

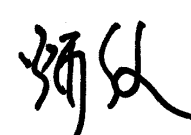




승 인 원

제 품 명	칩안테나		
사 용 자	텔리안		
적 용 모 델	MGQ7180		
사용자 CODE			
공급자	주식회사 파트론		
공급자 CODE	ACS2450EBAMQ		
텔 리 안	작성자	검 토 자	승인자
(주)파트론	작성자	품질합의	승인자
			
	개발 2P	품질보증파트	연구소
	전찬익	이광규	임병준
	02/12	02/12	02/12

2007 . 02. 12



경기도 화성시 반월동 33번지 나동 455-300

Tel : 031-201-7870~6

Fax : 031-201-7800

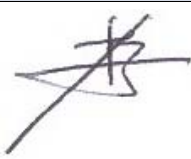
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SPECIFICATION

MODEL : ACS2450EBAMQ

DIELECTRIC CHIP ANTENNA

작성자	검토자	승인자
		
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[illegible]

2. 전기적 특성

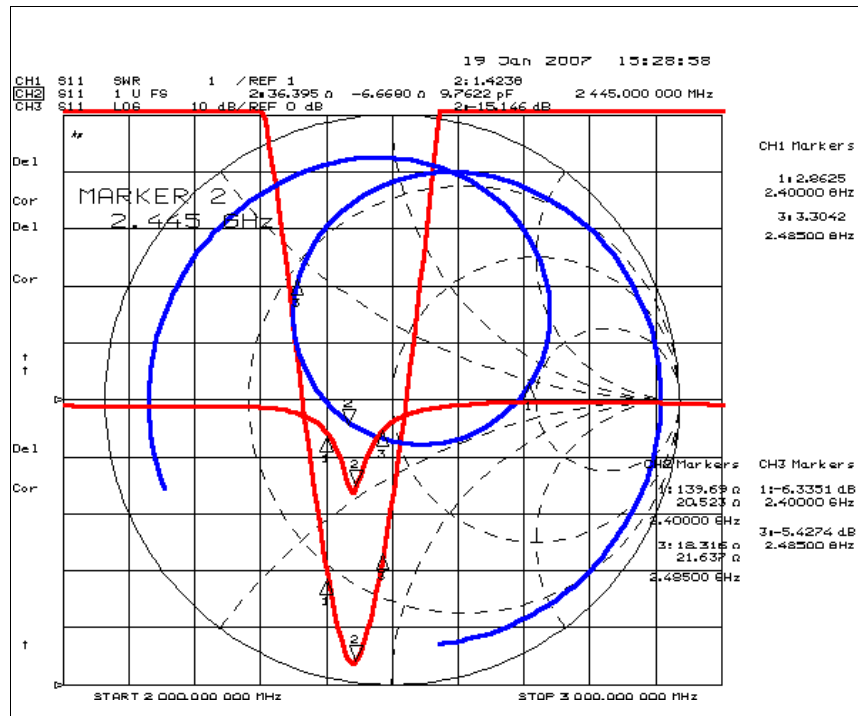
2.1 Set 실장 측정

ITEM				SPEC
Frequency Range [MHz]				2400 ~ 2485
VSWR [Max]				3 : 1
Bandwidth [MHz]				85
Polarization				Linear
Gain[dBi]	Total Gain (Peak / Avg) [dBi]			1.31 / -5.9
	Azimuth	Theta	Peak	-3.95
			Average	-9.28
		Phi	Peak	-4.04
			Average	-10.04
	Elevation 1	Theta	Peak	-2.09
			Average	-5.53
		Phi	Peak	-0.47
			Average	-6.34
	Elevation 2	Theta	Peak	-8.58
			Average	-14.81
		Phi	Peak	1.31
			Average	-3.86

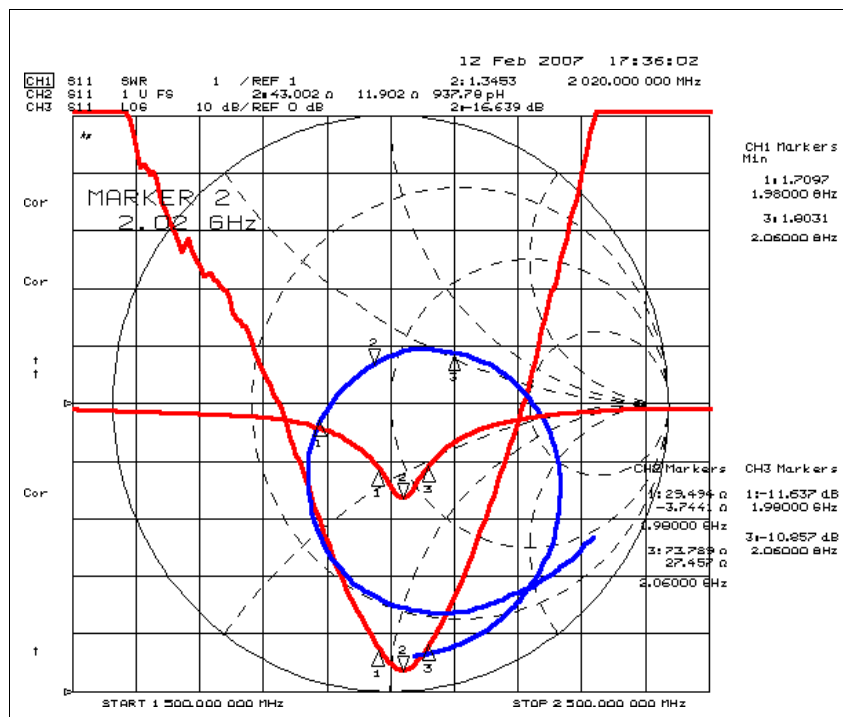
2.2 Test Fixture 측정

ITEM	SPEC	CTQ
Frequency Range [MHz]	1980 ~ 2060	
SWR [Max]	3 : 1	
Bandwidth [MHz]	80	

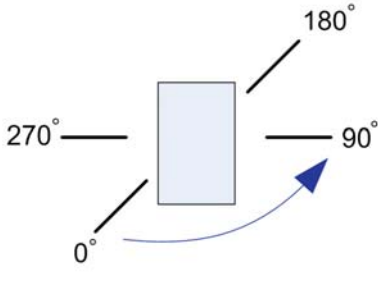
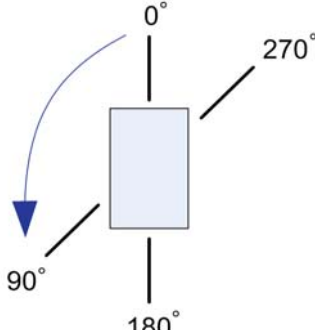
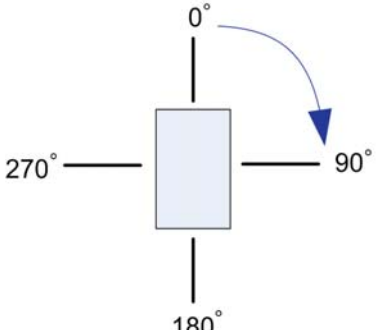
2.4 Set 실장 측정 Graph

