ANTENNA SPECIFICATION		DATE	2009-03-12	REV.	А
MODEL	ALADDIN(BT)	TYPE	BT antenna	PAGE	1/29

ANTENNA SPECIFICATION

	Prepared	Reviewed	Check	Approved
	by	by	by	by
R	la			
F	00 00		H	
			/	11
	09/03/12			hth
R	hu		*	1000
& D	- stige			
	09/03/12			09/03/12



ANTENNA SPECIFICATION		DATE	2009-03-12	REV.	А
MODEL	ALADDIN(BT)	TYPE	BT antenna	PAGE	2/29

CONTENTS

- 1. Approval Sheet Check List
- 2. Material Certification.
- 3. Technical Specifications
 - 3.1 Electrical Specifications
 - 3.2 Mechanical Specifications
 - 3.3 Packing Specifications
- 4. Test Equipments
- 5. Electrical Demands
 - 5.1 V.S.W.R.
 - 5.2 Radiation Pattern ontenno A
 - 5.3 Gain

6. Mechanical Demands

- 6.1 Contact Pin Force Test.
- 6.2 Contact Pin Resistance Test.
- 6.3 Drop Test.

7. Environmental demands

- 7.1 Operation Temperature Test
- 7.2 Temperature Change Test
- 7.3 High Humidity Test
- 7.4 Vibration test
- 7.5 Salt Spray Test
- 7.6 Storage Temperature



ANTENNA SPECIFICATION		DATE	2009-03-12	REV.	А
MODEL	ALADDIN(BT)	TYPE	BT antenna	PAGE	3/29

8. Antenna Data

- 8.1. Electrical Data (V.S.W.R & GAIN)
- 8.2. Antenna Drawing
- 8.3. Packing Spec Drawing
- 8.4. Reliability Test
- 8.5. Environment Test Report





ANTENNA SPECIFICATION		DATE	2009-03-12	REV.	А
MODEL	ALADDIN(BT)	TYPE	BT antenna	PAGE	4/29

1. Approval Check List

Approval Check List				
No	Date	Change Contents	Change Cause	Rev
1	2009.03.12	ANTENNA SPECIFICATION		А
2				
3				
4				
5				
6		aco antonna		
7				
8				
9				
10				
11				
12				
13				
14				



ANTENNA SPECIFICATION		DATE	2009-03-12	REV.	А
MODEL	ALADDIN(BT)	TYPE	BT antenna	PAGE	5/29

2. Material Certification

No	Part material	Raw material	Processing	Finishing	EA	Raw material company	Processing Plant	Etc
1	CARRIER	SC1004A-KPA1	MOLD	_	1	LG CHEM,LTD.	DUCK SUNG M&P Co.	-
2	PATTERN	STS301	PRESS	-	1	TAIHAN STAINLESS STEEL CO.,LTD	DAE JIN	-
3								
4								
5								
6								
7								
8								
9			ace	anter	n			
10								
11								
12								
13								
14								
15								



ANTENNA SPECIFICATION		DATE	2009-03-12	REV.	А
MODEL	ALADDIN(BT)	TYPE	BT antenna	PAGE	6/29

3. Technical Specifications

3.1 Electrical Specifications.

- Slide Down

- Slide Up

Electrical Spec.	BAND		
Frequency Range (MHz)	Bluetooth (2400 ~ 2480 MHz)		
	2400 MHz	2480 MHz	
V.S.W.R (Max.)	2.7:1 below	3.2:1 below	
PEAK GAIN (Min., E2-Plane)	-6.0 dBi	-6.0 dBi	
AVERAGE GAIN (Min., H-Plane)	-8.0 dBi	-9.0 dBi	

ace antenna A

Electrical Spec.	AND		
Frequency Range (MHz)	Bluetooth (2400 ~ 2480 MHz)		
	2400 MHz	2480 MHz	
V.S.W.R (Max.)	3.1:1 below	3.3:1 below	
PEAK GAIN (Min., E2-Plane)	-5.6 dBi	-6.3 dBi	
AVERAGE GAIN (Min., H-Plane)	-15 dBi	-16 dBi	

