Specification For Approval

Date: 2014 / 04/ 09

File No.: 140409002

Version: 1.0

Customer： 盛達電業股份有限公司

Customer P/N： **AAZANDHS2AN0727600**

INVAX P/N： **AN0727-64DP5BSM**

Description： **Antenna**

Cortec Checked By:	R@D Dept 2014.04.09 Jack; 海達電子有限公司 工程課 承認章
Customer Approved By:	

INVAX System Technology Corp.
4F. No. 815.Chung Hsiao East Rd.,Sec.5
Taipei, TAIWAN

TEL:886-2-2788-5218 FAX:886-2-2783-1658
http://www.invaxsystem.com

Cortec Technology Inc.
Xian-Xi Industrial, Sha-Tou Administration Zone,
Chang-An Town, Dong-Guan City, Guangdong
Province, China
TEL:86-769-85388261 FAX:86-769-85317869
http://www.cortec.com.cn

Index:

3. Revision History

Revision	Date	Change Notification	Description
1.0			

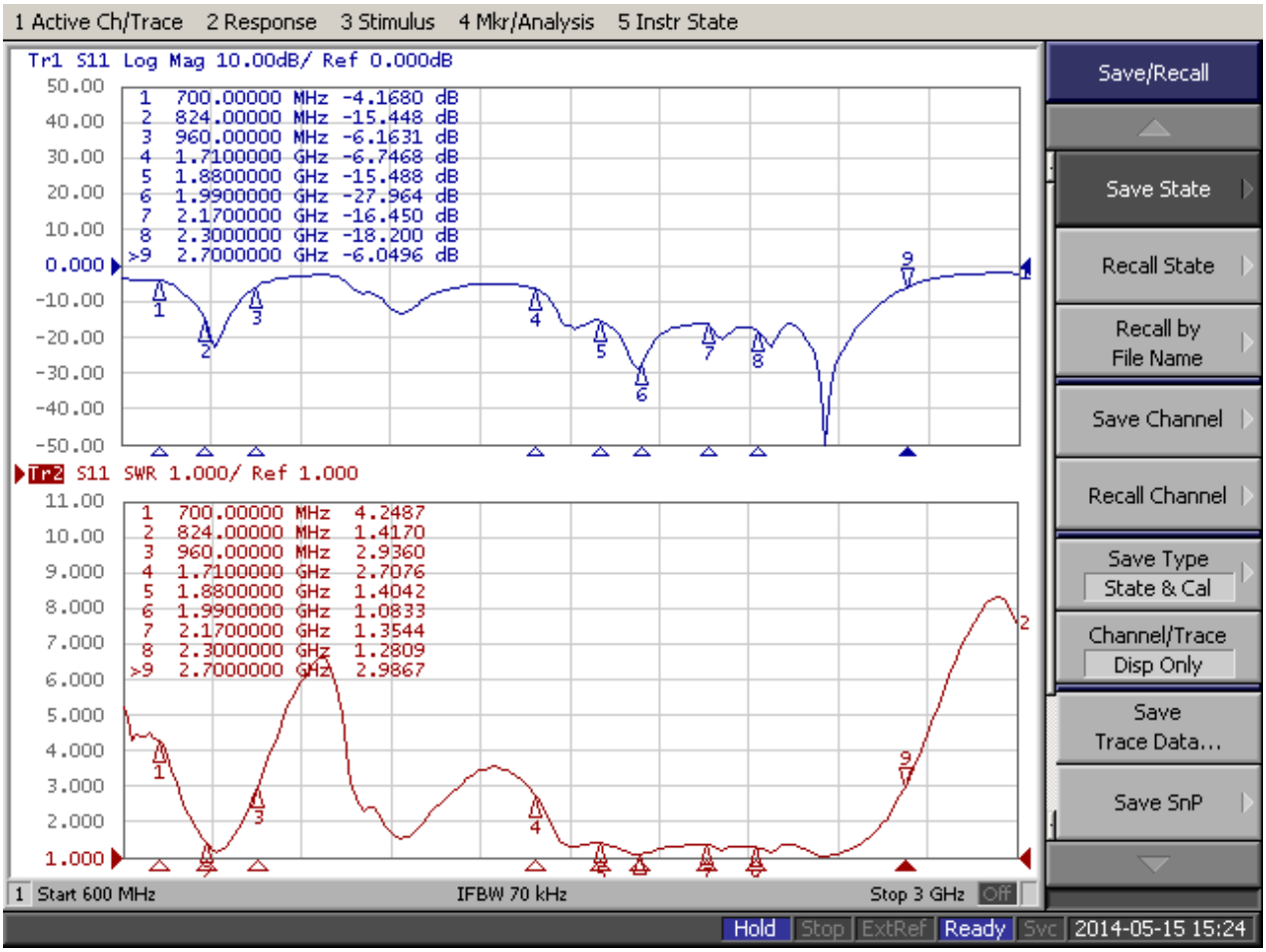
4. S pecification

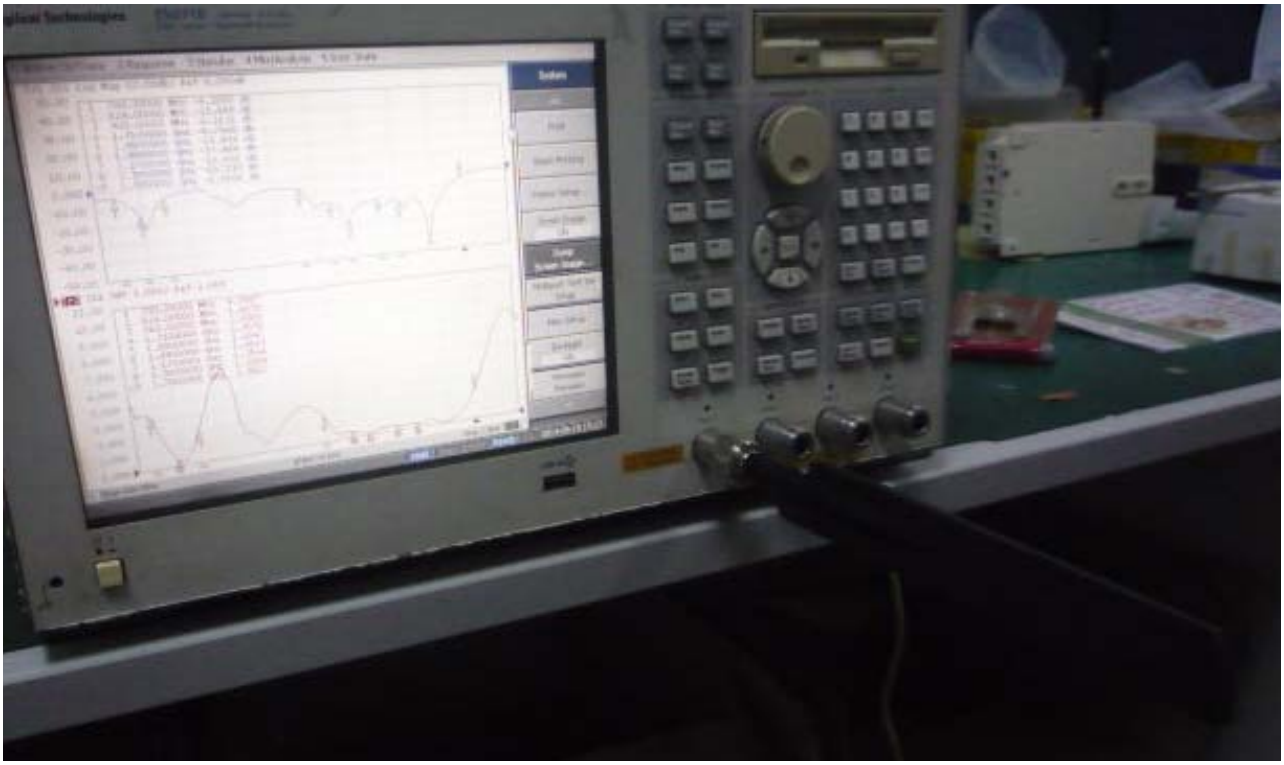
Sample Photo	
	
A. Electrical Characteristics	
Frequency	700 ~ 960 MHz 1710 ~ 2700 MHz
S.W.R.	<= 2.0 @ 824 MHz <= 2.0 @ 1880 ~ 2300 MHz
Antenna Gain	0.5 ± 0.5dBi @ 700 ~ 960 MHz 2.0 ± 0.7dBi @ 1710 ~ 2700 MHz
Efficiency (%)	40 % @ 700 ~ 960 MHz 76% @ 1710 ~ 2700 MHz
Polarization Linear	
Impedance	50 Ohm
B. Material & Mechanical Characteristics	
Material of Radiator	Cu
Material of Plastic	BODY: ABS HINGE:ABS
Cable Type	RG-178U-03
Connecter Type	SMA Male
C. Environmental	
Operation Temperature	- 40 ℃ ~ + 65 ℃
Storage Temperature	- 40 ℃ ~ + 80 ℃
Antenna Color Storage life	< 2 year

