



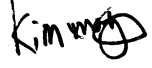


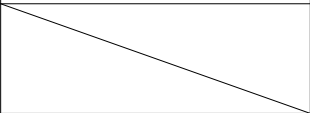


# APPROVAL SHEET

고객명			
업체명	RIC CO., LTD.		
제품명	2.4GHz Wi-Fi ANTENNA		
모델명	RIC-WAT-24001053-UFL050		
고객 P/N			
Maker Code			
제출일자	2018년 5월 30일		
제품사진			
	가로 105mm 세로 9.5mm 케이블 50mm		
	담당	검토	승인
회로			
	경원현 / 소장	김준배 / 이사	
기구			
	김명호 / 책임	방성일 / 이사	
품질			
	황미정 / 주임		장문기 / 대표

본사/연구소 : 충북 청주시 상당구 종고개로 254, 3층  
 TEL : 043)215-8520 / FAX : 043)215-8525

Part No	
Maker Code	RIC-WAT-24001053-UFL
Date(제출일)	2018.05.30
Page	1

Model	Type	Rev	RIC	1.1
	2.4GHz WiFi ANTENNA			

## 목 차

1. 제품사양 변경 이력 .....	2
1.1 승인원 이력 LIST .....	2
2. 회로 사항 .....	3
2.1 전기적 요구사항 .....	3
2.1.1 전기적 요구 사항 .....	3
2.1.2 Jig 전기적 사양(정재파비 포함) .....	5
2.1.3 복사 패턴 .....	7
2.1.4 안테나 이득 .....	7
2.2 시험조건 .....	9
2.2.1 시험환경(조건/방법) .....	9
2.2.2 시험 장비 .....	9
3. 기구사항 .....	10
3.1 기구적 요구 사항 .....	10
3.1.1 기구도면 .....	10
3.1.2 포장사양 및 도면 .....	11
4. 품질사항 .....	15
4.1 시험 요구 사항 .....	15
4.1.1 치수 .....	17
4.1.2 열충격 .....	18
4.1.3 고온 고습 .....	19
4.1.4 고온 저장 .....	20
4.1.5 저온 저장 .....	21
4.1.6 염수 분무 .....	22
4.1.7 도금사양서 .....	24
4.1.8 LOT 체계도 .....	25
4.1.9 공급사 출하 검사 성적서 .....	26
4.1.10 제품 보관 기준 .....	27
4.2 제조공정도 .....	28

Part No	
Maker Code	RIC-WAT-24001053-UFL
Date(제출일)	2018.05.30
Page	2

Model	Type	Rev	RIC	1.1
	2.4GHz WiFi ANTENNA			

1. 제품사양 변경 이력

1.1 승인원 이력 LIST

승인원 이력 LIST								
NO	REV	LG INNOTEK REV	개정 전 REV(날짜)	개정 전 REV(날짜)	상세개정 및 변경내용	수량	요청부서	진행단계
1	00	A		2015-05-11	본 승인용	50EA	개발구매	
2	01	A		2018-04-08	도면치수 일부변경			
3								
4								
5								
6								
7								
8								
9								
10								

Part No	
Maker Code	RIC-WAT-24001053-UFL
Date(제출일)	2018.05.30
Page	3

Model	Type	Rev	RIC	1.1
	2.4GHz WiFi ANTENNA			

## 2. 회로 사항

### 2.1 전기적 요구사항

#### 2.1.1 전기적 요구 사항

안테나는 전기적 사양에 명시되어 있는 정재파비 요구 사항을 만족해야 한다.

전기적 특성			
주파수 (Frequency Range)	WiFi		
	2400MHz	2440MHz	2480MHz
정재파(V.S.W.R)	2.5 이하	2.5 이하	2.5이하
이득 (Peak GAIN)	3.04dBi 이하	2.96dBi 이하	3.12dBi 이하
이득 (Peak GAIN) H-Plane	-3.46dBi 이상	-3.89dBi 이상	-3.76dBi 이상
공칭 임피던스	50 ohms		
편파	수직		
복사 패턴	OMNI DIRECTIONAL		
최대 입력 전력	1W		

Part No	
Maker Code	RIC-WAT-24001053-UFL
Date(제출일)	2018.05.30
Page	4

Model	Type	Rev	RIC	1.1
	2.4GHz WiFi ANTENNA			

- 장비 연결 측정

구 분	WiFi		
	2400MHz	2440MHz	2480MHz
정재파비(V.S.W.R)	2.5이하	2.5이하	2.5이하



-전기적 특성 VSWR



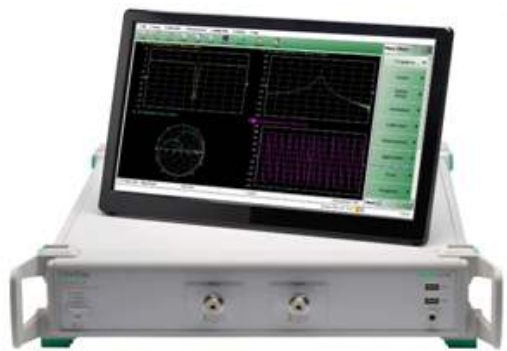
Part No	
Maker Code	RIC-WAT-24001053-UFL
Date(제출일)	2018.05.30
Page	5

Model	Type	Rev	RIC	1.1
	2.4GHz WiFi ANTENNA			

### 2.1.2 Jig 전기적 사양(정재파비 포함)

양산 JIG는 다음과 같은 주파수 한도 요구 사항을 만족해야 한다.

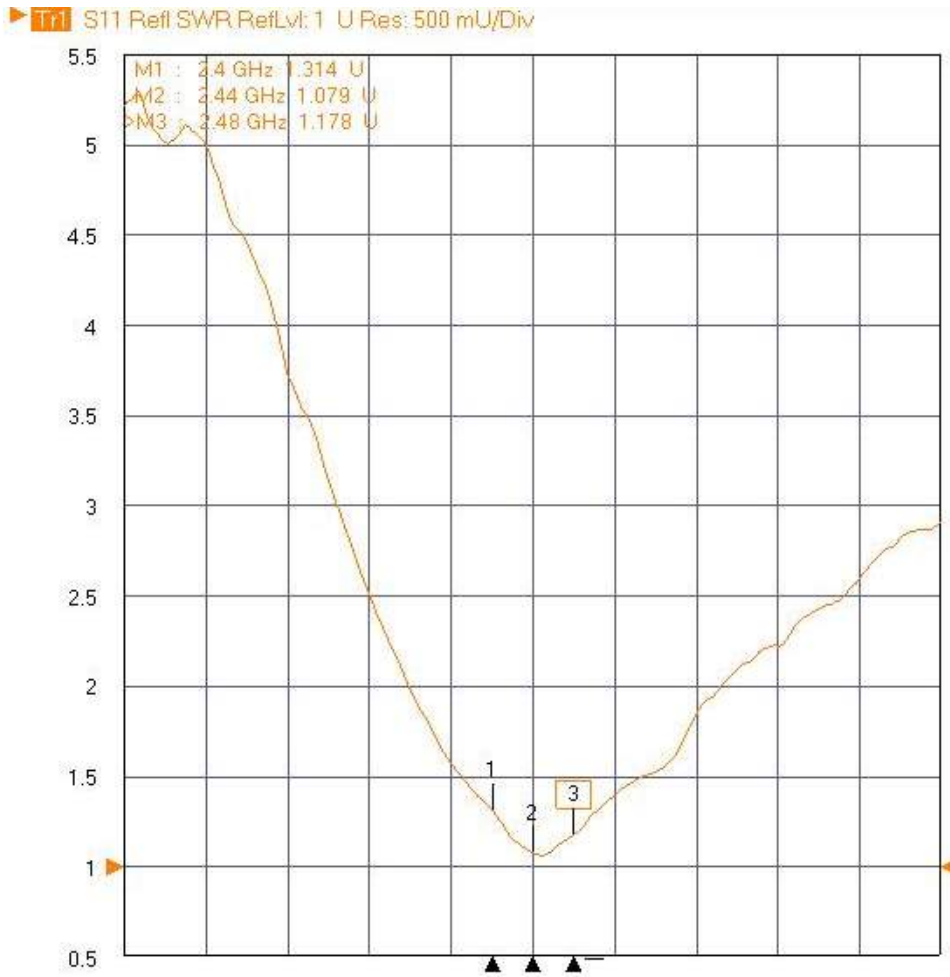
주파수 (Frequency Range)	LOW	HIGH
정재파비(V.S.W.R)	2400 MHz	2480 MHz
	2.5:1 이하	2.5:1이하



Part No	
Maker Code	RIC-WAT-24001053-UFL
Date(제출일)	2018.05.30
Page	6

Model	Type	Rev	RIC	1.1
	2.4GHz WiFi ANTENNA			

- 양산 특성 JIG VSWR



Part No	
Maker Code	RIC-WAT-24001053-UFL
Date(제출일)	2018.05.30
Page	7

Model	Type	Rev	RIC	1.1
	2.4GHz WiFi ANTENNA			

### 2.1.3 복사 패턴

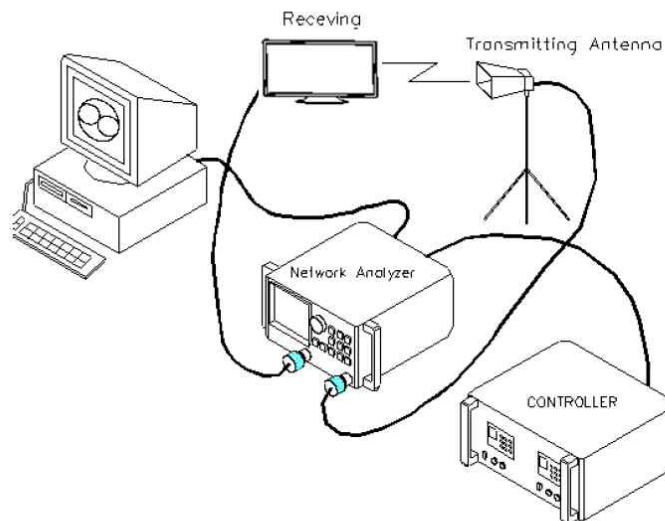
이 안테나의 복사 패턴은 H-Plane에서 무지향성 특성을 갖는다.

### 2.1.4 안테나 이득

안테나의 이득은 WiFi 대역의 STANDARD HORN 안테나를 이용하여 Calibration 한 후, E2-Plane에서 측정한 Peak Gain 값으로서 단위는 [dBi] 이며, 아래의 사양을 만족해야 한다.

#### -Set 거치 상태

주파수 (Frequency Range)	WiFi		
	2400MHz	2440MHz	2480MHz
이득 (Peak GAIN) E2-Plane 기준	3.04dBi 이하	2.96dBi 이하	3.12dBi 이하
이득 (Average GAIN) H-Plane 기준	-3.46dBi 이상	-3.89dBi 이상	-3.78dBi 이상

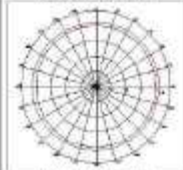
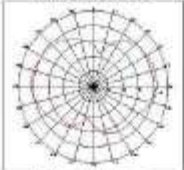
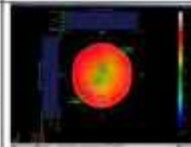
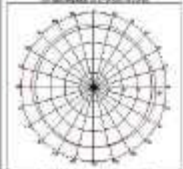
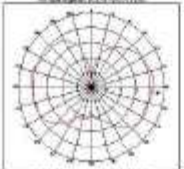
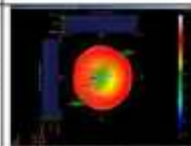
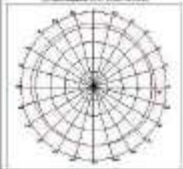
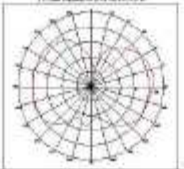
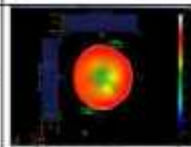




Part No	
Maker Code	RIC-WAT-24001053-UFL
Date(제출일)	2018.05.30
Page	8

Model	Type	Rev	RIC	1.1
	2.4GHz WiFi ANTENNA			

- GAIN & 3D Radiation pattern

Frequency	XY(View)	YZ(View)	Peak Gain dBi	Efficiency	Avg Gain (View) dB	Peak degree Hpeak at: Vpeak at:	3D	Avg Gain (View) dB
2.4			3.04587 dBi	89.32%	1.880 dB	Hpeak at: 90.000 deg, Vpeak at: -105.00001 deg		-3.463 dB
2.42			2.96681 dBi	84.48%	1.639 dB	Hpeak at: 90.000 deg, Vpeak at: -80.000 deg		-3.898 dB
2.45			3.12575 dBi	86.16%	1.790 dB	Hpeak at: 90.000 deg, Vpeak at: -80.128 deg		-3.786 dB

Part No	
Maker Code	RIC-WAT-24001053-UFL
Date(제출일)	2018.05.30
Page	9

Model	Type	Rev	RIC	1.1
	2.4GHz WiFi ANTENNA			

## 2.2 시험조건

### 2.2.1 시험환경(조건/방법)

전기, 기구적 및 환경 시험은 표준상태를 기준으로 전처리를 한 후 시험한다.

표준상태란 온도 15℃ ~ 25℃와 상대습도 25% ~ 80%, 기압 86~ 106kPa를 의미하며, 전처리 목적은 시험 전 이력의 영향을 제거하거나 또는 부분적으로 중화하거나 하는 목적으로 시험품을 처리한다. 이것은 시험방법의 최초의 과정을 의미하며, 시험품의 특성을 측정 및 시험 전에 안정 상태로 하기 위함을 목적으로 한다.

(표준상태 기준: 25℃ , 대기압)

- 기구적 시험은 전처리 과정을 1시간 기준으로 한다.
- 환경 시험 후 기구적 시험은 전처리 과정을 2시간으로 한다.
- 단, 전처리 과정 진행 후 시험 전 이력이 있을시 전처리 과정을 연장한다.

### 2.2.2 시험 장비

이 안테나의 시험을 위해 아래의 장비가 필요하다.

- 안테나의 정재파비 및 임피던스 측정을 위한 Network Analyzer(MS46322A).
- 송신 안테나를 상, 하 이동시키는 상, 하 이송부와 수신 안테나를 회전 시키는 Positioner, 이를 제어하는 Controller .
- WiFi 대역에서 사용하는 STANDARD HORN 안테나.W
- 케이블, 커넥터 및 측정 장비가 구비된 전파 무반사실
- 치수 측정을 위한 디지털 버니어캘리퍼스.
  - 열 충격 장비:TS-230
  - 항온 항습 장비: TH-S40
  - 고온 저장 장비: CT-40
  - 저온저장 장비: CT-FD052
- 염수 분무 시험기 .
  - 염수 분무 장비: ST-C600

Part No	
Maker Code	RIC-WAT-24001053-UFL
Date(제출일)	2018.05.30
Page	10

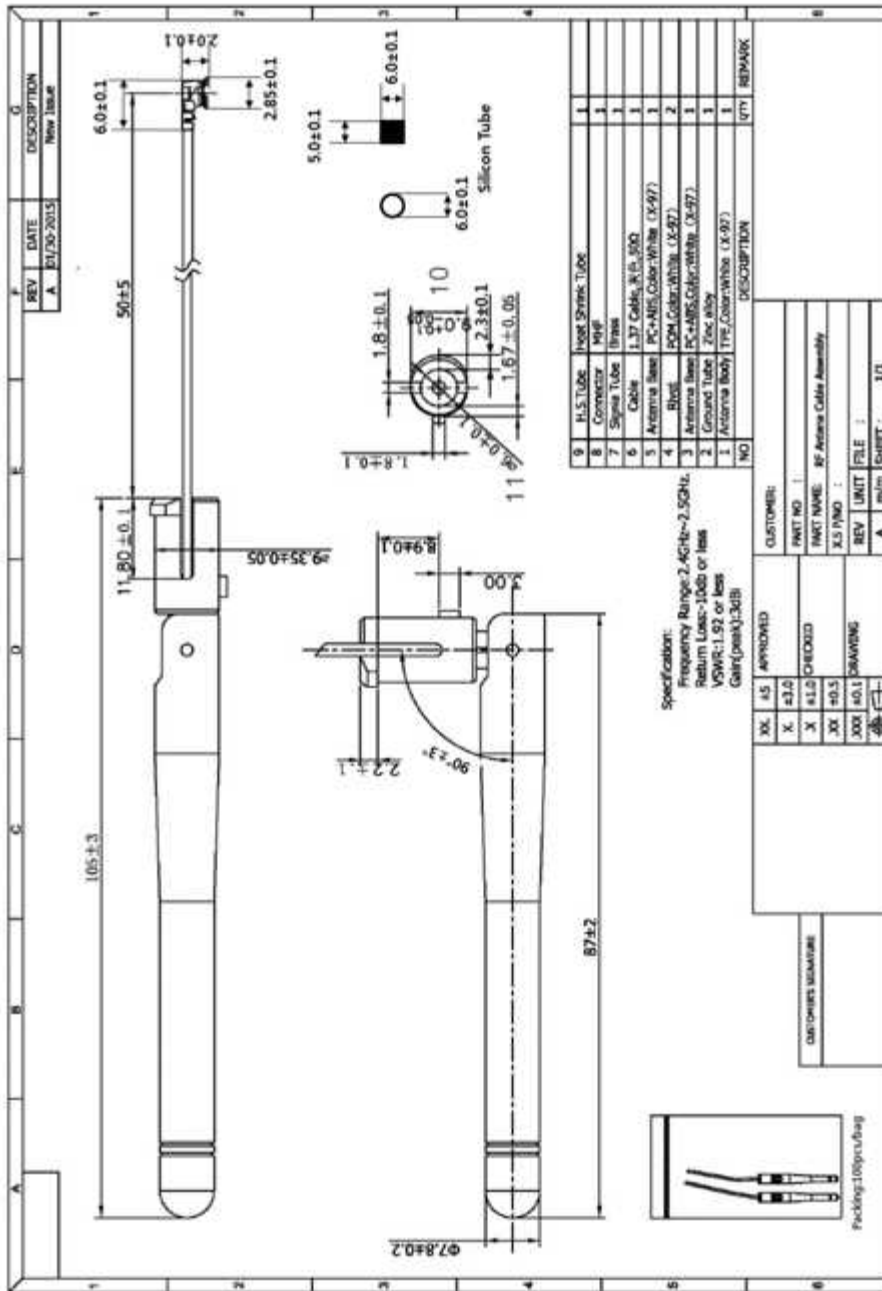
Model	Type	Rev	RIC	1.1
	2.4GHz WiFi ANTENNA			

### 3. 기구사항

- 안테나 기구도면 중 내부 Signia Tube에 대한 구체적인 사양은 (주)알아이씨의 핵심기술이므로 공개가 불가합니다.

#### 3.1 기구적 요구 사항

##### 3.1.1 기구도면



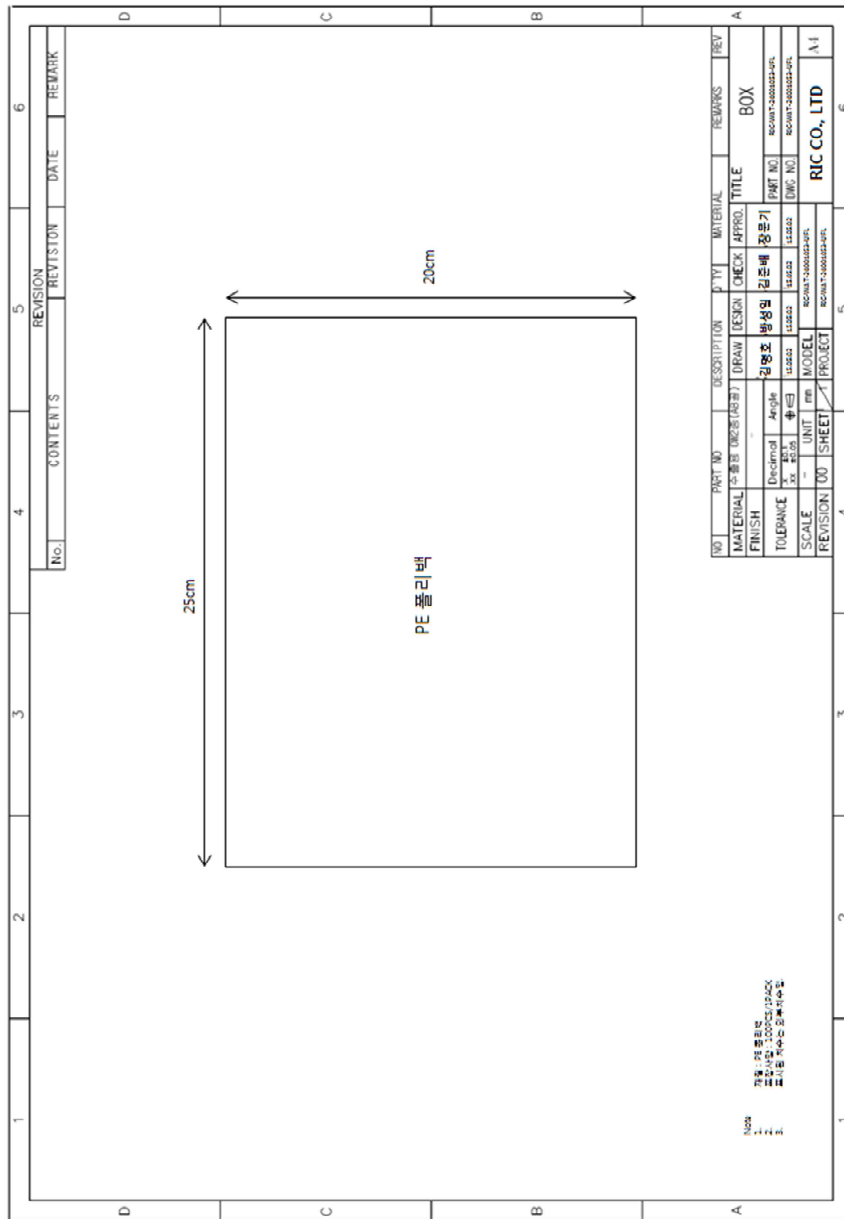
Part No	
Maker Code	RIC-WAT-24001053-UFL
Date(제출일)	2018.05.30
Page	11

Model	Type	Rev	RIC	1.1
	2.4GHz WiFi ANTENNA			

3.1.2 포장사양 및 도면

품명	수량	재질	비고
ZIPPO PACK	1/100 EA	PE	-
CARTON BOX	1/2000 EA	DW2종(AB골)	-

-ZIPPO PACK 도면



Part No	
Maker Code	RIC-WAT-24001053-UFL
Date(제출일)	2018.05.30
Page	12

Model	Type	Rev	RIC	1.1
	2.4GHz WiFi ANTENNA			

-ZIPPO PACK 포장 사진 (100EA/PACK)



Part No	
Maker Code	RIC-WAT-24001053-UFL
Date(제출일)	2018.05.30
Page	13

Model	Type	Rev	RIC	1.1
	2.4GHz WiFi ANTENNA			

-BOX 도면

**박스 모형구분 인쇄**  
정신부 실명확인 인쇄  
150

**최측면 인쇄 사항**  
NOTE SEE 5

**Mobile Antenna**  
Model:  
RIC CO., LTD

**우측면 인쇄 사항**  
RIC CO., LTD

**상면 인쇄 사항**  
RIC CO., LTD

**Notes**

1. 단공차: -0.0 / +0
2. 포장수량: ZPPOR 20개를 2,000PCS
3. 표시된 치수는 내부치수임
4. 모든 표시된 수치는 영점 이하를 갖
5. 각 크기는 1mm 단위로 반올림하여 인쇄하지.

