

LOCOSYS**大辰科技股份有限公司****LOCOSYS Technology Inc.**20F.-13, No.79, Sec. 1, Xintai 5th Rd.,
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台北縣汐止市新台五路一段79號20樓之13

TEL : 886-2-2793-1555

FAX : 886-2-2793-1503

APNO: _____


零件規格承認書**APPROVAL SHEET**

日期 : 2006/11/29
 料號 : 205000930001
 品名 : BT ANT/CHIP ANT/2.45GHz
 規格 : 5.2*2*1.5mm/2dBi/COXOC
 供應商 : COXOC(詮欣股份有限公司)
 廠牌 : COXOC
 廠商料號 : 920D07E15215013
 使用機種 : LS22000

 測試結果 : 可用 不可用 其他

進料檢驗注意事項：

* * * * *

核 准	審 查	經 辦
蔡國旭	蔡國旭	

表單編號：



承認書

SPECIFICATION FOR APPROVAL

客戶
CUSTOMER **大辰科技股份有限公司**

品名
DESCRIPTION **2.4GHz Chip Antenna
Size 2*5.2mm**

詮欣料號
PART No. **920D07E15215013**

客戶料號
CUSTOMER P/N **920D07E15215013**

PREPARED

CHECKED

APPROVED

詮欣股份有限公司
CHANT SINCERE CO., LTD

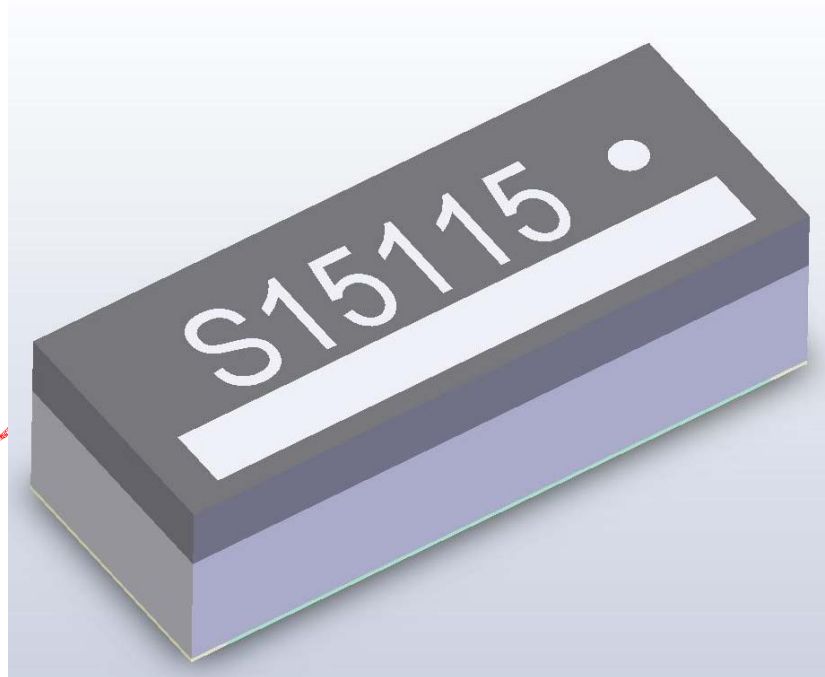
台北縣汐止市大同路三段188號7F-2
7F-2, No.188, SEC.3, TA TUNG ROAD, HSI CHIH
TAIPEI HSIEN, TAIWAN,
TEL : 886-2-86471251
FAX: 886-2-86472962 / 886-2-86471842



ISM Band Planar Chip Antenna
Bluetooth, WLAN IEEE802.11b/g
2.4GHz ISM Band
<Patent Protection>

Approval Sheet

2.4 GHz ISM Band Chip Antenna



920D07E15XXX013

Ver. 1.03

2006/06/07

CHANT SINCERE CO.,LTD.

DESCRIPTIONS

The exciting **920D07E15XXX013** is one of the world's high-performance 2.4GHz small chip antennas. It is for all 2.4GHz applications, including Bluetooth, IEEE802.11b/g, home RF, ZigBee and other popular and emerging standards. This chip antenna comprises a radiating structure of multiple meandered conducting strips, which are developed on a tiny piece of Printed Circuit Board (PCB) and packed with a Liquid Crystal Polymer (LCP) dielectric composite material to achieve size, performance characteristics and cost effectiveness superior to other designs. The incredibly compact surface mountable package measures a merely 5.2mm (L) × 2.0mm (W) × 1.5mm (H) in dimensions and is fully compatible with handmade and reflow attachment processes. The antenna's favorable electrical specifications, stability and cost-effectiveness make it the logical choice for a wide variety of applications in the 2.4GHz ISM band.

FEATURES

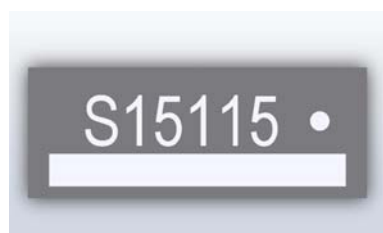
- Low Profile, Ultra-Thin, Light Weight (0.05g)
- Miniaturized Size (**5.2×2.0×1.5 mm³**)
- Omni-Directional Antenna Patterns
- Low Loss (**Average Gain = 0 dBi**)
- 50Ω Characteristic Impedance
- Impedance-Matching Free
- Wide Bandwidth
- Favorable Linear Polarization
- Fully Manual and Surface Mount Compatible
- Incredibly Compact SMD Package
- Highly Stable with Variations in Temperature and Humidity
- LCP Insert Molding Technology
- Cost-Effective

APPLICATIONS

- Bluetooth
- IEEE802.11b/g
- Wireless PCMCIA Cards
- Telemetry
- Data Collection
- Industrial Process Monitoring
- Compact Wireless Products
- External Antenna Elimination
- ZigBee

SPECIFICATIONS

- 920D07E15XXX013



KEY FEATURES:

- Low Profile, Ultra-Thin, Light Weight (0.05g)
- Miniaturized Size (5.2×2.0×1.5mm³)
- Impedance-Matching Free
- SMD Type
- Cost-Effective

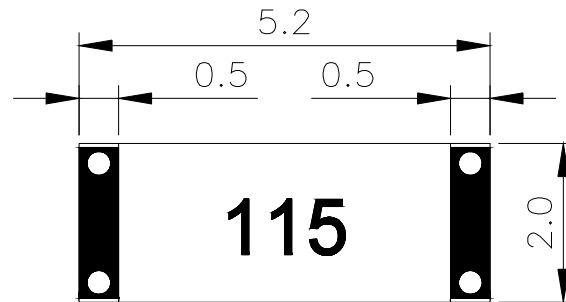
MAIN APPLICATIONS:

- Wireless communications in 2.4GHz ISM Band

	Single-Band Planar Chip Antenna
Dimension (mm ³)	5.2×2.0×1.5
Central Frequency (GHz)	2.45
Bandwidth (MHz)	>100
Gain (dBi) (Typical)	2
VSWR	2.0 (max.)
Return Loss (dB)	-10 (max.)
Polarization	Linear
Pattern	Omni-Directional
Impedance (Ω)	50
Operating Temperature (°C)	-25 ~ +85
Construction	LCP Insert Molding

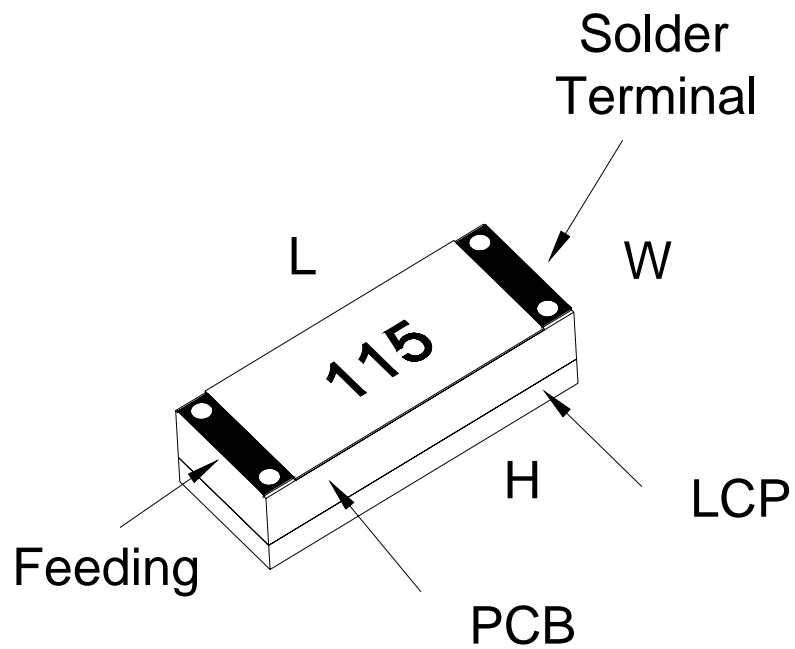
CHARACTERISTICS

Pad Layout (unit: mm)



Construction

COF



Antenna size: 5.2mm (L) × 2.0mm (W) × 1.5mm (H)

Land Pattern (unit: mm)

For best results, the chip antenna 920D07E15XXX013 should be mounted on one corner of 0.8mm thick FR4 PCB with $5.2 \times 9.0 \text{ mm}^2$ empty area and 50Ω microstrip-line input.

