

## ANT016008LCS2442MA1

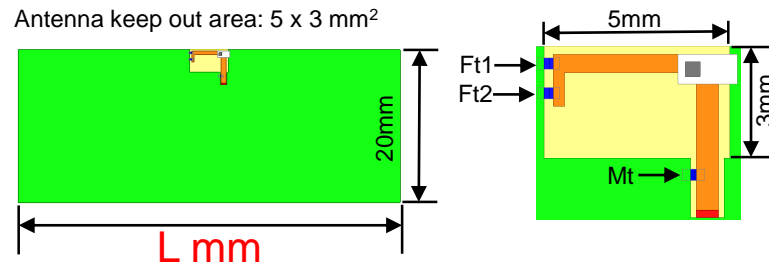


Dimensions (mm)

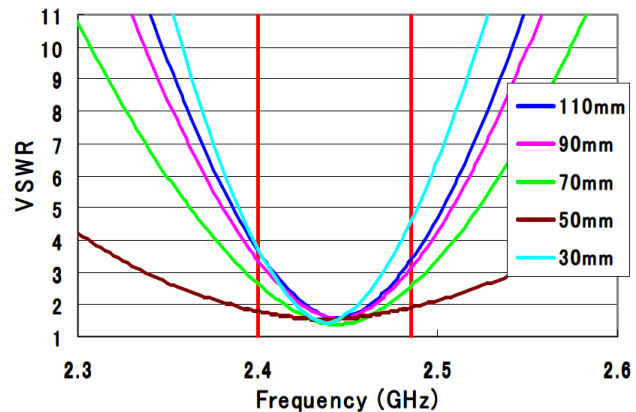
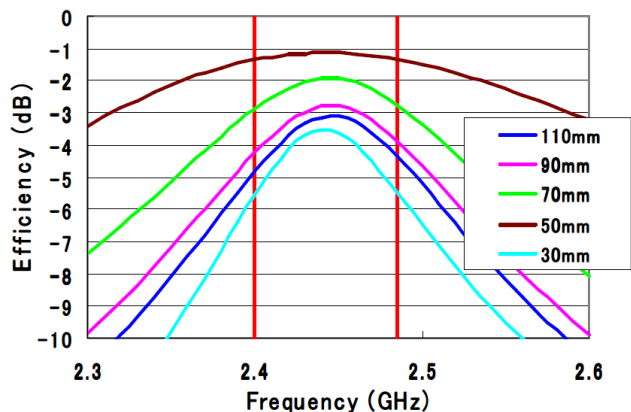
L	W	T
1.60	0.80	0.40
±0.10	±0.10	Max.

## EVALUATION BOARD

Antenna Location: Center  
Board size: L x 20 x 1 mm<sup>2</sup>  
Antenna keep out area: 5 x 3 mm<sup>2</sup>