NO	PART NO	DESCRIPTION	QTY	MATERIAL	REMARKS	REV
		DRAW DESIGN	CHECK	APPRO.	TITLE	
		김영호	방성익	김준배	장문기	BOX
		Decimal	Angle			
		TOLERANCE	mm			
		SCALE	UNIT	MODEL		
		REVISION	NO	SHEET	PROJECT	
					RIC CO., LTD	M

Part No	
Maker Code	RIC-WAT-24001053-UFL
Date(제출일)	2018.05.30
Page	14

Model	Type	Rev	RIC	1.1
	2.4GHz WiFi ANTENNA			

-제작된 BOX 사진



Part No	
Maker Code	RIC-WAT-24001053-UFL
Date(제출일)	2018.05.30
Page	15

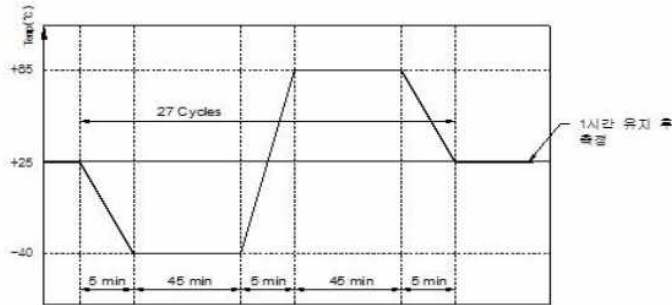
Model	Type	Rev	RIC	1.1
	2.4GHz WiFi ANTENNA			

#### 4. 품질사항

##### 4.1 시험 요구 사항

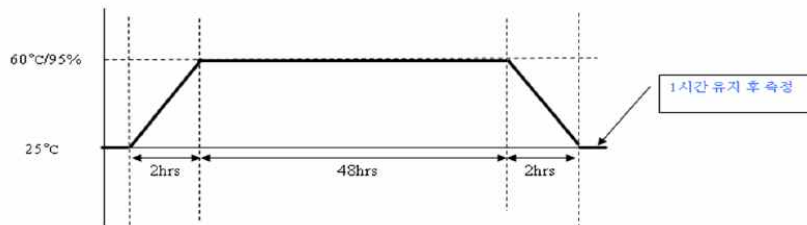
##### 열 충격 시험

안테나를 챔버에 넣는다. 온도를 다음과 같이 순환시킨다. 온도를 5분 동안  $-40^{\circ}\text{C}$ 로 감소시키고 45분 동안  $-40^{\circ}\text{C}$ 로 유지시키고, 5분 동안  $+85^{\circ}\text{C}$ 로 증가시킨 다음 45분 동안  $+85^{\circ}\text{C}$ 로 유지시킨다. 이 과정을 27회 반복하고  $+25^{\circ}\text{C}$ 에서 끝낸다. 1시간 동안  $+25^{\circ}\text{C}$ 를 유지 후, 안테나를 꺼내어 VSWR을 측정한다. 외관상 결함이 발생해서는 안되고, 시험 후 측정하는 동안 전기적 요구 사항을 만족해야 한다.



##### 고습 저장 시험

안테나를 챔버에 넣는다. 온도/습도를 2시간 동안  $+60^{\circ}\text{C}/95\%$ 로 증가시키고, 48시간 동안 유지시키고, 2시간 동안  $+25^{\circ}\text{C}/0\%$ 로 감소시키고, 1시간 동안  $+25^{\circ}\text{C}/0\%$ 를 유지 후, 안테나를 꺼내어 VSWR을 측정한다. 외관상 결함이 발생해서는 안되고, 측정하는 동안 전기적 요구 사항을 만족해야 한다.



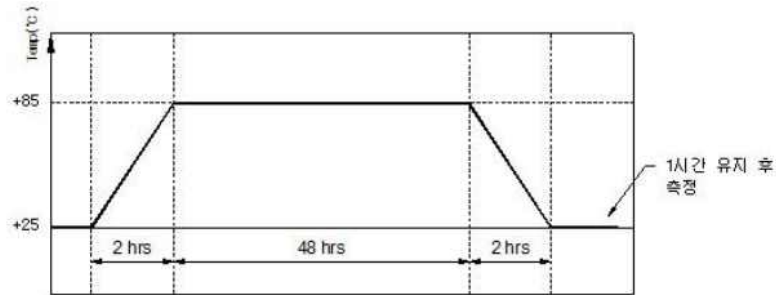


Part No	
Maker Code	RIC-WAT-24001053-UFL
Date(제출일)	2018.05.30
Page	16

Model	Type	Rev	RIC	1.1
	2.4GHz WiFi ANTENNA			

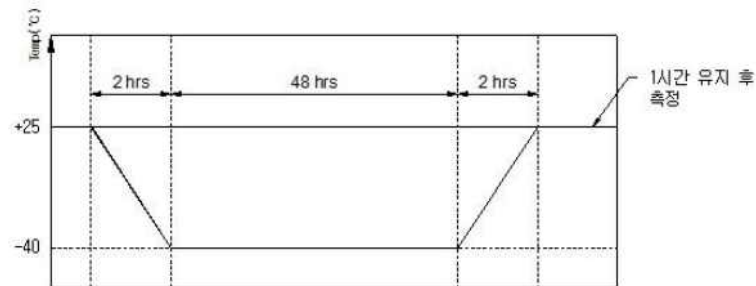
### 고온 저장 시험

안테나를 챔버에 넣는다. 온도를 2시간 동안 +85℃로 증가시키고, 48시간 동안 +85℃로 유지시킨 다음 2시간 동안 25℃로 감소시키고, 1시간 동안 25℃를 유지 후, 안테나를 꺼내어 VSWR을 측정한다. 외관상 결함이 발생해서는 안되고, 시험 후 측정하는 동안 전기적 요구사항을 만족해야 한다.



### 저온 저장 시험

안테나를 챔버에 넣는다. 온도를 2시간 동안 -40℃로 감소 시키고, 48시간 동안 -40℃로 유지시킨 다음 2시간 동안 25℃로 증가시키고, 1시간 동안 25℃를 유지 후, 안테나를 꺼내어 VSWR을 측정한다. 외관상 결함이 발생해서는 안되고, 시험 후 측정하는 동안 전기적 요구사항을 만족해야 한다.



### 염수 분무 시험

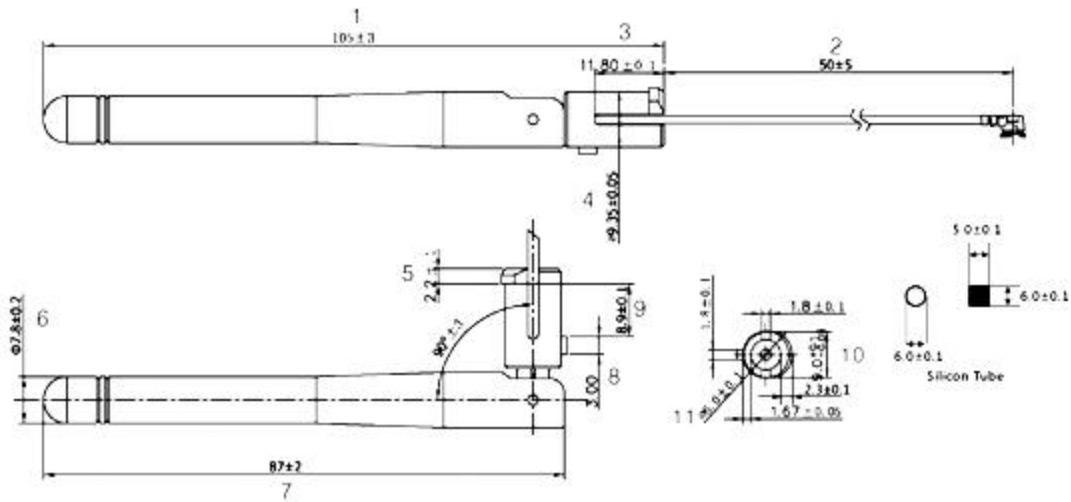
안테나를 35℃에서 Sodium 5% 수용액으로 포화된 대기에 48시간 동안 방치한다. 시험 후에 기구적 손상이 없어야 하며, 전기적으로 만족해야 한다. 시험은 IEC 68-2-11의 규격을 만족해야 한다.

Part No	
Maker Code	RIC-WAT-24001053-UFL
Date(제출일)	2018.05.30
Page	17

Model	Type	Rev	RIC	1.1
	2.4GHz WiFi ANTENNA			

#### 4.1.1 치수

##### 치수측정 데이터



##### 치수측정 Data

Dimension(단위 : mm)												외관	판정
No.	주요 치수												
	1	2	3	4	5	6	7	8	9	10	11		
spec.	105±3	50±5	11.80±0.1	9.35±0.05	2.2±0.1	7.8±0.2	87±2	3.00	8.9±0.1	9.0+0.1-0.05	6.0±0.1		
S1	104.55	49.64	11.77	9.35	2.20	7.87	87.46	3.00	8.89	8.97	6.03	양호	합격
S2	104.25	51.36	11.85	9.32	2.20	7.86	87.16	3.00	8.96	8.96	5.94	양호	합격
S3	104.31	50.93	11.74	9.30	2.17	7.87	87.17	3.00	8.85	8.98	5.99	양호	합격
S4	104.32	50.77	11.77	9.32	2.10	7.88	87.16	3.00	8.85	8.97	5.93	양호	합격
S5	104.21	52.00	11.89	9.31	2.15	7.86	87.17	3.00	8.96	8.96	6.01	양호	합격
MAX	104.55	52.00	11.89	9.35	2.20	7.88	87.46	3.00	8.96	8.98	6.03		
MIN	104.21	49.64	11.74	9.30	2.10	7.86	87.16	3.00	8.85	8.96	5.93		
AVG	104.33	50.94	11.80	9.32	2.16	7.87	87.22	3.00	8.90	8.97	5.98		
STDEV	0.13	0.87	0.06	0.02	0.04	0.01	0.13	0.00	0.06	0.01	0.04		

Part No	
Maker Code	RIC-WAT-24001053-UFL
Date(제출일)	2018.05.30
Page	18

Model	Type	Rev	RIC	1.1
	2.4GHz WiFi ANTENNA			

#### 4.1.2 열충격

신뢰성 시험 성적서							
시험명		열충격 시험					
시험 요구 조건							
시험명	시험 방법 및 조건				요구사항(판정기준)		
열충격 시험	-40°C~85°C, 45min(각 온도별 유지시간), 시험조 이동시간은 5min 이내, 27 cycle 반복				Test종료 후 힘, 뒤틀림, 외관에 수축 및 변형이 없고, 특성에 이상이 없을 것		
시험장비	열충격 CHAMBER						
시험결과							
NO	SAMPLE	시험전(VSWR)		시험 후(VSWR)		결과	
		2400 MHz	2480 MHz	2400 MHz	2480 MHz	외관	전기적 특성
	기준	2.5:1 이하	2.5:1 이하	2.5:1 이하	2.5:1 이하		
1	X1	1.222	1.434	1.348	1.390	OK	OK
	X2	1.225	1.401	1.308	1.321	OK	OK
	X3	1.361	1.310	1.325	1.432	OK	OK
	X4	1.279	1.389	1.390	1.431	OK	OK
	X5	1.213	1.410	1.348	1.339	OK	OK
	MAX	1.361	1.434	1.390	1.432		
	MIN	1.213	1.310	1.308	1.321		
	AVG	1.260	1.389	1.344	1.383		
	StDev	0.062	0.047	0.031	0.051		
합 .부 판정							
<input checked="" type="checkbox"/> 합격 <input type="checkbox"/> 불 합격							
비 고							
시험 전					시험 후		

Part No	
Maker Code	RIC-WAT-24001053-UFL
Date(제출일)	2018.05.30
Page	19

Model	Type	Rev	RIC	1.1
	2.4GHz WiFi ANTENNA			

#### 4.1.3 고온 고습

신뢰성 시험 성적서								
시험명		고온고습 시험						
시험 요구 조건								
시험명	시험 방법 및 조건				요구사항(판정기준)			
고온고습 시험	60°C/95%, 48hrs, 온도변화 시간은 2 시간 이내				Test종료 후 휨, 뒤틀림, 외관에 수축 및 변형이 없고, 특성에 이상이 없을 것			
시험장비	항온항습 CHAMBER							
시험결과								
NO	SAMPLE	시험전(VSWR)		시험 후(VSWR)		결과		
		2400 MHz	2480 MHz	2400 MHz	2480 MHz	외관	전기적 특성	
	기준	2.5:1 이하	2.5:1 이하	2.5:1 이하	2.5:1 이하			
1	X1	1.307	1.151	1.110	1.368	OK	OK	
	X2	1.387	1.242	1.322	1.354	OK	OK	
	X3	1.314	1.292	1.288	1.249	OK	OK	
	X4	1.334	1.347	1.265	1.401	OK	OK	
	X5	1.275	1.311	1.251	1.345	OK	OK	
	MAX	1.387	1.347	1.322	1.401			
	MIN	1.275	1.151	1.110	1.249			
	AVG	1.323	1.269	1.247	1.343			
	StDev	0.041	0.076	0.081	0.057			
합 .부 판정								
<input checked="" type="checkbox"/> 합격 <input type="checkbox"/> 불 합격								
비 고								
시험 전					시험 후			

Part No	
Maker Code	RIC-WAT-24001053-UFL
Date(제출일)	2018.05.30
Page	20

Model	Type	Rev	RIC	1.1
	2.4GHz WiFi ANTENNA			

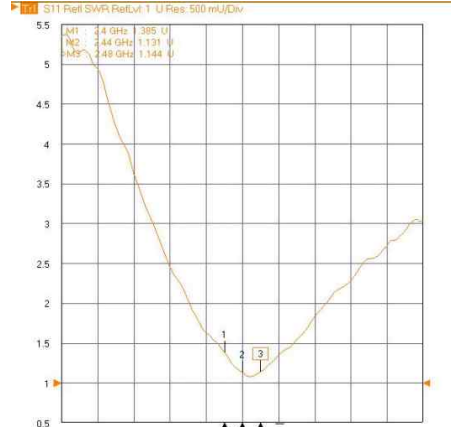

#### 4.1.4 고온 저장

신뢰성 시험 성적서								
시험명		고온저장시험						
시험 요구 조건								
시험명		시험 방법 및 조건			요구사항(판정기준)			
고온저장 시험		85°C, 48hrs, 온도변화 시간은 2시간 이내			Test종료 후 휨, 뒤틀림, 외관에 수축 및 변형이 없고, 특성에 이상이 없을 것			
시험장비		고온저장 CHAMBER						
시험결과								
NO	SAMPLE	시험전(VSWR)		시험 후(VSWR)		결과		
		2400 MHz	2480 MHz	2400 MHz	2480 MHz	외관	전기적 특성	
	기준	2.5:1 이하	2.5:1 이하	2.5:1 이하	2.5:1 이하			
1	X1	1.230	1.212	1.369	1.173	OK	OK	
	X2	1.290	1.280	1.441	1.377	OK	OK	
	X3	1.333	1.301	1.375	1.387	OK	OK	
	X4	1.380	1.399	1.389	1.422	OK	OK	
	X5	1.440	1.412	1.311	1.450	OK	OK	
	MAX	1.440	1.412	1.441	1.450			
	MIN	1.230	1.212	1.311	1.173			
	AVG	1.335	1.321	1.377	1.362			
	StDev	0.081	0.084	0.047	0.109			
합 .부 판정								
<input checked="" type="checkbox"/> 합격 <input type="checkbox"/> 불 합격								
비 고								
시험 전					시험 후			

Part No	
Maker Code	RIC-WAT-24001053-UFL
Date(제출일)	2018.05.30
Page	21

Model	Type	Rev	RIC	1.1
	2.4GHz WiFi ANTENNA			

4.1.5 저온 저장

신뢰성 시험 성적서								
시험명		저온저장시험						
시험 요구 조건								
시험명		시험 방법 및 조건			요구사항(판정기준)			
저온저장 시험		-40°C, 48hrs, 온도변화 시간은 2시간 이내			Test종료 후 휨, 뒤틀림, 외관에 수축 및 변형이 없고, 특성에 이상이 없을 것			
시험장비		항온조 CHAMBER						
시험결과								
NO	SAMPLE	시험전(VSWR)		시험 후(VSWR)		결과		
		2400 MHz	2480 MHz	2400 MHz	2480 MHz	외관	전기적 특성	
	기준	2.5:1 이하	2.5:1 이하	2.5:1 이하	2.5:1 이하			
1	X1	1.385	1.144	1.291	1.149	OK	OK	
	X2	1.286	1.223	1.315	1.234	OK	OK	
	X3	1.345	1.372	1.388	1.355	OK	OK	
	X4	1.245	1.331	1.314	1.401	OK	OK	
	X5	1.330	1.361	1.401	1.399	OK	OK	
	MAX	1.385	1.372	1.401	1.401			
	MIN	1.245	1.144	1.291	1.149			
	AVG	1.318	1.286	1.342	1.308			
	StDev	0.054	0.099	0.049	0.112			
합 부 판정								
<input checked="" type="checkbox"/> 합격 <input type="checkbox"/> 불 합격								
비 고								
시 험 전								
	시 험 후							

Part No	
Maker Code	RIC-WAT-24001053-UFL
Date(제출일)	2018.05.30
Page	22


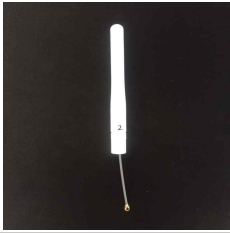

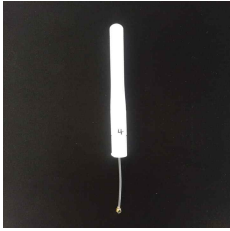






Model	Type	Rev	RIC	1.1
	2.4GHz WiFi ANTENNA			

4.1.6 염수 분무

신뢰성 시험 성적서								
시험명		염수분무시험						
시험 요구 조건								
시험명	시험 방법 및 조건				요구사항(판정기준)			
염수분무 시험	염수분무 35°C/5%, 48 hrs				Test종료 후 부품의 부식, 녹, 발생, 접촉 저항성분 증가 및 벗겨짐, 변형이 없고, 특성에 이상이 없을 것			
시험장비	염수분무 CHAMBER							
시험결과								
NO	SAMPLE	시험전(VSWR)		시험 후(VSWR)		결과		
		2400 MHz	2480 MHz	2400 MHz	2480 MHz	외관	전기적 특성	
	기준	2.5:1 이하	2.5:1 이하	2.5:1 이하	2.5:1 이하			
1	X1	1.320	1.165	1.280	1.199	OK	OK	
	X2	1.289	1.235	1.324	1.280	OK	OK	
	X3	1.343	1.370	1.345	1.399	OK	OK	
	X4	1.289	1.234	1.279	1.334	OK	OK	
	X5	1.389	1.402	1.444	1.399	OK	OK	
	MAX	1.389	1.402	1.444	1.399			
	MIN	1.289	1.165	1.280	1.199			
	AVG	1.326	1.281	1.343	1.322			
	StDev	0.042	0.0100	0.061	0.085			
합 .부 판정								
<input checked="" type="checkbox"/> 합격 <input type="checkbox"/> 불 합격								
비 고								
시 험 전								
	시 험 후							

Part No	
Maker Code	RIC-WAT-24001053-UFL
Date(제출일)	2018.05.30
Page	23

Model	Type	Rev	RIC	1.1
	2.4GHz WiFi ANTENNA			

구분	사진 첨부					
	시료#1		시료#2		시료#3	
염수 T e s t						
	시료#4		시료#5		/	
						
염수 T e s t	시료#1	외관 OK	시료#2	외관 OK	시료#3	외관 OK
						
	시료#4	외관 OK	시료#5	외관 OK	/	
						



Part No	
Maker Code	RIC-WAT-24001053-UFL
Date(제출일)	2018.05.30
Page	24

Model	Type	Rev	RIC	1.1
	2.4GHz WiFi ANTENNA			

#### 4.1.7 도금사양서

### 昆山科信成电子有限公司

#### 膜厚测试报告

送样单位: IQC 料号: 028-12G1-0002

电镀规格: Au:1u" min Ni:50u" min

HELMUT FISCHER GmbH + Co

Industriestrasse 21

71069 Sindelfingen



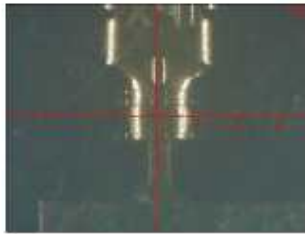
Fischerscope? XRAY XULM

Product: 8 / Au/Ni/CuSn(已校正)

Dir.: Fischer

Block:

322



铜板标准:

n = 1	Au = 1.45 μ"	Ni = 98.2 μ"
n = 2	Au = 1.29 μ"	Ni = 78.4 μ"
n = 3	Au = 1.14 μ"	Ni = 62.2 μ"
n = 4	Au = 1.14 μ"	Ni = 68.2 μ"

Mean	1.253 μ"	76.75 μ"
Standard deviation	0.149 μ"	15.80 μ"
C.O.V.	11.89 %	20.59 %
Range	0.314 μ"	36.0 μ"
Number of readings	4	4
Min. reading	1.14 μ"	62.2 μ"
Max. reading	1.45 μ"	98.2 μ"
Measuring time	15 sec	
Operator:		
Date: 2015-4-22	Time: 16:07:47	

Part No	
Maker Code	RIC-WAT-24001053-UFL
Date(제출일)	2018.05.30
Page	25

Model	Type	Rev	RIC	1.1
	2.4GHz WiFi ANTENNA			

#### 4.1.8 LOT 체계도

-발주자의 발주시 발주 연월일을 기준으로 알파벳순서로 LOT를 구분하여 부여한다.

예시)

2015년 7월 1일 발주분에 대한 LOT 체계도

번호	1	2	3	4	5	6	7	8	9	0
알파벳	A	B	C	D	E	F	G	H	I	J

2015-07-01 => BJA EJGJA

- LOT 번호를 위와 같이 발급하고 이를 납품시 외장박스, 내장 포장지에 인쇄하여 LOT관리가 가능하도록 한다.

Part No	
Maker Code	RIC-WAT-24001053-UFL
Date(제출일)	2018.05.30
Page	26

Model	Type	Rev	RIC	1.1
	2.4GHz WiFi ANTENNA			

4.1.9 공급사 출하 검사 성적서

출하 검사 시험 성적서													
시험명		제품 외형 치수 검사											
시험 요구 조건													
시험명		시험 방법 및 조건						요구사항(판정기준)					
치수 검사		LOT별 5개의 시료에 대한 외형치수 검사하고 고유번호를 표시한 후, LOT 납품시 별도로 포장하여 제출함						외형 치수검사시 승인원 상의 오차를 넘지 말아야 함.					
시험장비		버니어캘리퍼스											
측정결과													
치수측정 Data													
Dimension(단위 : mm)													
No.	주요 치수											외관	판정
	1	2	3	4	5	6	7	8	9	10	11		
spec.	105±3	50±5	11.80±0.1	9.35±0.05	2.2±0.1	7.8±0.2	87±2	3.00	8.9±0.1	9.0+0.1-0.05	6.0±0.1		
S1													
S2													
S3													
S4													
S5													
MAX													
MIN													
AVG													
STDEV													
비 고													
시험자	(사인)						승인자	(사인)					
시험 일자							승인 일자						

Part No	
Maker Code	RIC-WAT-24001053-UFL
Date(제출일)	2018.05.30
Page	27

Model	Type	Rev	RIC	1.1
	2.4GHz WiFi ANTENNA			

#### 4.1.10 제품 보관 기준

본 제품의 안전한 사용을 위하여 하기 보관 기준을 엄격히 따를 것.