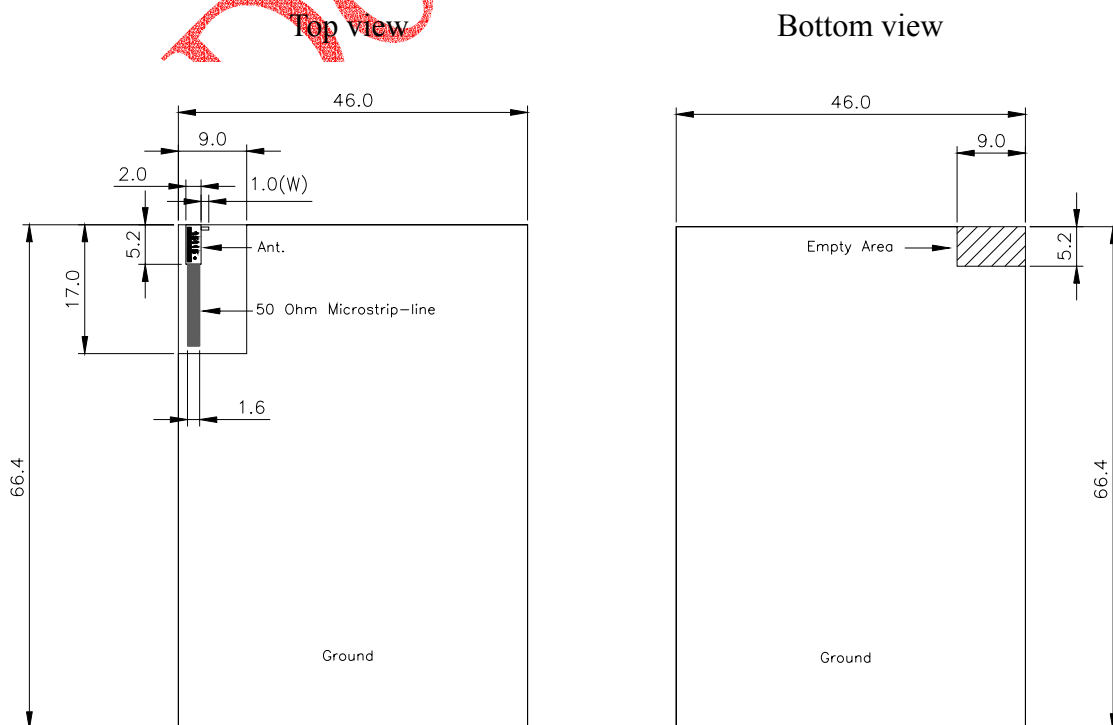
For another condition, the chip antenna 920D07E15XXX013 also could be mounted on one corner of 0.8 mm thick FR4 PCB with $5.2 \times 5 \text{ mm}^2$ empty area and 50Ω microstrip-line input but it must be utilized series winding 1pF capacitor as matching circuit component in order to improve the return loss of chip antenna at 2.45 GHz central frequency. Consequently, we can use the method of Pi circuit to tune central frequency of chip antenna. As regard, it can achieve excellent performance and desire different customer demands.

Summary :

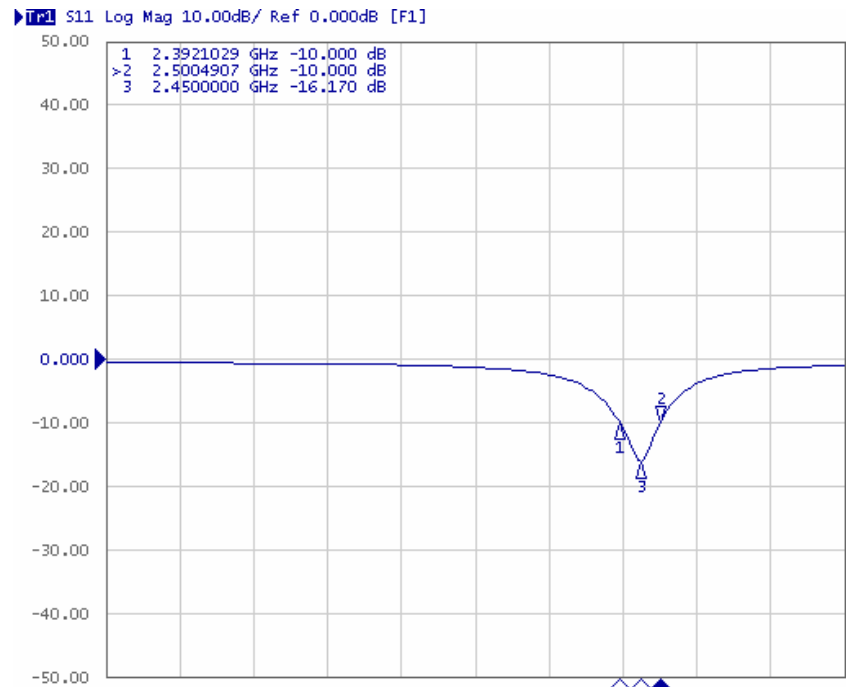
We can utilize different circuit length to tune the return loss of chip antenna for diverse product requirements. It was indicated that the central frequency shifted to high frequency with decrease in line length (see symbol “(W)” in land pattern). Such a results, when the length decreases 1 mm, the central frequency shifts about 100 MHz besides the bandwidth also still achieves previous purpose.

About above the results are mentioned as shown belows :

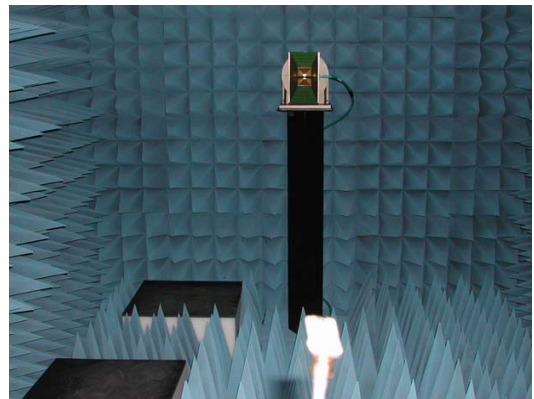
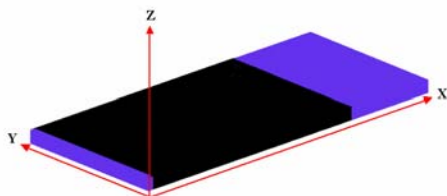
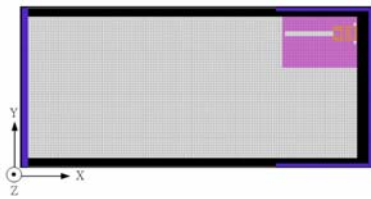
Condition (1) :

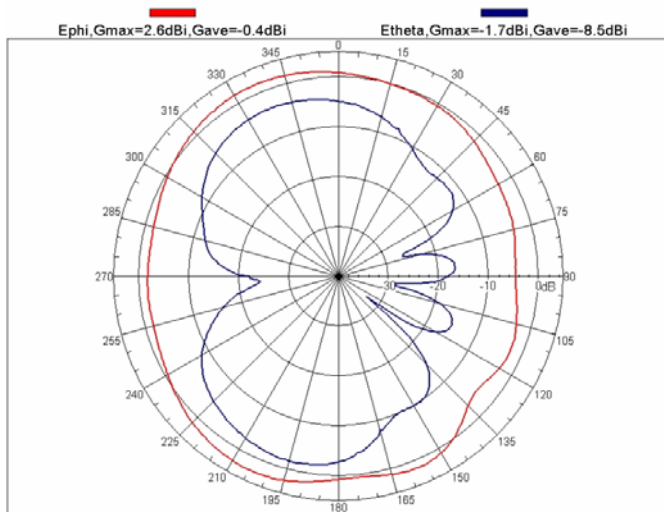


Return Loss and Bandwidth

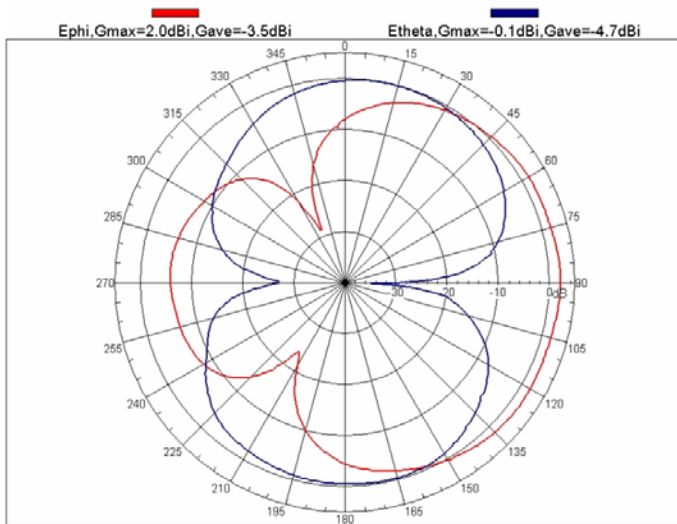


Radiation Pattern (unit: dBi)

