
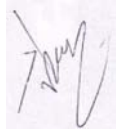



DATE : 2008. 01. 30.

SPECIFICATION FOR THE APPROVAL SHEET (仕様承認願)

COMMODITY : BLUETOOTH CHIP ANTENNA
PART NO. : KHBT4 (CAF-0013-00000)

Written by	Checked by	Approved by
		

APPROVAL NO.

DATE:

APPROVAL NOTICE

COMMODITY : BLUETOOTH CHIP ANTENNA
CODE NO. : KHBT4 (CAF-0013-00000)

We have hereby approved and accepted your specification under the following conditions.

Authorized signature

– INDEX –

1. INSTRUCTIONS
2. SPECIFICATIONS
3. DIMENSIONS
4. TERMINAL CONFIGURATION
5. MATCHING CONFIGURATION
6. MEASUREMENT DATA
7. ASSURANCE CONDITON
8. SOLDERING CONDITON
9. ATTENTION
10. PACKING
11. QUALITY MANAGEMENT PROCESS
12. RoHS REPORTS

► MULTILAYER BLUETOOTH CHIP ANTENNA

PART NO : KHBT4 (CAF-0013-00000)

This specification covers the multilayer chip antenna KHBT4 (CAF-0013-00000) used for UTS100.

1. Introduction

1) Chip antenna is a component which should be used with matching circuit composed of L or C.

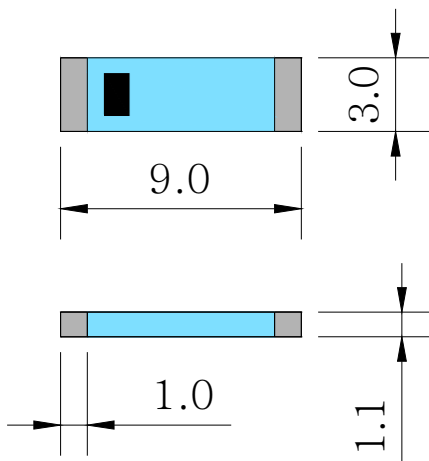
1) When you get a matching with L or C, center frequency would be getting down to 2.44 GHz.

2) Mount PCB : SMT type

2. Specifications

TYPE	SPEC
Frequency Range	2400 ~ 2485 MHz
Band width	100 MHz
Impedance	50Ω
Polarization	Linear
VSWR	2.0 Max
Gain	Max 2 dBi