- 포장상태 보관 기준  
제품의 박스 및 PE 포장제가 개봉되지 않은 조건시 실내 25도 조건으로 최대 24개월을 넘지 말것
- 제품의 박스만 개봉되고 PE 포장제가 개봉되지 않은 조건시 실내 25도 조건으로 최대 12개월을 넘지 말것
- 제품의 박스 및 PE 포장제가 개봉된 조건시 실내 25도 조건으로 최대 3개월을 넘지 말 것

제품 보관 조건

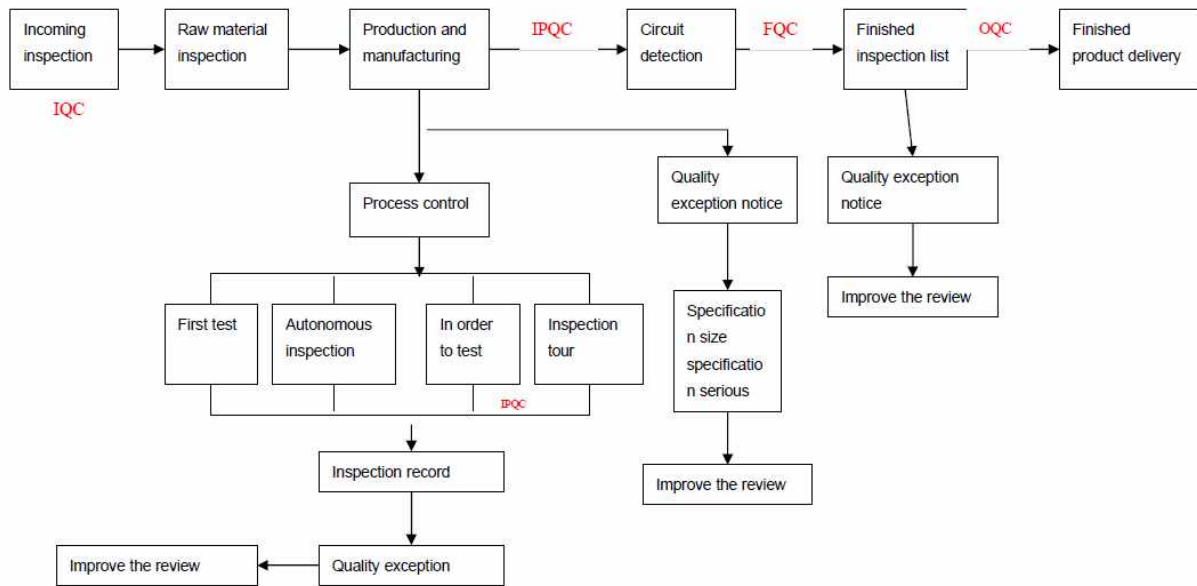
제품보관 조건	온도	습도
	25℃ ±10℃	0~80%

Part No	
Maker Code	RIC-WAT-24001053-UFL
Date(제출일)	2018.05.30
Page	28

Model	Type	Rev	RIC	1.1
	2.4GHz WiFi ANTENNA			

## 4.2 제조공정도

### 4.2.1 중국제조사 제조/검사 공정도



Part No	
Maker Code	RIC-WAT-24001053-UFL
Date(제출일)	2018.05.30
Page	29

Model	Type	Rev	RIC	1.1
	2.4GHz WiFi ANTENNA			

4.2.2 한국 수입사(주식회사 알아이씨) 검사 및 포장 공정도

공급자명	㈜알아이씨		제정일자	2015.05.11		REV NO.	00		
모델명	TWFB-R101D		품명	RIC-WAT-24001053-UFL		고객명	LG이노텍		
공정	흐름도	공정명	설비	관리항목	담당	기준	측정법	주기	비고
1	↓	수입검사 (CTQ공정)		-안테나외형 -SMA 케이블 -UFL커넥터	수입 검사	수입검사 기준	육안	전수검사	작업 표준서
2		외관검사		-이물질이 없을 것 -cable 피복 찢김 없 을 것 -UFL커넥터 이상유무	작업자	작업기준	육안	전수검사	작업 표준서
3		성능검사	JIG/ 네트워크분석기	-Log Mag(Limit Point)	검사자	성능검사JIG 설정값 기준	네트워크분석기	전수검사	작업 표준서
4		포장	PE PACK/박스	-팩 당 포장수량 -박스당 포장수량	작업자	작업기준	육안	전수검사	작업 표준서

Part No	
Maker Code	RIC-WAT-24001053-UFL
Date(제출일)	2018.05.30
Page	30

Model	Type	Rev	RIC	1.1
	2.4GHz WiFi ANTENNA			

4.3 ROHS 성적서  
- PC/ABS



**Test Report**

No. CANML1421267602

Date: 29 Dec 2014

Page 1 of 5

DONGGUAN ZHANGMUTOU LONGYU PLASTIC AND RUBBER MATERIAL CO., LTD

#B61 THE THIRD PERIOD OF BAIGUODONG PLASTIC AND RUBBER MATERIAL MARKET ZHANGMUTOU TOWN DONGGUAN CITY CHINA

The following sample(s) was/were submitted and identified on behalf of the clients as : PC/ABS

SGS Job No. : GZIN1412042151PC - GZ  
 Internal Reference No. : 3.3  
 Date of Sample Received : 22 Dec 2014  
 Testing Period : 22 Dec 2014 - 29 Dec 2014  
 Test Requested : Selected test(s) as requested by client.  
 Test Method : Please refer to next page(s).  
 Test Results : Please refer to next page(s).  
 Conclusion : Based on the performed tests on submitted sample(s), the results of Lead, Mercury, Cadmium, Hexavalent chromium, Polybrominated biphenyls (PBBs), Polybrominated diphenyl ethers (PBDEs) comply with the limits as set by RoHS Directive 2011/65/EU Annex II; recasting 2002/95/EC.

Signed for and on behalf of  
SGS-CSTC Ltd.

Trophy Zhang  
Approved Signatory



This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/units-into-locations.aspx> and, for electronic format documents, subject to terms and conditions for electronic documents at <http://www.sgs.com/en/terms-and-conditions/terms-and-conditions.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction clauses defined therein. Any holder of this document is advised that information contained herein reflects the Company's findings at the time of the test(s) and only within the limits of their accreditation, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is criminal and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.  
 Attention: To check the authenticity of testing information report & certificate, please contact us at telephone: (86-21) 5087-1443, or email: CN\_Doccheck@sgs.com  
 198 Kechu Road, Satered Park, Gangtuo Economic & Technology Development District, Gangtuo, China 510663 | (86-20) 82155555 | (86-20) 82075113 | www.sgs.com.cn  
 中国·广州·经济技术开发区科学城科珠路198号 | 邮编: 510663 | (86-20) 82155555 | (86-20) 82075113 | sgs.china@sgs.com

Member of the SGS Group (SGS SA)

Part No	
Maker Code	RIC-WAT-24001053-UFL
Date(제출일)	2018.05.30
Page	31

Model	Type	Rev	RIC	1.1
	2.4GHz WiFi ANTENNA			



**Test Report**

No. CANML1421267602

Date: 29 Dec 2014

Page 2 of 5

Test Results :

Test Part Description :

Specimen No.	SGS Sample ID	Description
SN1	CAN14-212676.003	Beige plastic grains

Remarks :

- (1) 1 mg/kg = 1 ppm = 0.0001%
- (2) MDL = Method Detection Limit
- (3) ND = Not Detected ( < MDL )
- (4) "-" = Not Regulated

**RoHS Directive 2011/65/EU**

- Test Method :
- (1)With reference to IEC 62321-5:2013, determination of Cadmium by ICP-OES.
  - (2)With reference to IEC 62321-5:2013, determination of Lead by ICP-OES.
  - (3)With reference to IEC 62321-4:2013, determination of Mercury by ICP-OES.
  - (4)With reference to IEC 62321:2008, determination of Hexavalent Chromium by Colorimetric Method using UV-Vis.
  - (5)With reference to IEC 62321:2008, determination of PBBs and PBDEs by GC-MS.

Test Item(s)	Limit	Unit	MDL	CR?
Cadmium (Cd)	100	mg/kg	2	ND
Lead (Pb)	1,000	mg/kg	2	ND
Mercury (Hg)	1,000	mg/kg	2	ND
Hexavalent Chromium (CrVI)	1,000	mg/kg	2	ND
Sum of PBBs	1,000	mg/kg	-	ND
Monobromobiphenyl	-	mg/kg	5	ND
Dibromobiphenyl	-	mg/kg	5	ND
Tribromobiphenyl	-	mg/kg	5	ND
Tetrabromobiphenyl	-	mg/kg	5	ND
Pentabromobiphenyl	-	mg/kg	5	ND
Hexabromobiphenyl	-	mg/kg	5	ND
Heptabromobiphenyl	-	mg/kg	5	ND
Octabromobiphenyl	-	mg/kg	5	ND
Nonabromobiphenyl	-	mg/kg	5	ND
Decabromobiphenyl	-	mg/kg	5	ND
Sum of PBDEs	1,000	mg/kg	-	ND
Monobromodiphenyl ether	-	mg/kg	5	ND



This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/terms-and-conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/terms-and-conditions/terms-e-document.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.  
 Attention: To attack the authenticity of testing inspection report & certificate, please contact us at telephone: (86-755) 8307-1443, or email: CN.Doccheck@sgs.com

SGS (China) Technical Services Co., Ltd. 196 Kechu Road, Science Park Guangzhou Economic & Technology Development District, Guangzhou, China 510663 t (86-20) 82155555 f (86-20) 82075113 www.sgs.com.cn  
 中国·广州·经济技术开发区科学城科珠路196号 邮编: 510663 t (86-20) 82155555 f (86-20) 82075113 e sgs.china@sgs.com

Member of the SGS Group (SGS SA)



Part No	
Maker Code	RIC-WAT-24001053-UFL
Date(제출일)	2018.05.30
Page	32

Model	Type	Rev	RIC	1.1
	2.4GHz WiFi ANTENNA			



**Test Report**

No. CANML1421267602

Date: 29 Dec 2014

Page 3 of 5

Test Item(s)	Limit	Unit	MDL	결과
Dibromodiphenyl ether	-	mg/kg	5	ND
Tribromodiphenyl ether	-	mg/kg	5	ND
Tetrabromodiphenyl ether	-	mg/kg	5	ND
Pentabromodiphenyl ether	-	mg/kg	5	ND
Hexabromodiphenyl ether	-	mg/kg	5	ND
Heptabromodiphenyl ether	-	mg/kg	5	ND
Octabromodiphenyl ether	-	mg/kg	5	ND
Nonabromodiphenyl ether	-	mg/kg	5	ND
Decabromodiphenyl ether	-	mg/kg	5	ND

Notes :

- (1) The maximum permissible limit is quoted from the directive 2011/65/EU, Annex II



This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/eng/terms-and-conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/eng/terms-and-conditions/terms-e-document.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained herein reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions. If any, the Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.  
 Attention: To check the authenticity of testing inspection report & certificate, please contact us at [china@sgs.com](mailto:china@sgs.com) (86-20) 82075113, or email: [CN.Inspection@sgs.com](mailto:CN.Inspection@sgs.com)  
 199 Kech Road, Sarned Park, Guangzhou, Electron & Techno Development Zone, Guangzhou, China 510663 t: (86-20) 82155555 f: (86-20) 82075113 www.sgs.com.cn  
 中国·广州·经济技术开发区科学城科珠路199号 邮编: 510663 t: 86-20 82155555 f: 86-20 82075113 e: [sgs.china@sgs.com](mailto:sgs.china@sgs.com)

Member of the SGS Group (SGS SA)

Part No	
Maker Code	RIC-WAT-24001053-UFL
Date(제출일)	2018.05.30
Page	33

Model	Type	Rev	RIC	1.1
	2.4GHz WiFi ANTENNA			



**Test Report**

No. CANML1421267602

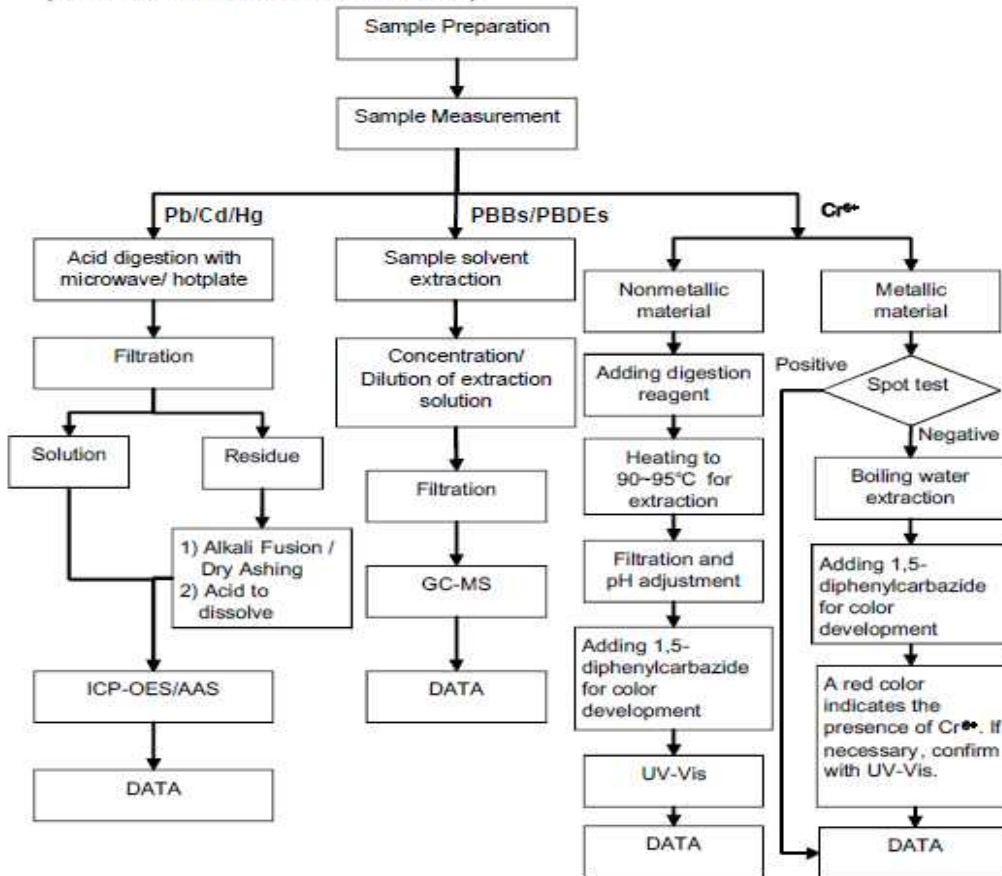
Date: 29 Dec 2014

Page 4 of 5

**ATTACHMENTS**

**RoHS Testing Flow Chart**

- 1) Name of the person who made testing: Bruce Xiao / Sunny Hu
- 2) Name of the person in charge of testing: Bella Wang / Cutey Yu
- 3) These samples were dissolved totally by pre-conditioning method according to below flow chart (Cr<sup>6+</sup> and PBBs/PBDEs test method excluded).



This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/terms-and-conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/terms-and-conditions/terms-e-document.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained herein reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions. If any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.

Attention: To check the authenticity of testing (inspection report) & certificate, please contact us at telephone: (86-755) 8387 1443, or email: CN.Detectcheck@sgs.com

SGS (Shanghai) Technical Services Co., Ltd  
 188 Xueyuan Road, Siping Road, Guangzhou Economic & Technological Development Zone, Guangzhou, China 510663 | (86-20) 82155555 | (86-20) 82075113 | www.sgs.com.cn  
 中国·广州·经济技术开发区科学城科珠路188号 邮编: 510663 | (86-20) 82155555 | (86-20) 82075113 | sgs.dvna@sgs.com

Member of the SGS Group (SGS SA)

Part No	
Maker Code	RIC-WAT-24001053-UFL
Date(제출일)	2018.05.30
Page	34

Model	Type	Rev	RIC	1.1
	2.4GHz WiFi ANTENNA			



**Test Report**

No. CANML1421267602

Date: 29 Dec 2014

Page 5 of 5

Sample photo:



SGS authenticate the photo on original report only

\*\*\* End of Report \*\*\*



This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/terms-and-conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Documents.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. Attention: To check the authenticity of heading (inspection report) & certificate, please contact us at telephone: (86-755) 8387 1443, or email: CN.Inspection@sgs.com

SGS (Shanghai) Technical Service Co., Ltd  
Shanghai SGS Inspection and Testing Laboratory

188 Szechuan Road, South Park Guangzhou, Economic & Technology Development Zone, Guangzhou, China 510663 | (86-20) 82155555 | (86-20) 82075113 | www.sgs.com.cn  
中国·广州·经济技术开发区科学城科珠路188号 邮编: 510663 | (86-20) 82155555 | (86-20) 82075113 | e: sgs.china@sgs.com

Member of the SGS Group (SGS SA)

Part No	
Maker Code	RIC-WAT-24001053-UFL
Date(제출일)	2018.05.30
Page	35

Model	Type	Rev	RIC	1.1
	2.4GHz WiFi ANTENNA			

- 검정색 플라스틱 수축튜브



**Test Report**

No. CANEC1419974615 A01 Date: 10 Dec 2014 Page 1 of 8

SHENZHEN WOER HEAT-SHRINKABLE MATERIAL CO.,LTD.  
 WOER MANSION,LANJING NORTH ROAD,PINGSHAN INDUSTRIAL ZONE, LONGGANG DISTRICT, SHENZHEN CHINA

**This report is to supersede test report CANEC1419974601**

The following sample(s) was/were submitted and identified on behalf of the clients as : Please see remark

SGS Job No. : CP14-063798 - SZ  
 Date of Sample Received : 02 Dec 2014  
 Testing Period : 02 Dec 2014 - 09 Dec 2014  
 Test Requested : Selected test(s) as requested by client.  
 Test Method : Please refer to next page(s).  
 Test Results : Please refer to next page(s).  
 Conclusion : Based on the performed tests on submitted sample(s), the results of Lead, Mercury, Cadmium, Hexavalent chromium, Polybrominated biphenyls (PBBs), Polybrominated diphenyl ethers (PBDEs) comply with the limits as set by RoHS Directive 2011/65/EU Annex II; recasting 2002/95/EC.

Signed for and on behalf of  
 SGS-CSTC Ltd.

Kenny Wang  
 Approved Signatory



This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/terms-and-conditions.aspx> and, for electronic format documents, subject to terms and conditions for electronic documents at <http://www.sgs.com/en/terms-and-conditions/Terms-and-Conditions/Document.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained herein reflects the Company's knowledge at the time of its issuance only and, within the limits of its legal responsibilities, it may. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.

SGS (Shanghai) Technical Service Co., Ltd.  
 199 Kailu Road, Science Park, Guangzhou Economic & Technological Development District, Guangzhou, China 510663 | (86-20) 82155555 | (86-20) 82075113 | www.sgs.com.cn  
 中国·广州·经济技术开发区科学城科珠路199号 邮编: 510663 | (86-20) 82155555 | (86-20) 82075113 | e: sgs.china@sgs.com

Member of the SGS Group (SGS SA)

Part No	
Maker Code	RIC-WAT-24001053-UFL
Date(제출일)	2018.05.30
Page	36

Model	Type	Rev	RIC	1.1
	2.4GHz WiFi ANTENNA			



## Test Report

No. CANEC1419974615 A01

Date: 10 Dec 2014

Page 2 of 8

Test Results :

Test Part Description :

Specimen No.	SGS Sample ID	Description
SN1	CAN14-199746.001	Black plastic tube w/ white printing

Remarks :

- (1) 1 mg/kg = 1 ppm = 0.0001%
- (2) MDL = Method Detection Limit
- (3) ND = Not Detected ( < MDL )
- (4) "-" = Not Regulated

### RoHS Directive 2011/65/EU

- Test Method :
- (1)With reference to IEC 62321-5:2013, determination of Cadmium by ICP-OES.
  - (2)With reference to IEC 62321-5:2013, determination of Lead by ICP-OES.
  - (3)With reference to IEC 62321-4:2013, determination of Mercury by ICP-OES.
  - (4)With reference to IEC 62321:2008, determination of Hexavalent Chromium by Colorimetric Method using UV-Vis.
  - (5)With reference to IEC 62321:2008, determination of PBBs and PBDEs by GC-MS.

Test Item(s)	Limit	Unit	MDL	SGS
Cadmium (Cd)	100	mg/kg	2	ND
Lead (Pb)	1,000	mg/kg	2	ND
Mercury (Hg)	1,000	mg/kg	2	ND
Hexavalent Chromium (CrVI)	1,000	mg/kg	2	ND
Sum of PBBs	1,000	mg/kg	-	ND
Monobromobiphenyl	-	mg/kg	5	ND
Dibromobiphenyl	-	mg/kg	5	ND
Tribromobiphenyl	-	mg/kg	5	ND
Tetrabromobiphenyl	-	mg/kg	5	ND
Pentabromobiphenyl	-	mg/kg	5	ND
Hexabromobiphenyl	-	mg/kg	5	ND
Heptabromobiphenyl	-	mg/kg	5	ND
Octabromobiphenyl	-	mg/kg	5	ND
Nonabromobiphenyl	-	mg/kg	5	ND
Decabromobiphenyl	-	mg/kg	5	ND
Sum of PBDEs	1,000	mg/kg	-	ND
Monobromodiphenyl ether	-	mg/kg	5	ND



This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Documents.aspx>, and for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Documents.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.

Attention: To check the authenticity of testing (inspection) report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: CN.Inspection@sgs.com

SGS (Shanghai) Technical Service Co., Ltd.  
 18F, Road, Sideroad, Puti, Shanghai Economic & Technological Development Zone, Shanghai, China 510683 t (86-20) 82155555 f (86-20) 82075113 www.sgs.com.cn  
 中国·广州·经济技术开发区科学城科珠路186号 邮编: 510683 t (86-20) 82155555 f (86-20) 82075113 e: sgs.dvna@sgs.com

Member of the SGS Group (SGS SA)

Part No	
Maker Code	RIC-WAT-24001053-UFL
Date(제출일)	2018.05.30
Page	37

Model	Type	Rev	RIC	1.1
	2.4GHz WiFi ANTENNA			



## Test Report

No. CANEC1419974615 A01

Date: 10 Dec 2014

Page 3 of 8

Test Item(s)	Limit	Unit	MDL	REF.
Dibromodiphenyl ether	-	mg/kg	5	ND
Tribromodiphenyl ether	-	mg/kg	5	ND
Tetrabromodiphenyl ether	-	mg/kg	5	ND
Pentabromodiphenyl ether	-	mg/kg	5	ND
Hexabromodiphenyl ether	-	mg/kg	5	ND
Heptabromodiphenyl ether	-	mg/kg	5	ND
Octabromodiphenyl ether	-	mg/kg	5	ND
Nonabromodiphenyl ether	-	mg/kg	5	ND
Decabromodiphenyl ether	-	mg/kg	5	ND

### Notes :

- (1) The maximum permissible limit is quoted from the directive 2011/65/EU, Annex II.

### Hexabromocyclododecane (HBCDD)

Test Method : Determination of HBCDD by GC-MS based on IEC 62321:2008.

Test Item(s)	Unit	MDL	REF.
Hexabromocyclododecane (HBCDD)	mg/kg	10	ND

### Notes :

- (1) Reference Information: Directive 2011/65/EU recasting RoHS directive 2002/95/EC:  
Hexabromocyclododecane (HBCDD) is considered as a priority for risk evaluation and substance restriction.

### Phthalate

Test Method : Determination of phthalates by GC-MS based on EN 14372:2004.