5. Characteristics and Reliability Test

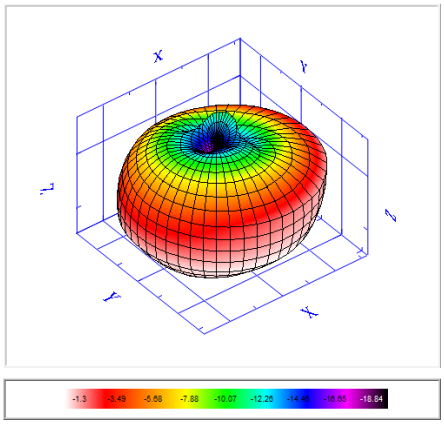
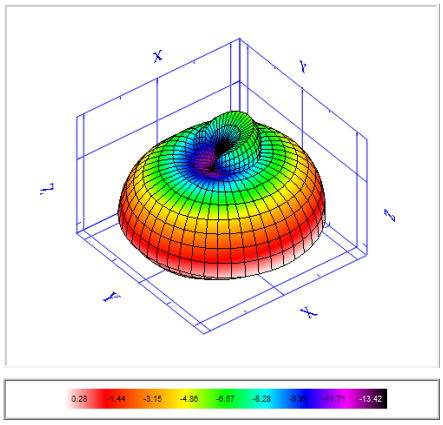
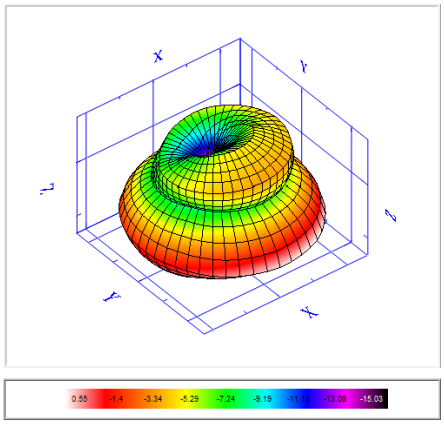
Test Items		Test Condition and Procedure	Requirements
C1	S.W.R.	Set DUT on Network Analyzer; make individual calibration to test	Directive DUT specification
C2	Antenna Gain	Set DUT on Antenna Chamber; make individual calibration to test	Directive DUT specification
M1	Vibration	GB / T2423 . 48-1997 Amplitude: 0.03 inch (1.5mm); Freq: 20 to 80 to 20 Hz 3 directions; 2 hours for each direction	1. No Visual Damage 2. Frequency Tol.<= 5%
M2	Random Drop	GB / T2423.8-1995 Height: 1.0 Meter; 3 directions; 1 time for each direction	1. No parts separated 2. Frequency Tol.<= 5%
M3	Solderability	GB 2423 . 28- 82 Solder iron: 260±5°C; Duration: 5 seconds	1. Mounted on PCB 2. No Visual Damage
M4	Terminal-Pull Test	Holding with individual specification; force applied to axis of terminal	1. Directive DUT specification 2. Frequency Tol.<= 5%
M5	Terminal-Torque Test	Holding with individual specification; applied clockwise and counterclockwise to the axis of terminal	1. Directive DUT specification 2. Frequency Tol.<= 5%
M6	Dimension	Inspection of dimension, color, material, package, surface process	Directive DUT specification
E1	Salt Spray	GB / T 2423 . 17- 93 Temp: 35°C; RH: >= 95%; NaCl solution: >= 5%; Time: 24 hours	After 2 Hours Recovery 1. No Visual Damage 2. Frequency Tol.<= 5%
E2	Humidity	GB / T 2423 . 4 - 93 Temp: 80°C / 12 H; -40°C / 12H RH: >= 90%; Time: 24 hours	After 2 Hours Recovery 1. No Visual Damage 2. Frequency Tol.<= 5%
E3	Thermal Shock	GB / T 2423 . 22 - 87 1 Cycle: - 40°C (30 minutes) to + 80°C (30 minutes) Cycles: 24	After 2 Hours Recovery 1. No Visual Damage 2. Frequency Tol.<= 5%
E4	Life (High Temp.)	GB /T 2423 . 2 - 89 Temp: 80°C; Time: 24 hours	After 2 Hours Recovery 1. No Visual Damage 2. Frequency Tol.<= 5%
R1	RoHS	With Reference to IEC 62321:2008 with flow chart	Directive RoHS 2011/65/EU
R2	PFOS	With Reference to USA EPA 3540C:1996 by LC/MS	Directive RoHS 2006/122/EC
R3	PFOA	With Reference to USA EPA 3540C:1996 by LC/MS	Directive RoHS 2006/122/EC

6. Antenna - S Parameter Test Data

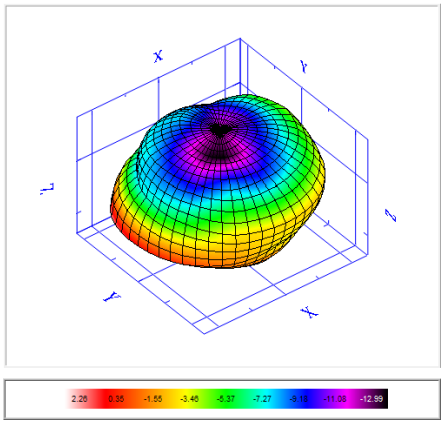
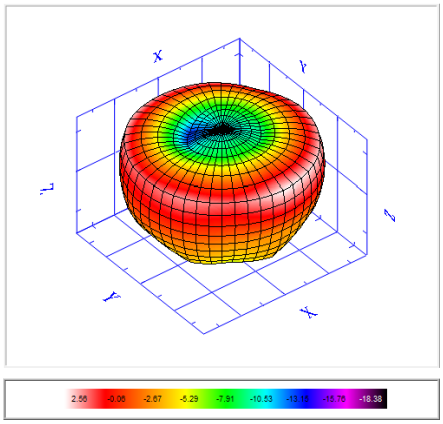
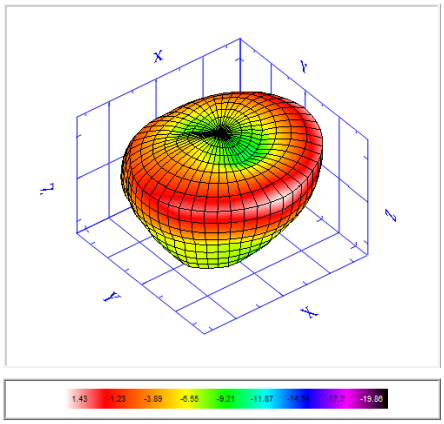




