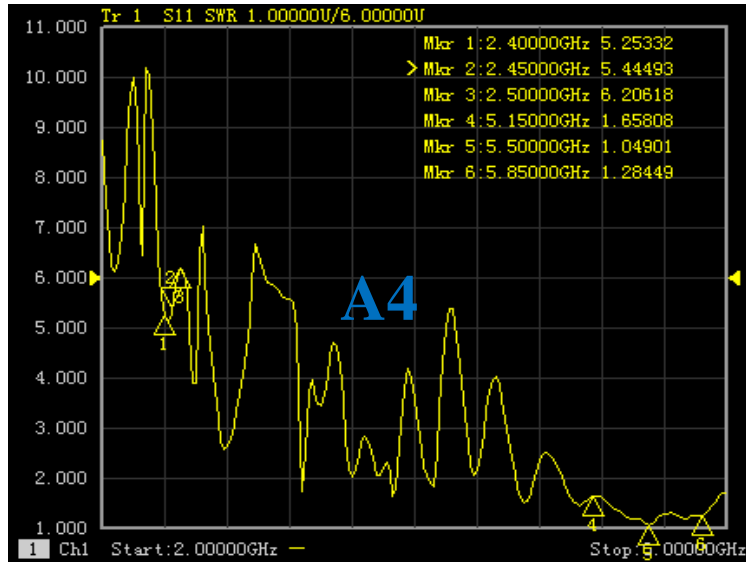




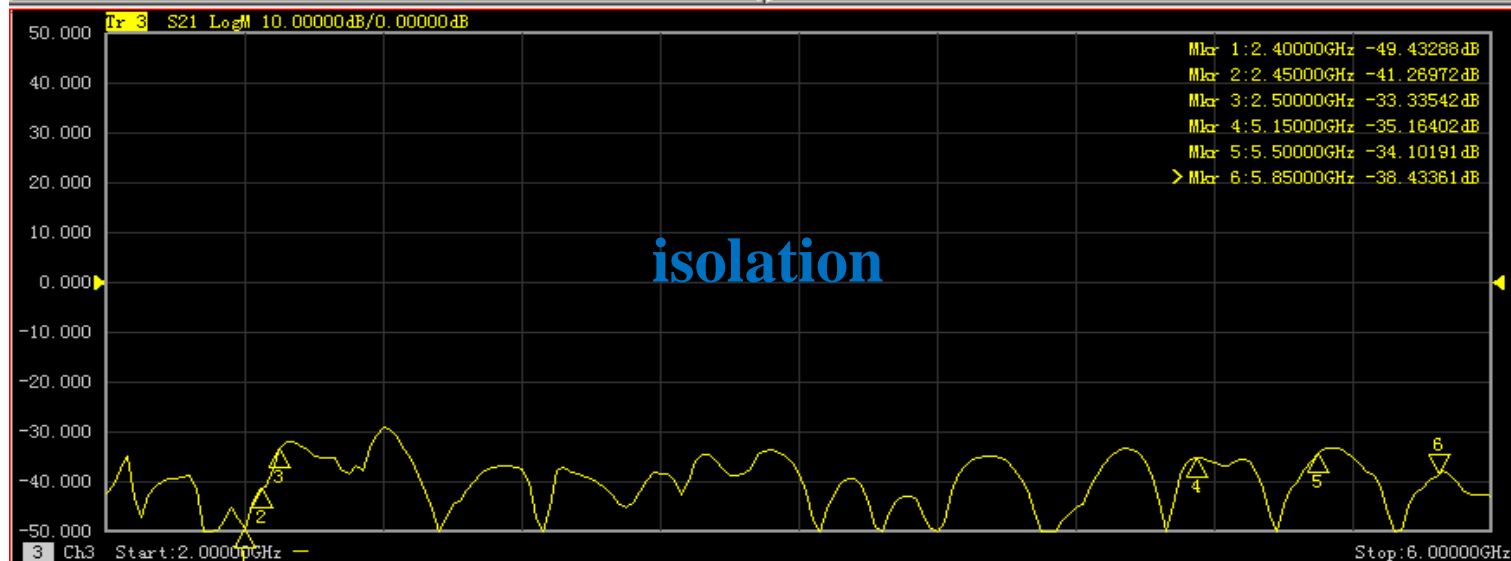
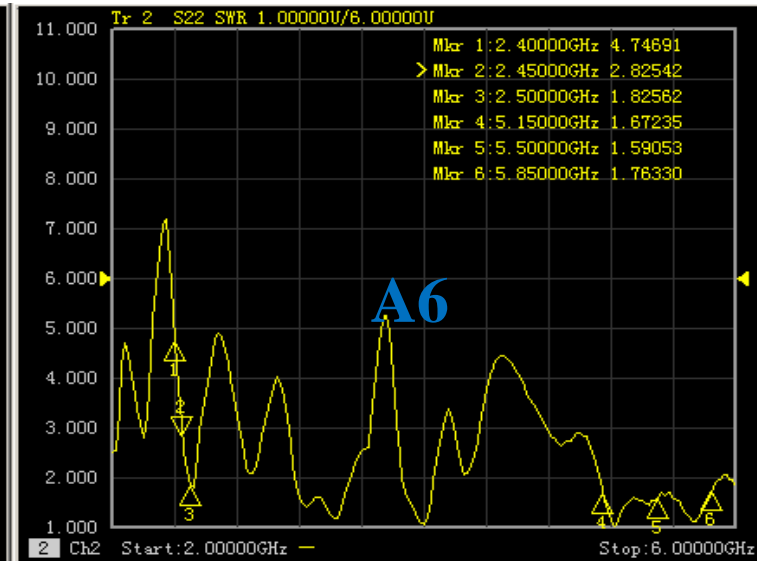
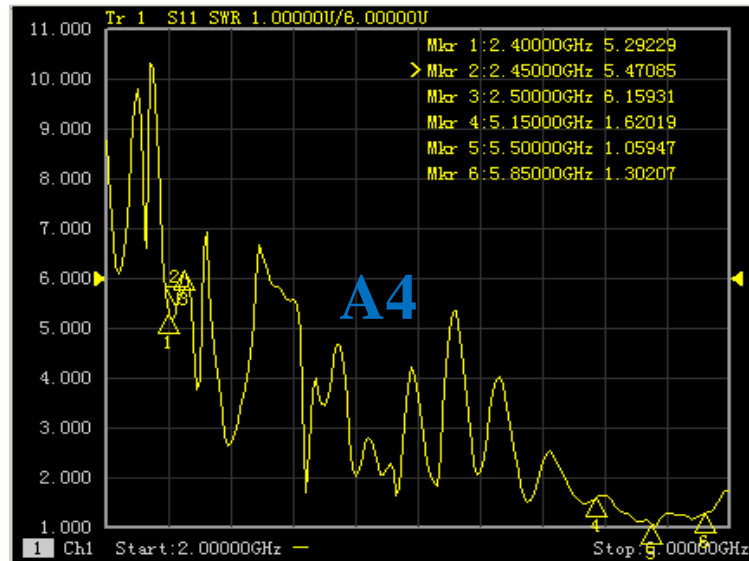
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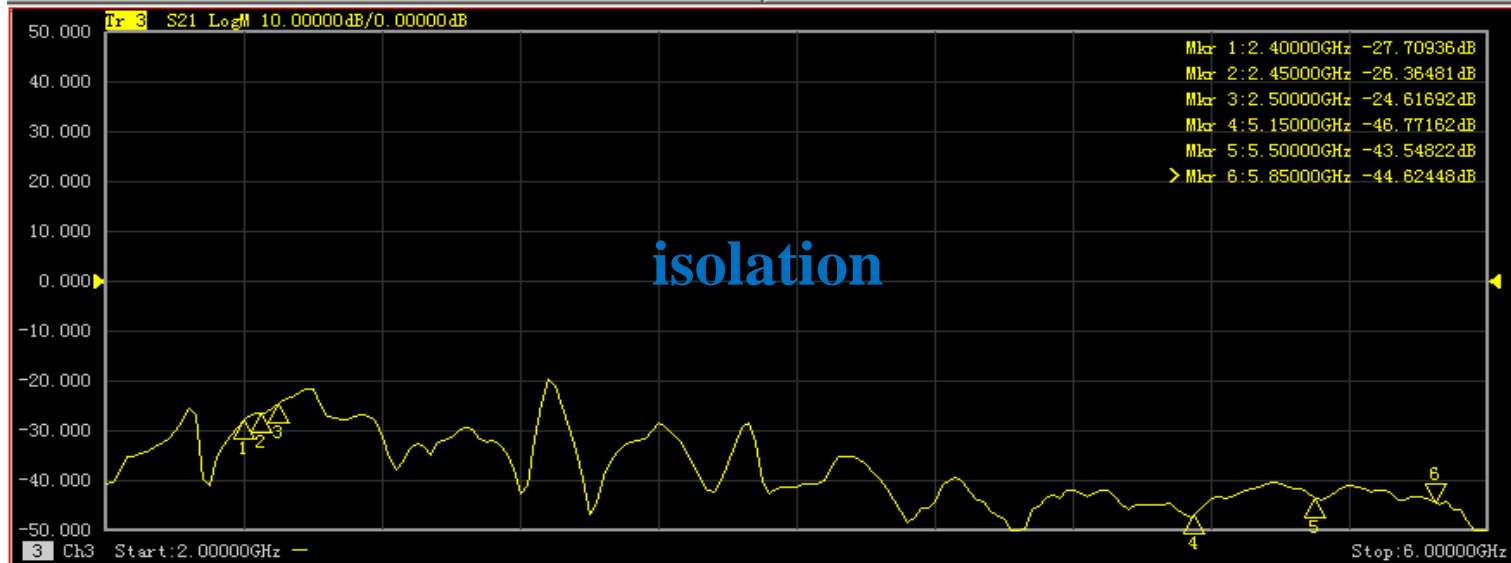
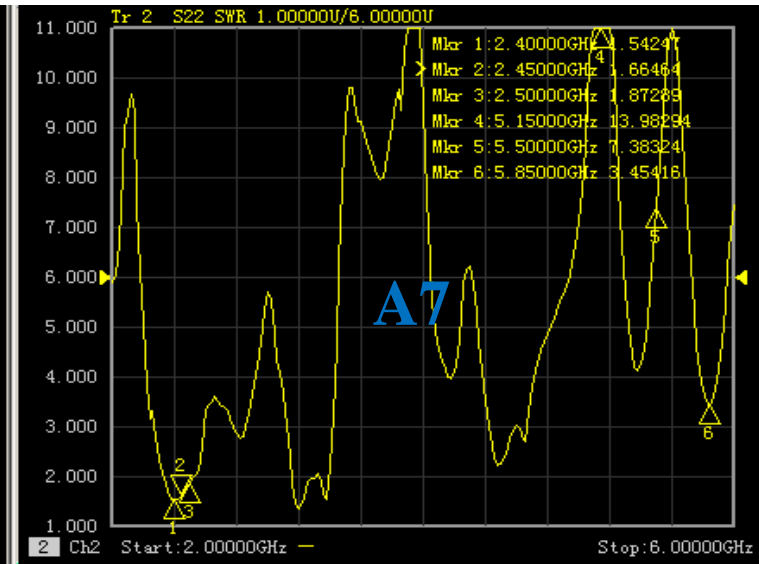
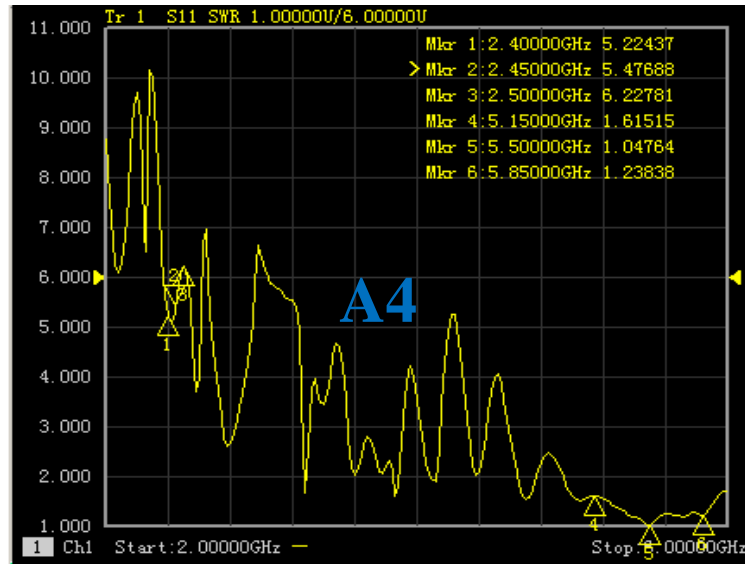
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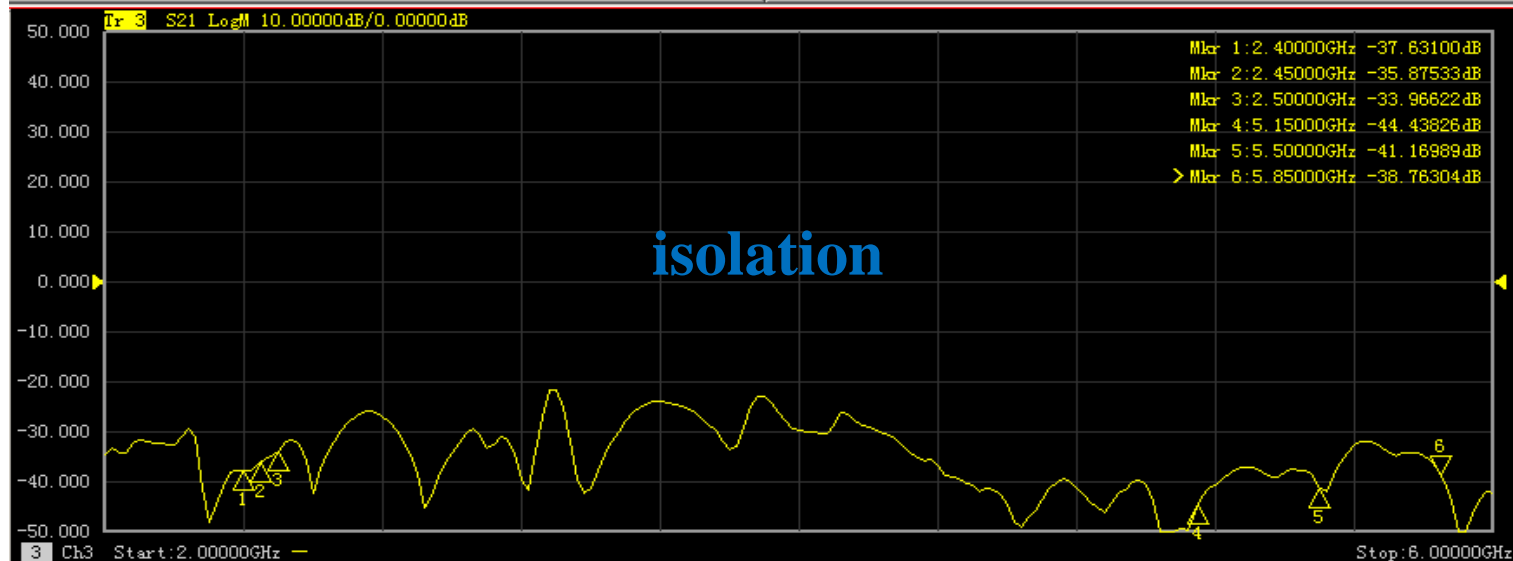
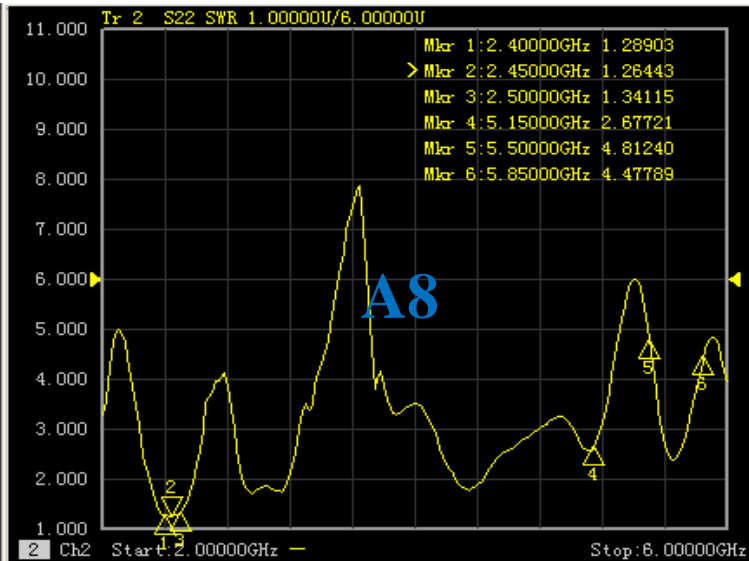