Impedance(Nominal)	50 ohms
Polarization	VERTICAL
Radiation Pattern	OMNI-DIRECTIONAL
Maximum Power	2 W



ANTENNA SPECIFICATION		DATE	2009-03-12	REV.	А
MODEL	ALADDIN(BT)	TYPE	BT antenna	PAGE	7/29

3.2 Mechanical Specifications

Mechanical Spec.	
Connector	Board contact pin type
Overall length	See drawing
Operating Temperature	-40°C ~+85 ℃
Weight	About 1.33g (Unit)

3.3 Packing Specifications

Packing Spec.		
PRODUCT	QUANTITY (Antenna)	MATERIAL
TRAY	1/30EA	P.S (0.8t)
TRAY INNER PAD	2/600EA	SW 2 type (B corrugated paper)
CARTON BOX	600EA/1BOX	DW 2 type (AB corrugated paper)





ANTENNA SPECIFICATION		DATE	2009-03-12	REV.	А
MODEL	ALADDIN(BT)	TYPE	BT antenna	PAGE	8/29

4. Test Equipment

The equipment for antenna test is as follows,

- Network Analyzer (E5071C) to measure the V.S.W.R., Standing wave ratio(SWR) and impedance bandwidth of antenna
- Standard horn antennas adjustable to the Bluetooth bands
- Anechoic Chamber installed the cables, connectors and equipments for measurements

ace antenna A

- Digital Caliper to measure the dimensions
- Torque Driver to measure the torque force of the helix
- Push/Pull gauge to measure the pulling forces
- Climatic Chamber for environmental tests



ANTENNA SPECIFICATION		DATE	2009-03-12	REV.	А
MODEL	ALADDIN(BT)	TYPE	BT antenna	PAGE	9/29

5. Electrical Demands

5.1 V.S.W.R

The V.S.W.R characteristics must be satisfied the electrical demands in the below table.

Electrical Spec.	ectrical Spec. BAND		
Frequency Range (MHz) Bluetooth (2400 ~ 2480 MHz)		0 ~ 2480 MHz)	
V.S.W.R	2400 MHz	2480 MHz	
(Slide Down)	2.7:1 below	3.2:1 below	
V.S.W.R	2400 MHz	2480 MHz	
(Slide Up)	3.1:1 below	3.3:1 below	

ace antenna A





ANTENNA SPECIFICATION		DATE	2009-03-12	REV.	А
MODEL	ALADDIN(BT)	TYPE	BT antenna	PAGE	10/29

5.2 Radiation Pattern

The radiation pattern must have the omni-directional characteristic in Cellular Band and PCS and AWS Band.

5.3 Gain

The gain is expressed as dBi. with condition (E2, H-Plane), the minimum Gain of antenna must be satisfied the electrical demands in the below table.

- Slide Down State

Frequency Range (MHz)	2400 MHz	2480 MHz
PEAK GAIN (Min., E2-Plane)	-6.0 dBi	-6.0 dBi
AVERAGE GAIN (Min., H-Plane)	ace onten	ng A-9.0 dBi

- Slide Up State

Frequency Range (MHz)	2400 MHz	2480 MHz
PEAK GAIN (Min., E2-Plane)	-5.6 dBi	-6.3 dBi
AVERAGE GAIN (Min., H-Plane)	-15 dBi	-16 dBi



ANTENNA SPECIFICATION		DATE	2009-03-12	REV.	А
MODEL	ALADDIN(BT)	TYPE	BT antenna	PAGE	11/29

6. Mechanical Demands

6.1. Contact Pin Force Test

Contact pin of antenna must keep 200g/f ±150 in operation distance.

(Operation distance of antenna is same to under drawing.

PCB overlap : 0mm~1.5mm)



6.2. Contact Pin Resistance Test.

After assemble antenna to test equipment, Contact pins are pressed to nominal assembly position 500 times. The antenna contact force must satisfy of (6.1) operation force. (Cycle time: 60 times/min)

6.3 Drop Test

The antenna is attached to the handset. The handset is dropped with the antenna downward onto a concrete surface at 1.5 m height and 6 plane The number of drop is 2 times.