7. Antenna - Radiation Pattern Test Data

704 MHZ	824 MHZ	960 MHZ
		

Frequency	704	824	880	960
TRP (dBm)	-4.86	-3.74	-3.45	-3.65
Peak EIRP (dBm)	-1.3	0.28	0.71	0.55
NHPRP +/- 45 (degree)	-4.57	-3.5	-3.23	-3.41
NHPRP +/- 30 (degree)	-5.58	-4.79	-4.53	-4.97
E-Theta Peak Gain (dBi)	-7.42	-6.32	-5.78	-5.7
E-Phi Peak Gain (dBi)	-1.73	0.01	0.51	0.34
E-Total Peak Gain (dBi)	-1.3	0.28	0.71	0.55
Directivity (dBi)	3.56	4.02	4.16	4.2
Efficiency (%)	32.69	42.28	45.19	43.14

1710 MHZ	2200 MHZ	2700 MHZ
		

Frequency	1710	1880	1990	2000	2100	2200	2300	2400	2500	2600	2700
TRP (dBm)	-1.35	-1.09	-0.64	-0.63	-0.55	-0.63	-1.49	-1.76	-0.79	-1.33	-3.33
Peak EIRP (dBm)	2.26	0.64	1.38	1.52	2.32	2.56	1.22	2.38	3.7	3	1.43
NHPRP +/- 45 (degree)	-1.22	-1.36	-1	-1	-0.93	-1.08	-1.81	-2.06	-1.07	-1.73	-4.09
NHPRP +/- 30 (degree)	-2.77	-1.87	-1.22	-1.21	-1.08	-1.2	-2.48	-2.37	-1.13	-1.68	-3.98
E-Theta Peak Gain (dBi)	-7.6	-11.2	-13.9	-14.1	-12.8	-10.3	-9.71	-8.94	-8.18	-11.3	-13.4
E-Phi Peak Gain (dBi)	2.25	0.62	1.36	1.51	2.29	2.55	1.17	2.34	3.68	3	1.42
E-Total Peak Gain (dBi)	2.26	0.64	1.38	1.52	2.32	2.56	1.22	2.38	3.7	3	1.43
Directivity (dBi)	3.61	1.73	2.02	2.16	2.88	3.19	2.7	4.14	4.49	4.33	4.77
Efficiency (%)	73.24	77.8	86.31	86.43	88.07	86.49	71.01	66.74	83.37	73.7	46.43

8. Mechanical Drawing

See attached files

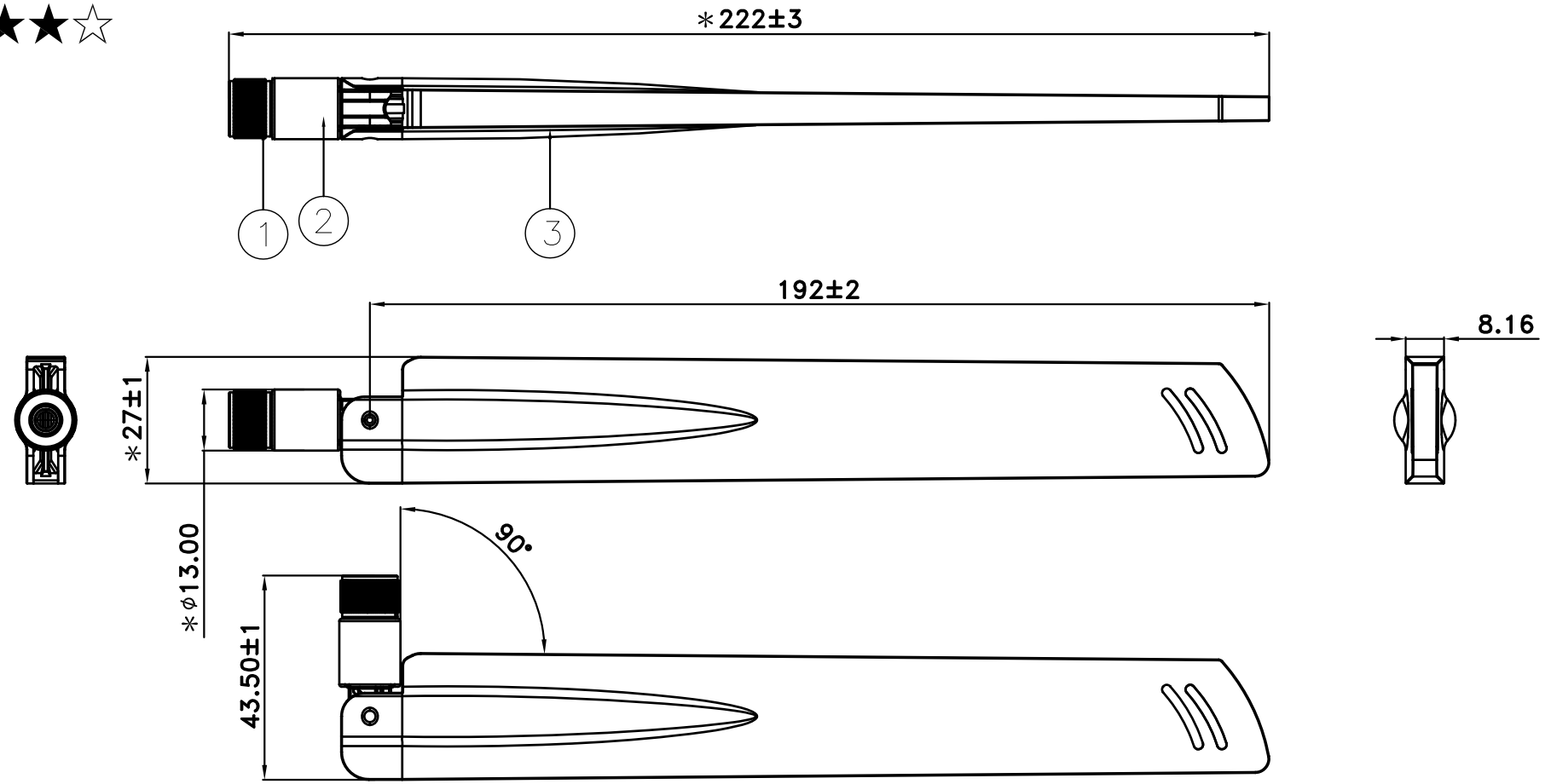
9. Material Description and RoHS Test Report

