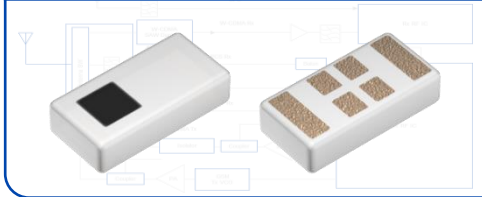


STUDY | PCB DIMENSION (Length)

■ ANT165550ST-1003A1

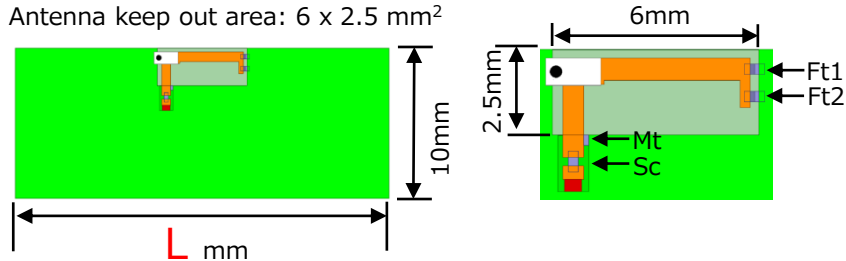


Dimensions (mm)

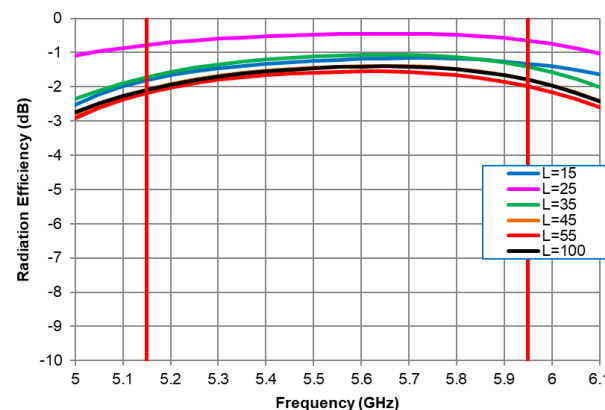
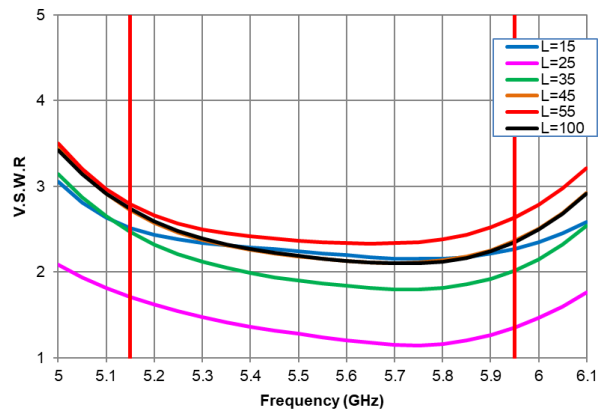
L	W	T
1.60	0.80	0.40
±0.10	±0.10	Max.

□ EVALUATION BOARD

Antenna Location: Center of an edge
Board size: $L \times 10 \times 1 \text{ mm}^2$
Antenna keep out area: $6 \times 2.5 \text{ mm}^2$



► VSWR & EFFICIENCY (SIMULATION)

