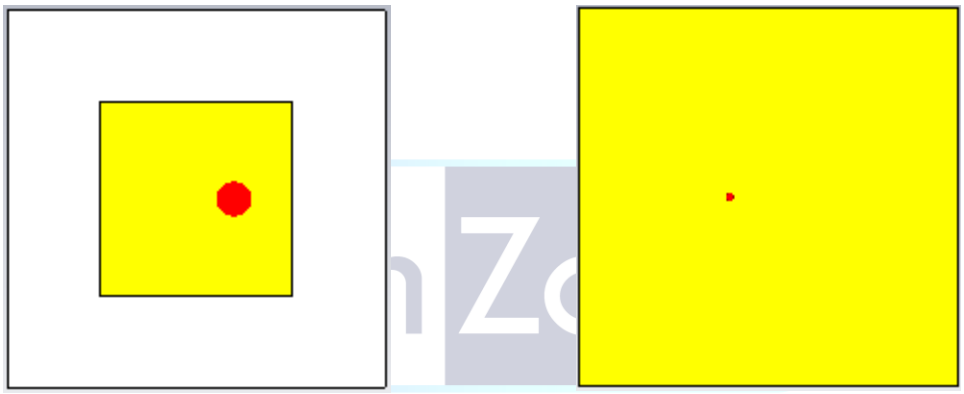
SQUARE MICROSTRIP PATCH ANTENNA

Problem Statement 1

To design a square patch antenna on a ROGERS RT DUROID 5880 substrate. The frequency is 9.15 GHz and thickness is 0.787 mm, dielectric constant = 2.2

USAGE: X BAND (POWER RADAR)



FRONT VIEW **BACK VIEW**

Parameter	Dimension(mm)	Description
W	10.2	Width of Patch
L	10.2	Length of Patch
Wg	20	Width of Ground
Lg	20	Length of Ground
X	1.4	Coaxial Feed (Discrete Port)
Hs	0.787	Height of Substrate
Ht	0.035	Height of Copper

DESIGN STEPS:

STEP1 Modelling of **Ground** Plane ➡ Brick ➡ Esc

Xmin	Xmax	Ymin	Ymax	Zmin	Zmax
-Wg/2	Wg/2	-Lg/2	Lg/2	0	Ht

Material: **Copper Annealed**

STEP2 Modelling of **Substrate** Plane ➡ Brick ➡ Esc

Xmin	Xmax	Ymin	Ymax	Zmin	Zmax
-Wg/2	Wg/2	-Lg/2	Lg/2	Ht	Ht+Hs

Material: **ROGERS RT DUROID 5880**

STEP3 Modelling of **Patch** Plane ➡ Brick ➡ Esc

Xmin	Xmax	Ymin	Ymax	Zmin	Zmax
-W/2	W/2	-L/2	L/2	Ht+Hs	2*Ht+Hs

Material: **Copper Annealed**

STEP6 Excitation of Square Patch Antenna

SIMULATION ➡ DISCRETE PORT

Impedance = 50 Ohms

X1 = 2.0; X2= 2.0; Y1 = 0.0; Y2= 0.0; Z1 = 0.0; Z2= 2*Ht + Hs;

STEP7 Simulate

DESIGN STEPS FOR CIRCULAR POLARIZATION:

Follow same procedure till STEP 6

STEP7 Excitation of Square Patch Antenna

SIMULATION ➡ DISCRETE PORT

Impedance = 50 Ohms

X1 = 0.0; X2= 0.0; Y1 = 2.0; Y2= 2.0; Z1 = 0.0; Z2= 2*Ht + Hs;

STEP8 Simulate