



Amphenol

APPROVAL SHEET

WIFI Antenna

SAA function:	Name:	Sign:	Date
RD manager	Hector Li		
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ME manager	Hector Li		
Project manager	Eric Zhang		

Project: Z16	Author:	File Name:
Date: 2016-08-25	Alex Lu	XY7697-12-000-R
Revision: B		
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Date:	Revision:	Updates and changes:	Issued by:
2015-12-15	A	Original release of the approval sheet	Shijie Lin
2016-08-25	B	Add 3D radiation pattern	Alex Lu

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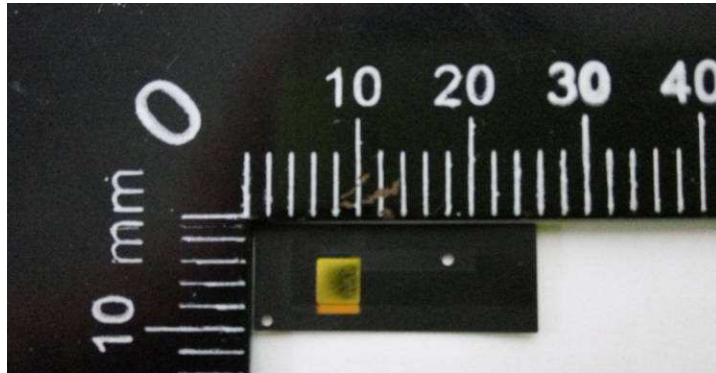
1 Antenna description

This antenna is WIFI internal antenna. The structure of the antenna is FPC.

1.1 Part number

SAA: XY7697-12-000-R

1.2 Antenna pictures



Picture1. Antenna picture

1.3 Device pictures



Picture2. Device picture

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2 Electrical Performance

2.1 Proposal specification for mass production

Return loss

Frequency(MHz)	2400-2500	5150-5850
Return loss(dB)	≤ -6	≤ -5

2.2 Measurement Set-up

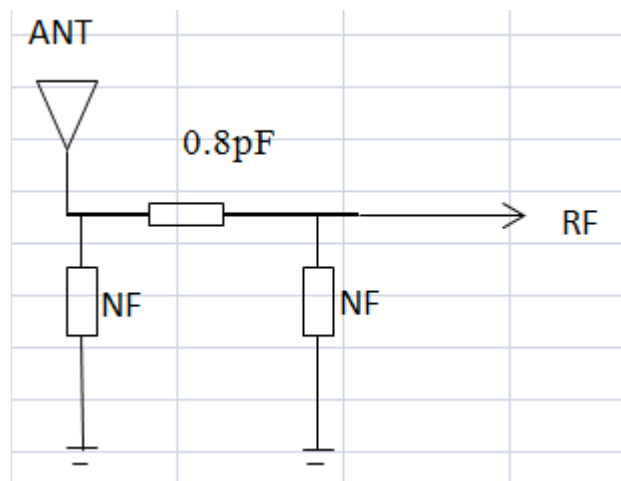
2.2.1 Return loss and VSWR

Return loss measurements (S_{11}) were performed using an Agilent ENA series Network Analyzer and the previously described test fixture. Coaxial chokes were used to mitigate surface currents on the outside of the cabling. The testing was performed in free space.

2.2.2 Efficiency

The efficiency of the antenna was measured in Amphenol's 3D anechoic chamber in Shanghai, China. The chamber is a Satimo system capable of doing tests from 380MHz to 6GHz. Coaxial chokes on the feed cable were used to mitigate surface currents during passive tests. The measurement results are calibrated using dipole standards.