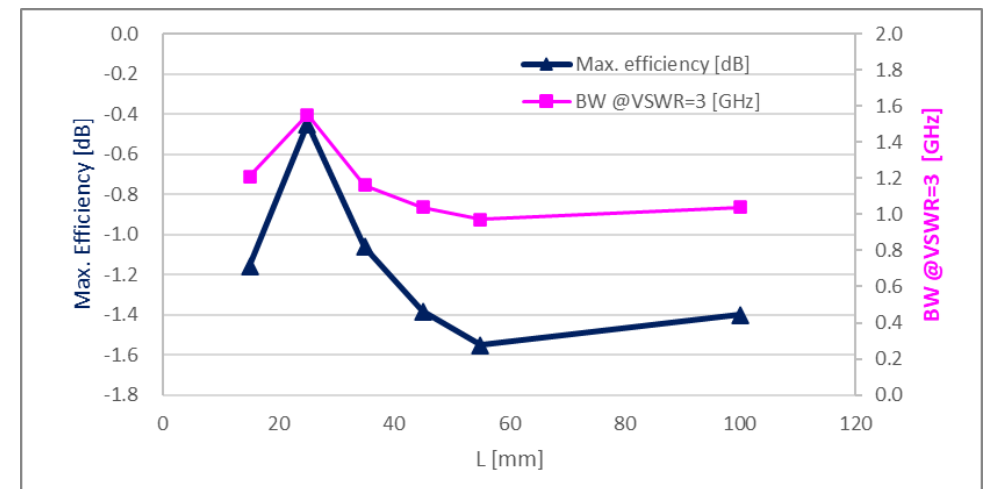


	VSWR			Efficiency [dB]		
Frequency [GHz]	5.15	5.55	5.95	5.15	5.55	5.95
L=15mm	2.5	2.2	2.3	-1.8	-1.2	-1.3
L=25mm	1.7	1.2	1.4	-0.8	-0.5	-0.6
L=35mm	2.5	1.9	2.0	-1.7	-1.1	-1.4
L=45mm	2.7	2.2	2.4	-2.1	-1.4	-1.8
L=55mm	2.8	2.4	2.6	-2.2	-1.6	-2.0
L=100mm	2.7	2.2	2.3	-2.1	-1.4	-1.8

□ TUNING COMPONENTS

L [mm]	15	25	35	45	55	100
Ft1 [pF]	1.2	2	2.2	2.1	1.9	1.9
Ft2 [pF]	-	-	-	-	-	-
Sc [pF]	0.5	0.5	0.5	0.5	0.5	0.5
Mt [pF]	0.3	0.3	0.3	0.3	0.3	0.3

□ MAX EFFICIENCY & BANDWIDTH (SIMULATION)



L [mm]	15	25	35	45	55	100
Max. efficiency [dB]	-1.2	-0.4	-1.1	-1.4	-1.6	-1.4
BW @VSWR=3 [GHz]	1.21	1.55	1.16	1.04	0.97	1.04

□ TECHNICAL REMARKS

- VSWR and Efficiency depend on the length L.
- The values of the tuning components also depend on the length L.

STUDY | PCB DIMENSION (Length)

■ ANT165550ST-1003A1

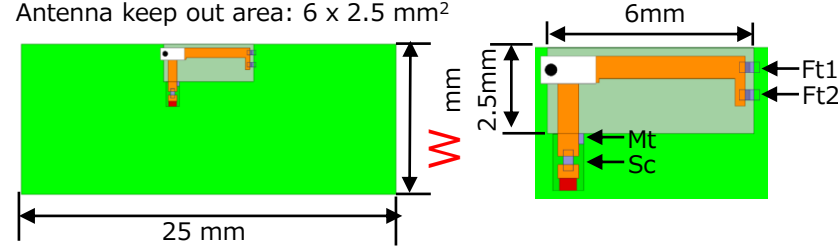


Dimensions (mm)

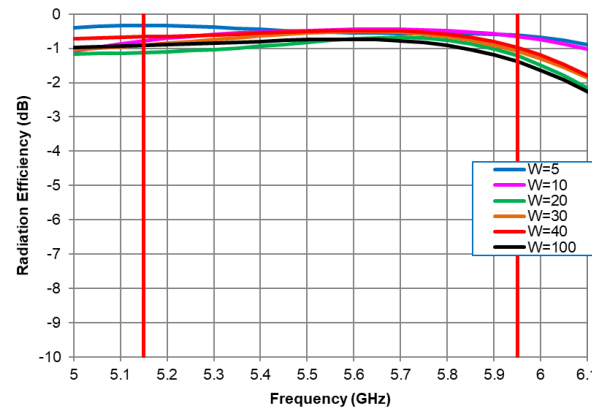
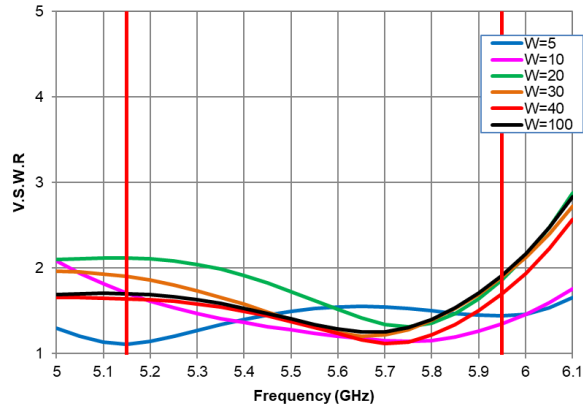
L	W	T
1.60	0.80	0.40
±0.10	±0.10	Max.