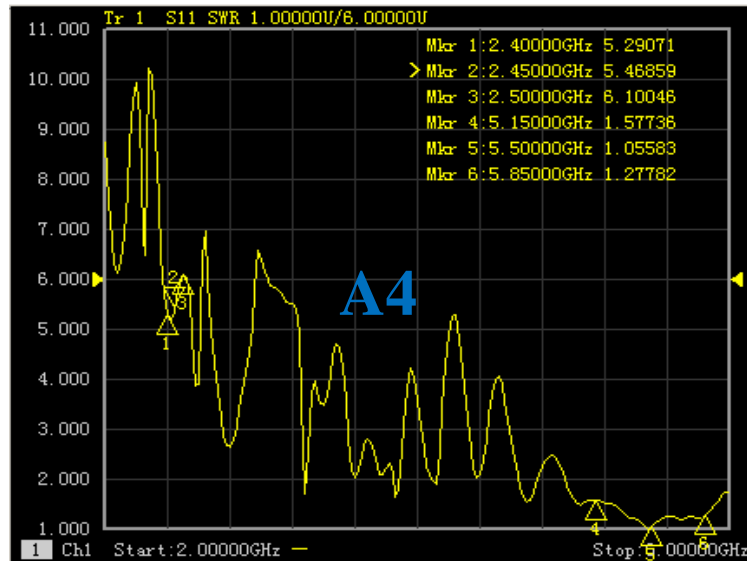
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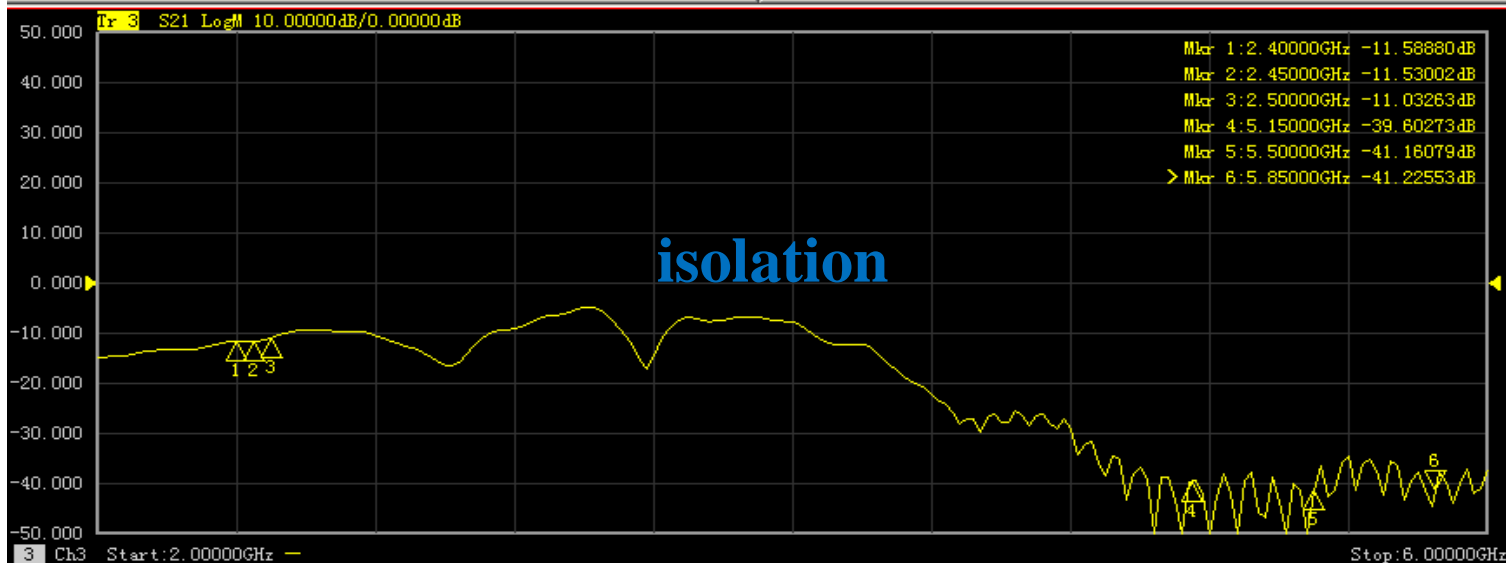
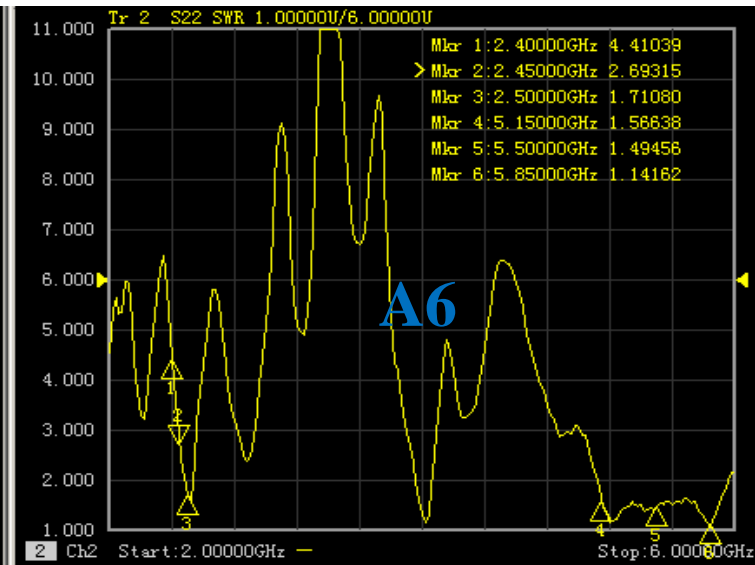
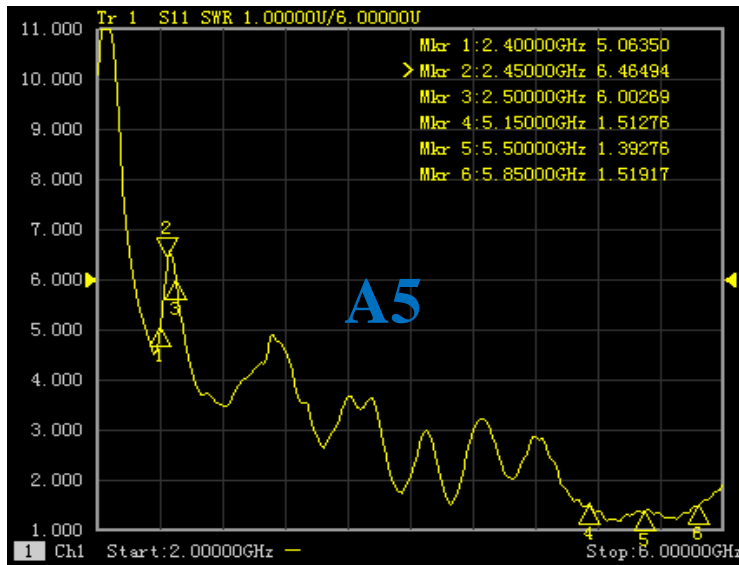
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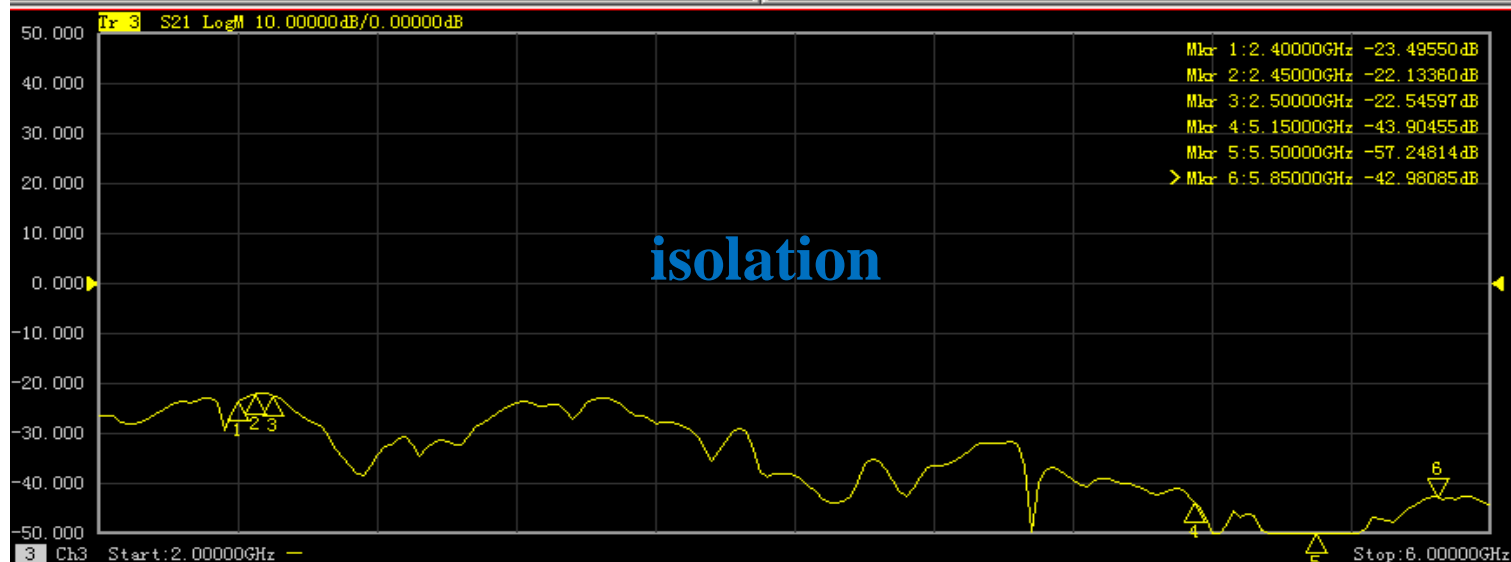
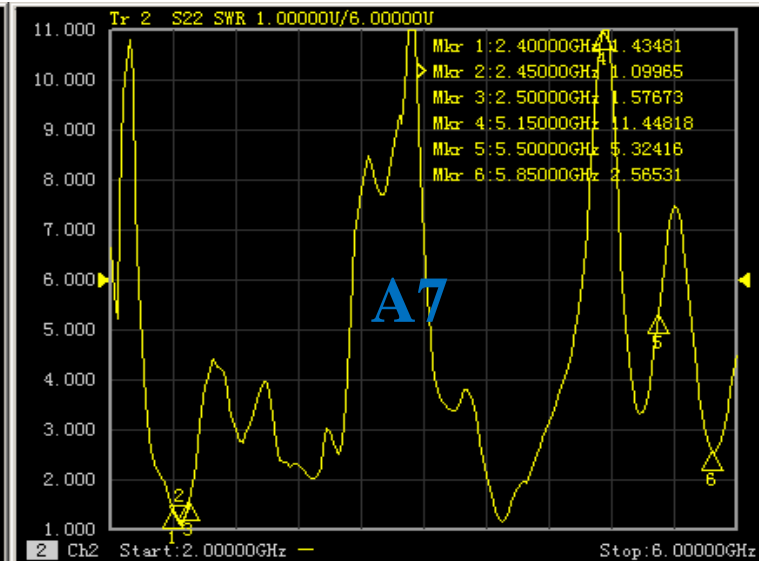
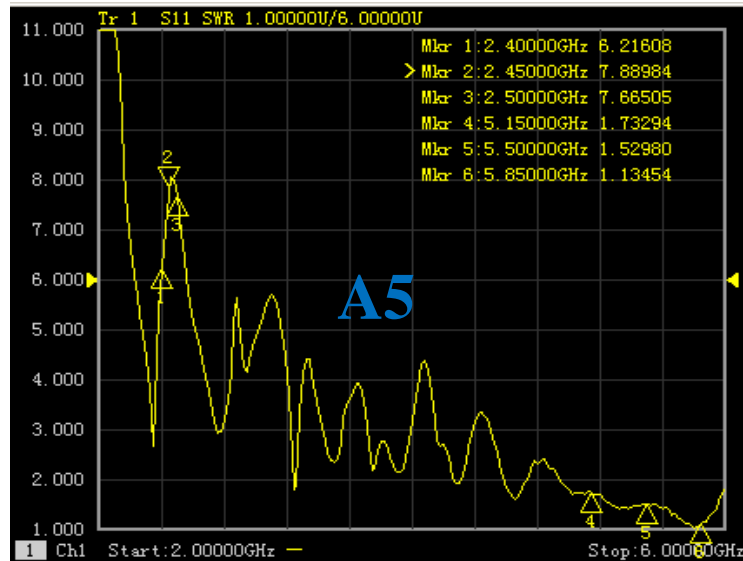
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## 2.S-Parameters(VSWR&isolation)(A5 A6)

