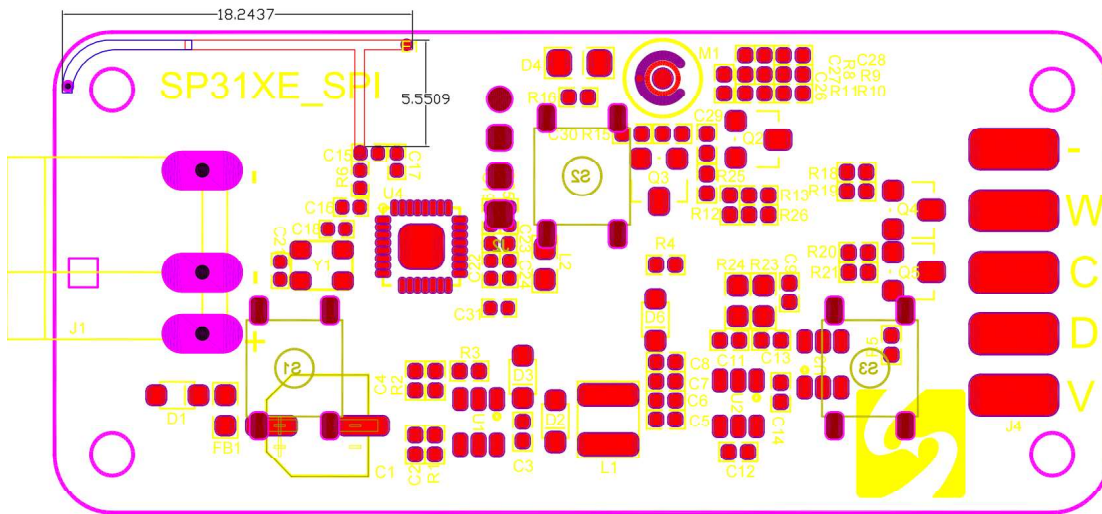


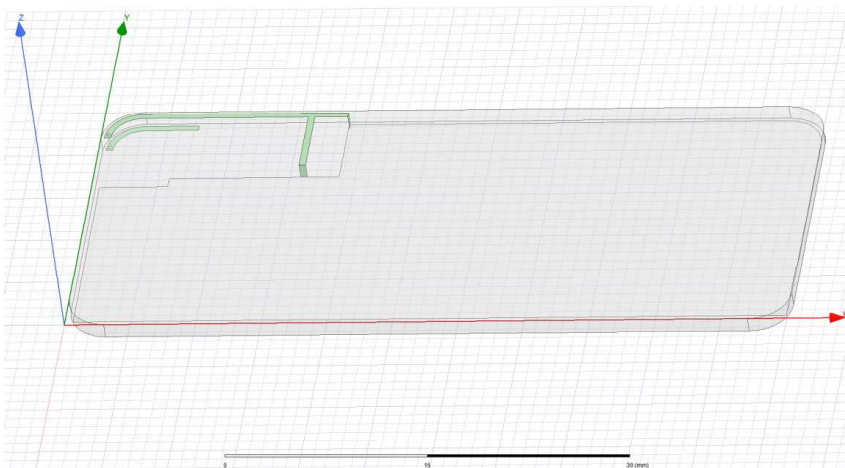
SP31XE Antenna Specifications

1. Antenna location and size (mm) :

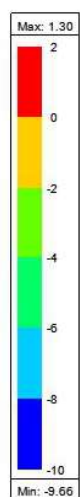


2. Antenna simulation Report:

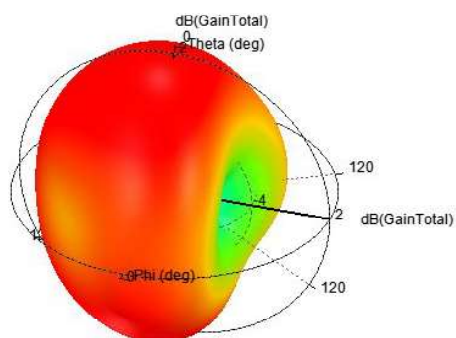
1) Antenna Simulation Model :



2) 3D Polar plot:

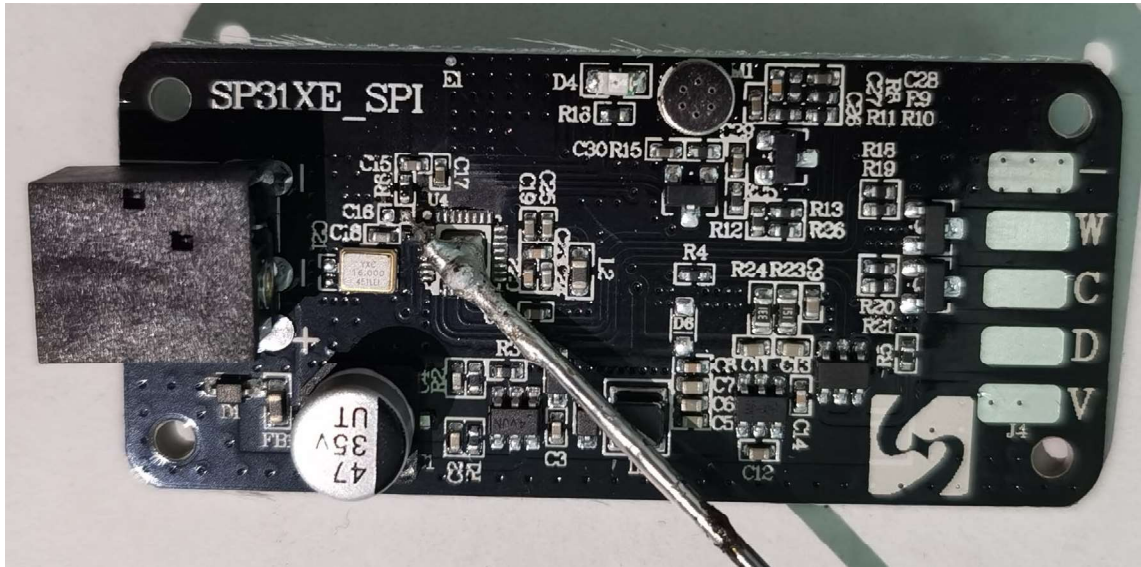


Gain Plot 4

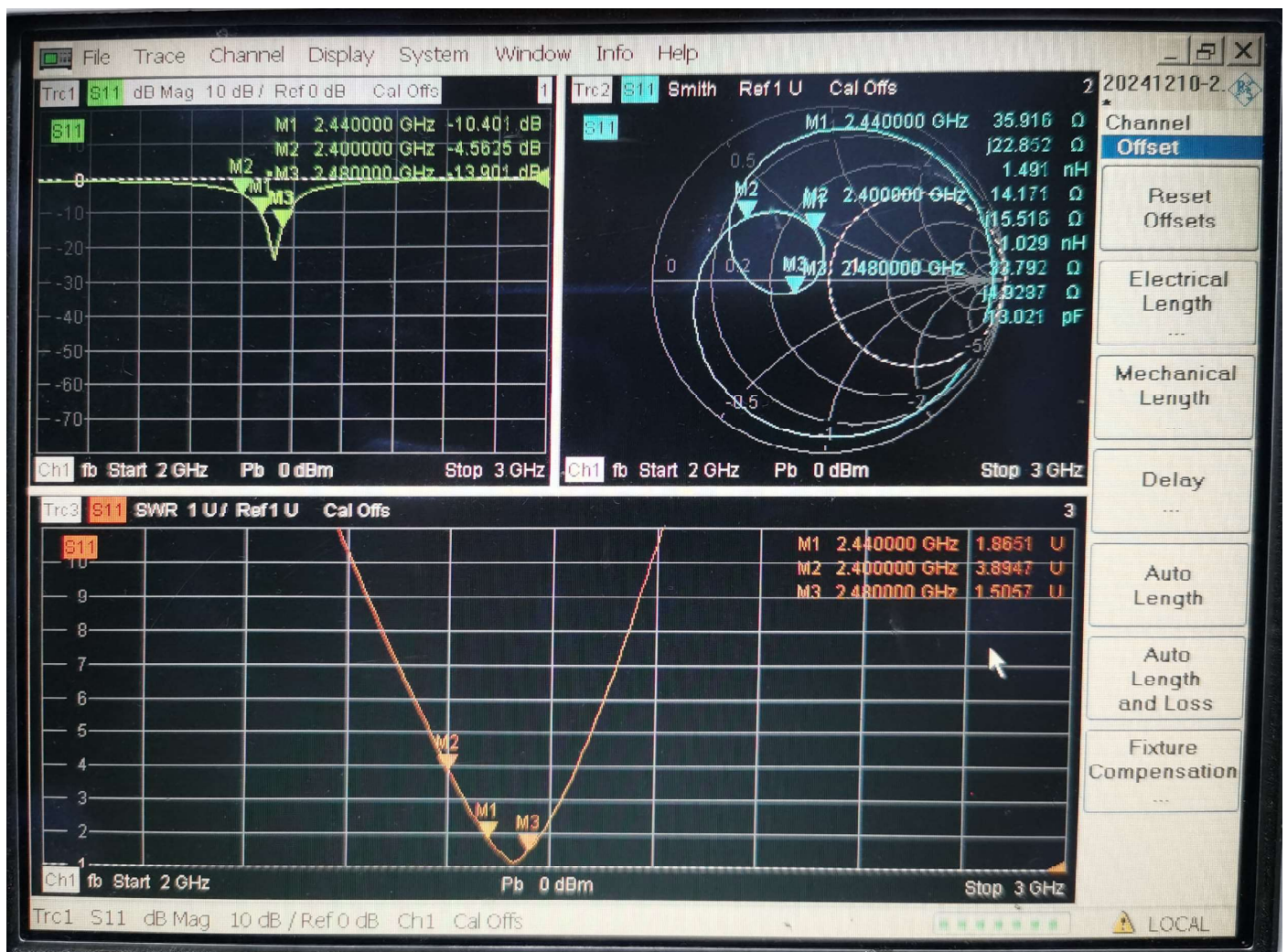


3.Test Report:

1) Appearance :



2) Antenna Smithchart ,VSWR and Return Loss:



4.Basic Characteristics:

A.Electrical Characteristics:	
Frequency	2400~2500 MHz
S.W.R.	<= 2.0
Max.Gain	1.3dBi
Efficiency	34% - 41%
Polarization	Linear
Impedance	50 Ohm
B.Material & Mechanical Characteristics:	
Material of Radiator	PCB
Cable Type	NONE
Connector Type	NONE
Pull Test	/
C.Environmental:	
Operation Temperature	-20°C~+60°C
Storage Temperature	-40°C~+80°C

5.Gain and Efficiency:

frequency (GHz)	2.4	2.41	2.42	2.43	2.44	2.45	2.46	2.47	2.48	2.49	2.5
efficiency (%)	34.0	35.5	37.0	38.5	41.0	40.0	39.0	38.0	39.5	34.0	35.5
Gain (dBi)	1.10	1.15	1.20	1.25	1.30	1.25	1.20	1.15	1.20	1.15	1.10