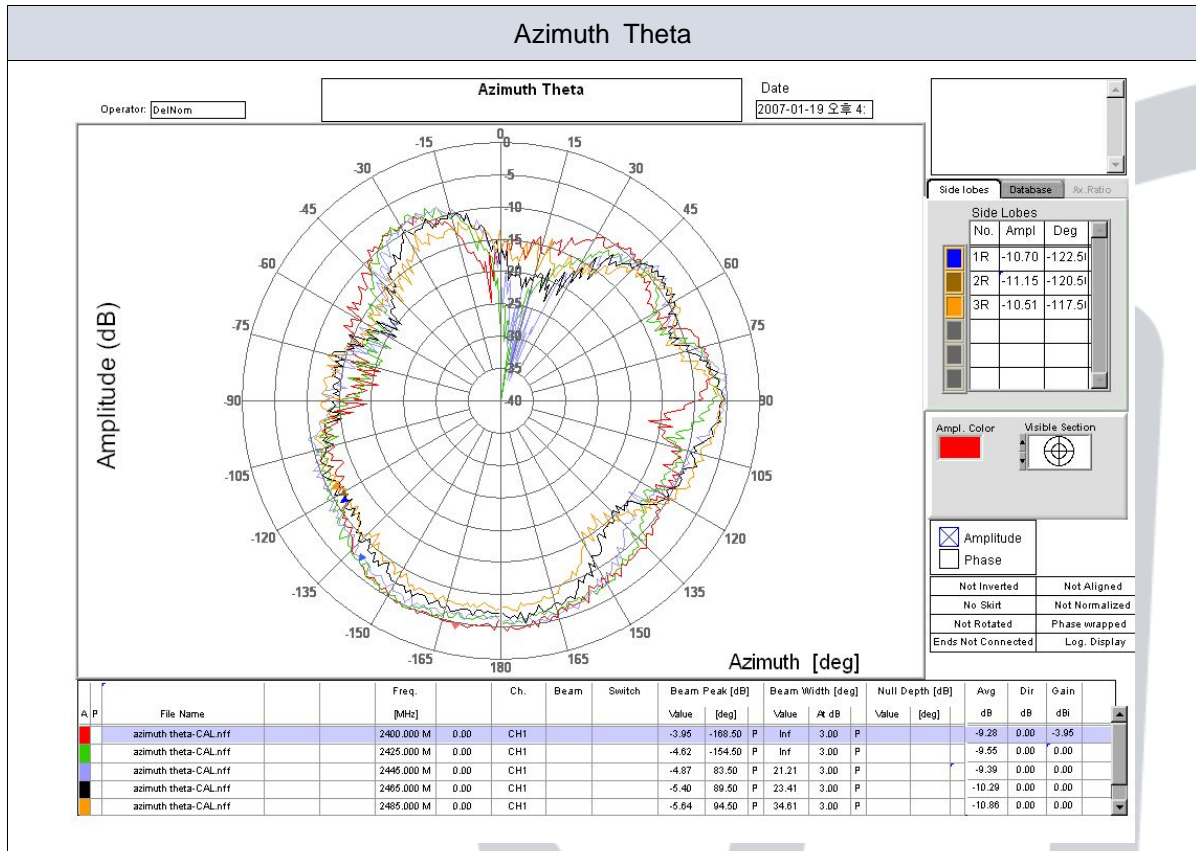


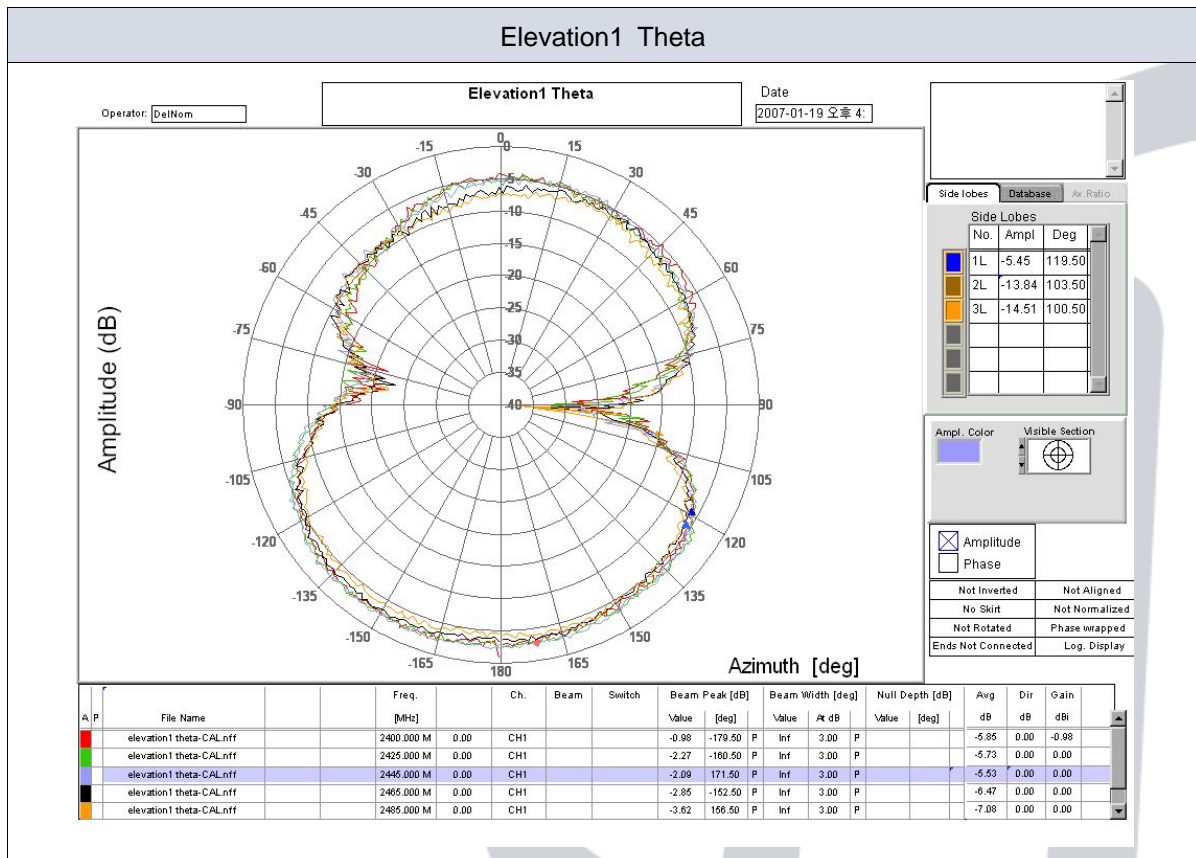
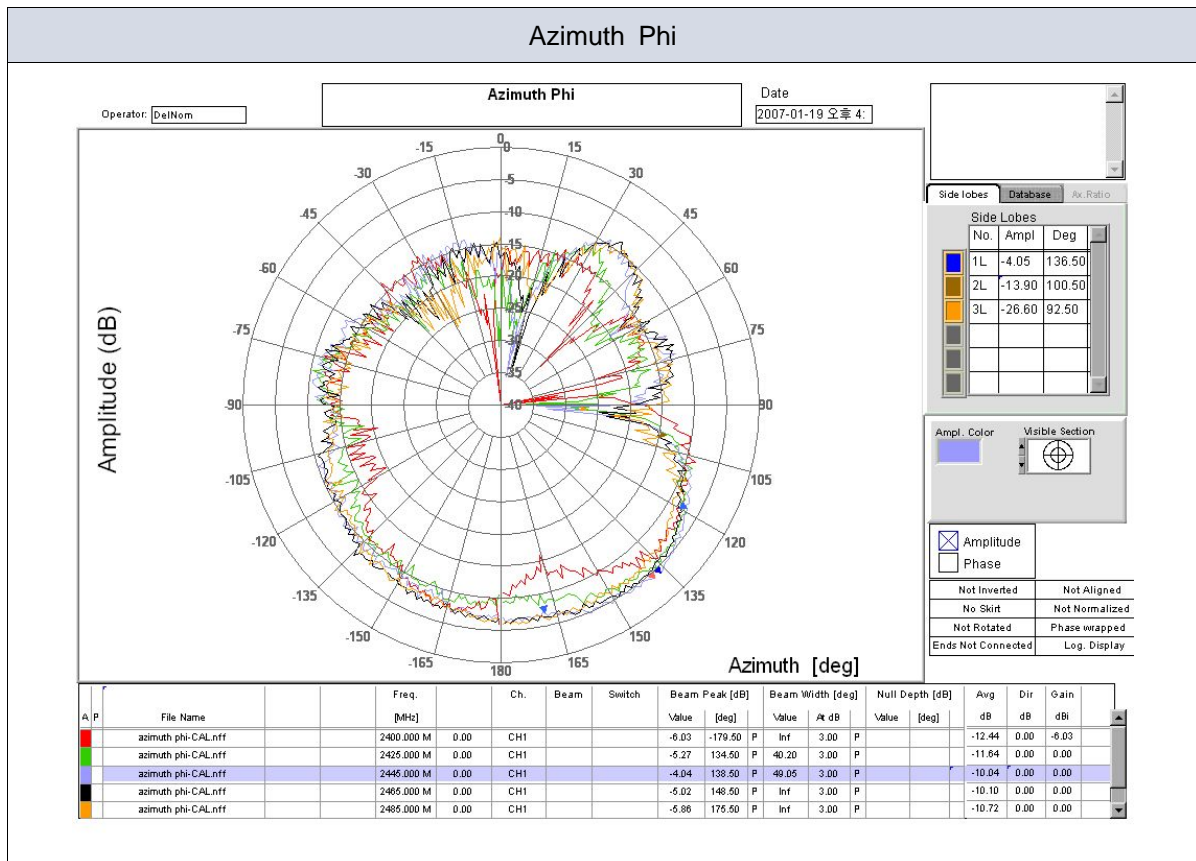
2.5 Test Fixture 측정 Graph