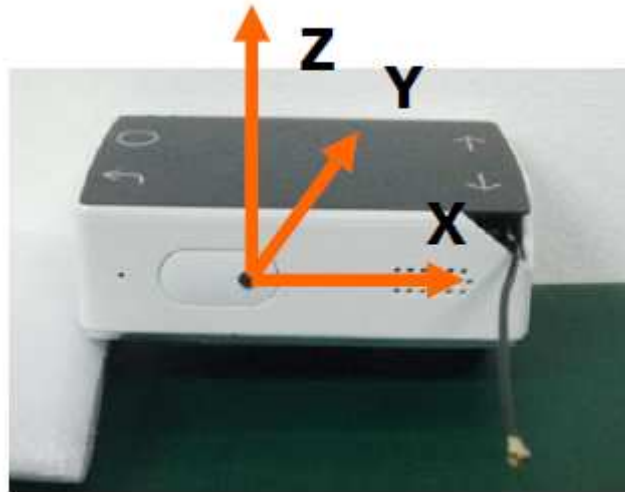
2.2.3 Matching Circuit Description



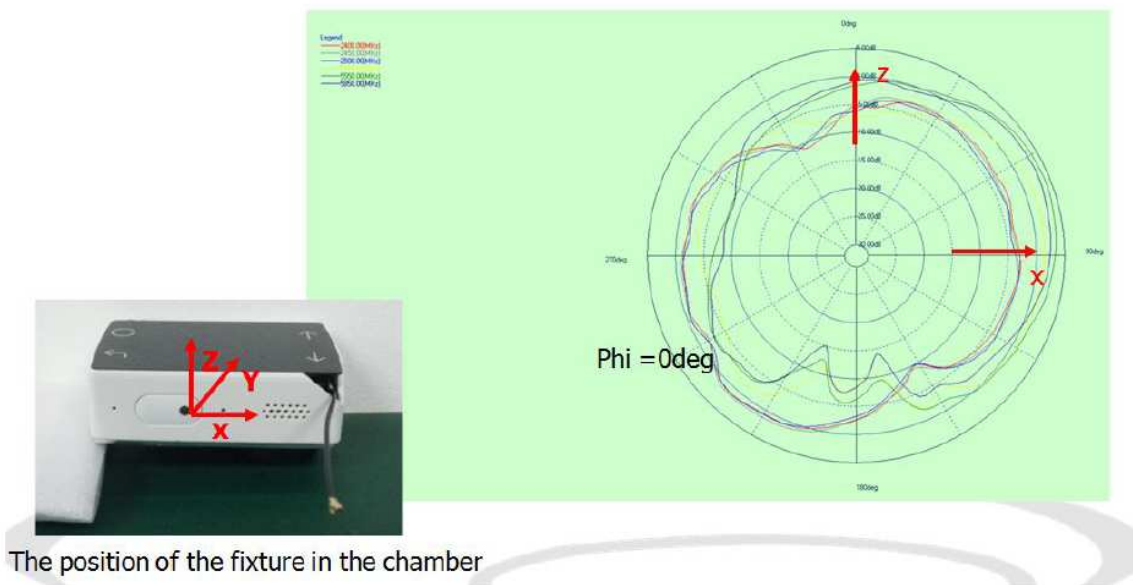
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3 Reference measurement data

3.1 Pictures of the test fixture



3.2 2D radiation pattern of antenna

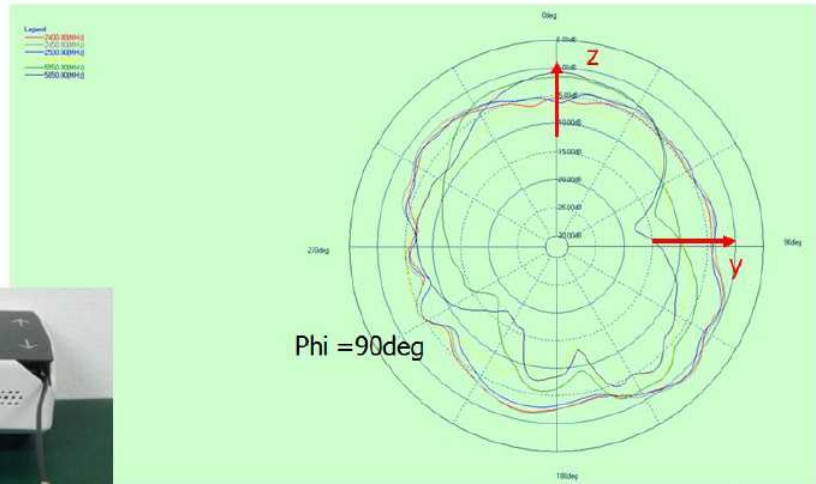


Phi = 0° (XOZ plane)

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The position of the fixture in the chamber



Phi = 90° (YOZ plane)



The position of the fixture in the chamber



Theta = 90° (XOY plane)