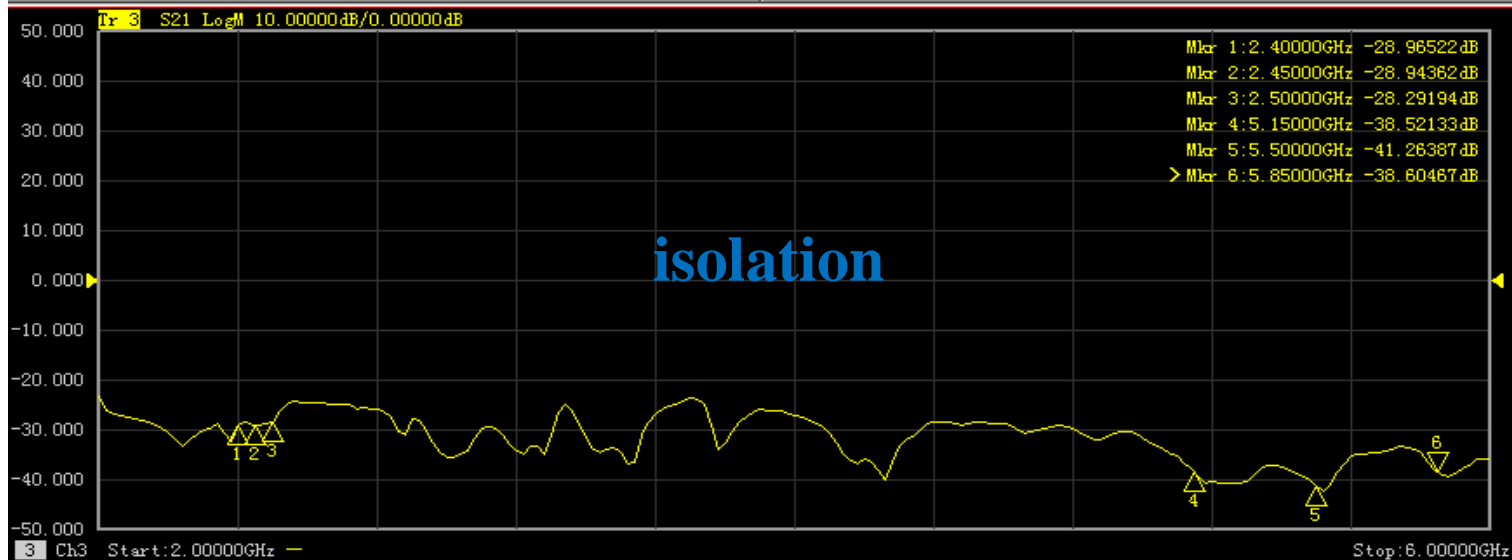
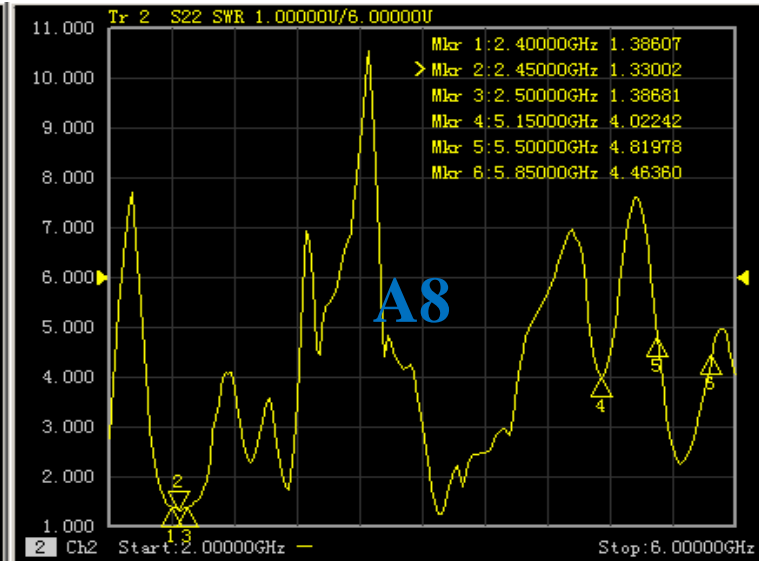
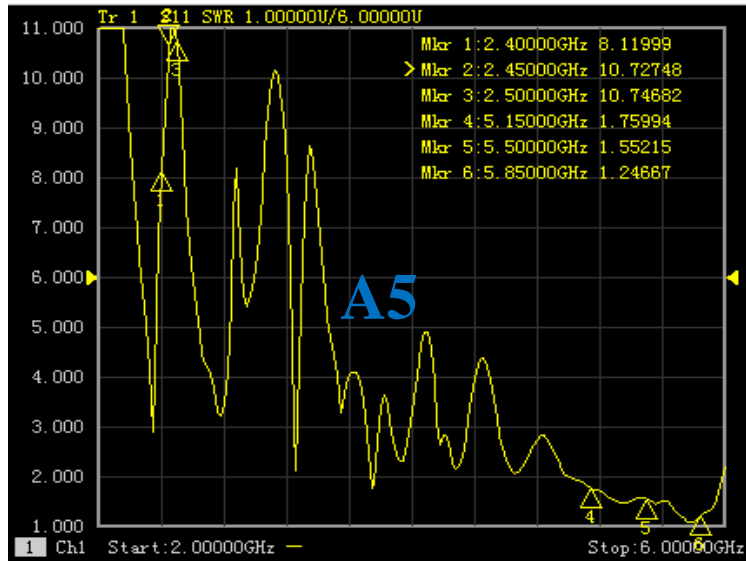


## 2.S-Parameters(VSWR&isolation)(A5 A7)

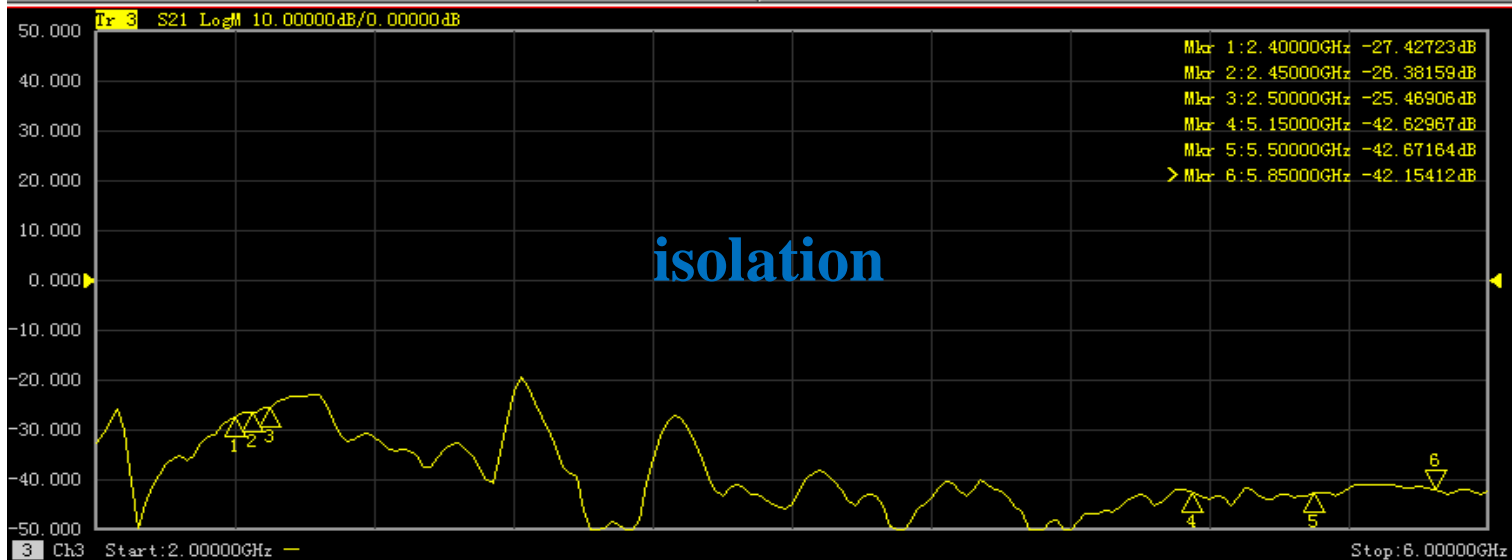
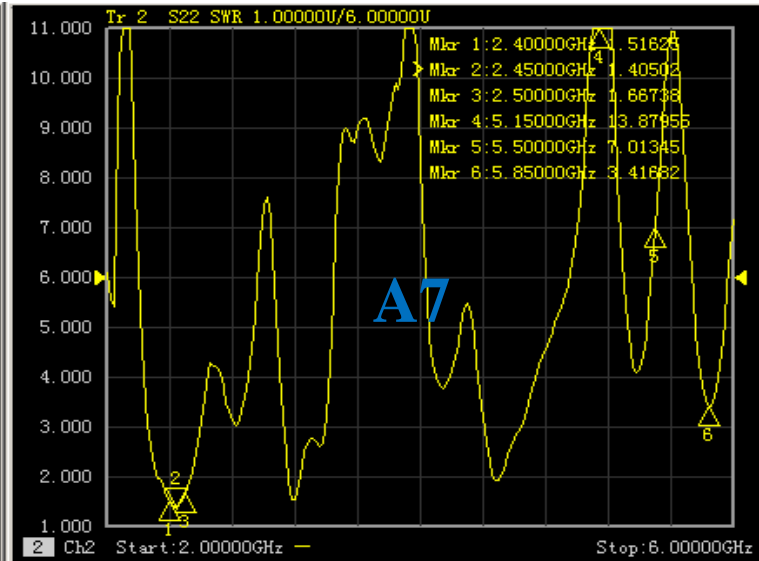
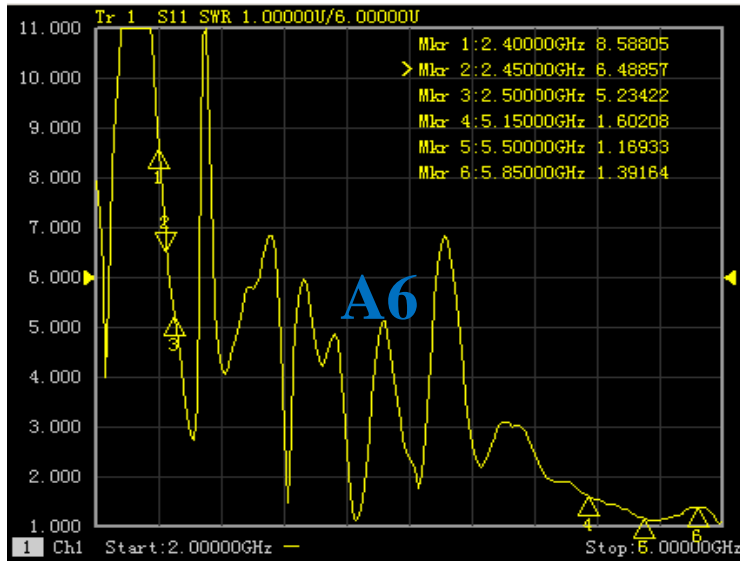




