

Specifications for Approval

기	Electrical Engineer	Mechanical Engineer	Q.A	APPROVAL
기				
자	K.I.S	S.J.Y	J.B.H	L.S.H
자	08/31	08/31	09/01	09/02

BUYER	Uneeds
MODEL	UM-1000
Part Name	CHIP ANTENNA
Part Code	-
Arro Code	ABP3015A2

205-11, Anyang 7-Dong, Manan-Gu, Anyang-Si, Gyeonggi-Do, Korea
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1. Approval History

NO	DATE	Before a change	After a change	Reason	REV
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2. Technical Properties

2.1 General Properties

MODEL	UM-1000
ANTENNA TYPE	CHIP ANTENNA
APPLICATIONS	BLUETOOTH

2.2 Electrical Properties

FREQUENCY RANGE	2,400 ~ 2,483(MHz)
V.S.W.R	LESS THAN 3.5:1
AVERAGE GAIN(dBi)	-4.0 (3D MEASUREMENT)
IMPEDANCE(NOMINAL)	50(Ω)
POLARIZATION	LINEAR
RADIATION PATTERN	OMNIDIRECTIONAL

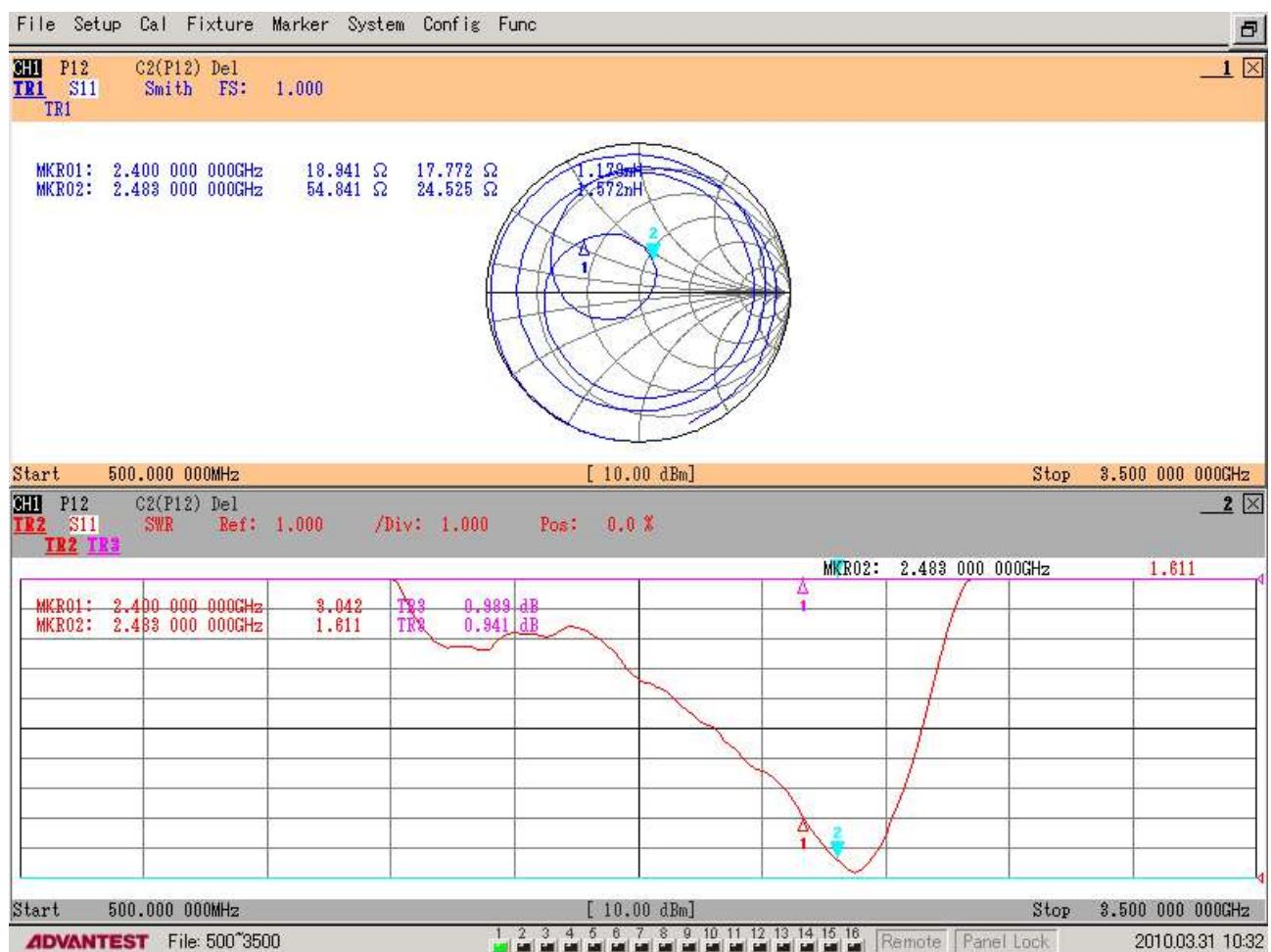
2.3 Mechanical Properties

CONNECTOR	N/A
LENGTH	REF DRAWING (No. 4.1)
TEMPERATURE	-20 ~ 70(°C)
WEIGHT	0.1(g)

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3. Electrical requirements

3.1 VSWR & Smith chart



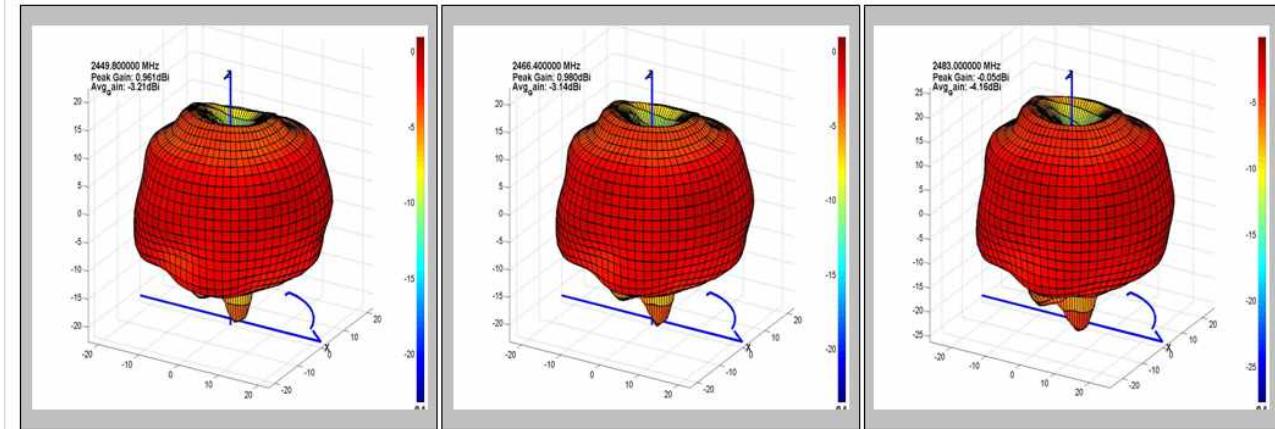
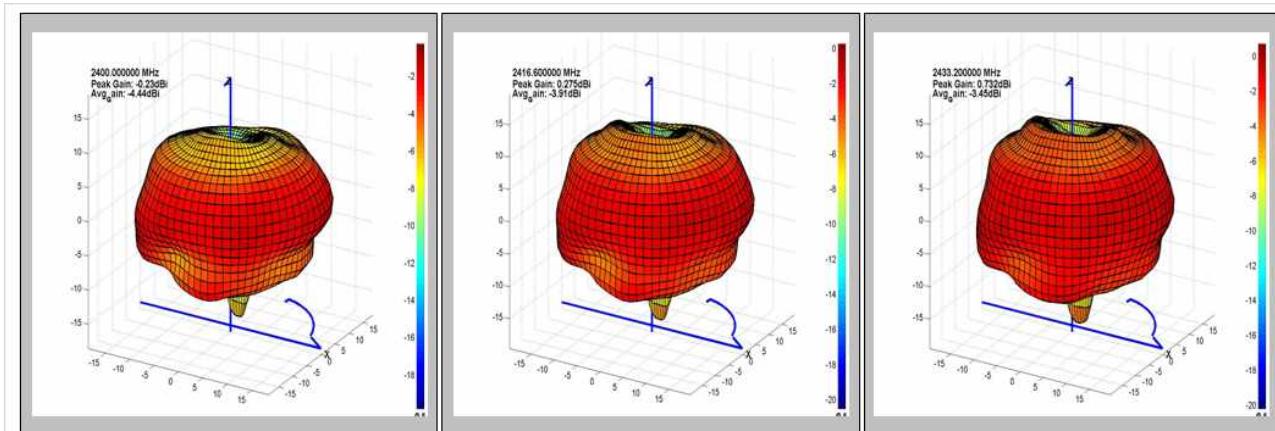
VSWR & Smith chart