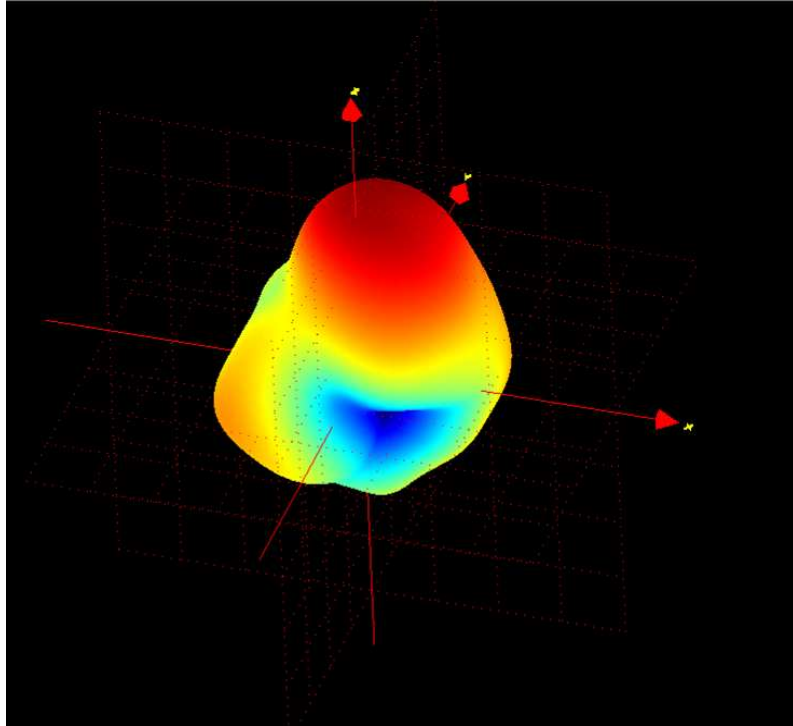
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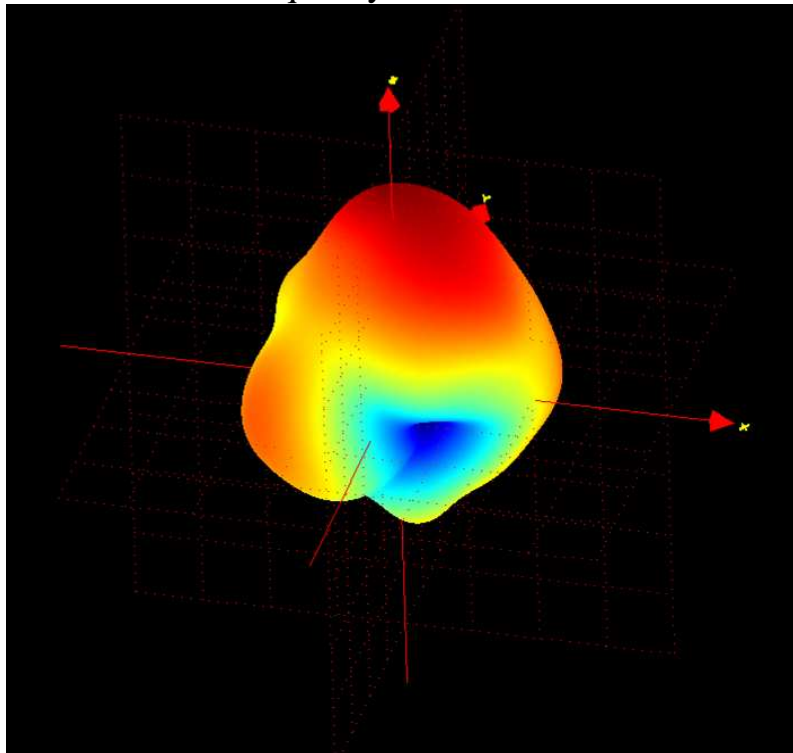
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3.3 3D radiation pattern

