

## Abstract

◆ *Experiment 1:*

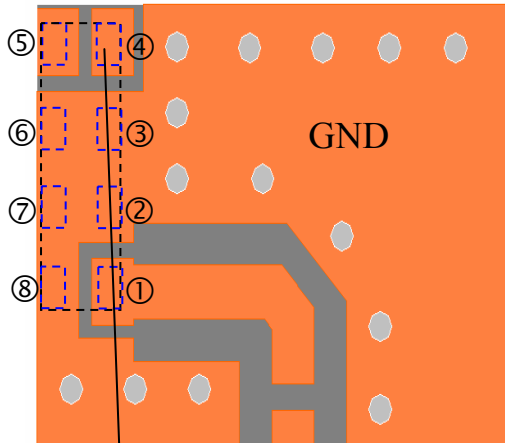
To shift up /down the center frequency of 2500AT43A0100 by changing the land pattern with *no matching circuits* ( $F_o$  @ 2.65GHz)

◆ *Experiment 2:*

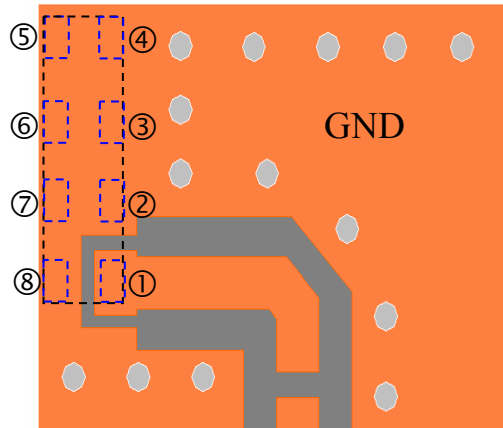
To tune down the center frequency (to 2.5GHz) of 2500AT43A0100 soldered on the initial land pattern *by matching circuits*.

# Experiment 1: Land Pattern Comparison

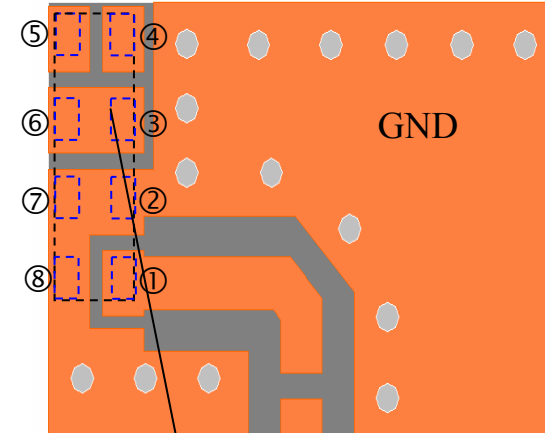
Initial land pattern  
( $S_{11}$ )



Land pattern 1  
( $S_{22}$ )



Land pattern 2  
( $S_{33}$ )



Initial Land Pattern → Pins 4 & 5 isolated.

