

互億科技
Billionton Systems Inc.

樣品承認報告書

☐環保料件缺環保測試報告, _____已補

日期:95-05-05

A. 規格書接收 / 確認:

採購部	研發部		包裝設計課	品保部	製造/製工部	資料中心
陳佳瑋	機構	電子			95.6.16 曠世奇	QC 95.6.22 曠世奇

B. 評估程序: (材質狀況: ☐符合 RoHS, ☐非環保)

報告書 編號	SA-10901901-020009	品名	CHIP ANTENNA/GP			數量	5
料號	10901901-020009	規格	2.4G/ALA621C4/邁拓			☐ 新規產品, 新供應商 ☐ 新規產品, 舊供應商 ☐ 舊規產品, 新供應商	
規範號碼		製造商	AMOTECH	代理商	邁拓		
部門	☒ 研發處 / ☐ 包裝設計課			☐ 品保部		☐ 製造部 / ☒ 製工部	
檢測項目	☒ 依廠商承認書 ☐ 產品使用 ☐ 關鍵規格及參數(Critical Parameter) 1. 2. 3. ☐ 其他						
結果	☒ 合格 ☐ 不合格			☒ 合格 ☐ 不合格		☒ 合格 ☐ 不合格	
部門主管	曠世奇			曠世奇		曠世奇	
採購部	研發部	包裝設計課	品保部	製造/製工部	資料中心	生管課	物管課
製造商	產品企劃處						

意見會簽:

料號生效	【10901901-020009】	確認者/日期	QC 95.6.22 曠世奇
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C. 分發部門:

☒ 採購部	☒ 研發部	☒ 包裝設計課	☒ 品保部	☒ 製造/製工部	☒ 資料中心	☒ 生管課	☒ 物管課
製造商	產品企劃處						

ROUTE: 採購→研發/包裝設計→品保→製造/製工→(包裝設計)資料中心→資料中心(分發)

表單編號:BAI-002-01 版本:C.0

承 認 書

Specification for Approval

Messrs. 互憶科技股份有限公司

Part Name MULTILAYRER CHIP ANTENNA

Part No. ALA621C4

Your Part No. _____

Date : April 25, 2006

APPROVED	CHECKED	DESIGNED

承認後請簽回乙份

邁拓企業股份有限公司

SELMAG ENTERPRISE CO., LTD.

台北縣新店市寶興路 45 巷 8 弄 10 號 4 樓

4nd Flr., No. 10, Alley 8, Lane 45, Pao Shin Rd., Hsin-Tien City,
Taipei Hsien, Taiwan. R.O.C.

Tel:886-2-2918-9913(代表號) Fax:886-2-2918-7731

業務工程師:謝惠如 EXT: 74 統一編號:09485687



Data Sheet

MULTILAYER CHIP ANTENNA

Part No. : ALA621C4

WRITTEN	CHECKED	APPROVED

February 14, 2006

AMOTECH Co., LTD.

Notes

The contents of this data sheet are subject to change without notice. Please confirm the specifications and delivery conditions when placing your order.

1. SPECIFICATIONS

1.1 Electrical Specifications

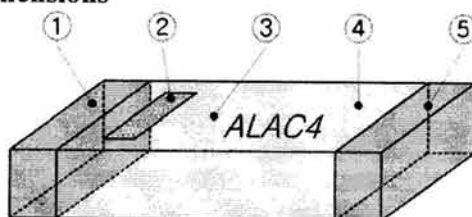
No	ITEM	SPEC.	Remark
1	Frequency Range	2.4 ~ 2.485 GHz	for ISM
2	VSWR	2.5 : 1 max.	
3	Gain	Avg. -3 dBi min.	
4	Polarization	Linear	
5	Azimuth Beam Pattern	Omni-directional	
6	Impedance	Nominal 50 Ω	

※ These values are measured on the matched reference test board.

