

# Specification For Approval

Date: 2014 / 12 / 24

File No.: 141224009

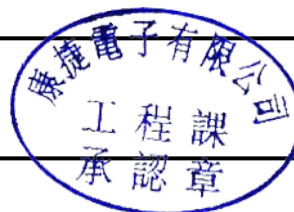
Version: 1.0


Customer : 盛達電業股份有限公司

Customer P/N : /

INVAX P/N : AN2600-5002BSM

Description : Antenna



Cortec Checked By:	
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:**

- 1. Revision History / Page 3**
- 2. Specification / Page 4**
- 3. Characteristics and Reliability Test / Page 5 ~ 6**
- 4. Antenna - S Parameter Test Data / Page 7**
- 5. Antenna - Radiation Pattern Test Data / Page 8**
- 6. Mechanical and Packing Drawing / Page 9 ~ 10**
- 7. Material Description and RoHS Test Report / Page 11 ~ end**

Product Number: AN2600-5002BSM

Product Name: Antenna



## 1. Revision History

Revision	Date	Change Notification	Description
1.0			

Product Number: AN2600-5002BSM

Product Name: Antenna



## 2. Specification

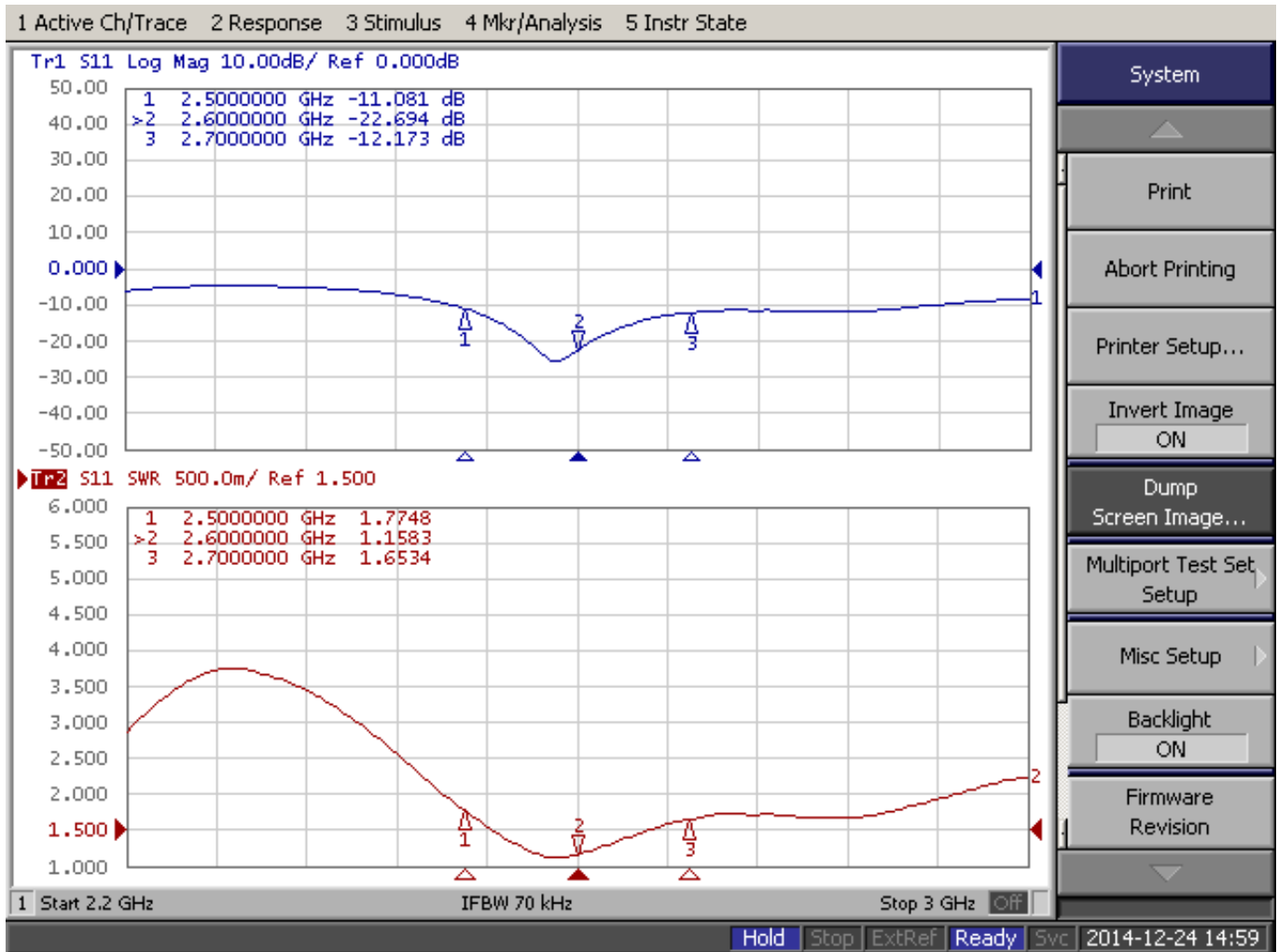
Sample Photo	
	
A. Electrical Characteristics	
Frequency	2500 ~ 2700 MHz
S.W.R.	<= 2.0
Peak Gain	4.15dBi
Polarization	Linear
Impedance	50 Ohm
B. Material & Mechanical Characteristics	
Material of Radiator	Cu
Material of Plastic	TPEE / ABS
Cable Type	RG-178
Connector Type	SMA Male
C. Environmental	
Operation Temperature	- 40 °C ~ + 65 °C
Storage Temperature	- 40 °C ~ + 80 °C
Antenna Color Storage life	< 2 year

### 3. Characteristics and Reliability Test

Test Items 測試項目		Test Condition and Procedure 測試方法	Requirements 要求	Result 結果
C1	V.S.W.R. 電壓駐波比	Set DUT on Network Analyzer; make individual calibration to test 設置網路分析儀參數進行測試	Directive DUT specification 符合待測物規範	OK
