GENERAL DYNAMICS
Mission Systems

GPSS Operations Enabled

# A114M

## *Mini Amplifier*

### Description

The A114M Mini Amplifier is an amplifier which covers the L-Band (GPS, Galileo, and GLONASS frequencies) designed with the thin link margins of satellite navigation systems in mind. The A114M features 40dB of gain, and a noise figure of less than 2dB. Since it consumes less than 20mA, it can be powered using the GPS receiver's antenna voltage output.

The A114M can be selected with a filtered option which will protect the GPS receiver from other spurious signals received by the antenna.

### Features

- Passes GPS L1/L2 /L5, Galileo, GLONASS, BeiDou (entire L-Band)
- RoHS, CE, and WEEE Compliant

### Options

- Filtered Option Available
- Variable Gain Option Available: -2dB to 38dB
- EMI shielding, waterproofing, hermetically sealed

***NOTE:*** *The A114M Mini Amplifier can be custom configured. Please contact GPS Source for further information on product options and specifications.*


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## 1. Electrical Specifications

Operating Temperature -40°C to 85°C

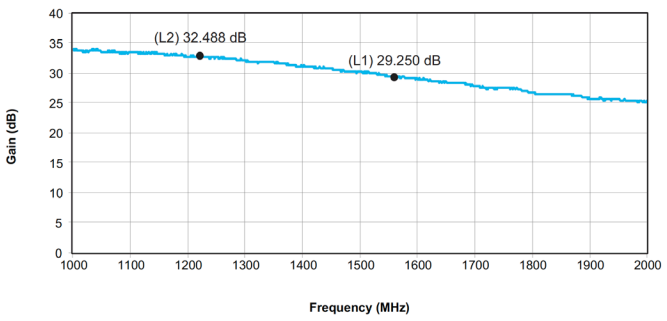
| Parameter | Conditions | | Min | Type | Max | Units |
|---|---|---|---|---|---|---|
| **Frequency Range** | IN – OUT, IN/OUT 50 Ω | | 1.1 | | 1.7 | GHz |
| **In/Out Impedance** | IN, OUT | | | 50 | | Ω |
| **Gain (Standard)** | IN – OUT, IN/OUT 50 Ω | | 38 | 40 | 42 | dB |
| **Gain (Custom) -AXX (1 - 39 dB)** | | | XX-2 | XX | XX+2 | |
| **Variable Gain Option** | IN – OUT, IN/OUT 50 Ω | Min | -4 | -2 | 0 | dB |
| | | Max | 35 | 36 | 38 | |
| **Filtered Option** [1] | IN – OUT, IN/OUT 50 Ω | | 36 | 38 | 40 | dB |
| | | Reject (-50MHz) | -30 | | | |
| | | Reject (+50MHz) | -42 | | | |
| **Input 1dB Comp.** | IN – OUT, IN/OUT 50 Ω | | -41 | | | dB |
| **Input $IP_3$** | IN – OUT, IN/OUT 50 Ω | | -33 | | | dB |
| **Input SWR** | OUT Port 50 Ω | | | | 2.5:1 | dB |
| **Output SWR** | IN Port 50 Ω | | | | 2.5:1 | dB |
| **Noise Figure** [2] | Antenna Any Port, Unused Ports 50 Ω | | | | 2 | dB |
| **Gain Flatness** | [L1 – L2] Antenna Any Port, Unused Ports 50 Ω | | | | 2 | dB |
| **Group Delay Flatness** | τd,max - τd,min, IN - OUT | | | | 3 | ns |
| **Reverse Isolation** | OUT - IN | | 40 | | | dB |
| **DC IN** | DC Input on IN/OUT port | | 3 | | 16 | VDC |
| **Device Current** | Current Consumption of Device (Excludes antenna current draw) | | | | 20 | mA |
| **Ant/Thru Current** | Non-Powered Configuration, DC Input on OUT port | | | | 250 | mA |
| **Max RF Input** | Max RF Input Without Damage | | | | 10 | dBm |

***Notes:*** *1. Rejection figures are relative to passband.*
*2. Does not apply to variable gain option at any setting other than maximum gain.*

