

PRODUCT SPECIFICATIONS

Product type	WLAN PIFA antenna
Model number	Aquila
Part number	SS-03-03-013, SS-03-03-014

Nov. 14, 2002

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1. Specifications

1.1 Specifications for antennas

Frequency range (GHz)	2.4 – 2.4835
VSWR	< 2.0
Peak/Average gain (dBi)	3.0max / -5.0min
Impedance	50 ohms
Polarization	Linear
Radiation pattern	Omni-directional

1.2 Antenna data sheet

	Frequency	SS-03-03-013 (right)	SS-03-03-014 (left)
VSWR	2400	1.26	1.31
	2484	1.28	1.13
	5150	1.58	1.23
	5350	1.36	1.60
Gain	2400	-2.62	-2.64
	2484	-3.89	-3.61
	5150	-5.29	-5.12
	5350	-4.84	-5.68

2. Test Methodology

2.1 Test equipment

The equipment for the antenna measurement we used is as follows.

- A. Agilent 8720ES Network Analyzer to measure the VSWR and input impedance.
- B. Three-dimensional anechoic chamber to measure the gain (Standard dipole and horn were used to calibrate the chamber)
- C. Digital caliper to measure the dimensions.
- D. Climatic chamber for mechanical tests.

2.2 Test setup

2.2.1 Frequency Range

2.4 ~ 2.484GHz, 5.15 ~ 5.35GHz

2.2.2 Antenna configuration

The antenna basically has two parts ; the stamping and the cable assembly with the connector on one side. The detailed drawing is attached.

2.2.3 VSWR

The VSWR is measured with Agilent 8720ES network analyzer. All the measurements are performed with the customer provided fixture. Figure 1 shows the schematic diagram for measuring VSWR.

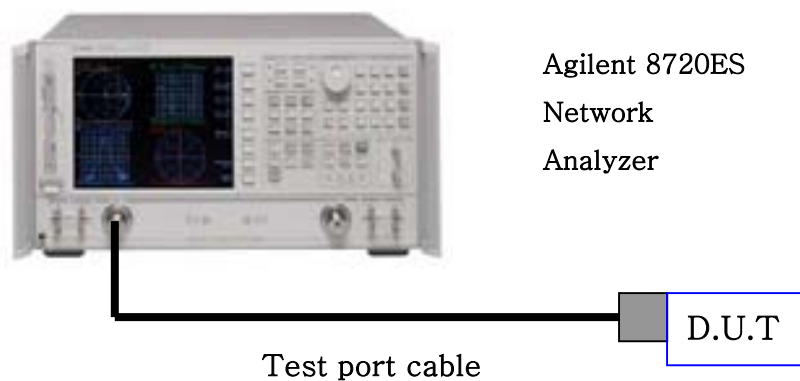


Figure 1. The schematic diagram for measuring VSWR

2.2.4 Radiation pattern and gain

The radiation pattern must have the omni-directional characteristic in both positions. The radiation pattern measurements are performed in the three-dimensional anechoic chamber. The chamber provides less than -30dB reflectivity from 800MHz through 6GHz . The chamber is calibrated using both standard dipole and horn antenna. The gain here is expressed as dBi that standardizes the isotropic antenna. The gain measurements are also performed in the same chamber described previously. Figure 2 shows the schematic diagram for measuring radiation pattern and gain.

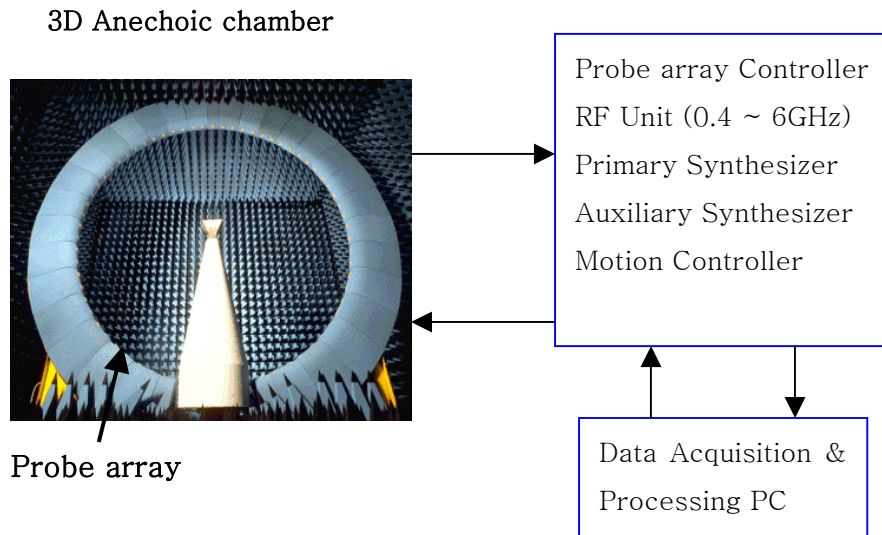


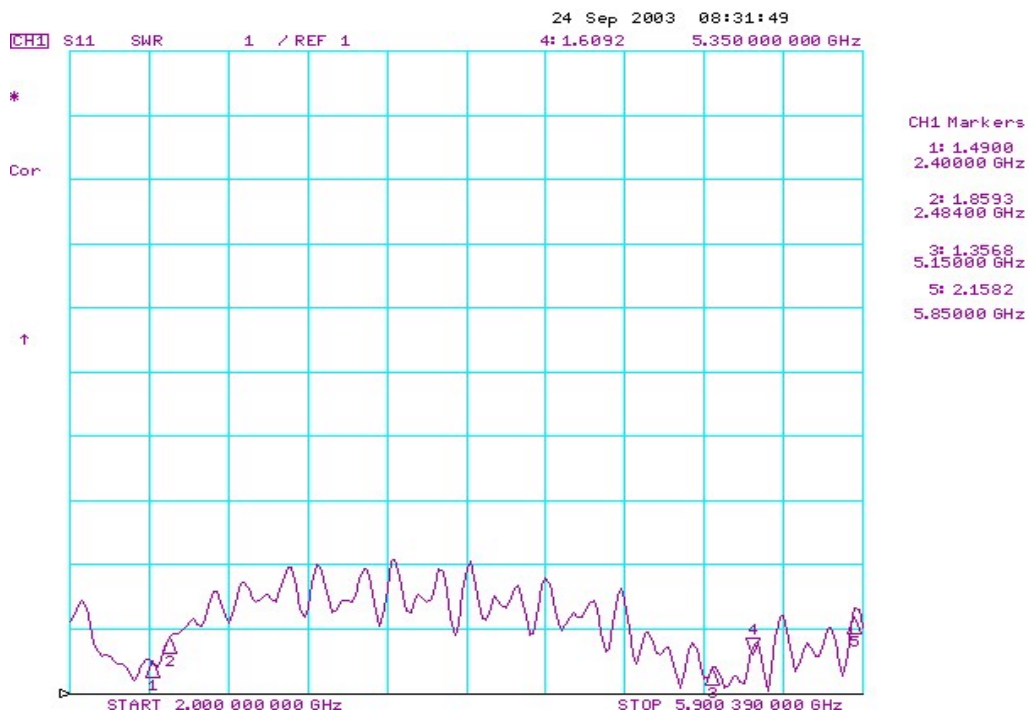
Figure 2. The schematic diagram for measuring radiation pattern and gain

