

2.4 GHz Inverted F Antenna spec.

This document describes a printed-circuit board (PCB) design that can be used with all 2.4GHz BT transceivers and transmitters for F-6207 module series Soc. The gain is measured to be 3.45 dBi, and the overall size requirements for this antenna, this antenna is compact, low cost and high performance.

1 Description of inverted F Antenna Design

Because the impedance of the inverted F Antenna is matched directly 50ohm,so it is no external matching components are required.

1.1 Dimensions.

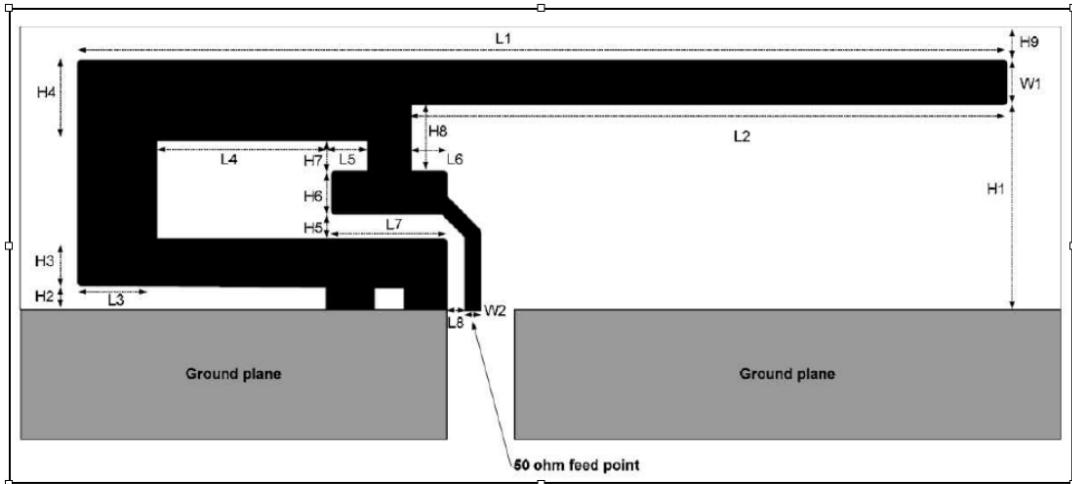
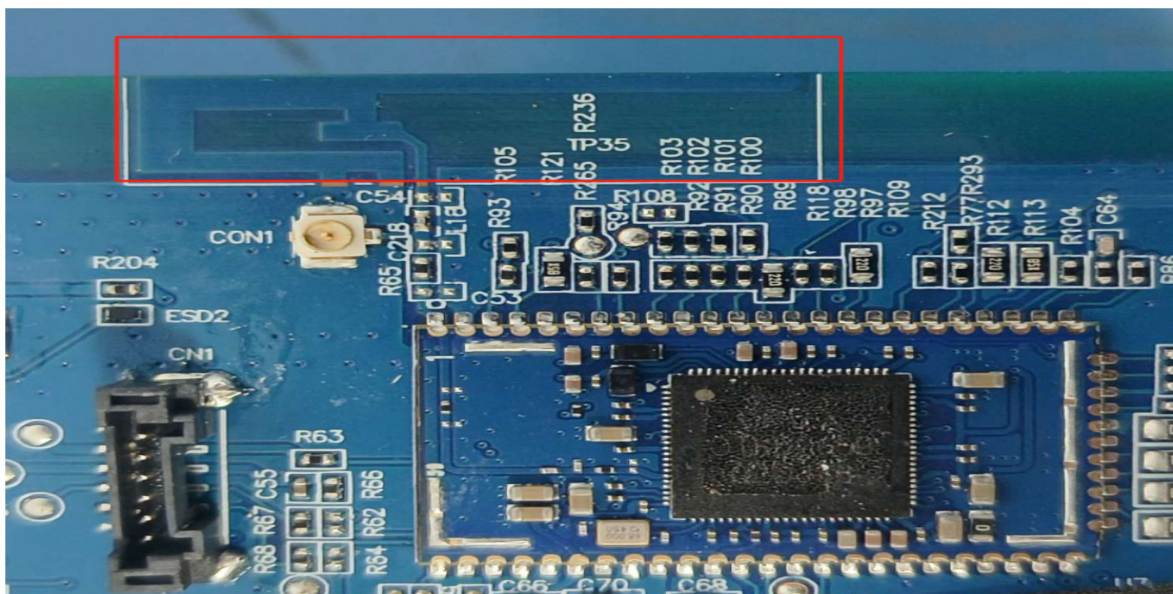