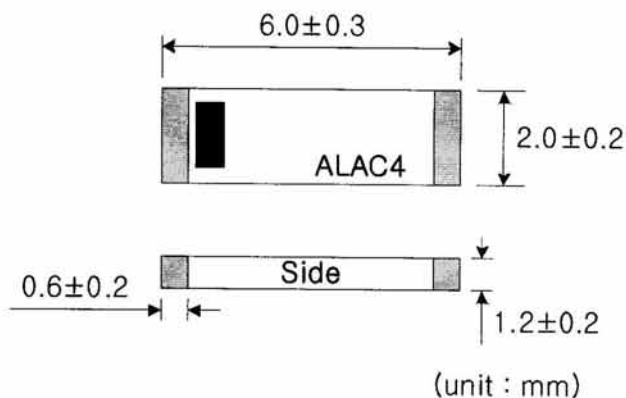
1.2 Mechanical Specifications

No	Internal Electrode	Ag	Pb-free
1	External Electrode	Ag/Ni/Sn	Pb-free
2	Dimensions (L x W x H)	6 x 2 x 1.2	mm
3	Unit Weight	46 $\pm$ 4	mg
4	Operating Temperature	-35 ~ +85	°C

1.3 Appearance and Dimensions

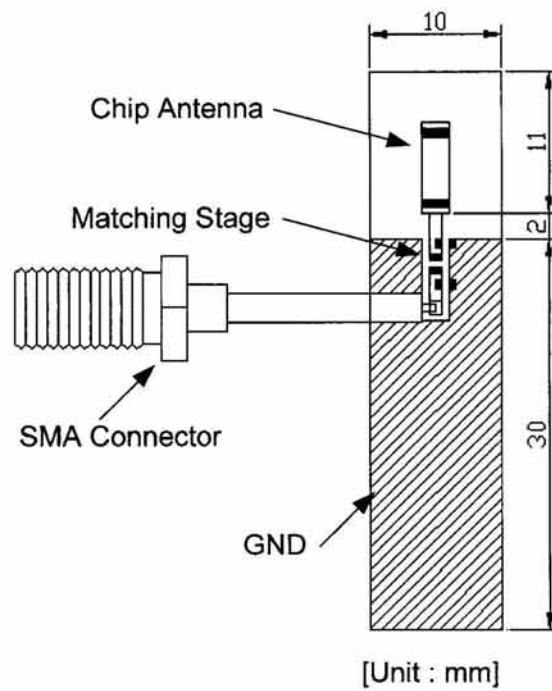


	Name	Function
1	External Electrode	Soldering, Input Port
2	Direction index	Indication of Input Port
3	Model No. index	-
4	Ceramic Body	-
5	External Electrode	Soldering

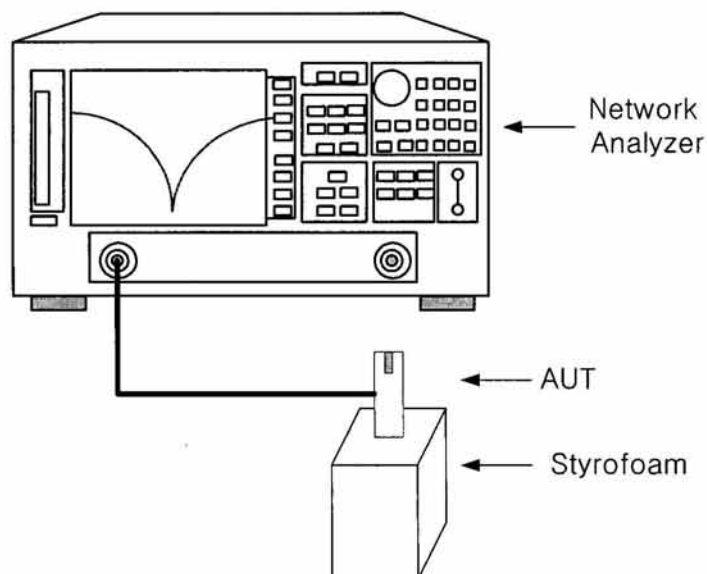


2. MEASUREMENT

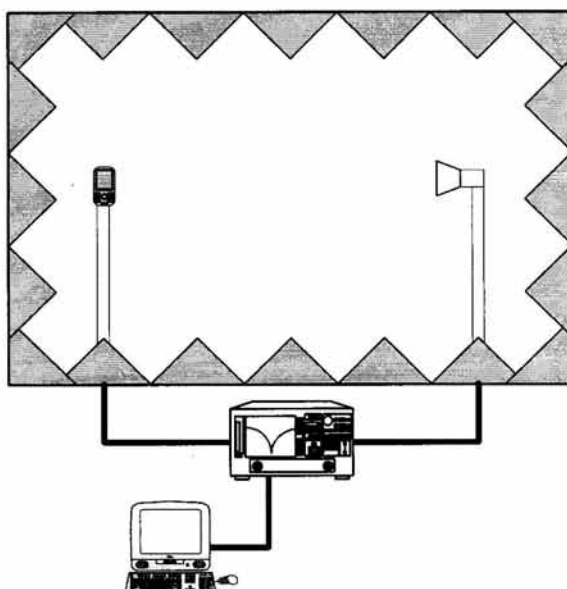
2.1 Reference Test Board for Measurement