2.2.5 Mechanical test

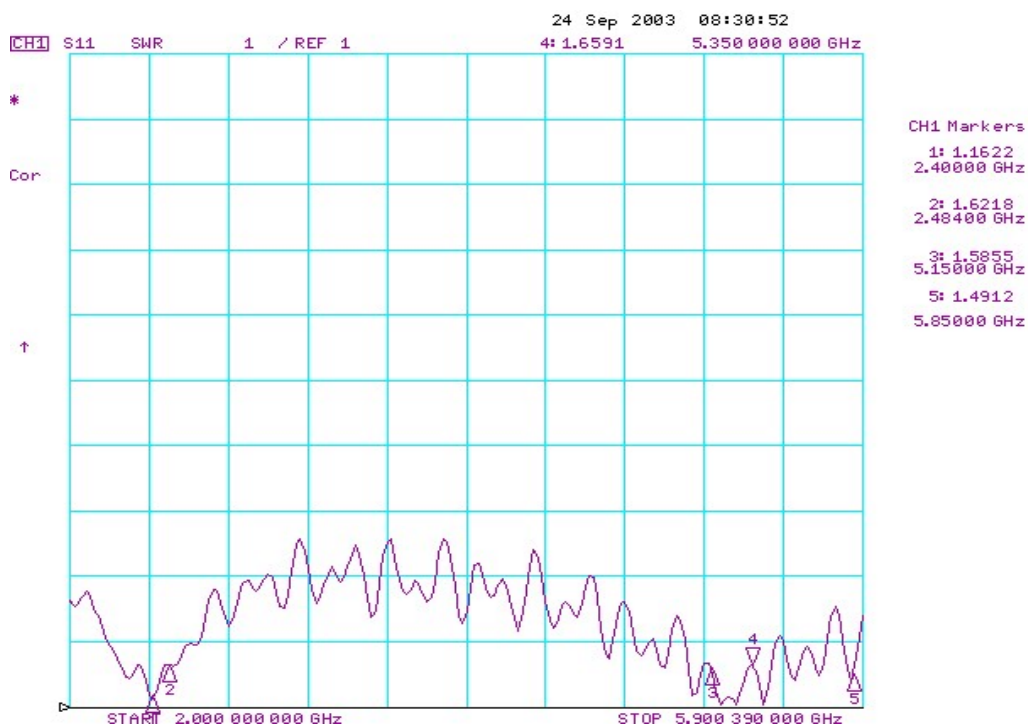
All mechanical tests are performed in the climatic chamber.