Figure 1. dimensions

H1	5.70 mm	W2	0.46 mm
H2	0.74 mm	L1	25.58 mm
H3	1.29 mm	L2	16.40 mm
H4	2.21 mm	L3	2.18 mm
H5	0.66 mm	L4	4.80 mm
H6	1.21 mm	L5	1.00 mm
H7	0.80 mm	L6	1.00 mm
H8	1.80 mm	L7	3.20 mm
H9	0.61 mm	L8	0.45 mm
W1	1.21 mm		

PCB layout



Frequency ID	1	2	3	4	5	6	7	8	9
Frequency (MHz)	2400.0	2410.0	2420.0	2430.0	2440.0	2450.0	2460.0	2470.0	2480.0
Efficiency (dBi)	-3.55		-3.48	-3.49	-3.44	-3.47	-3.39	-3.41	-3.50
Gain (dBi)	3.32		3.50	3.54	3.52	3.41	3.42	3.35	3.30
Efficiency (%)	44.15		44.87	44.77	45.24	44.97	45.78	45.56	44.68
Directivity (dB)	6.88		6.98	7.03	6.96	6.88	6.82	6.77	6.80
Peak Gain Position (Theta)	30.00		30.00	30.00	30.00	30.00	30.00	30.00	30.00
Peak Gain Position (Phi)	180.00		180.00	180.00	180.00	180.00	180.00	180.00	180.00
Efficiency ThetaPol (%)	19.77		20.05	20.03	20.20	19.94	20.16	19.95	19.63
Efficiency PhiPol (%)	24.37		24.82	24.74	25.04	25.03	25.62	25.61	25.05
Upper Hem. Efficiency (%)	29.64		30.16	30.17	30.50	30.38	30.83	30.74	30.32
Lower Hem. Efficiency (%)	14.51		14.71	14.60	14.74	14.59	14.95	14.82	14.36
T90(H)圆度	8.48		8.03	8.11	9.07	10.22	11.59	13.09	12.12
Gain 15deg (dBi)									
E1(XZ)波瓣宽度	71.39		72.62	75.32	77.84	77.32	76.06	76.45	75.77
E1(XZ)前后比	5.35		5.21	5.04	4.97	5.82	6.23	6.36	6.31
E2(YZ)波瓣宽度	52.32		54.75	50.69	59.15	57.14	60.32	56.12	59.36
E2(YZ)前后比	8.00		8.34	8.03	7.49	7.26	6.90	6.65	6.87
最大增益处轴比(P)	1.50		1.50	1.50	1.50	1.50	1.50	1.50	1.50
顶点(Theta=0)处轴比(P)	1.50		1.50	1.50	1.50	1.50	1.50	1.50	1.50
仰角10度最差(大)轴比(P)	1.50		1.50	1.50	1.50	1.50	1.50	1.50	1.50
Hc(XY)波瓣宽度	92.18		90.52	92.74	95.01	93.39	42.61	39.09	93.69
Hc(XY)前后比	4.16		4.35	4.00	3.65	4.15	3.75	3.75	3.59
最大增益处交极比(+/-45极化)	9.60		9.23	9.00	9.06	8.66	9.40	9.44	9.58
最大增益处交极比(水平垂直极化)	9.60		9.23	9.00	9.06	8.66	9.40	9.44	9.58
T60度Phi一圈最差交极比(+/-45极化)	0.08		0.01	0.01	0.02	0.03	0.00	0.03	0.00
T60度Phi一圈最差交极比(水平垂直极化)	0.08		0.01	0.01	0.02	0.03	0.00	0.03	0.00
T90度(H)Phi一圈最差交极比(+/-45极化)	0.02		0.03	0.00	0.00	0.03	0.02	0.01	0.05
T90度(H)Phi一圈最差交极比(水平垂直极化)	0.02		0.03	0.00	0.00	0.03	0.02	0.01	0.05
轴对称天线主瓣下倾角度(平均值)	84.92		84.67	84.54	84.54	85.17	85.00	84.83	85.13
轴向(Z+)水平垂直极化隔离度	8.83		8.91	9.28	9.51	9.79	9.47	8.79	8.46
Theta85.0一周最大增益	-1.17		-0.98	-1.02	-0.99	-0.64	-0.61	-0.64	-0.92
Theta85.0一周圆度(为最大最小增益值的差, 不是+/-的值)	7.63		7.66	7.40	7.75	8.35	9.07	9.56	9.46
Empty									