Test Item(s)	CAS NO.	Unit	MDL	REF.
Dibutyl Phthalate (DBP)	84-74-2	%(w/w)	0.003	ND
Benzylbutyl Phthalate (BBP)	85-68-7	%(w/w)	0.003	ND
Bis(2-ethylhexyl) Phthalate (DEHP)	117-81-7	%(w/w)	0.003	ND



This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/terms-and-conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/terms-and-conditions/terms-e-document.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted in the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. Attention: To check the authenticity of testing inspection report & certificate, please contact us at telephone: (86-755) 8337 1443, or email: CN.Inspection@sgs.com

188 Sate/Post, Satech Park Guangzhou, Economic & Technological Development Zone, Guangzhou, China 510663 | (86-20) 82155555 | (86-20) 82075113 | www.sgs.com.cn  
中国·广州·经济技术开发区科学城科珠路188号 邮编: 510663 | (86-20) 82155555 | (86-20) 82075113 | e: sgs.china@sgs.com

Member of the SGS Group (SGS SA)

Part No	
Maker Code	RIC-WAT-24001053-UFL
Date(제출일)	2018.05.30
Page	38

Model	Type	Rev	RIC	1.1
	2.4GHz WiFi ANTENNA			



**Test Report**

No. CANEC1419974615\_A01

Date: 10 Dec 2014

Page 4 of 8

Notes :

- (1) Reference Information: Directive 2011/65/EU recasting RoHS directive 2002/95/EC: Bis (2-ethylhexyl) phthalate (DEHP), Butyl benzyl phthalate (BBP) and Dibutyl phthalate (DBP) are considered as a priority for risk evaluation and substance restriction.



This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/terms-and-conditions.sgs> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/terms-and-conditions/terms-e-document.sgs>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. Attention: To check the authenticity of testing inspection report & certificate, please contact us at telephone: (86-755) 8307 1643, or email: CN\_fsccheck@sgs.com

SGS (Shanghai) Technical Service Co., Ltd  
Shanghai SGS Testing Service Laboratory

188 Sate Road, Satech Park, Guangzhou, Economic & Technological Development Zone, Guangzhou, China 510663 | (86-20) 82155555 | (86-20) 82075113 | www.sgs.com.cn  
中国·广州·经济技术开发区科学城科珠路188号 邮编: 510663 | (86-20) 82155555 | (86-20) 82075113 | e: sgs.china@sgs.com

Member of the SGS Group (SGS SA)

Part No	
Maker Code	RIC-WAT-24001053-UFL
Date(제출일)	2018.05.30
Page	39

Model	Type	Rev	RIC	1.1
	2.4GHz WiFi ANTENNA			



**Test Report**

No. CANEC1419974615 A01

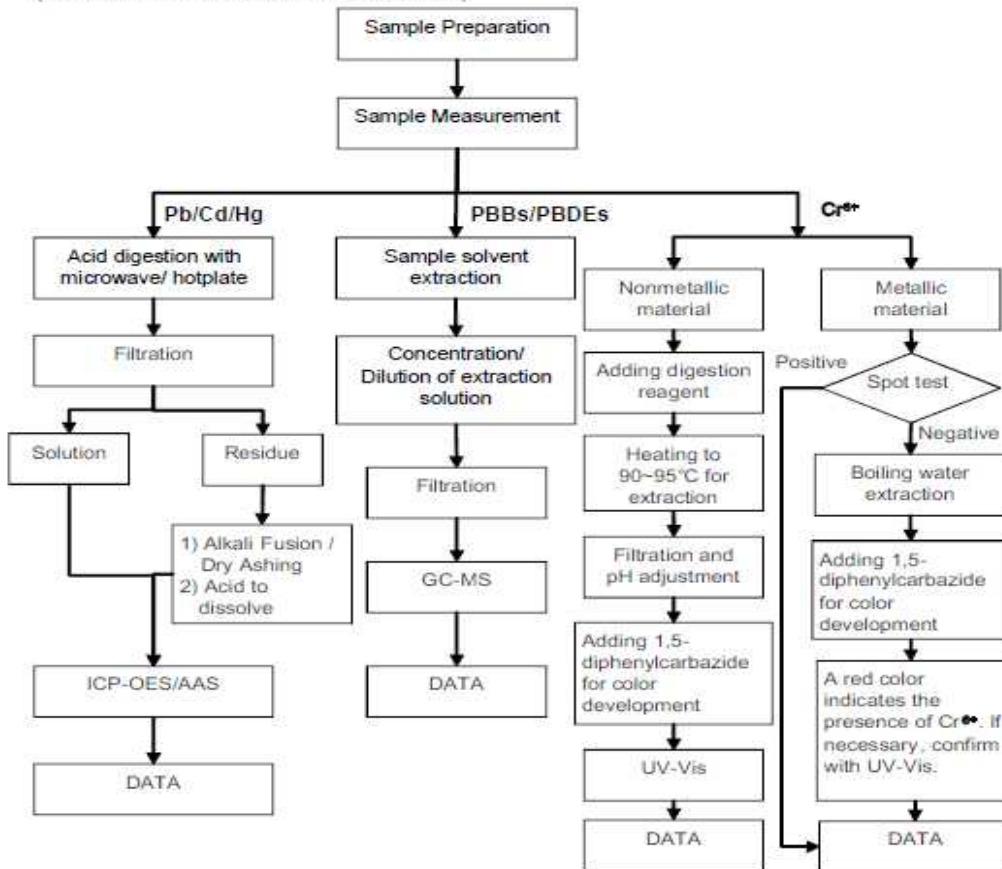
Date: 10 Dec 2014

Page 5 of 8

**ATTACHMENTS**

**RoHS Testing Flow Chart**

- 1) Name of the person who made testing: Bruce Xiao / Sunny Hu
- 2) Name of the person in charge of testing: Bella Wang / Cutey Yu
- 3) These samples were dissolved totally by pre-conditioning method according to below flow chart (Cr<sup>6+</sup> and PBBs/PBDEs test method excluded).



This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/terms-and-conditions.sgs> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/terms-and-conditions/terms-e-document.sgs>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. Attention: To check the authenticity of testing inspection report & certificate, please contact us at telephone: (86-755) 8387 1443, or email: CN.fsccheck@sgs.com

188 Gao/Poat/Sarash/Pat Guangzhou Estone & Tehnology Development Zone, Guangzhou, China 510663 t (86-20) 82155555 f (86-20) 82075113 www.sgs.com.cn  
 中国·广州·经济技术开发区科学城科珠路188号 邮编: 510663 t (86-20) 82155555 f (86-20) 82075113 e sgs.china@sgs.com

Member of the SGS Group (SGS SA)



Part No	
Maker Code	RIC-WAT-24001053-UFL
Date(제출일)	2018.05.30
Page	40

Model	Type	Rev	RIC	1.1
	2.4GHz WiFi ANTENNA			



**Test Report**

No. CANEC1419974615 A01

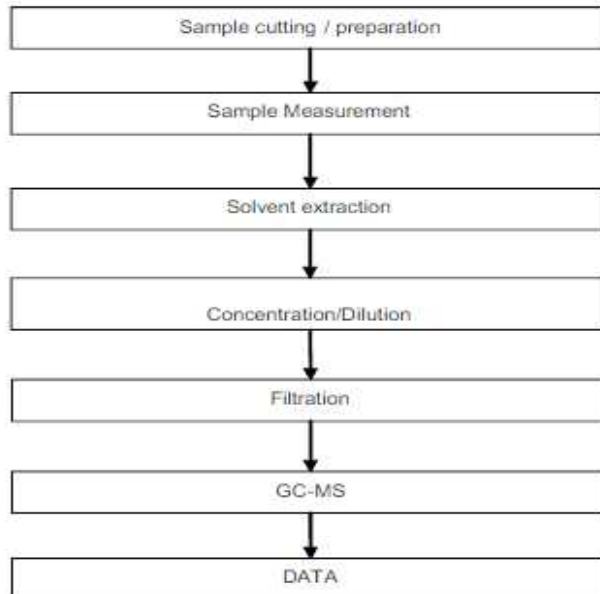
Date: 10 Dec 2014

Page 6 of 8

**ATTACHMENTS**

**HBCDD Testing Flow Chart**

- 1) Name of the person who made testing: Sunny Hu
- 2) Name of the person in charge of testing: Cutey Yu



This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/ery/terms-and-conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/ery/terms-and-conditions/terms-e-document.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained herein reflects the Company's findings at the time of its intervention, only and within the limits of Client's instructions. If any, the Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.

Attention: To check the authenticity of testing inspection report & certificate, please contact us at telephone: (86-755) 8307 4443, or email: [CN.Detective@sgs.com](mailto:CN.Detective@sgs.com)

188 Xueyuan Road, Sarned Park, Guangzhou Economic & Technological Development Zone, Guangzhou, China 510663 | (86-20) 82155555 | (86-20) 82075113 | [www.sgs.com](http://www.sgs.com) on  
 中国·广州·经济技术开发区科学城科珠路188号 | 邮编: 510663 | 86-20 82155555 | 86-20 82075113 | [sgs.china@sgs.com](mailto:sgs.china@sgs.com)

Member of the SGS Group (SGS SA)

Part No	
Maker Code	RIC-WAT-24001053-UFL
Date(제출일)	2018.05.30
Page	41

Model	Type	Rev	RIC	1.1
	2.4GHz WiFi ANTENNA			



**Test Report**

No. CANEC1419974615 A01

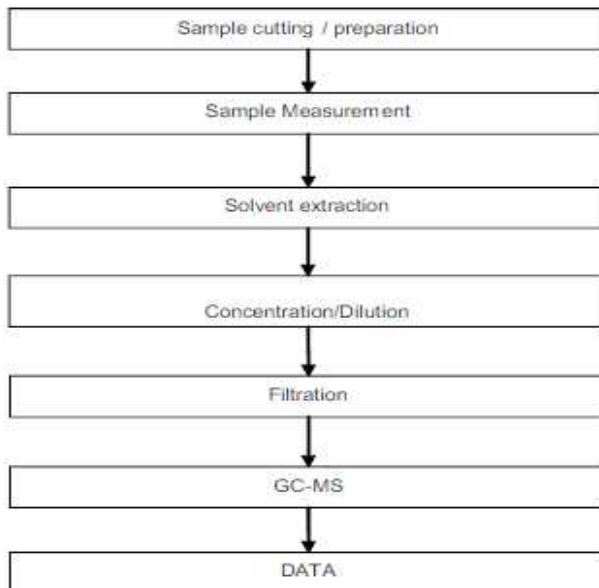
Date: 10 Dec 2014

Page 7 of 8

**ATTACHMENTS**

**Phthalates Testing Flow Chart**

- 1) Name of the person who made testing: Sunny Hu
- 2) Name of the person in charge of testing: Cutey Yu



This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Documents.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is prohibited and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.  
 Attention: To check the authenticity of testing inspection report & certificates, please contact us at [sgs@sgs.com](mailto:sgs@sgs.com) or email: [CN\\_Overcheck@sgs.com](mailto:CN_Overcheck@sgs.com)

SGS  
 Testing Service  
 SGS (Singapore) Technical Services Co., Ltd  
 Singapore Technical Services Laboratory

198 Xueyuan Road, Satech Park, Guangzhou Economic & Technology Development Zone, Guangzhou, China 510663 | (86-20) 82155555 | (86-20) 82075113 | [www.sgs.com](http://www.sgs.com)  
 中国·广州·经济技术开发区科学城科珠路198号 邮编: 510663 | (86-20) 82155555 | (86-20) 82075113 | [sgs.china@sgs.com](mailto:sgs.china@sgs.com)

Member of the SGS Group (SGS SA)

Part No	
Maker Code	RIC-WAT-24001053-UFL
Date(제출일)	2018.05.30
Page	42

Model	Type	Rev	RIC	1.1
	2.4GHz WiFi ANTENNA			



**Test Report**

No. CANEC1419974615 A01

Date: 10 Dec 2014

Page 8 of 8

RSFR-H HEAT SHRINKABLE TUBINGS (E329630) WOLIDA RSFR-H TUBE 125°C VW-1 H)

Sample photo:



SGS authenticate the photo on original report only

\*\*\* End of Report \*\*\*



This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/terms-and-conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Documents.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted in the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. Attention: To check the authenticity of testing inspection report & certificate, please contact us at telephone: (86-755) 8307 1643, or email: CN\_fsccheck@sgs.com

SGS (Shanghai) Technical Service Co., Ltd  
Shanghai SGS Testing Service Limited Liability

188 Sate/Post Street Pat Guangzhou Economic & Technological Development Zone, Guangzhou, China 510663 t (86-20) 82155555 f (86-20) 82075113 www.sgs.com.cn  
中国·广州·经济技术开发区科学城科珠路188号 邮编: 510663 t (86-20) 82155555 f (86-20) 82075113 e sgs.china@sgs.com

Member of the SGS Group (SGS SA)

Part No	
Maker Code	RIC-WAT-24001053-UFL
Date(제출일)	2018.05.30
Page	43

Model	Type	Rev	RIC	1.1
	2.4GHz WiFi ANTENNA			

- 구리



**Test Report**

No. CANEC1502837401

Date: 10 Mar 2015

Page 1 of 5

ZHONG SHAN SHI YANG METAL PRODUCT CO.,LTD  
 THE THIRD INDUSTRIAL AREA NANLANG TOWN ZHONG SHAN CITY GUANGDONG PROVINCE  
 CHINA

The following sample(s) was/were submitted and identified on behalf of the clients as : COPPER

SGS Job No. : CP15-008577 - GZ  
 Model No. : JISC3604  
 Lot No. : 2314  
 Main Substance : CU  
 Date of Sample Received : 04 Mar 2015  
 Testing Period : 04 Mar 2015 - 10 Mar 2015  
 Test Requested : Selected test(s) as requested by client.  
 Test Method : Please refer to next page(s).  
 Test Results : Please refer to next page(s).  
 Conclusion : Based on the performed tests on submitted sample(s), the results of Lead, Mercury, Cadmium, Hexavalent chromium comply with the limits as set by RoHS Directive 2011/65/EU Annex II; recasting 2002/95/EC.

Signed for and on behalf of  
 SGS-CSTC Standards Technical Services Co., Ltd. Guangzhou Branch

*Merry*

Merry Lv  
 Approved Signatory



This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/terms-and-conditions.aspx> and, for electronic format documents, subject to terms and conditions for electronic documents at <http://docs.sgs.com/en/terms-and-conditions/terms-and-conditions.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained herein reflects the Company's findings at the time of its issuance only and within the limits of its accreditation, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.

Attention: To check the authenticity of testing documents please visit [www.sgs.com](http://www.sgs.com) or email: [CN.Doccheck@sgs.com](mailto:CN.Doccheck@sgs.com)  
 198 Kechu Road, Science Park, Guangzhou Economic & Technology Development District, Guangzhou, China 510663 | (86-20) 82152225 | (86-20) 82075113 | [www.sgs.com.cn](http://www.sgs.com.cn)  
 中国·广州·经济技术开发区科学城科珠路198号 邮编: 510663 | (86-20) 82152225 | (86-20) 82075113 | [sgs.china@sgs.com](mailto:sgs.china@sgs.com)

Member of the SGS Group (SGS SA)

Part No	
Maker Code	RIC-WAT-24001053-UFL
Date(제출일)	2018.05.30
Page	44

Model	Type	Rev	RIC	1.1
	2.4GHz WiFi ANTENNA			



**Test Report**

No. CANEC1502837401

Date: 10 Mar 2015

Page 2 of 5

Test Results :

Test Part Description :

Specimen No.	SGS Sample ID	Description
SN1	CAN15-028374.001	Brassy metal

Remarks :

- (1) 1 mg/kg = 0.0001%
- (2) MDL = Method Detection Limit
- (3) ND = Not Detected ( < MDL )
- (4) "-" = Not Regulated

**RoHS Directive 2011/65/EU**

Test Method : (1)With reference to IEC 62321-5:2013, determination of Cadmium by ICP-OES.  
 (2)With reference to IEC 62321-5:2013, determination of Lead by ICP-OES.  
 (3)With reference to IEC 62321-4:2013, determination of Mercury by ICP-OES.  
 (4)With reference to IEC 62321:2008, determination of Hexavalent Chromium by spot test / Colorimetric Method using UV-Vis.

Test Item(s)	Limit	Unit	MDL	Conc.
Cadmium (Cd)	100	mg/kg	2	13
Lead (Pb)	1,000	mg/kg	2	29985*
Mercury (Hg)	1,000	mg/kg	2	ND
Hexavalent Chromium (CrVI)	-	-	◇	Negative

Notes :

- (1) The maximum permissible limit is quoted from the directive 2011/65/EU, Annex II
- (2) Spot-test:  
 Negative = Absence of CrVI coating, Positive = Presence of CrVI coating;  
 (The tested sample should be further verified by boiling-water-extraction method if the spot test result is Negative or cannot be confirmed.)  
 Boiling-water-extraction:  
 Negative = Absence of CrVI coating  
 Positive = Presence of CrVI coating; the detected concentration in boiling-water-extraction solution is equal or greater than 0.02 mg/kg with 50 cm<sup>2</sup> sample surface area.  
 Information on storage conditions and production date of the tested sample is unavailable and thus results of Cr(VI) represent status of the sample at the time of testing.



This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/terms-and-conditions.sgs> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/terms-and-conditions/terms-e-document.sgs>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. Attention: To check the authenticity of testing (inspection) report & certificate, please contact us at telephone: (86-755) 8337 1543, or email: CN.Inspection@sgs.com

SGS (Shanghai) Technical Services Co., Ltd.  
 Shanghai Branch, Inspection Laboratory

188 Sate Road, Satech Park, Guangzhou, Economic & Technology Development Zone, Guangzhou, China 510663 | (86-20) 82155555 | (86-20) 82075113 | www.sgs.com.cn  
 中国·广州·经济技术开发区科学城科珠路188号 邮编: 510663 | (86-20) 82155555 | (86-20) 82075113 | sgs.china@sgs.com

Member of the SGS Group (SGS SA)

Part No	
Maker Code	RIC-WAT-24001053-UFL
Date(제출일)	2018.05.30
Page	45

Model	Type	Rev	RIC	1.1
	2.4GHz WiFi ANTENNA			



**Test Report**

No. CANEC1502837401

Date: 10 Mar 2015

Page 3 of 5

Remark\*: According to the declaration from the client, Lead (Pb) in specimen is exempted by EU RoHS directive 2011/65/EU based on [ANNEX III 6(c)]: Copper alloy containing up to 4 % lead by weight.



This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/terms-and-conditions.sgs> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Documents.sgs>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. Attention: To check the authenticity of testing inspection report & certificate, please contact us at telephone: (86-755) 8387 1643, or email: CN\_fsccheck@sgs.com

SGS (Shanghai) Technical Services Co., Ltd.  
Shanghai SGS Testing Service Limited Laboratory

188 Sate/Past/Sarash/Pat Guangzhou Easton & Techno Development Zone, Guangzhou, China 510663 t (86-20) 82155555 f (86-20) 82075113 www.sgs.com.cn  
中国·广州·经济技术开发区科学城科珠路188号 邮编: 510663 t (86-20) 82155555 f (86-20) 82075113 e sgs.china@sgs.com

Member of the SGS Group (SGS SA)

Part No	
Maker Code	RIC-WAT-24001053-UFL
Date(제출일)	2018.05.30
Page	46

Model	Type	Rev	RIC	1.1
	2.4GHz WiFi ANTENNA			



**Test Report**

No. CANEC1502837401

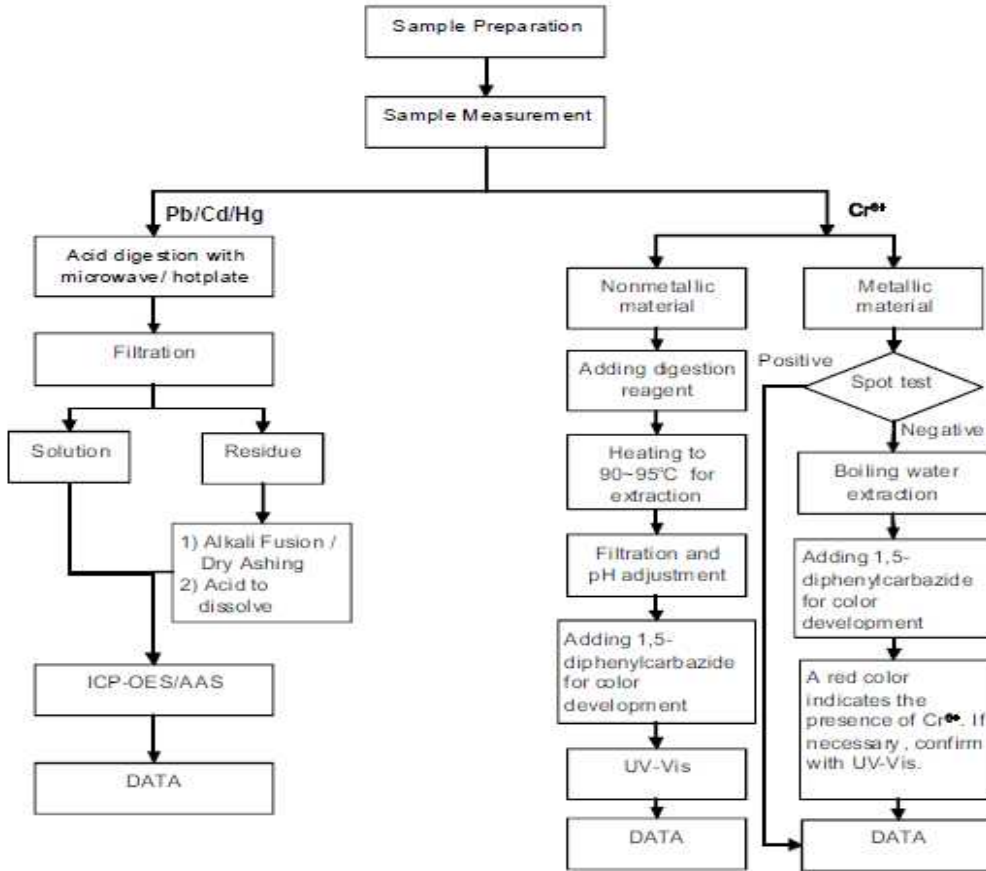
Date: 10 Mar 2015

Page 4 of 5

**ATTACHMENTS**

**RoHS Testing Flow Chart**

- 1) Name of the person who made testing: Bruce Xiao
- 2) Name of the person in charge of testing: Bella Wang
- 3) These samples were dissolved totally by pre-conditioning method according to below flow chart (Cr6+ test method excluded).



This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/terms-and-conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/terms-and-conditions/terms-e-document.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained herein reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted in the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. Attention: To check the authenticity of testing inspection reports & certificates, please contact us at telephone: (86-755) 8387 1643, or email: CN.fraudcheck@sgs.com

188 Gao/Li Road, South Park Guangzhou, Economic & Technological Development Zone, Guangzhou, China 510663 | (86-20) 82155555 | (86-20) 82075113 | www.sgs.com.cn  
 中国·广州·经济技术开发区科学城科珠路188号 | 邮编: 510663 | (86-20) 82155555 | (86-20) 82075113 | e: sgs.china@sgs.com

Member of the SGS Group (SGS SA)

Part No	
Maker Code	RIC-WAT-24001053-UFL
Date(제출일)	2018.05.30
Page	47

Model	Type	Rev	RIC	1.1
	2.4GHz WiFi ANTENNA			



**Test Report**

No. CANEC1502837401

Date: 10 Mar 2015

Page 5 of 5

Sample photo:



SGS authenticate the photo on original report only

\*\*\* End of Report \*\*\*



SGS Shenzhen Technical Service Co., Ltd.  
Shenzhen, China

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Documents.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings of the time of its intervention only and vests the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the instrument documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offences may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.