2.2 Diagram for VSWR measurement



2.3 Diagram for radiation gain and pattern measurements

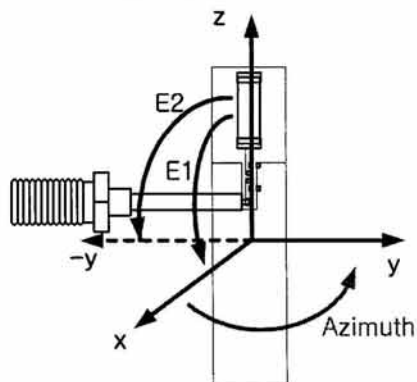


A. Anechoic chamber spec.

Parameters	Condition	Unit
Chamber size	8x4x4	m
Temperature	21.5	°C
Humidity	55	% RH
Measurement	S21 (8753ES)	
System software	Midas (Orbit/FR)	

B. Measurement coordinates

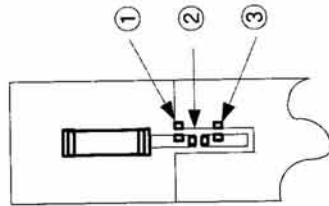
Measurement Plane	Symbol	Rotating direction
Azimuth	Azimuth	$x \rightarrow y$
Elevation1	E1	$z \rightarrow x$
Elevation2	E2	$z \rightarrow -y$



3. MEASUREMENT RESULT

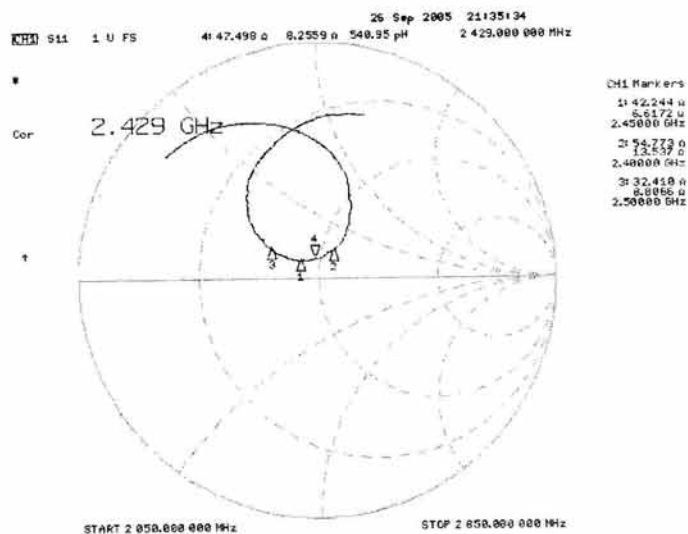
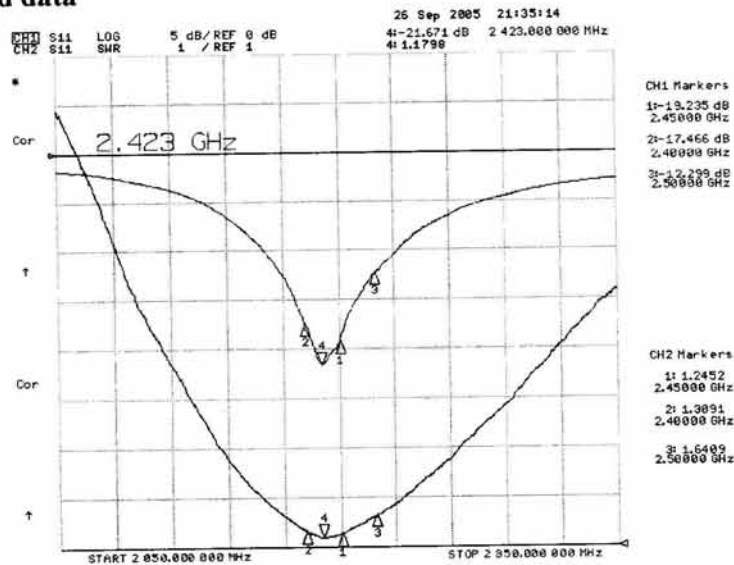
3.1 VSWR & Smithchart