C2	Insertion Loss 插入損失	Set DUT on Network Analyzer; make individual calibration to test 設置網路分析儀參數進行測試	Directive DUT specification 符合待測物規範	N/A
C3	Antenna Gain 天線增益	Set DUT on Antenna Chamber; make individual calibration to test 設置天線暗室參數進行測試	Directive DUT specification 符合待測物規範	OK
C4	Voltage Breakdown 耐電壓	Test voltage should be applied between insulated portions, or between ground as specified. 在絕緣部分測試電壓,或指定接地面之間	Max Voltage $\geq$ 500 V or directive material specification 最大電壓 $\geq$ 500V 或符合材料規範	N/A
C5	Insulation Resistance 絕緣阻抗	Set Voltage: 500 $\pm$ 50V; between the insulated portions, or between ground as specified. 設置電壓 500 $\pm$ 50V,在絕緣部份測試或指定接地面之間	Resistance $\geq$ 500 M ohm or directive material specification 阻抗 $\geq$ 500M ohm 或符合材料規範	N/A
C6	Contact Resistance 接觸阻抗	Air Temp: 26°C; measured with test equipment 室溫 26°C, 指定量測設備	Directive material specification 符合材料規範	N/A
M1	Vibration 震動	GB / T2423.48-2008 Amplitude: 0.03 inch (1.5mm); Freq: 20 to 80 to 20 Hz 3 directions; 2 hours for each direction 振幅 1.5mm ; 頻率 20~80~20Hz ; 3 個方向各 2H	1. No Visual Damage 2. Frequency Tol. $\leq$ 5% 無明顯外觀不良; 頻率偏移 $\leq$ 5%	OK
M2	Random Drop 跌落	GB / T2423.8-1995 Single : Height: 1.0 Meter; 3 directions; 1 time for each direction 單支天線, 高 1m ; 3 個方向各 1 次	1. No parts separated · fracture 2. Frequency Tol. $\leq$ 5% 產品無脫落、斷裂; 頻率偏移 $\leq$ 5%	OK
		Packing : Height: 0.76 Meter; 1 corner, 3 edges, 6 surface 包裝 : 高 0.76m , 一角、三棱、六面各一次		OK
		Antenna+Machine: Height: 0.76 Meter; 1 corner, 3 edges, 6 surface. 整機 : 高 0.76m , 一角、三棱、六面各一次	N/A	

