Product Name : GPS & VHF ANTENNA

MODEL : HAG-VHF-TH

CODE : 02M-19-044
POM-00-162

Approval	Request	Check	Review	Acceptance
				
Date	21/09/08			21/09/08

Revision history

Rev. No	Date	Contents before the change	Changed description	Note
Rev.0	2011-08-23	-	-	
Rev.1	2014-09-29		Correcting rubber pad material name	
Rev.2	2021-09-08		Addition label mark on the drawing	
Rev.3	2022-05-02		Appendix antenna radiation pattern data	

Contents

1. 1. Product specification

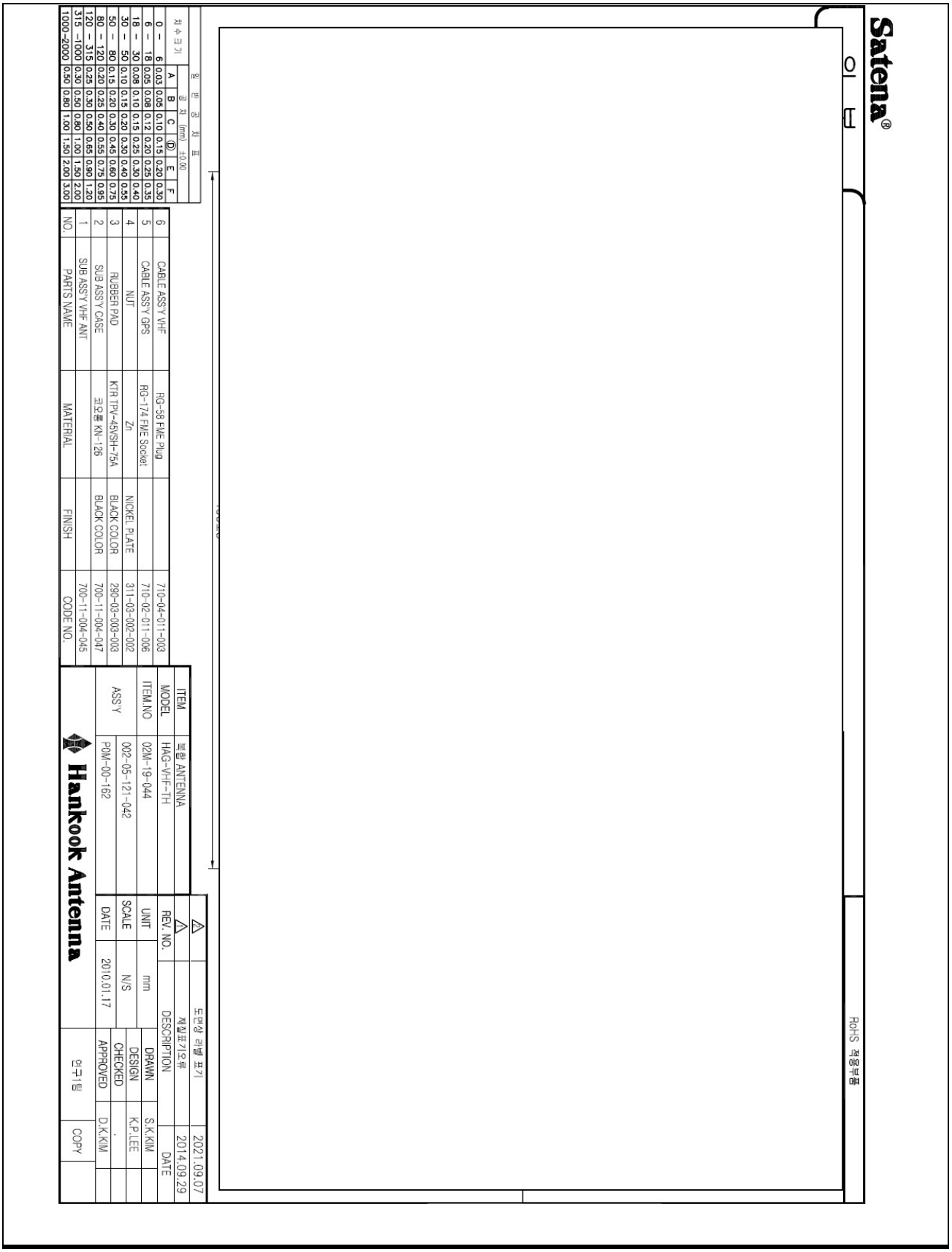
1.1 Electrical

Specifications		GPS	VHF
ELECTRIAL	Frequency	1575.42 MHz (L1 BAND)	150MHz ± 5MHz GP : Ø500mm
	GAIN	4dBi	2.7dBi
	V.S.W.R	Less than 2.0	Less than 2.0
	Impedance	50 Ω	50 Ω
	Polarization	RHCP	Vertical
	PATTERN	Hemispherical	Omni-Directional
	LNA	LNA Gain: 26 dB±2 dB Noise Figure: 2.0 dB (Max) Band Att.: 20 dB (min) @Fo±50Mhz Voltage: DC +3.0V~+5.0V (±0.3V) Current: 20 mA (Max)	-

1.2 Mechanical

Specifications		GPS	VHF
MECHANICAL	Cable	RG-174 x 300mm Black Color(with label 'GPS')	RG-174 x 300mm Black Color
	Connector	FME Socket (Nickel Plate)	FME JACK S/T (Nickel Plate)
	Height	66mm	400mm