□ EVALUATION BOARD

Antenna Location: Center of an edge
Board size: 25 x W x 1 mm²
Antenna keep out area: 6 x 2.5 mm²



► VSWR & EFFICIENCY (SIMULATION)

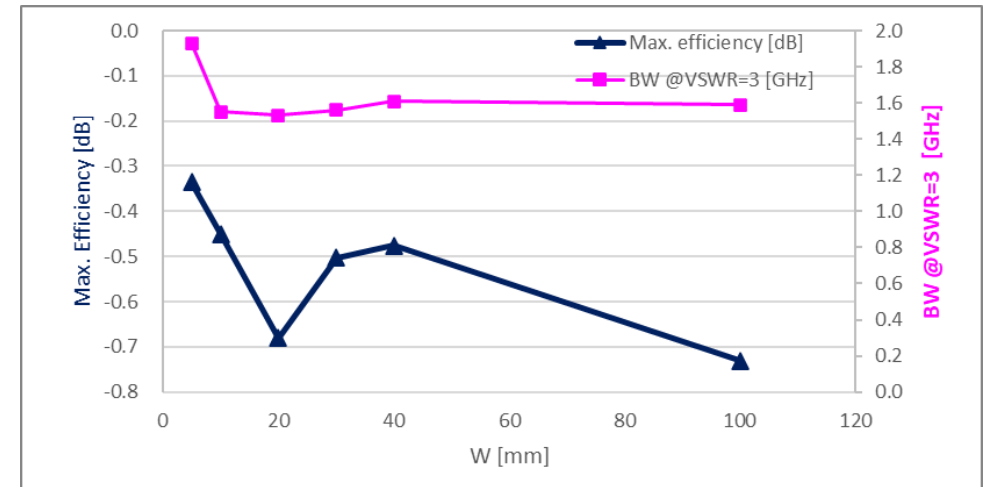


	VSWR			Efficiency [dB]		
Frequency [GHz]	5.15	5.55	5.95	5.15	5.55	5.95
W=5mm	1.1	1.5	1.4	-0.3	-0.5	-0.6
W=10mm	1.7	1.2	1.4	-0.8	-0.5	-0.6
W=20mm	2.1	1.6	1.9	-1.1	-0.8	-1.2
W=30mm	1.9	1.3	1.9	-0.9	-0.5	-1.1
W=40mm	1.6	1.3	1.7	-0.7	-0.5	-1.0
W=100mm	1.7	1.3	1.9	-0.9	-0.7	-1.4

□ TUNING COMPONENTS

L [mm]	5	10	20	30	40	100
Ft1 [pF]	3	2	3	3	3	3
Ft2 [pF]	-	-	-	-	-	-
Sc [pF]	0.4	0.5	0.5	0.5	0.5	0.5
Mt [pF]	0.4	0.3	0.4	0.4	0.4	0.4

□ MAX EFFICIENCY & BANDWIDTH (SIMULATION)



L [mm]	5	10	20	30	40	100
Max. efficiency [dB]	-0.3	-0.4	-0.7	-0.5	-0.5	-0.7
BW @ VSWR=3 [GHz]	1.93	1.55	1.53	1.56	1.61	1.59

□ TECHNICAL REMARKS

- VSWR and Efficiency depend on the length W.
- The values of the tuning components also depend on the length W.