Frequency = 2400MHz

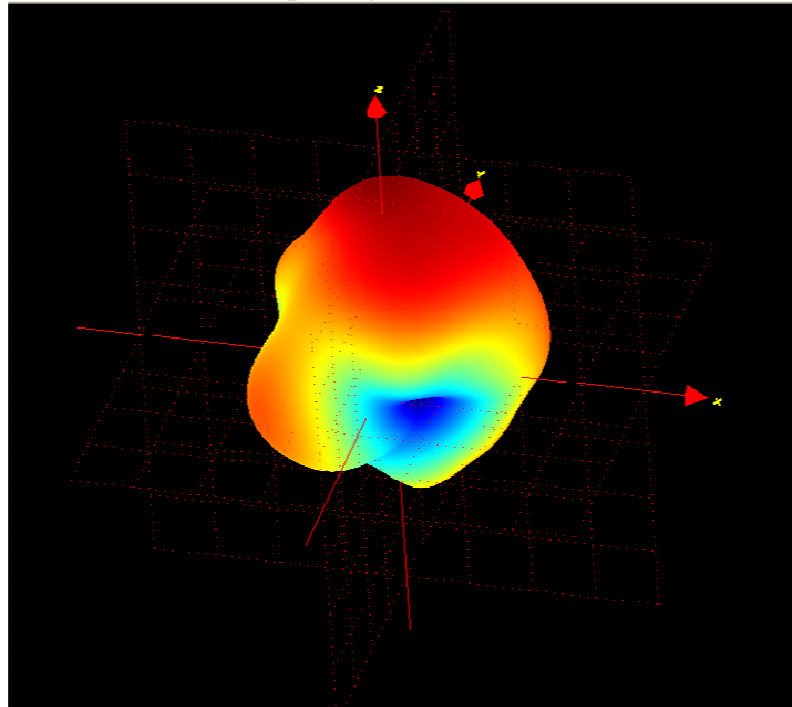


Frequency = 2450MHz

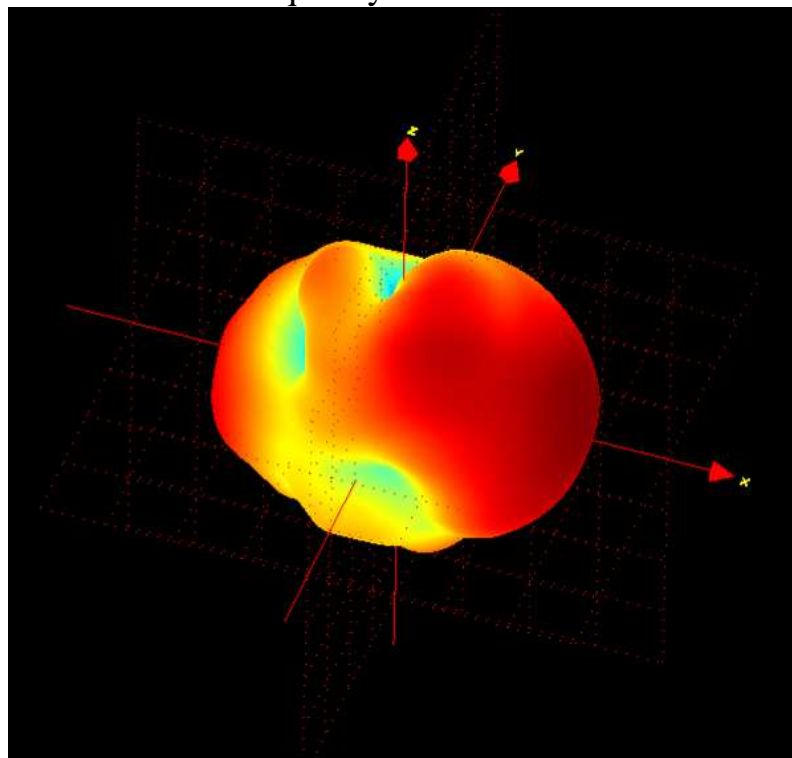


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Frequency = 2500MHz

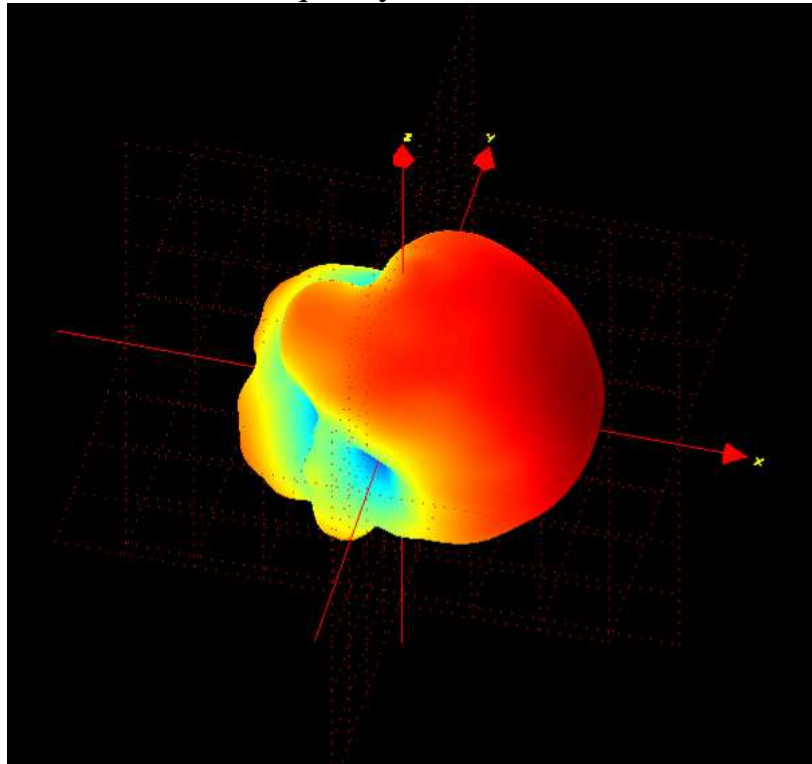


Frequency = 5150MHz

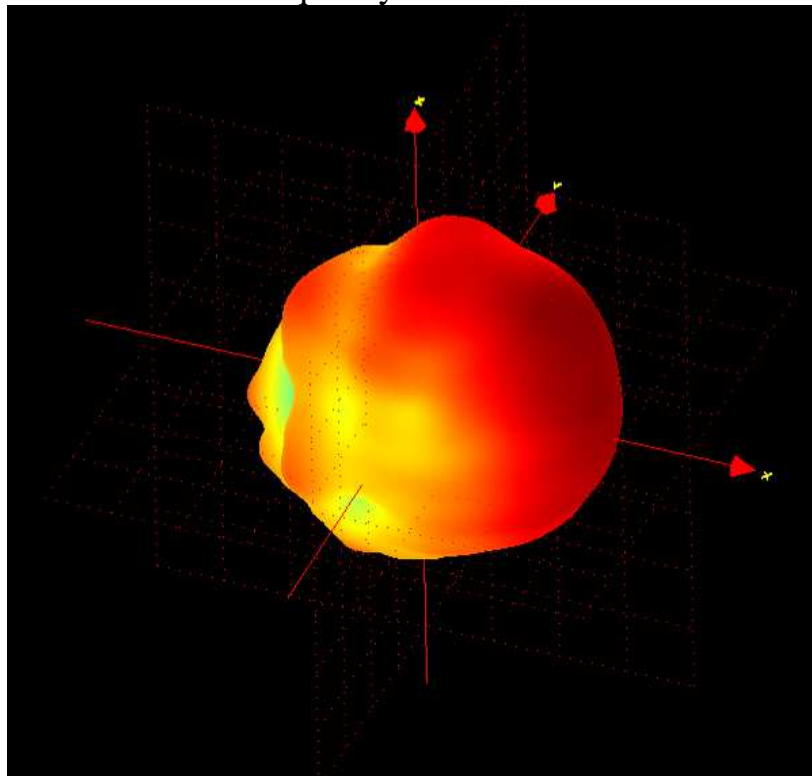


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Frequency = 5470MHz

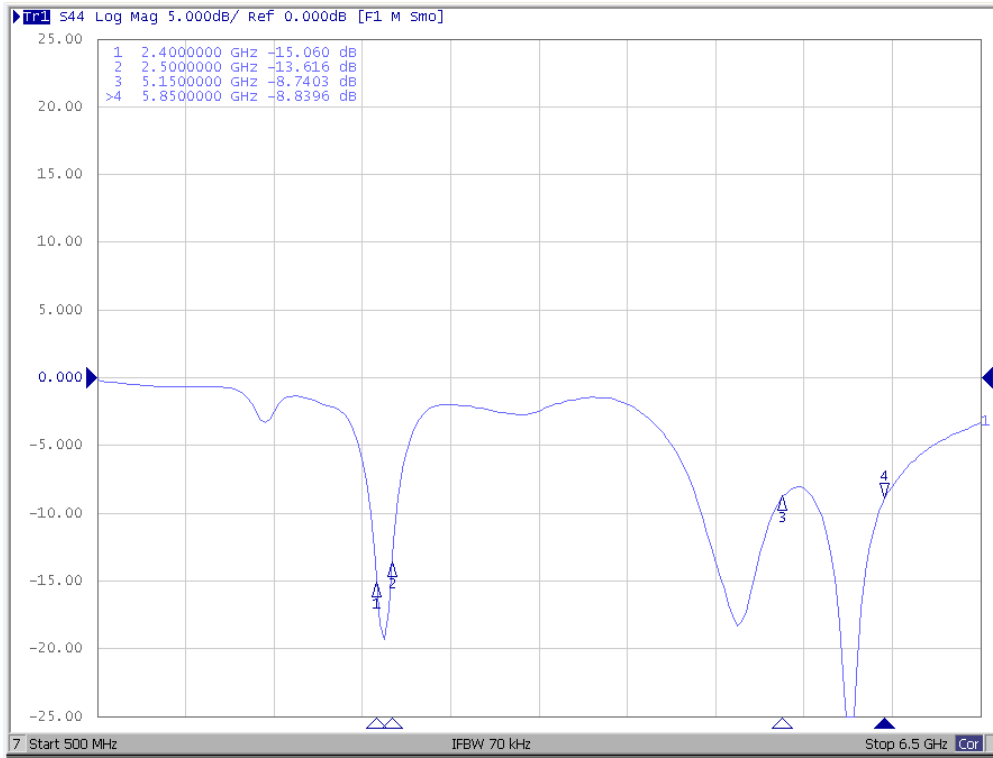


