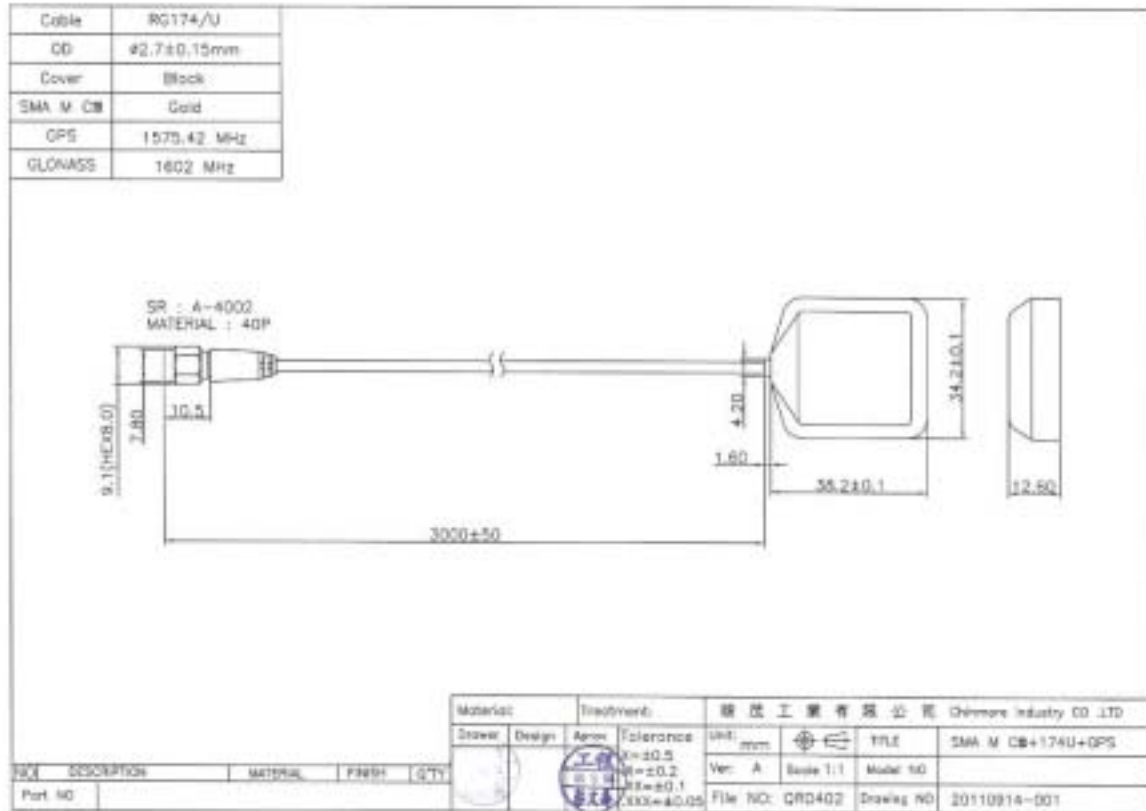


# CHINMORE INDUSTRY CO.,LTD.

## 1. Product Number : GPS-01



## 2. Application:

This application shall apply for antenna unit which shall be used with an engine for an automobile.(for impedance 50Ω)

## 3. Appearance:

Antenna Unit (refer to an attached drawing)

Dimensions 25mmx25mmx8.8mm

Cable RG174U

Connector SMA M C TYPE

## 4. Operating Condition:

Temperature -40 to +90 °C

Humidity 10 to 95% RH

## 5. Storage Condition:

Temperature -40 to +90 °C

Humidity 10 to 95% RH

## 6. Electrical Specification:

\*All value are defined at  $25\pm 15$  °C , $65\pm 20$  % RH, power handling 1 u watt,air pressure  $960 \pm 100$  HPA unless otherwise noted.