STUDY | Antenna keep out area

■ ANT165550ST-1003A1

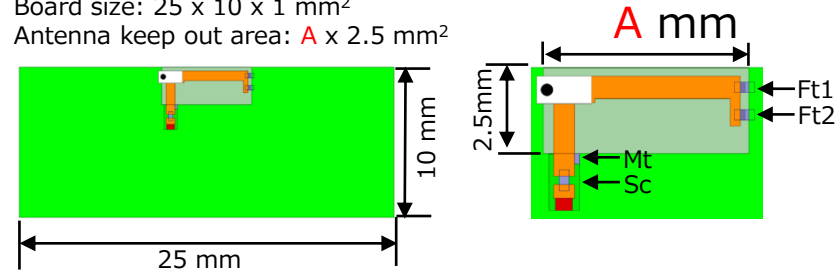


Dimensions (mm)

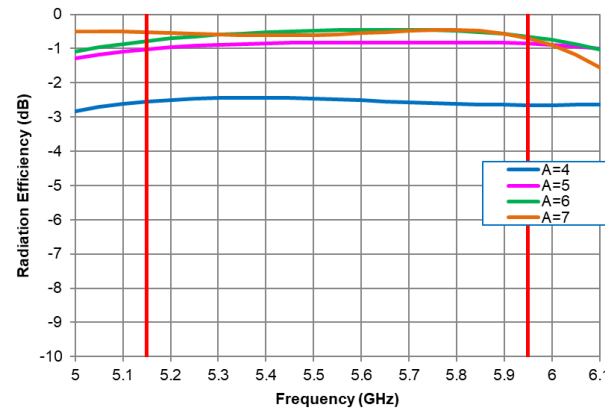
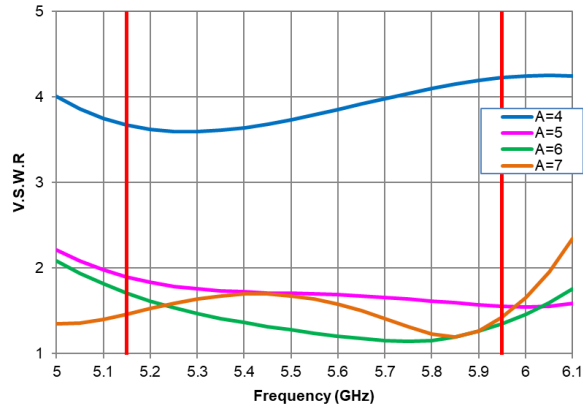
L	W	T
1.60	0.80	0.40
±0.10	±0.10	Max.

□ EVALUATION BOARD

Antenna Location: Center of an edge
Board size: 25 x 10 x 1 mm²
Antenna keep out area: A x 2.5 mm²



► VSWR & EFFICIENCY (SIMULATION)