M3	Solderability 可焊性	GB / T2423.28-2005 Temp: 260±5° C;Duration: 5 seconds 溫度 260±5° C;持續 5 秒	Tin evenly on full 上錫均勻飽滿	N/A
M4	Pull Test 拉力	Holding with individual specification; force applied to axis of terminal .單獨定義產品端子拉力	1. Directive DUT specification 2. Frequency Tol.≤5% 符合待測物規範;頻率偏移≤5%	OK
M5	Torque Test 扭力	Holding with individual specification; applied clockwise and counterclockwise to the axis of terminal 單獨定義產品端子之順時針及逆時針扭力	1. Directive DUT specification 2. Frequency Tol.≤ 5% 符合待測物規範;頻率偏移≤5%	OK
M6	Dimension 尺寸	Inspection of dimension, color, material, package, surface process.檢查尺寸,顏色,材料,包裝,表面處理	Directive DUT specification 符合待測物規範	OK
E1	Waterproof 防水	With Reference to IEC 60529 // IP Code Definition 參考 IEC60529 IP 定義	Directive DUT specification 符合待測物規範	N/A
E2	Salt Spray 鹽霧	GB / T 2423.17-2008 Temp: 35°C; RH: ≥ 95%; NaCl solution: ≥ 5%;Time: 24H 溫度 35°C ; 濕度≥95%;鹽水濃度≥5% ; 測試 24H	1. No Visual Damage 2. Frequency Tol.≤5% 無明顯外觀不良;頻率偏移≤5%	OK
E3	Temperature and Humidity Chamber 恒溫恒濕	GB / T 2423.3-2006 Temp: 80°C / 12 H; -40°C / 12H RH: ≥ 90%; Time: 24H 溫度 80°C 測試 12H 轉-40°C 測試 12H; 濕度≥ 90% ; 時間 24H	After 2 Hours Recovery 1. No Visual Damage 2. Frequency Tol.≤5% 恢復 2H 后, 無明顯外觀不良;頻率偏移≤5%	OK
E4	Thermal Shock 冷熱衝擊	GB / T 2423.22 - 2008 - 40°C (30 minutes) to + 80°C (30 minutes) ; Cycles: 24 - 40°C 測試 30 分轉 80°C 測試 30 分爲一個週期; 共 24 週期	After 2 Hours Recovery 1. No Visual Damage 2. Frequency Tol.≤5% 恢復 2H 后, 無明顯外觀不良;頻率偏移≤5%	N/A
E5	Aging test 老化	GB / T 2423.2 - 2008 Temp: 80°C; Time: 24 hours 溫度 80°C , 測試 24H	After 2 Hours Recovery 1. No Visual Damage 2. Frequency Tol.≤5% 無明顯外觀不良;頻率偏移≤5%	OK
E6	High Temp. 高溫	Temp. 270±10°C ; Times : 120 seconds 溫度 270±10°C , 測試時間 120 秒	No Visual Damage 無明顯外觀不良	N/A
R1	RoHS	With Reference to IEC 62321:2008 with flow chart 參考 IEC 62321 測試流程	Directive RoHS 2011/65/EU 符合 RoHS 2011/65/EU 標準	OK
R2	PFOS	With Reference to USA EPA 3550C:1996 by LC/MS 參考 USA EPA 3550C 測試流程	Directive RoHS 2006/122/EC 符合 RoHS 2011/65/EU 標準	OK