3. Dimensions



Unit : mm

Tolerance : ± 0.2

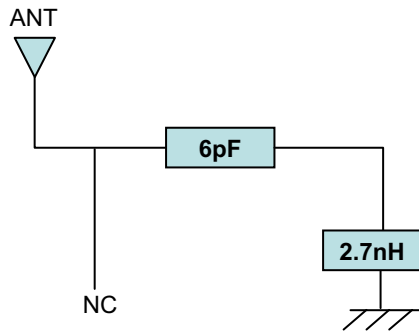
4. Terminal Configuration



(1)	(2)
Feeding Line	Nc

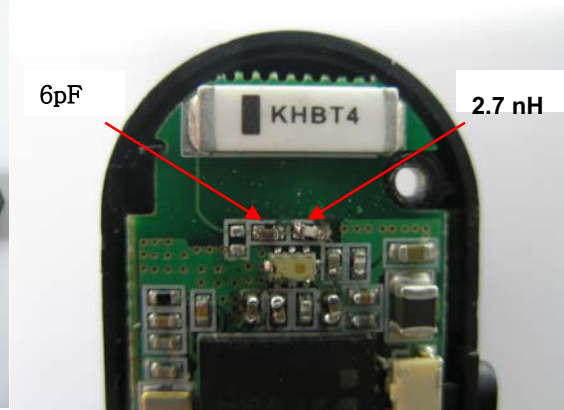
5. Matching Configuration

1) Matching Values



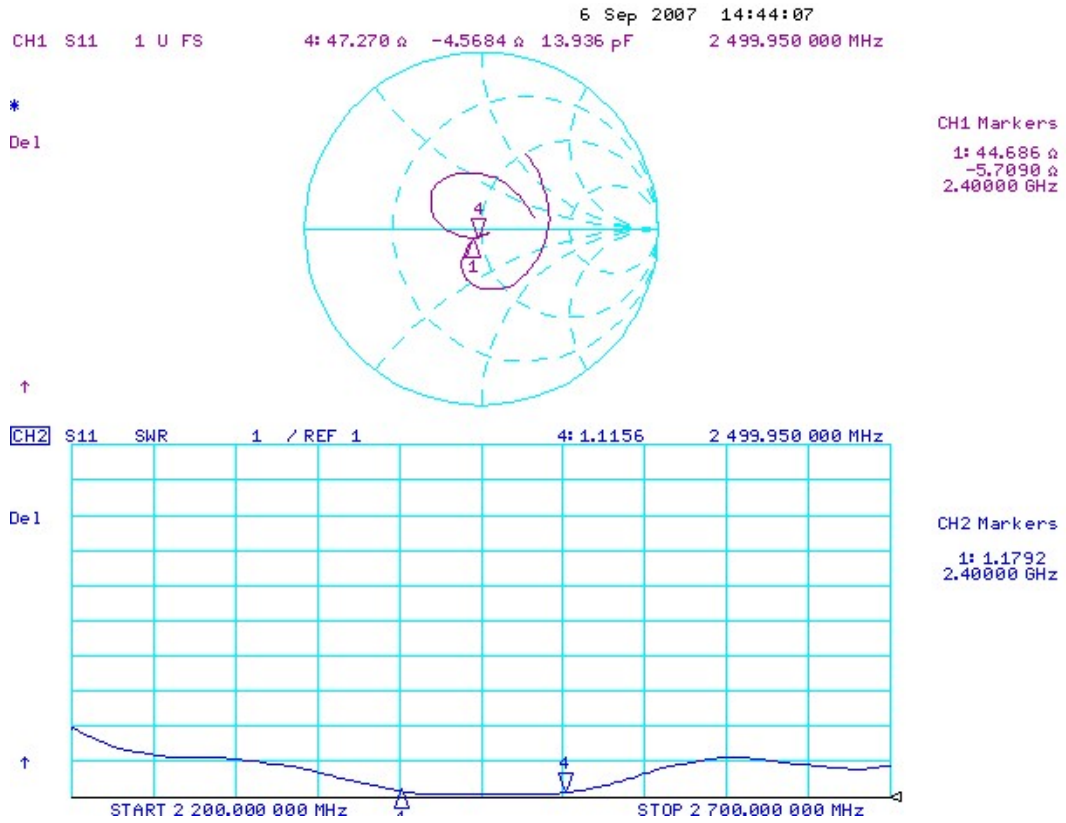
MODEL	Matching Component Value	
	Series	Parallel
KHBT4	6pF	2.7nH