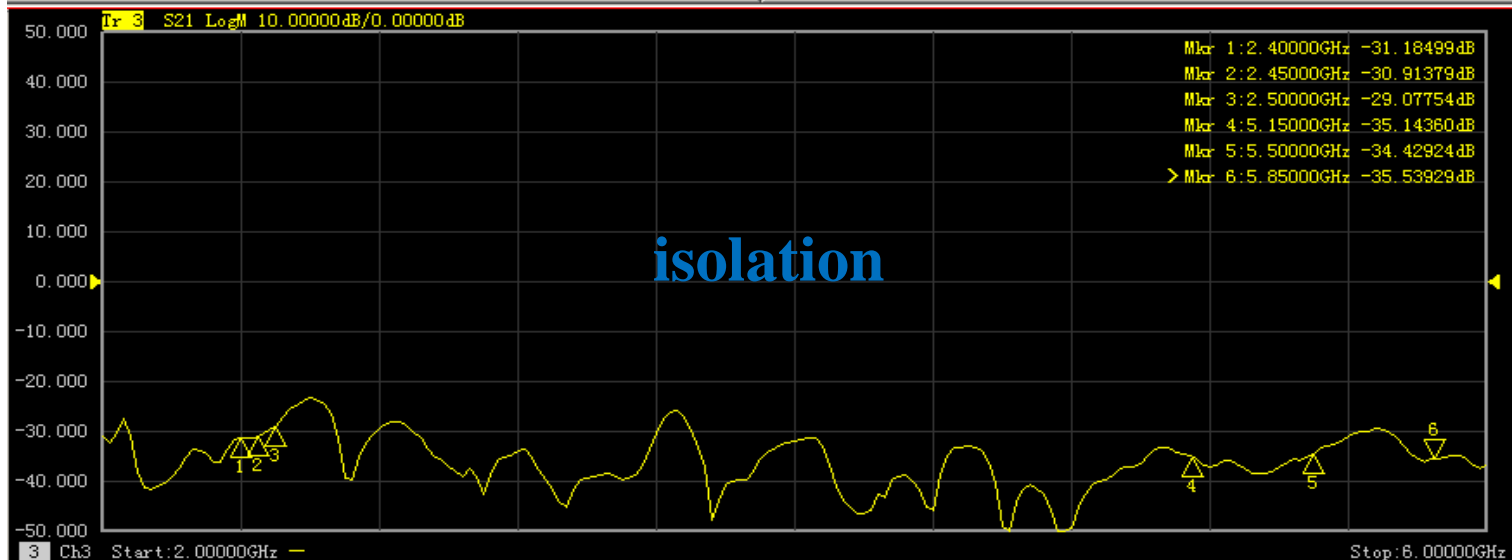
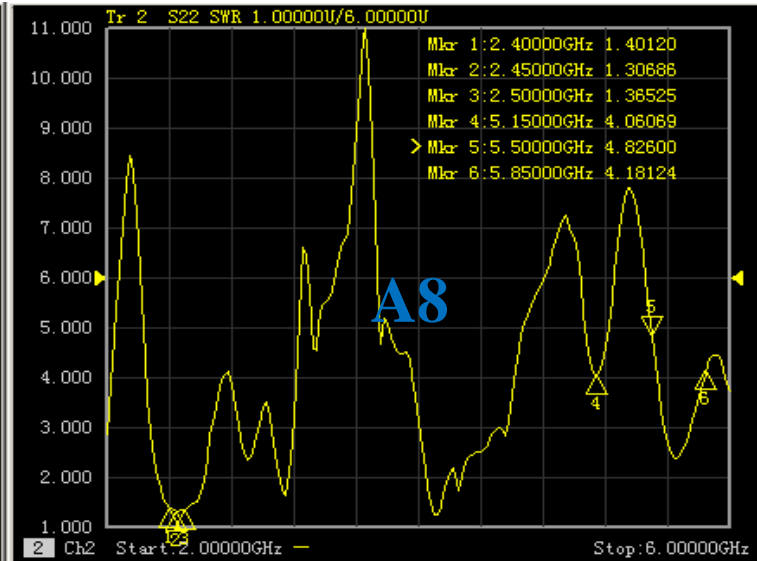
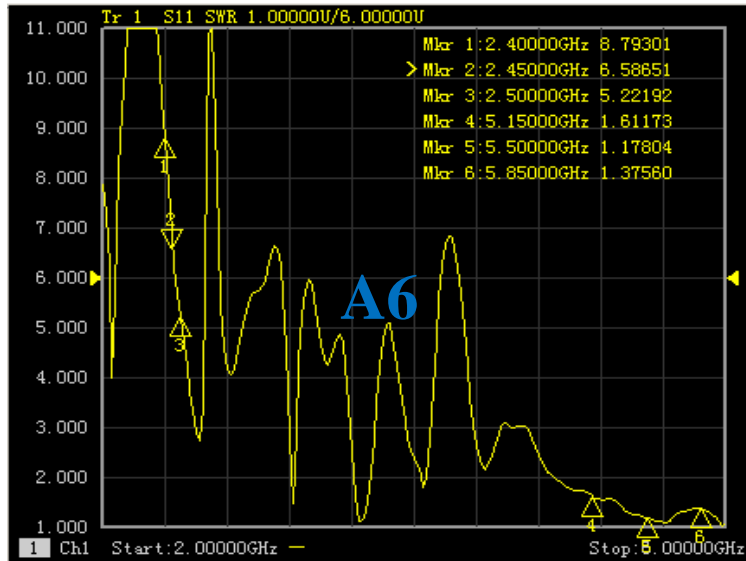
## 2.S-Parameters(VSWR&isolation)(A5 A8)



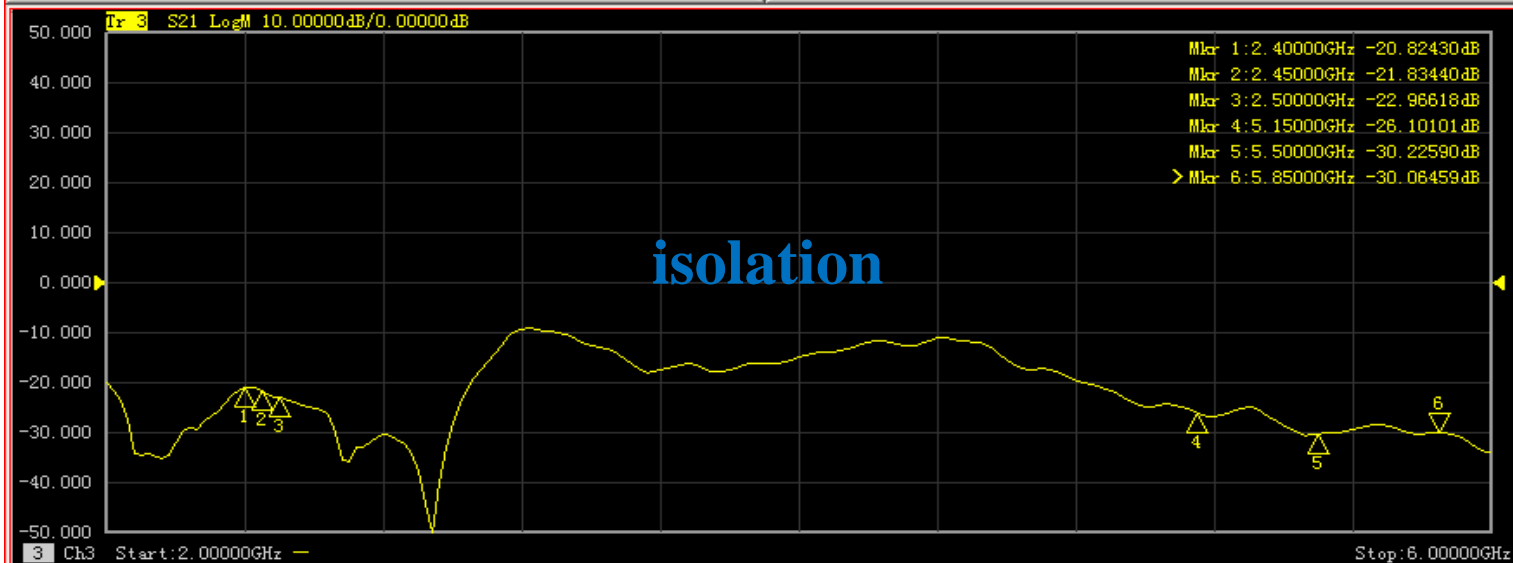
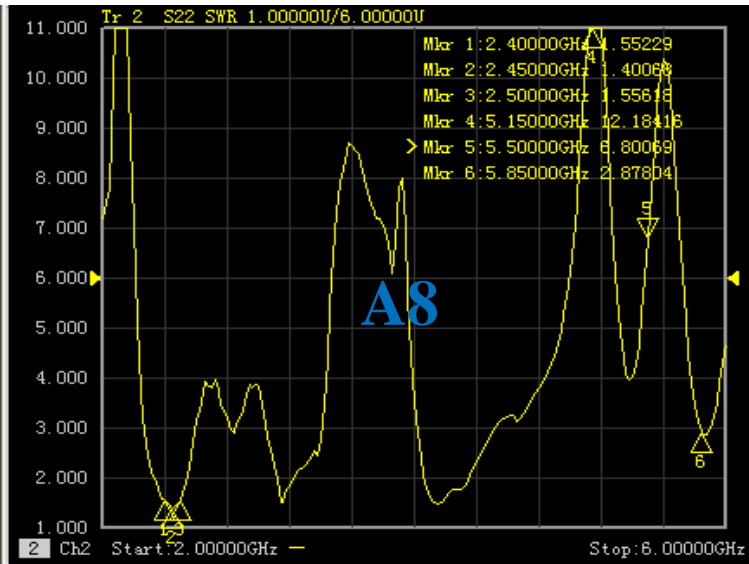
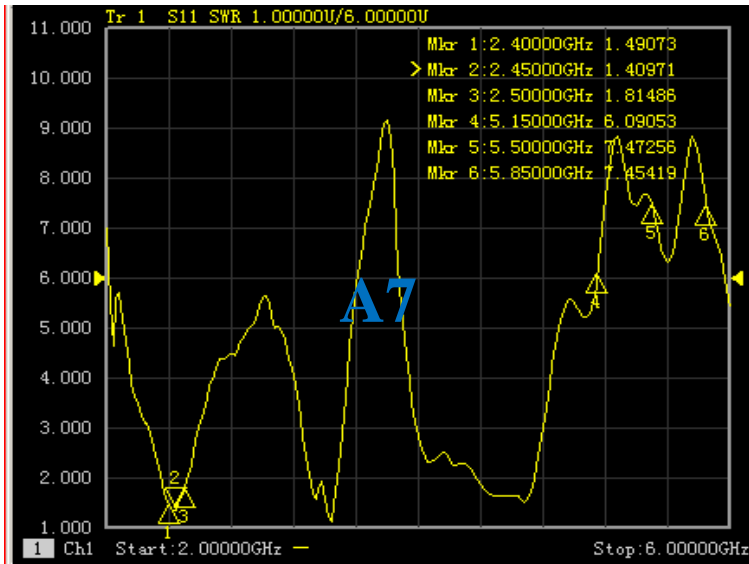
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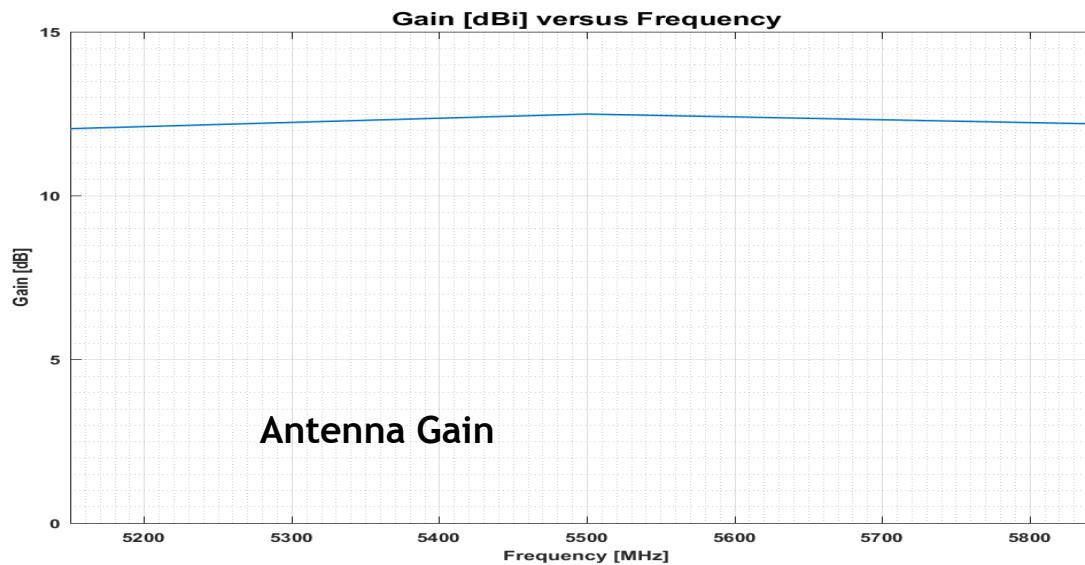
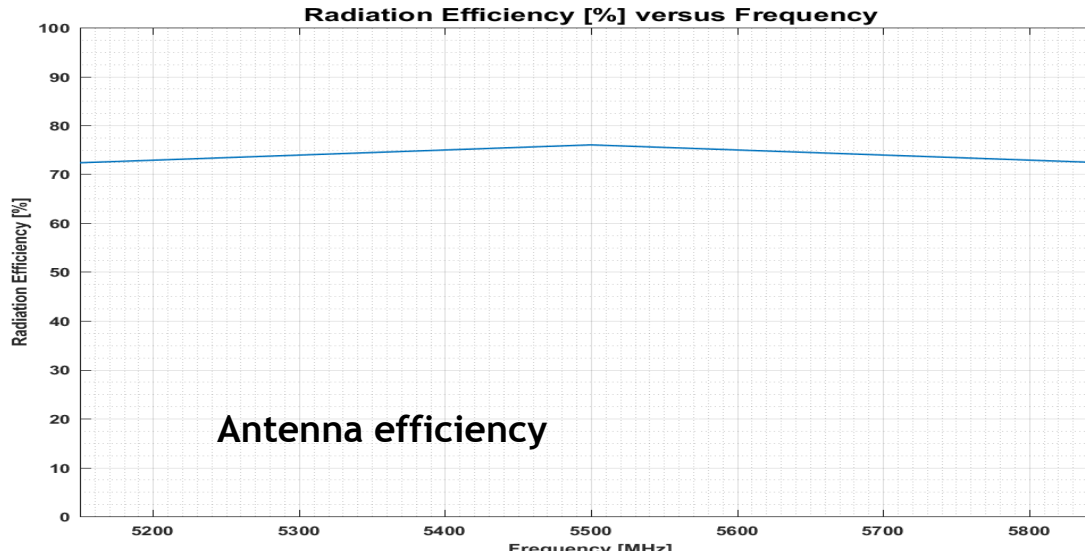
## 2.S-Parameters(VSWR&isolation)(A6 A8)