Frequency = 5850MHz



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3.4 Return loss



Picture3. WLAN main VSWR

3.5 Efficiency and peak gain

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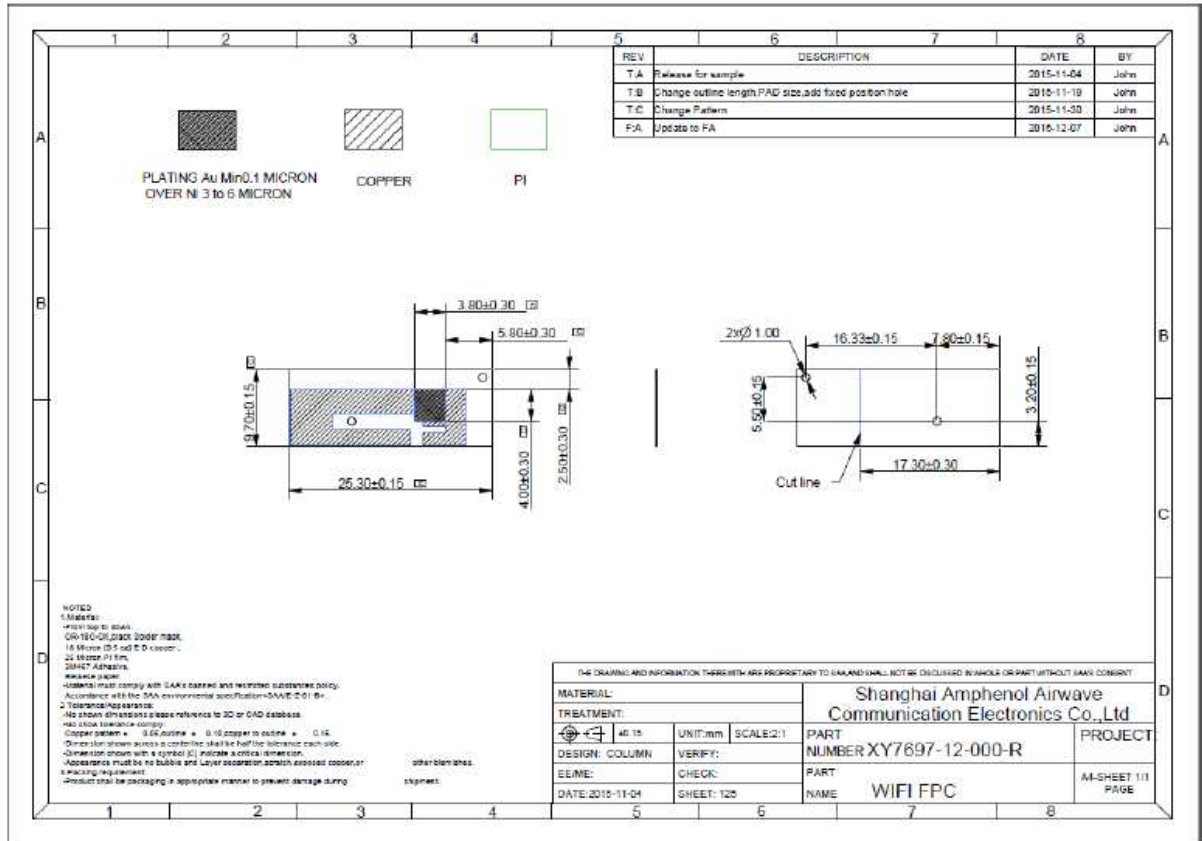
Frequency(MHz)	Efficiency (%)	Efficiency(dB)	Peak Gain(dB)
2400	44%	-3.54	1.21
2420	45%	-3.44	1.33
2440	46%	-3.35	1.57
2450	48%	-3.22	1.62
2460	47%	-3.26	1.52
2480	46%	-3.42	1.54
2500	43%	-3.66	1.26
Average	46%	-3.41	1.44
5150	40%	-4.03	1.73
5200	41%	-3.88	2.09
5250	43%	-3.66	2.53
5300	44%	-3.55	2.87
5350	48%	-3.23	3.34
5400	50%	-3.01	3.60
5450	53%	-2.77	3.91
5500	55%	-2.58	4.05
5550	56%	-2.54	4.08
5600	56%	-2.48	4.18
5650	56%	-2.50	4.10
5700	54%	-2.64	3.95
5750	52%	-2.88	3.81
5800	48%	-3.22	3.48
5850	45%	-3.44	3.30
Average	49%	-3.09	3.40