See attached files

RoHS Compatible

★★★★☆

SIGN	DATE	DESCRIPTION	APPROVER
A			
B			
C			



Note:
1.Take" ＊ "is the important dimension.
2.Tolerance:Unmarked tolerance refer to the standard tolerance please.

No.	Part Number	Name	Material	Finish	Q'ty
3	AN64D-P5-01B	Body	ABS	Black	1
2	Hinge-AN67-01B	Hinge	ABS	Black	1
1	SMA207-CCT5AN19-A	SMA公頭公針	Cu	Black	1

Invax System Group.
Cortec
Cortec Technology Inc.
Http://www.invaxsystem.com Tel:886-2-27885218
E-mail:info@invax.com.tw Fax:886-2-27831658

TITLE: AN64D Type LTE Antenna

PART NO.: AN0727-64DP5BSM | CUSTOMER P/N: /

APP BY	CHK BY	RF BY	DES BY	
Grant 2013/12/03	Jack 2013/12/03	SiFei 2013/12/03	LJHUA 2013/12/03	UNITS: mm SCALE: / REVISION: A

Tolerance
X.X ±0.5
X.XX ±0.2
X° ±1

Invax System Group.

Cortec

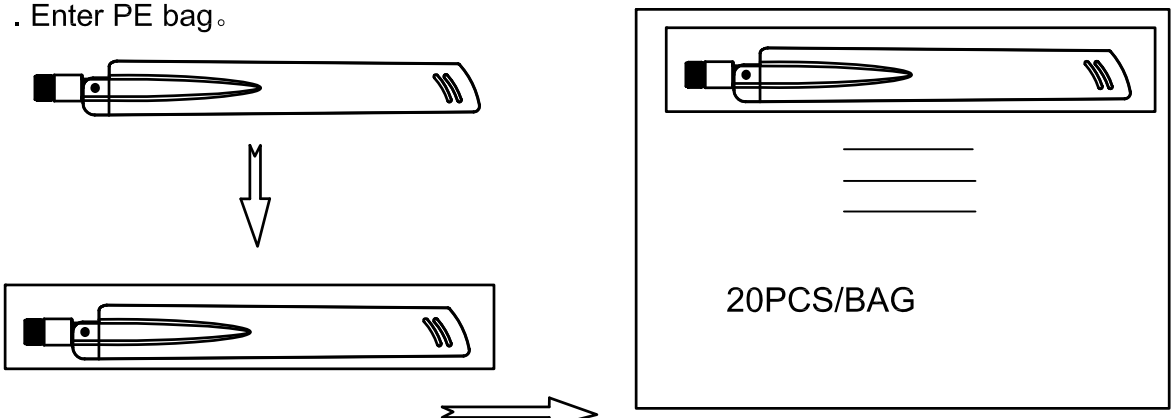
產品包裝規範
PACKING CRITERION

★★★★☆

Date: 2014.04.09

Part Number : AN0727-67DP5BSM	Revision : A
Name: 700~960MHZ/1710~2700MHz Antenna	Customer :