### 6-1) Patch

#### GPS Band

Characteristics		GPS Band	Glonass Band	Unit
Center Frequency*		1575.42±1.023	1602±2	MHz
Bandwidth (under -10dB return loss)		8 min.	16min	MHz
VSWR		2 max.		
Impedance		50		Ω
Polarization		Linear Polarization		
Gain	Peak	2.36(typical)	2.55 (typical)	dBi
	Efficiency	76.21 (typical)	68.39( typical)	%
Temperature Coefficient of Frequency		0±20 max (@ -40°C~85°C)		ppm/°C

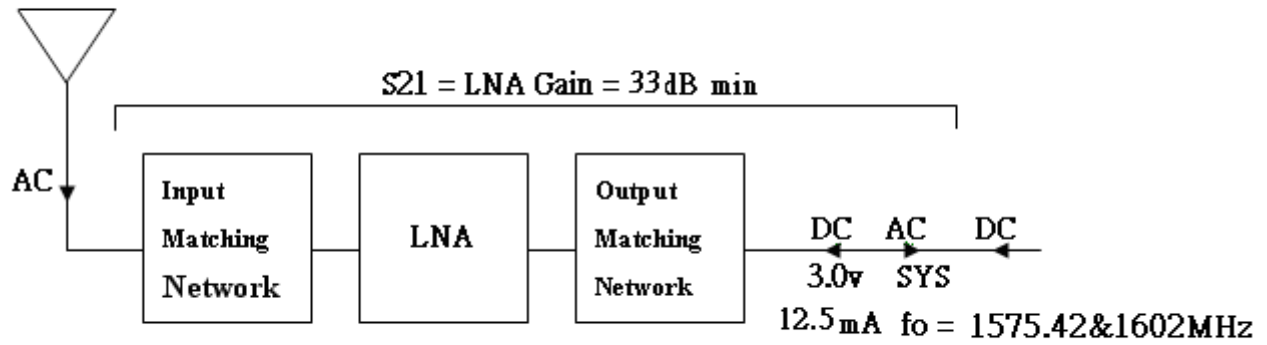
### 6-2) LNA

Characteristics	GPS Band	Glonass Band
Center Frequency	1575.42±1.023MHz	1602±2MHz
Gain	34 dB typ at 3V	33 dB typ at 3V
Noise Figure	1.5dB at 3V	1.5dB at 3V
Output V.S.W.R	2.0 max	
Input Voltage	DC = 3.0±0.5V	
Current	DC = 12.5mA typ at 3V	

## 7. Block Diagram:

## Antenna

Linear  
Gain= 2.5 dBi typ



The structure of GPS and Glonass antenna module

## 8. Measurement Method:

Patch:

### a). Reflection Coefficient Measurement

- Equipment : Network Analyzer (Agilent E5071A)(Fig.1)
- Item :  $S_{11}$  Log Chart (Return loss) ·  $S_{11}$  Smith Chart (Impedance)



Fig.1 Network Analyzer

### b). Pattern Measurement

- Equipment : Anechoic Chamber (Fig.2), Network Analyzer (Agilent E8753ES), Standard Horn
- Item : Gain pattern