Attention: To check the authenticity of testing / inspection reports & certificates, please contact us at [sgs@sgs.com](mailto:sgs@sgs.com) (86-755) 8307 1443, or email: [CN.Doccheck@sgs.com](mailto:CN.Doccheck@sgs.com)  
188 Xuehu Road, Shenshan Park, Guangzhou Economic & Technology Development Zone, Guangzhou, China 510663 | (86-20) 82155525 | (86-20) 82075113 | [www.sgs.com](http://www.sgs.com) | [www.sgs.com.cn](http://www.sgs.com.cn)  
中国 - 广州 - 经济技术开发区科学城珠晖路188号 邮编: 510663 | (86-20) 82155525 | (86-20) 82075113 | [sgs.china@sgs.com](mailto:sgs.china@sgs.com)

Member of the SGS Group (ISS 024)



Part No	
Maker Code	RIC-WAT-24001053-UFL
Date(제출일)	2018.05.30
Page	48

Model	Type	Rev	RIC	1.1
	2.4GHz WiFi ANTENNA			

-폴리에스테르일레스토머(TPEE)



**Test Report**

No. CANML1504465303

Date: 04 Apr 2015

Page 1 of 5

DONGGUAN ZHANGMUTOU LONGYU PLASTIC AND RUBBER MATERIAL CO., LTD  
 #B61 THETHIRD PERIOD OF BAIGUODONG PLASTIC AND RUBBER MATERIAL MARKET ZHANGMUTOU  
 TOWN DONGGUAN CITY  
 CHINA

The following sample(s) was/were submitted and identified on behalf of the clients as : TPEE

SGS Job No. : GZIN1503011339PC - GZ  
 Internal Reference No. : 4.3  
 Tested Sample Info. : 55D  
 Client Ref. Info. : 25D 30D 40D 45D 55D 63D 72D 84D  
 Date of Sample Received : 27 Mar 2015  
 Testing Period : 27 Mar 2015 - 04 Apr 2015  
 Test Requested : Selected test(s) as requested by client.  
 Test Method : Please refer to next page(s).  
 Test Results : Please refer to next page(s).  
 Conclusion : Based on the performed tests on submitted sample(s), the results of Lead, Mercury, Cadmium, Hexavalent chromium, Polybrominated biphenyls (PBBs), Polybrominated diphenyl ethers (PBDEs) comply with the limits as set by RoHS Directive 2011/65/EU Annex II; recasting 2002/95/EC.

Signed for and on behalf of  
 SGS-CSTC Standards Technical Services Co., Ltd. Guangzhou Branch

*Merry*

Merry Lv  
 Approved Signatory



This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/terms-and-conditions.aspx> and, for electronic format documents, subject to terms and conditions for electronic documents at [http://www.sgs.com/en/terms-and-conditions/Terms\\_e-Document.aspx](http://www.sgs.com/en/terms-and-conditions/Terms_e-Document.aspx). Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained herein reflects the Company's findings at the time of its intervention only and within the limits of its qualifications, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.  
 Attention: To check the authenticity of testing documents, please contact our telephone: 001 800 800 5566, or email: [CN.Docs@sgs.com](mailto:CN.Docs@sgs.com)  
 180 Keco Road, South Park (Guangzhou Economic & Technological Development Zone), Guangzhou, China 510663 | 1 (86-20) 82155555 | 1 (86-20) 82075113 | [www.sgs.com](http://www.sgs.com) on  
 中国·广州·经济技术开发区科学城科珠路186号 邮编: 510663 | 1 (86-20) 82155555 | 1 (86-20) 82075113 | [sgs.china@sgs.com](mailto:sgs.china@sgs.com)

Member of the SGS Group (SGS SA)

Part No	
Maker Code	RIC-WAT-24001053-UFL
Date(제출일)	2018.05.30
Page	49

Model	Type	Rev	RIC	1.1
	2.4GHz WiFi ANTENNA			



## Test Report

No. CANML1504465303

Date: 04 Apr 2015

Page 2 of 5

Test Results :

Test Part Description :

Specimen No.	SGS Sample ID	Description
SN1	CAN15-044653.003	White plastic grains

Remarks :

- (1) 1 mg/kg = 1 ppm = 0.0001%
- (2) MDL = Method Detection Limit
- (3) ND = Not Detected ( < MDL )
- (4) "-" = Not Regulated

### RoHS Directive 2011/65/EU

- Test Method :
- (1)With reference to IEC 62321-5:2013, determination of Cadmium by ICP-OES.
  - (2)With reference to IEC 62321-5:2013, determination of Lead by ICP-OES.
  - (3)With reference to IEC 62321-4:2013, determination of Mercury by ICP-OES.
  - (4)With reference to IEC 62321:2008, determination of Hexavalent Chromium by Colorimetric Method using UV-Vis.
  - (5)With reference to IEC 62321:2008, determination of PBBs and PBDEs by GC-MS.

Test Item(s)	Limit	Unit	MDL	503
Cadmium (Cd)	100	mg/kg	2	ND
Lead (Pb)	1,000	mg/kg	2	ND
Mercury (Hg)	1,000	mg/kg	2	ND
Hexavalent Chromium (CrVI)	1,000	mg/kg	2	ND
Sum of PBBs	1,000	mg/kg	-	ND
Monobromobiphenyl	-	mg/kg	5	ND
Dibromobiphenyl	-	mg/kg	5	ND
Tribromobiphenyl	-	mg/kg	5	ND
Tetrabromobiphenyl	-	mg/kg	5	ND
Pentabromobiphenyl	-	mg/kg	5	ND
Hexabromobiphenyl	-	mg/kg	5	ND
Heptabromobiphenyl	-	mg/kg	5	ND
Octabromobiphenyl	-	mg/kg	5	ND
Nonabromobiphenyl	-	mg/kg	5	ND
Decabromobiphenyl	-	mg/kg	5	ND
Sum of PBDEs	1,000	mg/kg	-	ND
Monobromodiphenyl ether	-	mg/kg	5	ND



This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/terms-and-conditions.sgs> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/terms-and-conditions/terms-e-document.sgs>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained herein reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. Attention: To check the authenticity of testing (inspection) report & certificate, please contact us at telephone: (86-755) 8337 1443, or email: CN.Inspection@sgs.com

188 Szechuan Road, South Park Guangzhou Economic & Technology Development Zone, Guangzhou, China 510663 | (86-20) 82155555 | (86-20) 82075113 | www.sgs.com.cn  
 中国·广州·经济技术开发区科学城科珠路188号 | 邮编: 510663 | (86-20) 82155555 | (86-20) 82075113 | e: sgs.china@sgs.com

Member of the SGS Group (SGS SA)

Part No	
Maker Code	RIC-WAT-24001053-UFL
Date(제출일)	2018.05.30
Page	50

Model	Type	Rev	RIC	1.1
	2.4GHz WiFi ANTENNA			



**Test Report**

No. CANML1504465303

Date: 04 Apr 2015

Page 3 of 5

Test Item(s)	Limit	Unit	MDL	SGS
Dibromodiphenyl ether	-	mg/kg	5	ND
Tribromodiphenyl ether	-	mg/kg	5	ND
Tetrabromodiphenyl ether	-	mg/kg	5	ND
Pentabromodiphenyl ether	-	mg/kg	5	ND
Hexabromodiphenyl ether	-	mg/kg	5	ND
Heptabromodiphenyl ether	-	mg/kg	5	ND
Octabromodiphenyl ether	-	mg/kg	5	ND
Nonabromodiphenyl ether	-	mg/kg	5	ND
Decabromodiphenyl ether	-	mg/kg	5	ND

Notes :

- (1) The maximum permissible limit is quoted from the directive 2011/65/EU, Annex II.



SGS (Shanghai) Technical Service Co., Ltd.  
Guangzhou Branch

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Documents.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction requirements. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.  
Attention: To check the authenticity of testing inspection report & certificate, please contact us at telephone: (86-755) 8307 5443, or email: CN\_Service@sgs.com  
100 Hefei Road, Shilong Park, Guangzhou Economic & Technology Development Zone, Guangzhou, China 510663 | (86-20) 82155555 | (86-20) 82075113 | www.sgs.com.cn  
中国·广州·经济技术开发区科学城科珠路100号 邮编: 510663 | 86-20-82155555 | 86-20-82075113 | sgschina@sgs.com

Member of the SGS Group (SGS SA)

Part No	
Maker Code	RIC-WAT-24001053-UFL
Date(제출일)	2018.05.30
Page	51

Model	Type	Rev	RIC	1.1
	2.4GHz WiFi ANTENNA			



**Test Report**

No. CANML1504465303

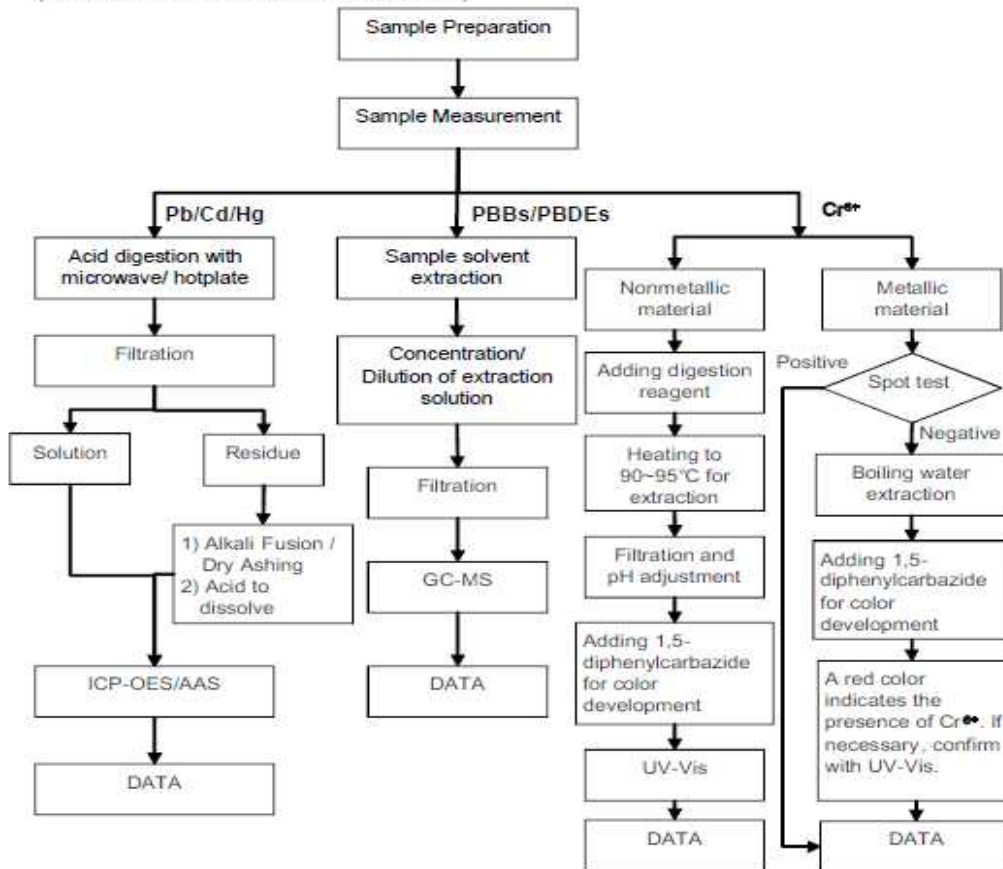
Date: 04 Apr 2015

Page 4 of 5

**ATTACHMENTS**

**RoHS Testing Flow Chart**

- 1) Name of the person who made testing: Bruce Xiao / Sunny Hu
- 2) Name of the person in charge of testing: Bella Wang / Cutey Yu
- 3) These samples were dissolved totally by pre-conditioning method according to below flow chart (Cr<sup>6+</sup> and PBBs/PBDEs test method excluded).



This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/terms-and-conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/terms-and-conditions/terms-e-document.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained herein reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. Attention: To check the authenticity of testing inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: CN.fraudcheck@sgs.com

188 Gao/Poat/Sarash/Pat Guangzhou Estonek & Tehnolgy Development Zone, Guangzhou, China 510663 t (86-20) 82155555 f (86-20) 82075113 www.sgs.com.cn  
 中国·广州·经济技术开发区科学城科珠路188号 邮编: 510663 t (86-20) 82155555 f (86-20) 82075113 e sgs.china@sgs.com

Member of the SGS Group (SGS SA)

Part No	
Maker Code	RIC-WAT-24001053-UFL
Date(제출일)	2018.05.30
Page	52

Model	Type	Rev	RIC	1.1
	2.4GHz WiFi ANTENNA			



**Test Report**

No. CANML1504465303

Date: 04 Apr 2015

Page 5 of 5

Sample photo:



SGS authenticates the photo on original report only

\*\*\* End of Report \*\*\*



This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/terms-and-conditions.sgs> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Documents.sgs>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. Attention: To check the authenticity of testing inspection report & certificate, please contact us at telephone: (86-755) 8307 1643, or email: CN\_fsccheck@sgs.com

SGS (Shanghai) Technical Services Co., Ltd.  
Shanghai SGS Testing Service Limited Laboratory

188 Szechuan Road, Szechuan Park, Guangzhou, Economic & Technology Development Zone, Guangzhou, China 510663 | (86-20) 82155555 | (86-20) 82075113 | www.sgs.com.cn  
中国·广州·经济技术开发区科学城科珠路188号 邮编: 510663 | (86-20) 82155555 | (86-20) 82075113 | e: sgs.china@sgs.com

Member of the SGS Group (SGS SA)

Part No	
Maker Code	RIC-WAT-24001053-UFL
Date(제출일)	2018.05.30
Page	53

Model	Type	Rev	RIC	1.1
	2.4GHz WiFi ANTENNA			

- RF 케이블



## Test Report

Report No. ECL01G02231900401

Page 1 of 8

Applicant JIANGSU YUANDA OF CABLE TECHNOLOGY CO.,LTD.

Address HANGKONG ROAD NO.5,JIANHU COUNTY YANCHENG CITY,JIANGSU PROVINCE.

The following sample(s) and sample information was/were submitted and identified by/on the behalf of the client

No.	Sample Name	Part No.	Material
1	Coaxial cable	RF0.81,RF1.13,RF1.32,RF1.37,RG142,RG174,	Silvery metal wire
2		RG178,RG179,RG180,RG187,RG188,RG316,	Colorless transparent plastic
3		RG316D,RG195,RG196,RG302,RG303,	Silvery metal wire
4		RG179D,RG223,RG304, RG393,RG400,RG402,RG405	Gray jacket

Sample Received Date Oct.29,2014

Testing Period Oct.29,2014 to Nov.1,2014

Test Requested As specified by client, to test Lead(Pb), Cadmium(Cd), Mercury(Hg), Hexavalent Chromium (Cr(VI)), Polybrominated Biphenyls (PBBs), Polybrominated Diphenyl Ethers (PBDEs), Fluorine (F), Chlorine (Cl), Bromine (Br), Iodine (I), Antimony (Sb), Tetrabromobisphenol-A (TBBP-A), Hexabromocyclododecane (HBCDD), Perfluorooctanoic Acid (PFOA), Perfluorooctane Sulfonates(PFOS) in the submitted sample(s).

Test Method Please refer to the following page(s).

Test Result(s) Please refer to the following page(s).

Tested by Chen Lijuan

Reviewed by Chen Laimin



Su Hongwei  
Su Hongwei  
Laboratory Manager

Date Nov.1,2014

No. R187779480

Centre Testing International Co.,Ltd. Shanghai Branch No.1996,New Jinqiao Road, Pudong District, Shanghai, China

Part No	
Maker Code	RIC-WAT-24001053-UFL
Date(제출일)	2018.05.30
Page	54

Model	Type	Rev	RIC	1.1
	2.4GHz WiFi ANTENNA			



## Test Report

Report No. ECL01G02231900401

Page 2 of 8

### Test Method

Tested Item(s)	Test Method	Measured Equipment(s)
Lead (Pb)	IEC 62321-5:2013 Ed.1.0	ICP-OES
Cadmium (Cd)	IEC 62321-5:2013 Ed.1.0	ICP-OES
Mercury (Hg)	IEC 62321-4:2013 Ed.1.0	ICP-OES
Hexavalent Chromium (Cr(VI))	IEC 62321:2008 Ed.1 Annex B	UV-Vis
	IEC 62321:2008 Ed.1 Annex C	
Polybrominated Biphenyls (PBBs)	IEC 62321:2008 Ed.1 Annex A	GC-MS
Polybrominated Diphenyl Ethers (PBDEs)	IEC 62321:2008 Ed.1 Annex A	GC-MS
Fluorine (F)	Refer to BS EN 14582:2007	IC
Chlorine (Cl)	Refer to BS EN 14582:2007	IC
Bromine (Br)	Refer to BS EN 14582:2007	IC
Iodine (I)	Refer to BS EN 14582:2007	IC
Antimony (Sb)	Refer to US EPA 3052:1996 & US EPA 6010C:2007	ICP-OES
Tetrabromobisphenol-A (TBBP-A)	Refer to US EPA 3540C:1996 & US EPA 8270D:2007	GC-MS
Hexabromocyclododecane (HBCDD)	Refer to US EPA 3550C:2007 & US EPA 8270D:2007	GC-MS
Perfluorooctanoic Acid (PFOA)	Refer to US EPA 3550C:2007 & US EPA 8321B:2007	LC-MS-MS
Perfluorooctane Sulfonates (PFOS)	Refer to US EPA 3550C:2007 & US EPA 8321B:2007	LC-MS-MS

Part No	
Maker Code	RIC-WAT-24001053-UFL
Date(제출일)	2018.05.30
Page	55

Model	Type	Rev	RIC	1.1
	2.4GHz WIFI ANTENNA			



## Test Report

Report No. ECL01G02231900401

Page 3 of 8

Test Result(s)

Tested Item(s)	Result(Unit: mg/kg)				MDL
	1	2	3	4	
Lead (Pb)	N.D.	N.D.	N.D.	N.D.	2 mg/kg
Cadmium (Cd)	N.D.	N.D.	N.D.	N.D.	2 mg/kg
Mercury (Hg)	N.D.	N.D.	N.D.	N.D.	2 mg/kg
Hexavalent Chromium (Cr(VI))	—	N.D.	—	N.D.	2 mg/kg
	Negative	—	Negative	—	/
<b>Polybrominated Biphenyls(PBBs)</b>					
Monobromobiphenyl	—	N.D.	—	N.D.	5 mg/kg
Dibromobiphenyl	—	N.D.	—	N.D.	5 mg/kg
Tribromobiphenyl	—	N.D.	—	N.D.	5 mg/kg
Tetrabromobiphenyl	—	N.D.	—	N.D.	5 mg/kg
Pentabromobiphenyl	—	N.D.	—	N.D.	5 mg/kg
Hexabromobiphenyl	—	N.D.	—	N.D.	5 mg/kg
Heptabromobiphenyl	—	N.D.	—	N.D.	5 mg/kg
Octabromobiphenyl	—	N.D.	—	N.D.	5 mg/kg
Nonabromobiphenyl	—	N.D.	—	N.D.	5 mg/kg
Decabromobiphenyl	—	N.D.	—	N.D.	5 mg/kg
<b>Polybrominated Diphenyl Ethers(PBDEs)</b>					
Monobromodiphenyl ether	—	N.D.	—	N.D.	5 mg/kg
Dibromodiphenyl ether	—	N.D.	—	N.D.	5 mg/kg
Tribromodiphenyl ether	—	N.D.	—	N.D.	5 mg/kg
Tetrabromodiphenyl ether	—	N.D.	—	N.D.	5 mg/kg
Pentabromodiphenyl ether	—	N.D.	—	N.D.	5 mg/kg
Hexabromodiphenyl ether	—	N.D.	—	N.D.	5 mg/kg
Heptabromodiphenyl ether	—	N.D.	—	N.D.	5 mg/kg
Octabromodiphenyl ether	—	N.D.	—	N.D.	5 mg/kg
Nonabromodiphenyl ether	—	N.D.	—	N.D.	5 mg/kg
Decabromodiphenyl ether	—	N.D.	—	N.D.	5 mg/kg

Tested Item(s)	Result(Unit: mg/kg)		MDL
	2	4	
<b>Halogen</b>			
Fluorine (F)	409433	484302	10 mg/kg
Chlorine (Cl)	N.D.	N.D.	10 mg/kg
Bromine (Br)	N.D.	N.D.	10 mg/kg
Iodine (I)	N.D.	N.D.	10 mg/kg



Part No	
Maker Code	RIC-WAT-24001053-UFL
Date(제출일)	2018.05.30
Page	56

Model	Type	Rev	RIC	1.1
	2.4GHz WiFi ANTENNA			



## Test Report

Report No. ECL01G02231900401

Page 4 of 8

Tested Item(s)	Result(Unit: mg/kg)		MDL
	2	4	
Antimony (Sb)	N.D.	N.D.	5 mg/kg
Tetrabromobisphenol-A (TBBP-A)	N.D.	N.D.	5mg/kg
Hexabromocyclododecane (HBCDD)	N.D.	N.D.	5 mg/kg
Perfluorooctanoic Acid (PFOA)	N.D.	N.D.	5mg/kg
Perfluorooctane Sulfonates(PFOS)	N.D.	N.D.	5mg/kg

### Tested Sample/Part Description

1. Silvery metal wire
2. Colorless transparent plastic
3. Silvery metal wire
4. Gray plastic wire jacket

**Note: The sample had been dissolved totally tested for Lead, Cadmium, Mercury, Antimony.**

-MDL= Method Detection Limit

-N.D. = Not Detected (<MDL)

-mg/kg = ppm = parts per million

-Negative = Absence of Cr(VI), the detected Cr(VI) concentration in the boiling water extraction solution is less than 0.02 mg/kg with 50cm<sup>2</sup> sample surface area used.

-According to the client's statement, the material of sample No.1, No.2, No.3, No.4 in this report is the same as the sample No.1, No.2, No.3, No.5 in report ECL01G022319004, so the test result(s) is presented in reference to that one.

Part No	
Maker Code	RIC-WAT-24001053-UFL
Date(제출일)	2018.05.30
Page	57

Model	Type	Rev	RIC	1.1
	2.4GHz WiFi ANTENNA			



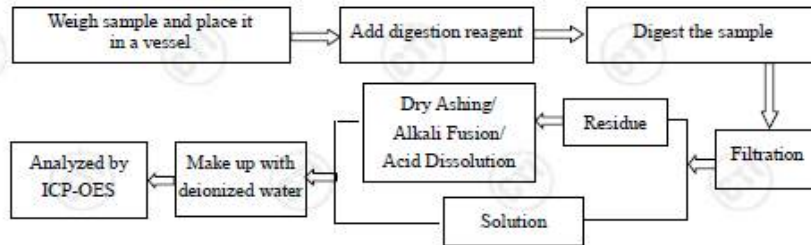
## Test Report

Report No. ECL01G02231900401

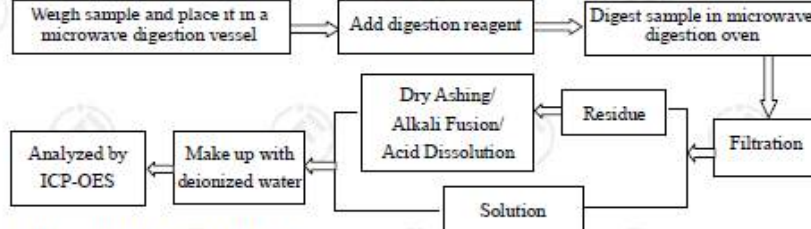
Page 5 of 8

### Test Process

#### 1. Lead(Pb), Cadmium(Cd)

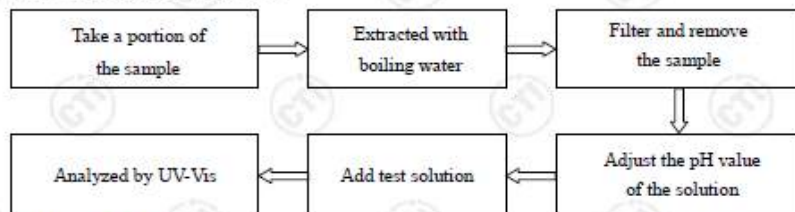


#### 2. Mercury (Hg)

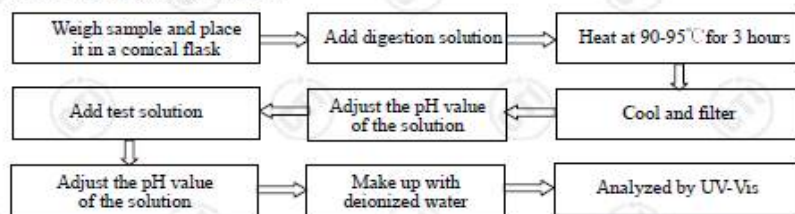


#### 3. Hexavalent Chromium (Cr(VI))

##### (1) IEC 62321:2008 Ed.1 Annex B



##### (2) IEC 62321:2008 Ed.1 Annex C



Part No	
Maker Code	RIC-WAT-24001053-UFL
Date(제출일)	2018.05.30
Page	58

Model	Type	Rev	RIC	1.1
	2.4GHz WIFI ANTENNA			

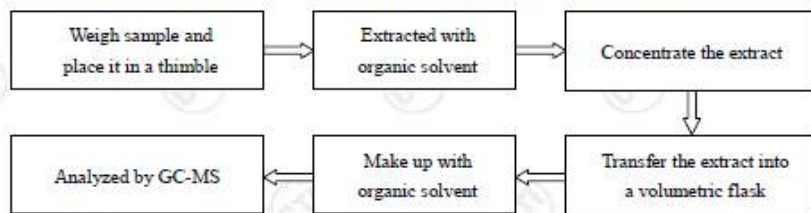


## Test Report

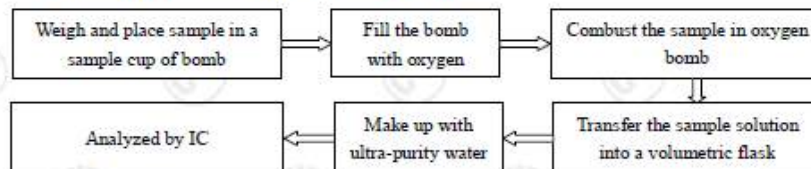
Report No. ECL01G02231900401

Page 6 of 8

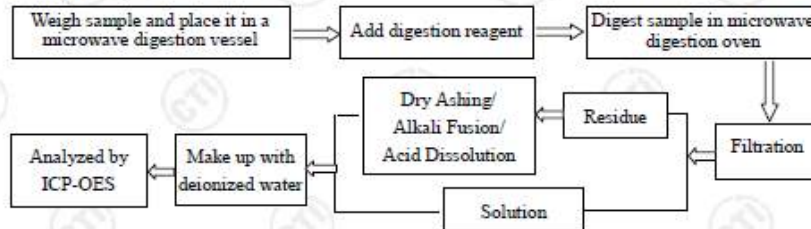
### 4. Polybrominated Biphenyls(PBBs), Polybrominated Diphenyl Ethers(PBDEs)



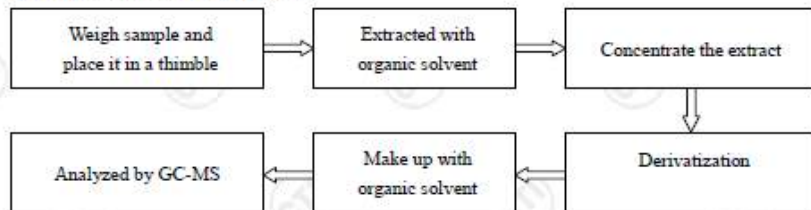
### 5. Fluorine(F), Chlorine(Cl), Bromine(Br), Iodine(I)



### 6. Antimony (Sb)



### 7. Tetrabromobisphenol-A (TBBP-A)



Part No	
Maker Code	RIC-WAT-24001053-UFL
Date(제출일)	2018.05.30
Page	59

Model	Type	Rev	RIC	1.1
	2.4GHz WiFi ANTENNA			

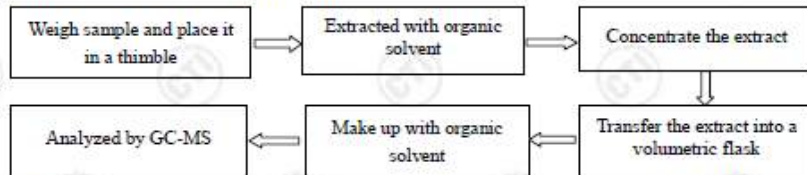


## Test Report

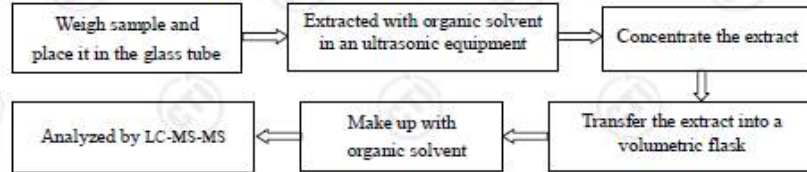
Report No. ECL01G02231900401

Page 7 of 8

### 8. Hexabromocyclododecane (HBCDD)



### 9. Perfluorooctanoic Acid (PFOA), Perfluorooctane Sulfonates (PFOS)



Part No	
Maker Code	RIC-WAT-24001053-UFL
Date(제출일)	2018.05.30
Page	60

Model	Type	Rev	RIC	1.1
	2.4GHz WiFi ANTENNA			

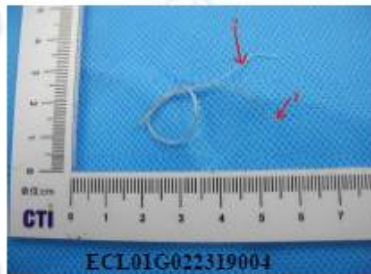


## Test Report

Report No. ECL01G02231900401

Page 8 of 8

### Photo(s) of the sample(s)



1.2



3



4

\*\*\* End of Report \*\*\*

The test report is effective only with both signature and specialized stamp. The result(s) shown in this report refer only to the sample(s) tested. Without written approval of CTI, this report can't be reproduced except in full.

Part No	
Maker Code	RIC-WAT-24001053-UFL
Date(제출일)	2018.05.30
Page	61

Model	Type	Rev	RIC	1.1
	2.4GHz WIFI ANTENNA			

- 인동



## Test Report

Report No. SCL01G003734002

Page 1 of 4

**Applicant** DONGGUANGOLDCONN ELECTRONICS CO.,LTD  
**Address** DAXIANDI DISTRICT QUANTANG, LIAO BU TOWN, DONGGUAN CITY, GUANGDONG, CHINA

The following sample(s) and sample information was/were submitted and identified by/on the behalf of the client

**Sample Name** USB/1394/HDMI/RF/ product line  
**Part No.** C5191  
**Material** Phosphor copper  
**Sample Received Date** May. 4, 2014  
**Testing Period** May. 4, 2014 to May. 8, 2014

**Test Requested** As specified by client, to test Lead (Pb), Cadmium (Cd), Mercury (Hg), Hexavalent Chromium(Cr(VI)), Perfluorooctane Sulfonates(PFOS), Perfluorooctanoic Acid(PFOA) in the submitted sample(s).

### Test Method

Test Item(s)	Test Method	Measured Equipment(s)
Lead (Pb)	IEC 62321-5:2013 Ed.1.0	ICP-OES
Cadmium (Cd)	IEC 62321-5:2013 Ed.1.0	ICP-OES
Mercury (Hg)	IEC 62321-4:2013 Ed.1.0	ICP-OES
Hexavalent Chromium(Cr(VI))	IEC 62321:2008 Ed.1 Annex B	UV-Vis
Perfluorooctane Sulfonates(PFOS)	Refer to US EPA 3550C:2007	LC-MS-MS
Perfluorooctanoic Acid(PFOA)	Refer to US EPA 3550C:2007	LC-MS-MS

**Test Result(s)** Please refer to the following page(s).

Tested by

*Rick Lin*

Reviewed by

*Vangar He*

approved by

*Danny Liu*

Date

May. 8, 2014

Danny Liu  
 Technical Manager

No. R1078419026

Centre Testing International (Shenzhen) Co., Ltd. Hongwei Industrial Zone, Bao'an 70 District, Shenzhen, Guangdong, China

CENTRE TESTING INTERNATIONAL CORPORATION

Complaint call: 0755-33681790

Complaint E-mail: complaint@cti-cert.com

E-mail: info@cti-cert.com

Hotline  
 400-8788-333  
 www.cti-cert.com

Part No	
Maker Code	RIC-WAT-24001053-UFL
Date(제출일)	2018.05.30
Page	62

Model	Type	Rev	RIC	1.1
	2.4GHz WiFi ANTENNA			



## Test Report

Report No. SCL01G003734002

Page 2 of 4

### Test Result(s)

Tested Item(s)	Result	MDL
Lead (Pb)	64 mg/kg	2 mg/kg
Cadmium (Cd)	N.D.	2 mg/kg
Mercury (Hg)	N.D.	2 mg/kg
Hexavalent Chromium(Cr(VI))	Negative	/

Tested Item(s)	Result	MDL
Perfluorooctane Sulfonates(PFOS)	N.D.	0.5 µg/m <sup>2</sup>
Perfluorooctanoic Acid(PFOA)	N.D.	0.5 µg/m <sup>2</sup>

Tested Sample/Part Description Metal with silvery-white/golden plating

Note: The sample(s) had been dissolved totally tested for Lead, Cadmium, Mercury.  
 -MDL = Method Detection Limit  
 -N.D. = Not Detected (<MDL)  
 -mg/kg = ppm = parts per million  
 -Negative = Absence of Cr(VI), the detected Cr(VI) concentration in the boiling water extraction solution is less than 0.02 mg/kg with 50cm<sup>2</sup> sample surface area used.

Part No	
Maker Code	RIC-WAT-24001053-UFL
Date(제출일)	2018.05.30
Page	63

Model	Type	Rev	RIC	1.1
	2.4GHz WiFi ANTENNA			



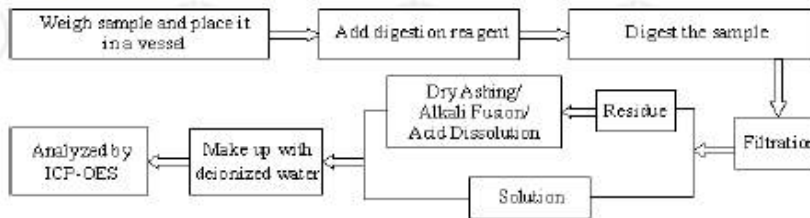
## Test Report

Report No. SCL01G003734002

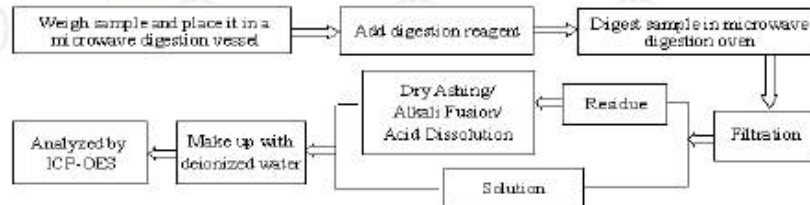
Page 3 of 4

### Test Process

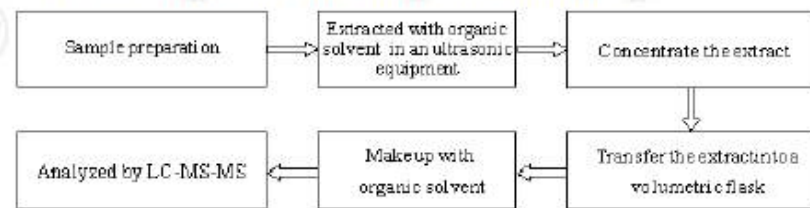
#### 1. Cadmium (Cd), Lead (Pb)



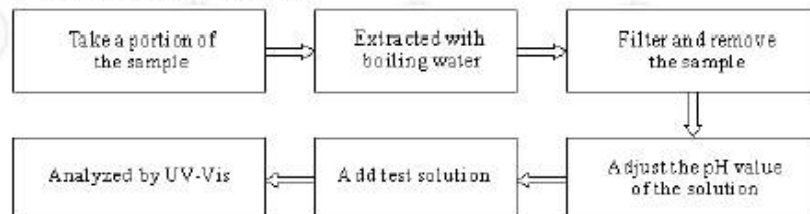
#### 2. Mercury (Hg)



#### 3. Perfluorooctane Sulfonates(PFOS), Perfluorooctanoic Acid(PFOA)



#### 4. Hexavalent Chromium(Cr(VI))





Part No	
Maker Code	RIC-WAT-24001053-UFL
Date(제출일)	2018.05.30
Page	64

Model	Type	Rev	RIC	1.1
	2.4GHz WiFi ANTENNA			



## Test Report

Report No. SCL01G003734002

Page 4 of 4

Photo(s) of the sample(s)



\*\*\* End of report \*\*\*

The test report is effective only with both signature and specialized stamp. The result(s) shown in this report refer only to the sample(s) tested. Without written approval of CTI, this report can't be reproduced except in full.

Part No	
Maker Code	RIC-WAT-24001053-UFL
Date(제출일)	2018.05.30
Page	65

Model	Type	Rev	RIC	1.1
	2.4GHz WiFi ANTENNA			

-실리콘 튜브



## 检测报告 Test Report

报告编号 SCL01H014517003E  
Report No. SCL01H014517003E

第 1 页 共 10 页  
Page 1 of 10

申请单位 深圳市沃尔格材料股份有限公司  
Applicant SHENZHEN WOER HEAT HEAT-SHRINKABLE MATERIAL CO.,LTD  
地址 深圳市龙岗区坪山镇大工业区三景北路沃尔格工业园  
Address WOER MANSION,NORTH LANJING ROAD,PINGSHAN,SHENZHEN P.R.CHINA

以下测试之样品及样品信息由申请者提供并确认  
The following sample(s) and sample information was/were submitted and identified by/on the behalf of the client

样品名称 透明硅胶管  
Sample Name Transparent Silicone Rubber Tube  
样品接收日期 2015.03.06  
Sample Received Date Mar. 6, 2015  
样品检测日期 2015.03.06-2015.03.11  
Testing Period Mar. 6, 2015 to Mar. 11, 2015

检测要求 根据客户要求,对所提交样品中的铅(Pb),镉(Cd),汞(Hg),六价铬(Cr(VI)),多溴联苯(PBBs),多溴二苯醚(PBDEs),六溴环十二烷(HBCDD),邻苯二甲酸酯进行测试  
Test Requested As specified by client, to test Lead (Pb), Cadmium (Cd), Mercury (Hg), Hexavalent Chromium(Cr(VI)), Polybrominated Biphenyl(PBBs), Polybrominated Diphenyl Ethers(PBDEs), Hexabromocyclododecane (HBCDD), Phthalates in the submitted sample(s).

检测依据/检测结果 请参见下一页  
Test Method/Test Result(s) Please refer to the following page(s).

主 检  
Tested by Haden  
批 准  
Approved by Danny Liu  
Danny Liu  
Technical Manager

审 核  
Reviewed by Cathy  
日 期  
Date 2015.03.11



No. R187217541

Part No	
Maker Code	RIC-WAT-24001053-UFL
Date(제출일)	2018.05.30
Page	66

Model	Type	Rev	RIC	1.1
	2.4GHz WiFi ANTENNA			



# 检测报告 Test Report

报告编号 SCL01H014517003E  
Report No. SCL01H014517003E

第 2 页 共 10 页  
Page 2 of 10

结论 Conclusion

测试样品 Tested Sample	依据指令 According to directive	结果 Result
提交样品 Submitted Sample	2011/65/EU*	合格 Pass

\*2011/65/EU为欧盟RoHS指令(2002/95/EC)的修订指令, 该指令对电子电器产品中的特定有毒有害物质(铅(Pb), 镉(Cd), 汞(Hg), 六价铬(Cr(VI)), 多溴联苯(PBBs), 多溴二苯醚(PBDEs))限制使用。  
合格表示检测结果不超过欧盟RoHS指令2011/65/EU规定的限值。

\*2011/65/EU is a new version of RoHS Directive (2002/95/EC) which focuses on restriction of the use of certain hazardous substances (Lead(Pb), Cadmium(Cd), Mercury(Hg), Hexavalent Chromium(Cr(VI)), Polybrominated Biphenyls(PBBs), Polybrominated Diphenyl Ethers(PBDEs)) in electrical and electronic equipment.  
Pass means that the results shown on the report do not exceed the limits set by RoHS Directive 2011/65/EU.

Part No	
Maker Code	RIC-WAT-24001053-UFL
Date(제출일)	2018.05.30
Page	67

Model	Type	Rev	RIC	1.1
	2.4GHz WiFi ANTENNA			



## 检测报告 Test Report

报告编号 SCL01H014517003E  
Report No. SCL01H014517003E

第 3 页 共 10 页  
Page 3 of 10

**检测依据 Test Method**

测试项目 Test Item(s)	测试方法 Test Method	测试仪器 Measured Equipment(s)
铅(Pb) Lead (Pb)	IEC 62321-5:2013 Ed.1.0	ICP-OES
镉(Cd) Cadmium (Cd)	IEC 62321-5:2013 Ed.1.0	ICP-OES
汞(Hg) Mercury (Hg)	IEC 62321-4:2013 Ed.1.0	ICP-OES
六价铬(Cr(VI)) Hexavalent Chromium(Cr(VI))	IEC 62321:2008 Ed.1 Annex C	UV-Vis
多溴联苯(PBBs) Polybrominated Biphenyl(PBBs)	IEC 62321:2008 Ed.1 Annex A	GC-MS
多溴二苯醚(PBDEs) Polybrominated Diphenyl Ethers(PBDEs)	IEC 62321:2008 Ed.1 Annex A	GC-MS
六溴环十二烷(HBCDD) Hexabromocyclododecane (HBCDD)	参照 US EPA 3540C:1996 & US EPA 8270D:2007 Refer to US EPA 3540C:1996 & US EPA 8270D:2007	GC-MS
邻苯二甲酸酯 Phthalates	参照 EN 14372:2004(E) Refer to EN 14372:2004(E)	GC-MS

**检测结果 Test Result(s)**

测试项目 Test Item(s)	结果 Result	方法检出限 MDL	2011/65/EU指令限值 Limit of Directive 2011/65/EU
铅(Pb) Lead (Pb)	N.D.	2 mg/kg	1000 mg/kg
镉(Cd) Cadmium (Cd)	N.D.	2 mg/kg	100 mg/kg
汞(Hg) Mercury (Hg)	N.D.	2 mg/kg	1000 mg/kg
六价铬(Cr(VI)) Hexavalent Chromium (Cr(VI))	N.D.	2 mg/kg	1000 mg/kg

Part No	
Maker Code	RIC-WAT-24001053-UFL
Date(제출일)	2018.05.30
Page	68

Model	Type	Rev	RIC	1.1
	2.4GHz WiFi ANTENNA			



## 检测报告 Test Report

报告编号 SCL01H014517003E  
Report No. SCL01H014517003E

第 4 页 共 10 页  
Page 4 of 10

测试项目 Test Item(s)	结果 Result	方法检出限 MDL	2011/65/EU指令限值 Limit of Directive 2011/65/EU
<b>多溴联苯(PBBs) Polybrominated Biphenyl(PBBs)</b>			
一溴联苯 Monobromobiphenyl	N.D.	5 mg/kg	1000 mg/kg
二溴联苯 Dibromobiphenyl	N.D.	5 mg/kg	
三溴联苯 Tribromobiphenyl	N.D.	5 mg/kg	
四溴联苯 Tetrabromobiphenyl	N.D.	5 mg/kg	
五溴联苯 Pentabromobiphenyl	N.D.	5 mg/kg	
六溴联苯 Hexabromobiphenyl	N.D.	5 mg/kg	
七溴联苯 Heptabromobiphenyl	N.D.	5 mg/kg	
八溴联苯 Octabromobiphenyl	N.D.	5 mg/kg	
九溴联苯 Nonabromobiphenyl	N.D.	5 mg/kg	
十溴联苯 Decabromobiphenyl	N.D.	5 mg/kg	

Part No	
Maker Code	RIC-WAT-24001053-UFL
Date(제출일)	2018.05.30
Page	69

Model	Type	Rev	RIC	1.1
	2.4GHz WiFi ANTENNA			



## 检测报告 Test Report

报告编号 SCL01H014517003E  
Report No. SCL01H014517003E

第 5 页 共 10 页  
Page 5 of 10

测试项目 Test Item(s)	结果 Result	方法检出限 MDL	2011/65/EU指令限值 Limit of Directive 2011/65/EU
<b>多溴二苯醚(PBDEs) Polybrominated Diphenyl Ethers(PBDEs)</b>			
一溴二苯醚 Monobromodiphenyl ether	N.D.	5 mg/kg	1000 mg/kg
二溴二苯醚 Dibromodiphenyl ether	N.D.	5 mg/kg	
三溴二苯醚 Tribromodiphenyl ether	N.D.	5 mg/kg	
四溴二苯醚 Tetrabromodiphenyl ether	N.D.	5 mg/kg	
五溴二苯醚 Pentabromodiphenyl ether	N.D.	5 mg/kg	
六溴二苯醚 Hexabromodiphenyl ether	N.D.	5 mg/kg	
七溴二苯醚 Heptabromodiphenyl ether	N.D.	5 mg/kg	
八溴二苯醚 Octabromodiphenyl ether	N.D.	5 mg/kg	
九溴二苯醚 Nonabromodiphenyl ether	N.D.	5 mg/kg	
十溴二苯醚 Decabromodiphenyl ether	N.D.	5 mg/kg	
<b>测试项目 Test Item(s)</b>	<b>结果 Result</b>	<b>方法检出限 MDL</b>	
六溴环十二烷(HBCDD) Hexabromocyclododecane (HBCDD)	N.D.	5 mg/kg	

Part No	
Maker Code	RIC-WAT-24001053-UFL
Date(제출일)	2018.05.30
Page	70

Model	Type	Rev	RIC	1.1
	2.4GHz WiFi ANTENNA			



## 检测报告 Test Report

报告编号 SCL01H014517003E  
Report No. SCL01H014517003E

第 6 页 共 10 页  
Page 6 of 10

测试项目 Tested Item(s)	结果 Result	方法检出限 MDL
<b>邻苯二甲酸酯 Phthalates</b>		
邻苯二甲酸二正丁酯 (DBP) Dibutyl phthalate(DBP) CAS#:84-74-2	N.D.	50 mg/kg
邻苯二甲酸丁基苄酯 (BBP) Butylbenzyl phthalate(BBP) CAS#:85-68-7	N.D.	50 mg/kg
邻苯二甲酸二(2-乙基己基)酯 (DEHP) Di-2-ethylhexyl phthalate(DEHP) CAS#:117-81-7	N.D.	50 mg/kg

测试样品/部位描述 透明硅胶管  
Tested Sample/Part Description Transparent silical gel tube

备注: 对于检测铅, 镉, 汞之样品已完全溶解。

-N.D. = 未检出 (小于方法检出限)

-mg/kg= ppm = 百万分之一

Remark: The sample(s) had been dissolved totally tested for Lead, Cadmium, Mercury.