A. Matching Value (recommend for reference testboard only)



①	N/C
②	2.7 nH
③	2.2 nH

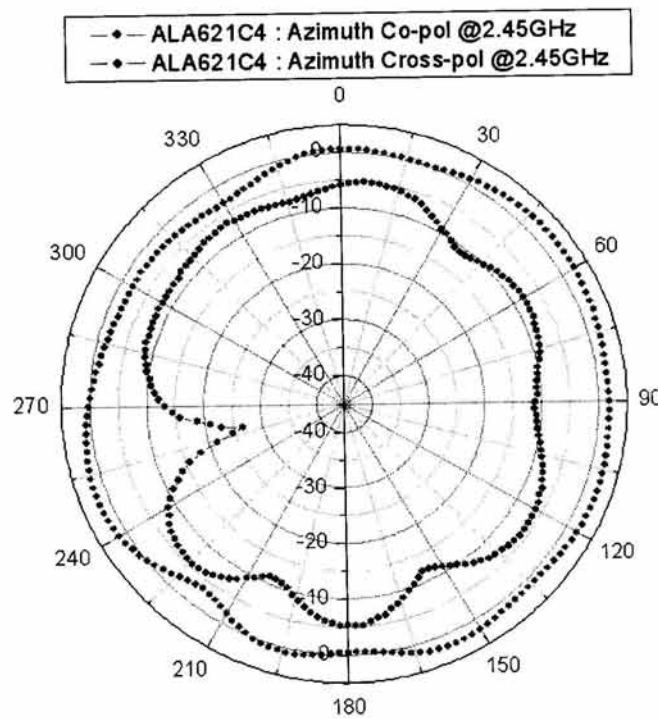
B. Measured data



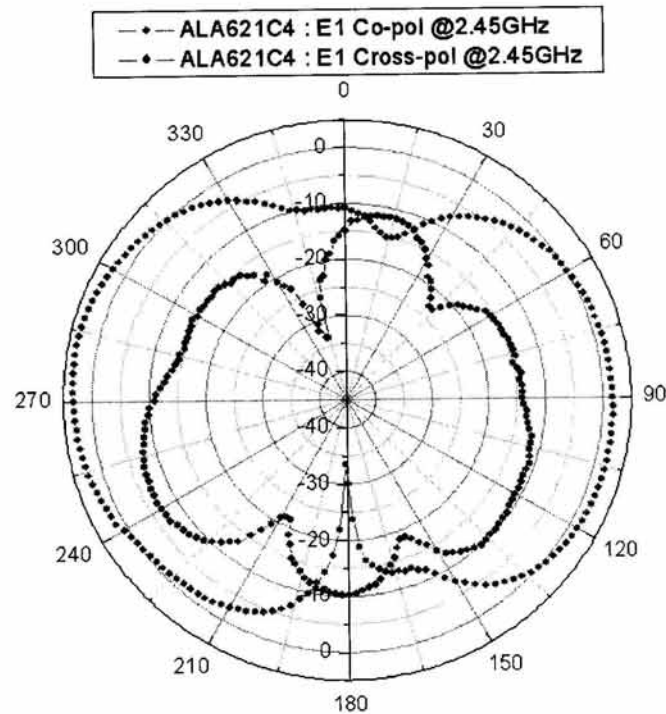
3.2 Radiation Gain and Pattern

[Measured data table]