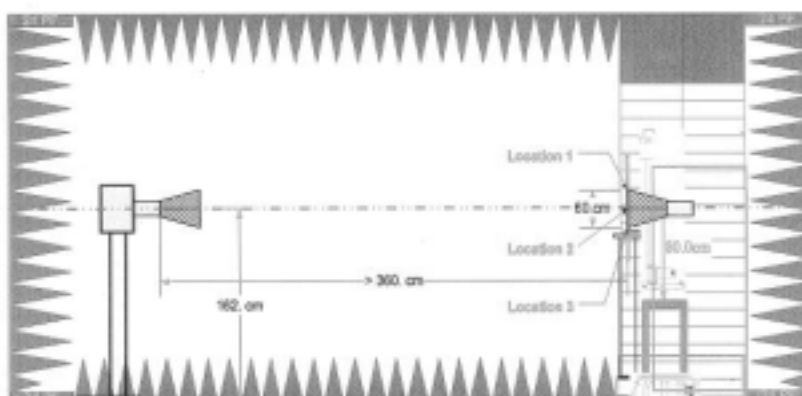


Fig.2 Quiet room

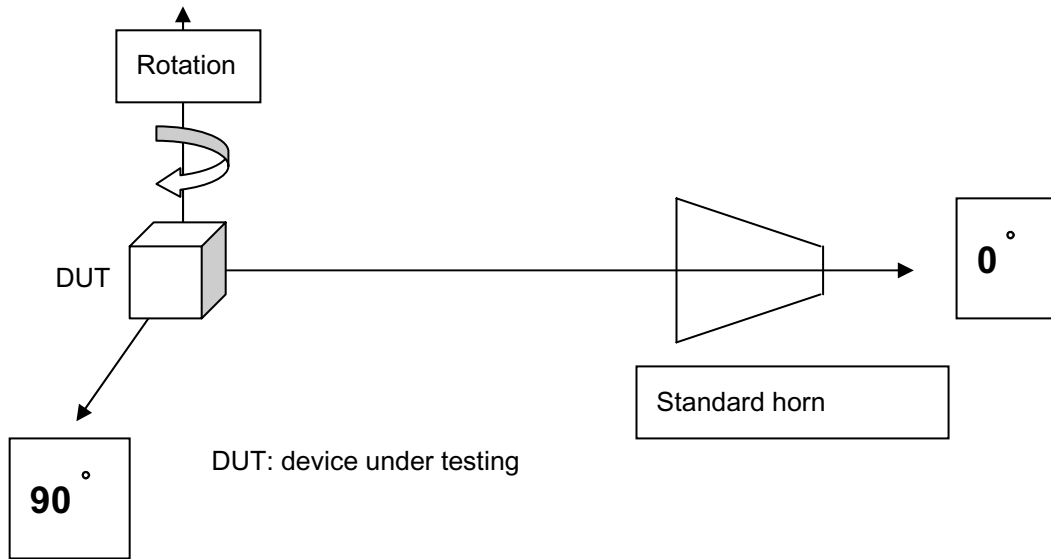


Fig.3 Schematic of measurement setup.

LNA:

a). Parameter Measurement

- Equipment : Network Analyzer (Agilent E5071B)(Fig.4)
- Item :  $S_{11}$ ,  $S_{12}$ ,  $S_{21}$ ,  $S_{22}$

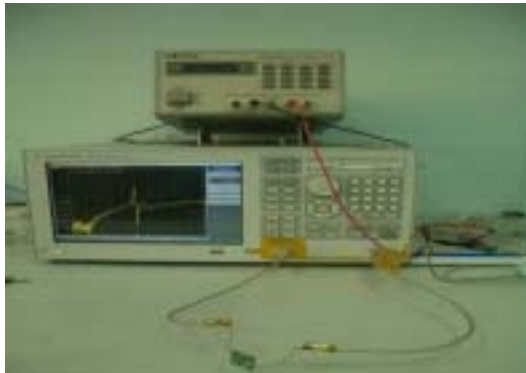


Fig.4 Network Analyzer

b). Noise Figure Measurement

- Equipment : Noise meter (Agilent: E4407B-219)(Fig5)
- Environment: Shielding Room (Fig.6)
- Item : N.F. (Noise Figure)

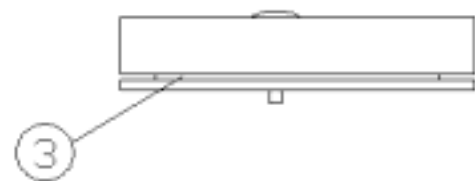
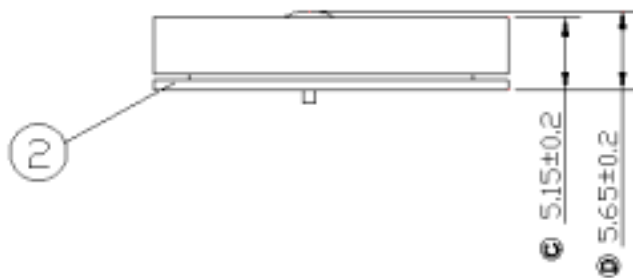
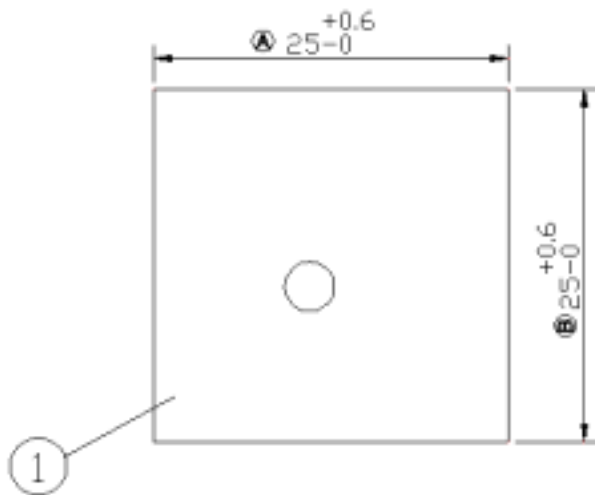