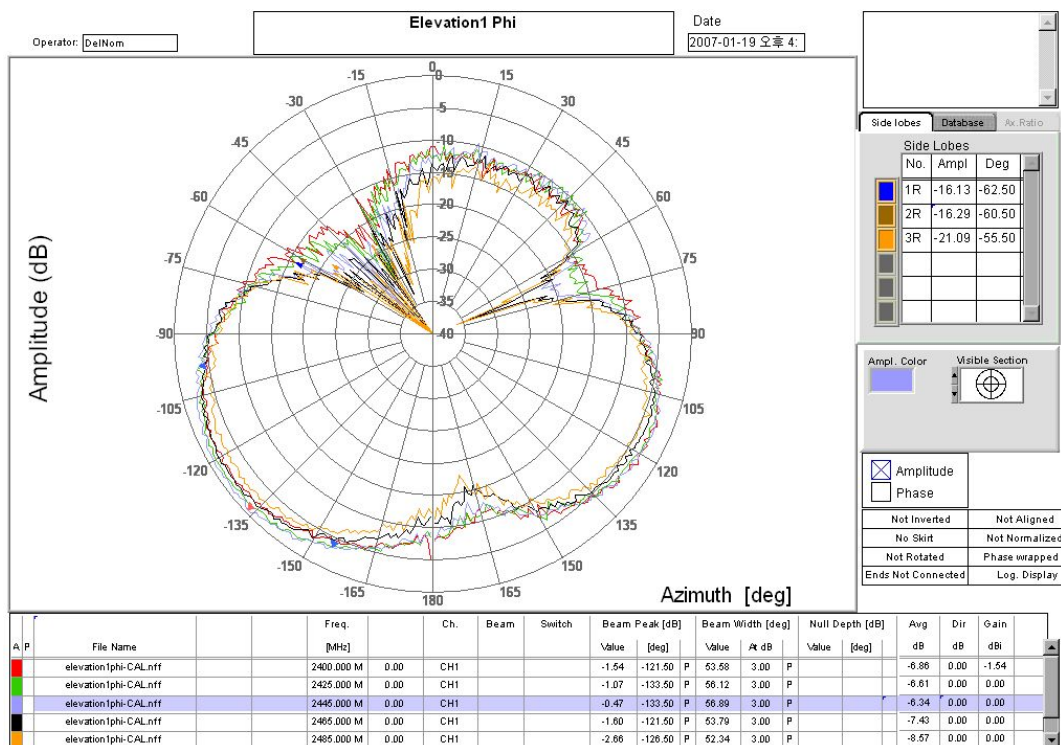
2.6 방사패턴

Azimuth Plane	Elevation 1 Plane	Elevation2 Plane
		
Theta	Vertical field of measured plane	
Phi	Horizontal field of measured plane	

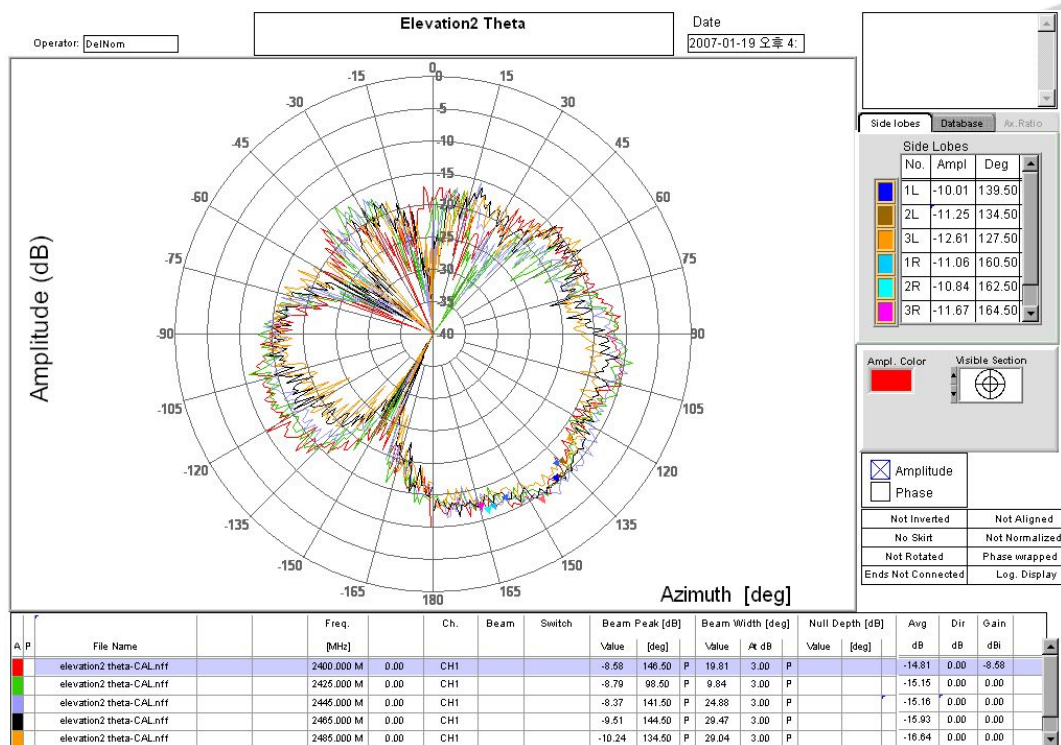


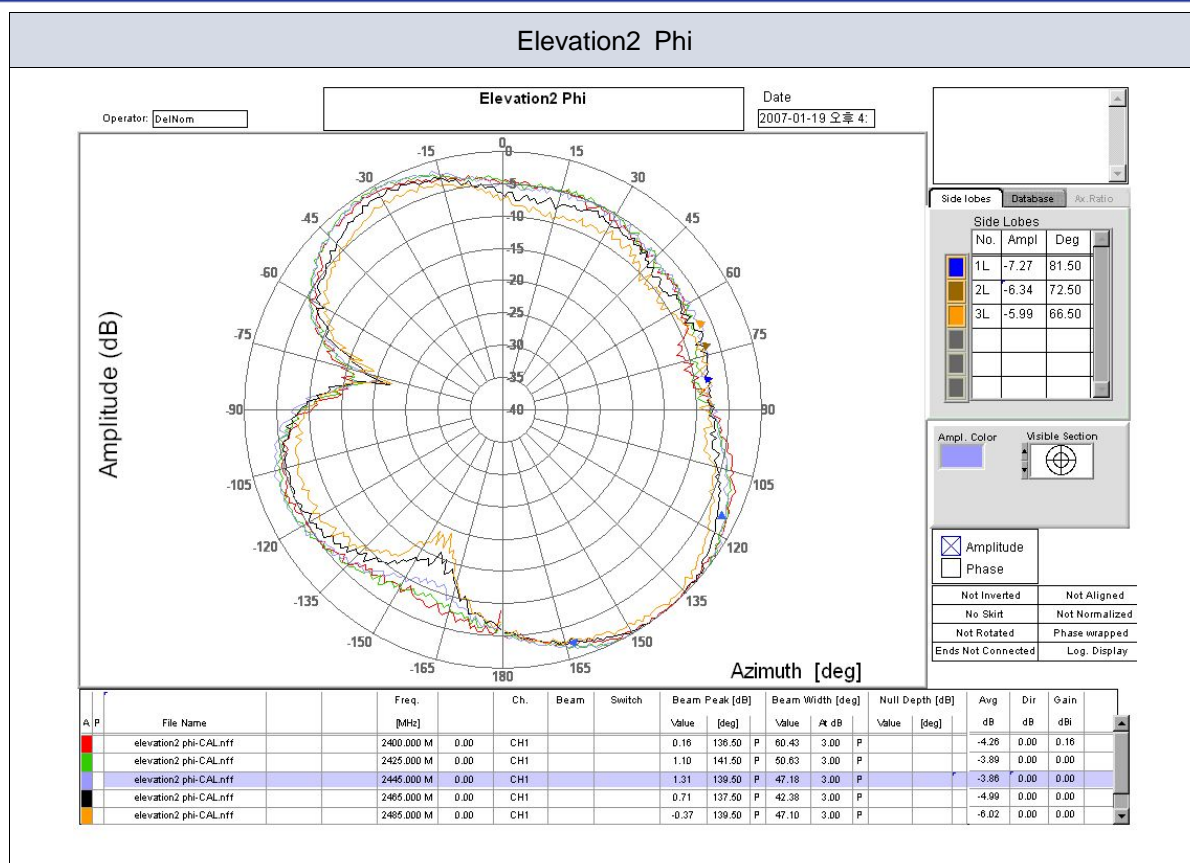


Elevation1 Phi



Elevation2 Theta

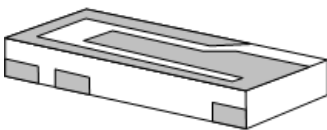
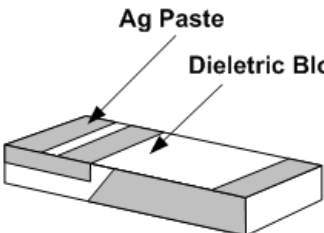