	Width	61x112mm(Elliptical)	Ø17mm
	Cover Material Mounting	Kolon KN-126 Black Color	Polychemical TPR-9000 Black Color

1.3 Product drawing


Satena®
RoHS 적용부품
Hankook Antenna
복합 ANTENNA
HAG-VHF-TH
02M-19-044
002-05-121-042
P0M-00-162
ASS'Y
MODEL
ITEM.NO
ITEM
UNIT
mm
SCALE
N/S
DATE
2010.01.17
DRAWN
DESIGN
CHECKED
APPROVED
S.K.KIM
K.P.LEE
D.K.KIM
연구1팀
COPY
REV. NO.
DESCRIPTION
DATE
제설표기2등
2014.09.29
도면상 라벨 표기
2021.09.07
일 반 공 차 표
치수크기
공차 (mm) ±0.00
A B C D E F
0 ~ 6 0.03 0.05 0.10 0.15 0.20 0.30
6 ~ 18 0.05 0.08 0.12 0.20 0.25 0.35
18 ~ 30 0.08 0.10 0.15 0.25 0.30 0.40
30 ~ 50 0.10 0.15 0.20 0.30 0.40 0.55
50 ~ 80 0.15 0.20 0.30 0.45 0.60 0.75
80 ~ 120 0.20 0.25 0.40 0.55 0.75 0.95
120 ~ 315 0.25 0.30 0.50 0.65 0.90 1.20
315 ~1000 0.30 0.50 0.80 1.00 1.50 2.00
1000~2000 0.50 0.80 1.00 1.50 2.00 3.00
NO. PARTS NAME MATERIAL FINISH CODE NO.
6 CABLE ASS'Y VHF RG-58 FME Plug 710-04-011-003
5 CABLE ASS'Y GPS RG-174 FME Socket 710-02-011-006
4 NUT Zn NICKEL PLATE 311-03-002-002
3 RUBBER PAD KTR TPV-45VSH-75A BLACK COLOR 290-03-003-003
2 SUB ASS'Y CASE 코오롱 KN-126 BLACK COLOR 700-11-004-047
1 SUB ASS'Y VHF ANT 700-11-004-045