Fig. 5 Noise Meter



Fig.6 Shielding Room

**9. Antenna Dimensions:**



unit:mm

3	twin adhesive	1
2	LNA(25mm*25mm*0.8mm)	1
1	254_patch(25mm*25mm*4mm)	1
Item	Description	Q'ty
Material		

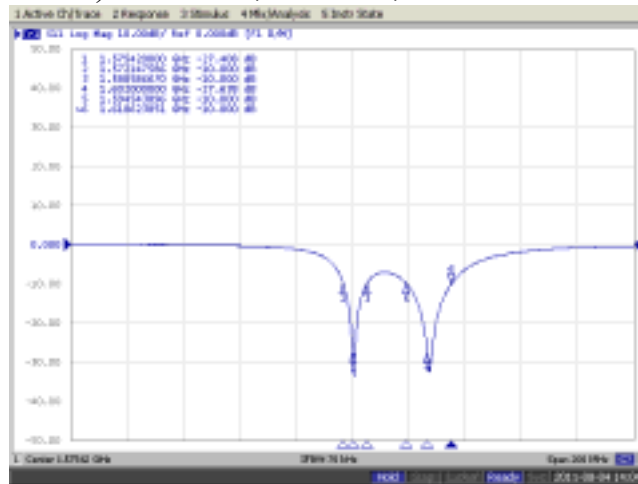
## 9. Electrical Characteristics

### Patch:

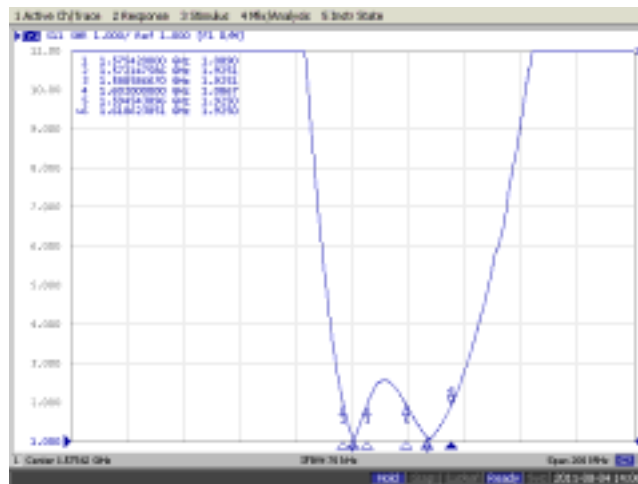
a).  $S_{11}$  Smith Chart ( Impedance):



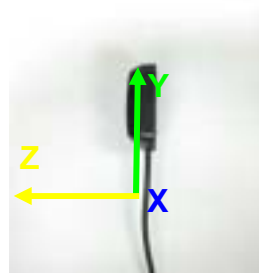
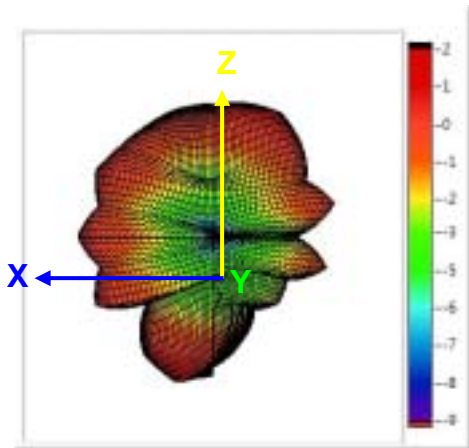
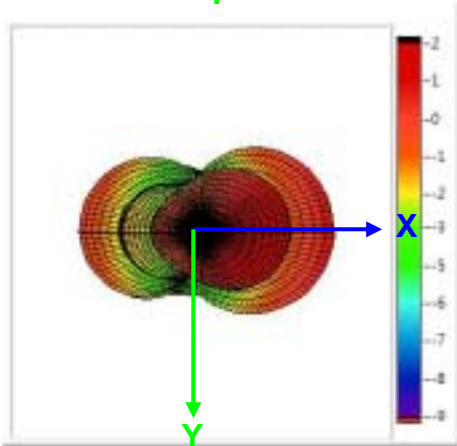
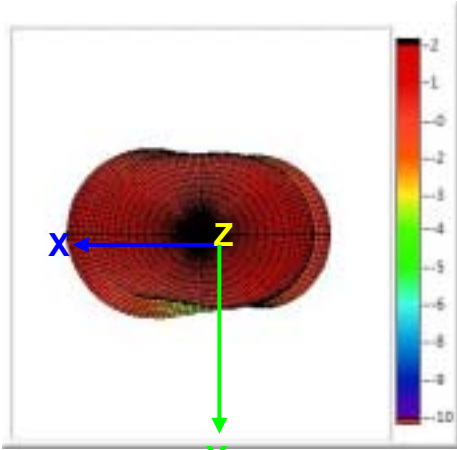
b).  $S_{11}$  Log Chart (Return loss): Bandwidth( $S_{11} < -10$ dB):