## VSWR & EFFICIENCY (SIMULATION RESULTS)

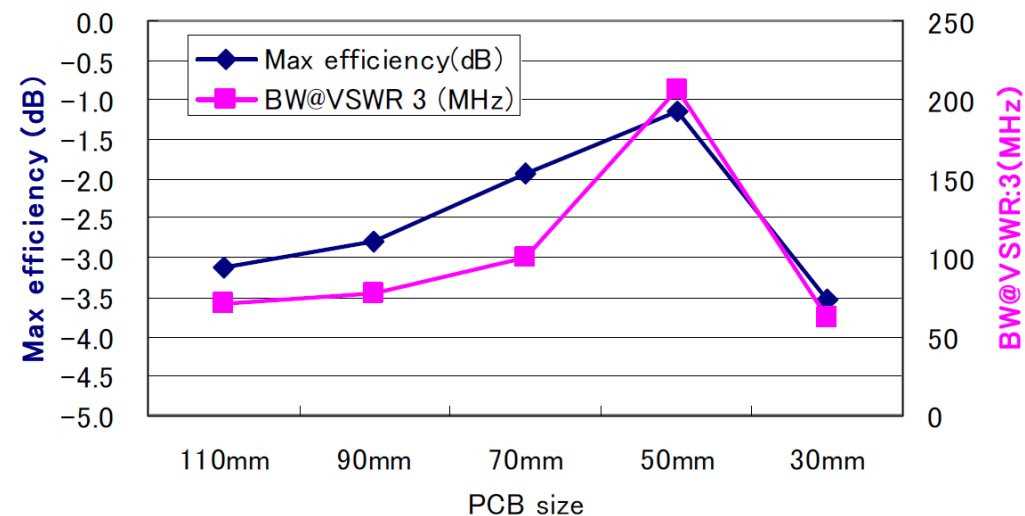


Item	VSWR			Efficiency(dB)		
	2.4	2.442	2.485	2.4	2.442	2.485
L=110mm	3.7	1.6	3.4	-4.81	-3.13	-4.34
L=90mm	3.4	1.6	3.1	-4.23	-2.80	-3.86
L=70mm	2.6	1.4	2.6	-2.87	-1.92	-2.74
L=50mm	1.8	1.6	1.9	-1.35	-1.14	-1.34
L=30mm	3.7	1.5	4.6	-5.54	-3.56	-5.46

## TUNING COMPONENTS

PCB Size	110mm	90mm	70mm	50mm	30mm
Ft1 (pF)	6	6	6	5	6
Ft2 (pF)	1.8	2	2	Blank	1
Mt (pF)	0.5	0.6	0.8	1.6	0.2

## MAX EFFICIENCY & BANDWIDTH (SIMULATION RESULTS)



PCB Size	110mm	90mm	70mm	50mm	30mm
Max efficiency(dB)	-3.1	-2.8	-1.9	-1.1	-3.5
BW@VSWR 3 (MHz)	70.9	77.8	100.4	206.8	61.7

## TECHNICAL REMARKS

- For maximum efficiency with center mount antenna: length L = 50

## ANT016008LCS2442MA1

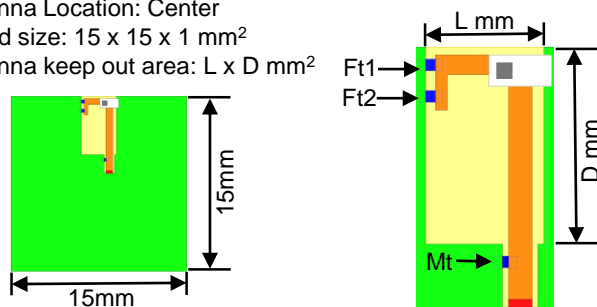


Dimensions (mm)

L	W	T
1.60	0.80	0.40
±0.10	±0.10	Max.

## EVALUATION BOARD

Antenna Location: Center  
Board size: 15 x 15 x 1 mm<sup>2</sup>  
Antenna keep out area: L x D mm<sup>2</sup>

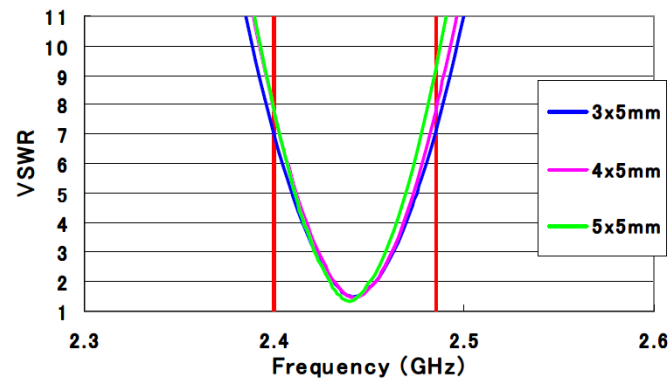
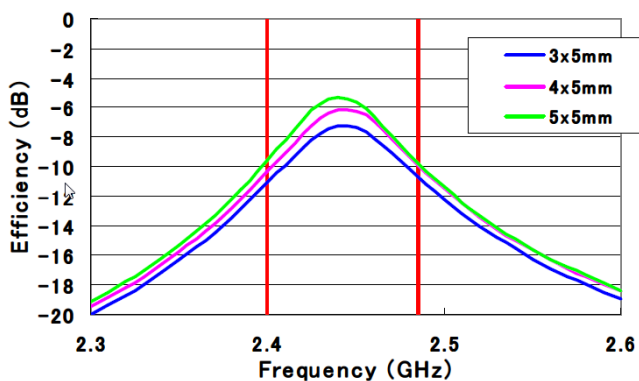


## TUNING COMPONENTS & KEEPOUT AREA SIZE

GND Off size	3x5mm	4x5mm	5x5mm
Ft1 (pF)	10	2.7	1.6
Ft2 (pF)	7	Blank	Blank
Mt (nH)	2.5	3.2	3.5