### 4. Antenna - S Parameter Test Data

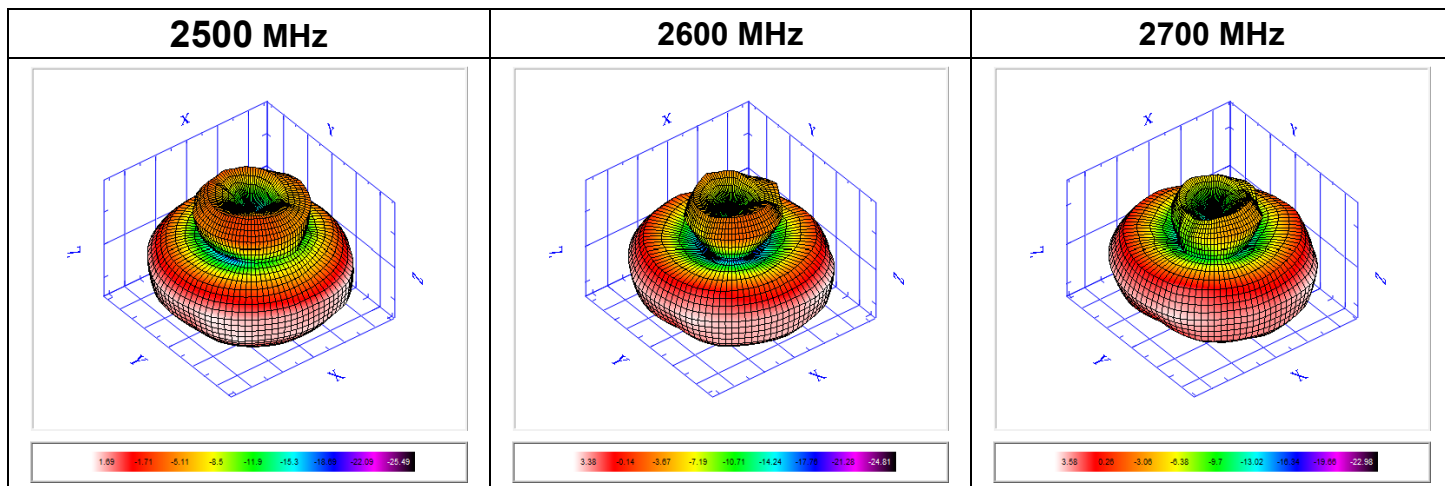


Product Number: AN2600-5002BSM

Product Name: Antenna



### 5. Antenna - Radiation Pattern Test Data



Frequency	2500	2520	2540	2560	2580	2600	2620	2640	2660	2680	2700
TRP (dBm)	-2.46	-2.8	-2.59	-2.39	-2.08	-1.72	-1.6	-1.31	-1.42	-1.51	-1.72
Peak EIRP (dBm)	1.69	1.56	1.82	2.32	2.88	3.38	3.55	4.15	3.8	3.77	3.58
NHPRP +/- 45 (degree)	-2.75	-3.07	-2.86	-2.65	-2.3	-1.92	-1.78	-1.51	-1.64	-1.7	-1.89
NHPRP +/- 30 (degree)	-3.33	-3.55	-3.29	-3.04	-2.63	-2.24	-2.07	-1.78	-1.93	-1.98	-2.15
E-Theta Peak Gain (dBi)	-16.67	-17.49	-17.26	-16.45	-15.46	-15.39	-15.67	-15.19	-14.67	-14.12	-14.09
E-Phi Peak Gain (dBi)	1.69	1.55	1.8	2.3	2.84	3.35	3.54	4.14	3.78	3.76	3.54
E-Total Peak Gain (dBi)	1.69	1.56	1.82	2.32	2.88	3.38	3.55	4.15	3.8	3.77	3.58
Directivity (dBi)	4.15	4.37	4.41	4.72	4.96	5.11	5.15	5.46	5.22	5.28	5.3
Efficiency (%)	56.69	52.44	55.07	57.61	62	67.24	69.24	73.96	72.09	70.71	67.28

### 6. Mechanical Drawing

See attached files

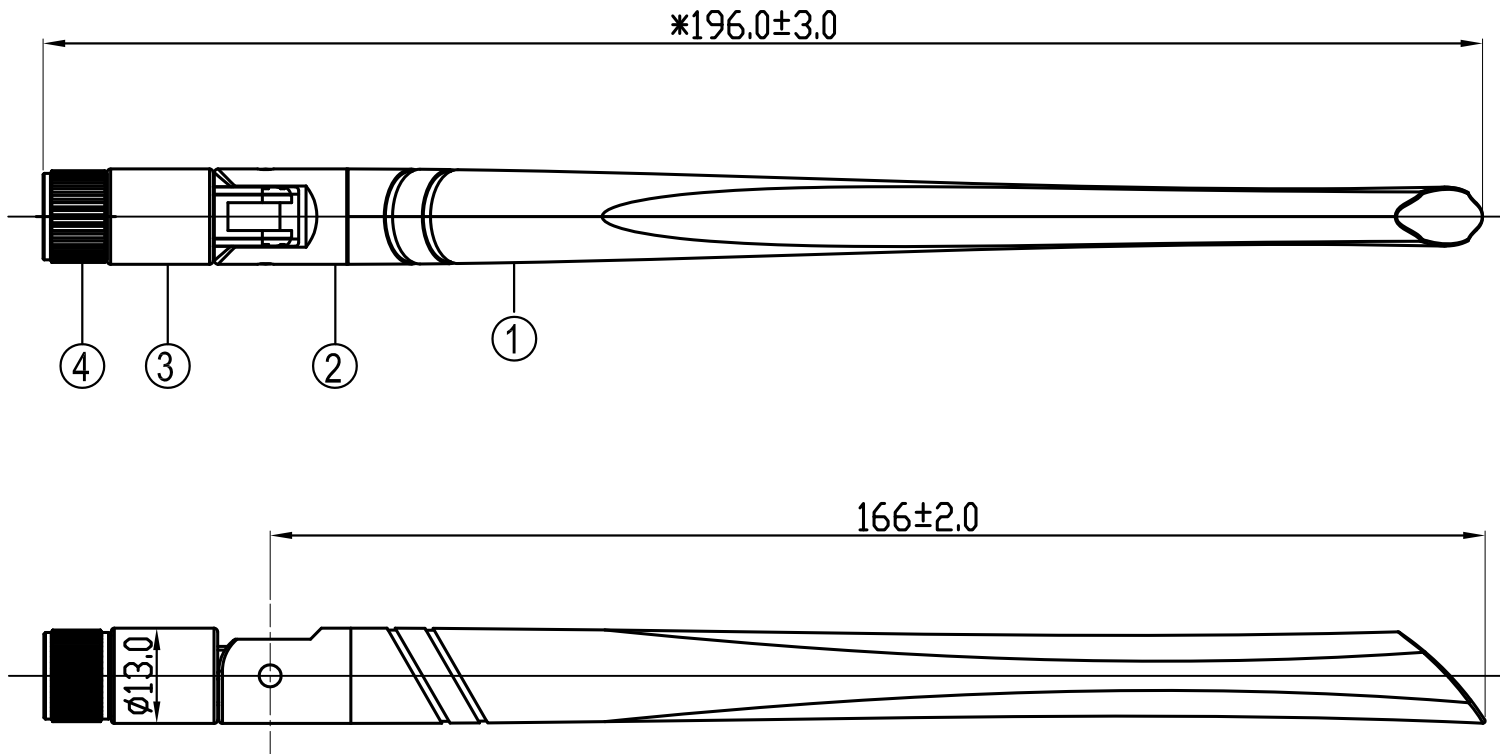
### 7. Material Description and RoHS Test Report