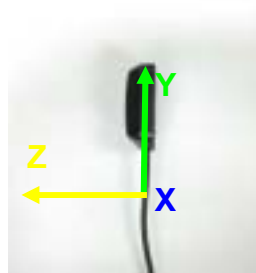
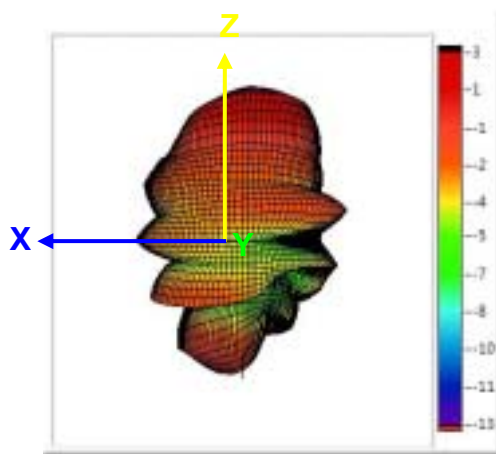
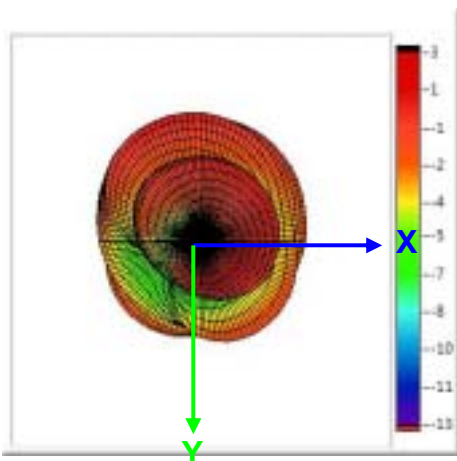
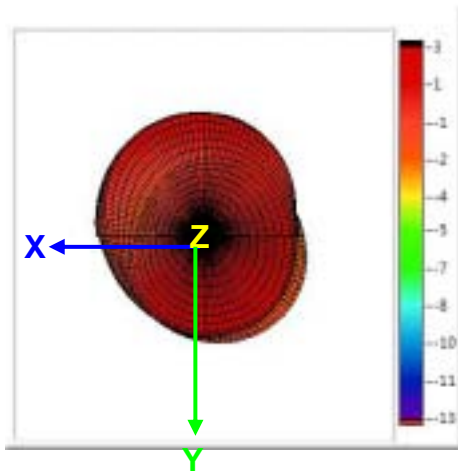
c).  $S_{11}$  SWR(VSWR):



d) Three D Radiation Pattern (@1575.42MHz)