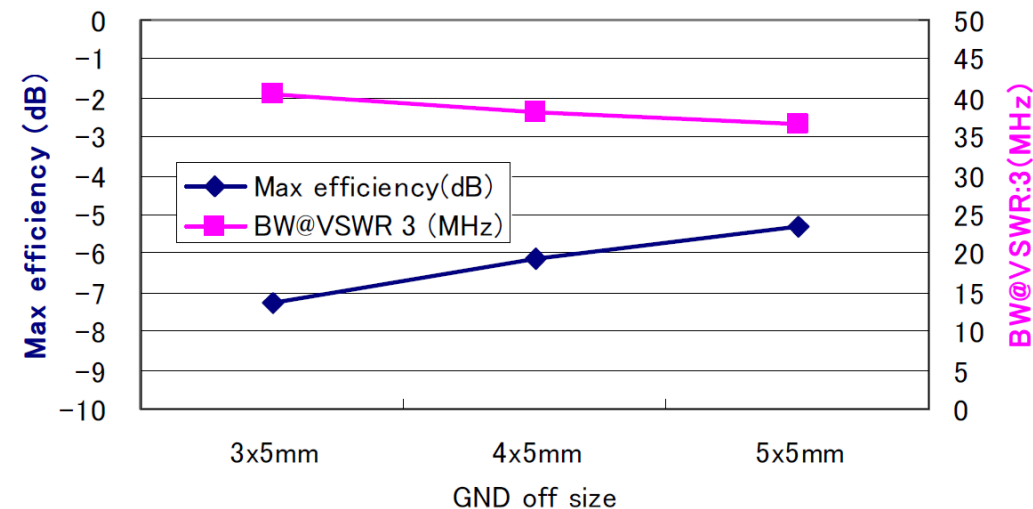
GND off size	L(mm)	D(mm)
3x5mm	3	5
4x5mm	4	5
5x5mm	5	5

## VSWR & EFFICIENCY (SIMULATION RESULTS)



Item	VSWR			Efficiency(dB)		
	Frequency(GHz)	2.4	2.442	2.485	2.4	2.442
3x5mm	7.0	1.5	7.1	-11.06	-7.30	-10.62
4x5mm	7.8	1.4	7.8	-10.35	-6.15	-9.80
5x5mm I	7.7	1.4	9.2	-9.59	-5.38	-9.71

## MAX EFFICIENCY & BANDWIDTH (SIMULATION RESULTS)



GND Off size	3x5mm	4x5mm	5x5mm
Max efficiency(dB)	-7.3	-6.1	-5.3
BW@VSWR 3 (MHz)	40.5	38.1	36.5

## ANT016008LCS2442MA1

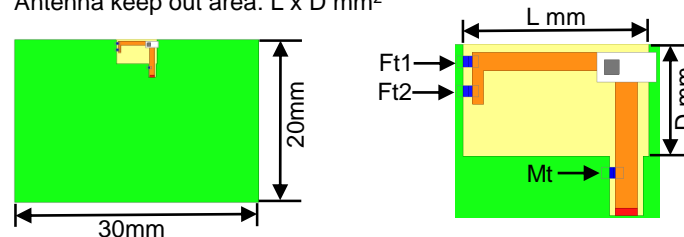


Dimensions (mm)

L	W	T
1.60	0.80	0.40
±0.10	±0.10	Max.

## EVALUATION BOARD

Antenna Location: Center  
Board size: 30 x 20 x 1 mm<sup>2</sup>  
Antenna keep out area: L x D mm<sup>2</sup>