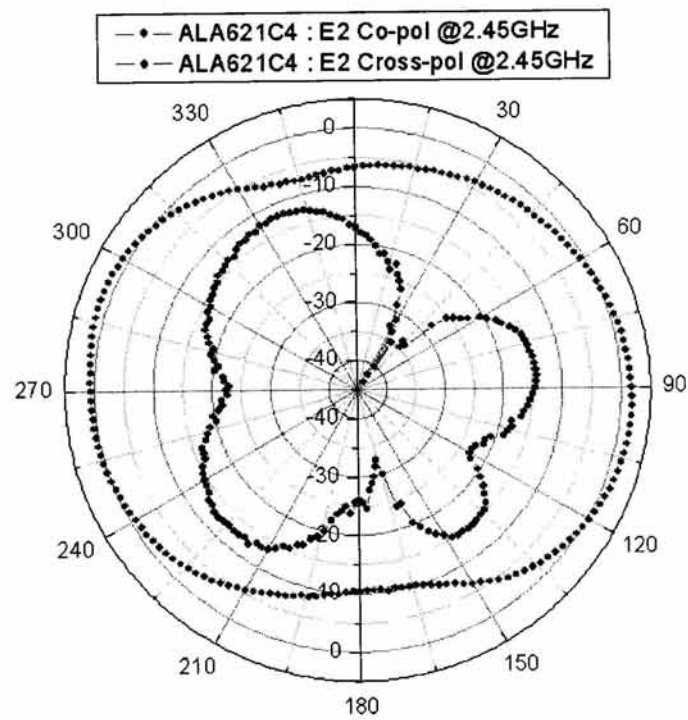
	Peak Gain (dBi)	Average Gain (dBi)	Remark
Azimuth	2.6	0.7	@2.45 GHz
Elevation1	3.5	-0.6	@2.45 GHz
Elevation2	2.0	-1.7	@2.45 GHz



[ALA621C4 radiation pattern : Azimuth@2.45GHz]



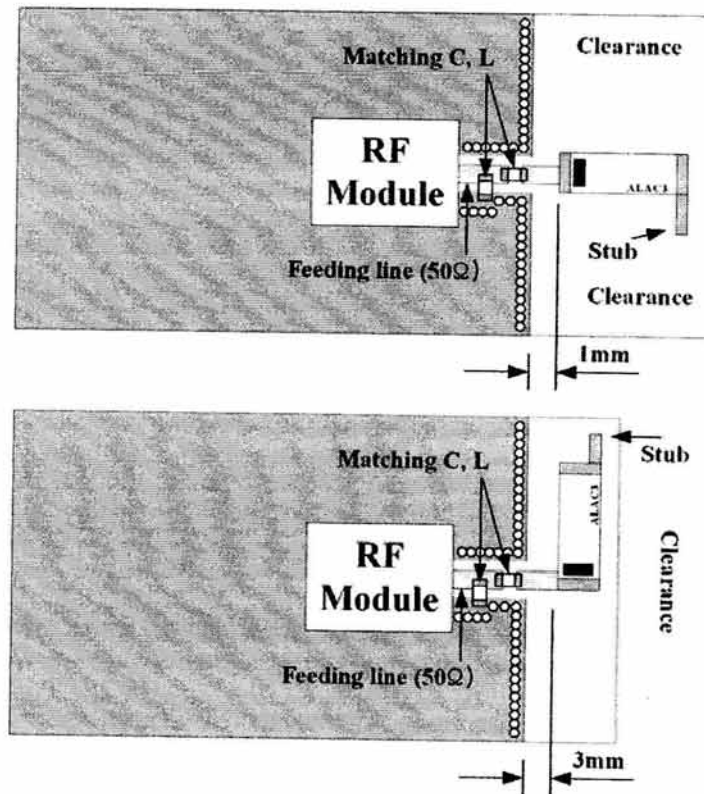
[ALA621C4 radiation pattern : Elevation1@2.45GHz]



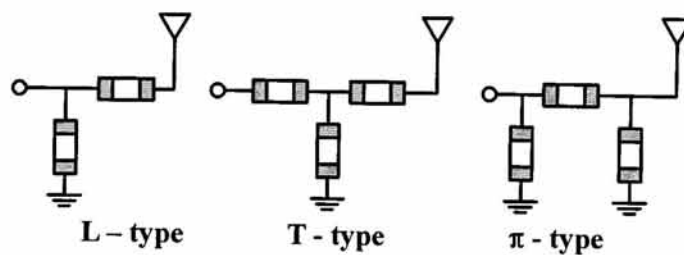
[ALA621C4 Radiation Pattern : Elevation2@2.45GHz]

4. SUGGESTED LAYOUT & MATCHING CIRCUIT

4.1 Layout (recommend only)

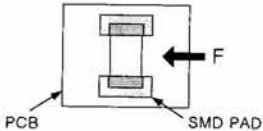
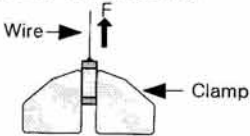