3. Performance Data

3.1 Left VSWR in the fixture

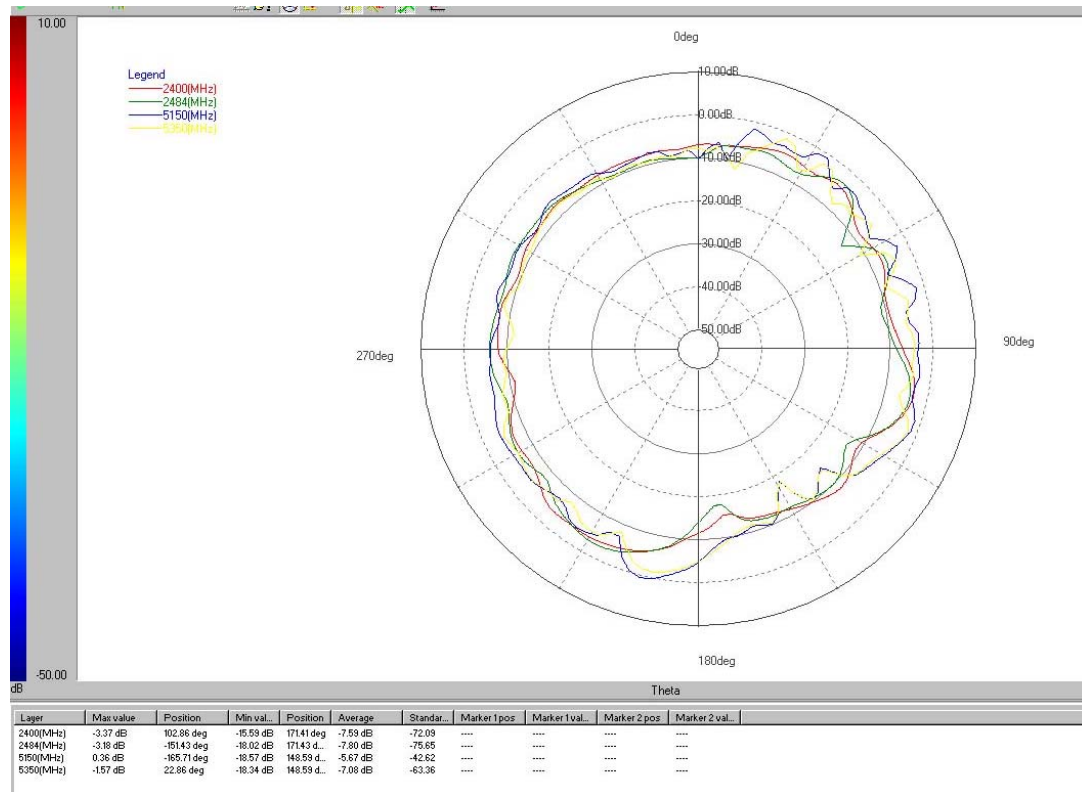


3.2 Right VSWR in the fixture

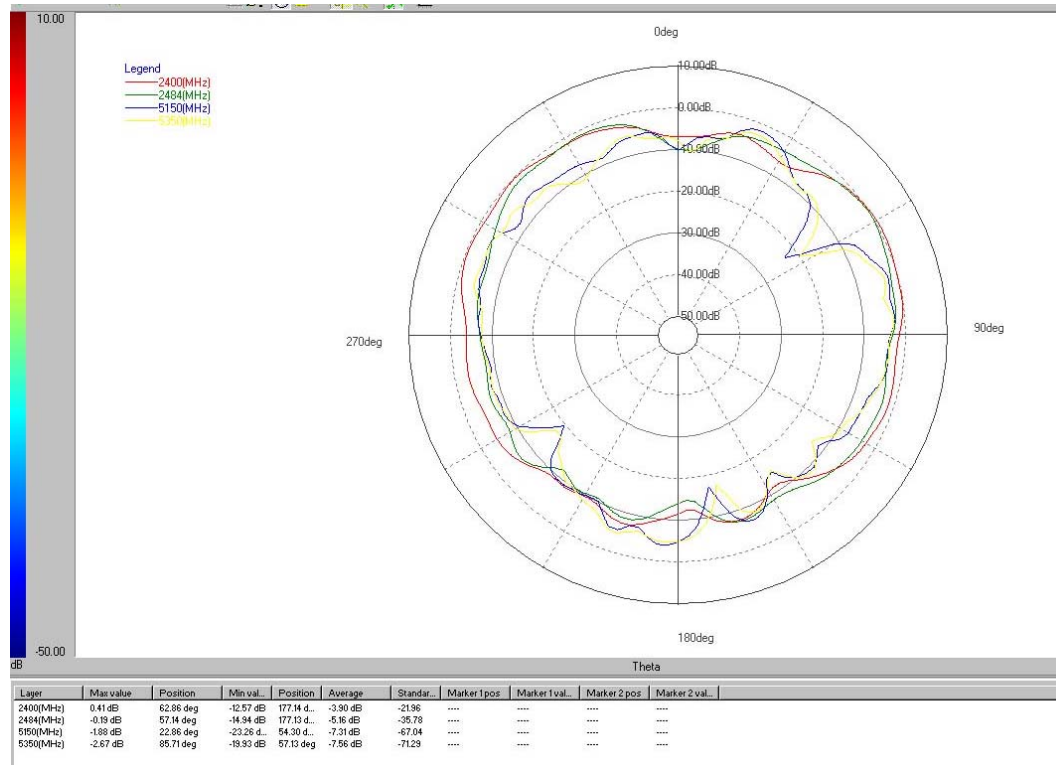


3.3 Radiation pattern and gain

3.3.1 Left E1-Plane



3.3.2 Left E2-Plane



3.3.3 Left H-Plane

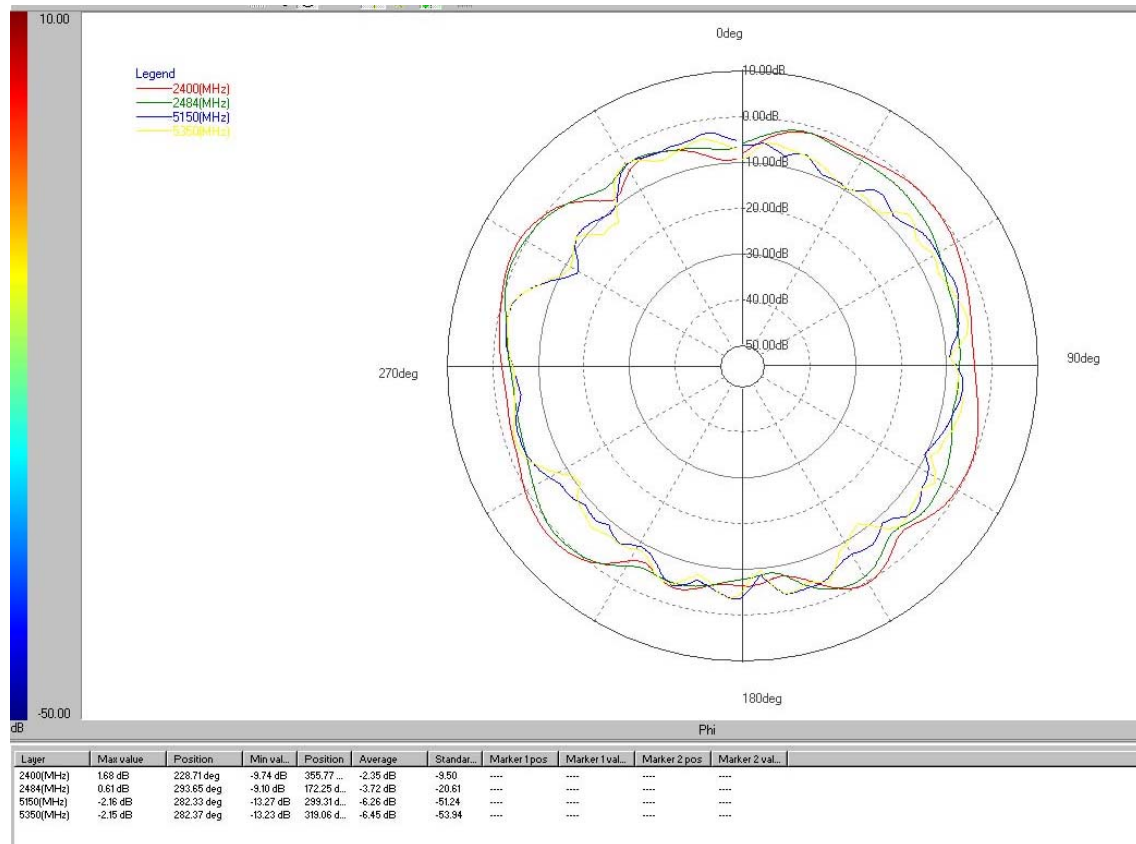
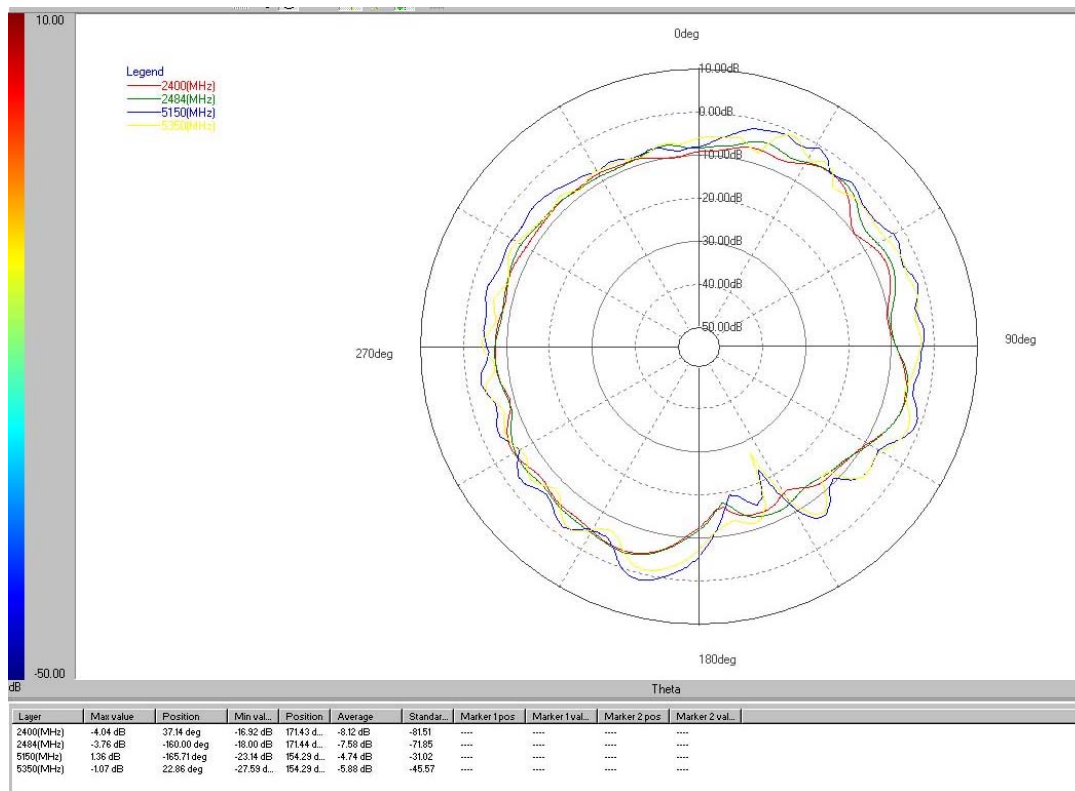