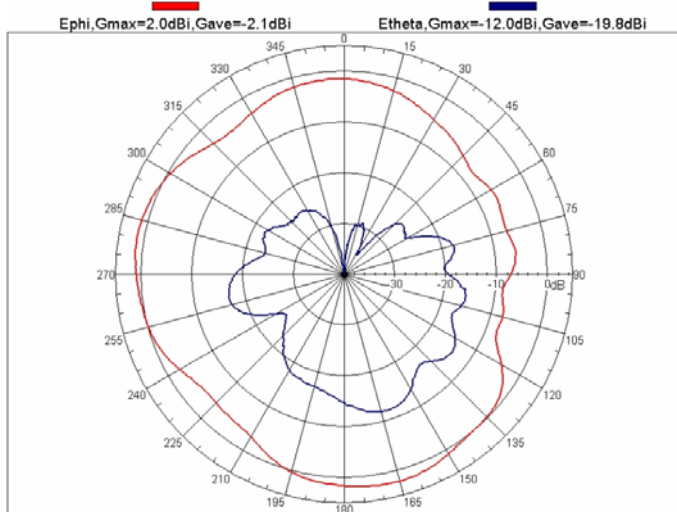
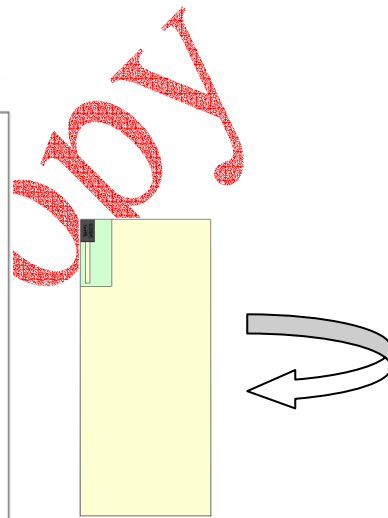




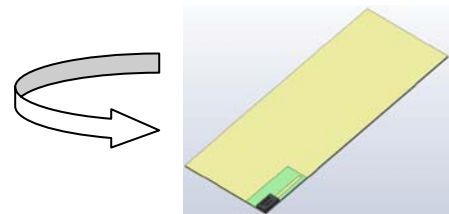
Phi=0° (X-Z plane) for 2.45 GHz



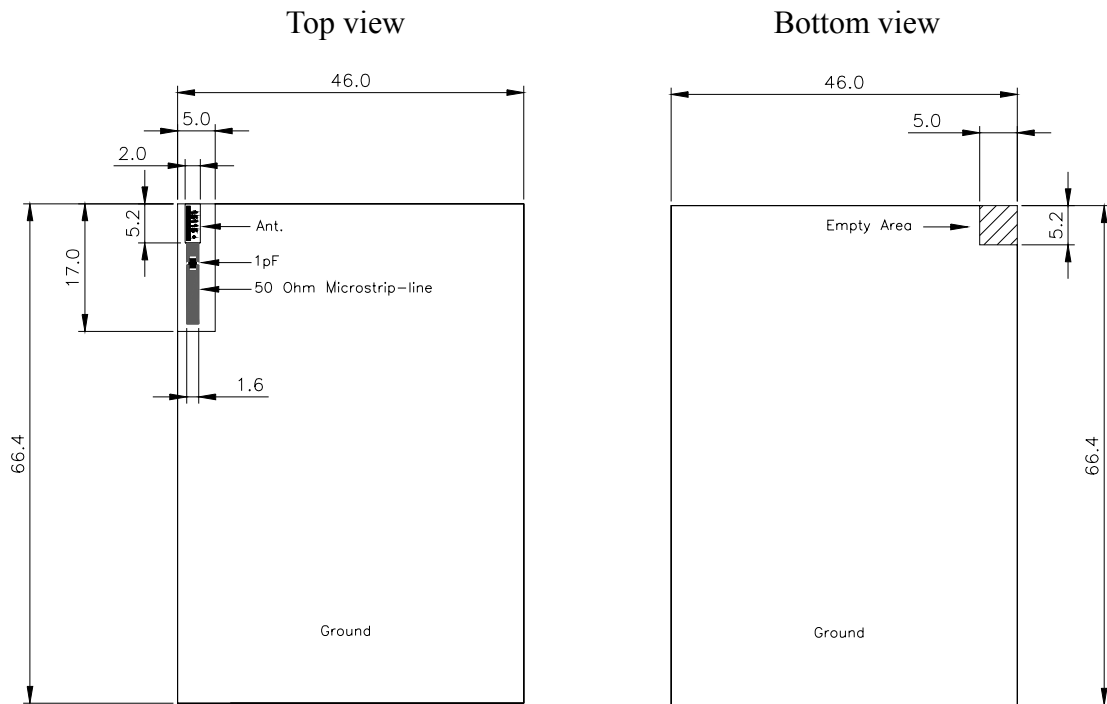
Phi=90° (Y-Z plane) for 2.45 GHz



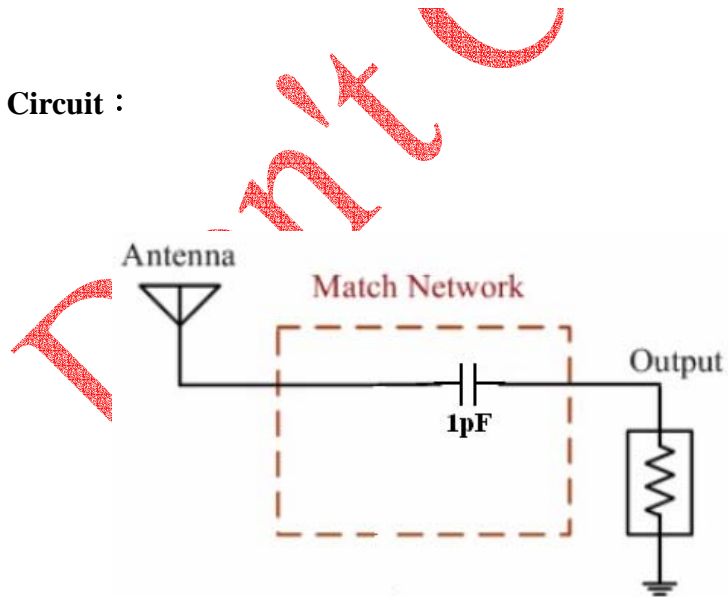
Theta=90° (X-Y plane) for 2.45 GHz



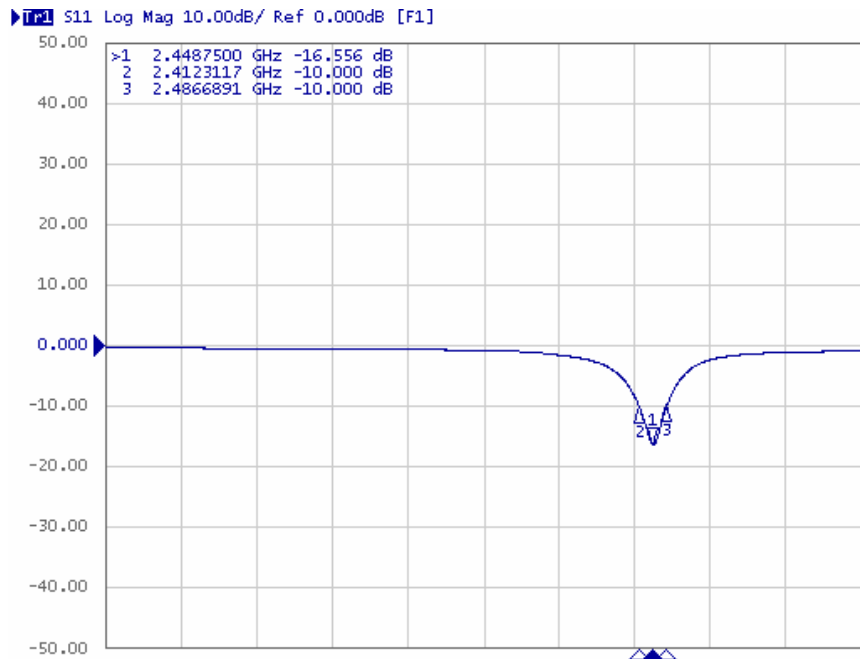
Condition (2) :



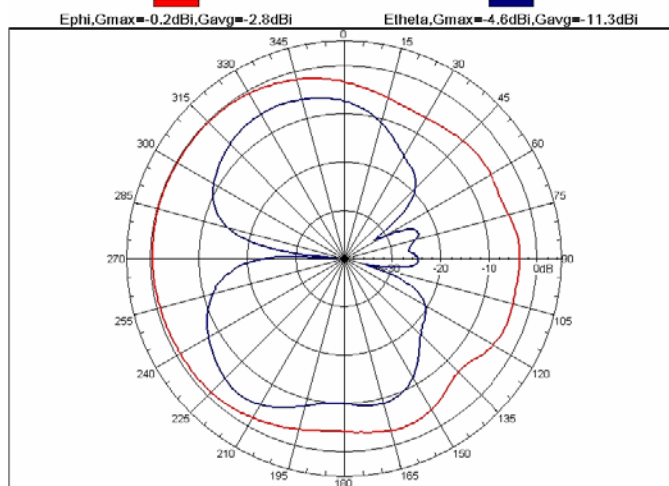
Matching Circuit :



Return loss and Bandwidth

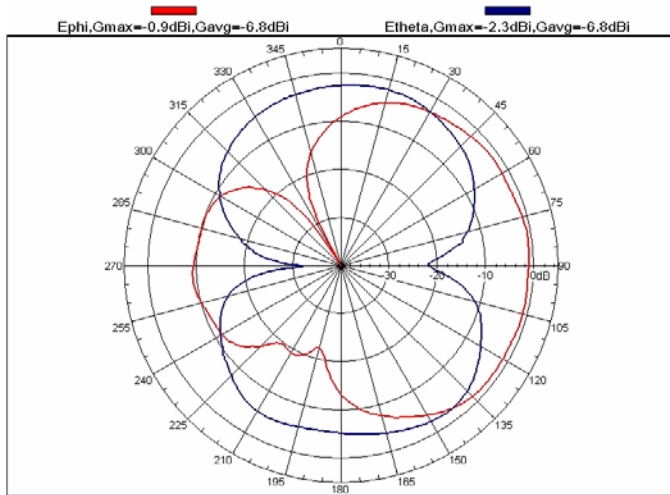


Radiation Pattern (unit : dBi)