2) Product Picture

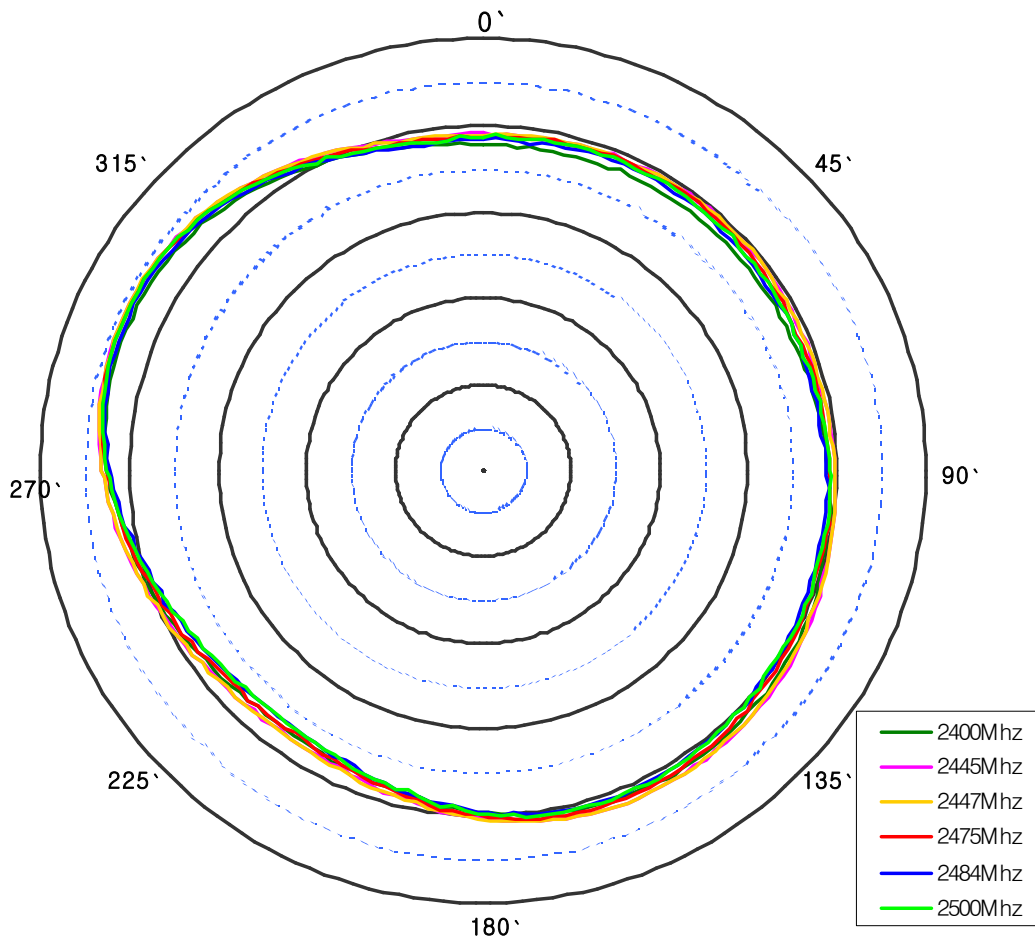


6. Measurement Data

1) VSWR



2) GAIN



Frequency	Max.	Min.	Avg.	Beam Peak
2400Mhz	3.51	-2.78	0.12	294°
2445Mhz	4.45	-2.24	0.91	296°
2447Mhz	4.42	-2.17	0.92	292°
2475Mhz	4.20	-3.08	0.46	296°
2484Mhz	3.87	-3.60	0.04	298°
2500Mhz	4.20	-3.51	0.25	294°

7. Assurance Condition

7-1) Environment Test

항목	조건	비고
고온방치	+85℃± 3℃, 120hr ±2hr	*시험 후 상온 (25℃±5℃)에서 1시간 방치 후 측정한다. *테이블1의 전기적 특성을 만족하여야 한다.
저온방치	-40℃±3℃, 120hr ±2hr	
내습시험	+60 ±3℃, RH90~95%, 120hr ±2hr	

7-2) Heat Shock, REELOW Test

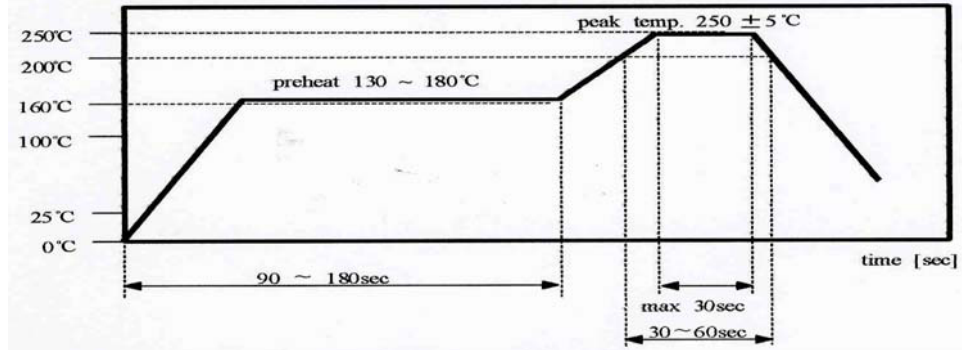
항목	조건	비고
열 충격	-40℃± 3℃/30min ↔ +85℃ ± 3℃/30min cycle : 15 cycle 온도변환시간 : 5min 미만	5-1과 동일
Reflow	Pre Heating 200+5℃, 30~60 sec Peak Heating 260+5℃, 30 sec Max	

7-3) Mechanical Test

항목	조건	비고
진동시험	주파수 : 10~500Hz에서 10X9.8m/s(G) Sweep time 15min, X.Y.Z each 5 times	*시험 후 테이블1의 전기적 특성을 만족하여야 한다.
낙하시험	높이 152cm에서 가 면 5회 낙하(지그 낙하)	