After the test, the original shape shall be possible to restore. The antenna shall satisfy the electrical demands.



ANTENNA SPECIFICATION		DATE	2009-03-12	REV.	А
MODEL	ALADDIN(BT)	TYPE	BT antenna	PAGE	12/29

7. Environmental Demands

7.1 Operation Temperature Test

- ➤ Test A: Place the antennas for testing in chamber. The chamber condition should be as follows: 1hours at -20°C.
- Final measurements: The antenna shall be visually inspected and electrically and also mechanically checked as required by products standard.
- Test B: Place the antennas for testing in chamber. The chamber condition should be as follows: 1hours at 70°C.
- Final measurements: The antenna shall be visually inspected and electrically and also mechanically checked as required by products standard.

7.2 Temperature Change Test

The object of temperature test is to evaluate the reliability of antenna component at temperature change.

Test: Temperature cycle is as follows. 2 hours at -40℃.

- 2 hours at +85℃.
- Temperature increase/decrease time (Temperature change time) is
- 2 hours. 10 cycles.

Final measurements: The antenna shall be visually inspected and electrically and mechanically checked as required by products standard.







7.3 High Humidity Test

Test: Place the antennas for testing in chamber. The chamber condition should be as follows: 24hours at +55°C, Relative humidity is 95%. Final measurements: The antenna shall be visually inspected and electrically and also mechanically checked as required by products standard.

7.4 Vibration Test

After assemble antenna to test equipment, Do test in X, Z direction per 1hour as a under spec. The antenna shall be visually inspected and electrically and mechanically checked as required by products standard. The test must satisfy to IEC 68-2-6 spec



ANTENNA SPECIFICATION		DATE	2009-03-12	REV.	А
MODEL	ALADDIN(BT)	TYPE	BT antenna	PAGE	14/29

Vibration frequency	F=5~55~5Hz(1cycle)
Sweeping Rate	0.5 octave/min
Maximum displacement	1.5mm
Maximum acceleration	2 g
Crossover Frequency	18.0Hz

7.5 Salt spray Test

Sprayed with the salt spray solution for a period of 96 hours at a temperature of+35℃.

The antenna shall be visually inspected and electrically and mechanically checked as required by products standard. The test must satisfy to IEC 68-2-11 spec .

ace antenna A

7.6 Storage temperature Test

After antenna are stored for a period of 96 hours at a temperature of -30 °C and a relative humidity of 95 %. Stored for a period of 96 hours at a temperature of +80 °C and a relative humidity of 95 % (total: 192 hour)

The antenna shall be visually inspected and electrically and mechanically checked as required by products standard.



ANTE	ENNA SPECIFICATION	DATE	2009-03-12	REV.	А
MODEL	ALADDIN(BT)	TYPE	BT antenna	PAGE	15/29

8. Antenna data

8.1. Electrical data(V.S.W.R & GAIN)

→ V.S.W.R (Slide Down)





ANTE	ENNA SPECIFICATION	DATE	2009-03-12	REV.	А
MODEL	ALADDIN(BT)	TYPE	BT antenna	PAGE	16/29

→ V.S.W.R (Slide Up)



→ Matching Circuit Diagram



2009-03-12 16:27/192.168.15.157/antenna

	ENNA SPECIFICATION	DATE	2009-03-12	REV.	А
MODEL	ALADDIN(BT)	TYPE	BT antenna	PAGE	17/29

→ GAIN (with Matching Circuit)

- E2-Plane
- → [Slide Down]



→ [Slide Up]





ANTE	ENNA SPECIFICATION	DATE	2009-03-12	REV.	А
MODEL	ALADDIN(BT)	TYPE	BT antenna	PAGE	18/29

- H-Plane

→ [Slide Down]



→ [Slide Up]