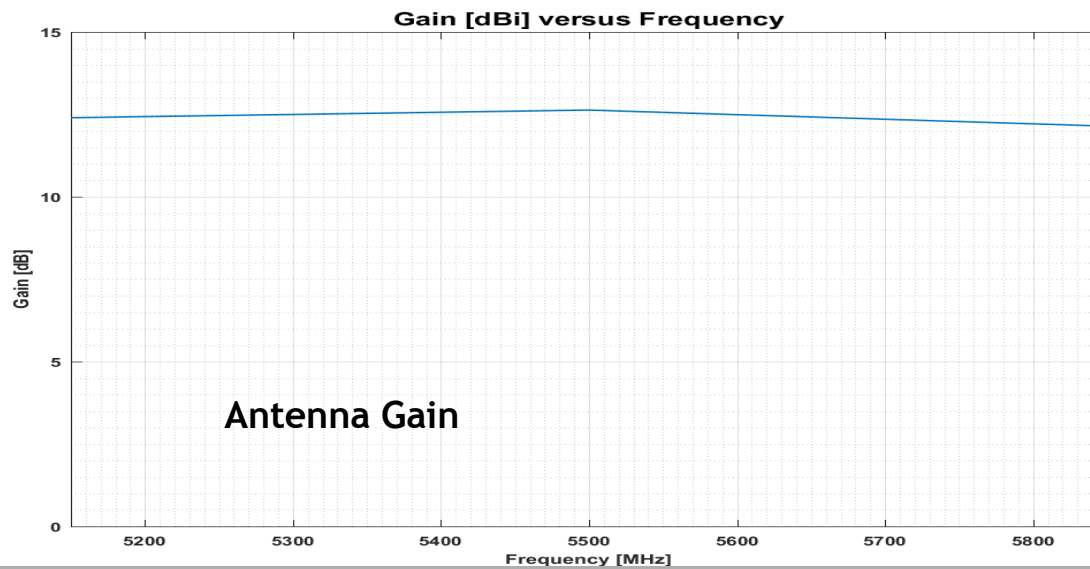
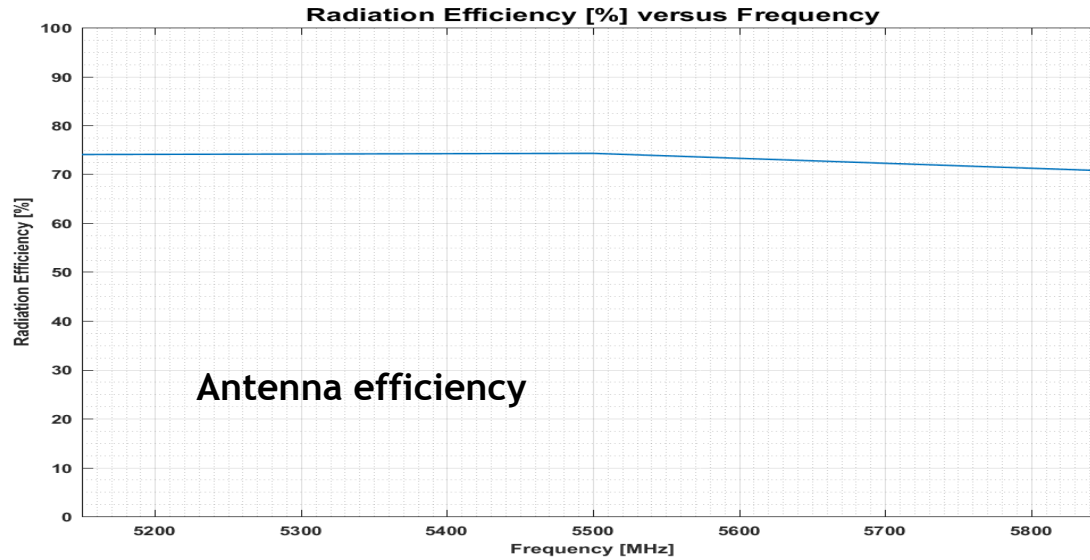
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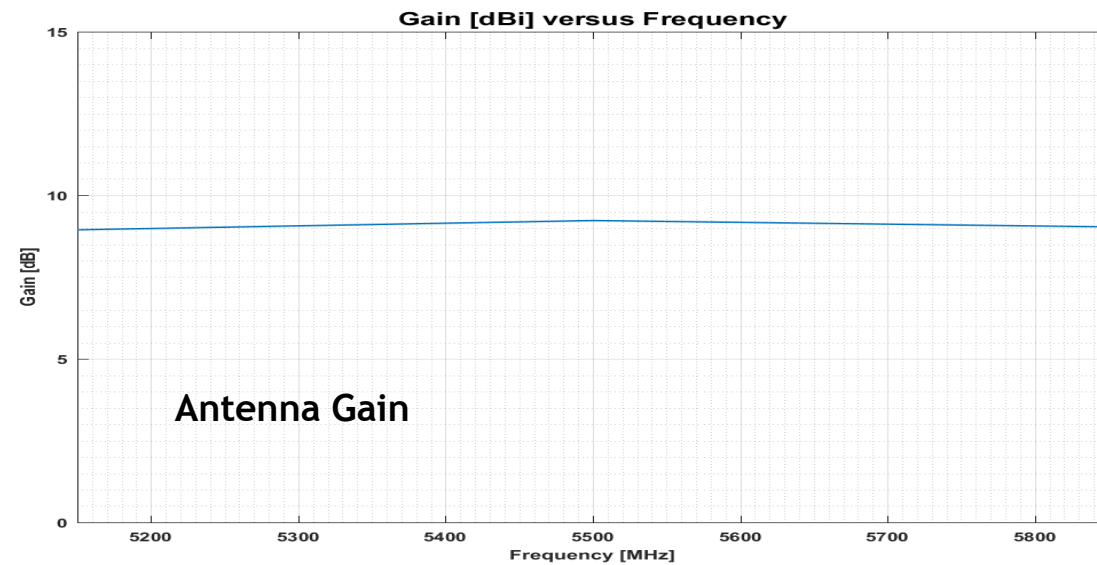
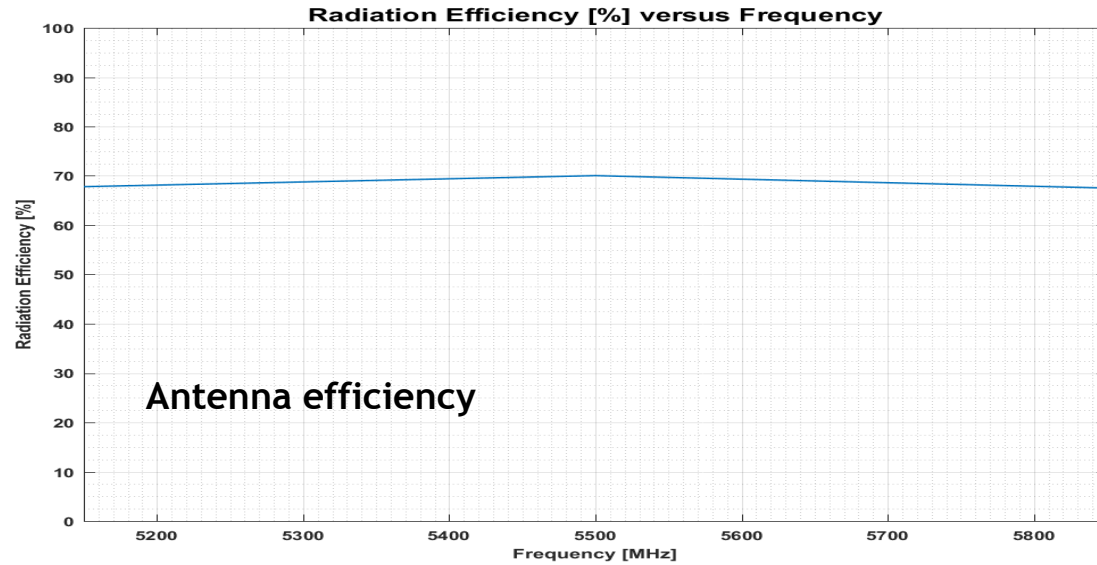
### 3. Antenna Efficiency & Peak Gain (A1)



### 3. Antenna Efficiency & Peak Gain (A2)

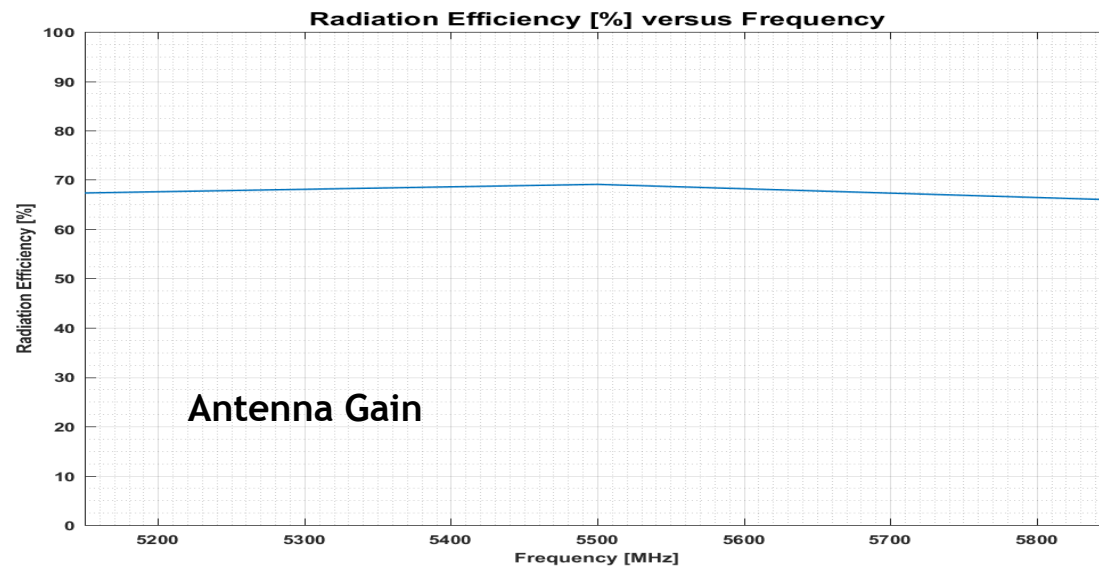
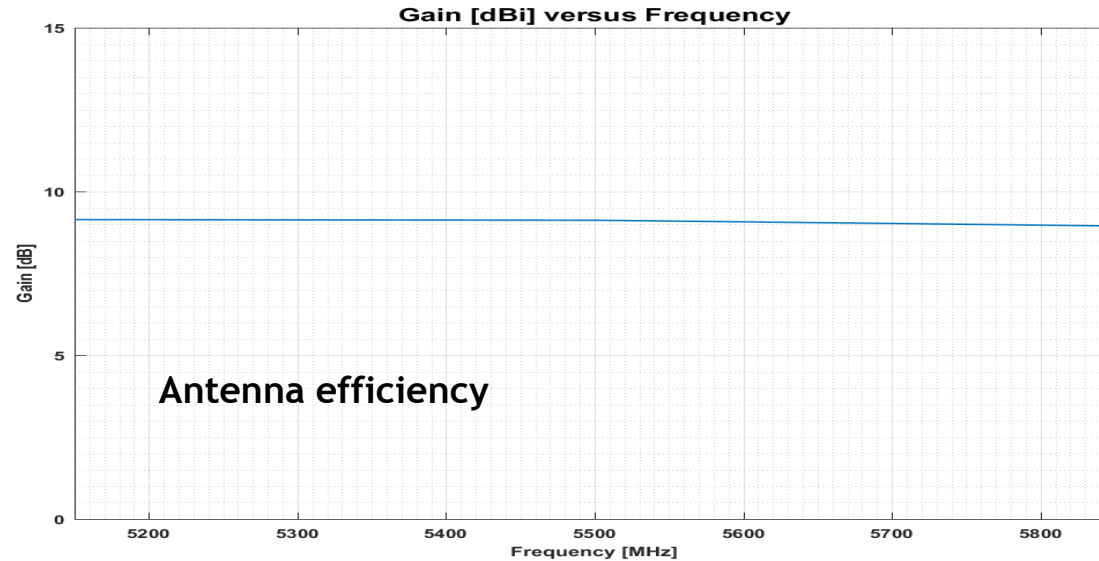


### 3. Antenna Efficiency & Peak Gain (A3)

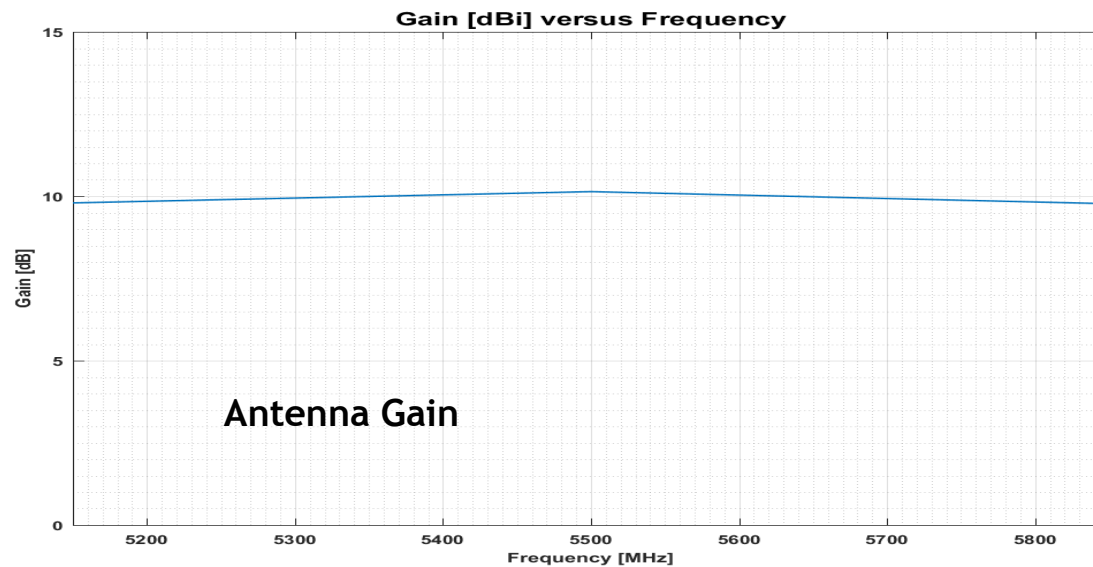
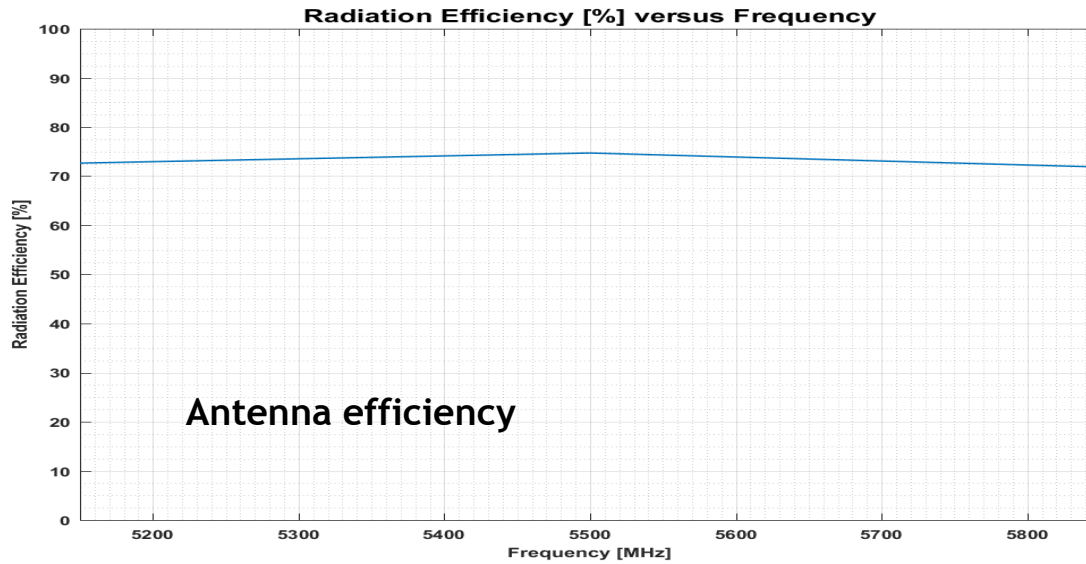