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3.2 3D Efficiency & Gain & Radiation Pattern

Frequency	Efficiency	Average Gain			Max Gain		
		Ver	Hor	Total	Ver	Hor	Total
2400.000000 MHz	35.9 %	-14.2 dBi	-4.9 dBi	-4.4 dBi	-4.4 dBi	-0.3 dBi	-0.2 dBi
2416.600000 MHz	40.6 %	-13.9 dBi	-4.4 dBi	-3.9 dBi	-3.8 dBi	0.1 dBi	0.3 dBi
2433.200000 MHz	45.1 %	-13.5 dBi	-3.9 dBi	-3.5 dBi	-3.1 dBi	0.6 dBi	0.7 dBi
2449.800000 MHz	47.7 %	-13.2 dBi	-3.7 dBi	-3.2 dBi	-2.6 dBi	0.8 dBi	1.0 dBi
2466.400000 MHz	48.4 %	-13.1 dBi	-3.6 dBi	-3.1 dBi	-2.0 dBi	0.8 dBi	1.0 dBi
2483.000000 MHz	38.4 %	-14.0 dBi	-4.6 dBi	-4.2 dBi	-2.2 dBi	-0.3 dBi	-0.1 dBi

Efficiency & Gain (3D MEASUREMENT)

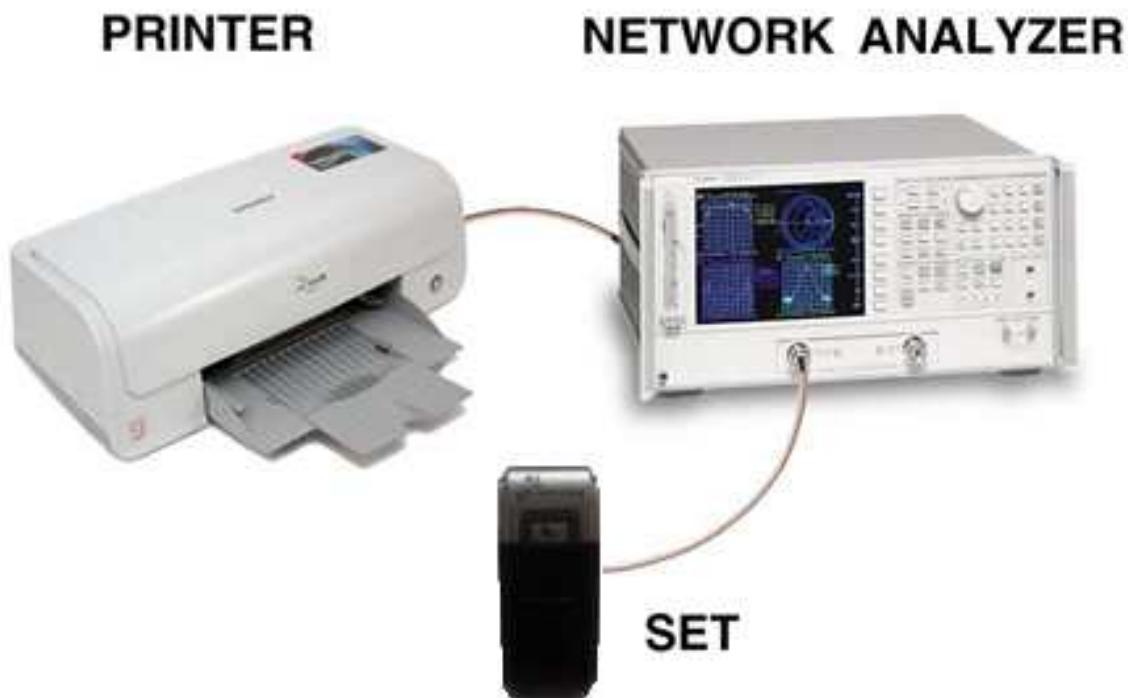


Radiation Pattern (3D MASUREMENT)

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3.3 VSWR & Smith chart Measurement Method

Measurement Method: Setting equipments as shown in fig. 3-1, connecting the hand set to the reflection port of the Network Analyzer, measure the impedance.