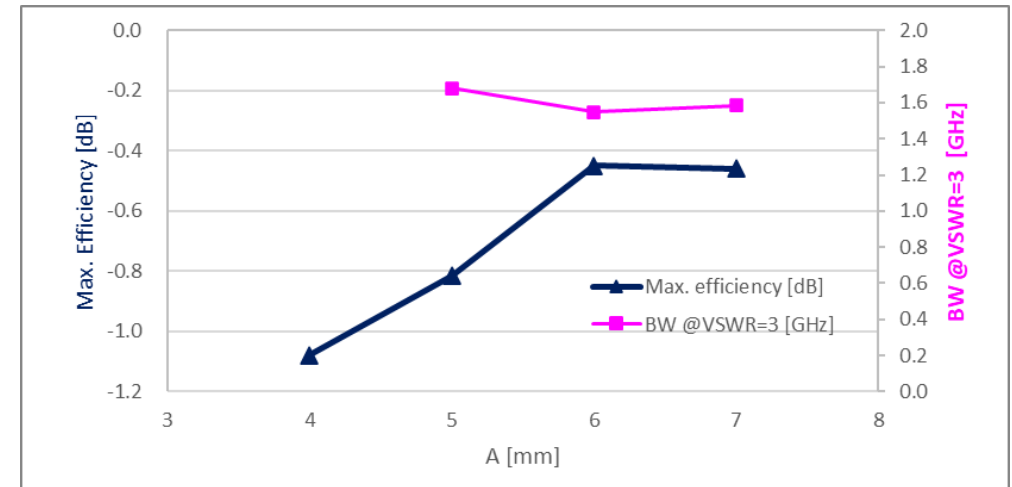


	VSWR			Efficiency [dB]		
Frequency [GHz]	5.15	5.55	5.95	5.15	5.55	5.95
A=4mm	3.7	3.8	4.2	-2.5	-2.5	-2.6
A=5mm	1.9	1.7	1.6	-1.0	-0.8	-0.9
A=6mm	1.7	1.2	1.4	-0.8	-0.5	-0.6
A=7mm	1.5	1.6	1.4	-0.5	-0.6	-0.7

□ TUNING COMPONENTS

A [mm]	4	5	6	7
Ft1 [pF]	10	10	2	0.7
Ft2 [pF]	-	-	-	-
Sc [pF]	0.5	0.5	0.5	0.4
Mt [pF]	0.3	0.3	0.3	0.4

□ MAX EFFICIENCY & BANDWIDTH (SIMULATION)



A [mm]	4	5	6	7
Max. efficiency [dB]	-1.1	-0.8	-0.4	-0.5
BW @VSWR=3 [GHz]	-	1.68	1.55	1.58

□ TECHNICAL REMARKS

- VSWR and Efficiency depend on the length A.
- The values of the tuning components also depend on the length A.

STUDY | Antenna keep out area

■ ANT165550ST-1003A1

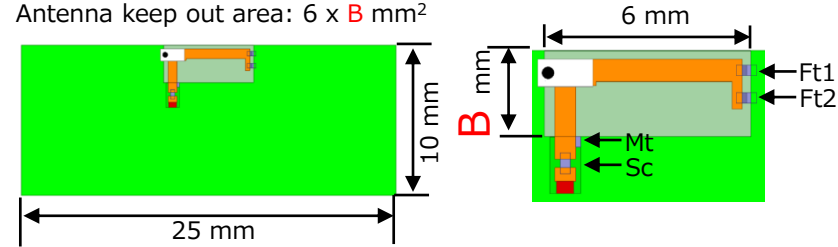


Dimensions (mm)

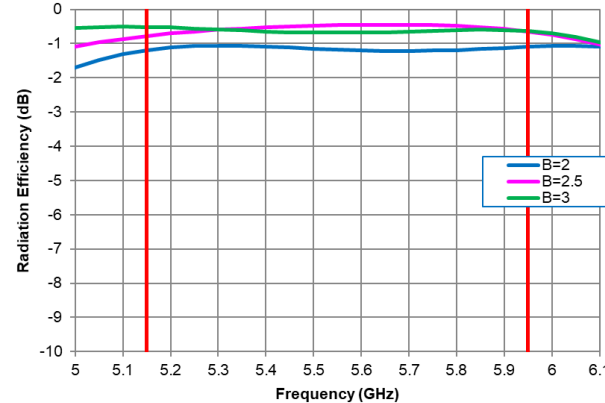
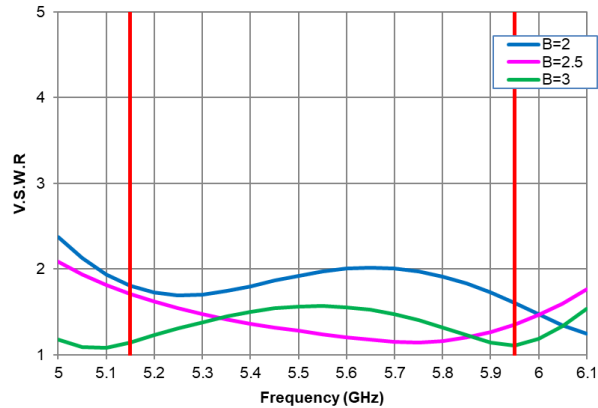
L	W	T
1.60	0.80	0.40
±0.10	±0.10	Max.