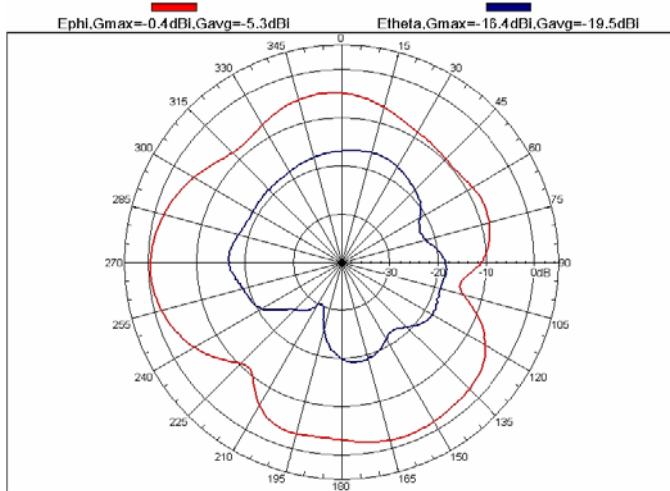
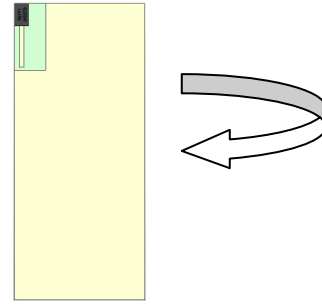


Phi=0° (X-Z plane) for 2.45 GHz

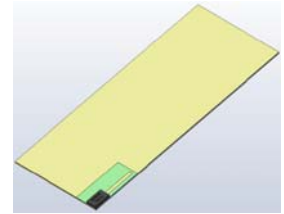
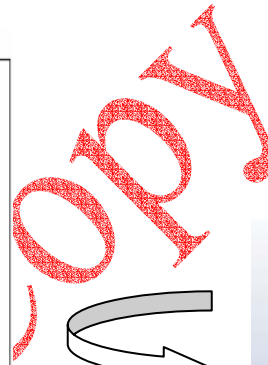




Phi=90° (Y-Z plane) for 2.45 GHz

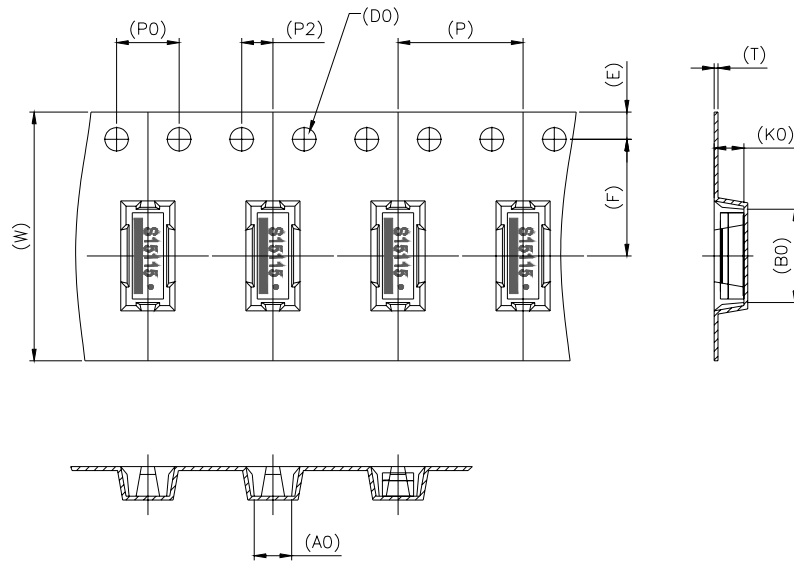


Theta=90° (X-Y plane) for 2.45 GHz



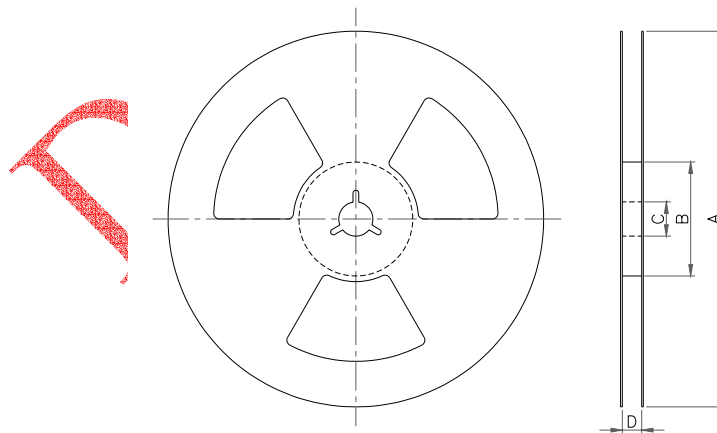
PACKING

Plastic Tape Specification (unit: mm)



Index	W	E	F	T	P	K0
Dimension(mm)	16.00 ± 0.30	1.75 ± 0.10	7.50 ± 0.10	0.25 ± 0.05	8.00 ± 0.10	1.90 ± 0.10
Index	P0	P2	D0	A0	B0	
Dimension(mm)	4.00 ± 0.10	2.00 ± 0.10	Φ1.50	2.40 ± 0.10	6.00 ± 0.10	

REEL DIMENSIONS (unit: mm)



Index	A	B	C	D
Dimension(mm)	Φ330	Φ100	Φ13.5	17.0 ± 0.5

Taping Quantity: MOQ=2K pieces per 13" reel.

HOW TO ORDER

920 D07 E 15 XXX 0 1 3

1 2 3 4 5

1. SERIES NO.

920=Chip Antenna

2. TYPE:

D07=2×5.2mm² (Gain=2 dBi)

3. ENVIRONMENT PROTECTION MATERIAL:

E=RoHS

4. THICKNESS:

15=1.5mm

5. CENTRE FREQUENCY:

015 = < 2.4GHz

115 = 2.4 GHz

215 = > 2.4GHz (Type 1)

225 = > 2.4GHz (Type 2)

235 = > 2.4GHz (Type3)

Change :

1. Revised Feed Direction of construction.

CHANT SINCERE CO., LTD.