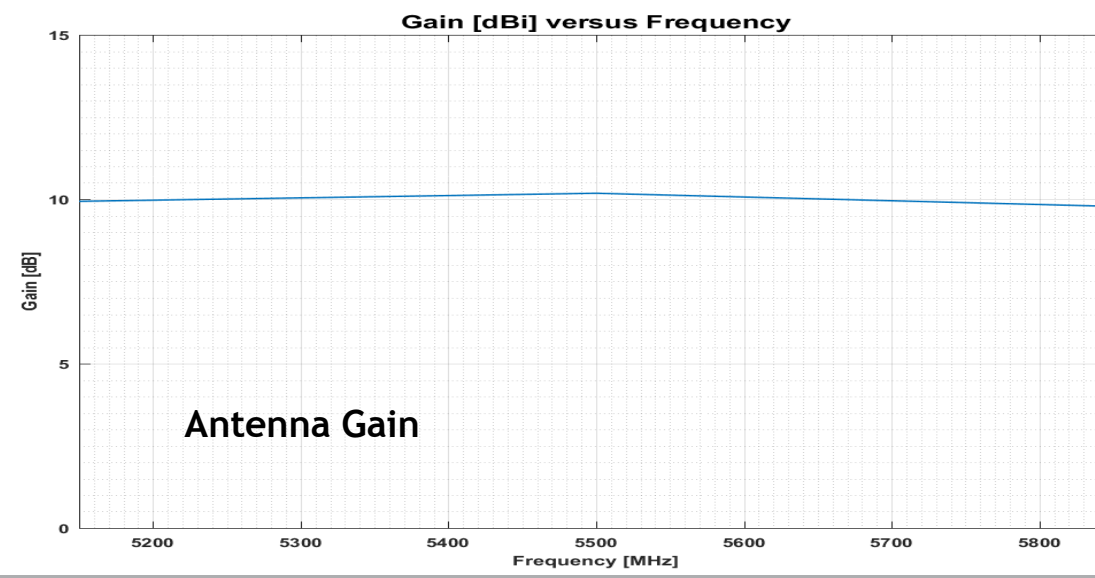
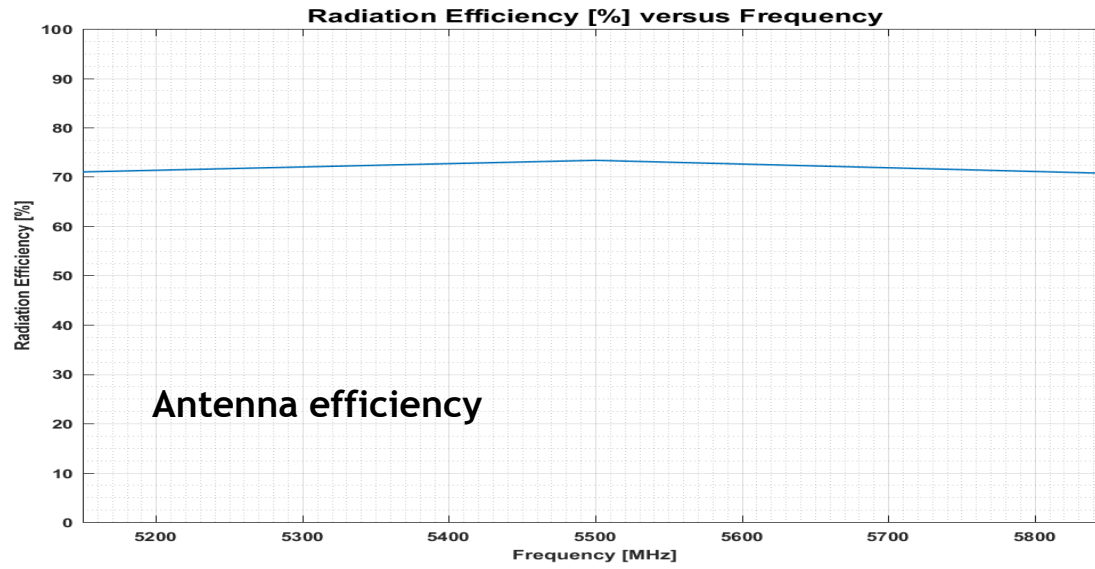
### 3. Antenna Efficiency & Peak Gain (A4)



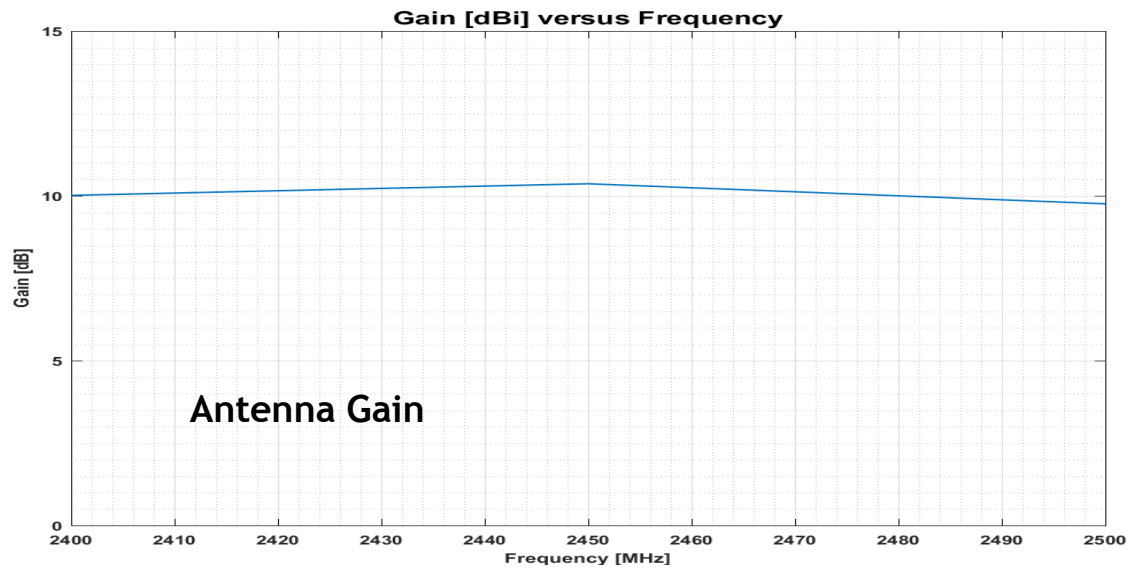
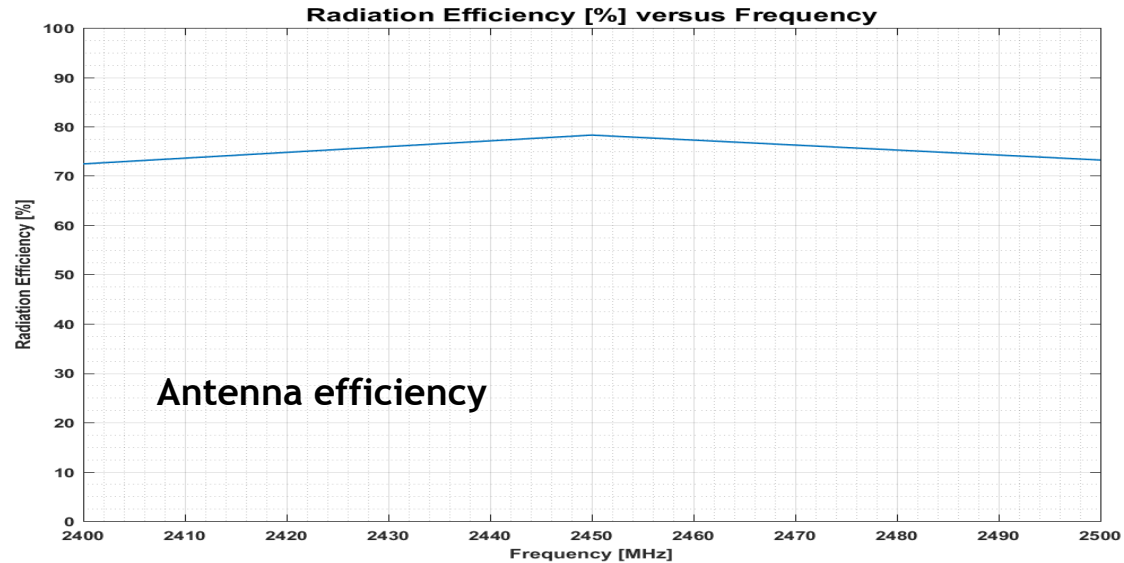
### 3. Antenna Efficiency & Peak Gain (A5)



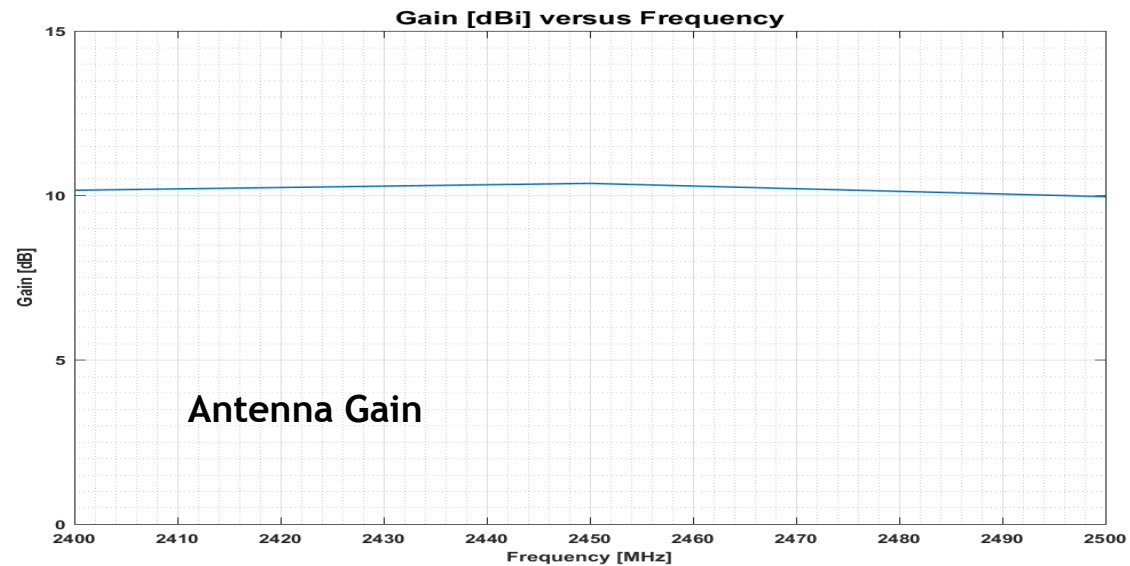
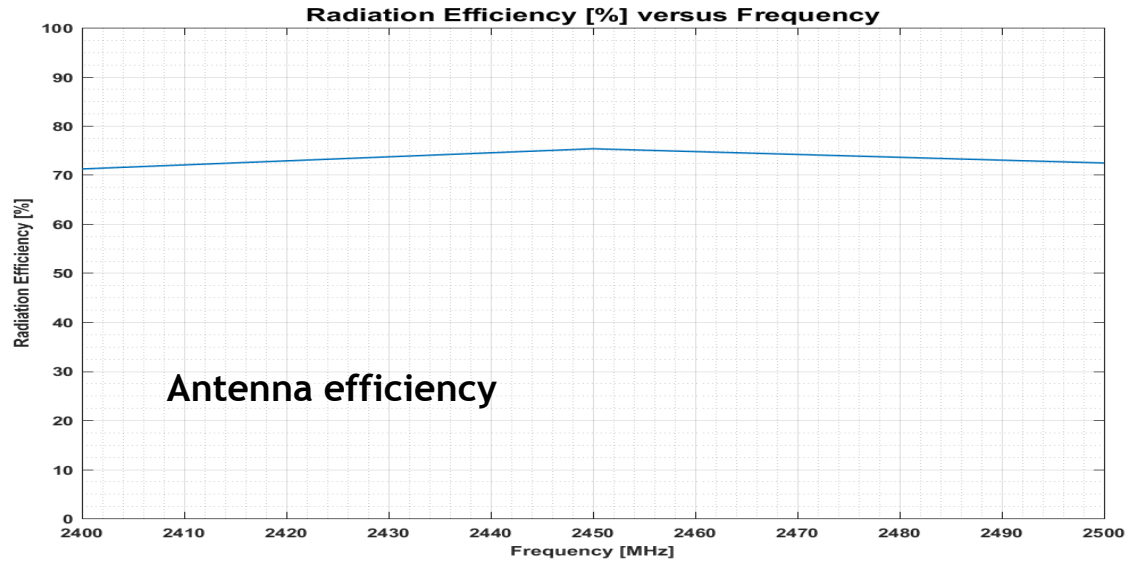
### 3. Antenna Efficiency & Peak Gain (A6)