## 2. Performance Data

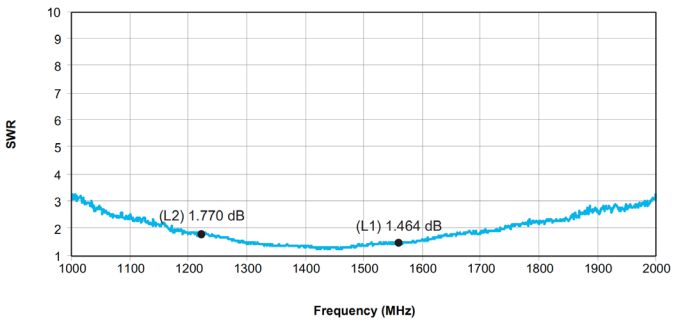
2.1 Unfiltered

- Gain vs. Frequency




2.1 Unfiltered SWR

- SWR vs. Frequency



## 2.2 Filtered Option

**Figure 2-3. Filtered Frequency Response**

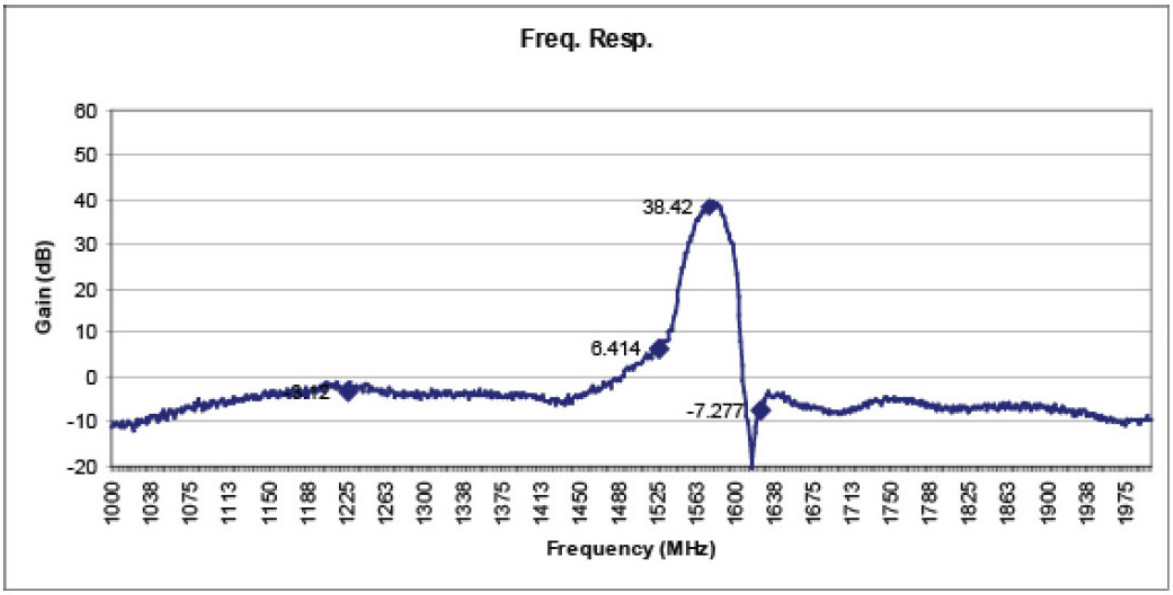
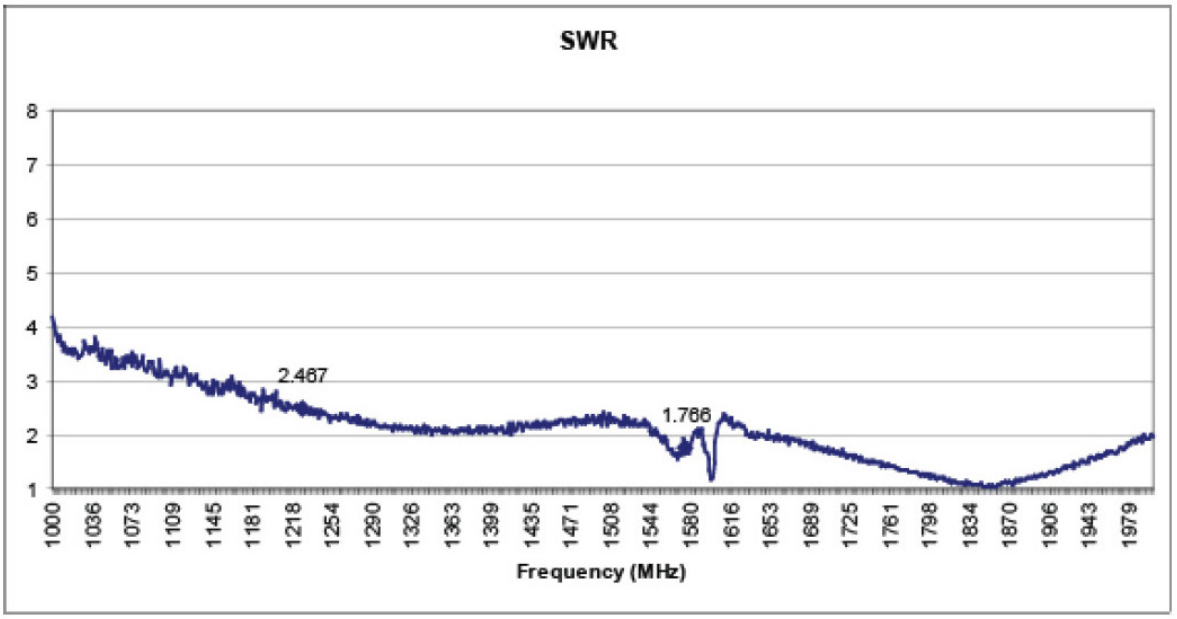