7F.-2, No.188, Datong Rd., Sec. 3

Sijhih City, Taipei County 221, Taiwan

TEL : 886-2-8647-1251

FAX : 886-2-8647-1872, 886-2-8647-2962

E-MAIL : aaron.hu@coxoc.com.tw

www.coxoc.com.tw

www.co-linkwireless.com

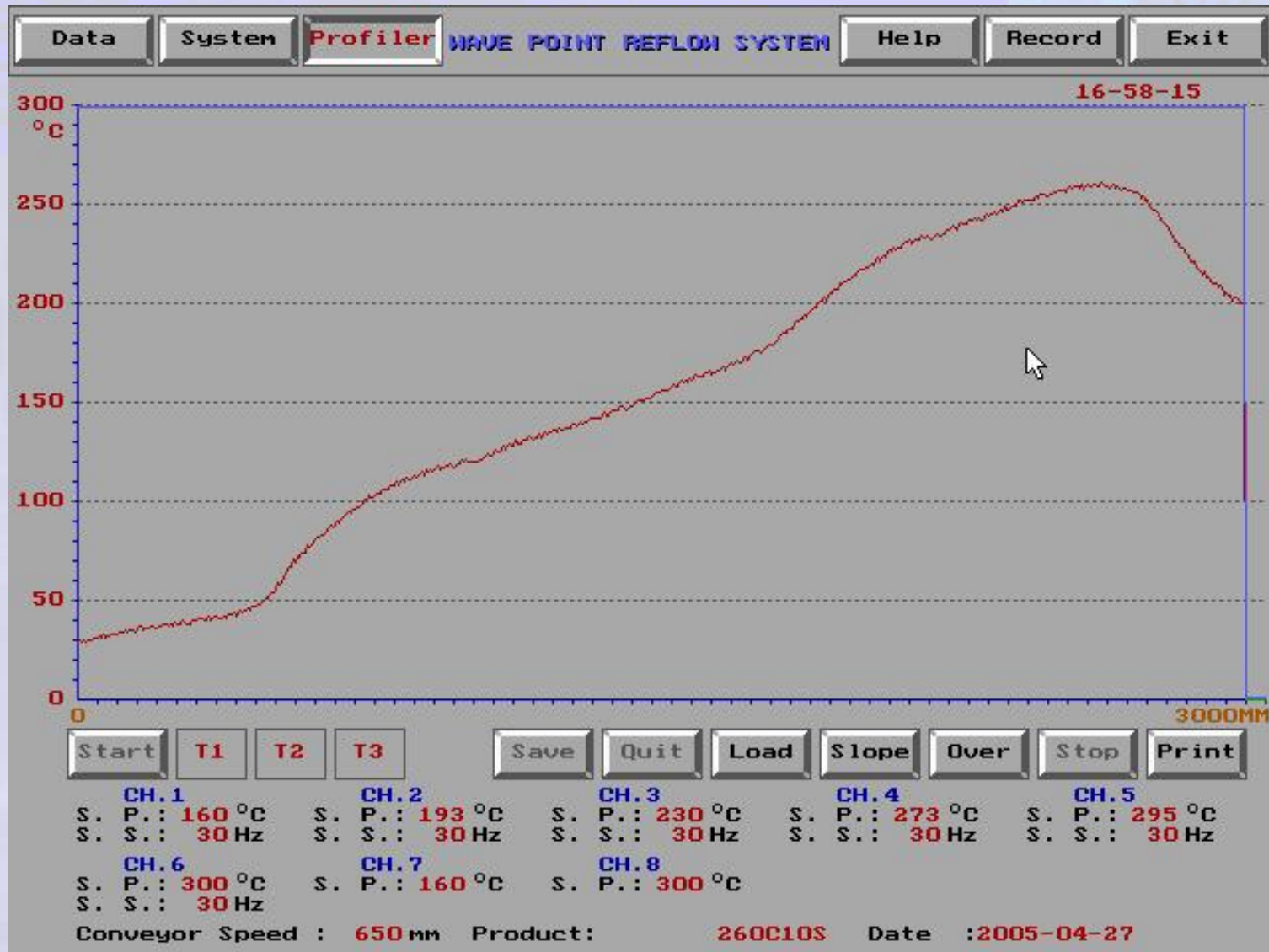


Chip Antenna RoHS Full Range Chart

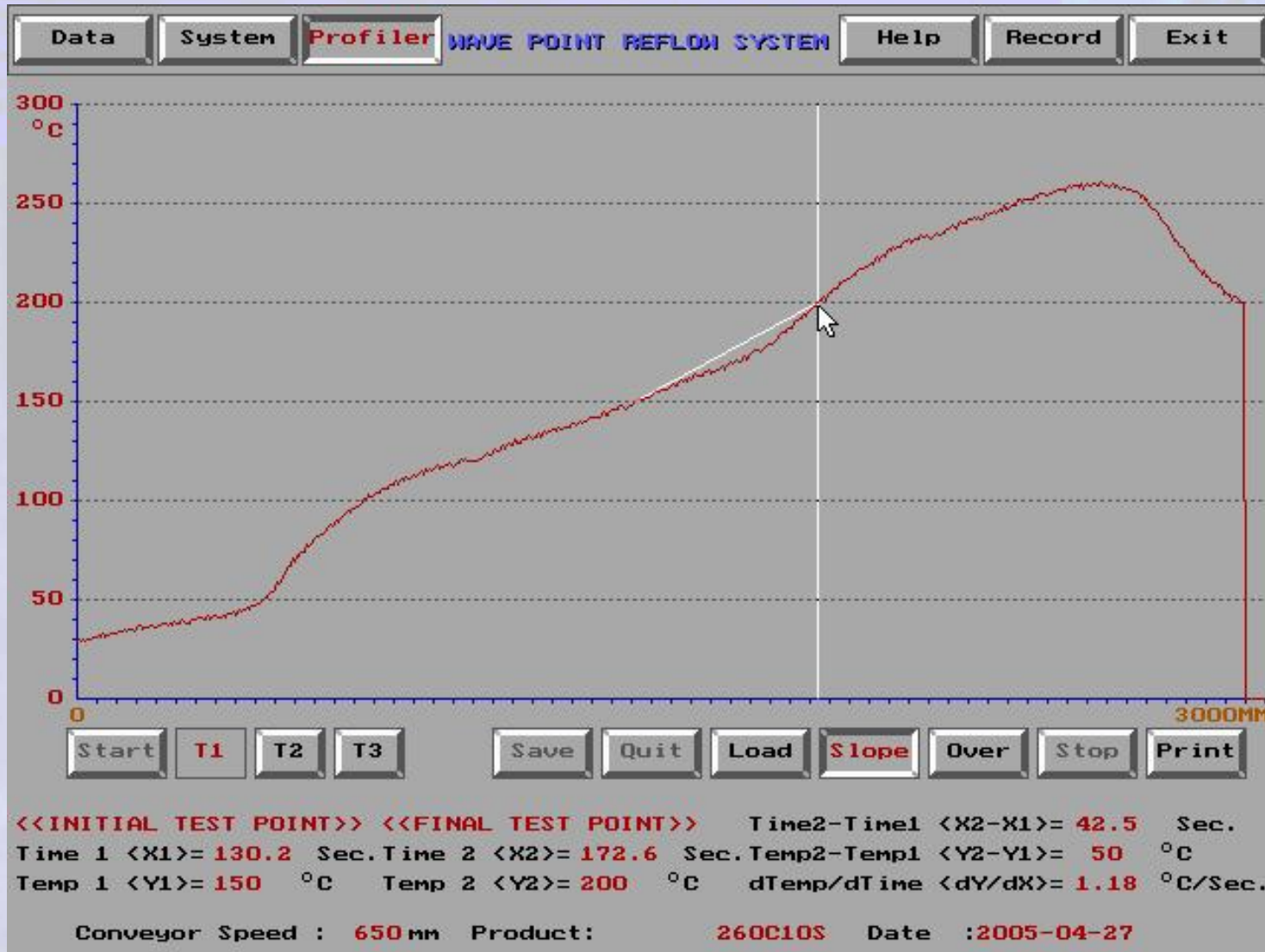
2005/08/15

Belle Hung

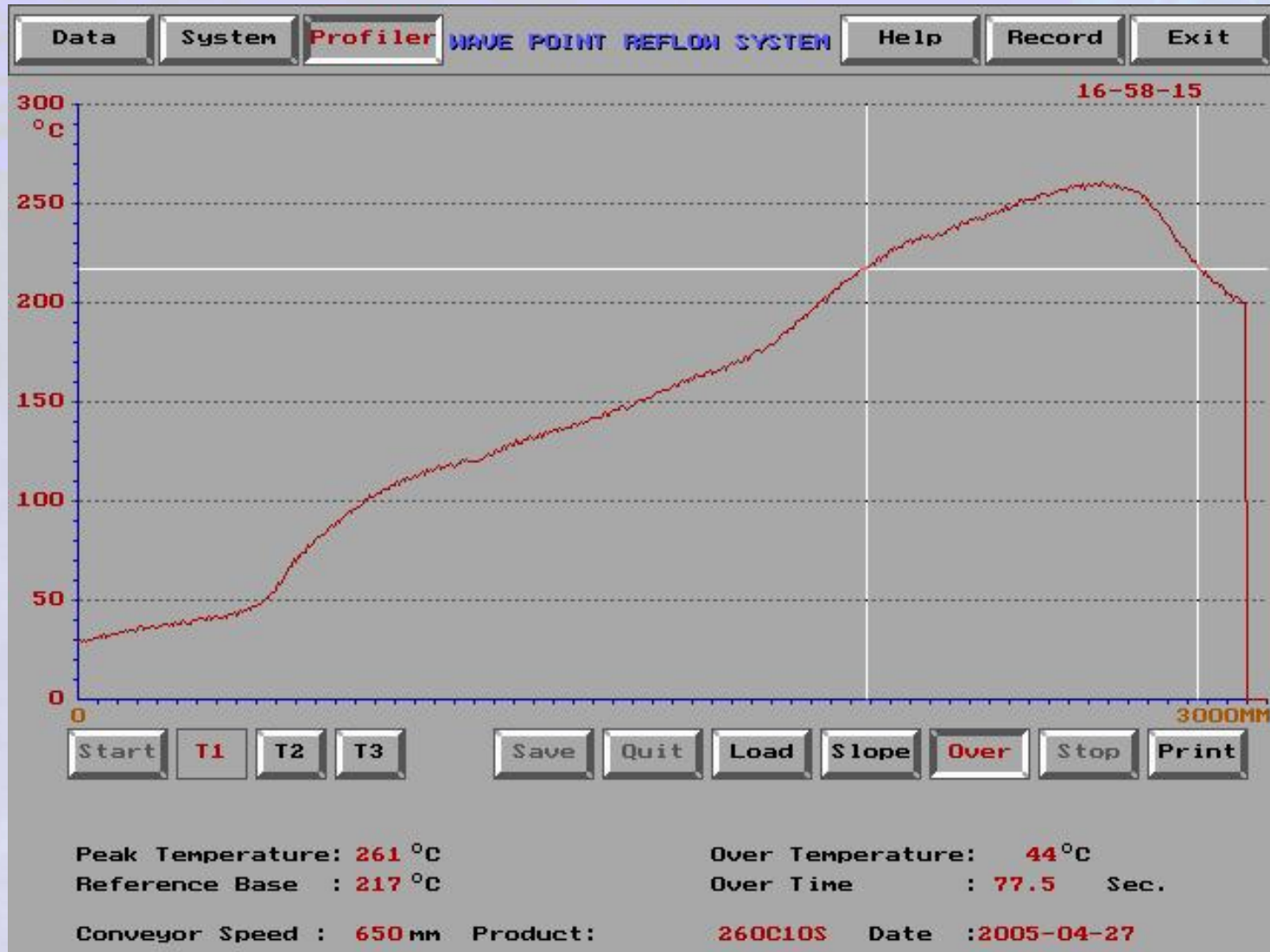
RoHS Full Range Chart



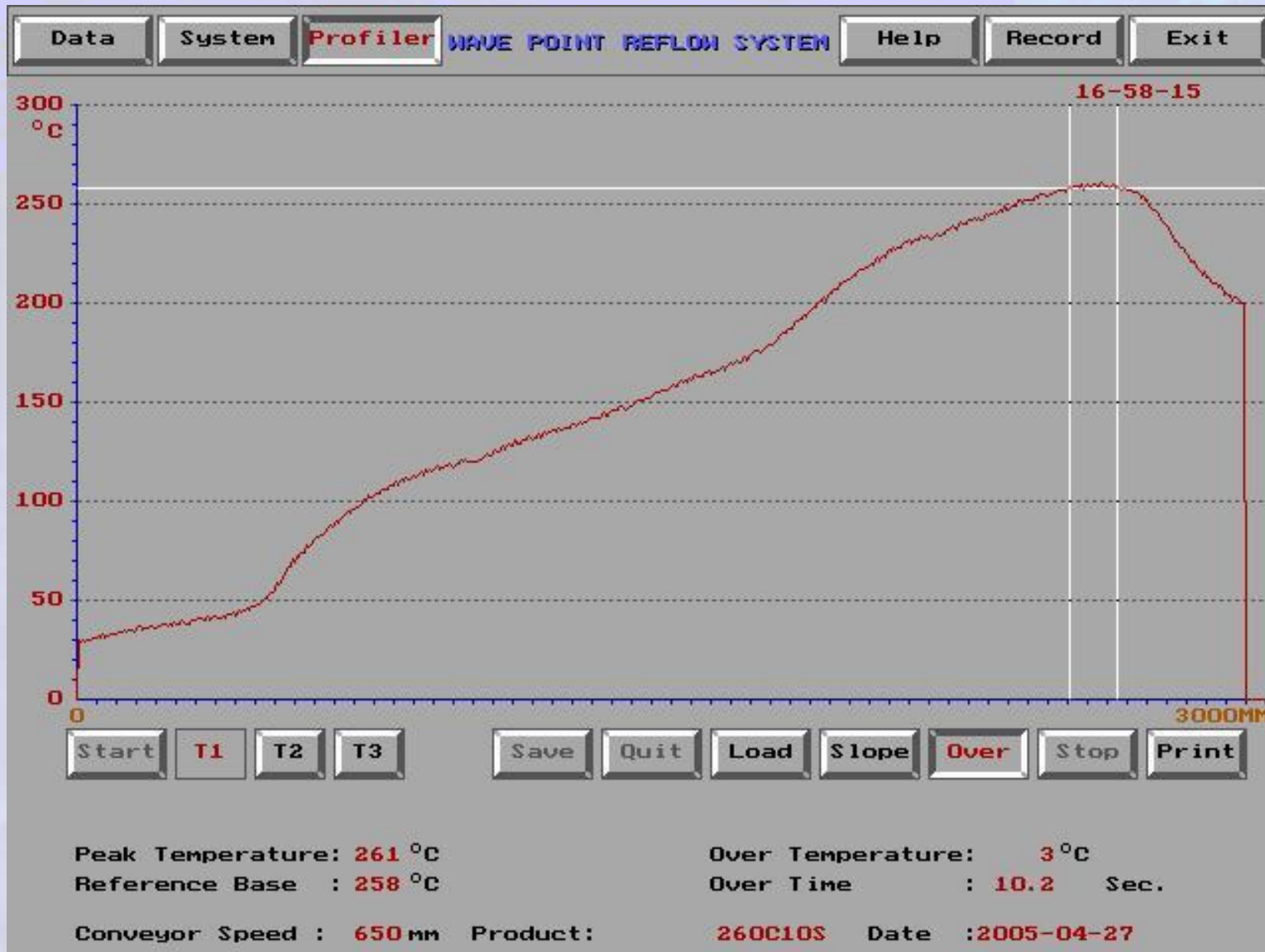
Pre Heat Time 150~200 °C /60~180sec(42.5sec)



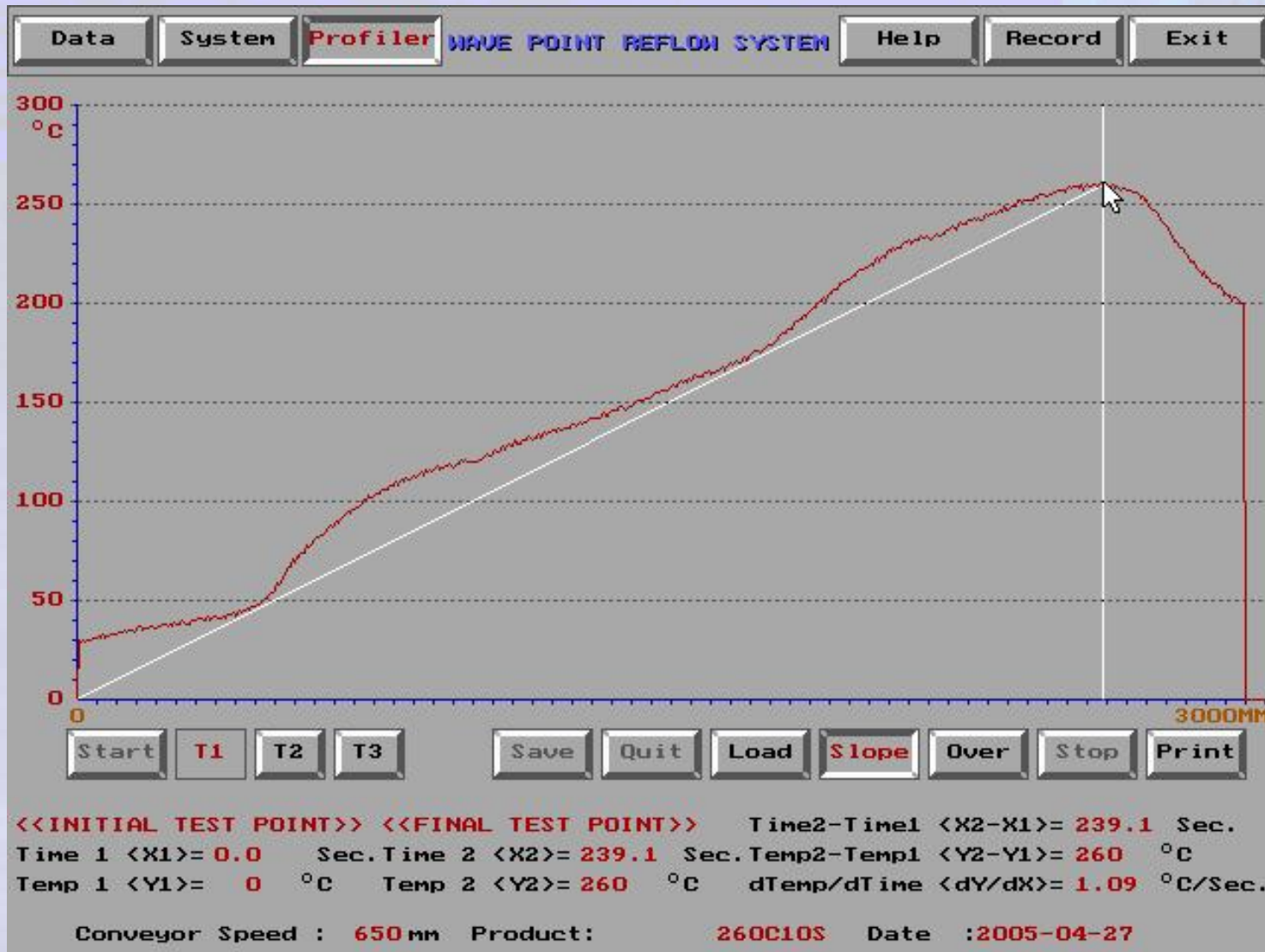
Over 217 °C Time 60~150sec



Peak Temp. Time 260+0/-5 °C /20~40sec



Max. Time from Room Temp. to Peak Temp is 8 min.



Test Report

CHANT SINCERE CO., LTD.
7F-2, NO. 188, SEC. 3, TA TUNG ROAD, HIS CHIH CITY,
TAIPEI HSIEN, TAIWAN, R. O. C.

Report No. : CE/2006/44761
Date : 2006/04/24
Page : 1 of 4

The following merchandise was (were) submitted and identified by the client as :

Type of Product : CHIP ANTENNA
Style/Item No : 920D
Sample Received : 2006/04/17
Testing Date : 2006/04/17 TO 2006/04/24

=====
Test Result : - Please see the next page -


Daniel Yeh, M.R. / Operation Manager
Signed for and on behalf of
SGS TAIWAN LTD.

Test Report

CHANT SINCERE CO., LTD.
7F-2, NO. 188, SEC. 3, TA TUNG ROAD, HIS CHIH CITY,
TAIPEI HSIEN, TAIWAN, R. O. C.

Report No. : CE/2006/44761
Date : 2006/04/24
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Test Result