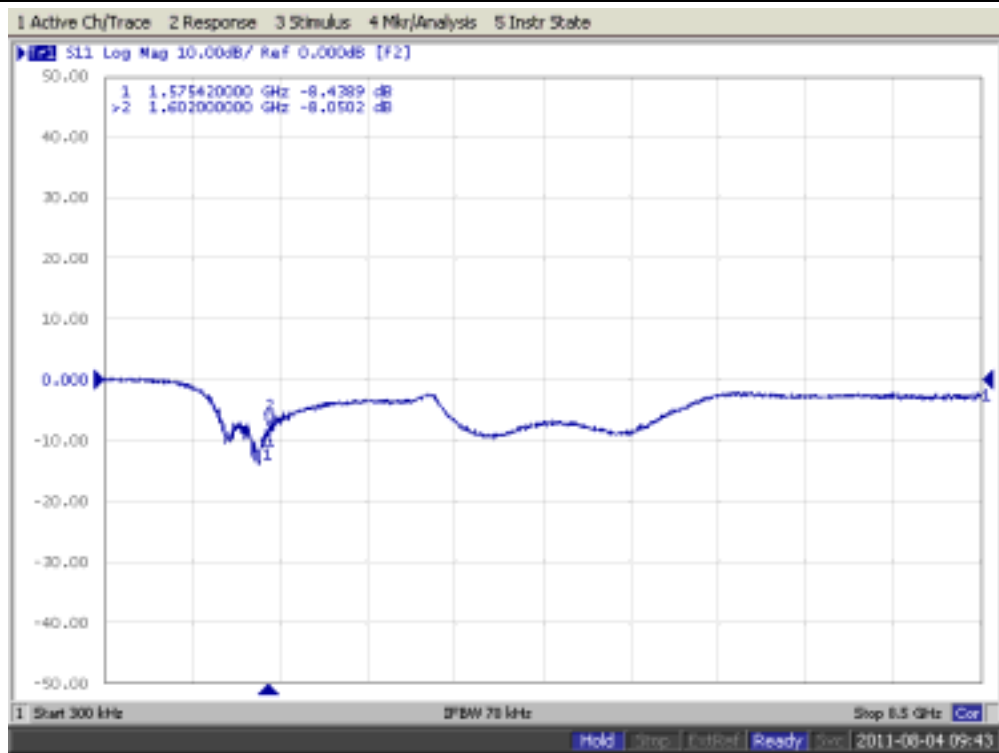
e) Three D Radiation Pattern(@1602MHz)



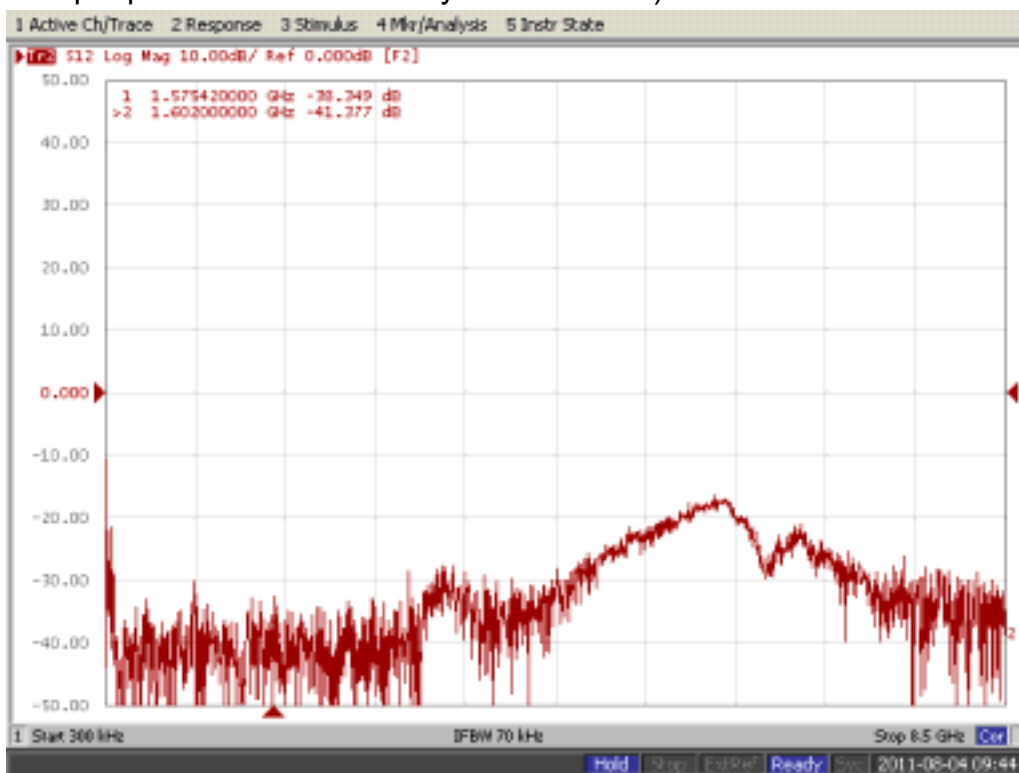
Low noise amplifier (LNA):

a).S11: (The input power of network analyzer is -40dBm)