□ EVALUATION BOARD

Antenna Location: Center of an edge
Board size: 25 x 10 x 1 mm²
Antenna keep out area: 6 x B mm²



► VSWR & EFFICIENCY (SIMULATION)

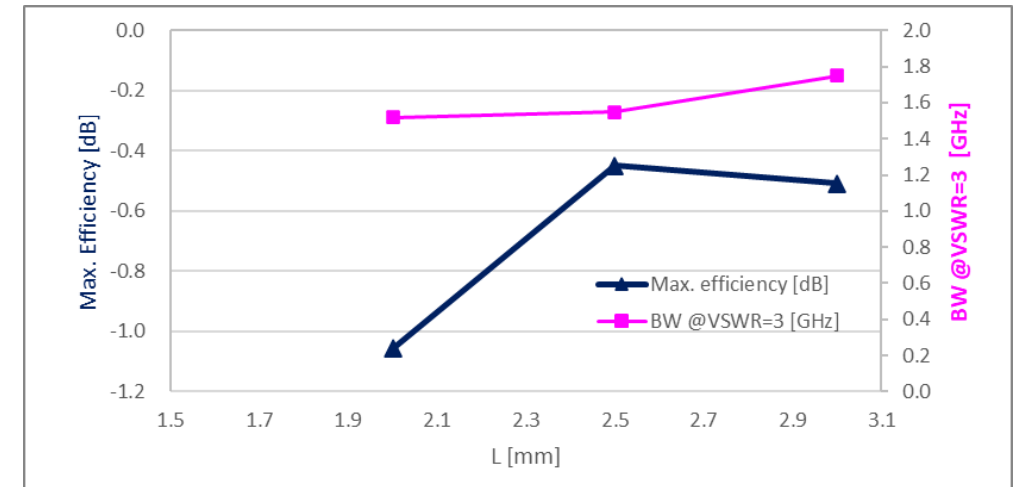


	VSWR			Efficiency [dB]		
Frequency [GHz]	5.15	5.55	5.95	5.15	5.55	5.95
B=2mm	1.8	2.0	1.6	-1.2	-1.2	-1.1
B=2.5mm	1.7	1.2	1.4	-0.8	-0.5	-0.6
B=3mm	1.1	1.6	1.1	-0.5	-0.7	-0.6

□ TUNING COMPONENTS

B [mm]	2	2.5	3
Ft1 [pF]	10	2	1
Ft2 [pF]	-	-	-
Sc [pF]	0.4	0.5	0.2
Mt [pF]	0.4	0.3	0.3

□ MAX EFFICIENCY & BANDWIDTH (SIMULATION)



B [mm]	2	2.5	3
Ft1 [pF]	10	2	1
Ft2 [pF]	-	-	-
Sc [pF]	0.4	0.5	0.2
Mt [pF]	0.4	0.3	0.3

□ TECHNICAL REMARKS

- VSWR and Efficiency depend on the length B.
- The values of the tuning components also depend on the length B.

STUDY | ANTENNA LOCATION

■ ANT165550ST-1003A1

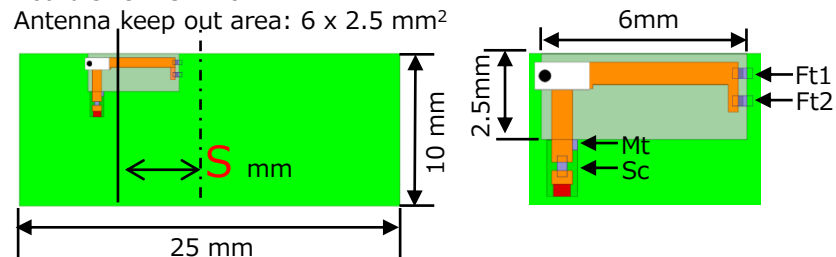


Dimensions (mm)