4.2 Matching Circuit (recommend only)



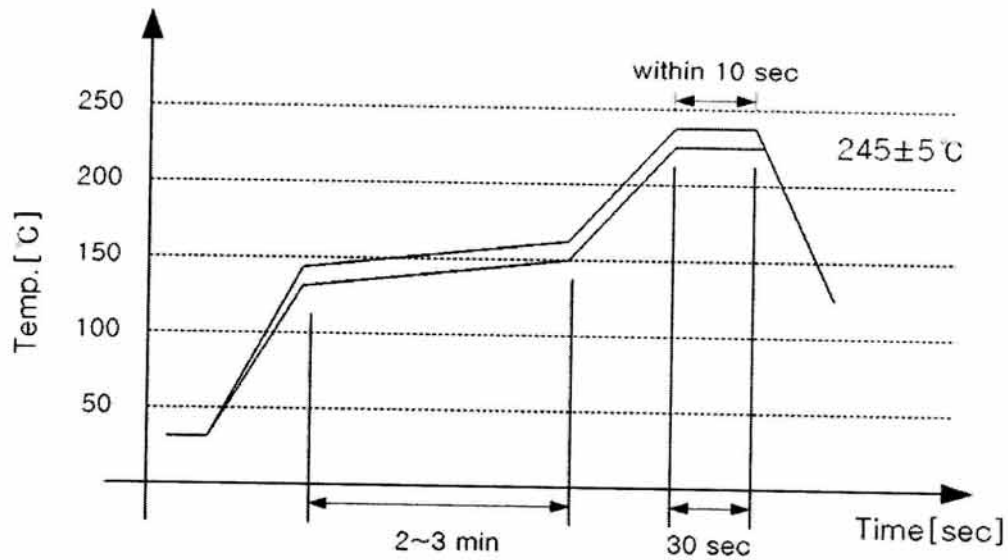
For usable matching, the **ground stability** must be guaranteed with **sufficient via holes** and the **case effects** should be considered. Finally, using one or more lumped chip elements and a tuning stub are recommended for better results.

5. RELIABILITY TEST

No	ITEM	TEST CONDITION	TEST REQUIREMENTS
1	Adhesive Strength of Termination	1. Applied force on SMD chip till detached point from PCB. 	1. No mechanical damage by forces applied on the right. 2. Strength (F) > 5 kgf
2	Tensile Strength	1. Wire : 0.6~0.8 tined Cu wire 	1. No mechanical damage by forces applied on the right. 2. Strength (F) > 3 kgf
3	Thermal Shock (Temperature Cycle)	1. 1 cycle / step 1 : $-40 \pm 3^{\circ}\text{C}$, 30 min step 2 : $+125 \pm 3^{\circ}\text{C}$, 30 min 2. Number of cycle : 30 3. Measure after left for 48 hrs min. at room temperature	1. No visual damage 2. Within electric spec (VSWR)
4	High Temperature Resistance	1. Temperature : $+125 \pm 5^{\circ}\text{C}$ 2. Time : 1000 ± 24 hrs 3. Measure f_c after left for 24 hrs min. at room temperature	1. No visual damage 2. Within electric spec (VSWR)
5	Low Temperature Resistance	1. Temperature : $-40 \pm 5^{\circ}\text{C}$ 2. Time : 1000 ± 24 hrs 3. Measure f_c after left for 48 hrs min. at room temperature	1. No visual damage 2. Within electric spec (VSWR)
6	Humidity (Steady Condition)	1. Humidity : 85 % RH 1. Temperature : $+85 \pm 3^{\circ}\text{C}$ 2. Time : 1000 ± 24 hrs 3. Measure f_c after left for 48 hrs min. at room temperature	1. No visual damage 2. Within electric spec (VSWR)