See attached files



# RoHS

Compatible



SIGN	DATE	DESCRIPTION	APPROVER
△			
△			
△			

4	SMA194-CCT5AN19-C	SMA公頭公針	Cu	電著	1
3	AN0304-T07B	連接頭	ABS	Black	1
2	AN9201-06B	連接筒	ABS	Black	1
1	BODY-AN50-01B	天線塑膠外套	TPEE	Black	1
No.	Part Number	Description	Material	Finished	Q'ty

*Invax System Group.*

**Cortec** *Cortec Technology Inc.*

Http://www.invaxsystem.com  
E-mail:info@invax.com.tw Tel:886-2-27885218  
Fax:886-2-27831658

TITLE: 2.5~2.7GHz ANTENNA

PART NO.: AN2600-5002BSM      CUSTOMER P/N: /

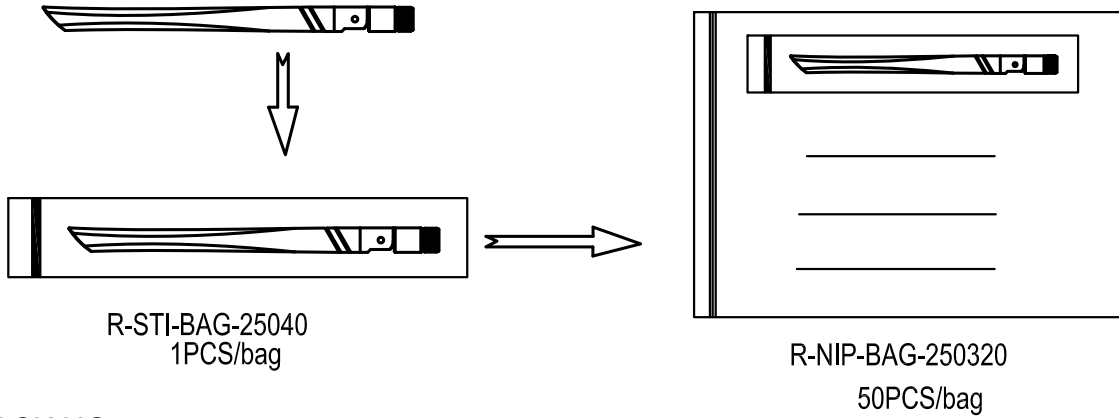
APP BY	CHK BY	RF BY	DES BY		Tolerance
Grant	Jack		ZGR		X.X ±0.3
2014.12.25	2014.12.25		2014.12.25		X.XX ±0.2
					X° ±1

