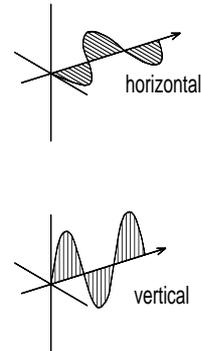
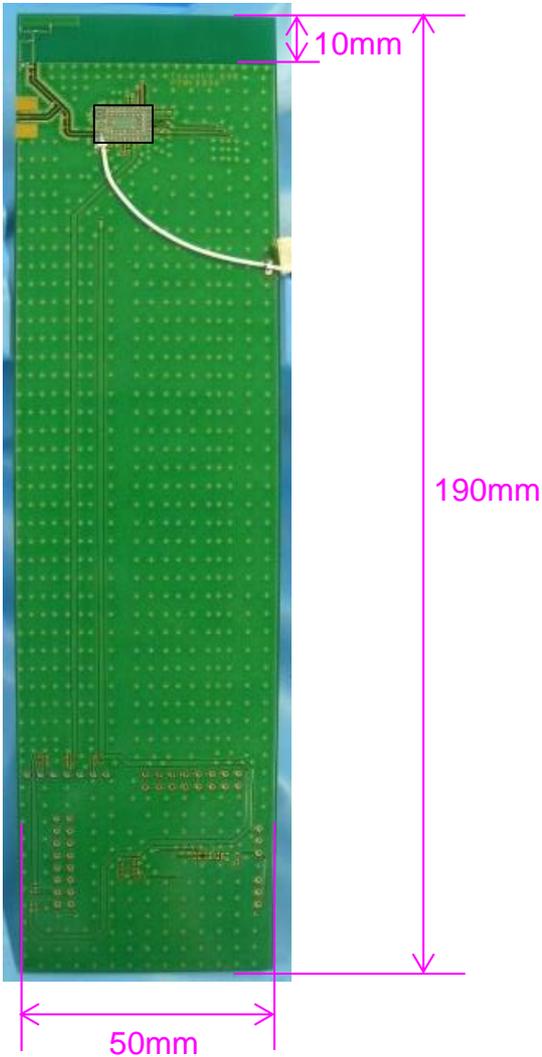