**Figure 2-4. Filtered SWR**



## 2.3 Variable Gain Option

**Figure 2-5. Variable Gain Frequency Response**

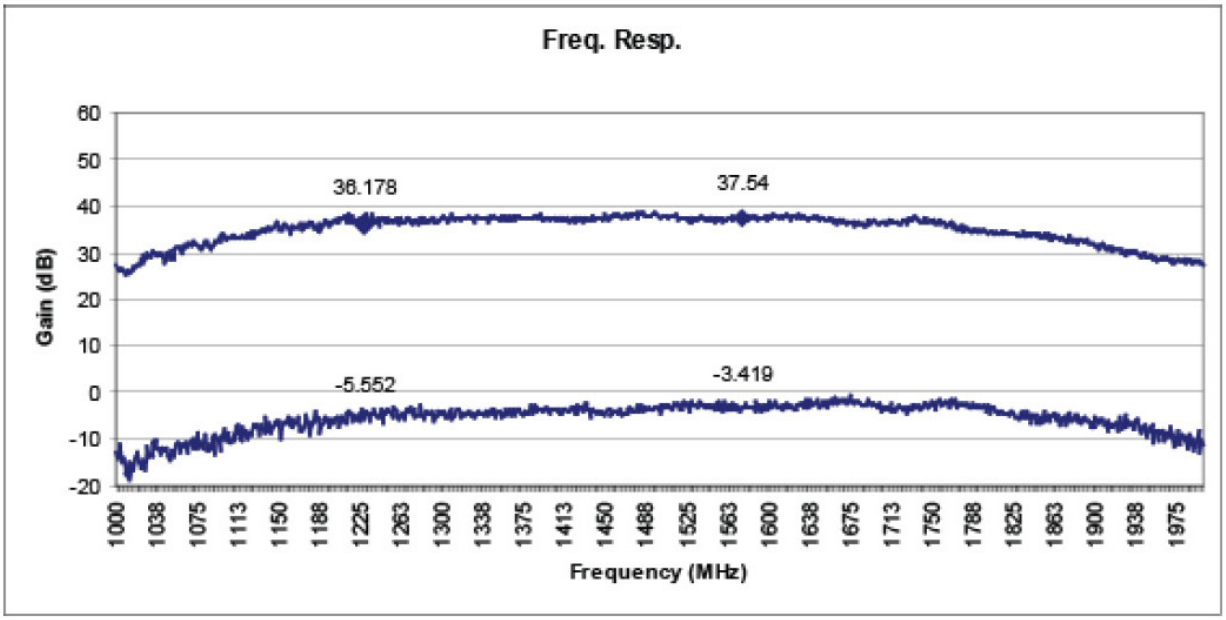
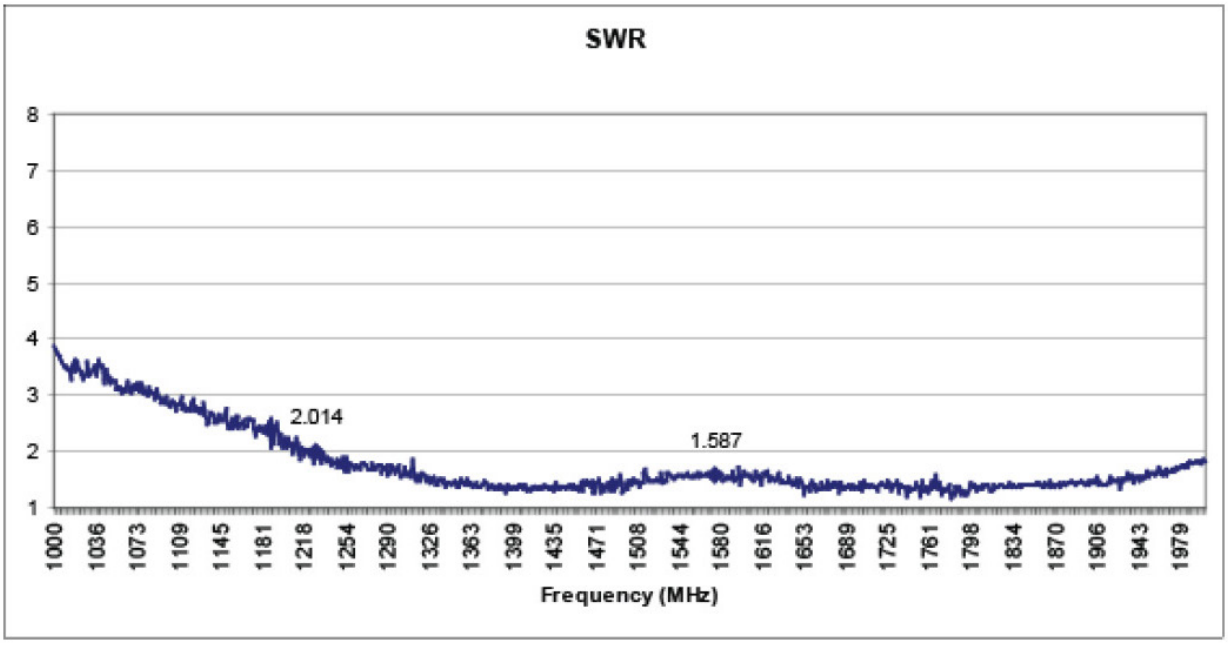



**Figure 2-6. Variable Gain SWR**



# A114M Amplifier

## 3. Product Options

Table 3-1. A114M Available Options

| | | |
|---|---|---|
| **RF Connector** | | |
| **Connector** | **Connector Type** | **Limitations** |
| | N (Female/Male) | N/A |
| | SMA (Female/Male) | N/A |
| | TNC (Female/Male) | N/A |
| **Housing** | | |
| **Housing** | **Housing Type** | **Limitations** |
| | Mini | None |
| **Port** | | |
| **Configuration** | Standard Configuration | Input and Output Passes DC |
| | Non-Standard Configuration (-S) | DC Blocked |
| **Amplification** | | |
| **Gain** | Standard | 40dB |
| | Custom | 1-39dB |

## 4. Product Code Decoder

**A114 M - AXX - X - NF**

**Amplifier**
A114 = A114 Amplifier

**Housing Option**
M = Mini Housing

**Custom Gain Option**
Blank = Standard Gain (40dB)
AXX = Custom Gain (Range = 1dB to 39dB)
V = Variable Gain (Range = -2dB to 38dB)

**Option(s)**
E = EMI Shielding (Includes Waterproofing)
F1 = L1 Filtering
HS = Hermetically Sealed
W = Waterproof

**Connector Option**
NF =N (Female)
SF = SMA (Female)
TF = TNC (Female)
NM = N (Male)
SM = SMA (Male)
TM = TNC (Male)

***Notes:*** *Waterproof option is not available with variable gain.*

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D-GPSS_A114MAmplifier-02-0823
059-A114M REV F
PRI-2310-0044