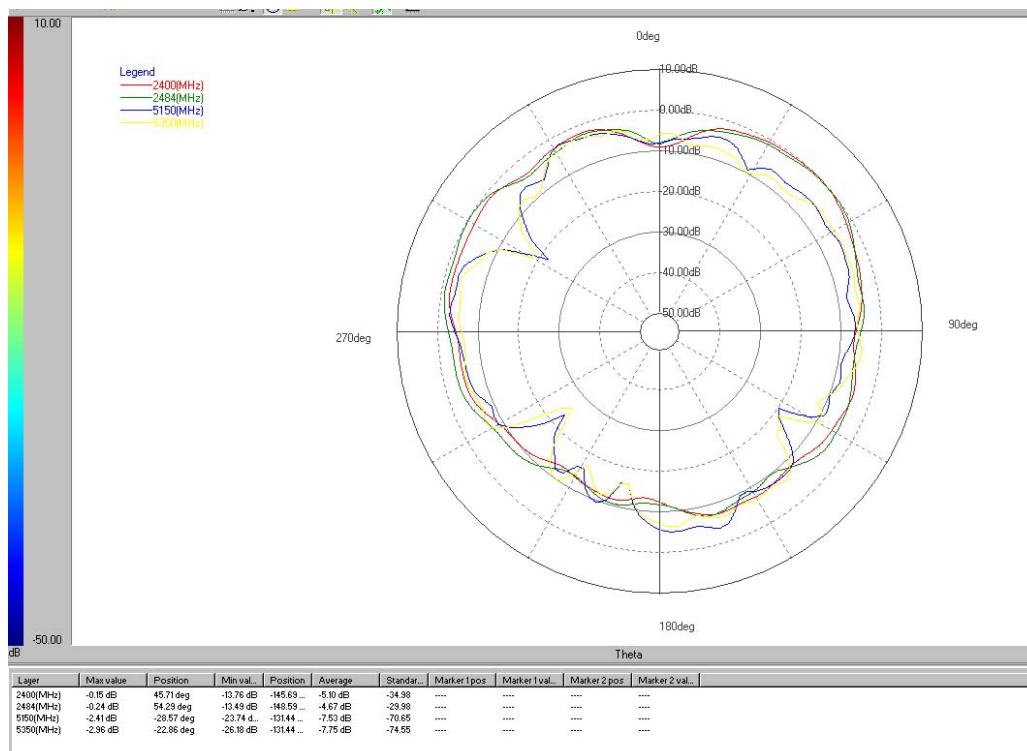
Table 1. Average gain (dBi) summary

Frequency (MHz)	E1-plane	E2-plane	H-plane
2400	-7.59	-3.90	-2.35
2484	-7.80	-5.16	-3.72
5150	-5.67	-7.31	-6.26
5350	-7.08	-7.56	-6.45