Type1LV Antenna Design Guide

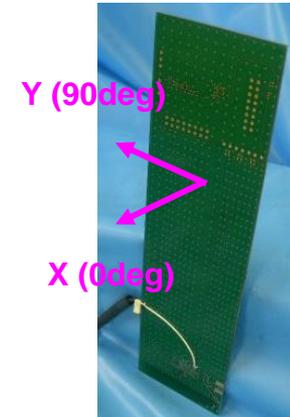
Apr, 2019



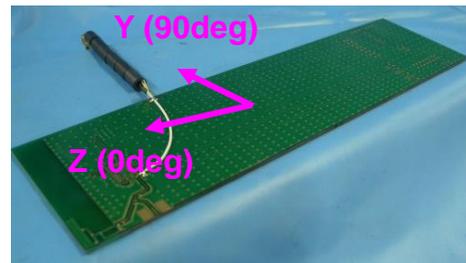
Measurement Board



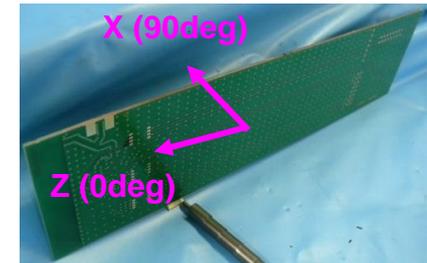
XY plane



YZ plane

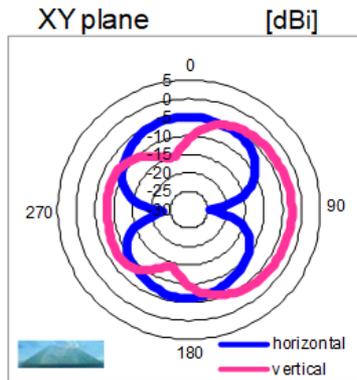


ZX plane

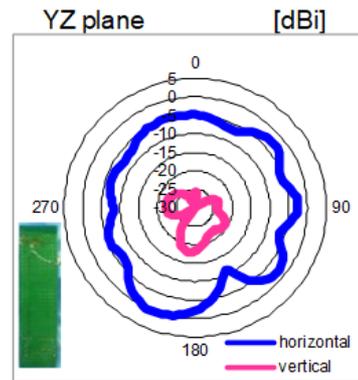


Antenna Performance for 2.4GHz

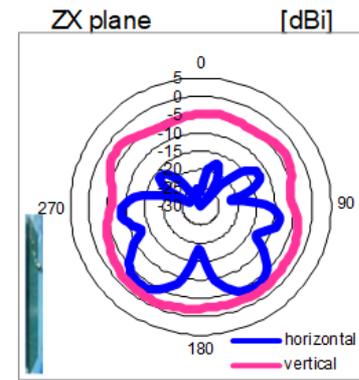
LINEAR POLARIZATION		[dBi]						[dB]
		XY-plane		YZ-plane		ZX-plane		Total Efficiency
		hor.	ver.	hor.	ver.	hor.	ver.	
2400 MHz	MAX.	-5.0	-3.3	0.5	-18.7	-3.4	-1.5	-3.5
	AVE.	-8.3	-6.4	-4.4	-24.1	-9.6	-3.6	
2442 MHz	MAX.	-4.8	-2.5	0.9	-18.1	-3.3	-1.3	-3.4
	AVE.	-8.2	-5.9	-4.2	-23.1	-9.7	-3.4	
2484 MHz	MAX.	-4.5	-2.7	0.1	-18.9	-3.2	-1.1	-3.4
	AVE.	-8.0	-6.0	-4.2	-23.6	-9.7	-3.3	



	HOR.	VER.
MAX	-4.8	-2.5
AVE	-8.2	-5.9



	HOR.	VER.
MAX	0.9	-18.1
AVE	-4.2	-23.1



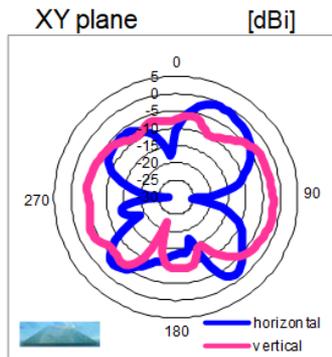
	HOR.	VER.
MAX	-3.3	-1.3
AVE	-9.7	-3.4

@2442MHz

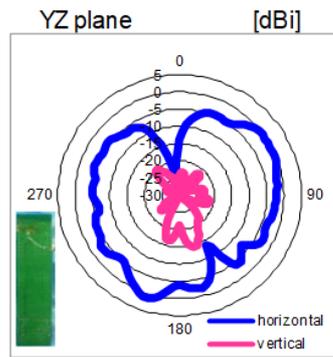
Antenna Type: Monopole (pattern antenna)
Antenna Gain: 0.9dBi (peak)

Antenna Performance for 5GHz

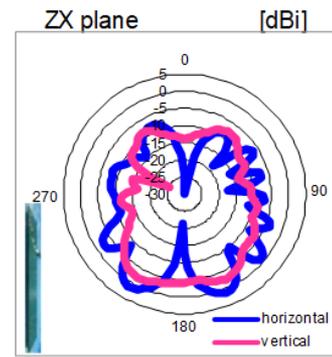
LINEAR POLARIZATION		[dBi]						[dB]
		XY-plane		YZ-plane		ZX-plane		Total Efficiency
		hor.	ver.	hor.	ver.	hor.	ver.	
5150 MHz	MAX.	-0.6	-2.6	1.3	-14.9	0.9	-0.1	-3.0
	AVE.	-6.4	-6.6	-3.6	-21.7	-6.6	-5.8	
5500 MHz	MAX.	-0.9	-1.9	1.0	-14.4	2.0	-2.1	-3.0
	AVE.	-6.8	-5.6	-3.6	-22.3	-5.6	-7.3	
5850 MHz	MAX.	-1.0	-2.7	0.6	-13.3	0.8	-2.6	-3.1
	AVE.	-6.8	-6.1	-3.8	-21.1	-6.3	-7.4	