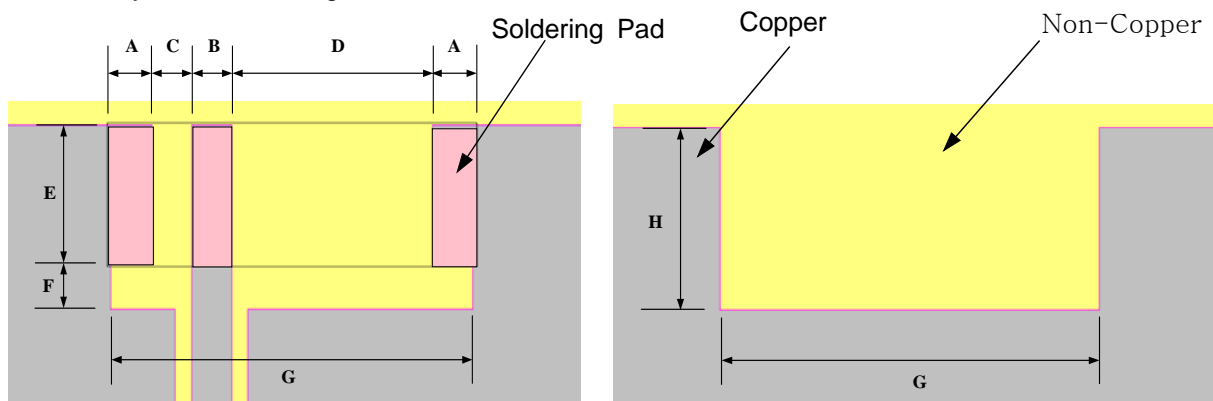
3. 기구적 특성

- 직방체의 형상을 갖는 유전체 소체에 은(Ag) Paste로 패턴을 형성하여 특성을 구현함

3.1 구조와 재질

Material	Dielectric Block (MMS-08)	3D Structure	
	Ag Paste (Metech)		
Size [mm]	W = 2.0±0.1		
	L = 5.4±0.1		
	T = 1.2±0.1		
Temperature [°C]	- 40 ~ +80		
Humidity [%]	At the normal temperature, RH 100		

3.2 PCB Layout & Soldering Pad Dimension



Top Layout

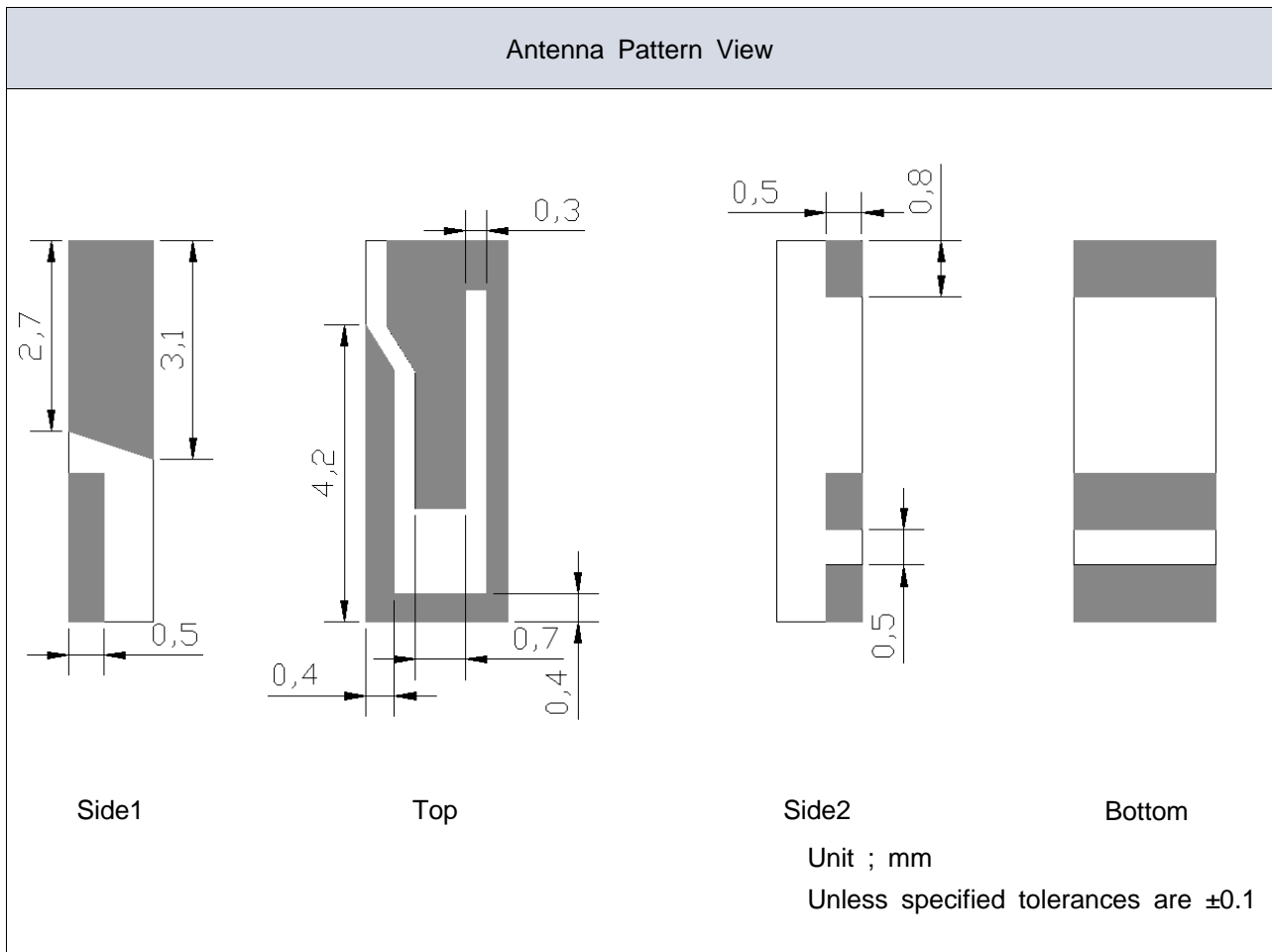
Bottom Pattern

Parameter	A	B	C	D	E	F	G	H
Value[mm]	0.9	0.8	0.5	2.5	2.2	more than 1.5	more than 5.6	more than 3.7

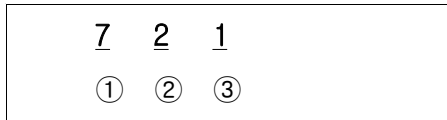
Unit ; mm

Unless specified tolerances are ± 0.1

3.3 안테나 패턴 도면

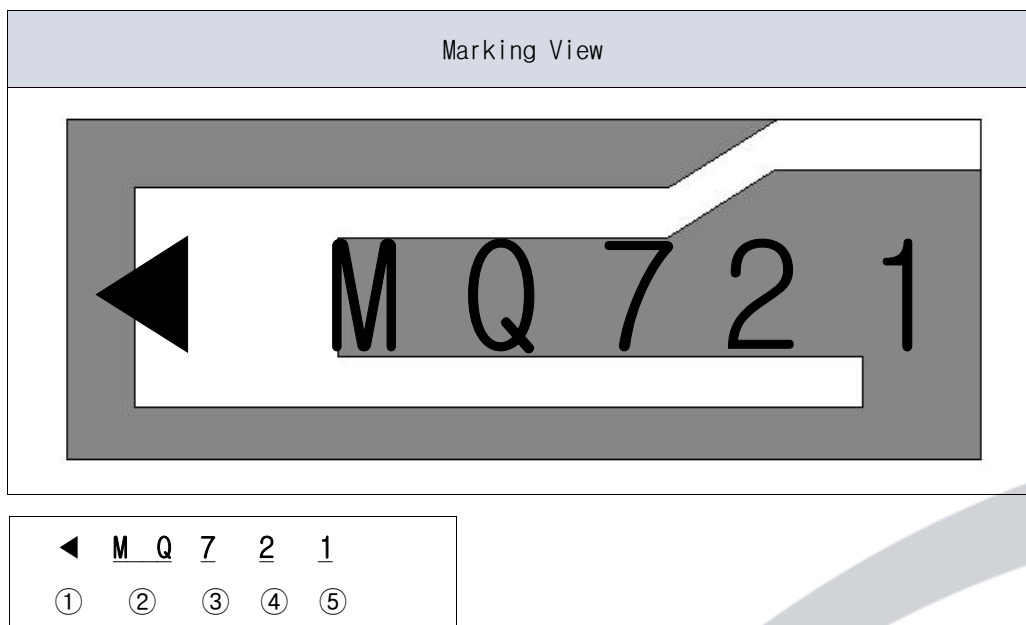


3.4 LOT 번호 표 기 법



- ① Year ; 1 - 2001, 2 - 2002, 7 - 2007
- ② Month ; 1 - January, 2 - February 9 - September, A - October, B - November ...
- ③ Date : 1 - 1st , 2 - 2nd A - 10th, B - 11th