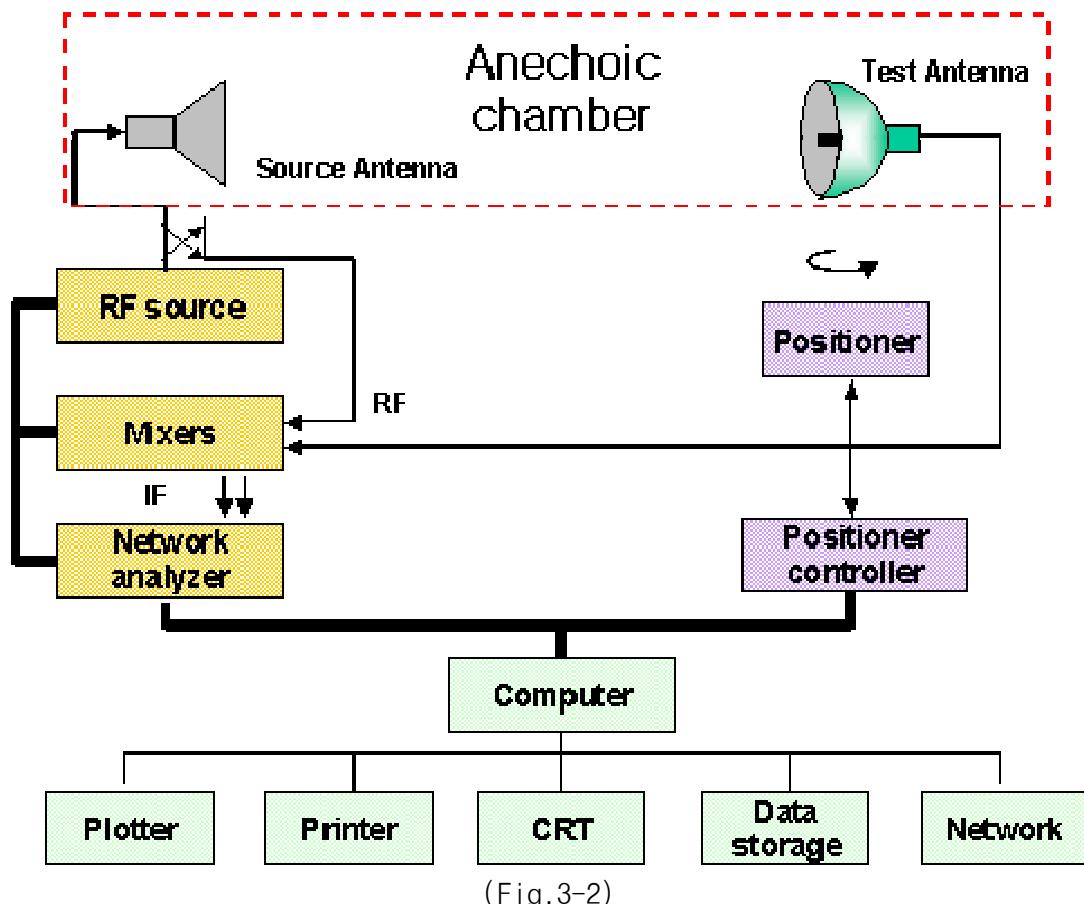


(Fig. 3-1)

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3.4 Efficiency & Gain & Radiation Pattern Measurement Method