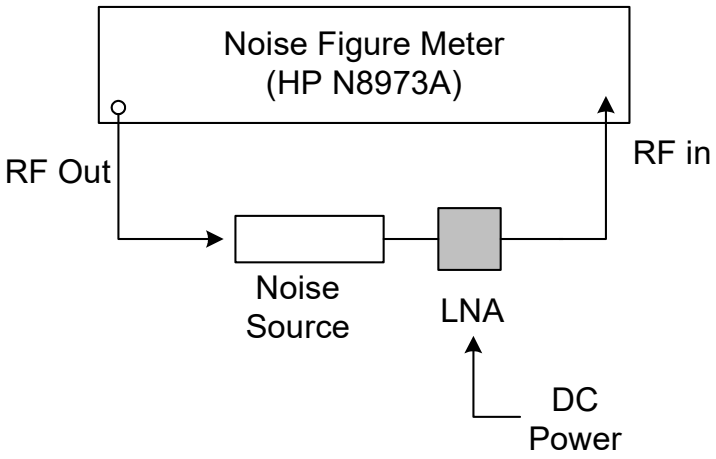
2. 2. Measurement method

2.1 LNA Gain & Noise Figure & Current Measurement

2.1.1 Measurement Equipment

Multi-meter(or Ammeter), Power Supply, Bias Tee, Noise Figure Analyzer

2.1.2 Measurement environment diagram

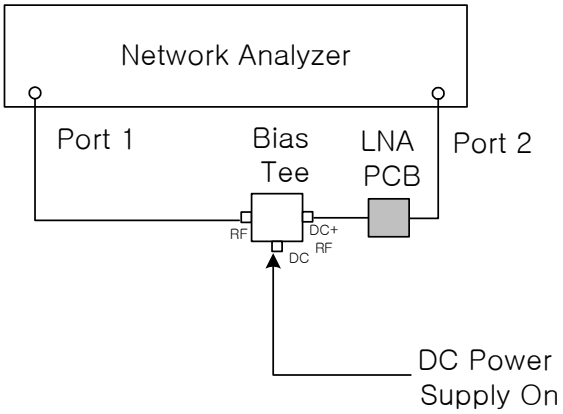


2.2 VSWR Measurement

2.2.1 Measurement Equipment

Multi-meter(or Ammeter), Power Supply, Bias Tee, Network Analyzer