-MDL = Method Detection Limit

-N.D. = Not Detected (<MDL)

-mg/kg = ppm = parts per million

Part No	
Maker Code	RIC-WAT-24001053-UFL
Date(제출일)	2018.05.30
Page	71

Model	Type	Rev	RIC	1.1
	2.4GHz WiFi ANTENNA			



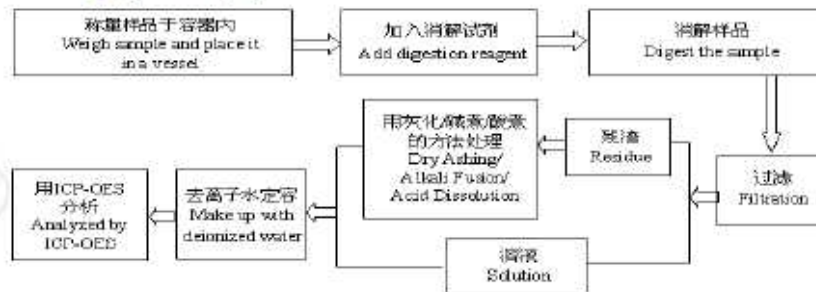
## 检测报告 Test Report

报告编号 SCL01H014517003E  
Report No. SCL01H014517003E

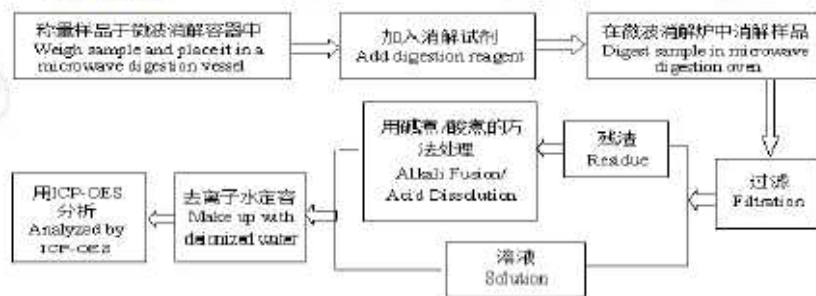
第 7 页 共 10 页  
Page 7 of 10

### 检测流程 Test Process

#### 1. 铅(Pb), 镉(Cd) Lead (Pb), Cadmium (Cd)



#### 2. 汞(Hg) Mercury (Hg)





Part No	
Maker Code	RIC-WAT-24001053-UFL
Date(제출일)	2018.05.30
Page	72

Model	Type	Rev	RIC	1.1
	2.4GHz WiFi ANTENNA			



## 检测报告 Test Report

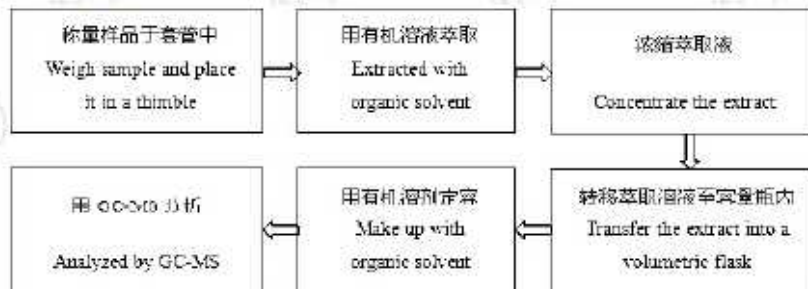
报告编号 SCL01H014517003E  
Report No. SCL01H014517003E

第 8 页 共 10 页  
Page 8 of 10

### 3. 六价铬(Cr(VI)) Hexavalent Chromium(Cr(VI))



### 4. 邻苯二甲酸酯 Phthalates



### 5. 多溴联苯(PBBs), 多溴二苯醚(PBDEs) Polybrominated Biphenyl(PBBs), Polybrominated Diphenyl Ethers(PBDEs)



Part No	
Maker Code	RIC-WAT-24001053-UFL
Date(제출일)	2018.05.30
Page	73

Model	Type	Rev	RIC	1.1
	2.4GHz WiFi ANTENNA			



## 检测报告 Test Report

报告编号 SCL01H014517003E  
Report No. SCL01H014517003E

第 9 页 共 10 页  
Page 9 of 10

6. 六溴环十二烷 (HBCDD)  
Hexabromocyclododecane (HBCDD)



Part No	
Maker Code	RIC-WAT-24001053-UFL
Date(제출일)	2018.05.30
Page	74

Model	Type	Rev	RIC	1.1
	2.4GHz WiFi ANTENNA			

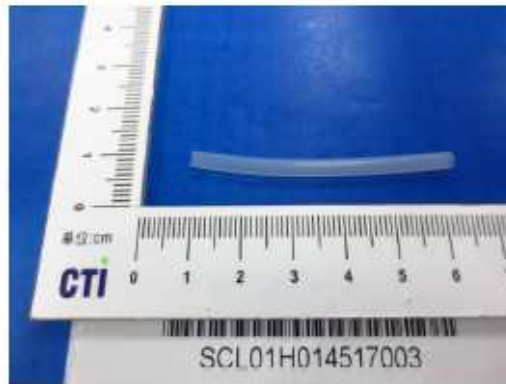


## 检测报告 Test Report

报告编号 SCL01H014517003E  
Report No. SCL01H014517003E

第 10 页 共 10 页  
Page 10 of 10

### 样品图片 Photo(s) of the sample(s)



\*\*\*报告结束\*\*\*  
\*\*\* End of report \*\*\*

检测报告无批准人签字及“报告专用章”无效，本报告检测结果仅对受测样品负责，未经CTI书面同意，不得部分复制本报告。

The test report is effective only with both signature and specialized stamp. The result(s) shown in this report refer only to the sample(s) tested. Without written approval of CTI, this report can't be reproduced except in full.

Part No	
Maker Code	RIC-WAT-24001053-UFL
Date(제출일)	2018.05.30
Page	75

Model	Type	Rev	RIC	1.1
	2.4GHz WiFi ANTENNA			

- 주석



**测试报告**

No. CANEC1408117401

日期: 2014年05月30日 第1页,共4页

东莞市成骏金属制品有限公司  
广东省东莞市沙田镇大泥管理区金玉村

以下测试之样品是由申请者所提供及确认: 3#锌合金

SGS工作编号: CP14-027932 - GZ  
 样品接收日期: 2014年05月27日  
 测试周期: 2014年05月27日 - 2014年05月30日  
 测试要求: 根据客户要求测试  
 测试方法: 请参见下一页  
 测试结果: 请参见下一页  
 结论: 基于所送样品进行的测试, 镉、铅、汞、六价铬的测试结果符合欧盟RoHS指令2002/95/EC的重订指令2011/65/EU附录II的限值要求。

道标标准技术服务有限公司  
授权签名

吕爱凤

Merry Lv 吕爱凤  
批准签署人

备注: 根据客户申请, SGS出具了此中文报告, 英文版本可根据客户要求提供. (The Chinese test report is issued according to the applicant's request. The English version is available from SGS if further needed)



This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/term-and-conditions>, also see, for electronic format documents, subject to terms and conditions for Electronic Documents at <http://www.sgs.com/term-and-conditions>. Attention is drawn to the limitation of liability, indemnification and limitation issues stated therein. Any holder of this document is advised that interpretation contained herein reflects the Company's analysis of the law of the jurisdiction only and within the limits of SGS's responsibility, if any. The Company's sole responsibility is to its Client and this document does not constitute parties to a transaction from assuming all their rights and obligations under the transaction concerned. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.  
 Attention: To check the authenticity of testing inspection report & certificates, please contact us at telephone: (86-755) 8887 5446 or email: [china@sgs.com](mailto:china@sgs.com)  
 (86)4678-2600 Fax: (86)4678-2601  
 13046th Road/Guangdong Park/Guangdong E-Technology Development Zone/Daoguo, China 510663 | (86-20) 82155525 | (86-20) 82075113 | [www.sgs.com](http://www.sgs.com)  
 中国·广州·经济技术开发区科学城科珠路130号 邮编: 510663 | (86-20) 82155525 | (86-20) 82075113 | [sgs.china@sgs.com](mailto:sgs.china@sgs.com)

Member of the SGS Group (SGS SA)

Part No	
Maker Code	RIC-WAT-24001053-UFL
Date(제출일)	2018.05.30
Page	76

Model	Type	Rev	RIC	1.1
	2.4GHz WiFi ANTENNA			



## 测试报告

No. CANEC1408117401

日期: 2014年05月30日 第2页,共4页

测试结果:

测试样品描述:

样品编号	SGS样品ID	描述
SN1	CAN14-081174.001	银灰色金属

备注:

- (1) 1 mg/kg = 1 ppm = 0.0001%
- (2) MDL = 方法检测限
- (3) ND = 未检出 (< MDL)
- (4) "\*" = 未按规定

## RoHS指令2011/65/EU

- 测试方法:
- (1)参考IEC 62321-5:2013, 用ICP-OES测定镉的含量
  - (2)参考IEC 62321-5:2013, 用ICP-OES测定铅的含量
  - (3)参考IEC 62321-4:2013, 用ICP-OES测定汞的含量
  - (4)参考IEC 62321:2008, 用点测试法/紫外-可见分光光度计比色法测定六价铬的含量

测试项目	限值	单位	MDL	结果
镉 (Cd)	100	mg/kg	2	3
铅 (Pb)	1,000	mg/kg	2	13
汞 (Hg)	1,000	mg/kg	2	ND
六价铬(Cr(VI))	-	-	◇	阴性

备注:

- (1) 最大允许限值引用自指令2011/65/EU 附录II.
- (2) ◇点测试法:  
阴性= 未检测到六价铬, 阳性= 检测到六价铬;  
(当点测试结果为阴性或无法确定时,将采用沸水萃取法作进一步的结果验证.)  
◇沸水萃取法:  
阴性= 未检测到六价铬  
阳性= 检测到六价铬; 表明50 cm<sup>2</sup>表面积的被测样品的沸水萃取液中六价铬的浓度等于或大于0.02 mg/kg  
由于未获知样品的存储条件和生产日期, 样品的六价铬测试结果仅能代表测试时样品含六价铬的状态.



This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/sgs-and-clients/sgs-also-for>, or electronic form documents, subject to terms and conditions for electronic documents at <http://www.sgs.com/en/sgs-and-clients/sgs-also-for/electronic-form-documents>. Attention is drawn to the limitation of liability, indemnification and arbitration clauses defined therein. Any holder of this document is advised that information contained herein reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not constitute parties to a transaction from exercising all their rights and obligations under the transaction documents. THIS DOCUMENT CANNOT BE REPRODUCED WITHOUT THE WRITTEN APPROVAL OF THE USER BY ANY UNAUTHORIZED PERSON. Integrity or falsification of the content or appearance of this document is unlawful and redactions may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.  
Attention: To check the authenticity of testing/inspection report @authisize, please contact us at telephone: 800-731-0387/9460, or email: [CS\\_Business@sgs.com](mailto:CS_Business@sgs.com)

180 Yehou Road, Sanyuan, Foshan Economic & Techno Development Zone, China 510663 | 86-20-82155555 | 86-20-82075113 | [www.sgsgroup.com.cn](http://www.sgsgroup.com.cn)  
中国·广州·经济技术开发区科学城科利路180号 邮编: 510663 | 86-20-82155555 | 86-20-82075113 | [sgs.china@sgs.com](mailto:sgs.china@sgs.com)

Member of the SGS Group (SGS SA)



Part No	
Maker Code	RIC-WAT-24001053-UFL
Date(제출일)	2018.05.30
Page	78

Model	Type	Rev	RIC	1.1
	2.4GHz WiFi ANTENNA			



测试报告

No. CANEC1408117401

日期: 2014年05月30日 第4页,共4页

样品照片:



此照片仅限于随SGS正本报告使用

\*\*\* 报告完 \*\*\*



This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/sgs-and-its-services-also-are-for-alternative-some-occasions>, subject to terms and conditions for electronic transactions of <http://www.sgs.com/en/sgs-and-its-services-also-are-for-alternative-some-occasions>. Attention is drawn to the limitation of liability, indemnification and arbitration clauses defined therein. Any holder of this document is advised that information contained herein reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not constitute parties to a transaction from exercising all their rights and obligations under the transaction documents. THIS DOCUMENT CANNOT BE REPRODUCED WITHOUT THE WRITTEN PRIOR WRITTEN APPROVAL OF THE USER BY ANY ORGANIZATION whatsoever, hereby or falsification of the content or appearance of this document is unlawful and offences may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.

Attention: To check the authenticity of testing/inspection report @ any location, please contact us at telephone: 800-731-8387 9460, or email: [CN\\_Business@sgs.com](mailto:CN_Business@sgs.com)

180 Yuetu Road, Guangzhou Economic & Technology Development Zone, Guangzhou, China 510663 | 86-20-82155555 | 86-20-82075113 | [www.sgs.com](http://www.sgs.com)  
 中国·广州·经济技术开发区科学城科韵路180号 邮编: 510663 | 86-20-82155555 | 86-20-82075113 | [sgs.china@sgs.com](mailto:sgs.china@sgs.com)

Member of the SGS Group (SGS SA)

Part No	
Maker Code	RIC-WAT-24001053-UFL
Date(제출일)	2018.05.30
Page	79

Model	Type	Rev	RIC	1.1
	2.4GHz WiFi ANTENNA			

-폴리아세탈(POM)



检测报告

编号: GZHG14090338500T

日期: 2014年09月12日

第1页共5页

东莞市樟木头龙宇塑胶原料经营部  
 东莞市樟木头镇百果洞塑胶原料市场三期 B61号

下列样品由客户提供及确认:

样品描述 : POM 100P  
 SGS参考编号 : CAN14-147334  
 执行检测 : 按申请者要求进行检测  
 收样日期 : 2014年09月04日  
 检测日期 : 2014年09月04日至2014年09月12日  
 检测结果 : 详细请见下页

测试要求	测试结果
参考欧盟 RoHS 指令 2002/95/EC 的重订指令 2011/65/EU 附录 II, 对所提交的样品进行铅、铝、汞、六价铬、多溴联苯和多溴二苯醚测试。	合格

通标标准技术服务有限公司  
 授权签名

刘燕君  
 批准签署人



This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/terms-and-conditions.aspx> and, for electronic format documents, subject to terms and Conditions for Electronic Documents at <http://www.sgs.com/en/terms-and-conditions/forms-e-document.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.  
 Attention: To check the authenticity of testing inspection report & certificate, please contact us at telephone: (86-73) 8307 5443, or email: [CN.Doccheck@sgs.com](mailto:CN.Doccheck@sgs.com)  
 168 Nanzhu Road, Science Park Guangzhou Economic & Technology Development District, Guangzhou, China 510663 1 (86-20) 82155555 f (86-20) 82075191 www.sgs.com.cn  
 中国·广州·经济技术开发区科学城珠珠路168号 邮编: 510663 1 (86-20) 82155555 f (86-20) 82075191 e [sgs.china@sgs.com](mailto:sgs.china@sgs.com)

Member of the SGS Group (SGS SA)



Part No	
Maker Code	RIC-WAT-24001053-UFL
Date(제출일)	2018.05.30
Page	80

Model	Type	Rev	RIC	1.1
	2.4GHz WiFi ANTENNA			



检测报告

编号: GZHG14090338500T

日期: 2014年09月12日

第2页共5页

测试结果:

测试样品描述:

样品编号	SGS 样品 ID	描述
SN1	CAN14-147334.001	白色的塑料颗粒

注释:

- (1) 1 mg/kg = 0.0001%
- (2) MDL = 方法检测限
- (3) ND = 未检出 (< MDL)
- (4) "-" = 未规定

**RoHS 指令 2011/65/EU**

- 测试方法:
- (1) 参考 IEC 62321-5:2013, 用 ICP-OES 测定镉的含量
  - (2) 参考 IEC 62321-5:2013, 用 ICP-OES 测定铅的含量
  - (3) 参考 IEC 62321-4:2013, 用 ICP-OES 测定汞的含量
  - (4) 参考 IEC 62321:2008, 用紫外-可见分光光度计比色法测定六价铬的含量
  - (5) 参考 IEC 62321:2008, 用 GC-MS 测定 PBBs(多溴联苯)和 PBDEs(多溴二苯醚)的含量

测试项目	限值	单位	MDL	001
镉 (Cd)	100	mg/kg	2	ND
铅 (Pb)	1000	mg/kg	2	ND
汞 (Hg)	1000	mg/kg	2	ND
六价铬(Cr(VI))	1000	mg/kg	2	ND
多溴联苯之和(PBBs)	1000	mg/kg	-	ND
一溴联苯	-	mg/kg	5	ND
二溴联苯	-	mg/kg	5	ND
三溴联苯	-	mg/kg	5	ND
四溴联苯	-	mg/kg	5	ND
五溴联苯	-	mg/kg	5	ND
六溴联苯	-	mg/kg	5	ND
七溴联苯	-	mg/kg	5	ND
八溴联苯	-	mg/kg	5	ND
九溴联苯	-	mg/kg	5	ND
十溴联苯	-	mg/kg	5	ND
多溴二苯醚之和(PBDEs)	1000	mg/kg	-	ND
一溴二苯醚	-	mg/kg	5	ND



This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Forms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Documents.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained herein reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

Attention: To check the authenticity of testing/inspection report & certificate, please contact us at telephone: (86-755) 8507 5443, or email: [cn\\_classification@sgs.com](mailto:cn_classification@sgs.com)

SGS (Shenzhen) Technical Service Co., Ltd. 中国·广州·经济技术开发区科学城科珠路108号 邮编: 510663 1 (86-20) 82155555 f (86-20) 82075161 www.sgs.com.cn  
 中国·广州·经济技术开发区科学城科珠路108号 邮编: 510663 1 (86-20) 82155555 f (86-20) 82075161 \* sgs.china@sgs.com

Member of the SGS Group (SGS SA)

Part No	
Maker Code	RIC-WAT-24001053-UFL
Date(제출일)	2018.05.30
Page	81

Model	Type	Rev	RIC	1.1
	2.4GHz WiFi ANTENNA			



检测报告

编号: GZHG14090338500T

日期: 2014 年 09 月 12 日

第 3 页 共 5 页

二溴二苯醚	-	mg/kg	5	ND
三溴二苯醚	-	mg/kg	5	ND
四溴二苯醚	-	mg/kg	5	ND
五溴二苯醚	-	mg/kg	5	ND
六溴二苯醚	-	mg/kg	5	ND
七溴二苯醚	-	mg/kg	5	ND
八溴二苯醚	-	mg/kg	5	ND
九溴二苯醚	-	mg/kg	5	ND
十溴二苯醚	-	mg/kg	5	ND

注释:

(1) 最大允许极限值引用自指令 2011/65/EU 附录 II.

备注: 请客户申请, SGS 出具了此中文报告; 英文版本可根据客户要求提供。



This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Forms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Documents.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained herein reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

Attention: To check the authenticity of testing/inspection report & certificate, please contact us at telephone: (86-755) 8507 5443, or email: [file.fraud@sgs.com](mailto:file.fraud@sgs.com)  
 中国·广州·经济技术开发区科学城科珠路108号 邮编: 510663 1 (86-20) 82155555 f (86-20) 82075101 www.sgs.com.cn  
 中国·广州·经济技术开发区科学城科珠路108号 邮编: 510663 1 (86-20) 82155555 f (86-20) 82075101 \* sgs.china@sgs.com

Member of the SGS Group (SGS SA)

Part No	
Maker Code	RIC-WAT-24001053-UFL
Date(제출일)	2018.05.30
Page	82

Model	Type	Rev	RIC	1.1
	2.4GHz WiFi ANTENNA			



检测报告

编号: GZHG14090338500T

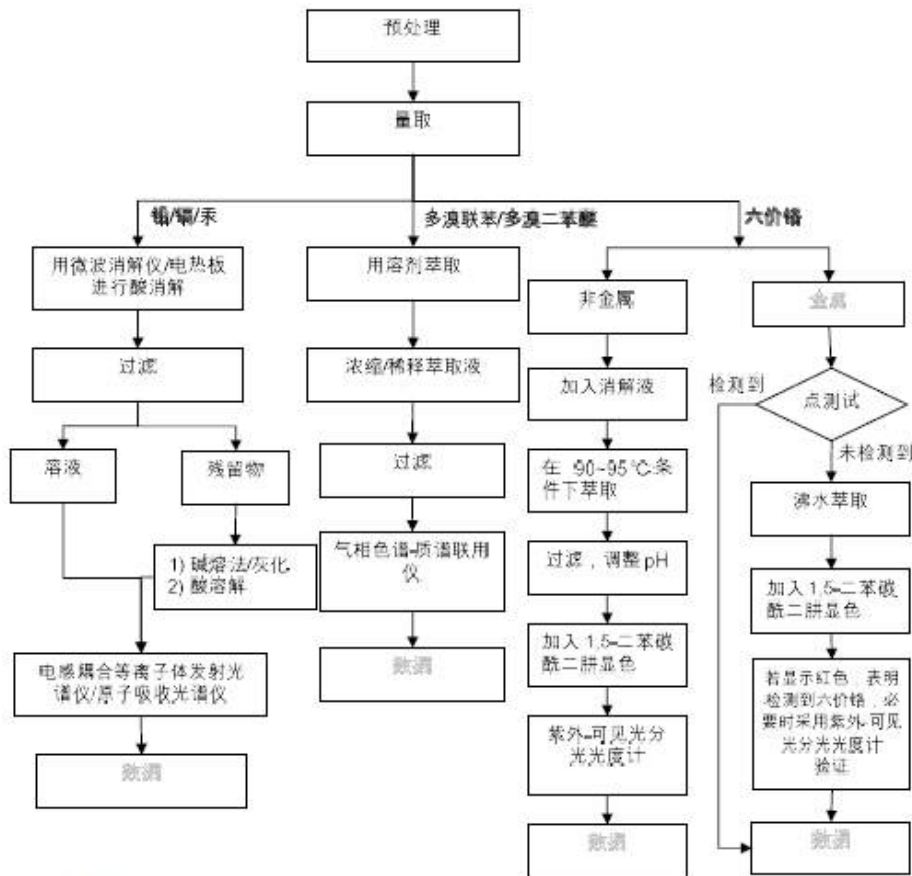
日期: 2014 年 09 月 12 日

第 4 页 共 5 页

附件

RoHS 测试流程图

- 1) 分析人员: 曹阳 / 余晓璐
- 2) 项目负责人: 余奕东 / 魏红
- 3) 样品按照下述流程被完全溶解 (六价铬和多溴联苯/多溴二苯醚测试除外)



This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/ser/terms-and-conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/ser/terms-and-conditions/terms-e-documents.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained herein reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not constitute part of a transaction from excluding all their rights and obligations under this transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

Attention: To check the authenticity of testing/inspection report & certificate, please contact us at telephone: (86-755) 8507 5443, or e-mail: [zh.zhao@sgs.com](mailto:zh.zhao@sgs.com)

SGS (Shenzhen) Technical Services Co., Ltd. 深圳瑞拓检测技术有限公司  
 中国·广州·经济技术开发区科学城科珠路108号 邮编: 510663 1 (86-20) 82155555 1 (86-20) 82075161 www.sgs.com.cn  
 中国·广州·经济技术开发区科学城科珠路108号 邮编: 510663 1 (86-20) 82155555 1 (86-20) 82075161 \* sgs.china@sgs.com

Member of the SGS Group (SGS SA)