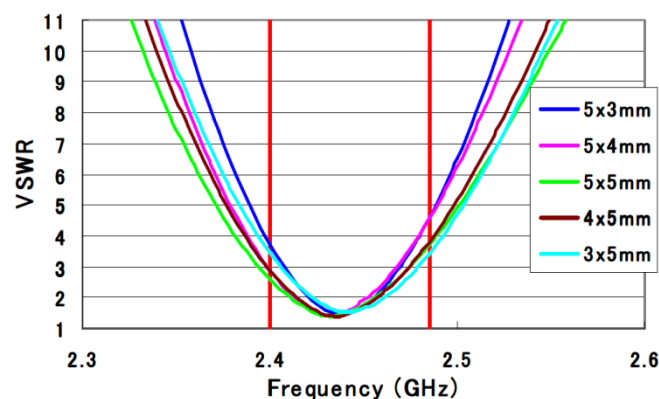
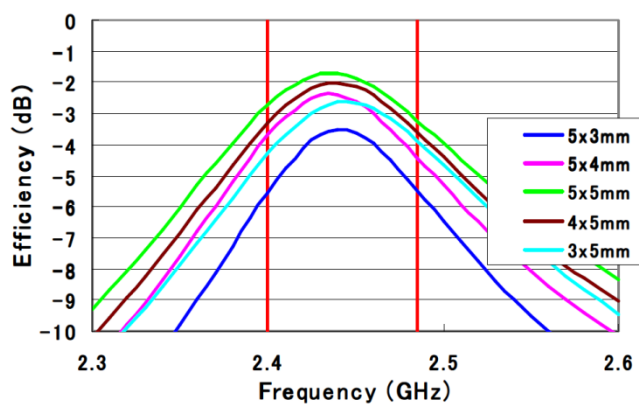


## TUNING COMPONENTS & KEEPOUT AREA SIZE

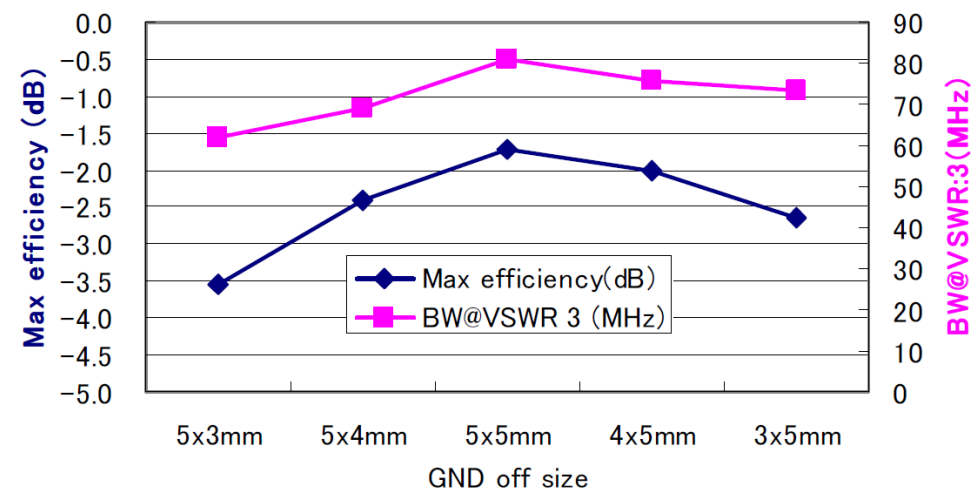
GND Off size	5x3mm	5x4mm	5x5mm	4x5mm	3x5mm
Ft1 (pF)	6	2.4	1.4	2.4	8
Ft2 (pF)	1	Blank	Blank	Blank	Blank
Mt (pF)	0.2	Blank	Blank	Blank	Blank

GND off size	L(mm)	D(mm)
5x3mm	5	3
5x4mm	5	4
5x5mm	5	5
4x5mm	4	5
3x5mm	3	5

## VSWR & EFFICIENCY (SIMULATION RESULTS)



## MAX EFFICIENCY & BANDWIDTH (SIMULATION RESULTS)



GND Off size	5x3mm	5x4mm	5x5mm	4x5mm	3x5mm
Max efficiency(dB)	-3.5	-2.4	-1.7	-2.0	-2.6
BW@VSWR 3 (MHz)	61.7	68.8	80.8	75.7	73.2

Item	VSWR			Efficiency(dB)		
	Frequency(GHz)	2.4	2.442	2.485	2.4	2.442
5x3mm	3.7	1.5	4.6	-5.54	-3.56	-5.46
5x4mm	2.9	1.6	4.6	-3.70	-2.45	-4.39
5x5mm	2.6	1.5	3.7	-2.72	-1.74	-3.21
4x5mm	2.9	1.5	3.8	-3.30	-2.05	-3.58
3x5mm	3.5	1.5	3.4	-4.30	-2.64	-3.84

## TECHNICAL REMARKS

- D dimension has greater impact on performance than L dimension of the keepout area