Table1 WLAN main Efficiency and peak gain

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4 Mechanical description

4.1 Drawings



5 FAI

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Inspection Report : First Article/ Vendor Sample Evaluation



Part Name: Z16 FPC	Part No.: XY7697-12-000-R	Mold No.:	N/A	Material Type:	N/A	Rev No.:	FA
Customer: XIAOYI <input checked="" type="checkbox"/> Supplier	Project Name: Z16	Color:	N/A	Sub. No.:	1	Page:	1 of 1

Dimensional Inspection

No.	Print Zone	Specification			Shot No.	To be filled by Amphenol								Disposition		Remark	
		Sign	Nominal	+ -		Shot 1	Shot 2	Shot 3	Shot 4	Shot 5	EQPT	Acc	Con. Acc	Rej			
1	B2		9.70	0.15	0.15	9.62	9.64	9.65	9.63	9.66							
2	C3		25.30	0.15	0.15	25.26	25.23	25.25	25.27	25.26							
3	B4		3.80	0.30	0.30	4.05	3.95	3.92	3.96	3.98							
4	B4		5.80	0.30	0.30	5.66	5.65	5.72	5.65	5.68							
5	C5		2.50	0.30	0.30	2.45	2.42	2.45	2.46	2.40							
6	C4		4.00	0.30	0.30	4.05	4.02	4.06	4.10	4.05							
7	B6		5.50	0.15	0.15	5.55	5.58	5.52	5.56	5.53							
8*2	B6		1.00	0.05	0.05	0.98	0.98	0.99	0.97	0.98							
	B6		1.00	0.05	0.05	0.97	0.98	0.98	0.98	0.99							
9	B6		16.33	0.15	0.15	16.35	16.38	16.32	16.30	16.39							
10	B7		7.80	0.10	0.10	7.85	7.82	7.86	7.88	7.83							
11	B8		3.20	0.15	0.15	3.22	3.25	3.22	3.21	3.23							

Equipment ID:	PLG - "Plug Gauge"	RG-"Radii Gauge"
DC-"Digital Caliper"	LG - "Loop Gauge"	PP-"Profile Projector"
DI-"Dial Indicator"	PG-"Pin Gauge"	OMM-"Objective Measuring Machine"
PLG - "Plug Gauge"		
ME Engineer:	John Jiang	Inspector Xionglu
QA Approval	Lois chen	Date 12/9/2015
Disposition:	Acc - "Accept"	Date 12/9/2015
	Rej - "Reject"	
	Con. Acc - "Conditional Accept"	
	(faulty, but accept)	