8. Soldering Condition

8-1) Standard Reflow Condition



8-2) Manual Soldering

예 열 : 120℃ / 시간 : 60 ~ 300 sec
인두 온도 : 340℃ ± 5℃ / 시간 : 각 단 최대 5 sec

9. Attention

9-1) Temperature

	Range of Temperature	Unit
Application	-40 ~ +85	℃
Keeping	-40 ~ +85	℃

9-2) MSL LEVEL 1 (JEDEC J-STD-020C)

Floor Life		Soak Requirements	
Time	Conditions	Time	Conditions
Unlimited	= < 30℃/85%RH	168+5/-0	= < 85%RH

10. Packing

10-1 Carrier/Reel Type

재질	표면저항	포장방식
대전 방지용 A-PET	Typical $10^9 \Omega$	밀 압착식

Input Marking

Feeding Direction

- 10 sprocket hole pitch cumulative tolerance ± 0.2
- Conber not to exceed $1mm$ in $100mm$.
- A_0 and B_0 measured on a plane $0.1mm$ above the bottom of the pocket
- K_0 measured from a plane on the inside bottom of the pocket to the top surface of the carrier.

ms201, dkc Bldg.
366-340 shindong2-dong,
Jung-gu, seoul.100-452, korea <http://www.dkcworld.com>
Tel. 822-2234-5890
Fax. 822-2238-8182

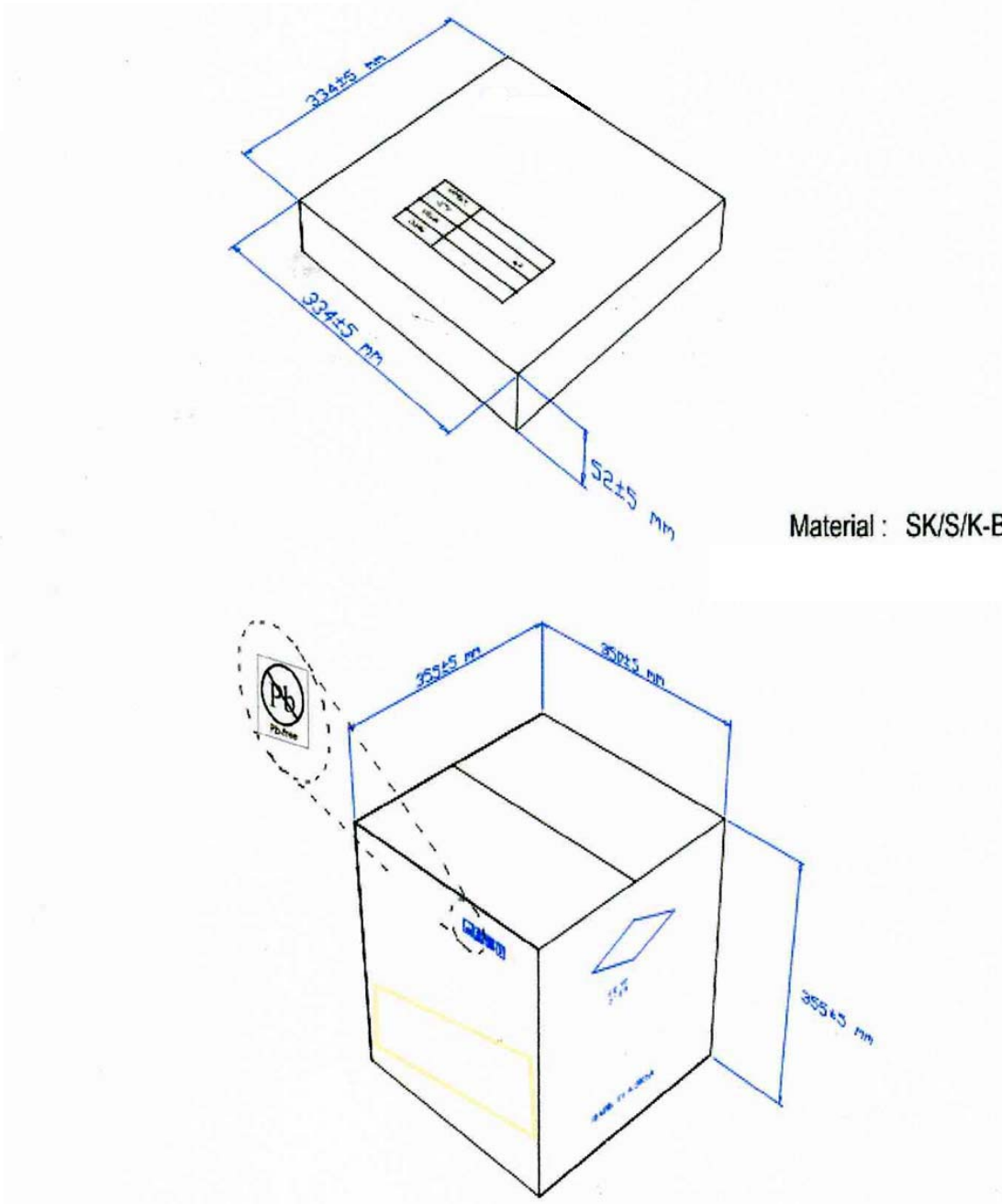
DKC DVG. No.	D-1608-020
DIMENSIONAL UNIT	MM
UNTELERANCED DIMENSION	±0.1
CAD FILE NAME	050309
DESIGNED BY	K. H. J
SCALE	1/1
TITLE	2.0 * 8.0 * 1.2P
PART.	CARRIER TAPE
MATERIAL	A-PET
LENGTH	49198±0.7mm
CDUNT	6150P±10P