## ANT016008LCS2442MA1

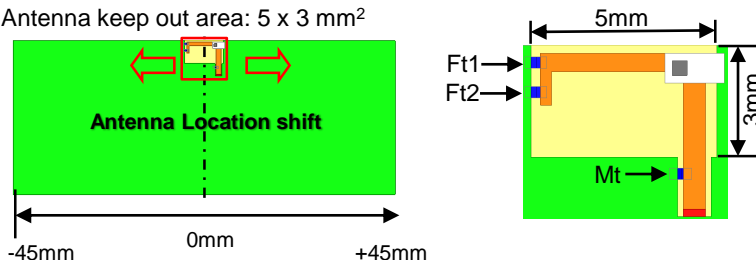


Dimensions (mm)

L	W	T
1.60	0.80	0.40
±0.10	±0.10	Max.

## EVALUATION BOARD

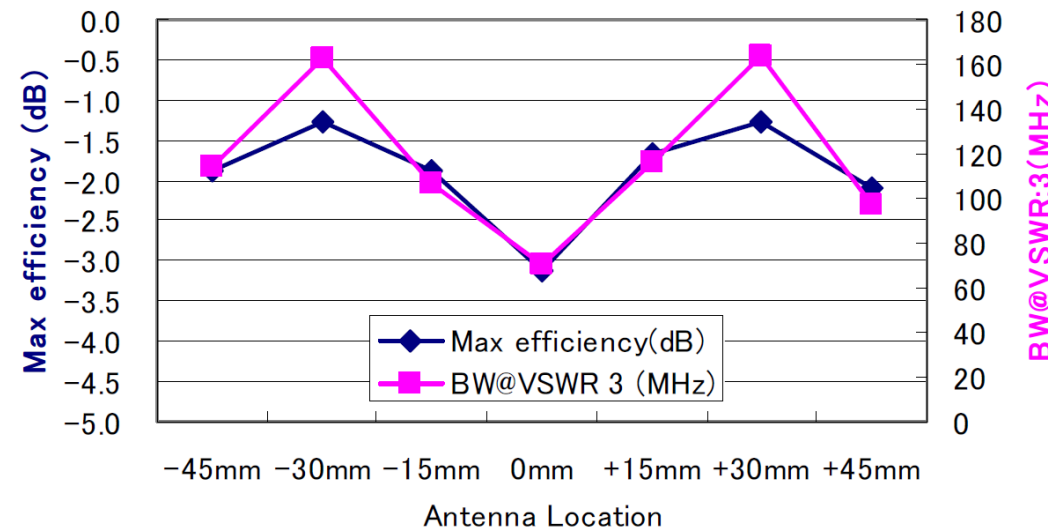
Antenna Location: Center  
 Board size: 110 x 20 x 1 mm<sup>2</sup>  
 Antenna keep out area: 5 x 3 mm<sup>2</sup>



## TUNING COMPONENTS

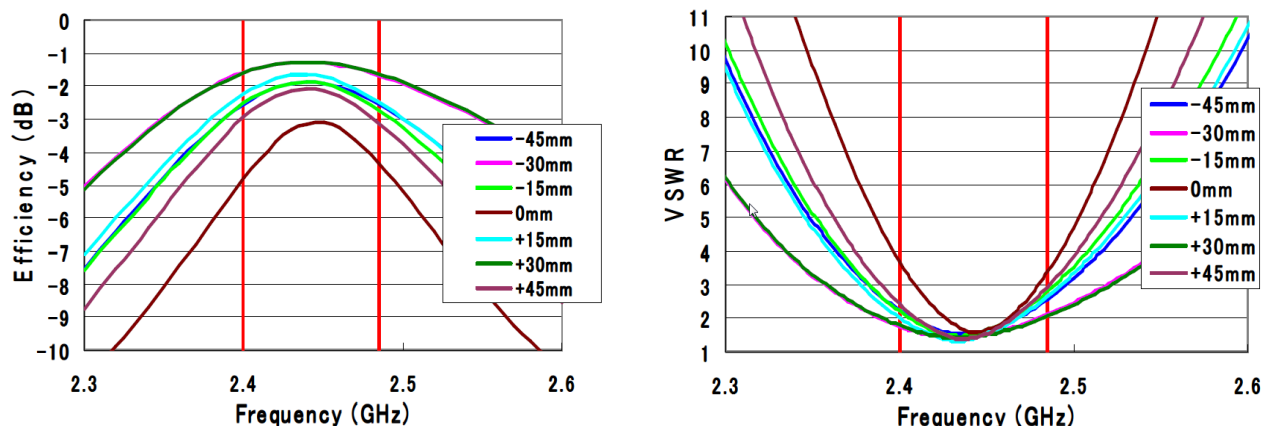
PCB Size	+45mm	+30mm	+15mm	0mm	-15mm	-30mm	-45mm
Ft1 (pF)	6	5.5	6	6	6	5.6	5.8
Ft2 (pF)	0.7	Blank	1.1	1.8	1.1	Blank	Blank
Mt (pF)	0.7	1.3	0.9	0.5	0.9	1.3	1