3.3.4 Right E1-Plane



3.3.5 Right E2-Plane



3.3.6 Right H-Plane

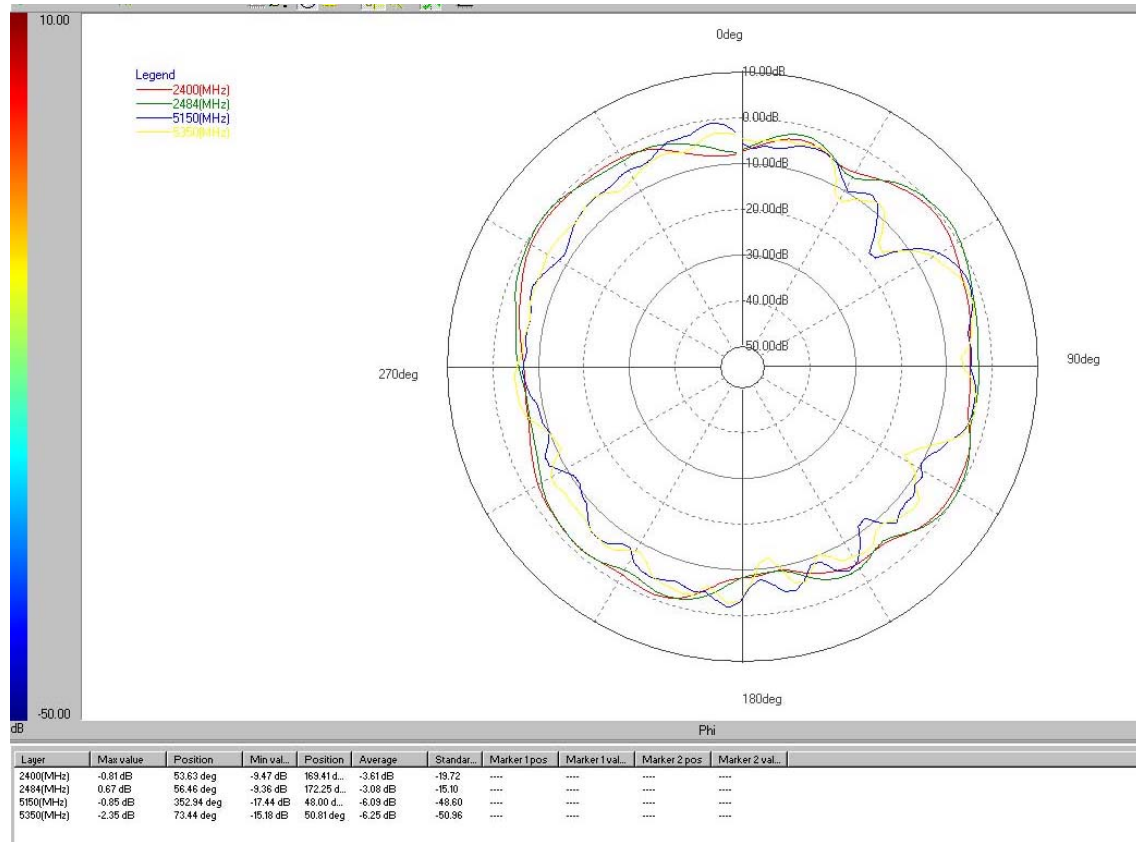
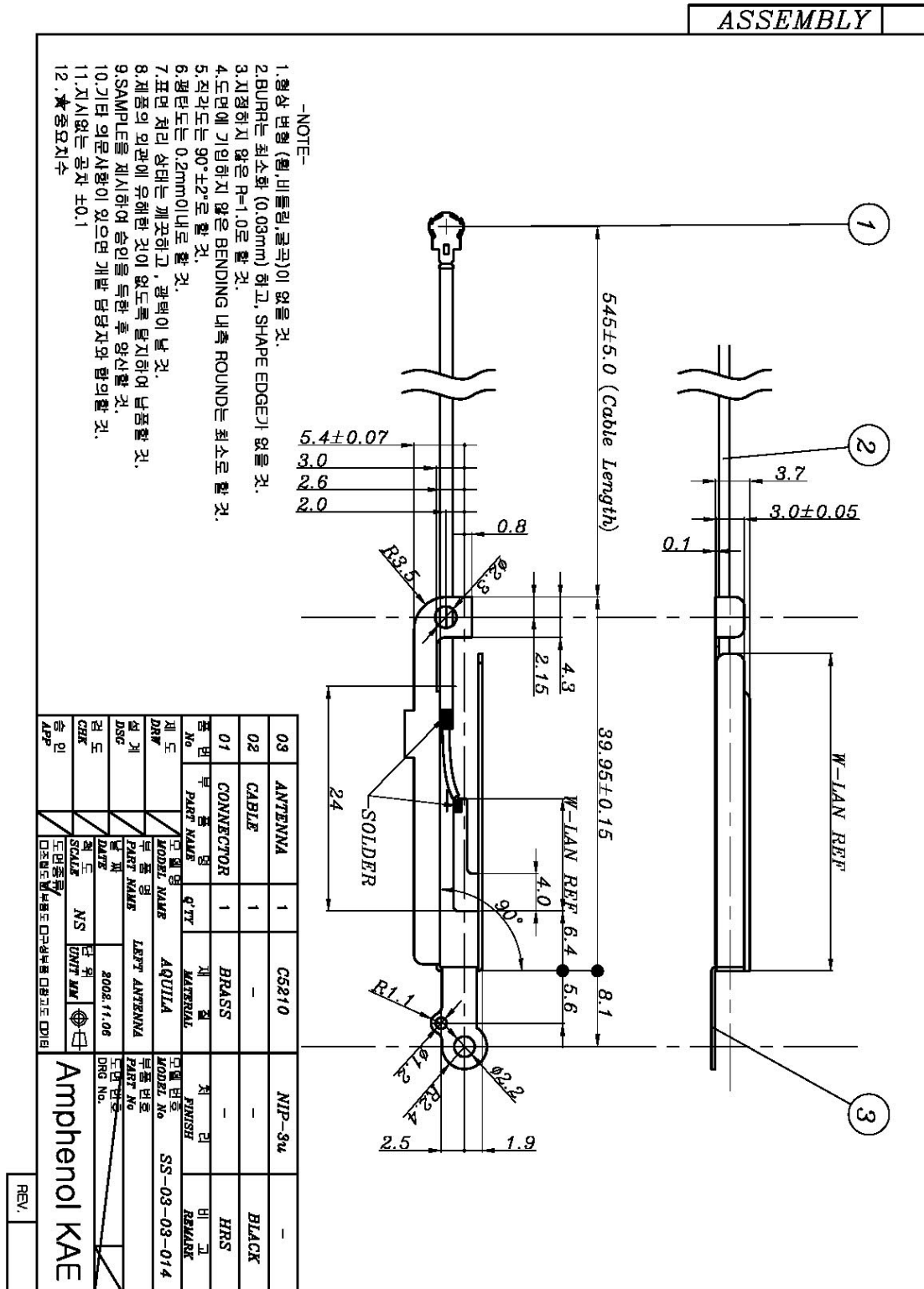