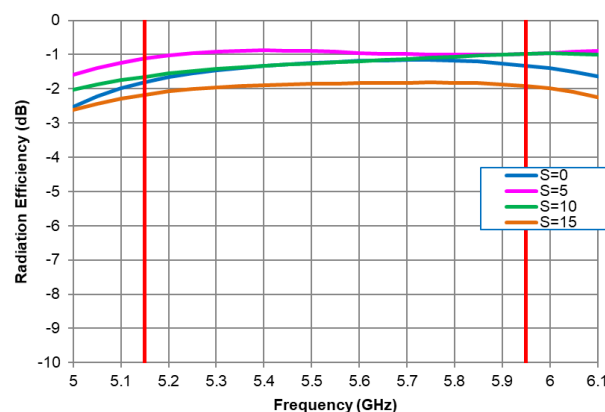
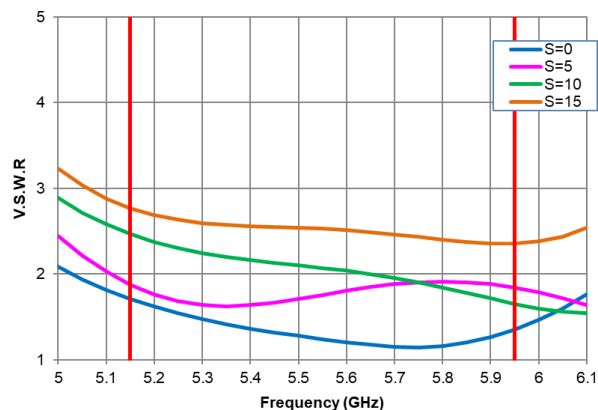
L	W	T
1.60	0.80	0.40
±0.10	±0.10	Max.

□ EVALUATION BOARD

Antenna Location: Center
Board size: 25 x 10 x 1 mm²
Antenna keep out area: 6 x 2.5 mm²



► VSWR & EFFICIENCY (SIMULATION RESULTS)

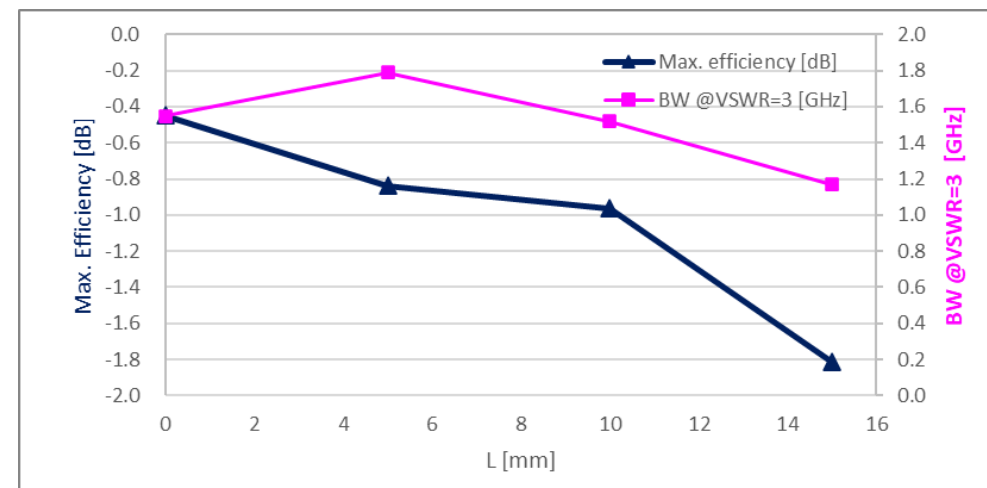


	VSWR			Efficiency [dB]		
Frequency [GHz]	5.15	5.55	5.95	5.15	5.55	5.95
S=0mm	1.7	1.2	1.4	-0.8	-0.5	-0.6
S=5mm	1.9	1.8	1.8	-1.1	-0.9	-1.0
S=10mm	2.5	2.1	1.7	-1.6	-1.2	-1.0
S=15mm	2.8	2.5	2.4	-2.2	-1.8	-1.9