NAME	SPEC.
W	16.0±0.2
E	1.75±0.1
F	7.5±0.1
D0	1.5±0.1
P	6.0±0.1
P0	4.0±0.1
PE	2.0±0.1
A0	2.3±0.1
B0	2.3±0.1
K0	1.4±0.1
T	0.3±0.05

DKC DVG. No.	D-REEL
DIMENSIONAL UNIT	MM
CAD FILE NAME	050114
DESIGNED BY	K. H. J
TITLE	CARRIER TAPE REEL
Color	0-4MM Blue/Black 56MM White
MATERIAL	PS
SPEC.	13 Inch

CARRIER	V1	V2
8mm	9.5	13.5
12mm	13.5	17.5
16mm	17.5	21.5
24mm	25.5	29.5
32mm	33.5	37.5
44mm	45.5	49.5
56mm	57.5	61.5

10-2 BOX ARTWORK



11. QUALITY MANAGEMENT PROCESS

제품	발행 / 개정		품질관리공정도										관리번호	기안	심의	결정
	Issued	Revised	요인관리					품질특성관리								
CHIP ANTENNA	FLOW CHART		공정명	설비명	관리항목	조건	관리주기	기록관리	관리항목	관리한계	검사방법	관리주기	기록관리	조치사항		
투입자재	준비	본공정														
세라믹		◇	수입검사		양입 금형상태	작업지도서 참조	매LOT 1회/일	Parameter C/SHEET	치수 무게 밀도 외관	작업지도서 참조	Micrometer Network	10개/LOT	C/sheet	반품		
파우더																
파우더 운할재	○		분말	Mixer	SETTER 외관온도 PROFILE	전수 2회/일 1회/월	C/sheet	폭 길이 모양	검사지도서 참조	측정기 현미경	20개/LOT 20개/LOT 전수	C/sheet	폐기			
		○	소성													
		◇	소채													
AG PASTE		○	SIDE1 PAD 인쇄	인쇄기 screen	스크로 속도 /압력SNAP	작업지도서 참조	-	-	PATTERN치수 외관	작업지도서 참조	Micrometer Network	10개/3일	C/sheet	제작업		
		○	건조	건조기 건조조기	온도 Belt speed	작업지도서 참조	1회/주	Parameter	건조상태 인쇄상태 파손	작업지도서 참조	목시	전수검사	LOT card	제작업		