## MAX EFFICIENCY & BANDWIDTH (SIMULATION RESULTS)



PCB Size	-45mm	-30mm	-15mm	0mm	+15mm	+30mm	+45mm
Max efficiency(dB)	-1.9	-1.3	-1.9	-3.1	-1.7	-1.3	-2.1
BW@VSWR 3 (MHz)	114.1	162.9	107.0	70.9	115.9	164.1	96.8

## VSWR & EFFICIENCY (SIMULATION RESULTS)



Item	VSWR			Efficiency(dB)		
	Frequency(GHz)	2.4	2.442	2.485	2.4	2.442
+45mm	2.2	1.5	2.6	-2.54	-1.88	-2.54
+30mm	1.8	1.5	2.1	-1.59	-1.28	-1.66
+15mm	2.2	1.5	2.8	-2.54	-1.89	-2.75
0mm	3.7	1.6	3.4	-4.81	-3.13	-4.34
-15mm	2.0	1.4	2.6	-2.23	-1.67	-2.48
-30mm	1.8	1.4	2.1	-1.61	-1.27	-1.63
-45mm	2.4	1.4	2.9	-2.96	-2.10	-3.12

## TECHNICAL REMARKS

- For maximum efficiency with PCB length L = 110mm, antenna mounting location is recommended at 1/4 of PCB length

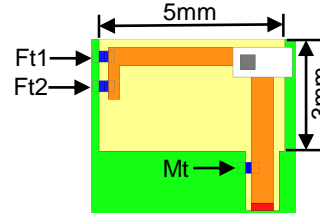
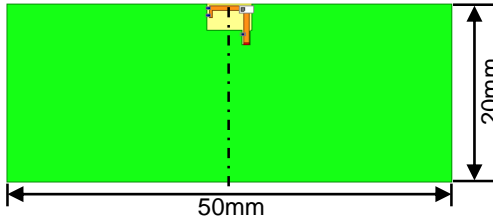
## ■ ANT016008LCS2442MA1



Dimensions (mm)		
L	W	T
1.60	0.80	0.40
±0.10	±0.10	Max.