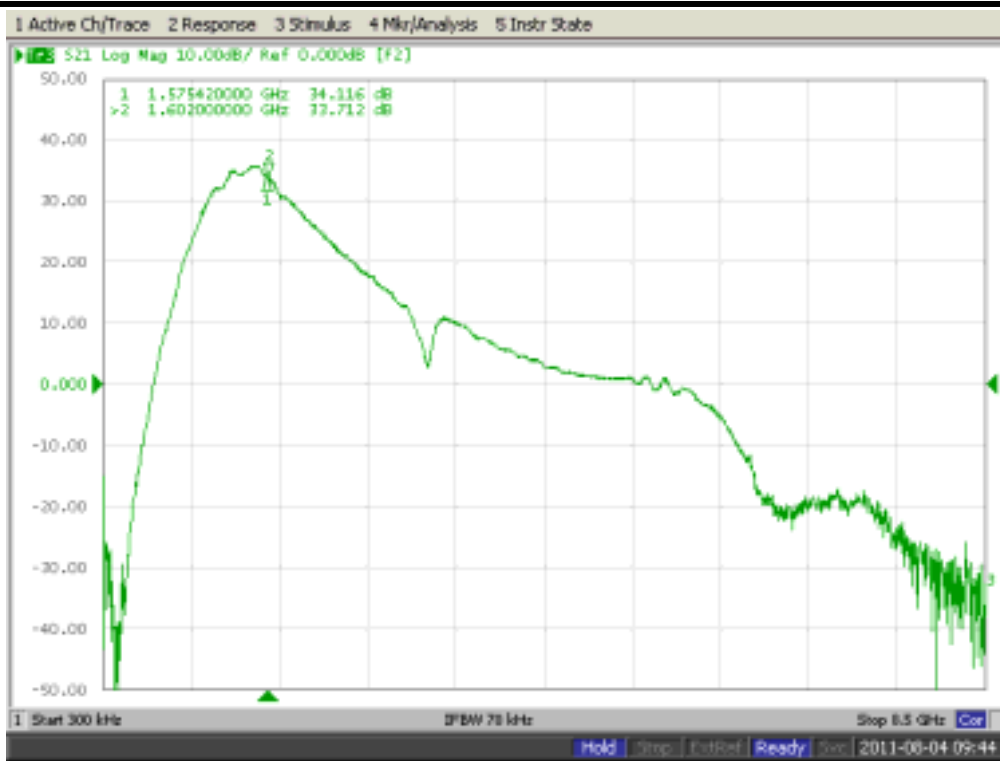




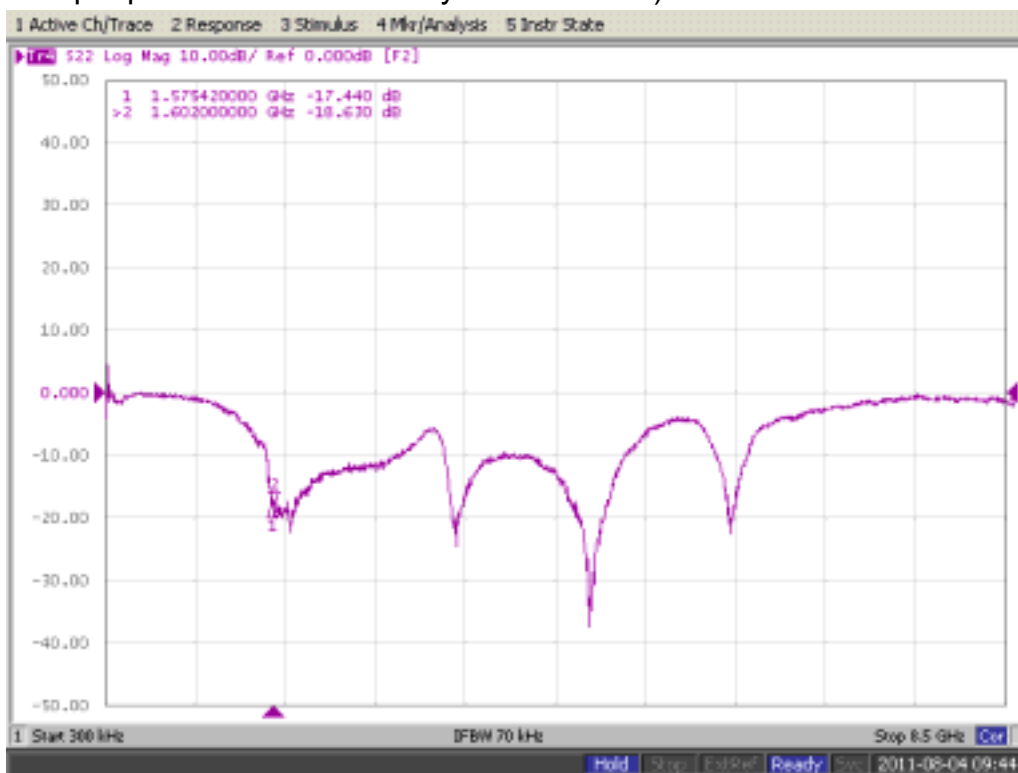
b). S12: (The input power of network analyzer is -40dBm)