Table 2. Average gain (dBi) summary

Frequency (MHz)	E1-plane	E2-plane	H-plane
2400	-8.12	-5.10	-3.61
2484	-7.58	-4.67	-3.08
5150	-4.74	-7.53	-6.09
5350	-5.88	-7.75	-6.25

4. Antenna Drawing

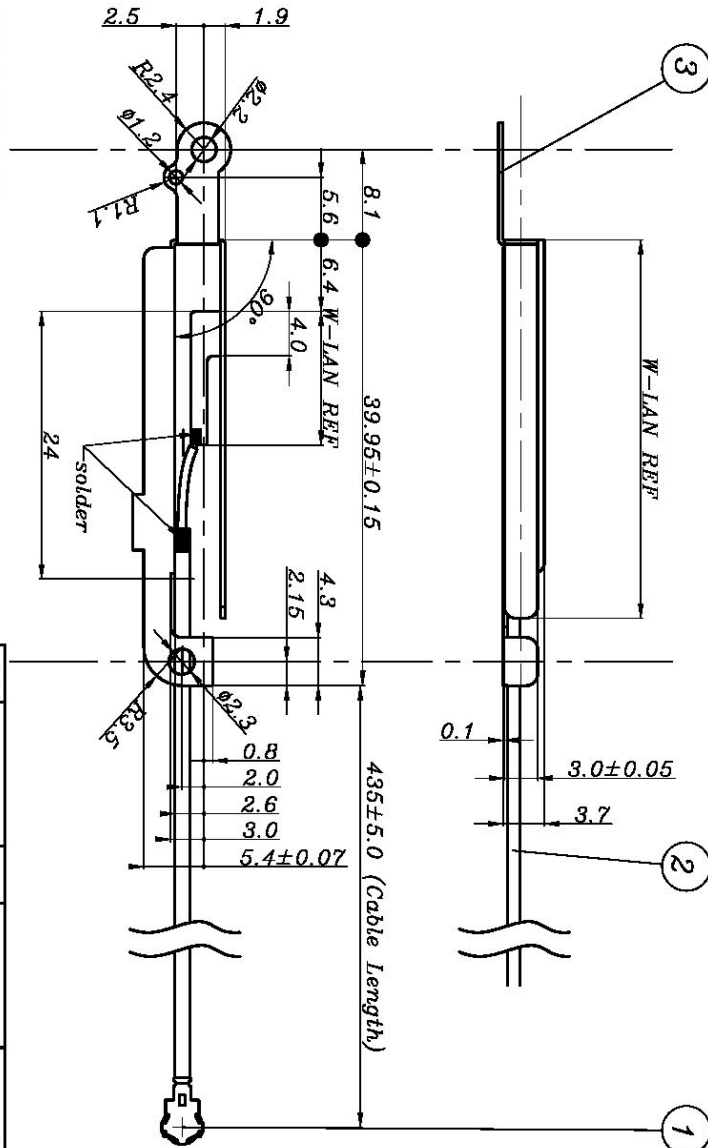


[illegible]

-NOTE-

1. 형상 변형 (휨, 비틀림, 굴곡)이 없을 것.
2. BURR은 최소화 (0.03mm) 하고, SHAPE EDGE가 없을 것.
3. 치형하지 않은 R=1.0로 할 것.
4. 도면에 기입하지 않은 BENDING 내측 ROUNDO는 최소로 할 것.
5. 직각도는 $90^{\circ} \pm 2^{\circ}$ 로 할 것.
6. 평탄도는 0.2mm이내로 할 것.
7. 표면 처리 상태는 깨끗하고, 광택이 날 것.
8. 제품의 외관에 유해한 것이 없도록 탈지하여 납품할 것.
9. SAMPLE를 제시하여 승인을 득한 후 양산할 것.
10. 기타 의문사항이 있으면 개별 담당자와 협의할 것.
11. 치치없는 공차 ± 0.1
12. ★중요치수

ASSEMBLY



-NOTE-

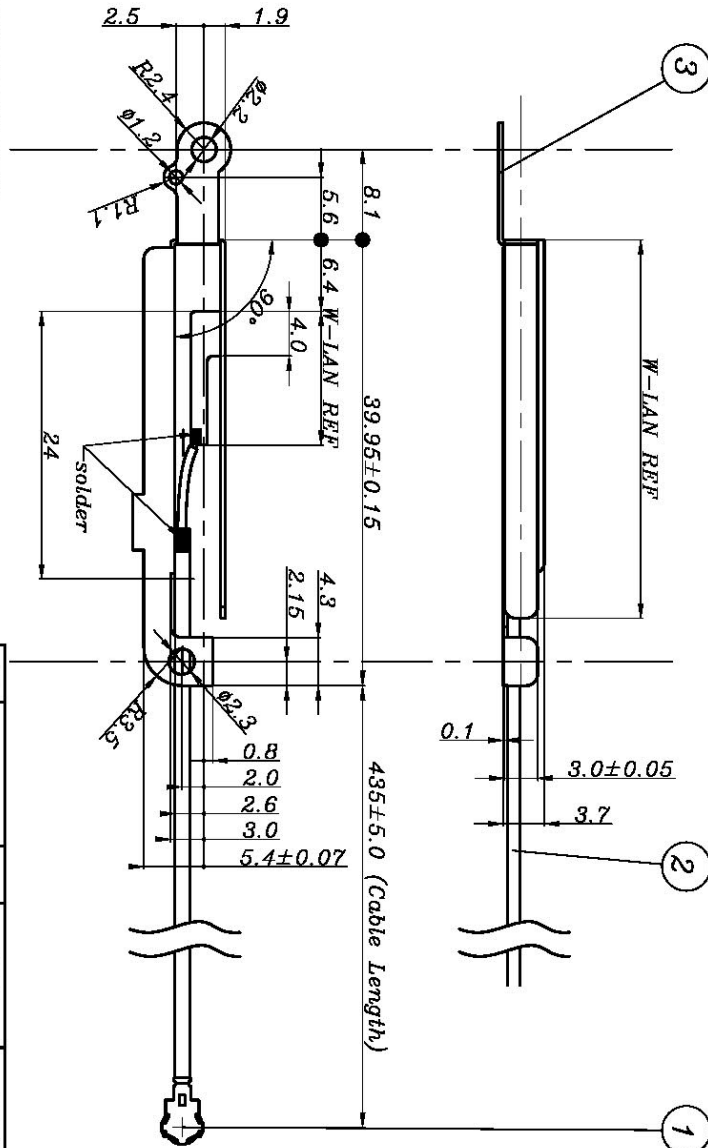
1. 형상 변형 (휨, 비틀림, 굴곡)이 없을 것.
2. BU면지는 최소 두께 (0.03mm) 하고, SHAPE EDGE가 없을 것.
3. 지정하지 않은 R=1.0으로 할 것.
4. 도면에 기입하지 않은 BENDING 내측 ROUNDO는 최소로 할 것.
5. 직각도는 90°±2로 할 것.
6. 평면도는 0.2mm이하로 할 것.
7. 표면 처리 상태는 깨끗하고, 광택이 날 것.
8. 제품의 외관에 유해한 것이 없도록 탈지하여 납땜할 것.
9. SAMPLE를 제시하여 승인을 득한 후 양산할 것.
10. 기타 의문사항이 있으면 개발 담당자와 협의할 것.
11. 치신하는 공차 ±0.1
12. ★중요치수