3.5 Marking 사양

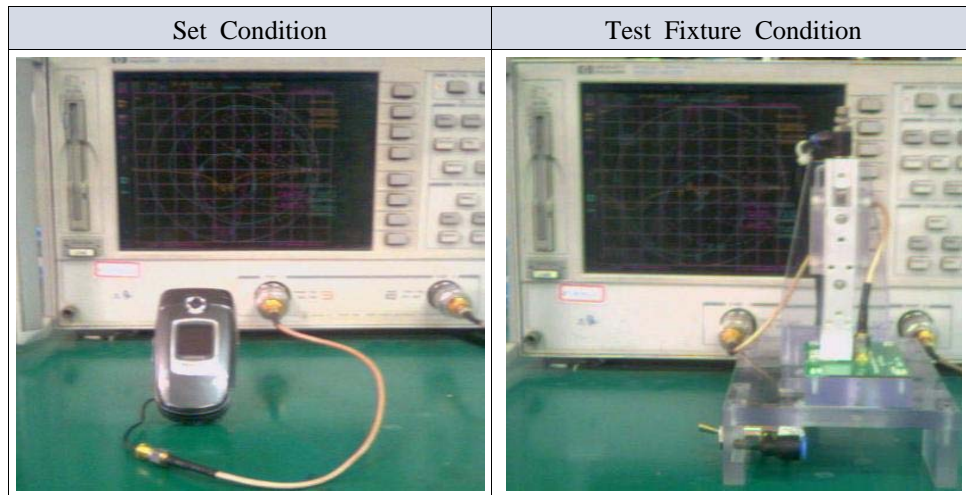


- ① Input Signal
- ② Serial
- ③ Year; 1 - 2001, 2 - 2002, 7 - 2007
- ④ Month ; 1 - January, 2 - February 9 - September, A - October, B - November
- ⑤ Date : 1 - 1st , 2 - 2nd A - 10th, B - 11th

4. 시험 방법

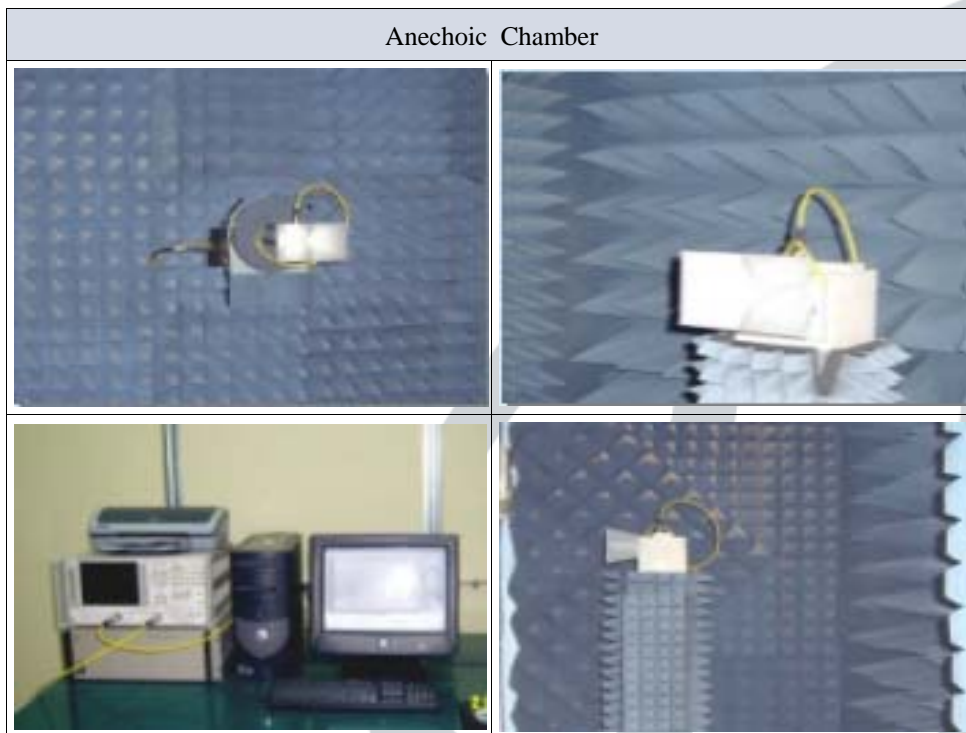
4.1 SWR/Returnloss

Network Analyzer를 이용하여 SWR/Returnloss 를 측정하며 표본 SPL을 선별 Test Fixture 를 이용 양품과 불량품을 선별한다.



4.2 Gain

당사가 보유한 전파 무반사실에서 상기4.1에서 측정된 Set를 이용하여 Antenna Gain을 측정한다.



5. 초기 검사 성적서

검사항목	특성 [MHz] CTQ		치수 [mm] CTQ		
규격	VSWR 3.0 Max		W=2.0±0.1	L=5.4±0.1	T=1.2±0.1
	1980	2060			
1	1.70	1.80	2.02	5.41	1.23
2	1.95	1.71	2.03	5.42	1.23
3	1.92	1.74	2.03	5.43	1.23
4	1.93	1.70	2.03	5.41	1.22
5	1.77	1.85	2.02	5.41	1.23
6	1.88	1.75	2.04	5.41	1.24
7	1.88	1.72	2.02	5.42	1.24
8	1.96	1.74	2.03	5.42	1.22
9	1.89	1.76	2.02	5.42	1.24
10	1.84	1.76	2.03	5.42	1.24
11	1.93	1.73	2.03	5.40	1.23
12	1.95	1.71	2.02	5.40	1.24
13	1.85	1.80	2.04	5.42	1.22
14	1.91	1.88	2.02	5.41	1.23
15	1.90	1.86	2.03	5.41	1.23
16	1.94	1.83	2.03	5.42	1.24
17	1.86	1.81	2.02	5.40	1.22
18	1.91	1.83	2.04	5.40	1.24
19	1.87	1.79	2.02	5.41	1.23
20	1.84	1.81	2.02	5.42	1.24
X	1.88	1.77	2.02	5.41	1.23
σ	0.06	0.05	0.01	0.01	0.01
Cpk	5.75	7.39	3.28	3.31	2.91
판정	OK	OK	OK	OK	OK

6. 신뢰성 보증조건

6.1 환경 시험

항목	조 건	비고
고온방치	$+85^{\circ}\text{C} \pm 3^{\circ}\text{C}$, 120hr \pm 2hr	*시험 후 상온($25^{\circ}\text{C} \pm 5^{\circ}\text{C}$)에서 1시간 방치 후 측정한다. *테이블1의 전기적 특성을 만족하여야한다
저온방치	$-40^{\circ}\text{C} \pm 3^{\circ}\text{C}$, 120hr \pm 2hr	
내습시험	$+60 \pm 3^{\circ}\text{C}$, RH90~95% ,120hr \pm 2hr	
ESD	MIL-STD-883D 3015.7(HBM), Class3B(8KV) 테스트 횟수 : 100회	*테이블1의 전기적 특성을 만족하여야한다

6.2 열충격 , REFLOW시험

항목	조 건	비고
열충격	$-40^{\circ}\text{C} \pm 3^{\circ}\text{C} / 45\text{min} \leftrightarrow +85^{\circ}\text{C} \pm 3^{\circ}\text{C} / 45\text{min}$ cycle : 30 cycle 온도변환시간 : 5min 미만	6-1와 동일
Reflow	Pre Heating $200 \pm 5^{\circ}\text{C}$, 30~60 sec Peak Heating $260^{\circ}\text{C} \pm 5^{\circ}\text{C}$, 30sec Max	

6.3 기계적 시험

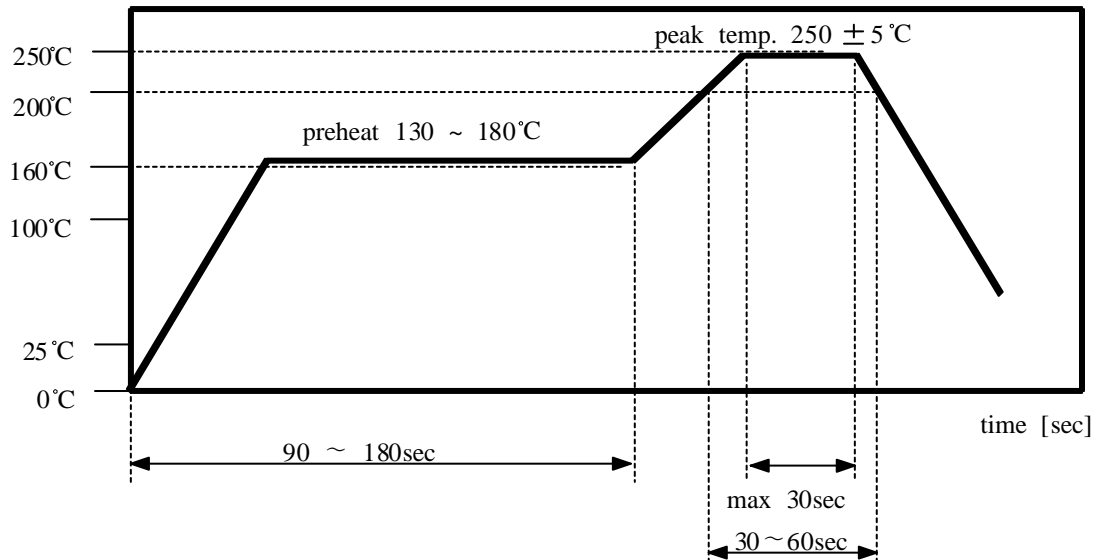
항목	조 건	비고
진동시험	주파수: 10~500Hz에서 $10 \times 9.8\text{ms}^2(\text{G})$ Sweep time 15min ,X.Y.Z each 5 times	*시험 후 테이블1의 전기적 특성을 만족하여야한다
낙하시험	높이 152cm에서 각 면 5회 낙하(지그낙하)	
힘 강도	힘정도 : 2mm 속도 : 0.5mm/초 지속시간 5초	
고착강도	PCB에 SMT후 힘 F를 주어 제품이 PCB에서 떨어질때까지 힘 F를 증가	*F > 5kgf 을 만족하여야한다

6.4 신뢰성 시험 성적서

※ 별첨

7. 납땜 조건

7.1 표준 열경화(Reflow) 조건



7.2 수동 납땜 (납땜 인두기를 사용할 경우)

예 열 : 120 $^{\circ}\text{C}$ / 시간 : 60 ~ 300 sec.
 인두온도 : 340 $^{\circ}\text{C} \pm 5^{\circ}\text{C}$ / 시간 : 각 단 최대 5 sec.