PART NAME NO.1 : BLACK PLASTIC

Test Item (s):	Unit	Method	MDL	Result	Spec.
				No.1	
Monobromobiphenyl	%	With reference to USEPA3540C or USEPA3550C. Analysis was performed by HPLC/DAD, LC/MS or GC/MS. (prohibited by 2002/95/EC (RoHS), 83/264/EEC, and 76/769/EEC)	0.0005	N.D.	-
Dibromobiphenyl	%		0.0005	N.D.	-
Tribromobiphenyl	%		0.0005	N.D.	-
Tetrabromobiphenyl	%		0.0005	N.D.	-
Pentabromobiphenyl	%		0.0005	N.D.	-
Hexabromobiphenyl	%		0.0005	N.D.	-
Heptabromobiphenyl	%		0.0005	N.D.	-
Octabromobiphenyl	%		0.0005	N.D.	-
Nonabromobiphenyl	%		0.0005	N.D.	-
Decabromobiphenyl	%		0.0005	N.D.	-
Total PBBs (Polybrominated biphenyls)/Sum of above	%		-	N.D.	-
Monobromobiphenyl ether	%	With reference to USEPA3540C or USEPA3550C. Analysis was performed by HPLC/DAD, LC/MS or GC/MS. (prohibited by 2002/95/EC (RoHS), 83/264/EEC, and 76/769/EEC)	0.0005	N.D.	-
Dibromobiphenyl ether	%		0.0005	N.D.	-
Tribromobiphenyl ether	%		0.0005	N.D.	-
Tetrabromobiphenyl ether	%		0.0005	N.D.	-
Pentabromobiphenyl ether	%		0.0005	N.D.	-
Hexabromobiphenyl ether	%		0.0005	N.D.	-
Heptabromobiphenyl ether	%		0.0005	N.D.	-
Octabromobiphenyl ether	%		0.0005	N.D.	-
Nonabromobiphenyl ether	%		0.0005	N.D.	-
Decabromobiphenyl ether	%		0.0005	N.D.	-
Total PBBEs(PBDEs) (Polybrominated biphenyl ethers)/Sum of above	%		-	N.D.	-
Total of Mono to Nona-brominated biphenyl ether. (Note 4)	%		-	N.D.	-