□ TUNING COMPONENTS

S [mm]	0	5	10	15
Ft1 [pF]	2	1	1.1	1.4
Ft2 [pF]	-	-	-	-
Sc [pF]	0.5	0.4	0.5	0.5
Mt [pF]	0.3	0.3	0.3	0.3

□ MAX EFFICIENCY & BANDWIDTH (SIMULATION RESULTS)



S [mm]	0	5	10	15
Max. efficiency [dB]	-0.4	-0.8	-1.0	-1.8
BW @VSWR=3 [GHz]	1.55	1.79	1.52	1.17

□ TECHNICAL REMARKS

- For maximum efficiency, antenna mounting location is recommended at ¼ of PCB length

SIMULATION STUDY | MATCHING & TUNING

■ ANT165550ST-1003A1

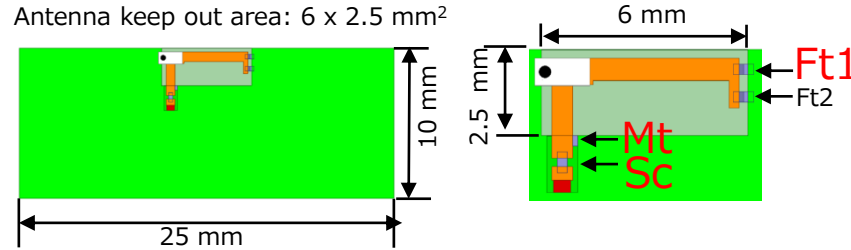


Dimensions (mm)

L	W	T
1.60	0.80	0.40
±0.10	±0.10	Max.

□ EVALUATION BOARD

Antenna Location: Center of an edge
Board size: 25 x 10 x 1 mm²
Antenna keep out area: 6 x 2.5 mm²

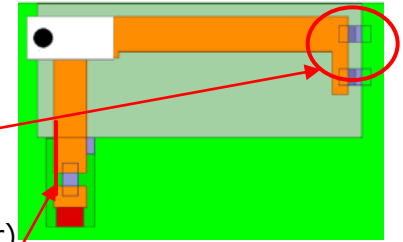


□ TECHNICAL REMARKS

Value of tuning components depend on:

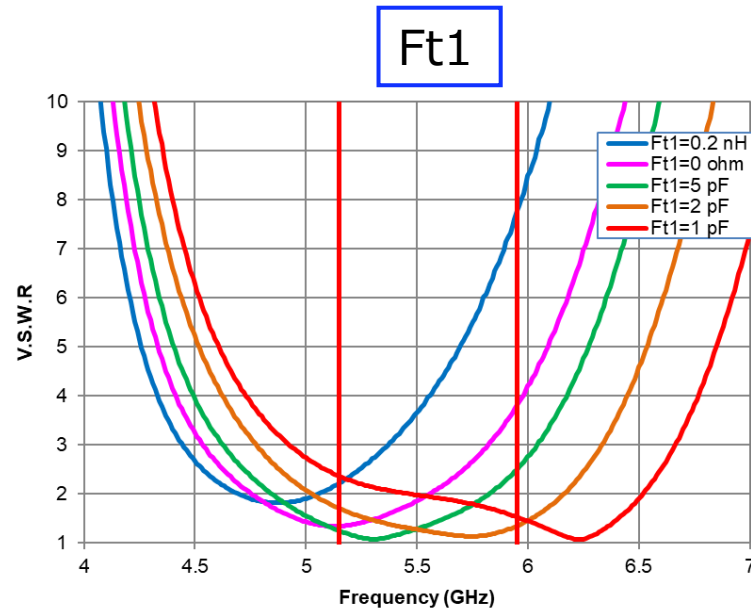
- PCB Size
- Antenna Location
- Other mechanical conditions

Frequency tuning
Matching Tuning
(Inductor or Capacitor)



Impedance Tuning

► FREQUENCY TUNING(SIMULATION RESULTS)



Ft1	0.2 nH	0 ohm	5 pF	2 pF	1 pF
Center frequency [GHz]	4.85	5.15	5.3	5.76	6.23

□ IMPEDANCE MATCHING (SIMULATION RESULTS)