2.2.2 Measurement environment diagram

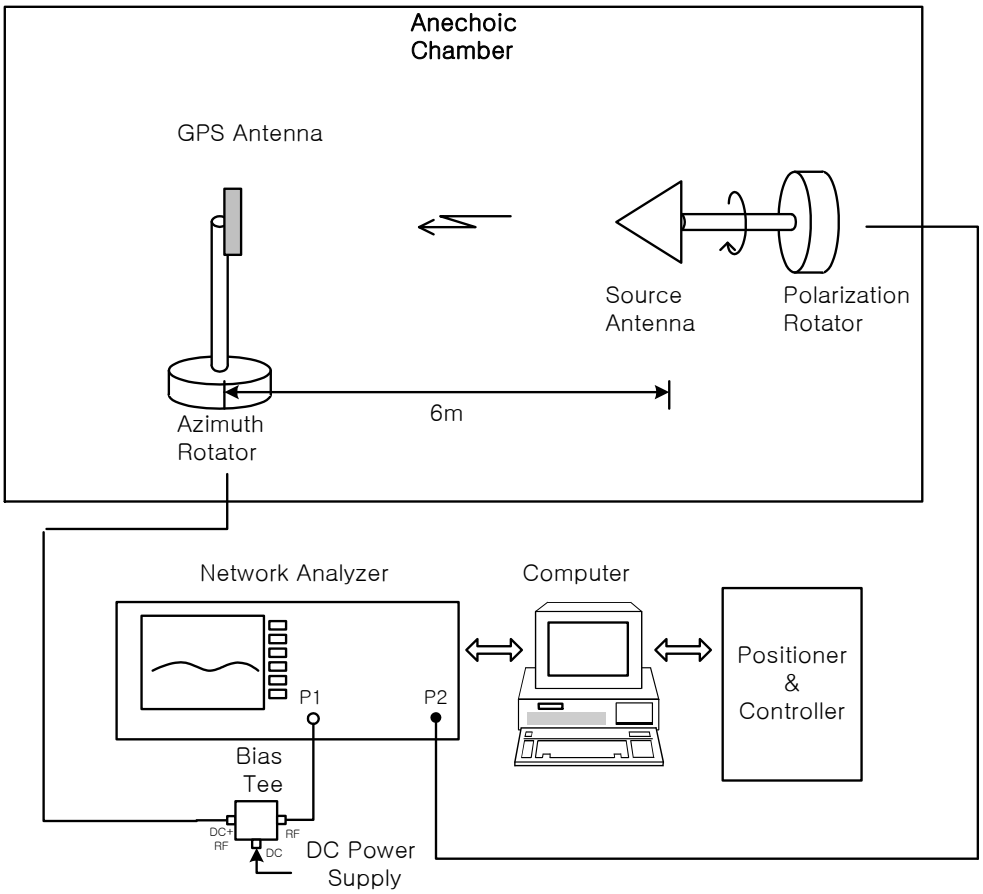


2.3 Overall Gain & Axial Ratio Measurement

2.3.1 Measurement Equipment

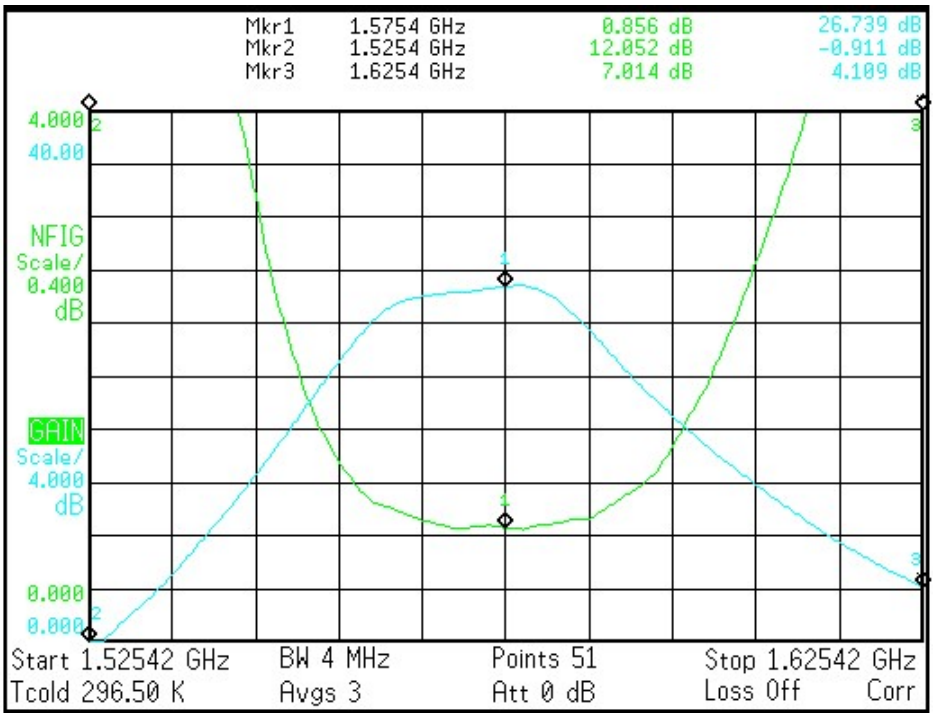
Anechoic chamber, Network Analyzer, PC, Far-Field Antenna Measurement Software (FR / Orbit), Positioner, Rotator, Standard Gain Horn Antenna, Source Antenna, Bias Tee, DC Power Supply