Test Report

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7F-2, NO. 188, SEC. 3, TA TUNG ROAD, HIS CHIH CITY,
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Report No. : CE/2006/44761
Date : 2006/04/24
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PASS

Test Item (s):	Unit	Method	MDL	Result	Spec.
				No.1	
94/62/EC (Heavy metal content)					
Chromium VI (Cr+6)	ppm	UV-VIS(US EPA 7196A) after reference to US EPA 3060A.	2	N.D.	-
Cadmium (Cd)	ppm	ICP-AES after as per EN 1122, method B:2001 or other acid digestion.	2	N.D.	-
Lead (Pb)	ppm	ICP-AES after as per US EPA 3050B or other acid digestion.	2	N.D.	-
Mercury (Hg)	ppm	ICP-AES after as per US EPA 3052 or other acid digestion.	2	N.D.	-
Total Lead+Cadmium+Mercury+Chromium VI	ppm	Total Lead+Cadmium+Mercury+Chromium VI (94/62/EC)	-	N.D.	100

- NOTE: (1) N.D. = Not detected (<MDL)
 (2) ppm = mg/kg
 (3) MDL = Method Detection Limit
 (4) Decabromodiphenyl ether (DecaBDE) in polymeric applications is exempted by Commission Decision of 13 Oct 2005 amending Directive 2002/95/EC notified under document 2005/717/EC.
 (5) PBBEs=PBDEs=Polybrominated Diphenyl Ethers=PBDOs=PBBOs.
 (6) " - " = Not Regulation

Test Report

CHANT SINCERE CO., LTD.
7F-2, NO. 188, SEC. 3, TA TUNG ROAD, HIS CHIH CITY,
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Report No. : CE/2006/44761
Date : 2006/04/24
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Test Report


CHANT SINCERE CO., LTD.
7F-2, NO. 188, SEC. 3, TA TUNG ROAD, HIS CHIH CITY,
TAIPEI HSIEN, TAIWAN, R. O. C.

Report No. : CE/2006/44760
Date : 2006/04/24
Page : 1 of 12

The following merchandise was (were) submitted and identified by the client as :

Type of Product : CHIP ANTENNA
Style/Item No : 920D
Sample Received : 2006/04/17
Testing Date : 2006/04/17 TO 2006/04/24

=====
Test Result : - Please see the next page -


Daniel Yeh, M.R. / Operation Manager
Signed for and on behalf of
SGS TAIWAN LTD.

Test Report

CHANT SINCERE CO., LTD.
7F-2, NO. 188, SEC. 3, TA TUNG ROAD, HIS CHIH CITY,
TAIPEI HSIEN, TAIWAN, R. O. C.

Report No. : CE/2006/44760
Date : 2006/04/24
Page : 2 of 12

Test Result

PART NAME NO.1 : MIXED ALL PARTS

Test Item (s):	Unit	Method	MDL	Result
				No.1
CFC's(Chlorofluorocarbons)		With reference to US EPA 8260.		
Group I				
Chlorofluorocarbon-11(CAS No:000075-69-4)	ppm	Analysis was performed by GC/MS.(CFC's(Chlorofluorocarbons))	1	N.D.
Chlorofluorocarbon-12(CAS No:000075-71-8)	ppm	Analysis was performed by GC/MS. [CFC's (Chlorofluorocarbons)]	1	N.D.
Chlorofluorocarbon-113(CAS No:000076-13-1)	ppm	Analysis was performed by GC/MS. [CFC's (Chlorofluorocarbons)]	1	N.D.
Chlorofluorocarbon-114(CAS No:000076-14-2)	ppm	Analysis was performed by GC/MS. [CFC's (Chlorofluorocarbons)]	1	N.D.
Chlorofluorocarbon-115(CAS No:000076-15-3)	ppm	Analysis was performed by GC/MS. [CFC's (Chlorofluorocarbons)]	1	N.D.
Group III				
Chlorofluorocarbon-13(CAS No:000075-72-9)	ppm	Analysis was performed by GC/MS. [CFC's (Chlorofluorocarbons)]	1	N.D.
Chlorofluorocarbon-111(CAS No:000354-56-3)	ppm	Analysis was performed by GC/MS. [CFC's (Chlorofluorocarbons)]	1	N.D.
Chlorofluorocarbon-112(CAS No:000076-12-0)	ppm	Analysis was performed by GC/MS. [CFC's (Chlorofluorocarbons)]	1	N.D.
Chlorofluorocarbon-211(CAS No:135401-87-5)	ppm	Analysis was performed by GC/MS. [CFC's (Chlorofluorocarbons)]	1	N.D.

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Report No. : CE/2006/44760
Date : 2006/04/24
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Test Item (s):	Unit	Method	MDL	Result
				No.1
Chlorofluorocarbon-212(CAS No:076564-99-3)	ppm	Analysis was performed by GC/MS. [CFC's (Chlorofluorocarbons)]	1	N.D.
Chlorofluorocarbon-213(CAS No:060285-54-3)	ppm	Analysis was performed by GC/MS. [CFC's (Chlorofluorocarbons)]	1	N.D.
Chlorofluorocarbon-214(CAS No:002268-46-4)	ppm	Analysis was performed by GC/MS. [CFC's (Chlorofluorocarbons)]	1	N.D.
Chlorofluorocarbon-215(CAS No:000076-17-5)	ppm	Analysis was performed by GC/MS. [CFC's (Chlorofluorocarbons)]	1	N.D.
Chlorofluorocarbon-216(CAS No:001652-80-8)	ppm	Analysis was performed by GC/MS. [CFC's (Chlorofluorocarbons)]	1	N.D.
Chlorofluorocarbon-217(CAS No:000422-86-6)	ppm	Analysis was performed by GC/MS. [CFC's (Chlorofluorocarbons)]	1	N.D.

Test Item (s):	Unit	Method	MDL	Result
				No.1
Chlorinated Paraffin (C10~C13) (CAS NO:010871-26-2)	%	With reference to USEPA3540C or USEPA3550C. Analysis was performed by GC/MS or GC/ECD.	0.01	N.D.

Test Item (s):	Unit	Method	MDL	Result
				No.1
1,1,1-trichloroethane	ppm	With reference to US EPA 8260. Analysis was performed by GC/MS.	1	N.D.

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Report No. : CE/2006/44760
Date : 2006/04/24
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Test Item (s):	Unit	Method	MDL	Result
				No.1
Carbon tetrachloride	ppm	With reference to US EPA 8260. Analysis was performed by GC/MS linked Headspace.	1	N.D.

Test Item (s):	Unit	Method	MDL	Result
				No.1
Halon		With reference to US EPA 8260.		
Halon-1211(CAS No:000353-59-3)	ppm	Analysis was performed by GC/MS.	1	N.D.
Halon-1301(CAS No:000075-63-8)	ppm	Analysis was performed by GC/MS.	1	N.D.
Halon-2402(CAS No:000124-73-1)	ppm	Analysis was performed by GC/MS.	1	N.D.

Test Item (s):	Unit	Method	MDL	Result
				No.1
HCFC's(Hydrogenated chlorofluorocarbons)		With reference to US EPA 8260.		
Hydrochlorofluorocarbon-21(CAS No.:000075-43-4)	ppm	Analysis was performed by GC/MS. [HCFC's (Hydrogenated chlorofluorocarbons)]	1	N.D.
Hydrochlorofluorocarbon-22(CAS No.:000075-45-6)	ppm	Analysis was performed by GC/MS. [HCFC's (Hydrogenated chlorofluorocarbons)]	1	N.D.
Hydrochlorofluorocarbon-31(CAS No.:000593-70-4)	ppm	Analysis was performed by GC/MS. [HCFC's (Hydrogenated chlorofluorocarbons)]	1	N.D.
Hydrochlorofluorocarbon-121(CAS No.:000354-14-3)	ppm	Analysis was performed by GC/MS. [HCFC's (Hydrogenated chlorofluorocarbons)]	1	N.D.

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				No.1
Hydrochlorofluorocarbon-122(CAS No.:000354-21-2)	ppm	Analysis was performed by GC/MS. [HCFC's (Hydrogenated chlorofluorocarbons)]	1	N.D.
Hydrochlorofluorocarbon-123(CAS No.:000306-83-1)	ppm	Analysis was performed by GC/MS. [HCFC's (Hydrogenated chlorofluorocarbons)]	1	N.D.
Hydrochlorofluorocarbon-124(CAS No.:002837-89-0)	ppm	Analysis was performed by GC/MS. [HCFC's (Hydrogenated chlorofluorocarbons)]	1	N.D.
Hydrochlorofluorocarbon-131(CAS No.:000359-28-4)	ppm	Analysis was performed by GC/MS. [HCFC's (Hydrogenated chlorofluorocarbons)]	1	N.D.
Hydrochlorofluorocarbon-132b(CAS No.:000471-43-2)	ppm	Analysis was performed by GC/MS. [HCFC's (Hydrogenated chlorofluorocarbons)]	1	N.D.
Hydrochlorofluorocarbon-133a(CAS No.:000075-88-7)	ppm	Analysis was performed by GC/MS. [HCFC's (Hydrogenated chlorofluorocarbons)]	1	N.D.
Hydrochlorofluorocarbon-141b(CAS No.:001717-00-6)	ppm	Analysis was performed by GC/MS. [HCFC's (Hydrogenated chlorofluorocarbons)]	1	N.D.
Hydrochlorofluorocarbon-221	ppm	Analysis was performed by GC/MS. [HCFC's (Hydrogenated chlorofluorocarbons)]	1	N.D.