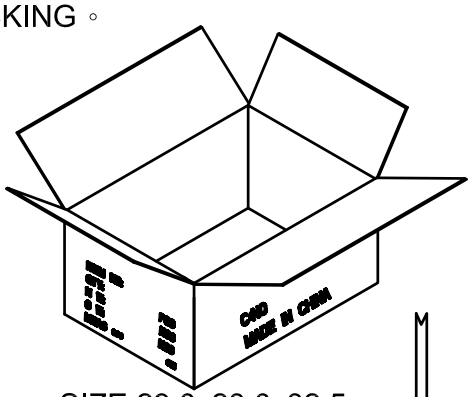
1 . Enter PE bag。



R-STI-BAG-25040

R-PE-BAG-310290

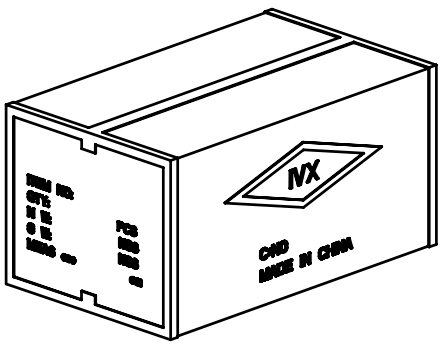
2.PACKING。

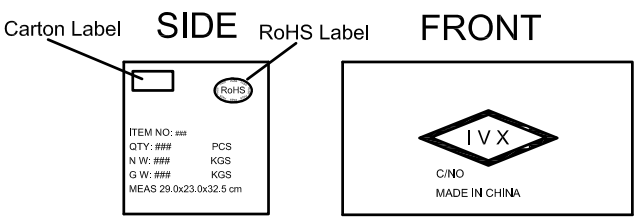


SIZE:29.0x23.0x32.5cm
300PCS/BOX

Cardboard :2pcs/BOX

3 . SEALING。





APPROVED BY： Grant　CHECKED BY： Jack　DESIGNED BY： LJHUA

SGS 台灣網站 → http://twap.sgs.com/sgsrsts/chn/cheres_tw.asp
SGS 大陸網站 → http://rsts.cn.sgs.com/chn/cheres_cn.asp
SGS 韓國網站 → http://rohs.kr.sgs.com/sgsrsts/en/cheres_en.asp

請輸入以下報告正確資料及檢查碼以便查核
1. 報告編號
2. 報告日期 (YYYY/MM/DD)
3. 產品名稱 (輸入前 10 個字不含空白)
4. 圖示檢查碼 (依指示畫面)

COR/F-G-47a

康捷電子有限公司	
填表：	時麗
部門：	研發部
職務：	文員

物料中HSF對象物質含量調查表

物料名稱： AN0727-64DP5BSM

序號	物料型號	物料各構成名稱	各構成物料的材質	測試報告裡RoHS對應物質測試結果						檢測報告編號	測試日期	測試名稱	測試機構名稱
				Cd	Pb	Hg	Cr(VI)	PBBs	PBDEs				
1	Hinge-AN67-01B	Hinge	ABS	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	10044908 034	2014.01.02	ABS-757	TuvRheinland
2	AN64D-P5-01B	Body	ABS	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	10044908 034	2014.01.02	ABS-757	TuvRheinland
3	SMA207-CCT5AN19-A	SMA Male	銅	60	31000	N.D.	Negative			CE/2013/73960	2013.07.25	REECUTTINGBRASSBA	SGS

根據測試報告如實填寫鉛、鎘、汞、六價鉻、PBBs和PBDEs六項禁用物質的含量

包裝材料中鉛、鎘、汞、六價鉻總含量不超過100ppm，鎘的允許濃度爲5ppm

歐盟ROHS指令豁免條款2009/95/BC、钢中合金元素中的铅含量达0.35%、铝含量达0.4%、铜合金中的铅含量达4%

Prüfbericht - Nr.: 10044908 034

Test Report No.:

Auftraggeber: *Client:*	Chi Mei Corporation 59-1, San Chia, Jen Te, Tainan City 71702, Taiwan, R.O.C.
Gegenstand der Prüfung: *Test Item:*	ACRYLONITRILE-BUTADIENE-STYRENE COPOLYMER
Bezeichnung: *Identification:*	POLYLAC® PA-757 / Nature
Anlieferungszustand: *Delivery condition:*	apparent good
Eingangsdatum: *Date of Receipt:*	2013-12-16
Prüfort: *Testing location:*	TÜV Rheinland Hong Kong Ltd.
Prüfgrundlage: *Test specification:*	According to RoHS (recast): Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment, 2011/65/EU: Total Content of Lead, Cadmium, Mercury, Chromium VI, Polybrominated Biphenyls, Polybrominated Diphenyl Ethers
Prüfergebnis: *Test result:*	According to the kind and extend of tests performed the above mentioned test item passed the test specification.

geprüft: *tested by:*

Datum *Date*	Name/Stellung *Name/Position*	Unterschrift *Signature*
2014-01-02	Anne Chen /Coordinator	

kontrolliert: *checked by:*

Datum *Date*	Name/Stellung *Name/Position*	Unterschrift *Signature*
2014-01-02	Carl Chang /Department Manager	

Sonstiges/ *Other Aspects:*

Test period: 2013-12-16 – 2014-01-02

Abkürzungen:				*Abbreviations:*			
	ok / P	=	*entspricht Prüfgrundlage*		*ok / P*	=	*passed*
	fail / F	=	*entspricht nicht Prüfgrundlage*		*fail / F*	=	*failed*
	n.a. / N	=	*nicht anwendbar*		*n.a. / N*	=	*not applicable*

TÜV Rheinland Taiwan Ltd. Softlines
4F., No.758, Sec. 4, Bade Rd., Songshan Dist., Taipei 105, Taiwan, R.O.C.
Tel.:+886 2 2172-7000 Fax: +886 2 2528-0018
Mail: service-gc@tuv.com · Web: www.twn.tuv.com

TÜV Rheinland Taiwan Ltd. Chemical Laboratory

Test Report No. : 10044908 034 2014-01-02
Customer : Chi Mei Corporation
Test Method : Cd, Pb, Hg, Cr VI, PBB/PBDE – determination with reference to EN 62321:2009

Sample Material Lab.-No.		LoD	POLYLAC® PA-757 / Nature plastic / light yellow TCL131216-39
Cadmium (Cd)	mg/kg	2	n.d.
Lead (Pb)	mg/kg	2	n.d.
Mercury (Hg)	mg/kg	2	n.d.
Chromium VI (Cr VI)	mg/kg	2	n.d.
PBBs	mg/kg	10	n.d.
PBDEs	mg/kg	10	n.d.