2.3.2 Measurement environment diagram

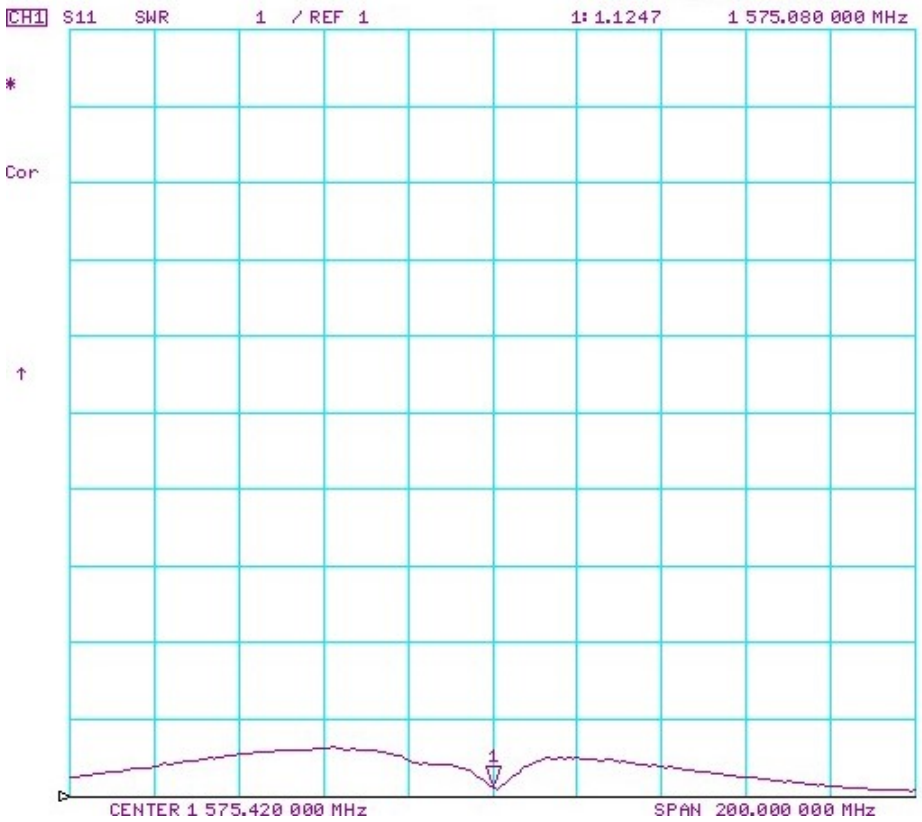


3. Standard measurement DATA

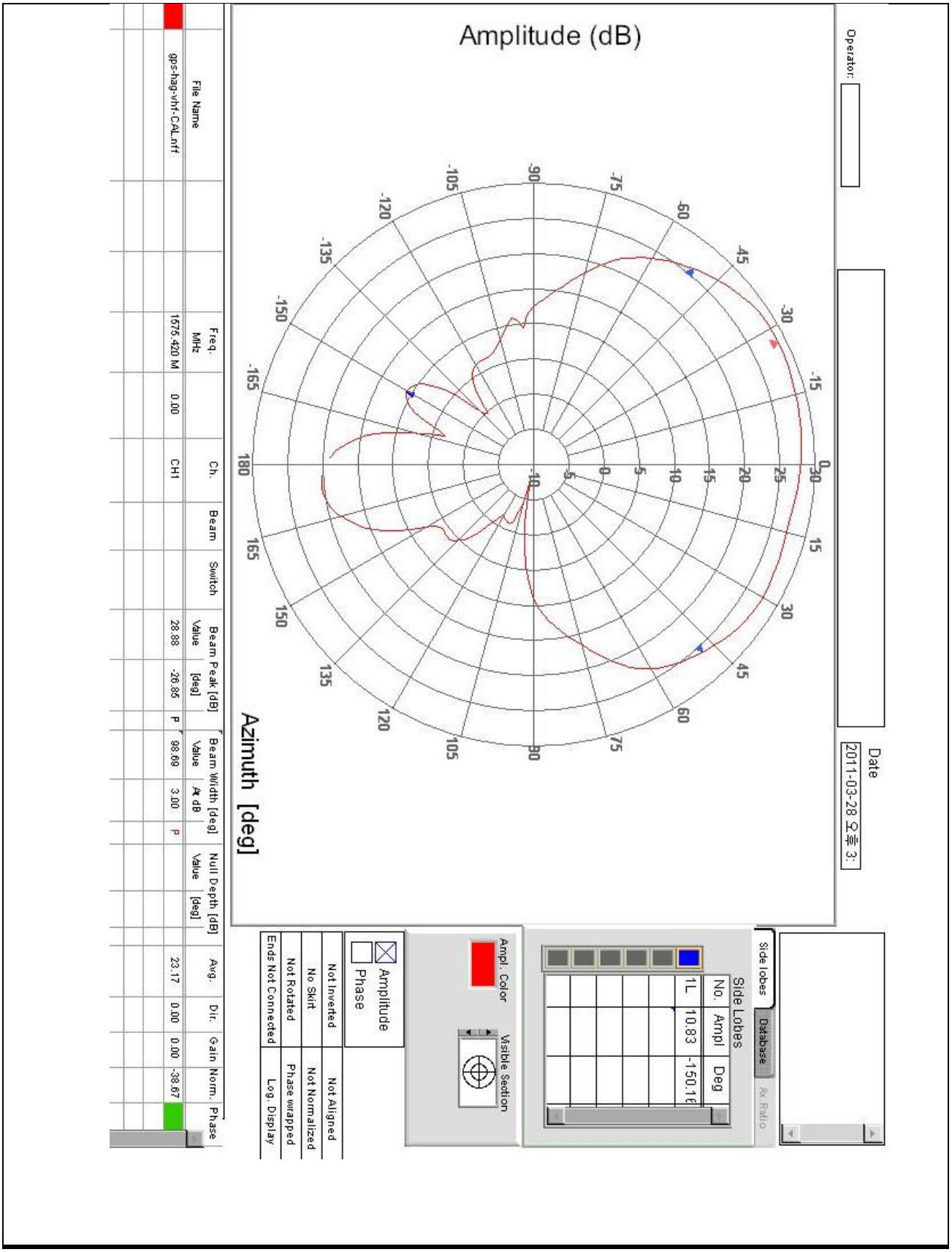
3.1 Gain and Noise Figure (GPS)