8. 주의 사항

8.1 온도 조건

	Range of Temperature	unit
Application	-40 ~ +85	$^{\circ}\text{C}$
Keeping	-40 ~ +85	$^{\circ}\text{C}$

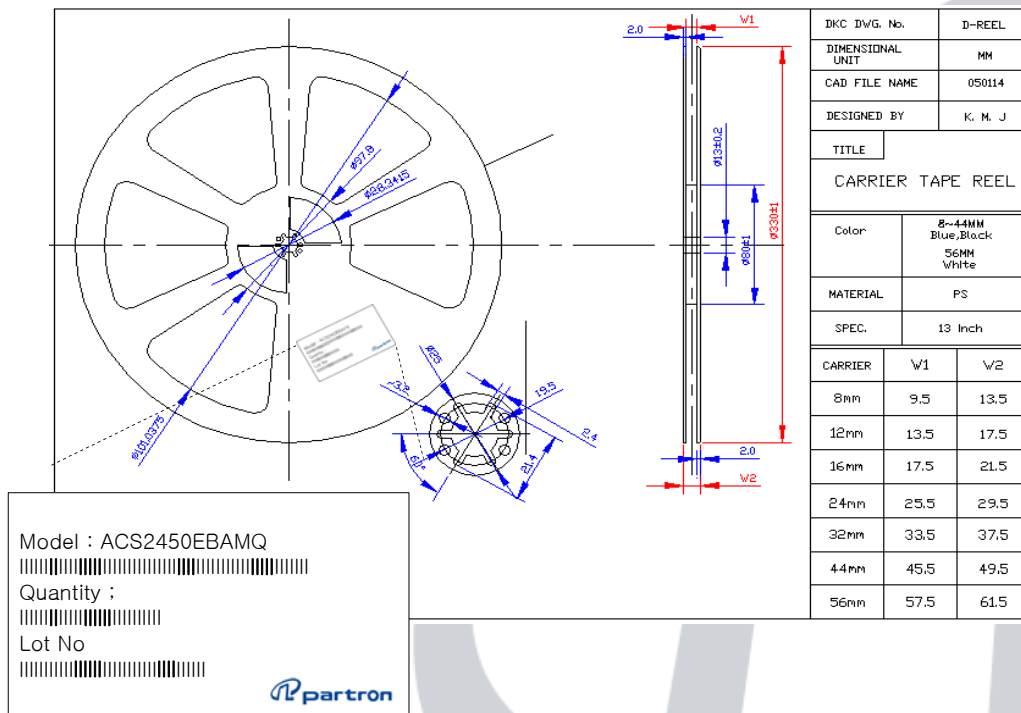
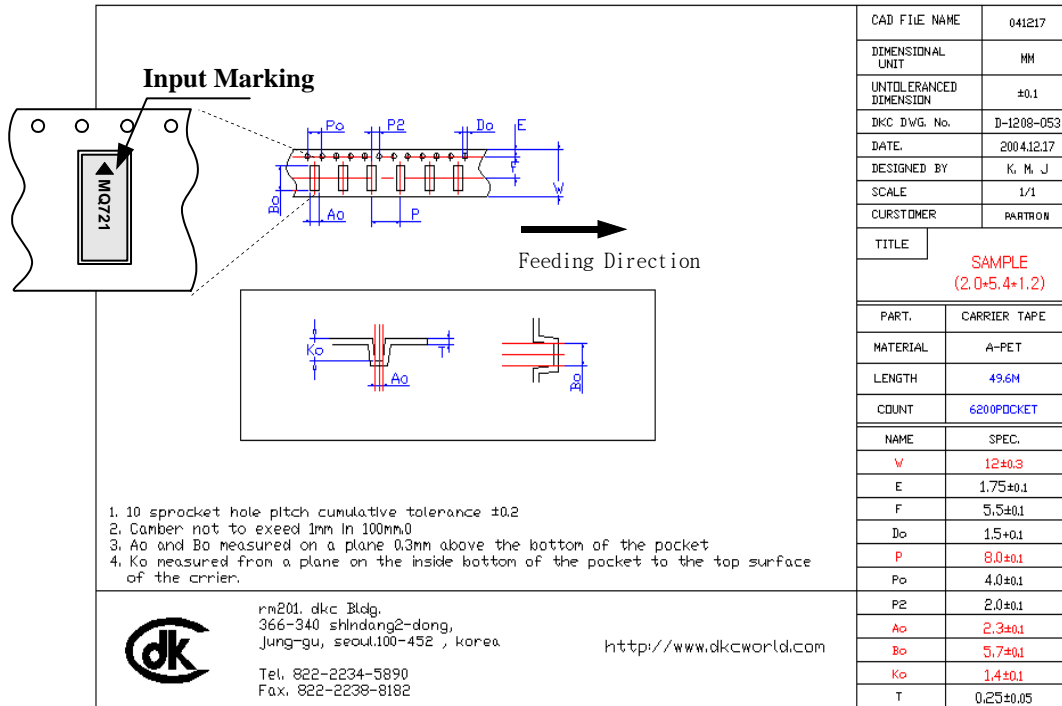
8.2 MSL LEVEL 1 (JEDEC J-STD-020C)

	Floor Life		Soak Requirements	
	Time	Conditions	Time	Conditions
	Unlimited	= < 30 $^{\circ}\text{C}$ /85%RH	168+5/-0	= < 85 $^{\circ}\text{C}$ /85%RH