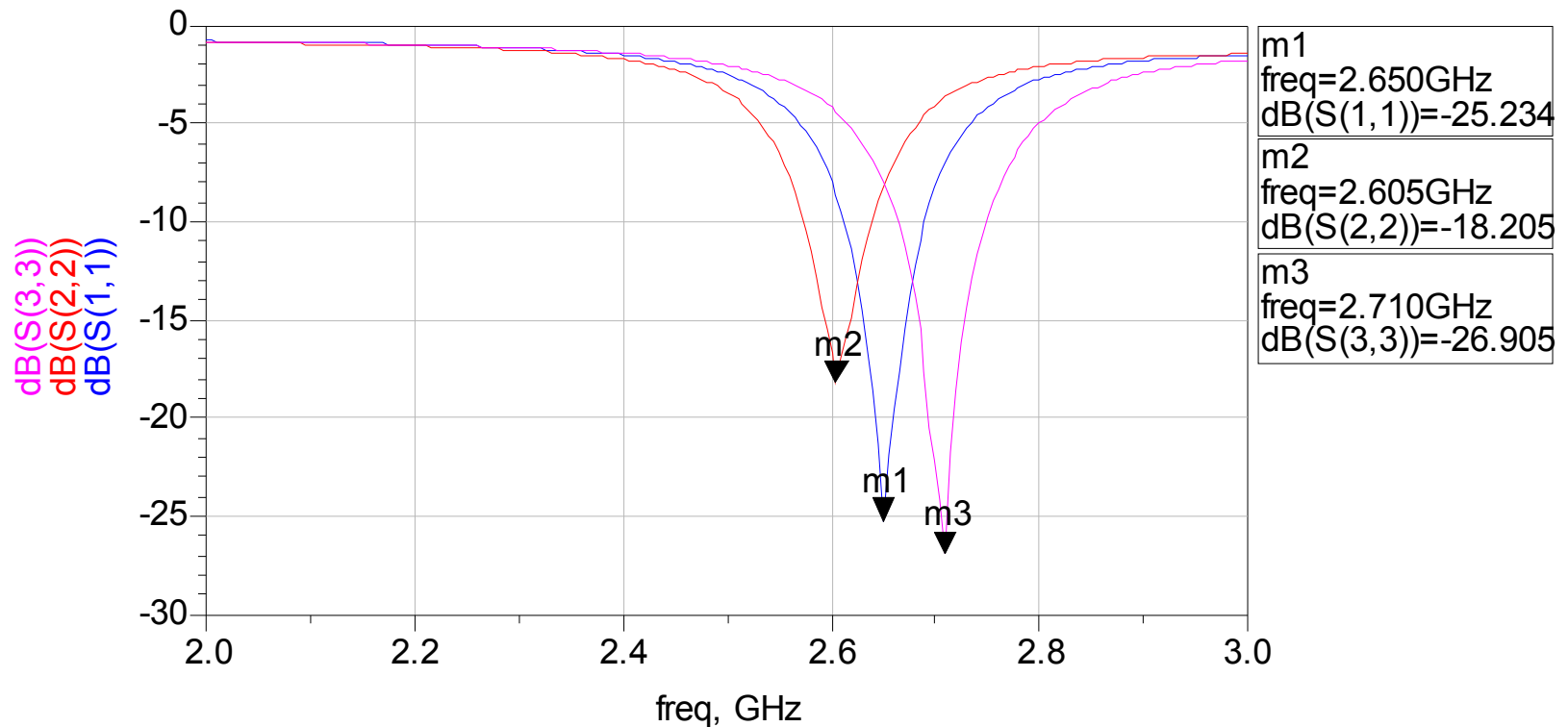
Land pattern 1 → Connect pins 4 & 5 with GND

Land pattern 2 → Antenna pins 3 & 6 connected together and isolated from GND, pins 4 & 5 isolated as well

GND  
Isolated

GND  
Isolated

## Experiment 1: Measured Result



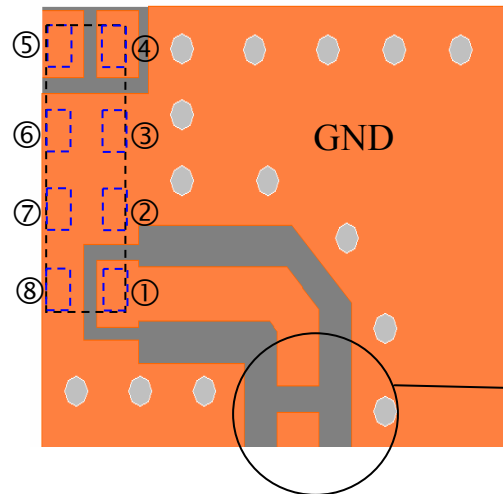
**Initial land pattern(S11)→Center frequency is 2.65GHz**