3.2 VSWR DATA (GPS)



3.3 OVERALL GAIN (GPS)

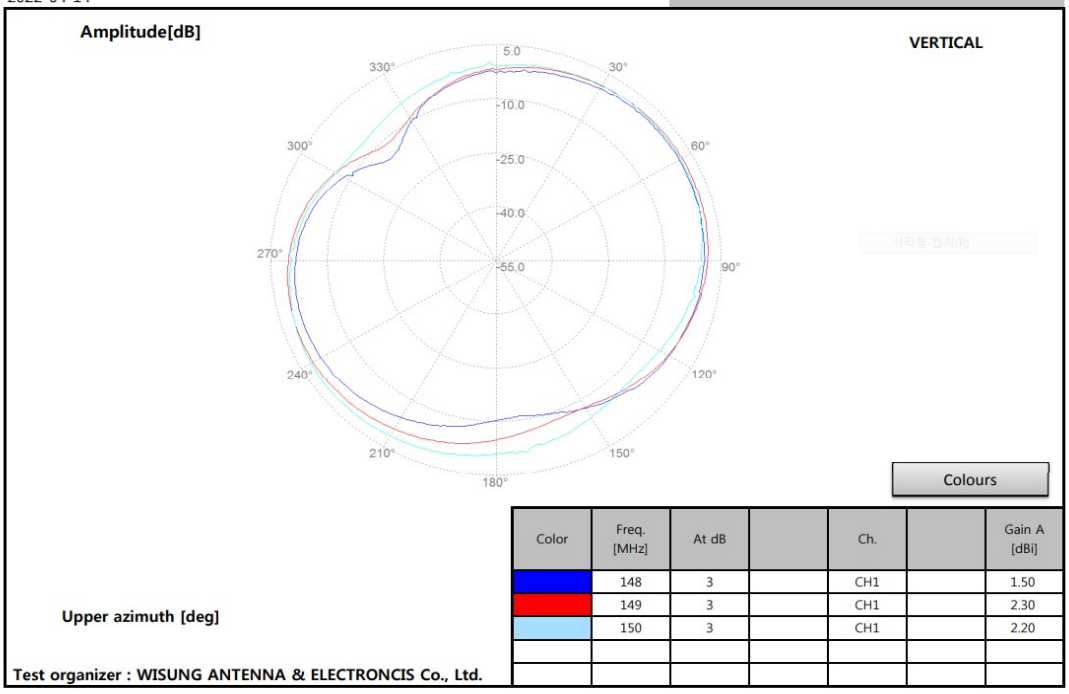

Amplitude (dB)
Azimuth [deg]
Operator
Date
2011-03-28 오후 3:
File Name
gps-hag-vhf-CAL.nff
Freq. MHz
1575.420 M
0.00
Ch.
CH1
Beam
Switch
Beam Peak [dB]
Value
28.88
[deg]
-26.85
P
Beam Width [deg]
Value
98.69
At dB
3.00
P
Null Depth [dB]
Value
[deg]
Avg.
23.17
Dir.
0.00
Gain
0.00
Norm.
-38.87
Phase
Side lobes
Database
Ax.Ratio
Side Lobes
No.
Ampl
Deg
1L
10.83
-150.1
Amplitude
Phase
Ampl. Color
Visible Section
Not Inverted
No Skirt
Not Rotated
Ends Not Connected
Not Aligned
Not Normalized
Phase wrapped
Log. Display