UNITS: mm  
SCALE: 1/1  
REVISION: A

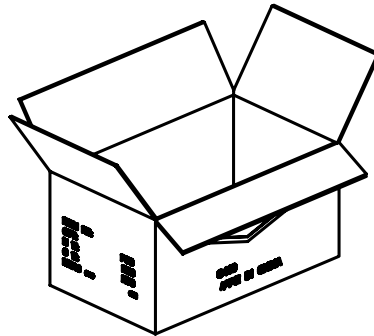
Date: 2014.12.25

Part Number : AN2600-5002BSM	Revision : A
Name: 2.5~2.7GHz ANTENNA	Customer : All

### 1. Enter OPP bag ◦

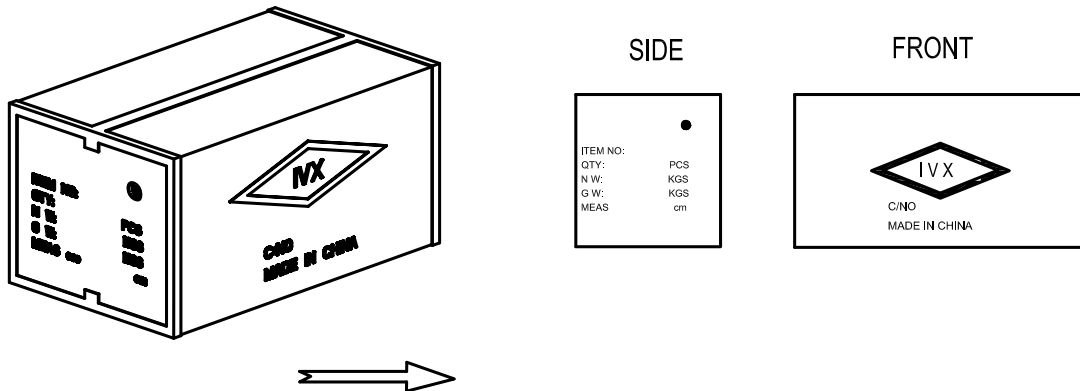


### 2. PACKING ◦



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

### 3. SEALING ◦



APPROVED BY : Grant

CHECKED BY : Jack

DESIGNED BY : ZGR

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)



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：AN2600-5002BSM

序號	物料型號	物料各構成名稱	各構成物料的材料	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	BODY-AN50-01B	Body1	TPEE	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	GZHG1403005664OT	2014.03.13	TPEE 63D	SGS
2	AN9201-06B	Body3	ABS	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	10044908 034	2014.01.02	ABS-757	TuvRheinland
3	AN0304-T07B	Body2	ABS	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	10044908 034	2014.01.02	ABS-757	TuvRheinland
4	ASM-T6821-H6850 AN92-14 R-AN123009	Tube	銅	N.D.	4	N.D.	Negative	N.D.	N.D.	SHAEC1402624401	2014.03.01	BRASS TUBE .	SGS
5	SP-1260894-CM	Spring	銅	N.D.	4	N.D.	Negative	N.D.	N.D.	SHAEC1402624401	2014.03.01	BRASS TUBE .	SGS
6	R-HSTUBE-008N	HSTUBE	EVA	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	CANEC1402540003	2014.03.13	HEAT SHRINKABLE TUBING(BK)	SGS
7	AN20-39	EVA	EVA	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	CANEC1403710103	2014.03.28	EVA+gum.	SGS
8	R-AN225010P	Plug	PTFE	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	CANEC1319461023 A01	2014.03.25	TEFLON ROD	SGS
9	R-RG-178U-03	RG178	FEP	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	ECL02G000368001E	2014.09.05	电线电缆料	CTI
10			PTFE	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	ECL02G000368002E	2014.09.05	电线电缆料	CTI
11			鍍銀銅絲	N.D.	N.D.	N.D.	Negative			SHAEC1407373515 A01	2014.05.13	SILVER-COATED	SGS
12			鍍錫銅	N.D.	12 mg/kg	N.D.	Negative			RHS06F003892002E	2013.12.20	鍍錫銅線	CTI
13	SMA194-CCT5AN19-C	SMA Male	銅	36	26662	N.D.	Negative			CANEC1408043401	2014.05.30	C3604 Copper bar	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，鎘的允許濃度為5ppm

歐盟ROHS指令豁免條款2009/95/BC、鋼中合金元素中的鉛含量達0.35%、鋁含量達0.4%、銅合金中的鉛含量達4%