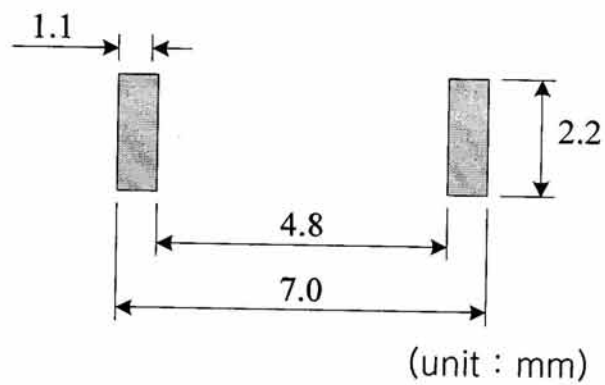
6. SOLDERING RECOMMENDATIONS

6.1 Reflow Soldering Profile



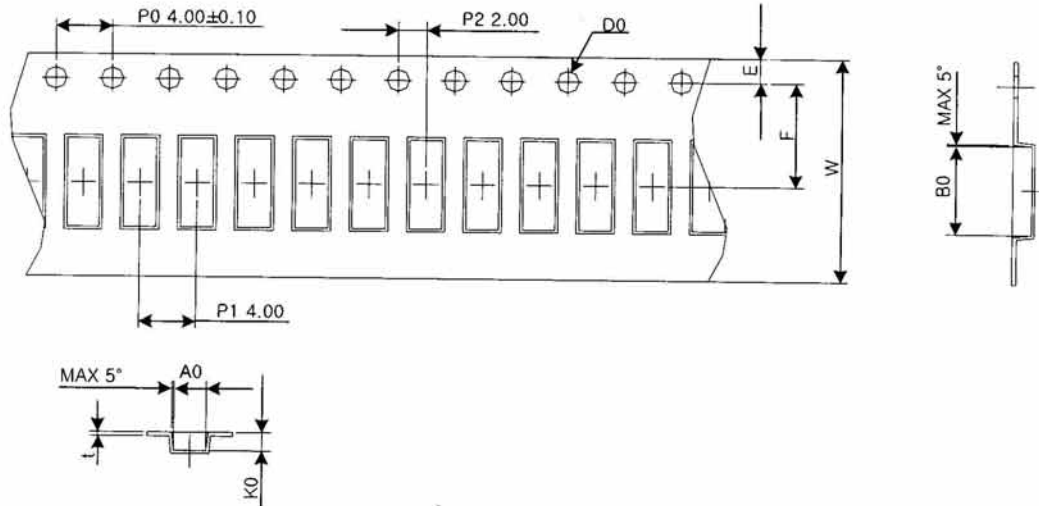
[Soldering Reflow Profile for Pb-free]

6.2 Soldering Land Pattern



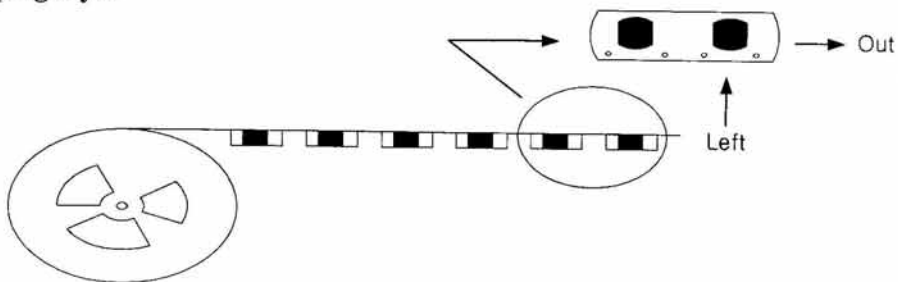
7. PACKING

7.1 Tape Dimension (unit : mm)



A0	2.30 ± 0.10	E	1.75 ± 0.10
B0	6.40 ± 0.10	F	7.50
K0	1.35 ± 0.10	t	0.30 ± 0.05
D0	1.55 ± 0.05	W	16.00 ± 0.30

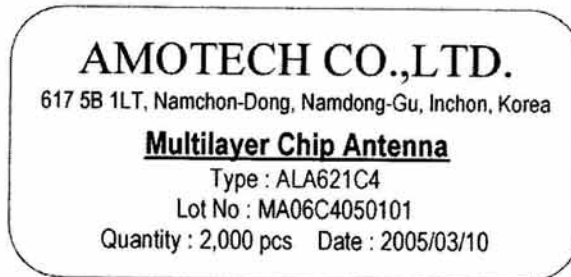
7.2 Taping Style



7.3 Packing Unit

	Quantity	Size (mm ³)
Reel	2,000 ea	Φ7 x 16mm
Small Box	6,000 ea (3 reel*2,000ea/reel)	185 * 185 * 68 (mm ³)
Middle Box	30,000 ea (5 small box*6,000ea/small box)	365 * 200 * 200 (mm ³)
Large Box	84,000 ea (14 small box*6,000ea/small box)	390 * 390 * 280 (mm ³)

7.4 Description of Packing Label



AMOTECH CO., LTD.