Notes:
- n.d. - not detected
- n.a. - not applicable
- LoD - Limit of Detection
- mg/kg is equal to ppm (parts per million)

	Cd	Cr(VI)	Pb	Hg	PBBs	PBDEs
Maximum permissible Limit acc. to 2011/65/EU (mg/kg)	100	1000	1000	1000	1000	1000

Test Sample

--- End of Test-Report ---

TÜV Rheinland Taiwan Ltd. Chemical Laboratory TÜVRheinland®

測試報告
Test Report

號碼(No.) : CE/2013/73960　　日期(Date) : 2013/07/25　　頁數(Page): 1 of 4

宮前五金股份有限公司
KUON CHEN HARDWARE CO., LTD.
桃園縣龜山鄉頂湖一街24號
NO. 24, DINGHU 1ST ST, GUISHAN SHIANG, TAOYUAN COUNTY 333, TAIWAN (R. O. C.)

以下測試樣品係由申請廠商所提供及確認 (The following sample(s) was/were submitted and identified by/on behalf of the applicant as):

送樣廠商(Sample Submitted By)	:	宮前五金股份有限公司 (KUON CHEN HARDWARE CO., LTD.)
樣品名稱(Sample Description)	:	FREE CUTTING BRASS BAR
樣品型號(Style/Item No.)	:	C3604
收件日期(Sample Receiving Date)	:	2013/07/19
測試期間(Testing Period)	:	2013/07/19 TO 2013/07/25

==========

測試需求(Test Requested) : 依據客戶要求, 參考RoHS 2011/65/EU Annex II 指令進行鎘, 鉛, 汞, 六價鉻測試. (As specified by client, with reference to RoHS Directive 2011/65/EU Annex II to determine Cadmium, Lead, Mercury, Cr(VI) contents in the submitted sample.)

測試方法(Test Method) : 參考IEC 62321: 2008方法 / With reference to IEC 62321: 2008.

測試結果(Test Results) : 請見下一頁 (Please refer to next pages).

Nicole Chien / Supervisor
Signed for and on behalf of
SGS TAIWAN LTD.
Chemical Laboratory - Taipei

測試報告
Test Report

號碼(No.) : CE/2013/73960　　日期(Date) : 2013/07/25　　頁數(Page): 2 of 4

宮前五金股份有限公司
KUON CHEN HARDWARE CO., LTD.
桃園縣龜山鄉頂湖一街24號
NO. 24, DINGHU 1ST ST, GUISHAN SHIANG, TAOYUAN COUNTY 333, TAIWAN (R. O. C.)

測試結果(Test Results)

測試部位(PART NAME)No.1　：　銅色金屬 (COPPER COLORED METAL)

測試項目 (Test Items)	單位 (Unit)	測試方法 (Method)	方法偵測極限值 (MDL)	結果 (Result) No.1
鎘 / Cadmium (Cd)	mg/kg	參考IEC 62321: 2008方法, 以感應耦合電漿原子發射光譜儀檢測. / With reference to IEC 62321: 2008 and performed by ICP-AES.	2	60
鉛 / Lead (Pb)	mg/kg		2	31000
汞 / Mercury (Hg)	mg/kg		2	n.d.
六價鉻 / Hexavalent Chromium Cr(VI)	**	參考IEC 62321: 2008方法, 以沸水萃取法檢測. / With reference to IEC 62321: 2008 and performed by Boiling water extraction Method.#	#	Negative

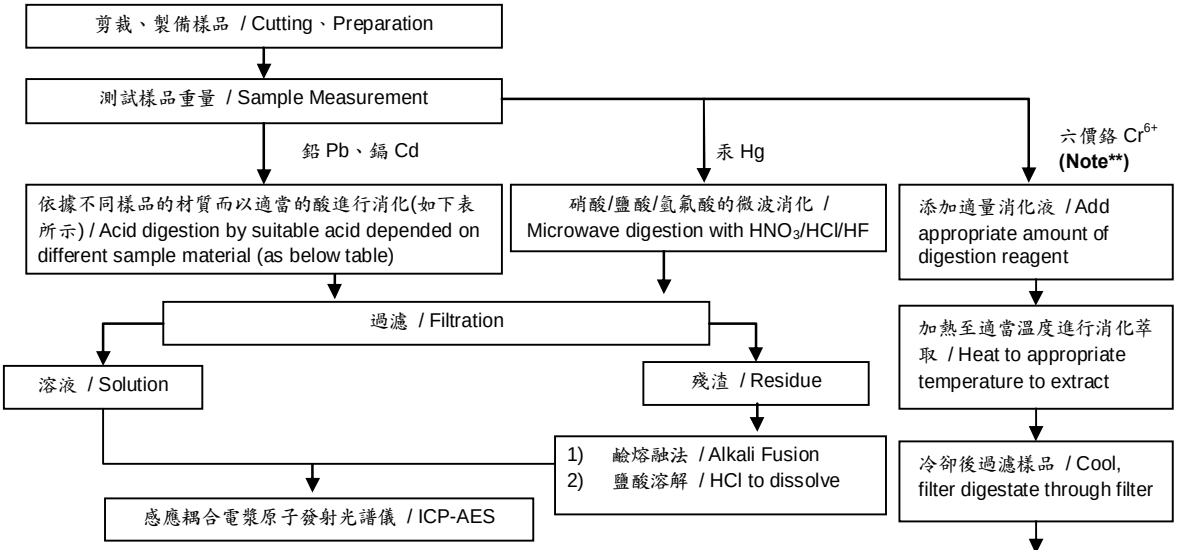
備註(Note):