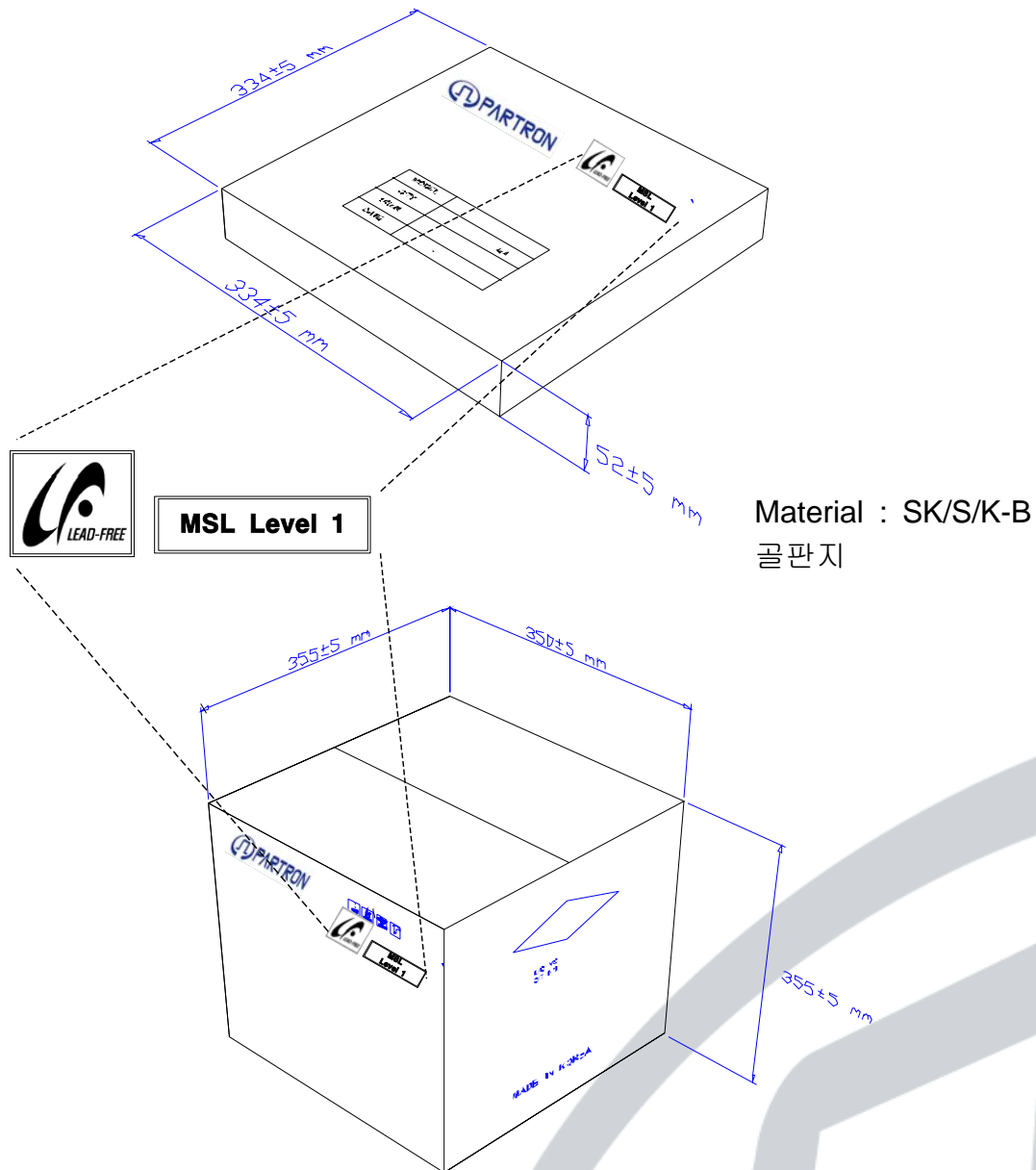
9. 포장 사양

9.1 Carrier/Reel 사양

재질	표면저항	포장방식
대전 방지용 A-PET	Typical $10^8 \Omega$	열 압착식



9.2 Box 사양



10. 관리공정도

제품		발행 /개정		품질관리공정도					관리번호	기안	심의	결정		
CHIP ANTENNA		Issued	04.04.06						PRCP-C001					
투입자재	FLOW CHART		공정명	요인관리					품질특성관리					
	준비	본공정		설비명	관리항목	조건	관리주기	기록관리	관리항목	관리한계	검사방법	관리주기	기록관리	조치사항
세라믹 파우더		◇	수입검사						수축율 유전율	작업지도서 참조	Micrometer Network	10개/LOT	C/sheet	반품
파우더 윤활제	○		분말	Mixer					혼합	파우더:윤활 제	저울	혼합시	-	폐기
		○	성형	프레스	양압 금형상태	작업지도서 참조	매LOT 1회/일	parameter C/SHEET	치수 무게 밀도 외관	작업지도서 참조	Micrometer 저울 Calculated Visual	5/100개검 사 10개/LOT	LOT CARD	폐기
		○	소성	소성로	SETTER 외관 온도 PROFILE	작업지도서 참조	전수 2회/일 1회/월	C/sheet						
		◇	소체						폭 길이 모양	검사지도서 참조	Micrometer Calipers 목시	20개/LOT 20개/LOT 전수	C/sheet	폐기
AG PASTE		○	SIDE1 PAD 인쇄	인쇄기 screen	스쿼즈 속도 /압력 SNAP	작업지도서 참조	1회/일	-	PATTERN치수 외관	작업지도서 참조	측정기 현미경	10개/3Jig	c/sheet	재작업
		○	건조	건조기 건조Jig	온도 Belt speed	작업지도서 참조	1회/주	Parameter	건조상태 인쇄상태 파손	작업지도서 참조	목시	전수검사	Lot card	재작업

제품		발행 /개정		품질관리공정도					관리번호	기안	심의	결정		
CHIP ANTENNA		Issued	04.04.06.						PRCP-C001					
		Revised	05.04.03											
투입자재	FLOW CHART		공정명	요인관리					품질특성관리					
	준비	본공정		설비명	관리항목	조건	관리주기	기록관리	관리항목	관리한계	검사방법	관리주기	기록관리	조치사항
AG PASTE		○	SIDE 2 PAD 인쇄	인쇄기 screen	스퀴즈 속도 /압력 SNAP	작업지도서 참조	1회/일	-	PATTERN치수 외관	작업지도서 참조	측정기 현미경	10개 /3Jig	c/sheet	재작업
		○	건조	건조기 건조Jig	온도 Belt speed	작업지도서 참조	1회/주	Parameter	건조상태 인쇄상태 파손	작업지도서 참조	목시	전수검사	Lot card	재작업
		○	소부	소부로 mesh망	온도 Belt speed	작업지도서 참조	1회/주	Parameter C/Sheet	소체파손 오염	작업지도서 참조	목시	전수	Lot card	폐기 재작업
AG PASTE		○	TOP 인쇄	인쇄기 screen	스퀴즈 속도 /압력 SNAP	작업지도서 참조	1회/일	-	PATTERN치수	작업지도서 참조	측정기	10개 /3Jig	c/sheet	재작업
		○	건조	건조기 건조Jig	온도 Belt speed	작업지도서 참조	1회/주	Parameter	건조상태 인쇄상태 파손	작업지도서 참조	목시	전수검사	Lot card	재작업
AG PASTE		○	BOTTOM PAD 인쇄 (초중종물 관리) CTQ공정	인쇄기 screen	스퀴즈 속도 /압력 SNAP	작업지도서 참조	1회/일	-	PATTERN치수 외관	작업지도서 참조	측정기 현미경	10개 /3Jig	c/sheet	재작업

제품		발행 /개정		품질관리공정도					관리번호	기안	심의	결정		
CHIP ANTENNA		Issued Revised	04.04.06. 05.04.03						PRCP-C001					
투입 자재	FLOW CHART		공정명	요인관리					품질특성관리					
	준비	본공정		설비명	관리항목	조건	관리주기	기록관리	검사항목	관리한계	검사방법	관리주기	기록관리	조치사항
		○	건조	건조기 건조Jig	온도 Belt speed	작업지도서 참조	1회/주	Parameter	건조상태 인쇄상태 파손	작업지도서 참조	목시	전수검사	Lot card	재작업
		○	소부	소부로 mesh망	온도 Belt speed	작업지도서 참조	1회/주	Parameter C/Sheet	소체파손 오염	작업지도서 참조	목시	전수	Lot card	폐기 재작업
		◇	외관검사						제품외관	한도견본 작업지도서 참조	목시 현미경	전수	Lot card 생산일보	폐기 수리
		○	MARKING	마킹기					마킹외관	한도견본	목시	전수	Lot card 생산일보	재작업 폐기
		◇	특성검사	NETWORK 검사지그	교정상태	작업지도서 참조	1회/반	C/sheet	전기적 특성	작업지도서 참조	Network	전수	Lot card 생산일보	폐기 수리
		◇	외관검사						제품외관 제품치수	한도견본 작업지도서 참조	목시 현미경	전수	Lot card 생산일보	폐기 수리
Carrier cover reel		○	Taping						수량 역삼 외관	작업지도서 참조	수작업	전수	Lot card 생산일보	재작업
		◇	출하검사	NETWORK 검사지그	교정상태	작업지도서 참조	1회/반	C/sheet	전기적특성 제품외관 포장상태	검사지도서	Network 현미경 목시	작업 지도서	성적서	return 폐기
포장 box label		○	포장	bar code printer					포장상태 기종혼입 포장수량	포장작업 지도서	목시	전수	-	재작업
		◇	포장검사						포장상태 기종혼입 포장수량	포장작업 지도서	목시	전수	-	return

11. 유해물질 분석 성적서

1) Ceramic Powder

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Test Report

FUJII TITANIUM IND. CO., LTD.
12-8, SENGUN-CHO, HIRATSUKA-CITY, KANAKAWA-
PREF. JAPAN. (T) 81-463-32-0210

Report No. : CE/2006/75167
Date : 2006/07/25
Page : 1 of 4

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

Sample Description : MIXTURE OF (1) MAGNESIUM SILICATE
(2) STRONTIUM ZIRCONATE (3) BARIUM TITANATE
Style/Item No : MMS-08 (B)
Sample Received : 2006/07/18
Testing Period : 2006/07/18 TO 2006/07/25

Test Result(s) : - Please see the next page(s) -

David Yeh, M.F., Operation Manager
Signed for and on behalf of
SGS TAIWAN LTD.