12. RoHS Reports

1. 환경관리물질 목록표

구분	규제물질	함유여부		제출서류			
		有	無	분석 Data	성분표	개 선 계획서	비사용 증명서
Class I	카드뮴과 그 화합물		0	0			0
	납과 그 화합물		0	0			
	수은과 그 화합물		0	0			
	6가크롬과 그 화합물		0	0			
	Polybrominated biphenyls (PBBs)		0				
	Polybrominated diphenylethers (PBDEs)		0				
Class II	Polychlorinated biphenyls (PCBs)		0				
	Polychlorinated Terphenyls (PCTs)						
	Polychlorinated naphthalences (PCNs)						
	Ozone depleting substances (CFCs, HCFCs, Halons)		0				
	석면과 그 화합물		0				
	포름 알데히드		0				
	단쇄염화파라핀 Short-chain chlorinated paraffins (Alkane 10-13 Carbon chain)		0				
	아조화합물		0				
	니켈과 그 화합물		0				
	유기주석화합물						
Class III	비스와 그 화합물						
	프탈레이트		0				
	PVC (포장재 기준 참조)		0				
	베릴륨과 그 화합물		0				
	기타 염소계 난연제 (Other chlorinated flame retardants)		0				
기타 브롬계 난연제 (ex, TBBP-A) (Other brominated flame retardants)		0					



Test Report No. F690501/LF-CTSAYA07-15667 Issued Date: July 13, 2007 Page 1 of 3

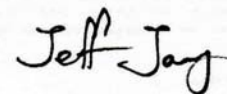
To: **SAMWOO ELECTRONICS PARTS CO., LTD.**
26-7, Dodang-dong
Wonmi-gu
Bucheon-city
GYEONGGI-DO
Korea

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

Product Name : Ceramic Chip Antenna
SGS File No. : AYA07-15667
Received Date : July 09, 2007
Test Performing Date : July 10, 2007
Test Performed : SGS Testing Korea tested the sample(s) selected by applicant with following results
Test Results : For further details, please refer to following page(s)
Buyer(s) : SAMSUNG, LG
Comments : The sampling and testing was performed only for the part indicated in the photo without disassembly by the applicant's specific request.

SGS Testing Korea Co. Ltd.

Pluto Kim
Monet Jeong
Billy Oh / Testing Person



Jeff Jang / Chemical Lab Mgr

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Sample No. : AYA07-15667.001
Sample Description : Ceramic Chip Antenna
Item No./Part No. : N/A
Comments : Material is ceramic.

Heavy Metals

Test Items	Unit	Test Method	MDL	Results
Cadmium (Cd)	mg/kg	US EPA 3052(1996), US EPA 6010B(1996), ICP	0.5	N.D.
Lead (Pb)	mg/kg	US EPA 3052(1996), US EPA 6010B(1996), ICP	5	N.D.
Mercury (Hg)	mg/kg	US EPA 3052(1996), US EPA 6010B(1996), ICP	2	N.D.
Hexavalent Chromium (Cr VI)	mg/kg	US EPA 3060A(1996), US EPA 7196A(1992), UV	1	N.D.

Flame Retardants-PBBs/PBDEs

Test Items	Unit	Test Method	MDL	Results
Monobromobiphenyl	mg/kg	US EPA 3540C, GC/MS	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.
Tetrabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Pentabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Hexabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Heptabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Octabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Nonabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Decabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Monobromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Dibromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tribromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tetrabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Pentabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Hexabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Heptabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Octabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Nonabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Decabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.

- 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

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SGS

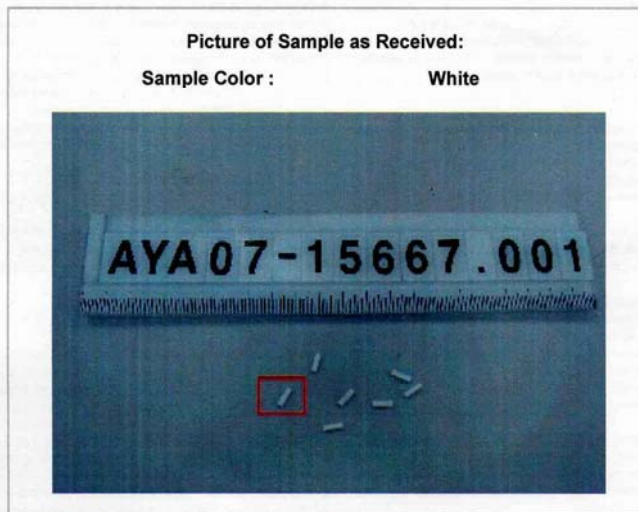
Test Report No. F690501/LF-CTSAYA07-15667

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Picture of Sample as Received:

Sample Color : White



*** End ***

- NOTE: (1) N.D. = Not detected.(<MDL)
(2) mg/kg = ppm
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(5) ** = Qualitative analysis (No Unit)
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