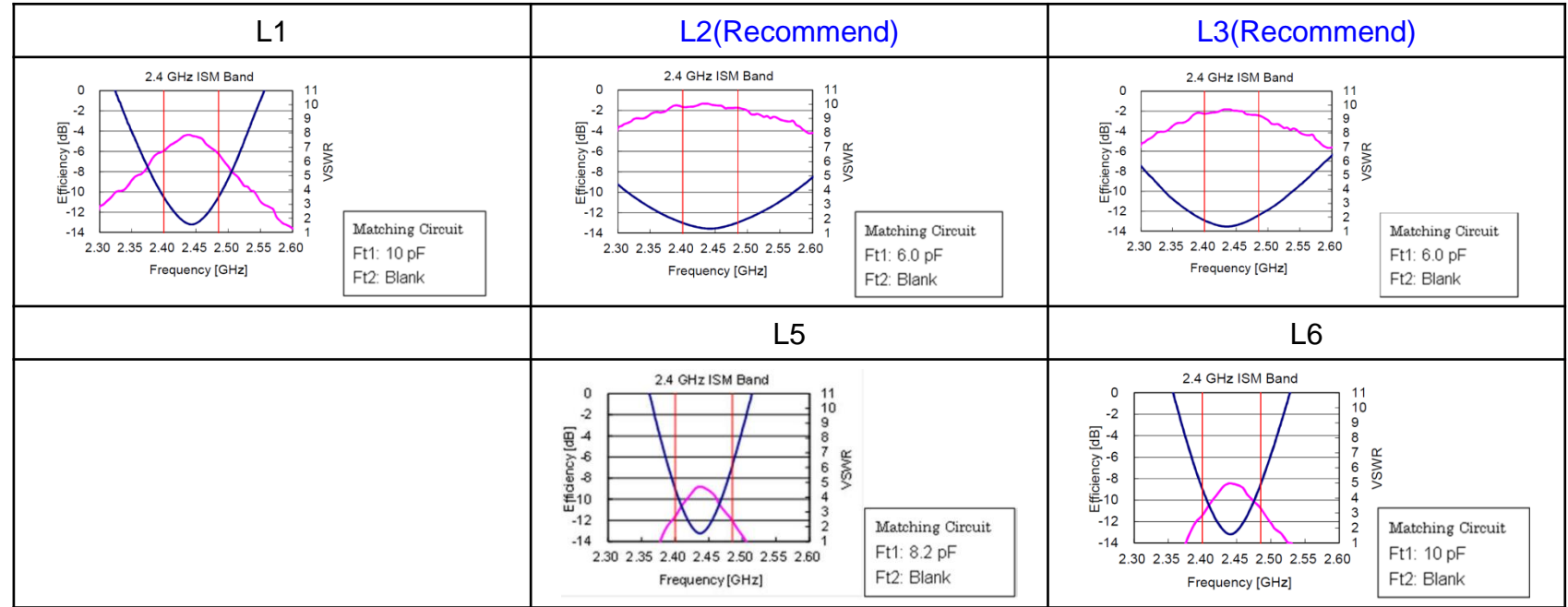
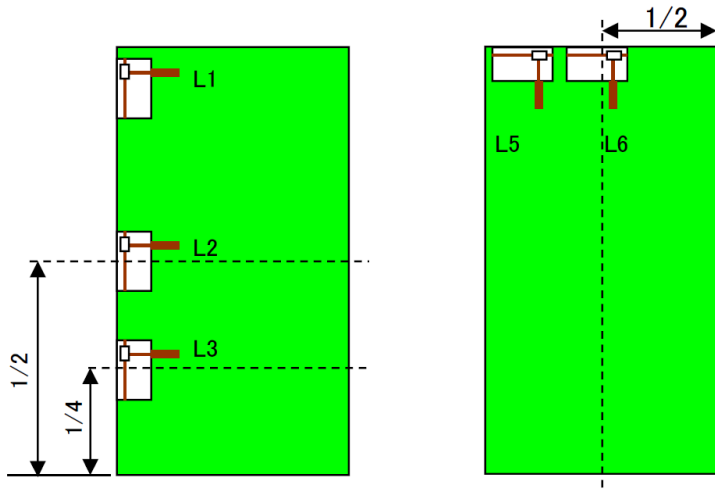
## □ EVALUATION BOARD

Antenna Location: Center  
 Board size: 50 x 20 x 1 mm<sup>2</sup>  
 Antenna keep out area: 5 x 3 mm<sup>2</sup>



## ▶ MEASUREMENT RESULTS

### Antenna Locations



## ANT016008LCS2442MA1

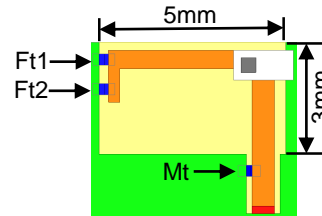
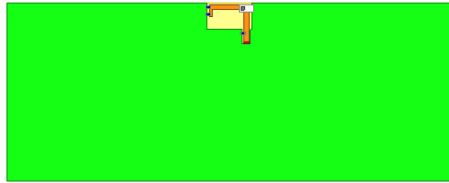


Dimensions (mm)

L	W	T
1.60	0.80	0.40
±0.10	±0.10	Max.