Part No	
Maker Code	RIC-WAT-24001053-UFL
Date(제출일)	2018.05.30
Page	83

Model	Type	Rev	RIC	1.1
	2.4GHz WiFi ANTENNA			

# SGS

检测报告

编号: GZHG14090338500T

日期: 2014 年 09 月 12 日

第 5 页 共 5 页

样品照片:



\*\*\*报告完\*\*\*



This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Forms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Documents.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained herein reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

Attention: To check the authenticity of testing/inspection report & certificate, please contact us at telephone: (86-755) 8507 5443, or email: [file\\_verification@sgs.com](mailto:file_verification@sgs.com)  
 中国·广州·经济技术开发区科学城科珠路108号 邮编: 510663 1 (86-20) 82155555 f (86-20) 82075161 www.sgs.com.cn  
 中国·广州·经济技术开发区科学城科珠路108号 邮编: 510663 1 (86-20) 82155555 f (86-20) 82075161 \* sgs.china@sgs.com

Member of the SGS Group (SGS SA)

(주)RIC

Part No	
Maker Code	RIC-WAT-24001053-UFL
Date(제출일)	2018.05.30
Page	84

Model	Type	Rev	RIC	1.1
	2.4GHz WiFi ANTENNA			

- 도금



**测试报告**

No. CANML1412551201

日期: 2014年08月05日 第1页,共5页

同发电子一楼二车间  
中国深圳市宝安区松岗镇楼岗村龙潭工业区

以下测试之样品是由申请者所提供及确认：金层

SGS工作编号： GZIN1407021097PC - GZ  
 内部编号： 2.1  
 样品接收日期： 2014年07月31日  
 测试周期： 2014年07月31日 - 2014年08月05日  
 测试要求： 根据客户要求测试  
 测试方法： 请参见下一页  
 测试结果： 请参见下一页  
 结论： 基于所送样品进行的测试，镉、铅、汞、六价铬、多溴联苯(PBBs)、多溴二苯醚(PBDEs)的测试结果符合欧盟RoHS指令2002/95/EC的重订指令2011/65/EU附录II的限值要求。

通标标准技术服务有限公司  
授权签名

*李丽贤*

Yan Lee 李丽贤  
批准签署人

备注: 根据客户申请, SGS出具了此中文报告, 英文版本可根据客户要求提供. (The Chinese test report is issued according to the applicant's request. The English version is available from SGS if further needed)



This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/verify/terms-and-conditions.aspx> and, for electronic format documents, subject to terms and conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Document.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not constitute parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.  
 Attention: To check the authenticity of testing/inspection report & certificate, please contact us at telephone: (86-755) 8367 1448; or email: CN\_Boocheck@sgs.com

SGS Testing Service (China) Co., Ltd.  
Guangzhou, China

196 Xuhu Road, Xixiang Park, Guangzhou Economic & Technology Development Zone, Guangzhou, China 510663 | (86-20) 82155555 | (86-20) 82075113 | www.sgs.com.cn  
 中国·广州·经济技术开发区科学城科珠路198号 邮编: 510663 | (86-20) 82155555 | (86-20) 82075113 | sgs.zh@sgs.com

Member of the SGS Group (SGS SA)

Part No	
Maker Code	RIC-WAT-24001053-UFL
Date(제출일)	2018.05.30
Page	85

Model	Type	Rev	RIC	1.1
	2.4GHz WiFi ANTENNA			



## 测试报告

No. CANML1412551201

日期: 2014年08月05日 第2页,共5页

测试结果:

测试样品描述:

样品编号	SGS样品ID	描述
SN1	CAN14-125512.001	带银灰色衬背的金色金属片

备注:

- (1) 1 mg/kg = 1 ppm = 0.0001%
- (2) MDL = 检测极限值
- (3) ND = 未检出 (< MDL)
- (4) "-" = 未规定

## RoHS指令2011/65/EU

- 测试方法:
- (1)参考IEC 62321-5:2013, 用ICP-OES测定镉的含量
  - (2)参考IEC 62321-5:2013, 用ICP-OES测定铅的含量
  - (3)参考IEC 62321-4:2013, 用ICP-OES测定汞的含量
  - (4)参考IEC 62321:2008, 用点测试法/紫外-可见分光光度计比色法测定六价铬的含量
  - (5)参考IEC 62321:2008, 用GC-MS测定PBBs(多溴联苯)和PBDEs(多溴二苯醚)的含量

测试项目	限值	单位	MDL	001
镉 (Cd)	100	mg/kg	2	ND
铅 (Pb)	1,000	mg/kg	2	15
汞 (Hg)	1,000	mg/kg	2	ND
六价铬 (Cr(VI))	-	-	◇	阴性
多溴联苯之和 (PBBs)	1,000	mg/kg	-	ND
一溴联苯	-	mg/kg	5	ND
二溴联苯	-	mg/kg	5	ND
三溴联苯	-	mg/kg	5	ND
四溴联苯	-	mg/kg	5	ND
五溴联苯	-	mg/kg	5	ND
六溴联苯	-	mg/kg	5	ND
七溴联苯	-	mg/kg	5	ND
八溴联苯	-	mg/kg	5	ND
九溴联苯	-	mg/kg	5	ND
十溴联苯	-	mg/kg	5	ND
多溴二苯醚之和 (PBDEs)	1,000	mg/kg	-	ND
一溴二苯醚	-	mg/kg	5	ND
二溴二苯醚	-	mg/kg	5	ND



This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/terms-and-conditions.aspx> and, for electronic format documents, subject to terms and conditions for electronic documents at <http://www.sgs.com/en/terms-and-conditions/terms-e-document.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained herein reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. Attention: To check the authenticity of testing inspection report & certificate, please contact us at telephone: (86-755) 8287 1443, or email: CH.Doccheck@sgs.com

SGS (Shenzhen) Technical Services Co., Ltd.  
Guangdong, China (Shenzhen) General Laboratory

188 Kefu Road, Science Park, Guangzhou Economic & Technology Development District, Guangzhou, China 510663 | (86-20) 82155555 | (86-25) 82075113 | [www.sgs.com](http://www.sgs.com) on

中国·广州·经济技术开发区科学城科珠路188号

邮编: 510663 | (86-20) 82155555 | (86-20) 82075113 | [sgs.china@sgs.com](mailto:sgs.china@sgs.com)

Member of the SGS Group (SGS SA)

Part No	
Maker Code	RIC-WAT-24001053-UFL
Date(제출일)	2018.05.30
Page	86

Model	Type	Rev	RIC	1.1
	2.4GHz WiFi ANTENNA			



## 测试报告

No. CANML1412551201

日期: 2014年08月05日 第3页,共5页

测试项目	限值	单位	MDL	QOI
三溴二苯醚	-	mg/kg	5	ND
四溴二苯醚	-	mg/kg	5	ND
五溴二苯醚	-	mg/kg	5	ND
六溴二苯醚	-	mg/kg	5	ND
七溴二苯醚	-	mg/kg	5	ND
八溴二苯醚	-	mg/kg	5	ND
九溴二苯醚	-	mg/kg	5	ND
十溴二苯醚	-	mg/kg	5	ND

备注:

(1) 最大允许极限值引用自指令2011/65/EU 附录II.

(2) ◦点测试法:

阴性= 未检测到六价铬, 阳性= 检测到六价铬;

(当点测试结果为阴性或无法确定时,将采用沸水萃取法作进一步的结果验证.)

◦沸水萃取法:

阴性= 未检测到六价铬

阳性= 检测到六价铬; 表明50 cm<sup>2</sup>表面积的被测试样品的沸水萃取液中六价铬的浓度等于或大于0.02 mg/kg

由于未获知样品的存储条件和生产日期, 样品的六价铬测试结果仅能代表测试时样品含六价铬的状态。



This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/terms-and-conditions.aspx> and, for electronic format documents, subject to terms and conditions for electronic documents at <http://www.sgs.com/en/terms-and-conditions/terms-e-document.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained herein reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.  
Attention: To check the authenticity of testing/inspection report & certificate, please contact us at telephone: (86-755) 8287 1443, or email: [CN.Doccheck@sgs.com](mailto:CN.Doccheck@sgs.com)

SGS (Shenzhen) Technical Services Co., Ltd.  
Guangdong, P.R.China, General Laboratory

188 Kefu Road, Science Park, Guangzhou Economic & Technology Development District, Guangzhou, China 510663 | (86-20) 82155555 | (86-25) 82075113 | [www.sgs.com](http://www.sgs.com)  
中国·广州·经济技术开发区科学城科珠路198号 邮编: 510663 | (86-20) 82155555 | (86-20) 82075113 | [sgs.china@sgs.com](mailto:sgs.china@sgs.com)

Member of the SGS Group (SGS SA)

Part No	
Maker Code	RIC-WAT-24001053-UFL
Date(제출일)	2018.05.30
Page	87

Model	Type	Rev	RIC	1.1
	2.4GHz WiFi ANTENNA			



测试报告

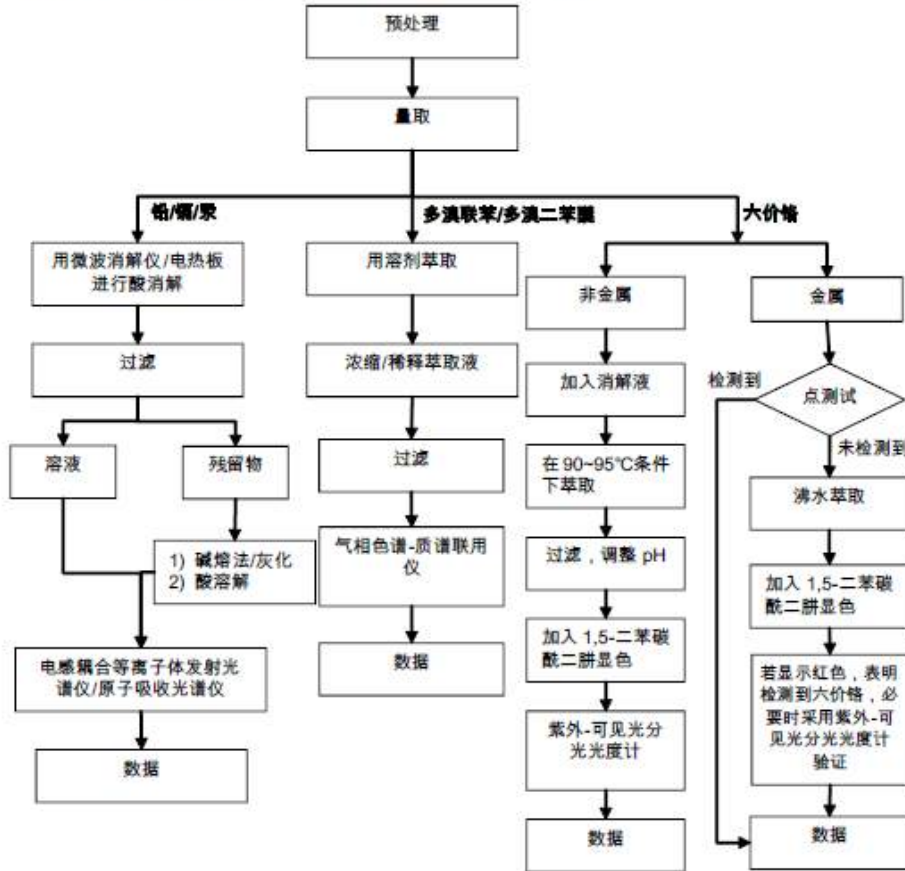
No. CANML1412551201

日期: 2014年08月05日 第4页,共5页

附件

RoHS 测试流程图

- 1) 分析人员: 肖戈 / 胡香云
- 2) 项目负责人: 汪丹 / 余晓璐
- 3) 样品按照下述流程被完全消解 (六价铬和多溴联苯 / 多溴二苯醚测试除外)。



This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/term-and-conditions.aspx> and, for electronic format documents, subject to terms and conditions for electronic Documents at <http://www.sgs.com/en/term-and-conditions/terms-e-document.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained herein reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not constitute parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. Attention: To check the authenticity of testing/inspection report & certificate, please contact us at telephone: (86-755) 8287 1443, or email: CH.Doccheck@sgs.com

SGS (Shanghai) Technical Services Co., Ltd.  
Guangdong, China (former General Laboratory)

188 Kefu Road, Science Park Guangzhou Economic & Technology Development District, Guangzhou, China 510663 T: (86-20) 82155555 F: (86-20) 82075113 www.sgs.com.cn  
中国·广州·经济技术开发区科学城科珠路188号 邮编: 510663 T: (86-20) 82155555 F: (86-20) 82075113 e: sgs.china@sgs.com

Member of the SGS Group (SGS SA)



Part No	
Maker Code	RIC-WAT-24001053-UFL
Date(제출일)	2018.05.30
Page	88

Model	Type	Rev	RIC	1.1
	2.4GHz WiFi ANTENNA			



测试报告

No. CANML1412551201

日期: 2014年08月05日 第5页,共5页

样品照片:



此照片仅限于随SGS正本报告使用

\*\*\* 报告完 \*\*\*



This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/terms-and-conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/terms-and-conditions/terms-e-document.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained herein reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.  
Attention: To check the authenticity of testing inspection report & certificate, please contact us at telephone: (86-755) 8287 1443, or email: CH.Doccheck@sgs.com

SGS (Shenzhen) Technical Services Co., Ltd.  
Guangdong, P.R.China, Terms & Conditions Library

188 Kefu Road, Samesh Park, Guangzhou Economic & Technology Development District, Guangzhou, China 510663 | (86-20) 82155555 | (86-25) 82075113 | [www.sgs.com](http://www.sgs.com) | [www.sgs.com](http://www.sgs.com)  
中国·广州·经济技术开发区科学城科珠路198号 邮编: 510663 | (86-20) 82155555 | (86-20) 82075113 | [sgs.china@sgs.com](mailto:sgs.china@sgs.com)

Member of the SGS Group (SGS SA)

Part No	
Maker Code	RIC-WAT-24001053-UFL
Date(제출일)	2018.05.30
Page	89

Model	Type	Rev	RIC	1.1
	2.4GHz WiFi ANTENNA			

- 도금



**测试报告**

No. CANML1412551202

日期: 2014年08月05日 第1页,共5页

同发电子一楼二车间  
中国深圳市宝安区松岗镇楼岗村龙潭工业区

以下测试之样品是由申请者所提供及确认：镍层

SGS工作编号： GZIN1407021097PC - GZ  
 内部编号： 2.2  
 样品接收日期： 2014年07月31日  
 测试周期： 2014年07月31日 - 2014年08月05日  
 测试要求： 根据客户要求测试  
 测试方法： 请参见下一页  
 测试结果： 请参见下一页  
 结论： 基于所送样品进行的测试，镉、铅、汞、六价铬、多溴联苯(PBBs)、多溴二苯醚(PBDEs)的测试结果符合欧盟RoHS指令2002/95/EC的重订指令2011/65/EU附录II的限值要求。

通标标准技术服务有限公司  
授权签名

*李丽贤*

Yan Lee 李丽贤  
批准签署人

备注: 根据客户申请, SGS出具了此中文报告, 英文版本可根据客户要求提供. (The Chinese test report is issued according to the applicant's request. The English version is available from SGS if further needed)



This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/ver/terms-and-conditions.aspx> and for electronic format documents, subject to terms and conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Document.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained herein reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.  
 Attention: To check the authenticity of testing/inspection report & certificate, please contact us at telephone: (86-755) 9367 1443; or email: CN\_DocCheck@sgs.com  
 96 Yefu Road, Xixiang Park, Guangzhou Economic & Technology Development District, Guangzhou, China 510663 | (86-20) 82155555 | (86-20) 82075113 | www.sgs.com.cn  
 中国·广州·经济技术开发区科学城科珠路198号 | 邮编: 510663 | (86-20) 82155555 | (86-20) 82075113 | sgs.china@sgs.com

Member of the SGS Group (SGS SA)

Part No	
Maker Code	RIC-WAT-24001053-UFL
Date(제출일)	2018.05.30
Page	90

Model	Type	Rev	RIC	1.1
	2.4GHz WiFi ANTENNA			



## 测试报告

No. CANML1412551202

日期: 2014年08月05日 第2页,共5页

测试结果:

测试样品描述:

样品编号	SGS样品ID	描述
SN1	CAN14-125512.002	银灰色金属片

备注:

- (1) 1 mg/kg = 1 ppm = 0.0001%
- (2) MDL = 检测极限值
- (3) ND = 未检出 (< MDL)
- (4) "-" = 未规定

## RoHS指令2011/65/EU

- 测试方法:
- (1)参考IEC 62321-5:2013, 用ICP-OES测定镉的含量
  - (2)参考IEC 62321-5:2013, 用ICP-OES测定铅的含量
  - (3)参考IEC 62321-4:2013, 用ICP-OES测定汞的含量
  - (4)参考IEC 62321:2008, 用点测试法/紫外-可见分光光度计比色法测定六价铬的含量
  - (5)参考IEC 62321:2008, 用GC-MS测定PBBs(多溴联苯)和PBDEs(多溴二苯醚)的含量

测试项目	限值	单位	MDL	002
镉 (Cd)	100	mg/kg	2	ND
铅 (Pb)	1,000	mg/kg	2	23
汞 (Hg)	1,000	mg/kg	2	ND
六价铬 (Cr(VI))	-	-	◇	阴性
多溴联苯之和 (PBBs)	1,000	mg/kg	-	ND
一溴联苯	-	mg/kg	5	ND
二溴联苯	-	mg/kg	5	ND
三溴联苯	-	mg/kg	5	ND
四溴联苯	-	mg/kg	5	ND
五溴联苯	-	mg/kg	5	ND
六溴联苯	-	mg/kg	5	ND
七溴联苯	-	mg/kg	5	ND
八溴联苯	-	mg/kg	5	ND
九溴联苯	-	mg/kg	5	ND
十溴联苯	-	mg/kg	5	ND
多溴二苯醚之和 (PBDEs)	1,000	mg/kg	-	ND
一溴二苯醚	-	mg/kg	5	ND
二溴二苯醚	-	mg/kg	5	ND



This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/terms-and-conditions.aspx> and, for electronic format documents, subject to terms and conditions for electronic documents at <http://www.sgs.com/en/terms-and-conditions/terms-e-document.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained herein reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. Attention: To check the authenticity of testing inspection report & certificate, please contact us at telephone: (86-755) 8287 1443, or email: CH.Doccheck@sgs.com

SGS (Shenzhen) Technical Services Co., Ltd.  
Guangdong, China (Shenzhen) General Laboratory

188 Kefu Road, Science Park, Guangzhou Economic & Technology Development District, Guangzhou, China 510663 | (86-20) 82155555 | (86-25) 82075113 | [www.sgs.com](http://www.sgs.com) on  
中国·广州·经济技术开发区科学城科珠路188号 邮编: 510663 | (86-20) 82155555 | (86-20) 82075113 | [sgs.china@sgs.com](mailto:sgs.china@sgs.com)

Member of the SGS Group (SGS SA)

Part No	
Maker Code	RIC-WAT-24001053-UFL
Date(제출일)	2018.05.30
Page	91

Model	Type	Rev	RIC	1.1
	2.4GHz WiFi ANTENNA			



**测试报告**

No. CANML1412551202

日期: 2014年08月05日 第3页,共5页

测试项目	限值	单位	MDL	002
三溴二苯醚	-	mg/kg	5	ND
四溴二苯醚	-	mg/kg	5	ND
五溴二苯醚	-	mg/kg	5	ND
六溴二苯醚	-	mg/kg	5	ND
七溴二苯醚	-	mg/kg	5	ND
八溴二苯醚	-	mg/kg	5	ND
九溴二苯醚	-	mg/kg	5	ND
十溴二苯醚	-	mg/kg	5	ND

备注:

(1) 最大允许极限值引用自指令2011/65/EU 附录II.

(2) ◦点测试法:

阴性= 未检测到六价铬, 阳性= 检测到六价铬;

(当点测试结果阴性或无法确定时,将采用沸水萃取法作进一步的结果验证.)

◦沸水萃取法:

阴性= 未检测到六价铬

阳性= 检测到六价铬; 表明50 cm²面积的被测试样品的沸水萃取液中六价铬的浓度等于或大于0.02 mg/kg

由于未获知样品的存储条件和生产日期, 样品的六价铬测试结果仅代表测试时样品含六价铬的状态.



This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/terms-and-conditions.aspx> and, for electronic format documents, subject to terms and conditions for electronic documents at <http://www.sgs.com/en/terms-and-conditions/terms-e-document.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained herein reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.  
Attention: To check the authenticity of testing/inspection report & certificate, please contact us at telephone: (86-755) 8287 1443, or email: CH.Doccheck@sgs.com

SGS (Shenzhen) Technical Services Co., Ltd.  
Guangdong, P.R.China, General Laboratory

188 Kefu Road, Science Park, Guangzhou Economic & Technology Development District, Guangzhou, China 510663 | (86-20) 82155555 | (86-20) 82075113 | www.sgs.com | www.sgs.com.cn  
中国·广州·经济技术开发区科学城珠晖路188号 邮编: 510663 | (86-20) 82155555 | (86-20) 82075113 | sgs.china@sgs.com

Member of the SGS Group (SGS SA)

Part No	
Maker Code	RIC-WAT-24001053-UFL
Date(제출일)	2018.05.30
Page	92

Model	Type	Rev	RIC	1.1
	2.4GHz WiFi ANTENNA			



**测试报告**

No. CANML1412551202

日期: 2014年08月05日 第5页,共5页

样品照片:



此照片仅限于随SGS正本报告使用

\*\*\* 报告完 \*\*\*



This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/terms-and-conditions.sgs> and, for electronic format documents, subject to terms and conditions for electronic Documents at <http://www.sgs.com/ict/terms-and-conditions/terms-e-document.sgs>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the site of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced abstract in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.  
Attention: To check the authenticity of testing/inspection report & certificate, please contact us at telephone: (86-755) 8287 1433, or email: CH.Doccheck@sgs.com

SGS Standards Technical Services Co., Ltd.  
Guangzhou, China (Head Office) and Laboratory

188 Kechu Road, Science Park Guangzhou Economic & Technology Development District, Guangzhou, China 510663 | (86-20) 82155555 | (86-20) 82075113 | www.sgs.com.cn  
中国·广州·经济技术开发区科学城科珠路188号 邮编: 510663 | (86-20) 82155555 | (86-20) 82075113 | sgs.china@sgs.com

Member of the SGS Group (SGS SA)

Part No	
Maker Code	RIC-WAT-24001053-UFL
Date(제출일)	2018.05.30
Page	93

Model	Type	Rev	RIC	1.1
	2.4GHz WiFi ANTENNA			

#### 4.3 생산지 정보

책 임 자 : 장 문 기

고객명	MODEL	부품	부품 소재별 구분	부품명	업 체 명	업체소재지
		RIC-WAT -24001053- UFL	H.S.tube	HEAT SHRINK TUBE	深圳市沃尔核材股份有限公司	중국
			connector	MHF	GINAR Engineering Plastics	대만
			SIGNIA TUBE	BRASS	东莞市虎门洪利五金制品厂	중국
			cable (RF137)	1.37 CABLE	JIANGYIN CITY YUANDA ELECTRICAL CO., LTD.	중국
			Antenna base	PC+ABS	台灣化學纖維股份有限公 司	대만
			Rivet	POM	Polyplastics Co.,Ltd	일본
			Antenna base	PC+ABS	台灣化學纖維股份有限公 司	대만
			Ground Tube	ZINC ALLOY	东莞市虎门洪利五金制品厂	중국
			Antenna Body	TPE	長春人造樹脂廠股份有限公司	대만