3.4 VSWR (VHF ANTENNA)

3.5 OVERALL GAIN (VHF ANTENNA)

Date
2022-04-14

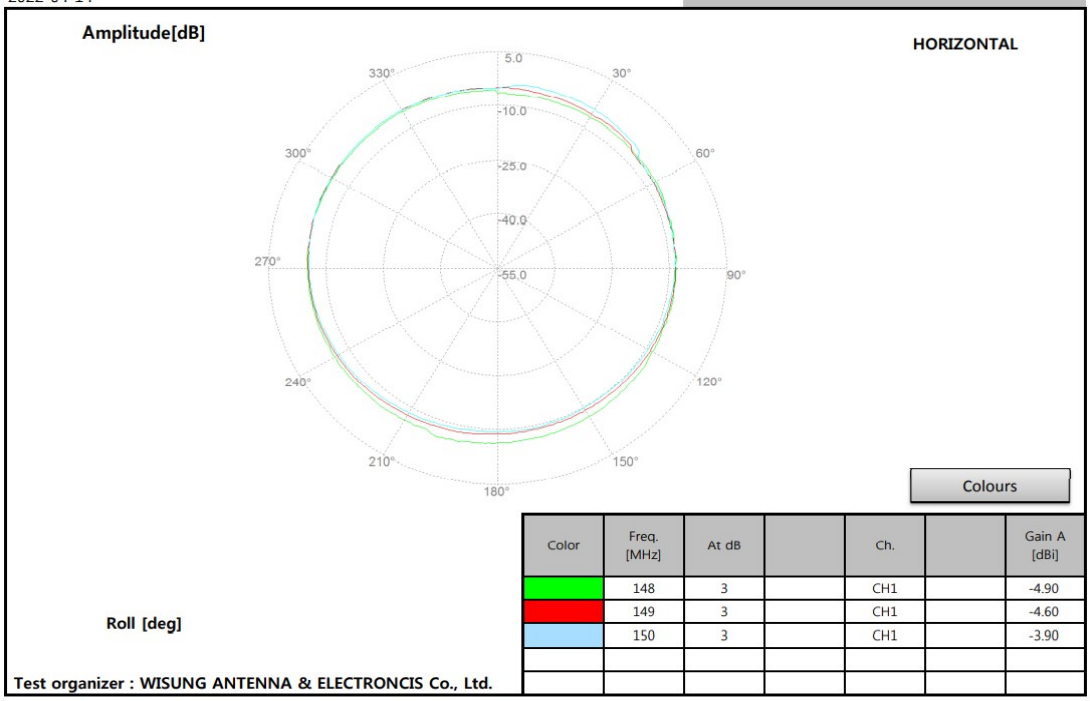
No. 1 VHF ANTENNA GAIN TEST



Color	Freq. [MHz]	At dB		Ch.		Gain A [dBi]
	148	3		CH1		1.50
	149	3		CH1		2.30
	150	3		CH1		2.20

Date
2022-04-14

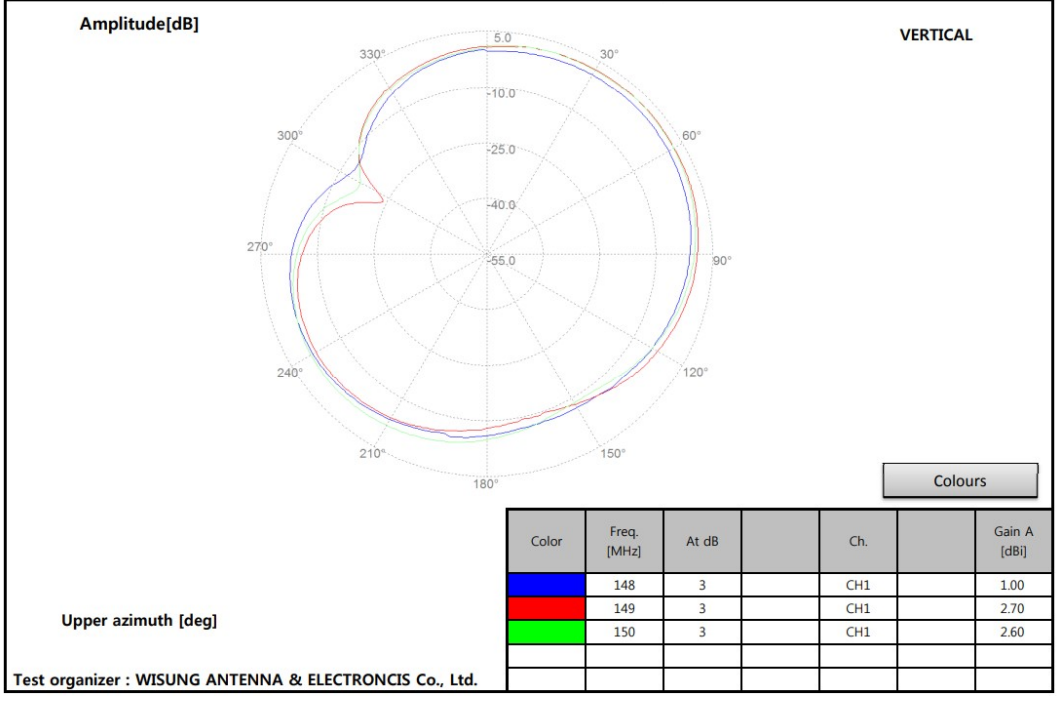
No. 1 VHF ANTENNA GAIN TEST



Color	Freq. [MHz]	At dB		Ch.		Gain A [dBi]
	148	3		CH1		-4.90
	149	3		CH1		-4.60
	150	3		CH1		-3.90