	HOR.	VER.
MAX	-0.9	-1.9
AVE	-6.8	-5.6



	HOR.	VER.
MAX	1.0	-14.4
AVE	-3.6	-22.3

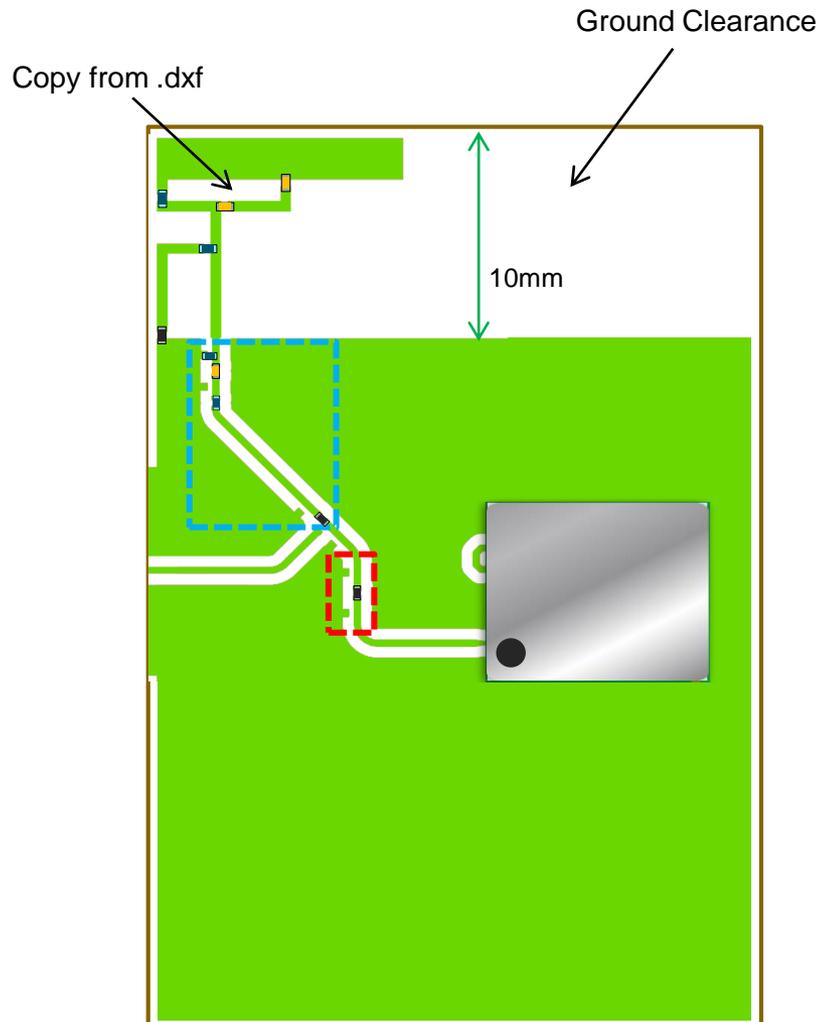


	HOR.	VER.
MAX	2.0	-2.1
AVE	-5.6	-7.3

@5500MHz

Antenna Type: Monopole (pattern antenna)
Antenna Gain: 2.0dBi (peak)

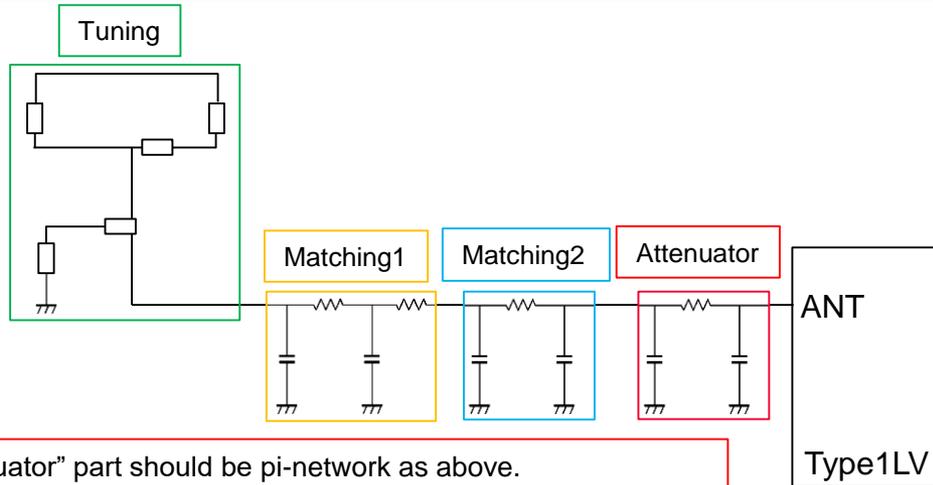
Layout Guide for Good Antenna Performance



- Place the antenna on top-left(or right) corner.
- Keep GND clearance all long the top edge.
- Place metal stuff as far as possible.
- Place **pi-network + one component** for matching.
 - Put appropriate value of C/L/R depends on actual performance.
- Place **pi-network** for attenuating.
 - Put 0ohm in series and no load in parallel on the initial design.
 - Put appropriate value of R depends on actual performance.