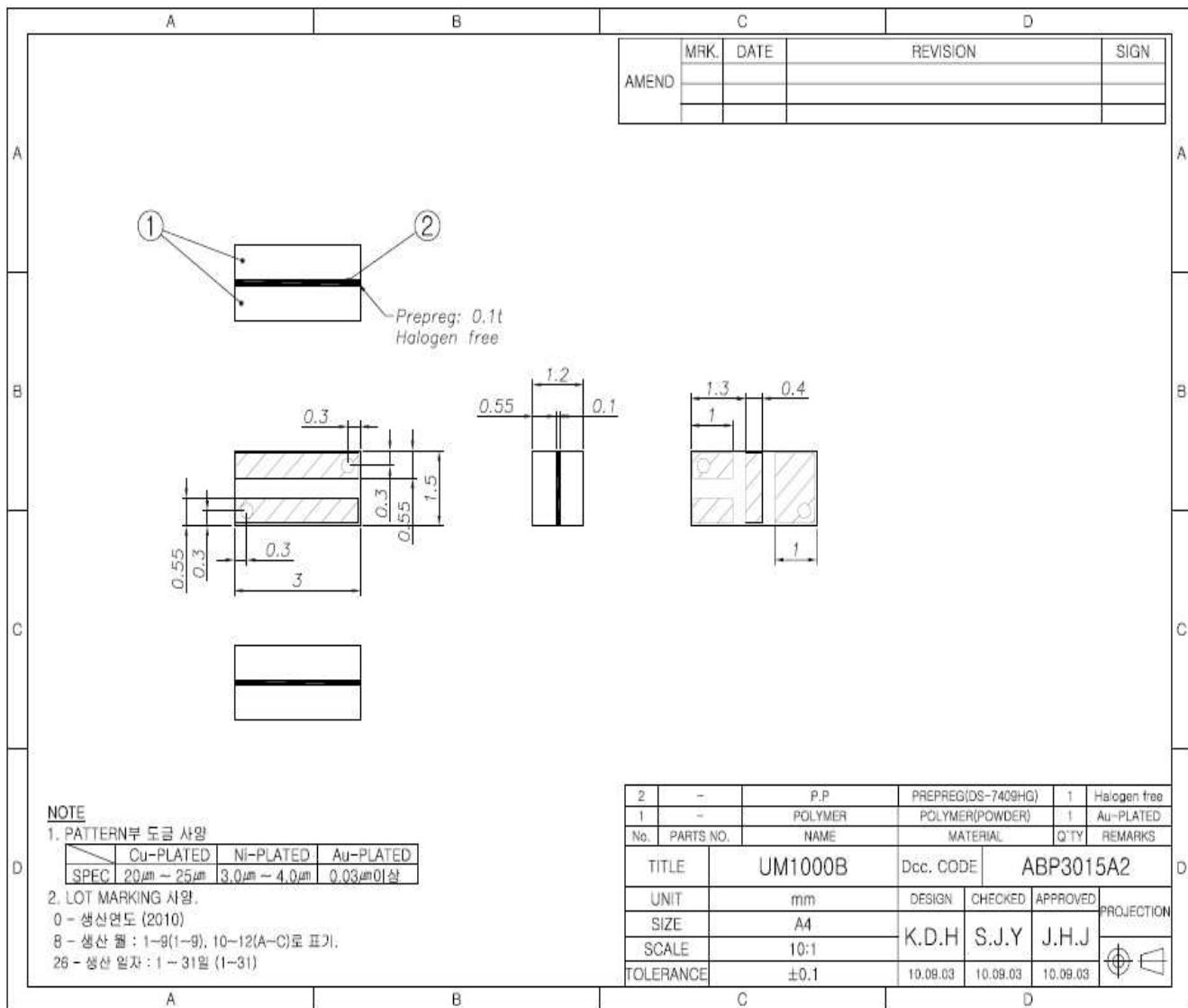
Measurement Method : As shown in fig.3-2, setting the horn antenna as standard antenna, measure the gain by [dBi].