Date
2022-04-14

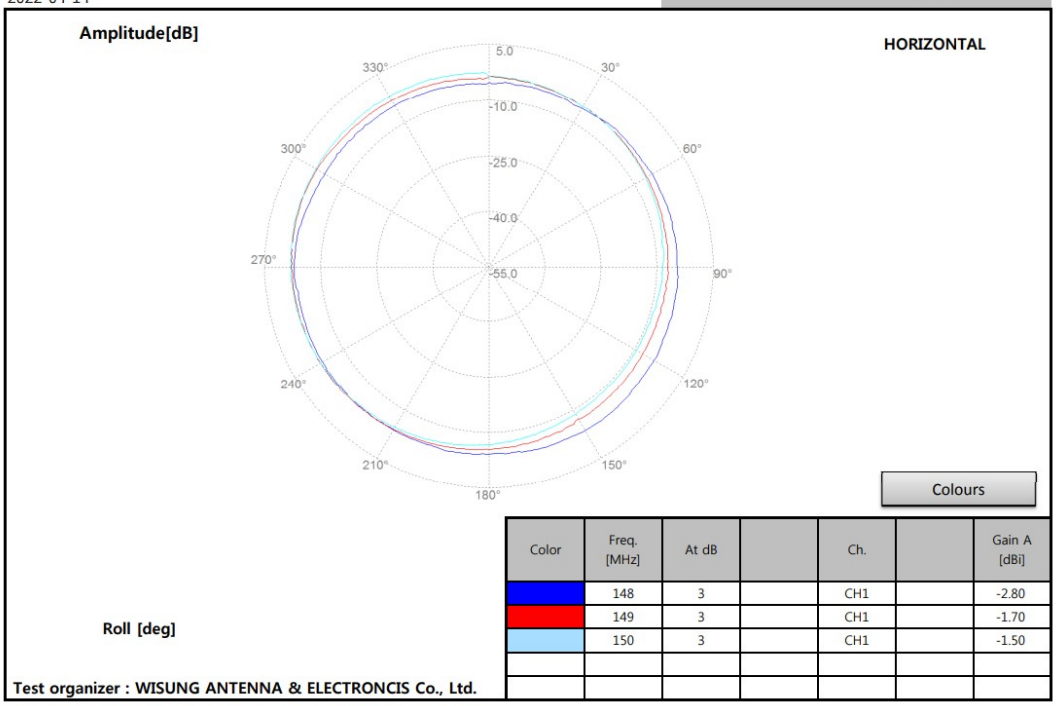
No. 2 VHF ANTENNA GAIN TEST



Color	Freq. [MHz]	At dB		Ch.		Gain A [dBi]
	148	3		CH1		1.00
	149	3		CH1		2.70
	150	3		CH1		2.60

Date
2022-04-14

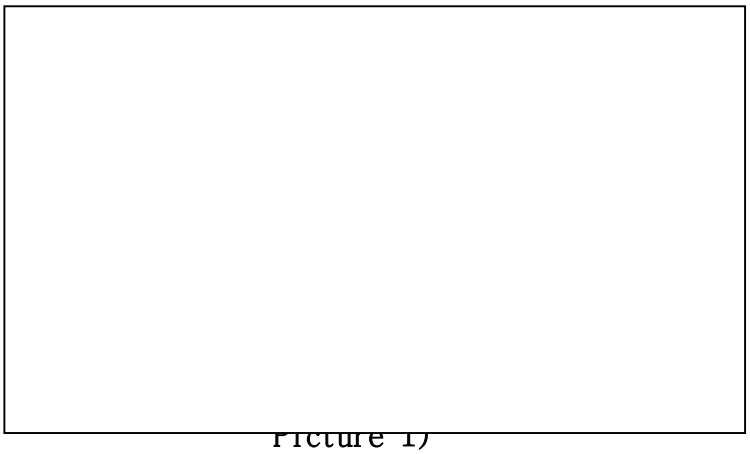
No. 2 VHF ANTENNA GAIN TEST



Color	Freq. [MHz]	At dB		Ch.		Gain A [dBi]
	148	3		CH1		-2.80
	149	3		CH1		-1.70
	150	3		CH1		-1.50

4. 4. Packaging specification

- Our company makes it according to the standard of packaging specifications of GPS Dual ANTENNA.



Picture 1)

(1) Picture 1) product push in the packaging vinyl(910-02-002-068)

(2) Packaged product packed in a outbox.