Please follow Installation Manual.

Antenna Design

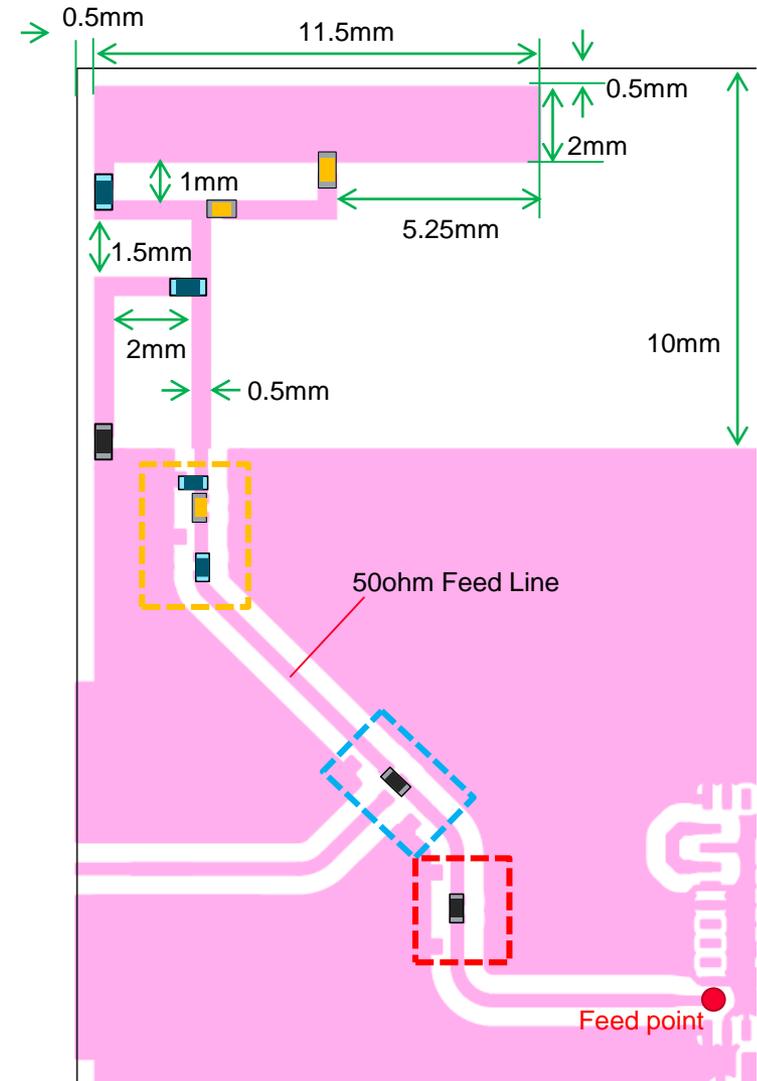


“Attenuator” part should be pi-network as above.
Appropriate value of R depends on the design of the product.
Put 0 ohm in series and no load in parallel on the initial design.

“Matching2” part should be pi-network as above.
Only matching1 might achieve the antenna tuning, but if you have a place to have this part, please add it.
Appropriate value of L/C/R depends on the design of the product.
Put 0 ohm in series and no load in parallel on the initial design.

“Matching1” part should be pi-network + 1 series component as above.
Appropriate value of L/C/R depends on the design of the product.
*Refer to the next page for Murata Certification board condition.

“Tuning” part should be follow antenna.dxf file below.
Appropriate value of L/C/R depends on the design of the product.
*Refer to the next page for Murata Certification board condition.



Please follow “type1lv_antenna_p2ml6906.dxf”

Measurement condition

<Measurement condition>

Condition	Memo	Tuning					Matching circuit									
		2GHz	5GHz-1	5GHz-2	5GHz-3	5GHz-4	Shunt 1	Series 1	Shunt 2	Series 2	Shunt 3	Series 3	Shunt 4	Shunt 5	Series 4	Shunt 6
Condition	Optimized matching	1.0nH	0.3pF	0.3pF	3.0nH	0ohm	3.9nH	2.0pF	None	1.5nH	None	0ohm	None	None	0ohm	None