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4. Mechanical Specifications

4.1 Mechanical Drawing

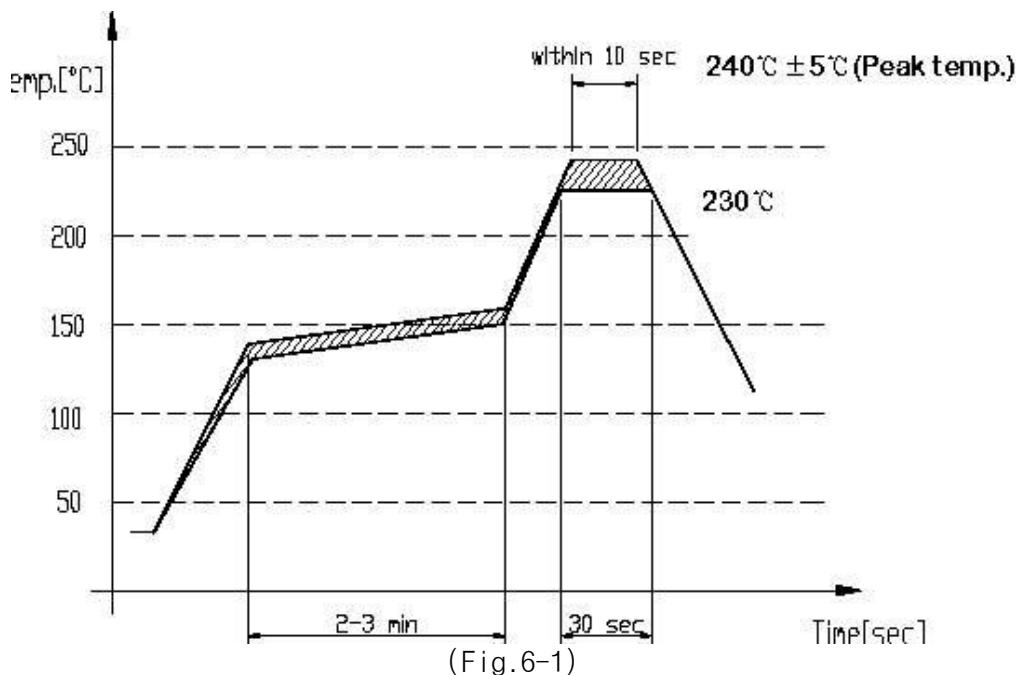


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5. Soldering Conditions (Pb Free)

- 1) To prevent deterioration of antenna performance, fellow conditions are satisfied.
 - Only reflow soldering process is available.
 - Inactive flux should be used.(Contents of Cl is below 0.2%)
 - Reflow cycle must be under 3 times.