Name of Company

617 5B 1LT, Namchon-Dong, Namdong-Gu, Inchon, Korea

Address of Manufacture

Multilayer Chip Antenna

Name of Component

Type : ALA621C4

ALA : Amotech LTCC Antenna
621 : Chip Size
C4 : Version & Frequency index

Lot No : MA06C4050101

MA : Mass-product Antenna
06 : Chip Size
C4 : Version & Frequency index
0501 : Date
01 : Order of production

Quantity : 2,000 pcs

Quantity : 2,000 pcs

Date : 2005/03/10

Date : 2005 /03 /10

8. STORAGE CONDITION

- A. Storage environment must be at an ambient temperature of 15~35℃ and an ambient humidity of 45~75 % RH. (MSL Level 2)
- B. Chip antenna can experience degradation of termination solderability when subjected to high temperature of humidity, or if exposed to sulfur or chlorine gases.
- C. Avoid mechanical shock (ex. falling) to the chip antenna to prevent mechanical cracking inside of the ceramic dielectric due to its own weight.



SGS Testing Korea Co., Ltd.

#18-34, Sanbon-dong, Gunpo-city, Kyunggi-do, Korea 435-040
Tel : 031-4285-777, Fax : 031-427-2374/9, InterNet><http://www.sgslab.co.kr>

Test Report

No. F690501/LF-CTS100695

Date : May 27, 2005

Page 1 of 2

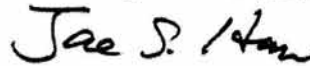
AMOTECH
5BL-AL, 617, Namchon-dong, Namdong-gu,
Incheon, Korea

The Following merchandise was submitted and identified by the clients as : -

Type of Product	: Chip Antenna
SGS File No	: G-49/2005-1904/6
Materials	: Glass + Al ₂ O ₃
Style/Item No.	: Chip Antenna
Sample Receiving Date	: May. 20, 2005
Test Performing Date	: May. 21, 2005
Test Performed	: SGS Testing Korea tested the sample which was selected by applicant with following result.
Test Results	: For further detail, please refer to following page.

KHJ/ysh

SGS Testing Korea Co., Ltd.



Jason Han / Director

SGS Testing Korea Co., Ltd.

#18-34, Sanbon-dong, Gunpo-city, Kyunggi-do, Korea 435-040
Tel : 031-4285-777, Fax : 031-427-2374/9, InterNet>http://www.sgslab.co.kr

Test Report

No. F690501/LF-CTS100695

Date : May 27, 2005

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Heavy Metal

Test Items	Unit	Test Method	MDL	Results
Cadmium (Cd)	mg/kg	USEPA 3050B, ICP-AES	0.5	n. d.
Lead (Pb)	mg/kg	USEPA 3050B, ICP-AES	5	40
Mercury (Hg)	mg/kg	USEPA 3052, ICP-AES	2	n. d.
Hexavalent Chromium (Cr VI)	mg/kg	USEPA 3060A, UV-Vis	1	n. d.

Flame Retardants

Test Items	Unit	Test Method	MDL	Results
Polybrominated Biphenyls (PBBs)				
Bromobiphenyl	mg/kg	With reference to USEPA 3450C. Analysis was performed by GC/MS.	5	n. d.
Dibromobiphenyl	mg/kg		5	n. d.
Tribromobiphenyl	mg/kg		5	n. d.
Tetrabromobiphenyl	mg/kg		5	n. d.
Pentabromobiphenyl	mg/kg		5	n. d.
Hexabromobiphenyl	mg/kg		5	n. d.
Heptabromobiphenyl	mg/kg		5	n. d.
Octabromobiphenyl	mg/kg		5	n. d.
Nonabromobiphenyl	mg/kg		5	n. d.
Decabromobiphenyl	mg/kg		5	n. d.
Polybrominated Diphenyl Ethers (PBDEs)				
Bromodiphenyl ether	mg/kg	With reference to USEPA 3450C. Analysis was performed by GC/MS.	5	n. d.
Dibromodiphenyl ether	mg/kg		5	n. d.
Tribromodiphenyl ether	mg/kg		5	n. d.
Tetrabromodiphenyl ether	mg/kg		5	n. d.
Pentabromodiphenyl ether	mg/kg		5	n. d.
Hexabromodiphenyl ether	mg/kg		5	n. d.
Heptabromodiphenyl ether	mg/kg		5	n. d.
Octabromodiphenyl ether	mg/kg		5	n. d.
Nonabromodiphenyl ether	mg/kg		5	n. d.
Decabromodiphenyl ether	mg/kg		5	n. d.

Note : n. d. = Not detected

MDL = Method Detection Limit

***** End *****