6 CPK

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CPK Data Sheet

Part Name:	Z16 FPC	Part No.:	XY7697-12-000-R	Mold No.:	N/A	Material Type:	N/A	Rev No.:	FA
<input type="checkbox"/> Customer	<input checked="" type="checkbox"/> Supplier	SAA	Project Name:	Z16	Color:	N/A	Sub. No.	1	of 1

Dim. No.	1	2	3	4	5	6							
Nominal Dim.	9.70	25.30	3.80	5.80	2.50	4.00							
Tol. Max. (+)	0.15	0.15	0.30	0.30	0.30	0.30							
Tol. Min. (-)	0.15	0.15	0.30	0.30	0.30	0.30							
USL	9.85	25.45	4.10	6.10	2.80	4.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00
LSL	9.55	25.15	3.50	5.50	2.20	3.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Sampl.	1	2	3	4	5	6							
Sampl.1	9.62	25.26	4.05	5.66	2.45	4.05							
Sampl.2	9.64	25.23	3.95	5.65	2.42	4.02							
Sampl.3	9.65	25.25	3.92	5.72	2.45	4.06							
Sampl.4	9.63	25.27	3.96	5.65	2.46	4.11							
Sampl.5	9.66	25.26	3.98	5.56	2.41	4.05							
Sampl.6	9.65	25.32	3.92	5.68	2.45	4.11							
Sampl.7	9.68	25.31	3.85	5.75	2.46	4.05							
Sampl.8	9.64	25.26	3.88	5.72	2.42	4.12							
Sampl.9	9.65	25.25	3.90	5.75	2.43	4.06							
Sampl.10	9.62	25.26	3.92	5.68	2.45	4.08							
Sampl.11	9.65	25.24	3.91	5.66	2.46	4.09							
Sampl.12	9.72	25.28	3.86	5.75	2.48	4.12							
Sampl.13	9.68	25.25	3.88	5.72	2.51	4.11							
Sampl.14	9.68	25.30	3.91	5.71	2.48	4.08							
Sampl.15	9.66	25.31	3.86	5.73	2.42	4.06							
Sampl.16	9.67	25.32	3.92	5.69	2.46	4.05							
Sampl.17	9.65	25.28	3.86	5.68	2.49	4.08							
Sampl.18	9.66	25.29	3.85	5.72	2.45	4.06							
Sampl.19	9.70	25.25	3.92	5.75	2.42	4.07							
Sampl.20	9.72	25.27	3.85	5.73	2.43	4.08							
Sampl.21	9.68	25.26	3.86	5.68	2.46	4.05							
Sampl.22	9.65	25.31	3.95	5.71	2.46	4.10							
Sampl.23	9.63	25.28	3.92	5.73	2.48	4.03							
Sampl.24	9.65	25.32	3.85	5.68	2.51	4.06							
Sampl.25	9.64	25.28	3.88	5.72	2.45	4.05							
Sampl.26	9.65	25.26	3.86	5.75	2.46	4.10							
Sampl.27	9.67	25.25	3.92	5.71	2.48	4.06							
Sampl.28	9.68	25.26	3.87	5.68	2.49	4.08							
Sampl.29	9.65	25.31	3.92	5.69	2.51	4.03							
Sampl.30	9.66	25.32	3.85	5.75	2.45	4.04							
Sampl.31	9.64	25.29	3.88	5.72	2.47	4.09							
Sampl.32	9.63	25.28	3.86	5.69	2.46	4.05							
Sampl.33	9.68	25.26	3.85	5.68	2.48	4.06							
Sampl.34	9.65	25.28	3.89	5.67	2.45	4.05							
Sampl.35	9.70	25.29	3.91	5.71	2.46	4.07							

Maximum	9.720	25.320	4.050	5.750	2.510	4.120	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Minimum	9.620	25.230	3.850	5.560	2.410	4.020	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Std Dev	0.025	0.026	0.045	0.039	0.026	0.026	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Mean	9.660	25.277	3.898	5.701	2.459	4.069	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Cp	1.988	1.945	2.236	2.550	3.855	3.806	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
CpkI	1.454	1.652	2.964	1.708	3.330	4.687	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Cpku	2.523	2.238	1.508	3.393	4.380	2.925	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Cpk	1.454	1.652	1.508	1.708	3.330	2.925	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!

Too Low	Within Spec	Too High
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