1. mg/kg = ppm；0.1wt% = 1000ppm
2. n.d. = Not Detected (未檢出)
3. MDL = Method Detection Limit (方法偵測極限值)
4. **= Qualitative analysis (No Unit) 定性分析(無單位)
5. # = a. Positive means the presence of CrVI on the tested areas
   (Positive表示測試區域偵測到六價鉻)
   b. Negative means the absence of CrVI on the tested areas
   (Negative表示測試區域未偵測到六價鉻)
   The detected concentration in boiling-water-extraction solution is equal or greater than 0.02 mg/kg with 50 cm^2 tested areas. / 該溶液濃度≧0.02 mg/kg with 50 cm^2 (tested areas)

測試報告
Test Report

宮前五金股份有限公司
KUON CHEN HARDWARE CO., LTD.
桃園縣龜山鄉頂湖一街24號
NO. 24, DINGHU 1ST ST, GUISHAN SHIANG, TAOYUAN COUNTY 333, TAIWAN (R. O. C.)

1) 根據以下的流程圖之條件，樣品已完全溶解。(六價鉻測試方法除外) / These samples were dissolved totally by pre-conditioning method according to below flow chart.（Cr^{6+} test method excluded）
2) 測試人員：楊登偉 / Name of the person who made measurement: Climbgreat Yang
3) 測試負責人：張啓興 / Name of the person in charge of measurement: Troy Chang



樣品材質 / Sample Material	消化酸液種類 / Digestion Acid
鋼，銅，鋁，焊錫 / Steel, copper, aluminum, solder	王水，硝酸，鹽酸，氫氟酸，雙氧水 / Aqua regia, HNO_3, HCl, HF, H_2O_2
玻璃 / Glass	硝酸,氫氟酸 / HNO_3/HF
金，鉑，鈀，陶瓷 / Gold, platinum, palladium, ceramic	王水 / Aqua regia
銀 / Silver	硝酸 / HNO_3
塑膠 / Plastic	硫酸，雙氧水，硝酸，鹽酸 / H_2SO_4, H_2O_2, HNO_3, HCl
其他 / Others	加入適當的試劑至完全溶解 / Added appropriate reagent to total digestion

Note:** (1) 針對非金屬材料加入鹼性消化液，加熱至 90~95℃ 萃取. / For non-metallic material, add alkaline digestion reagent and heat to 90~95℃.
(2) 針對金屬材料加入純水，加熱至沸騰萃取. / For metallic material, add pure water and heat to boiling.

測試報告
Test Report

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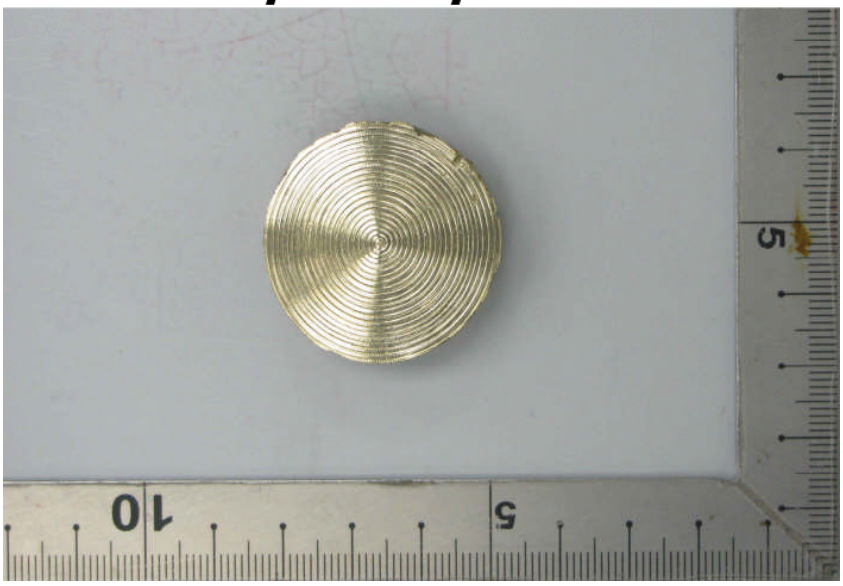
宮前五金股份有限公司
KUON CHEN HARDWARE CO., LTD.
桃園縣龜山鄉頂湖一街24號
NO. 24, DINGHU 1ST ST, GUISHAN SHIANG, TAOYUAN COUNTY 333, TAIWAN (R. O. C.)

*** 照片中如有箭頭標示，則表示爲實際檢測之樣品/部位. ***
(The tested sample / part is marked by an arrow if it's shown on the photo.)

CE/2013/73960



** 報告結尾 (End of Report) **