03	ANTENNA	1	CS210		NIP-3u	-
02	CABLE	1	-		-	WHITE
01	CONNECTOR	1	BRASS		-	HRS
부품 No	부품명 PART NAME	수량 Q'TY	소재 MATERIAL	처리 FINISH	비고 REMARK	
제 도 DRAW	모델명 MODEL NAME	AGUILA		모델 No MODEL NO	SS-03-03-0133	
설계 DSG	부품명 PART NAME	RIGHT ANTENNA	부품 No PART NO	도면 번호 DRG NO.		
검 도 CHK	날짜 DATE	2008.11.06	수량 QTY	단위 UNIT	입고 DATE	
승인 APP	도인 SCALE	NS	단위 UNIT	입고 DATE	Amphenol KAE	

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ASSEMBLY



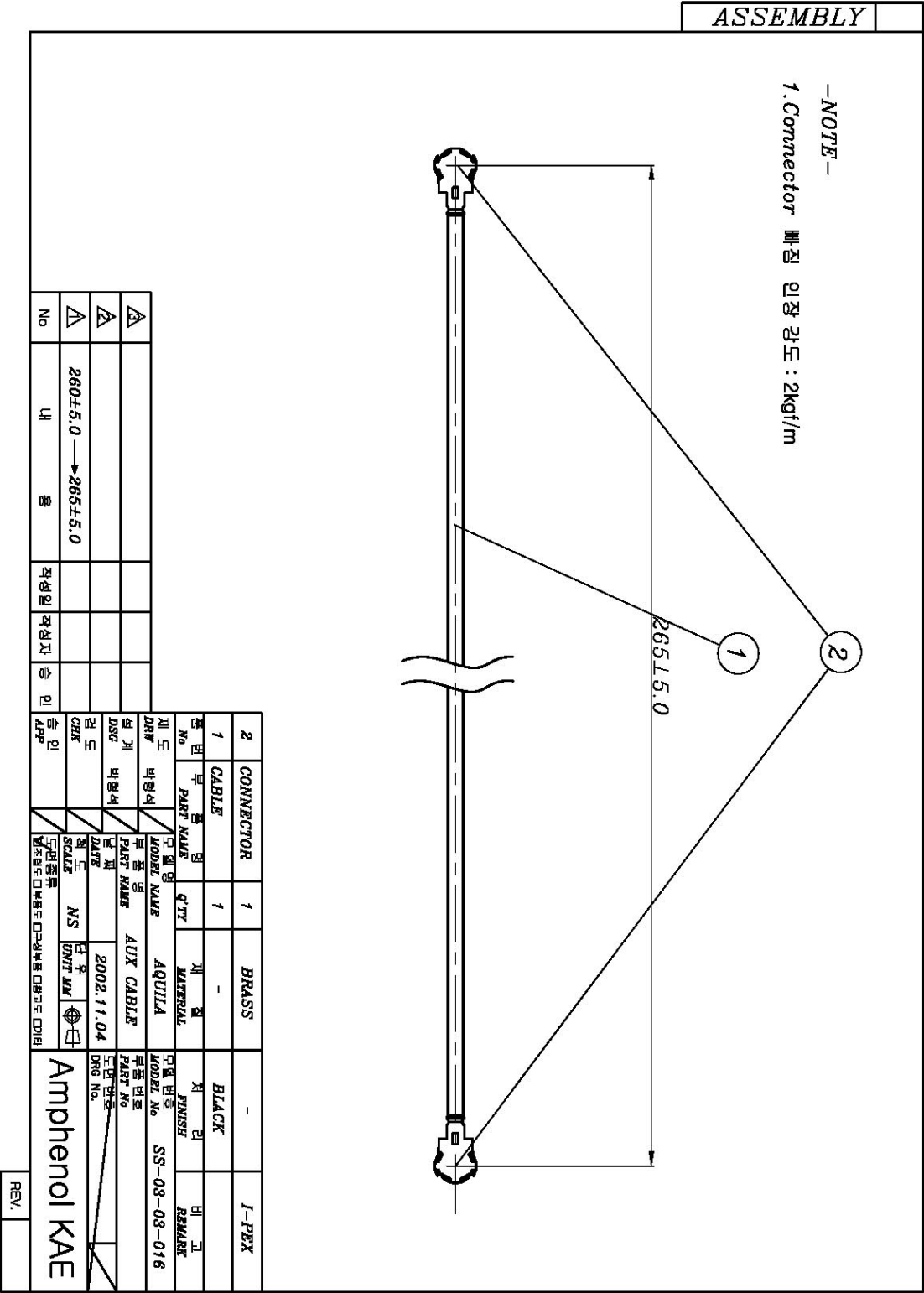
-NOTE-

1. 형상 변형 (웨이브들링, 굴곡)이 없을 것.
2. BU머리는 최소화 (0.03mm) 하고, SHAPE EDGE가 없을 것.
3. 시정화기 않은 R=1.0으로 할 것.
4. 도면에 기입하지 않은 BENDING 내측 ROUNDO는 최소로 할 것.
5. 직각도는 90°±2°로 할 것.
6. 평면도는 0.2mm 이내로 할 것.
7. 표면 처리 상태는 깨끗하고, 광택이 날 것.
8. 제품의 외관에 유해한 것이 없도록 탈지하여 납땀할 것.
9. SAMPLE를 제시하여 승인을 득한 후 양산할 것.
10. 기타 의문사항이 있으면 개별 담당자와 협의할 것.
11. 치신치는 공차 ±0.1
12. ★중요치수

