

## Problem Statement 2

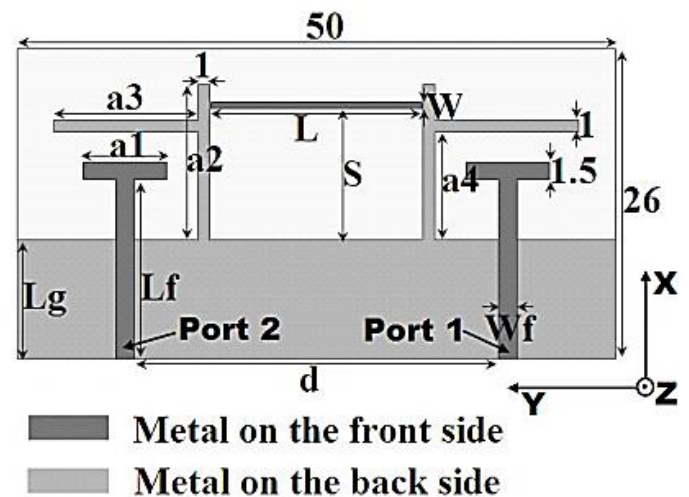
To design dual band T shaped Monopole MIMO antenna on a FR-4 substrate. With Stub Resonator.

The frequency is 1 GHz to 6 GHz and the thickness is 0.8 mm, dielectric constant = 4.3.

Also Reduce Mutual Coupling with the help of Stub Resonator.

**USAGE:** 2.4/5.2/5.8 GHz WLAN operating bands

Parameter	Value(mm)	Parameter	Value(mm)	Parameter	Value(mm)
Lg	10	a1	7	h	0.8
Lf	15	a2	13	W	0.5
Wf	1.5	a3	12	S	11
d	30.5	a4	9		
t	0.035	L	17.6		



**STEP1** Modelling of **Substrate** Plane → Brick → Esc

Xmin	Xmax	Ymin	Ymax	Zmin	Zmax
-25	25	0	26	-h	0

Material: FR-4 (Lossy)

**STEP2** Modelling of **Patch P1** → Brick → Esc

Pa	Xmin	Xmax	Ymin	Ymax	Zmin	Zmax
	-1.5/2	1.5/2	0	Lf	0	t

Material: Copper Annealed

Pb	Xmin	Xmax	Ymin	Ymax	Zmin	Zmax
	-a1/2	a1/2	Lf	Lf + 1.5	0	t

Material: Copper Annealed

*Boolean Addition: Add Pa & Pb to form Patch P1*

**STEP3** Modelling of **Patch P2** → Brick → Esc

1. **Transform: Translate P1** [  $X = -0.75 - d/2$  ]
2. Select Patch P1 and **Transform: Mirror** [  $X = 180$  ] to form Patch P2.

**STEP4** Modelling of **Slot Resonator** → Brick → Esc

Xmin	Xmax	Ymin	Ymax	Zmin	Zmax
$-L/2$	$L/2$	$S+Lg$	$S+Lg+W$	0	t

**STEP5** Modelling of **Ground Plane** → Brick → Esc

<b>G1</b>	Xmin	Xmax	Ymin	Ymax	Zmin	Zmax
	-25	25	0	$Lg$	$-h-t$	$-h$

Material: Copper Annealed

<b>G2</b>	Xmin	Xmax	Ymin	Ymax	Zmin	Zmax
	-1	0	$Lg$	$Lg+a2$	$-h-t$	$-h$

<b>G3</b>	Xmin	Xmax	Ymin	Ymax	Zmin	Zmax
	$-1-a3$	-1	$Lg+a4$	$Lg+a4+1$	$-h-t$	$-h$

*Boolean Addition: Add G2 & G3 to form Ground **G4****Apply **Transform: Translate** [  $X = -L/2$  ] on G4***G5** Apply Transform: Mirror [  $X = 180$  ] on G4 to form **G5***Boolean Addition: Add G4 & G5 to form **Ground Plane*****STEP5** EXCITATION: Create input ports on both Patch P1 & P2

PICK → PICK FEED → MACRO → SOLVER → PORTS → CALCULATE PORT EXTENTION

CALCULATE → CONSTRUCT PORT FROM PICKED FACE → CLOSE

**STEP6** SIMULATE