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Test Item (s):	Unit	Method	MDL	Result
				No.1
Hydrochlorofluorocarbon-222(CAS No.:000422-30-0)	ppm	Analysis was performed by GC/MS. [HCFC's (Hydrogenated chlorofluorocarbons)]	1	N.D.
Hydrochlorofluorocarbon-223	ppm	Analysis was performed by GC/MS. [HCFC's (Hydrogenated chlorofluorocarbons)]	1	N.D.
Hydrochlorofluorocarbon-224	ppm	Analysis was performed by GC/MS. [HCFC's (Hydrogenated chlorofluorocarbons)]	1	N.D.
Hydrochlorofluorocarbon-225ca(CAS No.:000422-56-0)	ppm	Analysis was performed by GC/MS. [HCFC's (Hydrogenated chlorofluorocarbons)]	1	N.D.
Hydrochlorofluorocarbon-225cb(CAS No.:000507-55-1)	ppm	Analysis was performed by GC/MS. [HCFC's (Hydrogenated chlorofluorocarbons)]	1	N.D.
Hydrochlorofluorocarbon-226(CAS No.:000431-87-8)	ppm	Analysis was performed by GC/MS. [HCFC's (Hydrogenated chlorofluorocarbons)]	1	N.D.
Hydrochlorofluorocarbon-231	ppm	Analysis was performed by GC/MS. [HCFC's (Hydrogenated chlorofluorocarbons)]	1	N.D.
Hydrochlorofluorocarbon-232	ppm	Analysis was performed by GC/MS. [HCFC's (Hydrogenated chlorofluorocarbons)]	1	N.D.

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Test Item (s):	Unit	Method	MDL	Result
				No.1
Hydrochlorofluorocarbon-233	ppm	Analysis was performed by GC/MS. [HCFC's (Hydrogenated chlorofluorocarbons)]	1	N.D.
Hydrochlorofluorocarbon-234	ppm	Analysis was performed by GC/MS. [HCFC's (Hydrogenated chlorofluorocarbons)]	1	N.D.
Hydrochlorofluorocarbon-235(CAS No.:013838-16-9)	ppm	Analysis was performed by GC/MS. [HCFC's (Hydrogenated chlorofluorocarbons)]	1	N.D.
Hydrochlorofluorocarbon-241	ppm	Analysis was performed by GC/MS. [HCFC's (Hydrogenated chlorofluorocarbons)]	1	N.D.
Hydrochlorofluorocarbon-242	ppm	Analysis was performed by GC/MS. [HCFC's (Hydrogenated chlorofluorocarbons)]	1	N.D.
Hydrochlorofluorocarbon-243(CAS No.:000338-75-0)	ppm	Analysis was performed by GC/MS. [HCFC's (Hydrogenated chlorofluorocarbons)]	1	N.D.
Hydrochlorofluorocarbon-244	ppm	Analysis was performed by GC/MS. [HCFC's (Hydrogenated chlorofluorocarbons)]	1	N.D.
Hydrochlorofluorocarbon-251	ppm	Analysis was performed by GC/MS. [HCFC's (Hydrogenated chlorofluorocarbons)]	1	N.D.

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Test Item (s):	Unit	Method	MDL	Result
				No.1
Hydrochlorofluorocarbon-252	ppm	Analysis was performed by GC/MS. [HCFC's (Hydrogenated chlorofluorocarbons)]	1	N.D.
Hydrochlorofluorocarbon-253(CAS No.:000354-06-1)	ppm	Analysis was performed by GC/MS. [HCFC's (Hydrogenated chlorofluorocarbons)]	1	N.D.
Hydrochlorofluorocarbon-261(CAS No.:000420-97-3)	ppm	Analysis was performed by GC/MS. [HCFC's (Hydrogenated chlorofluorocarbons)]	1	N.D.
Hydrochlorofluorocarbon-262(CAS No.:000420-97-3)	ppm	Analysis was performed by GC/MS. [HCFC's (Hydrogenated chlorofluorocarbons)]	1	N.D.
Hydrochlorofluorocarbon-271	ppm	Analysis was performed by GC/MS. [HCFC's (Hydrogenated chlorofluorocarbons)]	1	N.D.

Test Item (s):	Unit	Method	MDL	Result
				No.1
PCBs(Polychlorinated Biphenyls)(CAS NO:001336-36-3)	ppm	With reference to USEPA 8082A. Analysis was performed by GC/MS or GC/ECD.	0.5	N.D.

Test Item (s):	Unit	Method	MDL	Result
				No.1
Polychlorinated Naphthalene	ppm	With reference to 83/264/EEC & EPA 8270D. Analysis was performed by GC/MS.	5	N.D.

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Test Item (s):	Unit	Method	MDL	Result
				No.1
Halogen		As per EN14582 method B.		
Halogen-Chlorine (Cl)(CAS No:007782-50-5)	ppm	Filling the oxygen and absorb solution in the flask and take sample in the flask and burn it, the absorb solution was analyzed by IC method.	50	N.D.
Halogen-Fluorine (F)(CAS No:007782-41-4)	ppm	Filling the oxygen and absorb solution in the flask and take sample in the flask and burn it, the absorb solution was analyzed by IC method.	50	1960.0
Halogen-Bromine (Br)(CAS No:007726-95-6)	ppm	Filling the oxygen and absorb solution in the flask and take sample in the flask and burn it, the absorb solution was analyzed by IC method.	50	36390.0
Halogen-Iodine (I)(CAS No:007553-56-2)	ppm	Filling the oxygen and absorb solution in the flask and take sample in the flask and burn it, the absorb solution was analyzed by IC method.	50	N.D.

Test Item (s):	Unit	Method	MDL	Result
				No.1
PVC (CAS No:9002-86-2)	%	With reference to ASTM E1252 method. Analysis was performed by FTIR/ATR and Pyrolyzer-GC/MS.	1	Negative

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Test Item (s):	Unit	Method	MDL	Result
				No.1
PCTs(Polychlorinated Terphenyls)	ppm	With reference to USEPA 8082A. Analysis was performed by GC/MS or GC/ECD.	0.5	N.D.

Test Item (s):	Unit	Method	MDL	Result
				No.1
Monobromobiphenyl	%	With reference to USEPA3540C or USEPA3550C. Analysis was performed by HPLC/DAD, LC/MS or GC/MS. (prohibited by 2002/95/EC (RoHS), 83/264/EEC, and 76/769/EEC)	0.0005	N.D.
Dibromobiphenyl	%		0.0005	N.D.
Tribromobiphenyl	%		0.0005	N.D.
Tetrabromobiphenyl	%		0.0005	N.D.
Pentabromobiphenyl	%		0.0005	N.D.
Hexabromobiphenyl	%		0.0005	N.D.
Heptabromobiphenyl	%		0.0005	N.D.
Octabromobiphenyl	%		0.0005	N.D.
Nonabromobiphenyl	%		0.0005	N.D.
Decabromobiphenyl	%		0.0005	N.D.
Total PBBs (Polybrominated biphenyls)/Sum of above	%		-	N.D.
Monobromobiphenyl ether	%	With reference to USEPA3540C or USEPA3550C. Analysis was performed by HPLC/DAD, LC/MS or GC/MS. (prohibited by 2002/95/EC (RoHS), 83/264/EEC, and 76/769/EEC)	0.0005	N.D.
Dibromobiphenyl ether	%		0.0005	N.D.
Tribromobiphenyl ether	%		0.0005	N.D.
Tetrabromobiphenyl ether	%		0.0005	N.D.
Pentabromobiphenyl ether	%		0.0005	N.D.
Hexabromobiphenyl ether	%		0.0005	N.D.
Heptabromobiphenyl ether	%		0.0005	N.D.
Octabromobiphenyl ether	%		0.0005	N.D.
Nonabromobiphenyl ether	%		0.0005	N.D.
Decabromobiphenyl ether	%		0.0005	N.D.
Total PBBEs(PBDEs) (Polybrominated biphenyl ethers)/Sum of above	%		-	N.D.
Total of Mono to Nona-brominated biphenyl ether. (Note 4)	%		-	N.D.

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Test Item (s):	Unit	Method	MDL	Result
				No.1
Chromium VI (Cr+6)	ppm	UV-VIS(US EPA 7196A) after reference to US EPA 3060A.	2	N.D.
Cadmium (Cd)	ppm	ICP-AES after reference to EN 1122, method B:2001 or other acid digestion.	2	N.D.
Mercury (Hg)	ppm	ICP-AES after reference to US EPA 3052 or other acid digestion.	2	N.D.
Lead (Pb)	ppm	ICP-AES after reference to US EPA 3050B or other acid digestion.	2	8.3

- NOTE: (1) N.D. = Not detected (<MDL)
 (2) ppm = mg/kg
 (3) MDL = Method Detection Limit
 (4) Decabromobiphenyl ether (DecaBDE) in polymeric applications is exempted by
 Commission Decision of 13 Oct 2005 amending Directive 2002/95/EC notified
 under document 2005/717/EC.
 (5) PBBEs=PBDEs=Polybrominated Diphenyl Ethers=PBDOs=PBBOs.
 (6) " - " = Not Regulation
 (7) The MDL is 5ppm for the single compound of CP

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