03	ANTENNA	1	CS210	NIP-3u	-
02	CABLE	1	-	-	WHITE
01	CONNECTOR	1	BRASS	-	I-PEX
품번 No	부품명 PART NAME	수량 QTY	재료 MATERIAL	처리 FINISH	비고 REMARK
제도 DRAW	모델명 MODEL NAME	아quila			
설계 DSG	부품명 PART NAME	RIGHT ANTENNA			
검도 CHK	날짜 DATE	2008.11.06			
승인 APP	제도 SCALE	NS	단위 UNIT	mm	
도면종류 □오전압 □후전압 □구형부품 □정규도 □DIB					
Amphenol KAE DRG No.					
모델명 MODEL No					
부품명 PART No					
SS-03-03-02					

Amphenol KAE

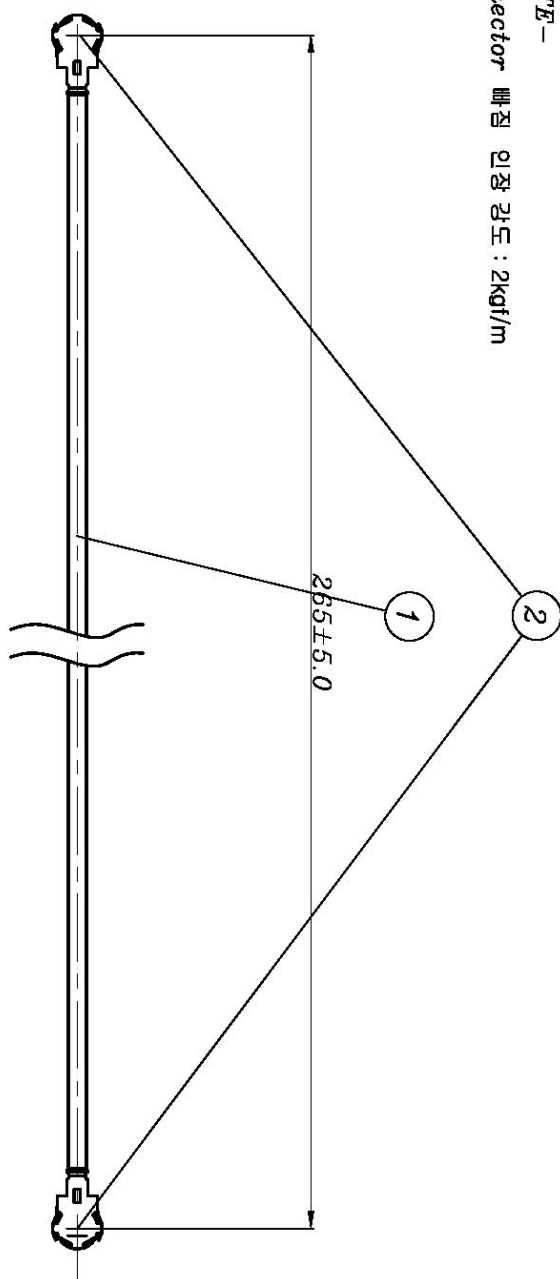
REV.



ASSEMBLY

-NOTE-

1. Connector 빠짐 인장 강도 : 2kgf/m



2	CONNECTOR	1	BRASS	-	I-PEX
1	CABLE	1	-	WHITE	-
품번	부품명	수량	재질	처리	비고
No	PART NAME	Q'TY	MATERIAL	FINISH	REMARK
제 도	모델명	모델번호	모델번호	모델번호	모델번호
DRW	백화서	MODEL NAME	AQUILA	MODEL No	SS-03-03-015
설계	백화서	부품명	MAIN CABLE	부품번호	부품번호
DSG	백화서	PART NAME		PART No	
검도		날짜	2002.11.04	도면번호	
		DATE		DRG No.	
척도	NS	단위	mm		
SCALE		UNIT	mm		
주요종류	부속품	구분	부속품	구분	부속품
구분	구분	구분	구분	구분	구분
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CONCEPT DRAWING

REF

$\phi 7.0_{-0.05}^{+0.05}$

Antenna Plug

PCB

Socket&Plug Assy

Recommended PC Board Pattern

-NOTE-

1) () 치수 : 용접치수임.

2) FREQUENCY RANGE : DC~3GHz

3) Characteristic : Impedance : 50 Ω

No	내	용	작성일	작성지	승인	승인 APP

품번	CONTACT	1	C5210	NIP3U-AUF
품명	INSULATOR	1	TEFLON	-
부품명	SHELL	1	G3804	NIP3U-AUF
수량	QTY	1	개	개
소재	MATERIAL			
FINISH				
REMARK				

제도	모델명	MODEL NAME	AQUILA
DRW	무출력형	THRU-HOLE CONNECTOR	무출력형
설계	PART NAME	DATE	2002.4.25
리도	SCALE	UNIT	MM
CHK	NS	단위	mm
승인	APPROVAL	DATE	2002.4.25

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5. Mechanical test

Item	Specifications	Conditions
Temperature cycle	No damage or cracks	Temperature (time): -40°C(40min) → 5 to 35°C(5min) → + 90°C(30min) → 5 to 35°C(5min)
Salt spray	No excessive corrosion	48 hours continuous exposure to 5% salt water
Humidity resistance	No damage or cracks	Temperature of 40°C, humidity of 95%, let stand of 96 hours