ANTE	ENNA SPECIFICATION	DATE	2009-03-12	REV.	А
MODEL	ALADDIN(BT)	TYPE	BT antenna	PAGE	19/29

8.2. Antenna Drawing





ANTE	ENNA SPECIFICATION	DATE	2009-03-12	REV.	А
MODEL	ALADDIN(BT)	TYPE	BT antenna	PAGE	20/29

8.3. Packing Spec Drawing.





ANTE	ENNA SPECIFICATION	DATE	2009-03-12	REV.	А
MODEL	ALADDIN(BT)	TYPE	BT antenna	PAGE	21/29

8.4 Reliability Test.

- 8.5. Environment test report
- 8.5.1 CARRIER [LUPOY SC1004A-KPA1]

	SGS				
Tes	st Report	NO. F690501/LF-CTSAYAA08-27498	Issued Date:	October 13, 2008	Page 1 of 3
To:	LG CHEM, LTD. LG twin tower 2: Yeoeuido-dong Yeongdeungpo- SEOUL Korea	3 gu			
The	following merchan	dise was submitted and identified by the client a	S:		
Produ	uctName	: LUPOY SC1004A-KPA1			
SGS	File No.	: AYAA08-27498			
Recei	ived Date	: October 07, 2008			
Test I	Performing Date	: October 08, 2008			
Test	Performed	: SGS Testing Korea tested the sample(s) s	elected by applican	t with following results	
Test	Results	: For further details, please refer to following	; page(s)	na A	

SGS Testing Korea Co. Ltd.

Jeff 0

Jeff Jang / Chemical Lab Mgr

ha document to assume by the Company under do Camada Condense to Server primed conductor or worked and to search to th<u>te visual scattaria and condense har.</u> Market in a document to assume the term of the company of the company under the indexer of the document of terms of terms

FD52 Version2

Pluto Kim

Monet Jeong Billy Oh / Testing Person

SGS Testing Korea Co., Ltd.

322, The Oualley, 555-5, Hogye-tlong, Dongan-gu, Anyang-si, Oyeongpi-tlo, Korea 431-0280 1+822 (00,31 4608 0000 11+82 (00,31 4608 069 hilp Xwww.sgsteb.co.br. ywww.kr.sgs.com/green kab

Member of the SOSOroup (Sodé & Générale de Suruelliance)



ANTE	ENNA SPECIFI	CATI	ON	DATE	2009-03	8-12	REV.	А
ODEL	ALADDIN	I(BT)		TYPE	BT ante	enna	PAGE	22/29
Test	SGS t Report No. F690501A.F-CTS e No. : AYAA08-27498.1	5AYAA08-2 3	7498	Issued Dat	te: October 13, 2004	3 Page	2 of 3	
Sample Item No <u>Heavy</u>	e Description : LUPOY SC1004, o./Part No. : N/A Metals	4-КРА1						
Test It	tems	Unit	2	Test Metho	d	MDL	Results	
Cadmi	ium (Cd)	mg/kg	US EPA 305	2(1996), US EP 4	46010B(1996), ICP	0.5	N.D.	
Lead	Pb)	mg/kg	US EPA 305	2(1996), US EP 4	A 6010B(1996), ICP	5	N.D.	
Mercu	in (Ha)	mg/kg	US EP 4 305	2(1996) US EP4	A6010B(1996) ICP	2	N D	
Heyev	alent Chromium (Cr M)	mg/kg	US EPA 3060	A(1996) US EP	A 7196A(1992) UV	1	N D	-
Flame	Retardants-PBBs/PBDEs	llpit	-	Test Matha	d	мп	Regulte	
Morek	hromobinhenvi	mg/ka	-	IS ED & 25400	GOMS	5	ND	-
Dibron	nohinbenyl	mg/ka		IS ED & 3540C -	GC MS	5	N.D.	
Tribros	mosiphenyl	mg/kg		IS EP & 3540C	GCMS	5	N.D.	
Tetrah	nromphenyl	mg/kg		IS EP & 3540C -	GCMS A	5	N.D.	
Dentel	bromobiphenyl	mg/kg		IS EP & 3540C -	GCMS	5	N.D.	
Heven	aromosiphenyi	mg/kg		IS EP & 35400 -	GCMS	5	N.D.	-
Hentel	homobinhenvi	mg/kg	nni	IS EP & 35400	GCMS	5	N.D.	
Octabi	romobipheny	mg/kg		JS EP A 3540C	GC/MS	5	N D	
Nonah	promobipheny	mg/kg		JS EP A 3540C	GC/MS	5	N D	-
Decah	promobiphenyl	mg/kg	1	JS EP A 3540C	GC/MS	5	ND	-
Monok	bromodiphenyl ether	mg/kg	1	JS EP A 3540C	GC/MS	5	N.D.	
Dibron	nodiphenyl ether	mg/kg	1	JS EP A 3540C	GC/MS	5	N.D.	
Tribron	modiphenyl ether	mg/kg	1	JS EP A 3540C.	GC/MS	5	N.D.	
Tetrab	promodiphenyl ether	mg/kg	l	JS EP A 3540C.	GC/MS	5	N.D.	
Pental	bromodiphenyl ether	mg/kg	1	JS EP A 3540C.	GC/MS	5	N.D.	
Hexabromodiphenyl ether		mg/kg.	l	JSEPA3540C,	GC/MS	5	N.D.	
Hexab	bromodiphenyl ether	mg/kg	ι	JS EP A 3540C.	GC/MS	5	N.D.	
Hexab	Octabromodiphenyl ether		1	IS EP A 3540C	SC MS	5	ND	
Hexab Heptal Octab	romodiphenyl ether	mg/kg		10 LT A 00400.	oomo		14.0.	
Hexab Heptal Octabl Nonak	romodiphenyl ether promodiphenyl ether	mg/kg	l	JS EP A 3540C,	GC/MS	5	N.D.	

NOTE: (1) N.D. = Not detected.(<MDL)

(1) N.D. - Not detected. (IND.-)
(2) mg/kg = ppm
(3) MDL = Method Detection Limit
(4) - = No regulation
(5) ** = Qualitative analysis (No Unit)
(6) Negative = Undetectable / Positive = Detectable

This document is issued by the Company under As General Conditions of Service profiled checker or sealable on registed and ecoseble is <u>the systematic and conditionality</u>. Whether is decine the instance of backing individual conditions are as the Company's set approaching is to Company a strand that incompany and the time to Canada and/order are as the Company's set approaching is to Canat and the document are as a strand that member profile on the company and the time of the company and the time to canada and/order are as the Company's set approaching is to Canat and the document are as a strand to the company and the set of the document are as a strand that incompany and the set of the company and the set of the company and the set of the company and the company and

FD52 Version2

SGS Testing Korea Co., Ltd.

322, The O-walley, 555-5, Nogye-dong, Dongan-gu, Aryang-si, Oyeonggi-to, Korea 431-020 t+s2 (0031 4603 0001 f+s2 (0031 4603 059 hilp //www.sgstab.co.kr.www.kr.sgs.com/greentab



Member of the SOSOroup (Sodé & Générale de Suruelliance)

ANTE	ENNA SPECIFICATION	DATE	2009-03-12	REV.	А
MODEL	ALADDIN(BT)	TYPE	BT antenna	PAGE	23/29



Test Report No. F690501/LF-CTSAYAA08-27498

Issued Date: October 13, 2008

Page 3 of 3





- (2) mg/kg = ppm
 (3) MDL = Method Detection Limit
- (4) = No regulation
 (5) ** = Qualitative analysis (No Unit)
- (6) Negative = Undetectable / Positive = Detectable

ce printed coerteen locument is establish this document do hareon network the Conganya notin a transaction noni assessing all the measurable to the ruliast actent of terned ter ter the bries c- its

FDS2 Version2

SGS Testing Korea Co.,Ltd.

322, The Ousliey, 555-5, Hogye-dong, Dongan-gu, Anyang-si, Oyeonggi-tio, Korea 431-0280 1+822 (00,31 4603 0000 1+822 000,31 4603 059 hilp //www.sgstab.co/r_www.krsgs.com/greeniath

Member of the SOSOroup (Sodé & Générale de Suruelitance)



ANTE	ENNA	SPECIFICATION	DATE	2009-03-12	REV.	A
MODEL		ALADDIN(BT)	TYPE	BT antenna	PAGE	24/29
Test To: The fo	SGS t Report LG CHEM, LTD LG twin tower 2 Yeoeuido-dong Yeongdeungpo SEOUL Korea	N O. F690501/LF-C TSAYAA 08-27499 23 I-gu ndise was submitted and identified by the client as	Issued Dat	te: October 13, 2008 Page	1 of 2	
Produc	ct Name	: LUPOY SC1004A-KPA1				
SGS Fi	ile No.	: AYAA08-27499				
Receiv	red Date	: October 07, 2008				
Test P	erforming Date	: October 08, 2008				
Test P	erformed	: SGS Testing Korea tested the sample(s) se	lected by applic	ant with following results		
Test R	esults	: For further details, please refer to following	page(s)	Δ		

ace antenna A

SGS Testing Korea Co. Ltd.

Pluto Kim Monet Jeong Billy Oh / Testing Person

Jeff Ja

Jeff Jang / Chemical Lab Mgr

SGS Testing Horea Co., Ltd.

322, The O watey, 555-9, Nogye-dong, Dongan-gu, Anyang-st, Oyeonggi-to, Korea +31-1331 1+522 (1121 +4505 1000 f+522 (11)21 +4505 159 http://www.sgstab.co.kr.www.kr.sgs.com/greentab

Member of the SOSOroup (Sodé & Générale de Suruelliance)



ANTENNA SPECIFICATION		DATE	2009-03-12	REV.	А
MODEL	ALADDIN(BT)	TYPE	BT antenna	PAGE	25/29



Chlorine(CI)

Test Report	NO. F690501/LF-CTSAYAA08-27	7499 Issued Date:	October 13, 2008	Page 2 of 2
Sample No.	: AYAA08-27499.001			
Sample Description	: LUPOY SC1004A-KPA1			
ltem No./Part No.	: N/A			
<u>Halogen Contents</u>				
Test Items	Unit	Test Method	MD	L Res
Bromine(Br)	mg/kg	EN 14582:2007 , I	.C 30	I N.

mg/kg



EN 14582:2007, IC

*** End ***

NOTE: (1) N.D. = Not detected.(<MDL)

- (2) mg/kg = ppm
- (3) MDL = Method Detection Limit
- (4) = No regulation
- (5) ** = Qualitative analysis (No Unit)
- (6) Negative = Undetectable / Positive = Detectable

Service printed overlaat this document is actuard int and this document doc on request env ____ son contened hereon nelle de partes to e transacti dens nev be prosecuted nincellen and juradict decrui riany. The Oc abareten rengary or n yte the sample site stad. Companys undergo at the brain warrowing all their rights and rullest extent of the law. Unless 7/2 M כח דכח לכ להש unwithense reportment countent is unleaved and items approval of the Compa

FOS2 Version2

SGS Testing Korea Co., Ltd.

322, The O ualley, 555-9, Hogye-dong, Dongan-gu, Aryang-si, Gyeonggi-do, Korea +31-DBD 1+82 (D31 +608 000 11+82 (D31 +608 059 hilp //www.sgstab.co.kr.www.kr.sgs.com/greenlab

Member of the SOSOroup (Sodé & Générale de Suruelliance)



Results N.D.

N.D.

30

ANTE	ΞΝΝΑ	SPECIFICATION	DATE	2009-03-12	REV.	А
MODEL	MODEL ALADDIN(BT)			BT antenna	PAGE	26/29
8.5.2 PA	TTERN [STS 301]				
S	GS					
Test F	Report	No. F690501/LF-CTSAYA07-25043	Issued Date:	November 14, 2007 Page 1		
To: T/ 60 Di Ar G' Ko The follow	AIHAN STAIN 03 Seonggok-c anwon-gu nsan-city YEONGGI-DC prea wing merchan	LESS STEEL CO., LTD dong) dise was submitted and identified by the client as :				
Product N	lame	: STS301				
SGS File I	No.	: AYA07-25043				
Received	Date	: November 08, 2007				
Test Perfo	orming Date	: November 09, 2007				
Test Perfo	ormed	: SGS Testing Korea tested the sample(s) selected	d by applicant w	ith following results		
Test Resu	Test Results : For further details, please refer to following page		(s)			
Buyer(s)		: LG,SAMSUNG				
		aco an	lon	A		

ace anienna 🦳

Pluto Kim Monet Jeong Billy Oh / Testing Person SGS Testing Korea Co. Ltd.

n Jeff

Jeff Jang / Chemical Lab Mgr

This document is issued by the Company subject to its General Conditions of Service printed overleaf or available on request and accessible at <u>www.tos.com</u>. Attention is drawn to the Imitations of liability, indemnification and jurisdictional issues defined therain. Unlise offerwise stated the results shown in this test report refer only to the sample (s) tested. This document cannot be reproduced except in full, without prior approval of the Company. Any unauthorized alteration, forgery or fatsification of the contant or appearance of this report is unlawful and offenders may be prosecuted to the fullest extent of the law.

F052 Version2



ANTENNA SPECIFICATION				DATE 2009-03		12	REV.	А
ODEL	IN(BT)		TYPE	YPE BT anter		PAGE	27/2	
Sample No. Sample Descripti Style/Item No. Comments Heavy Metals	S rt No. F690501/LI : AYA07-2504 ion : STS301 : N/A : Material is s	F-CTSAYA07-25 43.001 tainless steel.	043	Issued Da	ate: November 14, 2	007 Pa	ige 2 of 4	
Test Items		Unit		Tost Math				
Cadmium (Cd)		ma/ka	US EPA 305	52(1996) LIS EP	A 6010B(1995) ICP	MDL	Resul	ts
Lead (Pb)		mg/kg	US EPA 3052(1996) US EPA 6010B(1996), ICP			0.5	N.D.	-
Mercury (Hg)		mg/kg	US EPA 3052(1996), US EPA 6010B(1996), ICP			2	N.D.	
Hexavalent Chrom	ium (Cr VI)	mg/kg	US EPA 3060A(1996), US EPA 7196A(1992), UV			1	N.D.	-
Test Items	DOUTE ALL MARKET MULTING	Unit		Test Metho	od	MDL	Result	ts
Monobromobiphen	omobiphenyl mg/kg US E		JS EPA 3540C, GC/MS 5		5	N.D.		
Dibromobiphenyl		mg/kg	US EPA 3540C, GC/MS		5	N.D.		
Tribromobiphenyl		mg/kg	US EPA 3540C, GC/MS		5	N.D.		
Tetrabromobiphen	yl	mg/kg	US EPA 3540C, GC/MS		5	N.D.		
Pentabromobiphen	<u>y1</u>	mg/kg	US EPA 3540C, GC/MS		5	N.D.		
Hexabromobiphen	¢I	mg/kg	US EPA 3540C, GC/MS		5	N.D.		
Ostabromobiphen	lyn -	mg/kg		US EPA 3540C,	GC/MS	5	N.D.	
Nonabramabiahan	4	mg/kg	1	US EPA 3540C,	GC/MS	5	N.D.	
Decabromobipheny	//	mg/kg	US EPA 3540C, GC/MS		5	N.D.		
Monobromodinham	vi ether	mg/kg	US EPA 3540C, GC/MS		5	N.D.		
Dibromodioheaut	ther	mg/kg	US EPA 3540C, GC/MS		5	N.D.	_	
Tribromodinhenvl e	ther	maka	US EPA 3540C, GC/MS		5	N.D.	_	
Tetrabromodipheny	l ether	ma/kg	US EPA 3540C, GG/MS		5	N.D.	_	
Pentabromodinber	yl ether	mg/kg		IS EPA 3540C	GCMS	5	N.D.	_
1 Million Children Pringer	l ether	mg/kg	1	US EPA 3540C, GC/MS		5	N.D.	-
Hexabromodipheny		malka	L	US EPA 35400, GOMS		5	N.D.	-
Hexabromodipheny	vi ether	Octabromodiphenvi ether molko		US EPA 3540C, GC/MS			N.D.	1
Hexabromodipheny Heptabromodipheny Octabromodiphenyl	yl ether ether	mg/kg	L	S EPA 3540C 0	GC/MS	5	ND	
Hexabromodipheny Heptabromodipheny Octabromodipheny Nonabromodipheny	yl ether ether I ether	mg/kg mg/kg	L	IS EPA 3540C, 0	GC/MS GC/MS	5	N.D.	