## EVALUATION BOARD

Antenna Location: Center  
 Board size: 120 x 65 x 1 mm<sup>2</sup>  
 Antenna keep out area: 5 x 3 mm<sup>2</sup>



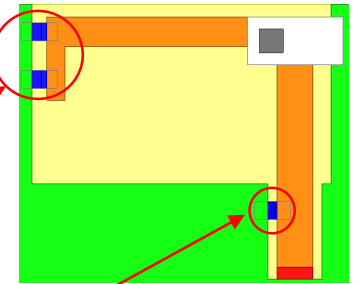
## TECHNICAL REMARKS

Value of tuning components depend on:

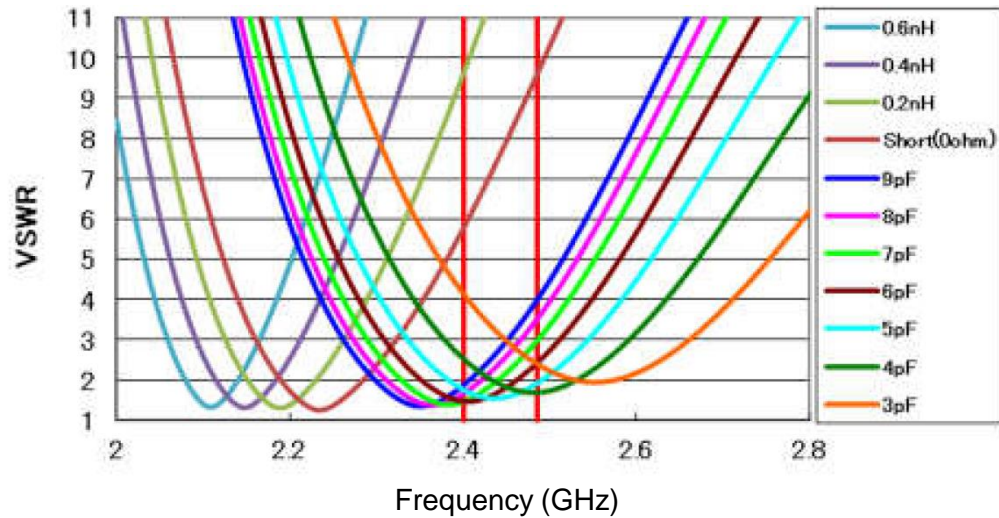
- PCB Size
- Antenna Location
- Other mechanical conditions

Frequency tuning

Impedance Matching Tuning



## FREQUENCY TUNING (SIMULATION RESULTS)

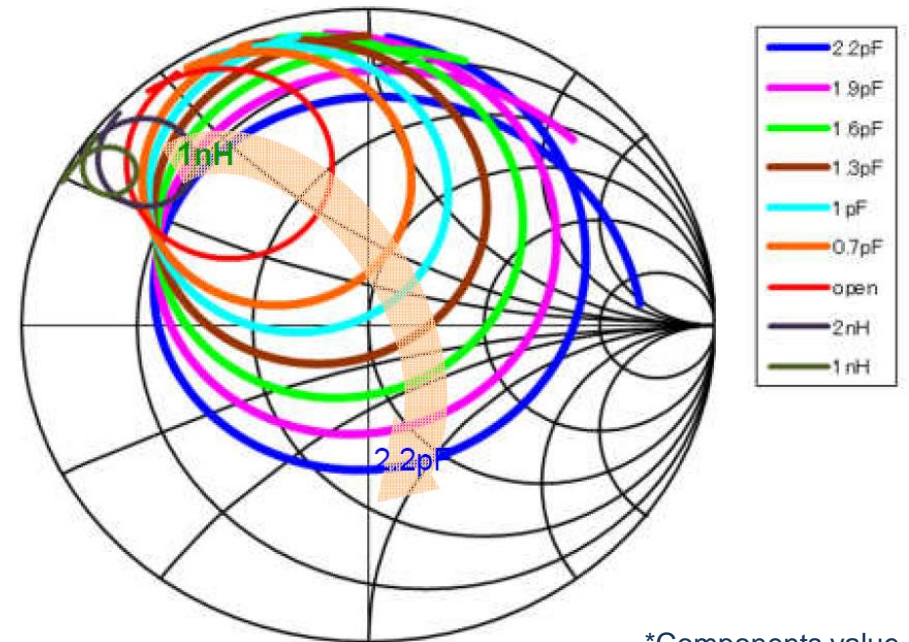


1.6nH ← 3pF

\*Components value = Ft1 + Ft2

Frequency tuning value	0.6nH	0.4nH	0.2nH	short	9pF	8pF	7pF	6pF	5pF	4pF	3pF
Center Frequency(GHz)	2.112	2.152	2.194	2.242	2.357	2.370	2.388	2.410	2.440	2.485	2.555

## IMPEDANCE MATCHING (SIMULATION RESULTS)



\*Components value = Mt