

# GPSRKXLV GPS L1 Repeater Kit

## Technical Product Data

### Features

- Features that Facilitate FCC Site Authorization for GPS Repeaters
- Calibrated & Controlled ERP Levels
- Filtered L1
- Oscillation Detection & Prevention
- Antenna Monitor & Alarm Indication
- Wireless Remote Control via Bluetooth Option



### Description

The GPSRKKL1 represents a significant advancement in GPS repeater technology, including features that facilitate FCC site authorization. Featuring an integrated GPS receiver, the GPSTKL1 provides a calibrated and controlled ERP at the user defined or FCC authorized level, regardless of the uncertain loss or gain in the receive antenna cable network. Additionally, the GPSRKKL1 provides a tracking indication when the device is tracking satellites and controlling the re-radiated GPS signal levels. The product also includes optional features for oscillation detection and prevention; receive antenna monitor & alarm indication, and filtering for the GPS band. The GPSRKKL1 features digital display with a user friendly menu enabling easy front panel operation and configuration of the device or via an optional RS232 serial port. With an optional Bluetooth wireless interface also available, the GPSRKKL1 may be configured remotely when physical access to the system is not convenient.

The GPSRKKL1 is only available for certain eligible customers in the United States or for customers outside the United States. For this is the product you need to facilitate FCC authorization of your site for GPS Repeaters. Call, email ([sales@gpssource.com](mailto:sales@gpssource.com)), or visit our website ([www.gpssource.com](http://www.gpssource.com)) for further information on product options, specifications, or to receive an easy to use order sheet.

## Repeater Amplifier:

### Electrical Specifications, Operating Temperature -40 to 85°C

| Parameter                                                                                        | Conditions                                                 | Min            | Typ        | Max            | Units |
|--------------------------------------------------------------------------------------------------|------------------------------------------------------------|----------------|------------|----------------|-------|
| Freq. Range:<br>1575.4MHz                                                                        | IN – OUT, IN/OUT-50Ω                                       | 1565           |            | 1585           | MHz   |
| Rejection:<br>1575MHz<br>+/- 50MHz<br>+/- 75MHz<br>+/- 300MHz                                    | IN – OUT, IN/OUT-50Ω;                                      | 5<br>12<br>33  |            |                | dB    |
| Gain<br>-Min. Gain<br>-Max. Gain                                                                 | IN – OUT (Tx Ant.)                                         | -21.8<br>37.2  | -19<br>40  | -16.2<br>42.8  | dB    |
| Controlled Sig. Lvl.<br>ERP:<br>-Min. RF Out <sup>(1)(2)</sup><br>-Max. RF Out <sup>(1)(3)</sup> | IN – OUT (Tx Ant.)                                         | -84.5<br>-63.5 | -86<br>-65 | -87.5<br>-66.5 | dBm   |
| Input/Output<br>Impedance                                                                        | IN, OUT Port                                               |                | 50         |                | Ω     |
| Input/Output SWR                                                                                 | Input, Output Port 50Ω                                     |                |            | 2.0:1          | -     |
| Noise Figure                                                                                     | IN Port – Tx Ant; Max. Signal Setting                      |                |            | 2.5            | dB    |
| DC IN                                                                                            | DC Input from wall mount transformer, or<br>quick connects | 8              | 9          | 16             | VDC   |
|                                                                                                  | Optional DC input on RF Port. <sup>(note 4)</sup>          | 6              |            | 16             | VDC   |
| Current                                                                                          | Amplifier Current Draw, DC Input                           |                |            | 180            | mA    |
| Current (Iout)                                                                                   | Antenna Current Draw, DC output to Ant<br>VDC In = 16V,    |                |            | 35             | mA    |

#### Notes:

1. Min. and Max. calibrated/controlled GPS repeater output signal levels in ERP.
2. Equates to a range of approximately 30ft., assuming ERP signal level of -142.1dBm (EIRP of -140dBm) and typical value of -86dBm.
3. Equates to a range of approximately 350ft., assuming ERP signal level of -142.1dBm (EIRP of -140dBm) and typical value of -65dBm.
4. LCD back light and antenna monitor & alarm not available when powered via RF ports

## Repeater Antenna:

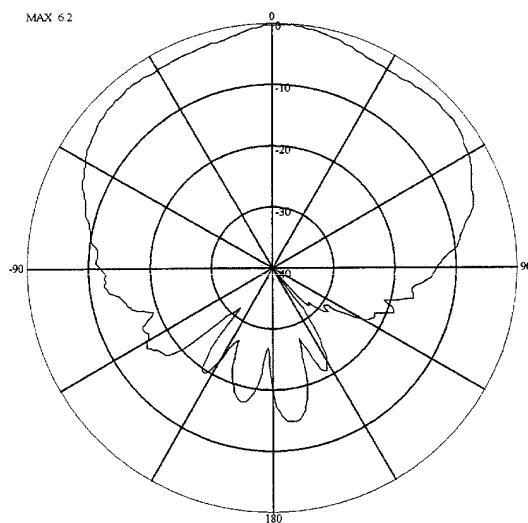
### Electrical Specifications, Operating Temperature -40 to 85°C

| Parameter                 | Conditions                 | Min  | Typ | Max   | Units |
|---------------------------|----------------------------|------|-----|-------|-------|
| Freq. Range:<br>1575.4MHz | Ant – Output, Output = 50Ω | 1565 |     | 1585  | MHz   |
| Imped.                    |                            |      | 50  |       | Ω     |
| Gain                      | Output =50Ω                | 2.5  | 3.0 | 3.5   | dBi   |
| Output SWR                | Output = 50Ω               |      |     | 2.5:1 | -     |
| Polarization              | Right Hand Circular        |      |     |       |       |