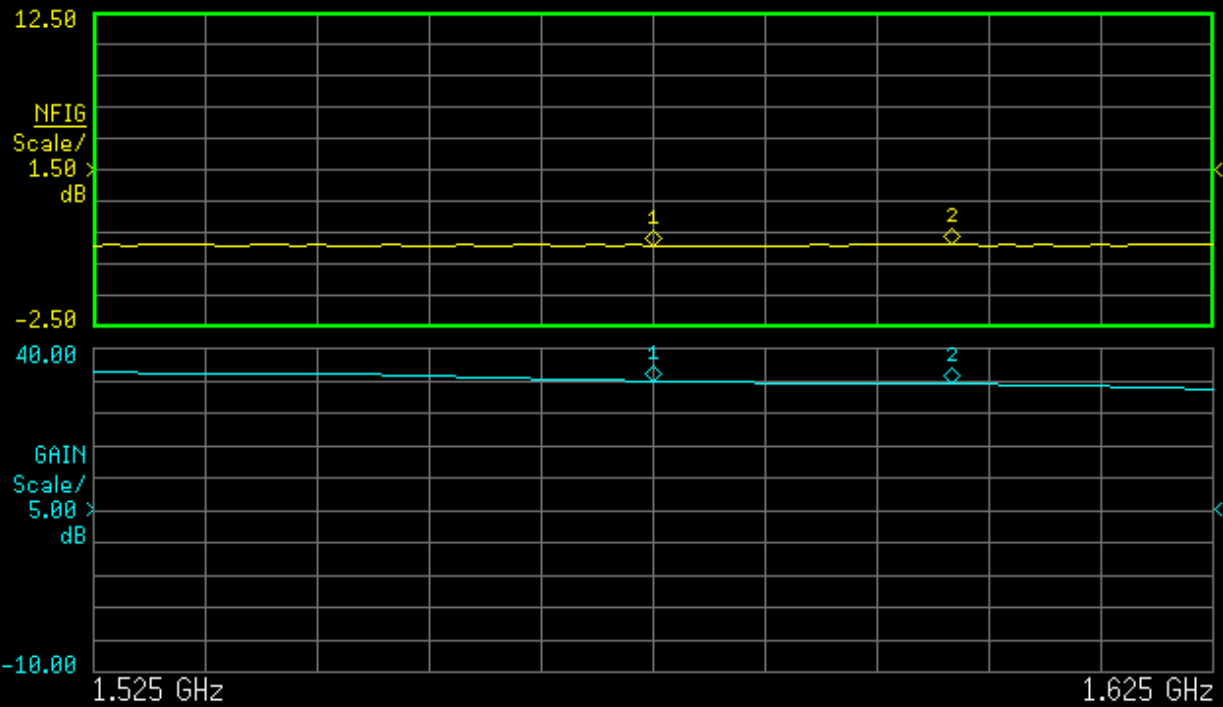
c). S21 (Gain): (The input power of network analyzer is -40dBm)



d). S22: (The input power of network analyzer is -40dBm)



e). N.F. (Noise Figure):



General			NF1G	GAIN
Markers	Mkr1	1.5754 GHz	1.4070 dB	35.0503 dB
Markers	Mkr2	1.6021 GHz	1.4697 dB	34.6265 dB
Source				