Solder paste : Ag/Sn/Cu:96.5/3.0/0.5



6. Notice

- 1) Specimens should be kept in environment of -5 ~ 40°C and under RH70% for standby.(MSL Level 1)
- 2) Working in high temperature or humidity, or environment of exposure to chlorine gas or sulfur can cause the dielectric chip antenna to deteriorate in ability of soldering on electrode.
- 3) Mechanical Impact should be avoided to prevent crack by the weight of Dielectric Chip Antenna itself.
- 4) Dielectric Chip Antenna should be soldered within 6months. The chip antenna over 6months should be checked about soldering availability

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7. RoHS Report



Test Report No. F690501/LF-CTSAYAA09-08322

Issued Date: March 27, 2009

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To: INTOPS
205-13, Anyang-7dong
Manan-gu
Anyang-city
Gyeonggi-do
Korea

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

Product Name : Intenna
SGS File No. : AYAA09-08322
Received Date : March 23, 2009
Test Performing Date : March 24, 2009
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
Comments : By the applicant's specific request, the sampling and testing was performed only for the part indicated in the photo without disassembly.

SGS Testing Korea Co. Ltd.

Pluto Kim
Cindy Park
Jinee Song/ Testing Person

Jeff Jang / Chemical Lab Mgr

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Sample No. : AYAA09-08322.001

Sample Description : Intenna

Item No./Part No. : N/A

Heavy Metals

Test Items	Unit	Test Method	MDL	Results
Cadmium (Cd)	mg/kg	With reference to IEC 62321:2008, ICP-OES	0.5	N.D.
Lead (Pb)	mg/kg	With reference to IEC 62321:2008, ICP-OES	5	N.D.
Mercury (Hg)	mg/kg	With reference to IEC 62321:2008, ICP-OES	2	N.D.
Hexavalent Chromium (Cr VI)	mg/kg	With reference to IEC 62321:2008, UV-VIS	1	N.D.

Flame Retardants-PBBs/PBDEs

Test Items	Unit	Test Method	MDL	Results
Monobromobiphenyl	mg/kg	With reference to IEC 62321:2008, GC-MS	5	N.D.
Dibromobiphenyl	mg/kg	With reference to IEC 62321:2008, GC-MS	5	N.D.
Tribromobiphenyl	mg/kg	With reference to IEC 62321:2008, GC-MS	5	N.D.
Tetrabromobiphenyl	mg/kg	With reference to IEC 62321:2008, GC-MS	5	N.D.
Pentabromobiphenyl	mg/kg	With reference to IEC 62321:2008, GC-MS	5	N.D.
Hexabromobiphenyl	mg/kg	With reference to IEC 62321:2008, GC-MS	5	N.D.
Heptabromobiphenyl	mg/kg	With reference to IEC 62321:2008, GC-MS	5	N.D.
Octabromobiphenyl	mg/kg	With reference to IEC 62321:2008, GC-MS	5	N.D.
Nonabromobiphenyl	mg/kg	With reference to IEC 62321:2008, GC-MS	5	N.D.
Decabromobiphenyl	mg/kg	With reference to IEC 62321:2008, GC-MS	5	N.D.
Monobromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, GC-MS	5	N.D.
Dibromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, GC-MS	5	N.D.
Tribromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, GC-MS	5	N.D.
Tetrabromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, GC-MS	5	N.D.
Pentabromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, GC-MS	5	N.D.
Hexabromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, GC-MS	5	N.D.
Heptabromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, GC-MS	5	N.D.
Octabromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, GC-MS	5	N.D.
Nonabromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, GC-MS	5	N.D.
Decabromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, 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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Sample No. : AYAA09-08322.001

Sample Description : Intenna

Item No./Part No. : N/A

Halogen Contents

Test Items	Unit	Test Method	MDL	Results
Bromine(Br)	mg/kg	BS EN 14582:2007, IC	30	N.D.
Chlorine(Cl)	mg/kg	BS EN 14582:2007, IC	30	N.D.

Picture of Sample as Received:



*** 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

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