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SGS TAIWAN LIMITED NO. 135-1, Wu-Kung Road, Wu-Kung Industrial Zone, Taipei County, Taiwan.
TEL: 886-2-22992231 FAX: 886-2-2299-3222 www.sgs.com.tw

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Test Report

FUJII TITANIUM IND. CO., LTD.
12-8, SENGUN-CHO, HIRATSUKA-CITY, KANAKAWA-
PREF. JAPAN. (T) 81-463-32-0210

Report No. : CE/2006/75167
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Test Result(s)
PART NAME NO.1 : WHITE POWDER

Test Item (s):	Unit	Method	MDL	Result No.1
PBBs (Polybrominated biphenyls)				
Monobromobiphenyl	%		0.0005	N.D.
Dibromobiphenyl	%		0.0005	N.D.
Tribromobiphenyl	%		0.0005	N.D.
Tetrabromobiphenyl	%		0.0005	N.D.
Pentabromobiphenyl	%	With reference to	0.0005	N.D.
Hexabromobiphenyl	%	USEPA3540C. Analysis was	0.0005	N.D.
Heptabromobiphenyl	%	performed by HPLC/DAD,	0.0005	N.D.
Octabromobiphenyl	%	LC/MS or GC/MS.	0.0005	N.D.
Nonabromobiphenyl	%	(prohibited by 2002/95/EC	0.0005	N.D.
Decabromobiphenyl	%	(RoHS), 83/264/EEC, and	0.0005	N.D.
		76/769/EEC)	0.0005	N.D.
Total PBBs (Polybrominated biphenyls)/Sum of above	%		-	N.D.
PBDEs (Polybrominated diphenyl ethers)				
Monobromodiphenyl ether	%		0.0005	N.D.
Dibromodiphenyl ether	%		0.0005	N.D.
Tribromodiphenyl ether	%		0.0005	N.D.
Tetrabromodiphenyl ether	%		0.0005	N.D.
Pentabromodiphenyl ether	%		0.0005	N.D.
Hexabromodiphenyl ether	%	With reference to	0.0005	N.D.
Heptabromodiphenyl ether	%	USEPA3540C. Analysis was	0.0005	N.D.
Octabromodiphenyl ether	%	performed by HPLC/DAD,	0.0005	N.D.
Nonabromodiphenyl ether	%	LC/MS or GC/MS.	0.0005	N.D.
Decabromodiphenyl ether	%	(prohibited by 2002/95/EC	0.0005	N.D.
		(RoHS), 83/264/EEC, and	0.0005	N.D.
		76/769/EEC)	0.0005	N.D.
Total PBDEs (Polybrominated diphenyl ethers)/Sum of above	%		-	N.D.
Total of Mono to Nona-brominated biphenyl ether. (Note 4)	%		-	N.D.

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Test Report

FUJII TITANIUM IND. CO., LTD.
12-8, SENGUN-CHO, HIRATSUKA-CITY, KANAKAWA-
PREF. JAPAN. (T) 81-463-32-0210

Report No. : CE/2006/75167
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Test Item (s):	Unit	Method	MDL	Result
Chromium VI (Cr+6)	ppm	UV-VIS (US EPA 7196A) after reference to US EPA 3060A.	2	N.D.
Cadmium (Cd)	ppm	ICP-AES after reference to EN 1122, method B:2001 or other acid digestion.	2	N.D.
Mercury (Hg)	ppm	ICP-AES after reference to US EPA 3052 or other acid digestion.	2	N.D.
Lead (Pb)	ppm	ICP-AES after reference to US EPA 3050B or other acid digestion.	2	19.3

NOTE: (1) N.D. = Not Detected (<MDL)
(2) ppm = mg/kg
(3) MDL = Method Detection Limit
(4) Decabromobiphenyl ether (DecaBDE) in polymeric applications is exempted by Commission Decision of 13 Oct 2005 amending Directive 2002/95/EC notified under document 2005/717/EC.
(5) PBDEs=PBDEs=Polybrominated Diphenyl Ethers=PBDOs=PBBOs.
(6) "-" = Not Regulation
(7) "N/A" = Not Applicable

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**** End of Report ****

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2) Ag paste

SGS

Test Report No. F890501/LF-CTSGP06-26952 Date: October 27, 2006 Page 1 of 2

To: **METECH KOREA CO., LTD.**
B-601 Dongyang Paragon officetel 17-2 Jeongja-dong
Bundang-gu
Seongnam-city
GYEONGGI-DO
Korea

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

Commodity : PCC11837HV
SGS File No. : GP06-26952
Received Date : October 20, 2006
Test Performing Date : October 23, 2006
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)

SGS Testing Korea Co. Ltd.
Jeff Jang
Jeff Jang / Chemical Lab Mgr

Pluto Kim
Patrick An
Monet Jeong
Jinee Song
/Testing Person

The above certificate is the accredited test items by Korea Laboratory Accreditation Scheme (KOLAS), which signed the ILAC-MRA.

This Test Report is issued by the Company subject to its General Conditions of Service printed overleaf. Attention is drawn to the limitations of liability, indemnification and jurisdictional issues defined therein. The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This Test Report cannot be reproduced, except in full, without prior written permission of the Company.

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Test Report No. F690501/LF-CTSGP06-26952 Date: October 27, 2006 Page 2 of 2

Sample No. : GP06-26952.001
Sample Description : PCC11837HV
Item No./Part No. : N/A
Comments : Material is silver paste.

Heavy Metals

Test Item	Unit	Test Method	MDL	Results
Cadmium (Cd)	mg/kg	US EPA 3050B(1996), US EPA 6010B(1996), ICP	0.5	N.D.
Lead (Pb)	mg/kg	US EPA 3050B(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 7106A(1992), UV	1	N.D.

Picture of Sample as Received:



*** End ***

NOTE: (1) N.D. = Not detected (<MDL)
(2) ppm = mg/kg
(3) MDL = Method Detection Limit
(4) Estimated expanded uncertainty U with a coverage factor k = 2, corresponding to a level of confidence of about 95%

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3) Marking ink

SGS

Test Report No. F890501/LF-CTSGP06-27074 Date: October 27, 2006 Page 1 of 3

To: **INATE KOREA CO., LTD.**
15130 Cheongwon T2 Town 7th
Kusan-dong
Kangwon-do
28200
Korea

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

Commodity : ink-41355 black ink
SGS File No. : GP06-27074
Received Date : October 23, 2006
Test Performing Date : October 23, 2006
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)

SGS Testing Korea Co. Ltd.
Jeff Jang
Jeff Jang / Chemical Lab Mgr

Pluto Kim
Monet Jeong
Jinyi Oh
Jinyi Jang
/Testing Person

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Test Report No. F690501/LF-CTSGP06-27074 Date: October 27, 2006 Page 2 of 3

Sample No. : GP06-27074.001
Sample Description : ink-41355 black ink
Ink/Item No. : N/A

Heavy Metals

Test Item	Unit	Test Method	MDL	Results
Cadmium (Cd)	mg/kg	US EPA 3050B(1996), US EPA 6010B(1996), ICP	0.5	N.D.
Lead (Pb)	mg/kg	US EPA 3050B(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 7106A(1992), UV	1	N.D.

Trace Elements (Pb/Cd/Cr)

Test Item	Unit	Test Method	MDL	Results
Aluminum/aluminum	mg/kg	US EPA 3040C, GC/MS	5	N.D.
Chlorine/chlorine	mg/kg	US EPA 3040C, GC/MS	5	N.D.
Fluorine/fluorine	mg/kg	US EPA 3040C, GC/MS	5	N.D.
Hydrogen/hydrogen	mg/kg	US EPA 3040C, GC/MS	5	N.D.
Phosphorus/phosphorus	mg/kg	US EPA 3040C, GC/MS	5	N.D.
Sulfur/sulfur	mg/kg	US EPA 3040C, GC/MS	5	N.D.
Selenium/selenium	mg/kg	US EPA 3040C, GC/MS	5	N.D.
Strontium/strontium	mg/kg	US EPA 3040C, GC/MS	5	N.D.
Titanium/titanium	mg/kg	US EPA 3040C, GC/MS	5	N.D.
Zinc/zinc	mg/kg	US EPA 3040C, GC/MS	5	N.D.
Antimony/antimony	mg/kg	US EPA 3040C, GC/MS	5	N.D.
Barium/barium	mg/kg	US EPA 3040C, GC/MS	5	N.D.
Boron/boron	mg/kg	US EPA 3040C, GC/MS	5	N.D.
Calcium/calcium	mg/kg	US EPA 3040C, GC/MS	5	N.D.
Chromium/chromium	mg/kg	US EPA 3040C, GC/MS	5	N.D.
Copper/copper	mg/kg	US EPA 3040C, GC/MS	5	N.D.
Iron/iron	mg/kg	US EPA 3040C, GC/MS	5	N.D.
Magnesium/magnesium	mg/kg	US EPA 3040C, GC/MS	5	N.D.
Manganese/manganese	mg/kg	US EPA 3040C, GC/MS	5	N.D.
Nickel/nickel	mg/kg	US EPA 3040C, GC/MS	5	N.D.
Silicon/silicon	mg/kg	US EPA 3040C, GC/MS	5	N.D.
Sodium/sodium	mg/kg	US EPA 3040C, GC/MS	5	N.D.
Zinc/zinc	mg/kg	US EPA 3040C, GC/MS	5	N.D.

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

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Test Report No. F890501/LF-CTSGP06-27074 Date: October 27, 2006 Page 3 of 3

Picture of Sample as Received:



*** End ***

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

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