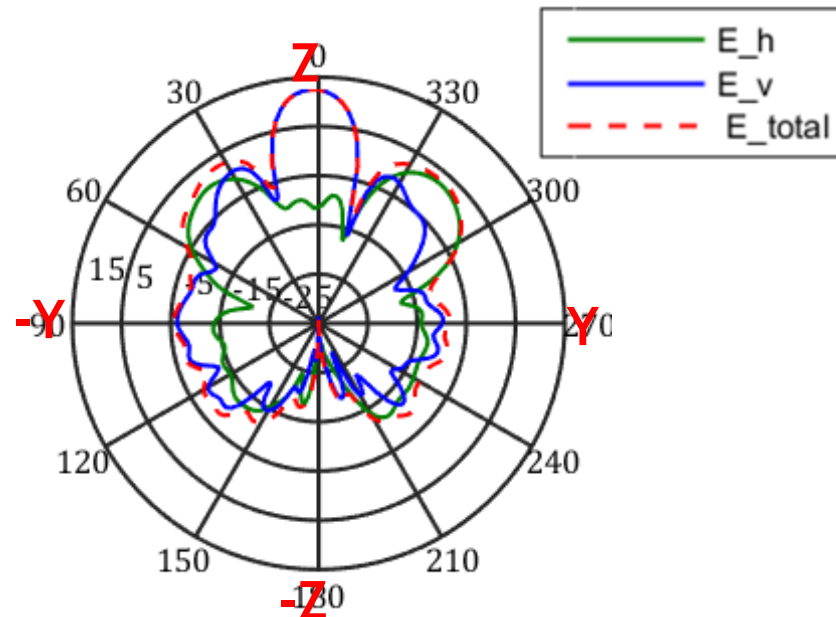
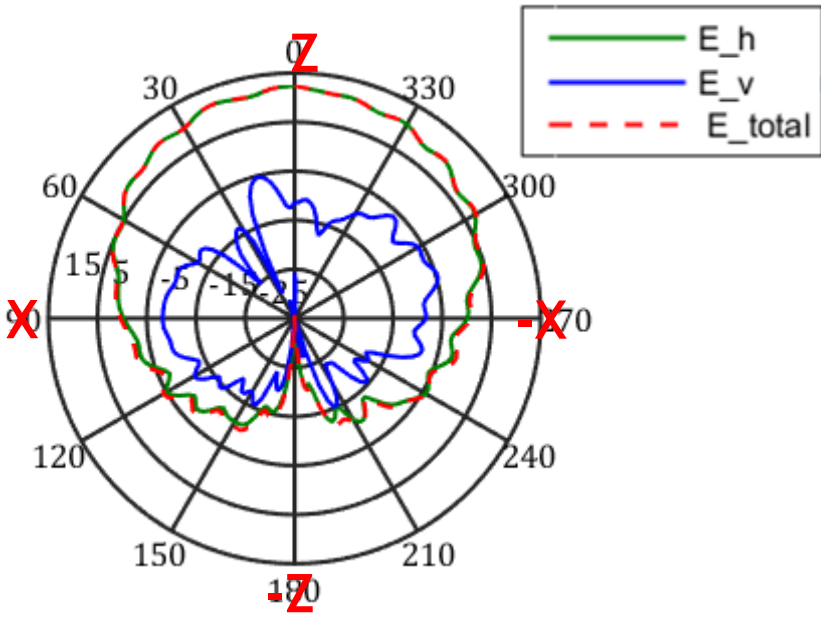
### 3. Antenna Efficiency & Peak Gain (A7)



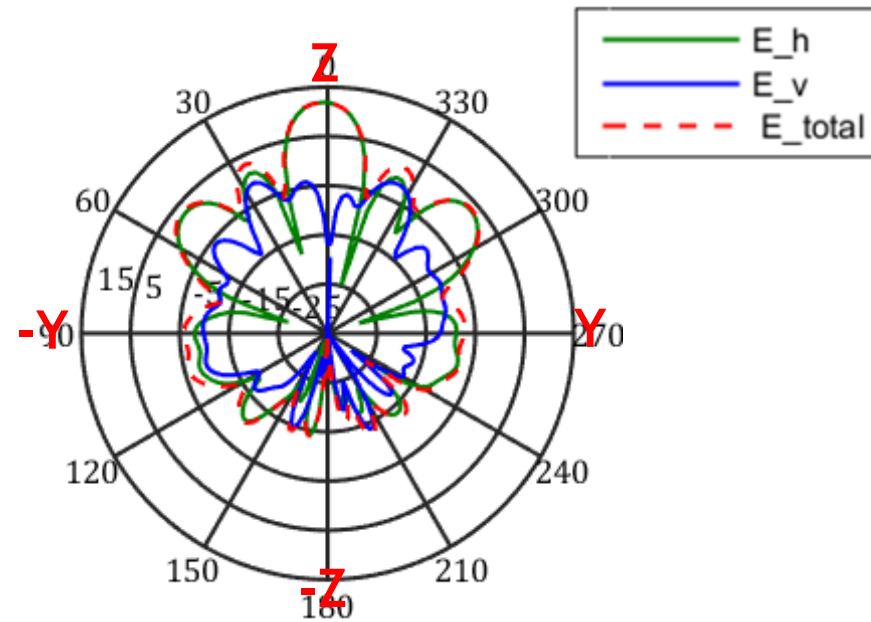
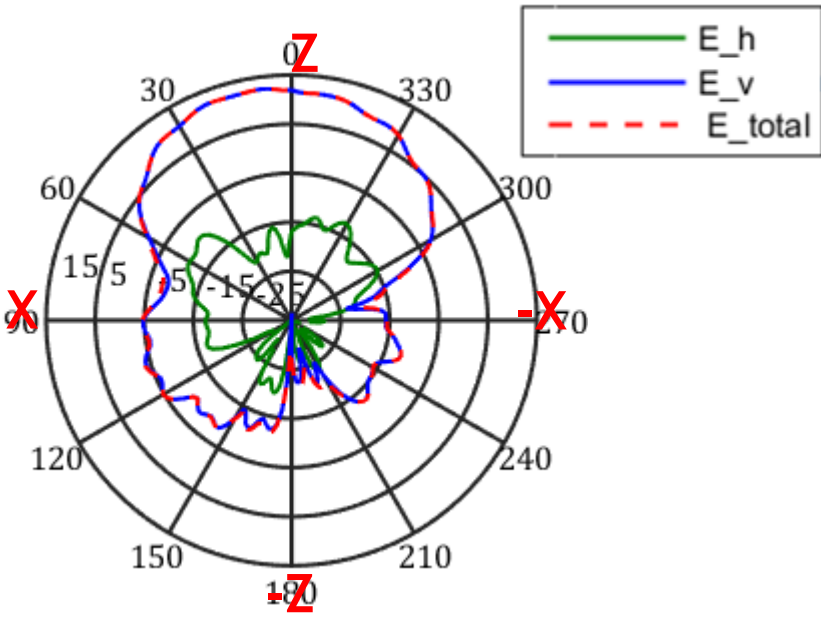
### 3. Antenna Efficiency & Peak Gain (A8)



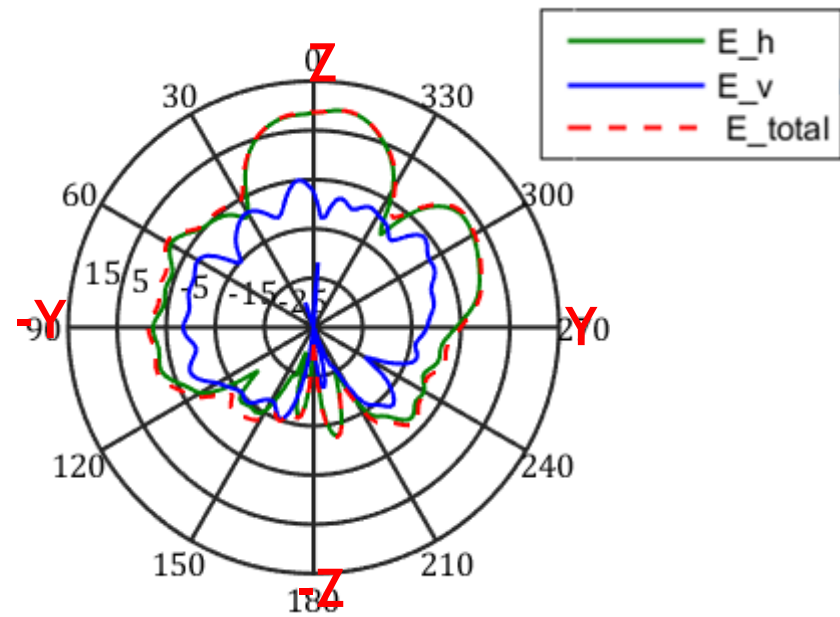
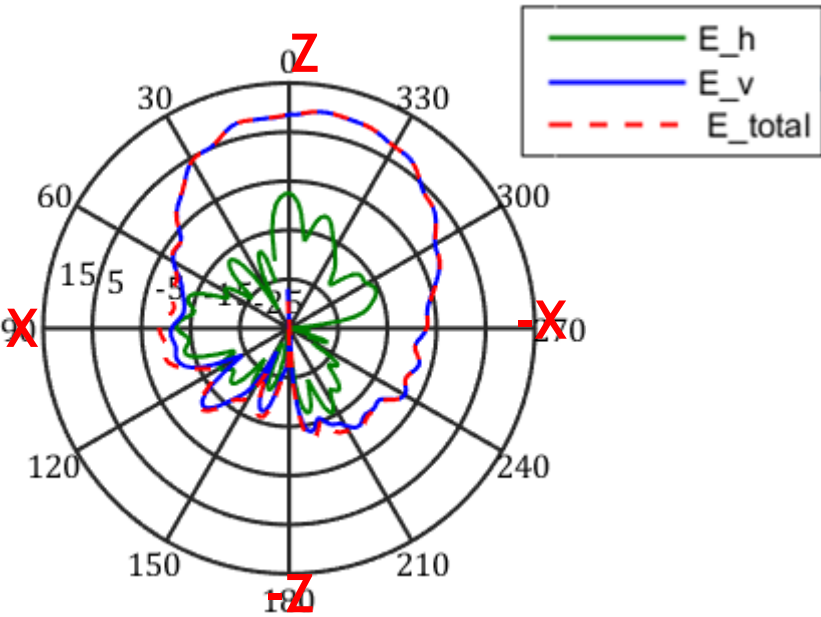
#### 4. Radiation patterns (A1 5500 MHZ)



#### 4. Radiation patterns (A2 5500MHZ)

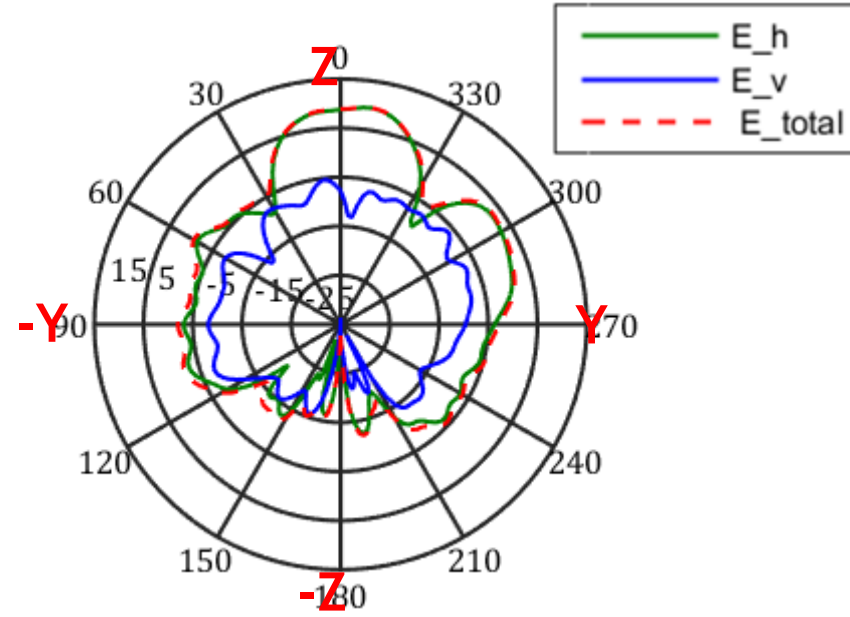
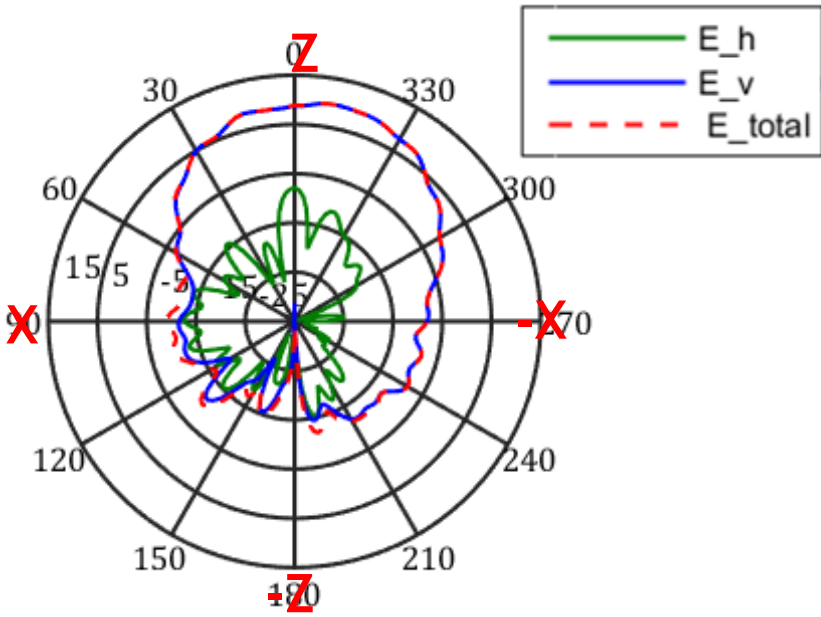