**Land pattern 1(S22)→Center frequency is shift down 50MHz to 2.6GHz**

**Land pattern 2(S33) → Center frequency shift up 60MHz to 2.71GHz**

## Experiment2: Land Pattern Image

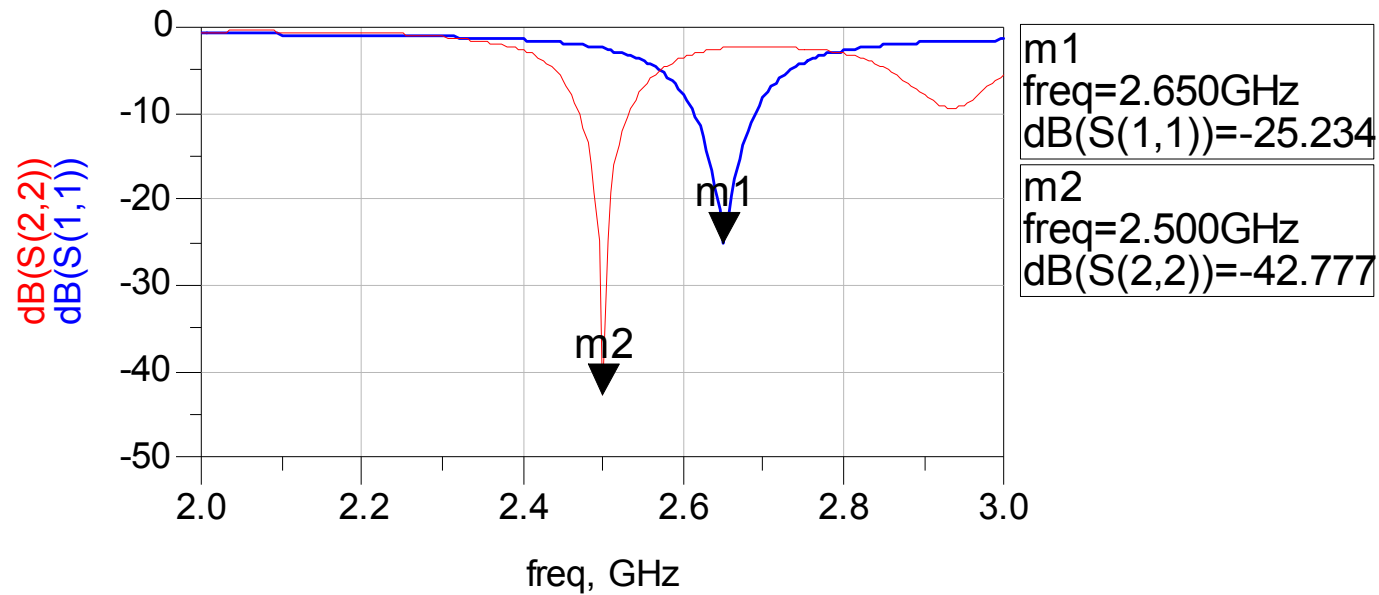
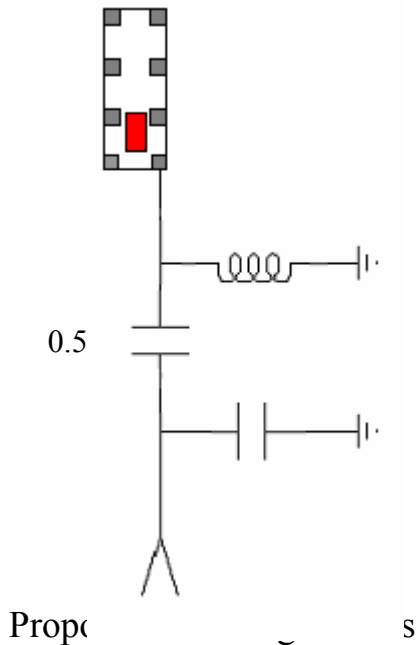
### Initial land pattern



Matching  
circuits (next  
page)