(2) mg/kg = ppm (3) MDL = Method Detection Limit

(4) - = No regulation (5) ** = Qualitative analysis (No Unit)

(6) Negative = Undetectable / Positive = Detectable

This document is issued by the Company subject to its General Conditions of Service printed overleaf or available on request and accessible at www.spc.com. Attention is drawn to the limitations of liability, indemnification and jurisdictional issues defined therein. Unless otherwise stated the results shown in this last report refer only to the sample (a) tested. This document cannot be reproduced except in full, without prior approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this report is unlawful and offenders may be prosecuted to the fullest extent of the law.

F052 Version2



ANTENN	A SPECIFICATION	DATE	2009-03-12	REV.	А
MODEL	ALADDIN(BT)	TYPE	BT antenna	PAGE	28/29
00					
SG	5				
Test Report	NO. F690501/LF-CTSAYA07-25043	Issued Da	ate: November 14, 2007 F	Page 3 of 4	
	Picture of Sample as R	eceived:			
	Sample Color :	Silver			
	AYA 07-25	043.0	100		
			The second		
			1		
	aco ap	topr			
	acean	IEIII			
NOTE: (1) N.D. = N (2) mg/kg =	ot detected.(<mdl) ppm</mdl) 				
(3) MDL = N	ternou Detection Limit				

This document is issued by the Company subject to its General Conditions of Service printed overleaf or available on request and accessible at <u>www.sps.com</u>. Attention is crawn to the limitations of liability, indemnification and jurisdictional issues defined therein. Unless otherwise stated the results shown in this test report refer only to the sample (s) tested. This document cannot be reproduced except in full, without prior approval of the Company. Any unsuthorized alteration, forgery or falsification of the context or appearance of this report is unlawful and offenders may be preserved to the fullest extent of the law.

F052 Version2



ANTENNA SPECIFICATION		DATE	2009-03-12	REV.	А		
MODEL	ALADDIN(BT)			TYPE	BT antenna	PAGE	29/29
S Test R	Report	NO. F690501/LF	F-CTSAYA07-25043 Flow Chart of (EPA 3052 for	Issued Digestion r Cd, Pb)	Date: November 14, 2007	Page 4 of	4
			Cutting/Prepa	ration			
			Sample Measurement	(0.2g)			
			Add HNO3 + HCI (+	H2O2)			
			Microwave Di	gestion	Re	sidue	

Operator

Section Chief Jeff Jang

Dami Yeom

*** End ***

Filtering & Rinsing

ICP-AES

DATA

The samples were dissolved totally by pre-conditioning method according to above flow chart.

NOTE: (1) N.D. = Not detected.(<MDL)

- (2) mg/kg = ppm
 (3) MDL = Method Detection Limit
 (4) = No regulation
 (5) ** = Qualitative analysis (No Unit)
- (6) Negative = Undetectable / Positive = Detectable

This document is issued by the Company subject to its General Conditions of Service printed overlaaf or evaluatie on request and accessible at <u>www.tos.com</u>. Attention is drawn to the limitations of liability, incernentication and juried tonal issues defined therein. Unless otherwise stated the results shown in this test report refer only to the sample (s) tested. This document cannot be reproduced except in full, without prior approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this report is unlewful and offenders may be prosecuted to the fulleet extent of the law.

F052 Version2



Dry Ashing.

XRF Confirm.