## 4. Radiation patterns (A3 5500MHZ)

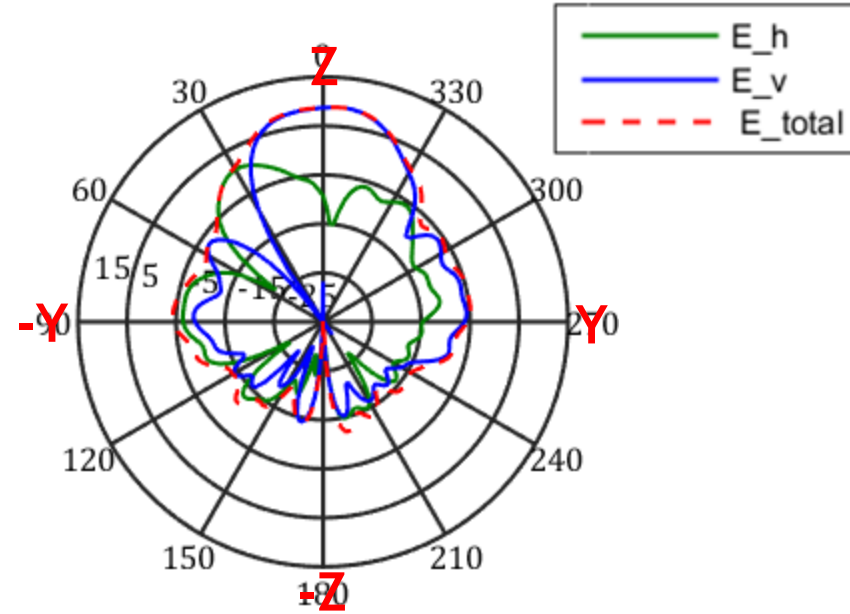
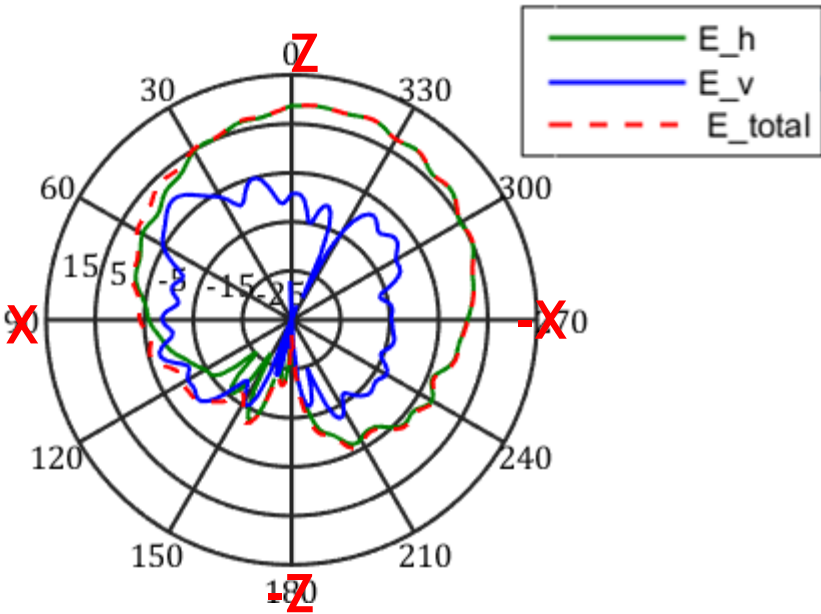




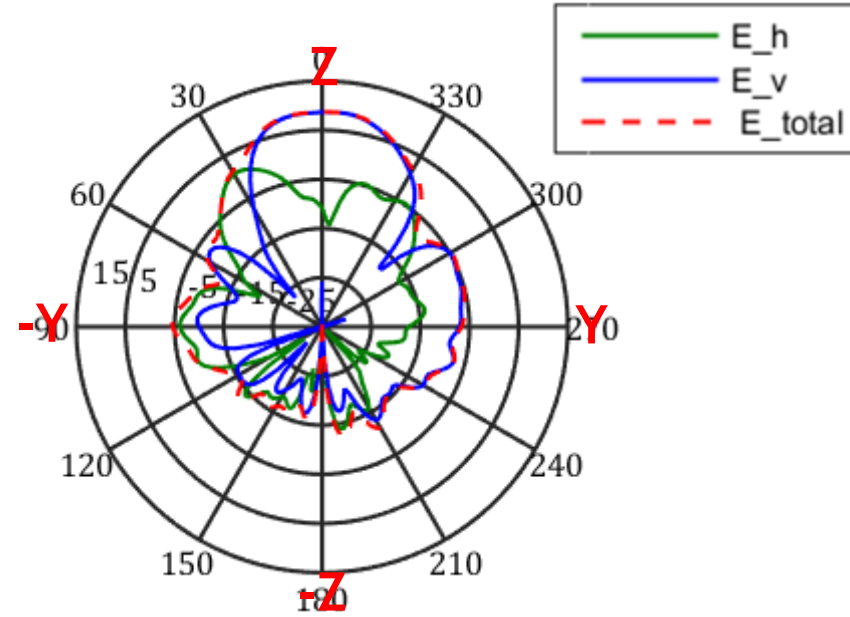
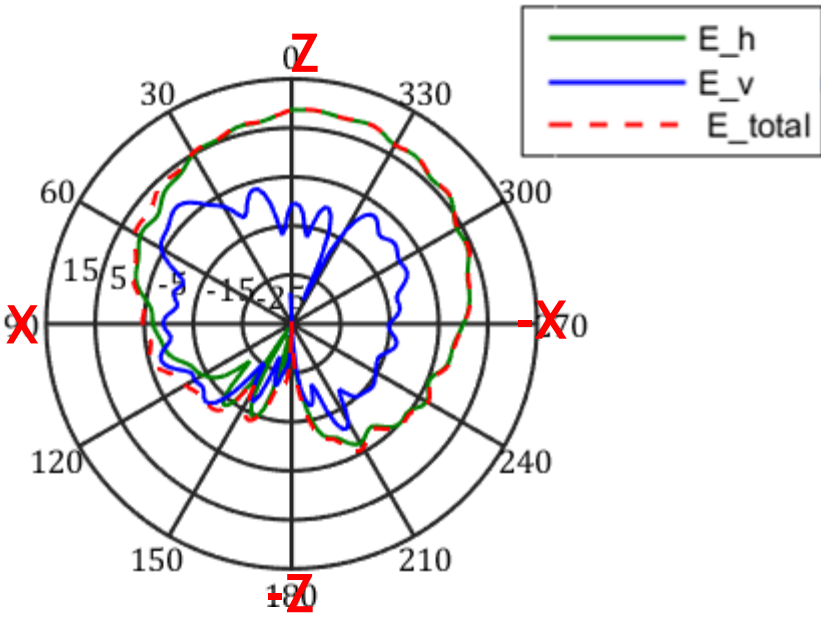
#### 4. Radiation patterns (A4 5500MHZ)



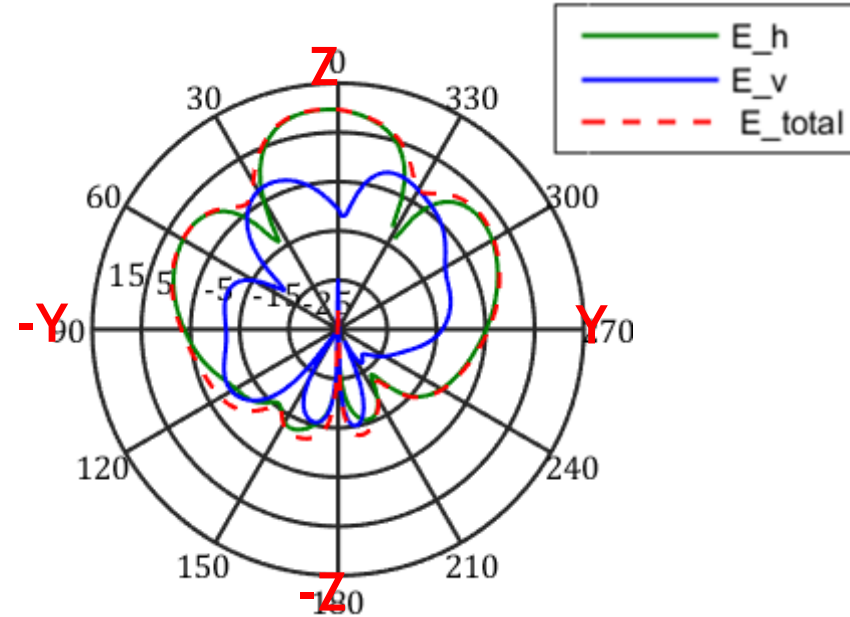
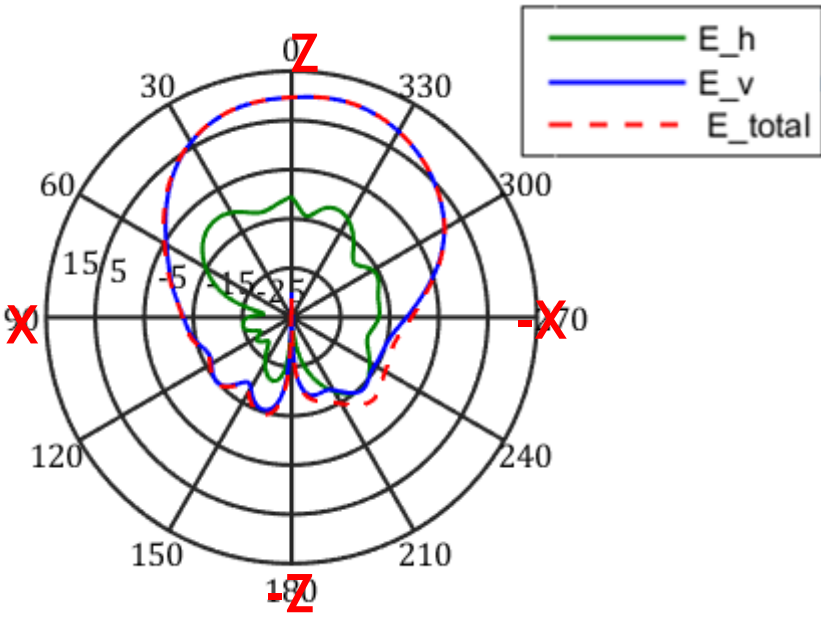
#### 4.Radiation patterns (A5 5500MHZ)



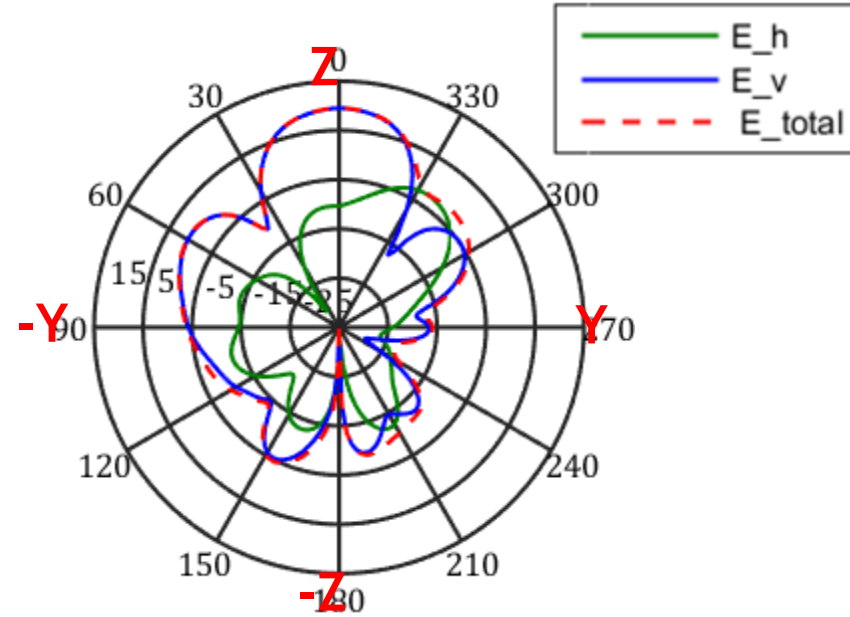
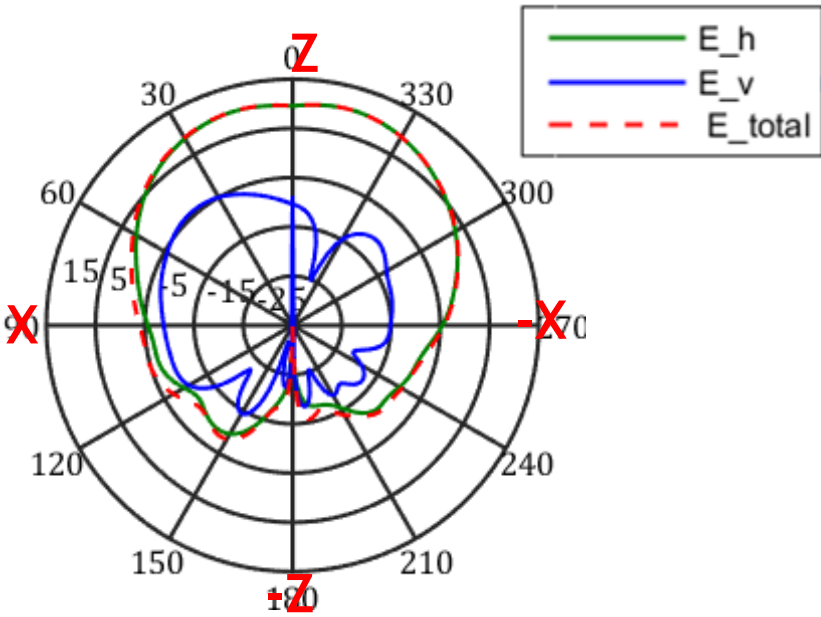
#### 4.Radiation patterns (A6 5500MHZ)



#### 4. Radiation patterns (A7 2450MHZ)



#### 4. Radiation patterns (A8 2450MHZ)



## 5.Summary

### 1.测量数据如下:

Item	Frequency(MHz)	2400	2450	2500
A7	Peak Gain(dBi)	10.13	10.08	10.09
	Efficiency(%)	72.13	74.56	71.24
A8	Peak Gain(dBi)	10.15	10.06	10.12
	Efficiency(%)	71.22	75.33	72.43
Item	Frequency(MHz)	5150	5500	5850
A1	Peak Gain(dBi)	12.04	12.49	12.18
	Efficiency(%)	72.31	74.56	72.13
A2	Peak Gain(dBi)	12.29	12.53	12.14
	Efficiency(%)	72.45	73.34	71.58
A3	Peak Gain(dBi)	8.94	9.23	9.03
	Efficiency(%)	68.86	69.65	68.79
A4	Peak Gain(dBi)	9.14	9.12	8.95
	Efficiency(%)	68.75	69.46	67.85
A5	Peak Gain(dBi)	9.80	10.14	9.77
	Efficiency(%)	71.14	73.12	71.04
A6	Peak Gain(dBi)	9.94	10.18	9.78
	Efficiency(%)	71.25	73.12	70.85