## Experiment2: Return Loss & Matching circuits

2500AT43A0100 soldered on initial land pattern

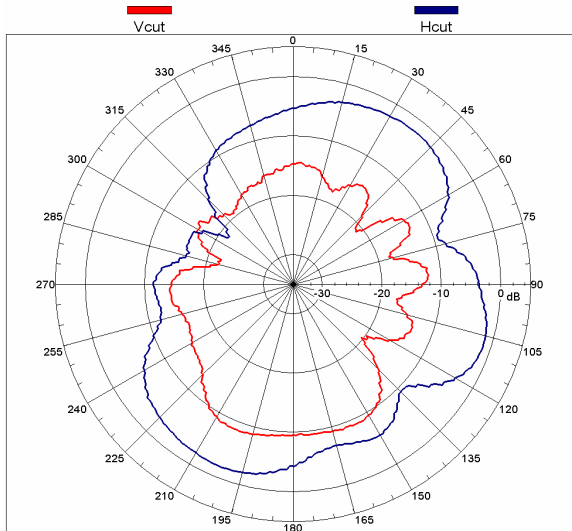


**2500AT43A0100 without matching circuits(S11)→Center frequency is 2.65GHz**

**2500AT43A0100 with matching circuits(S22)→Center frequency shift down to 2.5GHz**

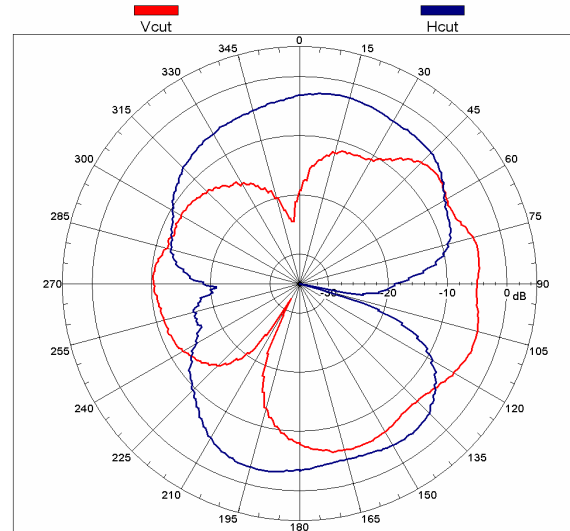
# Experiment 2: Radiation Pattern @ 2.5GHz

Far-field amplitude of XY\_plane.nsi



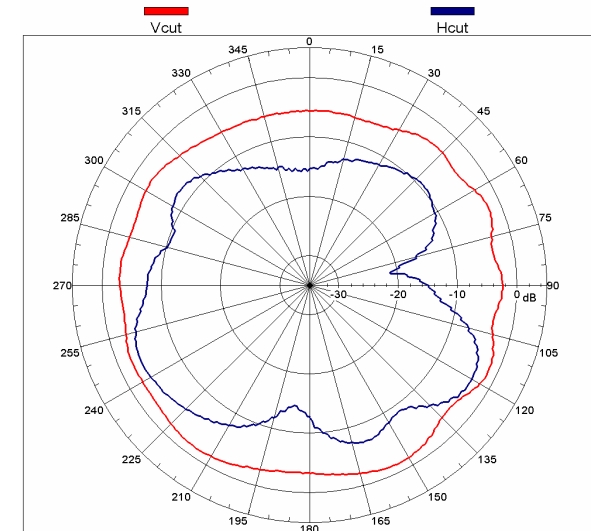
XY-plane	Peak	Avg.
H cut	-1.39	-5.82
V cut	-8.67	-14.03
Total	-1.12	-5.11

Far-field amplitude of XZ\_plane.nsi



XZ-plane	Peak	Avg.
H cut	-2.50	-6.97
V cut	-3.95	-9.52
Total	-1.63	-4.47

Far-field amplitude of YZ\_plane.nsi



YZ-plane	Peak	Avg.
H cut	-3.43	-9.03
V cut	-1.46	-3.27
Total	0.56	-2.17

## Summary

### ◆ *Experiment 1:*

The results show that the center frequency can be shifted up/down by about 50MHz by changing the antenna land pattern.

### ◆ *Experiment 2:*

The center frequency can also be shifted down to 2.5GHz by the matching circuit (shown as the page5).

Note: Combining experiments 1 & 2 can give the designer the desired  $F_0$