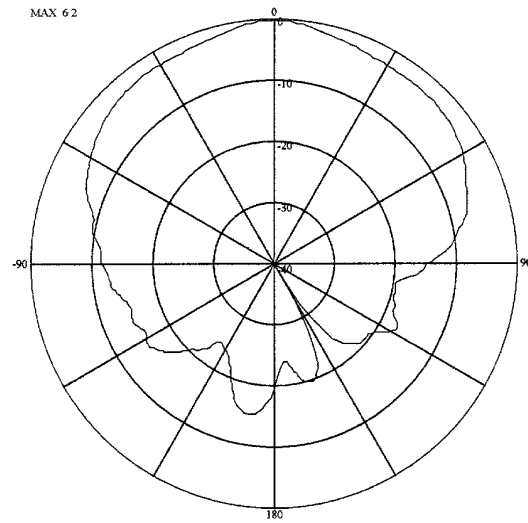
## Performance Data:

### Far Field Patterns – 1575 MHz

#### Rotating Linear – (E Cut)



#### Rotating Linear – (H Cut)



## Recommended Receive Antenna

GPS Source recommends operation of the GPSRKL1 with the GPS Source L1A Active GPS antenna and 100 ft. LMR400 coaxial cable.



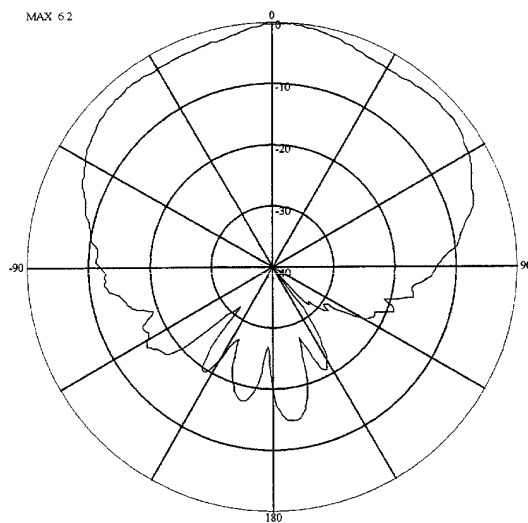
## Electrical Specifications, Operating Temperature -40 to 85°C

| Parameter                                                     | Conditions                                     | Min           | Typ | Max   | Units |
|---------------------------------------------------------------|------------------------------------------------|---------------|-----|-------|-------|
| Freq. Range:<br>1575.4MHz                                     | Ant – Output, Output = 50Ω                     | 1565          |     | 1585  | MHz   |
| Out Impedance                                                 |                                                |               | 50  |       | Ω     |
| Output SWR                                                    | VDC = 3 to 16V, Output = 50Ω                   |               |     | 2.5:1 | -     |
| Gain                                                          | Ant Element + LNA, VDC = 3 to 16V, Output =50Ω | 33            | 35  | 36    | dB    |
| Noise Figure                                                  | VDC = 3 to 16V, Output = 50Ω                   |               |     | 1.2   | dB    |
| Rejection:<br>1575MHz<br>+/- 50MHz<br>+/- 75MHz<br>+/- 300MHz | Ant – Output, VDC = 3 to 16V, Output = 50Ω     | 5<br>12<br>33 |     |       | dB    |
| Req. DC Input V.                                              | DC Input on RF Output Center Conductor         | 3             |     | 16    | VDC   |
| Current-Amplified                                             | Amplifier Current Draw, DC Input               |               | 23  | 30    | mA    |
| Polarization                                                  | Right Hand Circular                            |               |     |       |       |

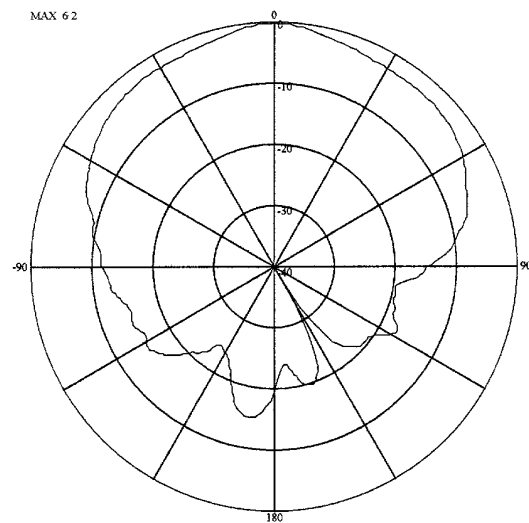
**Performance Data:**

**Far Field Patterns – 1575 MHz**

**Rotating Linear – (E Cut)**



**Rotating Linear – (H Cut)**



### Available Options:

| Power Supply Options:     |                               |                             |
|---------------------------|-------------------------------|-----------------------------|
| Source Voltage Options    | Voltage Input                 | Type                        |
|                           | DC 8-16 VDC                   | Transformer, Quick Connects |
|                           | DC 6-16 VDC                   | DC Input on IN Port         |
| Output Voltage Options    | DC Voltage Out <sup>(1)</sup> |                             |
|                           | 3.3                           |                             |
|                           | 5                             |                             |
| RF Connector Options:     |                               |                             |
| IN Port Connector Options | Connector Type                | Limitations                 |
|                           | N (Male & Female)             |                             |
|                           | SMA (Male & Female)           |                             |
|                           | TNC (Male & Female)           |                             |
|                           | BNC (Male & Female)           | Performance Not Guaranteed  |

### Notes:

- Maximum DC current draw out input port of the device is a function of the DC input voltage and desired DC output voltage , according to the following:

$$I_{out} \leq 1.4 / (V_{DC\ IN} - V_{DC\ OUT}) - 0.180 \quad \text{Amps (or 250mA max)}$$

**Mechanical:**

GPSRKL1 Amplifier:

