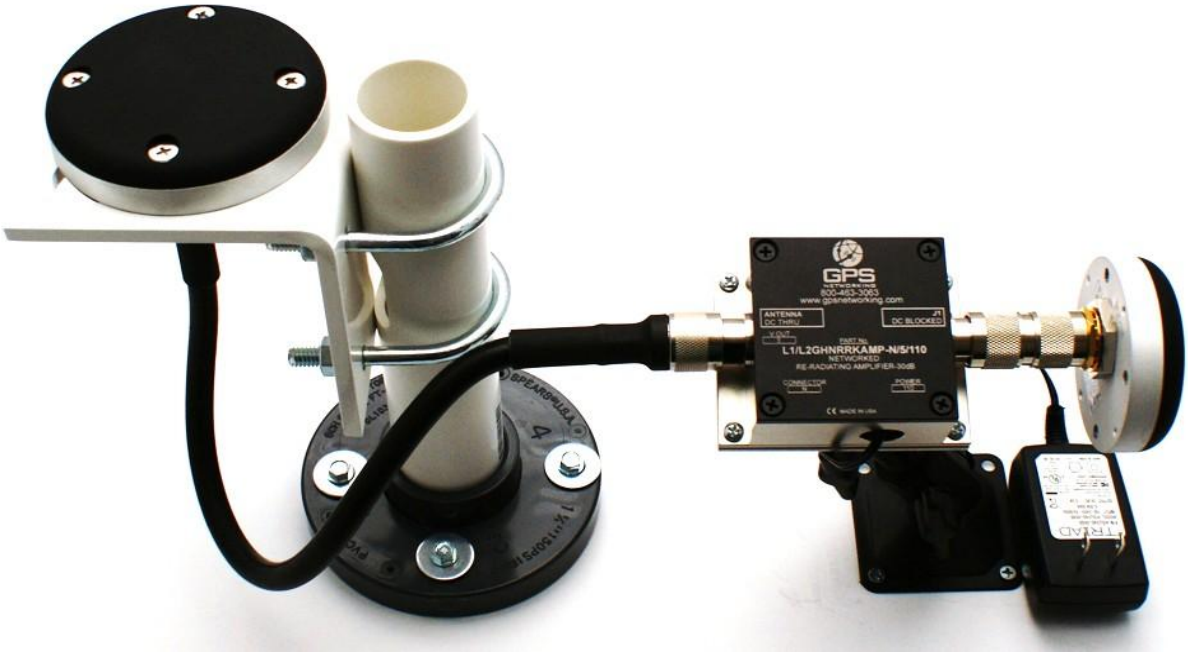
L1/L2GPNRRKIT

L1/L2 GNSS Portable Networked Re-Radiating Kit Technical Product Data



Features

- **Uses Existing L1/L2 GNSS Roof Antenna**
- **Re-Radiating Amplifier with Power Supply**
  Typical Gain 30dB
- **Optional Mounting Kit Hardware**
  Adjustable Re-Radiating Kit Mount
- **Variable Gain Option**
  Re-Radiating Amp Gain Varies from approx 0-23 dB gain
- **Variable Gain Option with LCD Display**
  Push Button Control in 1dB Increments 0-30dB gain

Description

The GPS L1/L2 GNSS Portable Hanger Re-Radiating Kit (L1/L2GPNRRKIT) is a re-radiating system that allows re-radiation of the GPS L1/L2 signal as well as the other GNSS frequencies (including Galileo, GLONASS, Beidou and Omnistar indoors). The L1/L2GPNRRKIT consists of a re-radiating amplifier with a wall mount plug-in transformer that powers the entire system, and a passive L1/L2 GNSS re-radiating antenna. The GNSS signals from the roof antenna are amplified and radiated indoors. Thus, if a receiver has line of sight with the re-radiating antenna, it can receive the GNSS signal indoors up to 100 feet. A cable from the roof antenna to the re-radiating kit is required and can be purchased separately.

Re-Radiating Amplifier Electrical Specifications, $T_A = 25^0C$

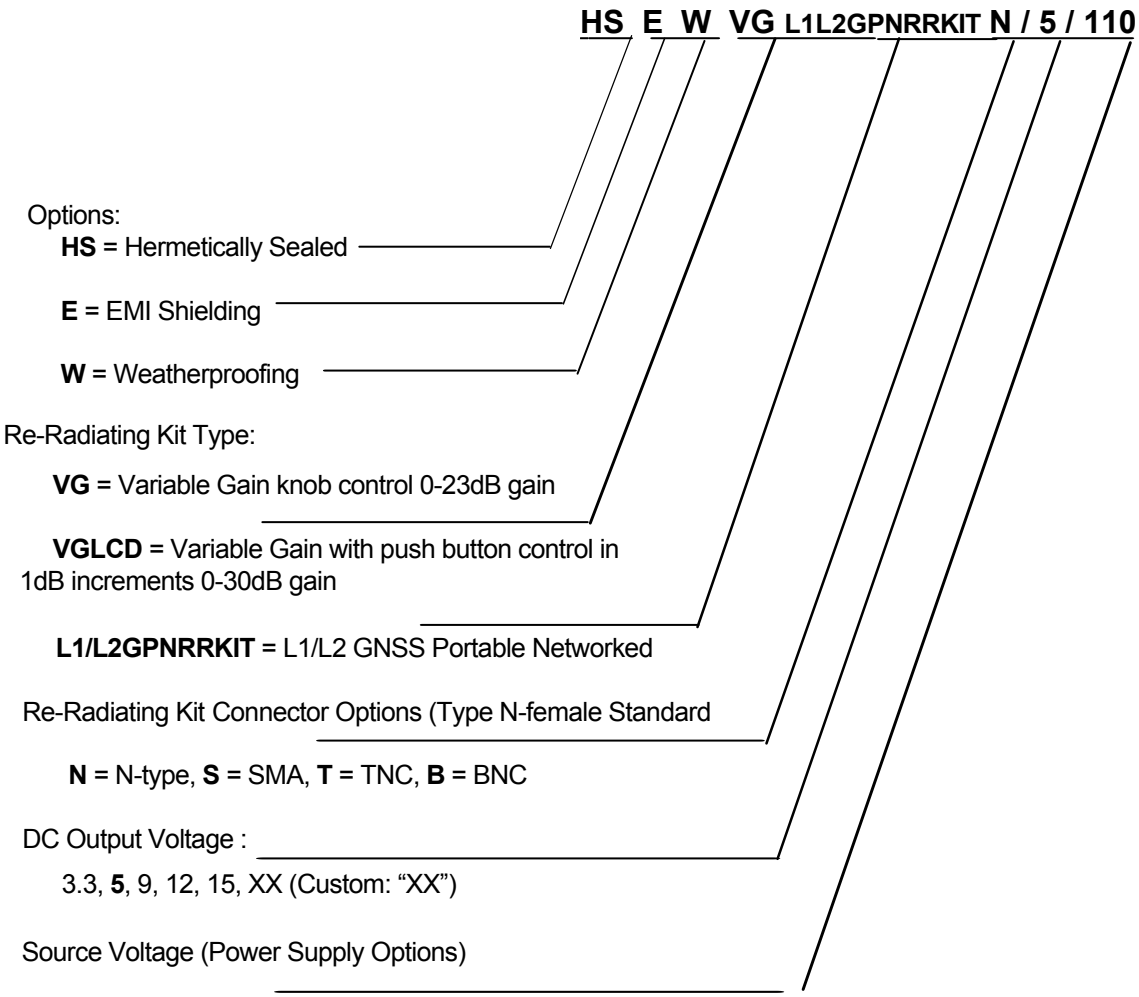
Parameter	Conditions	Min	Typ	Max	Units
Freq. Range	Ant – J1	1.1		1.7	GHz
In/Out Imped.	Ant, J1		50		Ω
Gain (1)					dB
.	.	29.	30	31	dB
Input SWR (2)	J1 - 50Ω			1.8:1	-
Output SWR	Ant - 50Ω			1.8:1	-
Noise Figure	Ant – J1		3.3	3.5	dB
Current			20	30	mA
Gain Flatness	| L1 – L2 | ; Ant – J1		0.5	1	dB
Reverse Isolation	J1 – Ant	35			dB
Group delay Flatness	$\tau_{d,max} - \tau_{d,min}$: Ant – J1			1	ns

Re-Radiating Amp System Power Supply Options		
Source Voltage Options	VOLTAGE INPUT	STYLE
	110VAC	Transformer (Wall Mount)
	220 VAC	Transformer (Wall Mount)
	240 VAC (United Kingdom)	Transformer (Wall Mount)
	Customer Supplied DC 9-32 VDC	Military Style Connector
Re-Radiating Amp Gain Control Options		
Standard Gain	30 dB (Custom Gain between 0-30dB available upon request)	
Variable Gain	-3 ≤ Gain ≤ 23dB	
Variable Gain with LCD Display	0-30dB gain range with push button control in 1dB increments	
RF Connector Options		
Connector Options	CONNECTOR STYLE	CHARGE
	Type N-female	NC
	Type SMA-female	NC
	Type TNC-female	NC
	Type BNC-female	NC
	Other	Contact GPS Networking

Re-Radiating A**ntenna** Electrical Specifications, $T_A = 25^0C$

Parameter	Conditions	Min	Typ	Max	Units
Frequency	See Passive Antenna Specifications page 6				GHz
Bandwidth					MHz
Impedance			50		Ω
Peak Gain			3		dBic
Output SWR				1.5:1	-
Polarization			RHCP		-

Part Number Configuration



Options:

HS = Hermetically Sealed

E = EMI Shielding

W = Weatherproofing

Re-Radiating Kit Type:

VG = Variable Gain knob control 0-23dB gain

VGLCD = Variable Gain with push button control in 1dB increments 0-30dB gain

L1/L2GPNRRKIT = L1/L2 GNSS Portable Networked

Re-Radiating Kit Connector Options (Type N-female Standard

N = N-type, **S** = SMA, **T** = TNC, **B** = BNC

DC Output Voltage :

3.3, **5**, 9, 12, 15, XX (Custom: "XX")

Source Voltage (Power Supply Options)

110=110VAC, **220**=220VAC (2 prong Euro), **240**=240 (3 prong UK)

MC = Military DC Connector (User Supplies 9-32VDC)

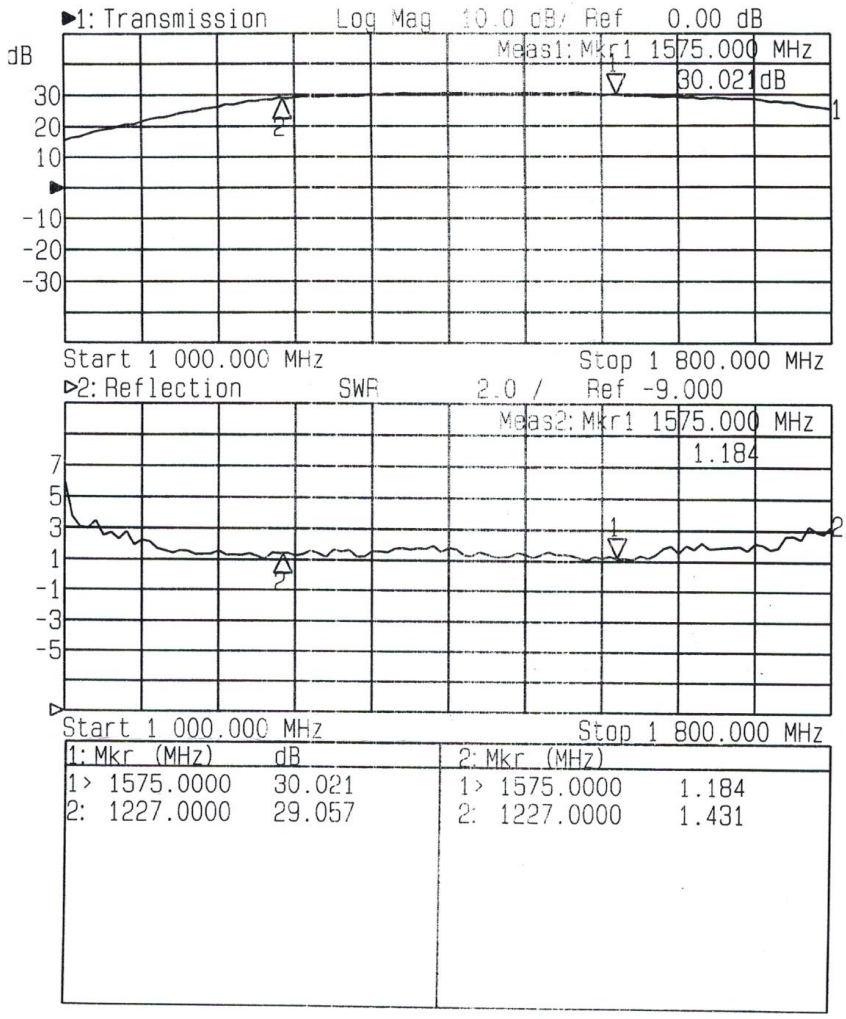
(Military DC Mating Connector is included standard with the MC power option)

Contact GPS Networking Technical Support at 719-595-9880 or salestech@gpsnetworking.com for any questions regarding non-standard configurations and corresponding part numbers)

Performance:

NRRKAMP (Re-Radiating Kit Amp Standard Gain)

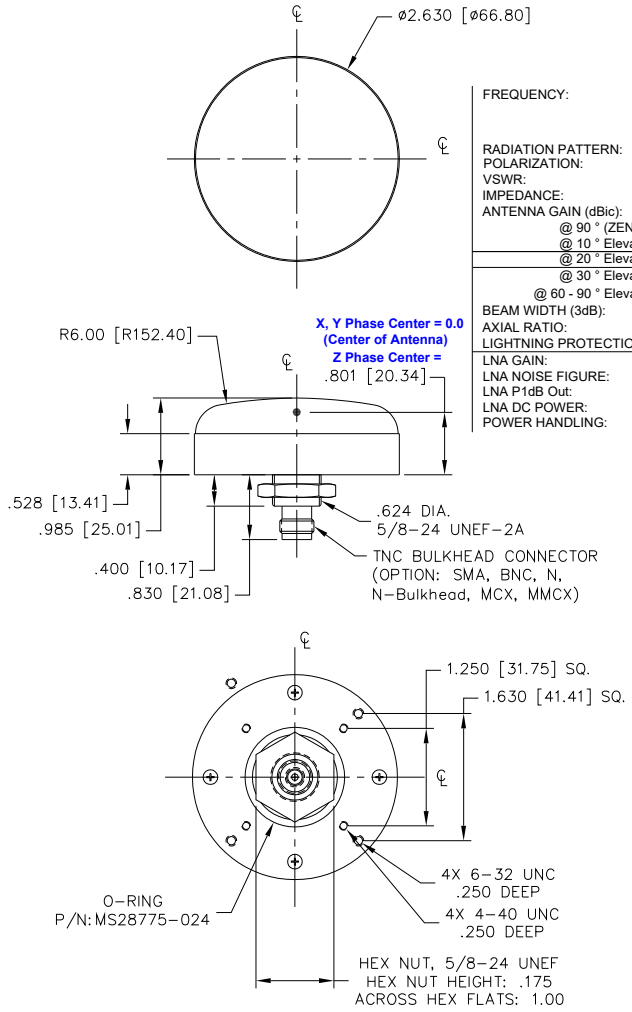
Input SWR (Ant. Port) and Frequency Response: Ant. To J1) (Typical, type N connectors):



Specifications:

L1L2GRRKPA-N (L1/L2 GNSS Passive retransmit antenna-indoor)

Includes all GNSS Frequencies



SPECIFICATIONS

ELECTRICAL:

	L5 GPS E5, E5a, E5b, Galileo L5 IRNSS		L2 GPS B2 Compass		L2 GLONASS E6 Galileo B3 Compass		OmniSTAR / L-Band L6 Galileo B1 Compass		L1 GPS E1, E2 Galileo L1 IRNSS		L1 GLONASS
FREQUENCY:	1176.45 ± 12.0 MHz 1164.45 - 1219.14 MHz 1176.45 ± 15.0 MHz		1227.60 ± 12.0 MHz 1207.14 ± 10.0 MHz		1252.50 ± 7.5 MHz 1266.75 - 1290.75 MHz 1268.52 ± 10.0 MHz		1542.50 ± 14.0 MHz 1542.50 ± 5.0 MHz 1561.098 ± 10.0 MHz		1575.42 ± 15.0 MHz 1575.42 ± 17.0 MHz 1575.42 ± 12.0 MHz		1603 ± 7.0 MHz
RADIATION PATTERN:	HEMISPHERICAL										
POLARIZATION:	RHCP		RHCP		RHCP		RHCP		RHCP		RHCP
VSWR:	< 2.0:1		< 2.0:1		< 2.0:1		< 2.0:1		< 2.0:1		< 2.0:1
IMPEDANCE:	50 ohms		50 ohms		50 ohms		50 ohms		50 ohms		50 ohms
ANTENNA GAIN (dBic):	Free Space	5in G.P	Free Space	5in G.P	Free Space	5in G.P	Free Space	5in G.P	Free Space	5in G.P	Free Space	5in G.P
@ 90 ° (ZENITH):	- 7	- 3	+ 0.5	+ 3	- 0.8	+ 2.3	+ 1.9	+ 1.0	+ 4.1	+ 3.2	+ 2.0	+ 2.6
@ 10 ° Elevation:	- 13	- 10	- 5.6	- 4.1	- 7.1	- 5.0	- 5.0	- 5.7	- 2.8	- 3.2	- 5.1	- 4.2
@ 20 ° Elevation:	- 11	- 9	- 3.9	- 2.7	- 5.4	- 3.3	- 3.9	- 3.9	- 1.9	- 1.6	- 4.1	- 2.6
@ 30 ° Elevation:	- 10	- 8	- 2.6	- 0.8	- 4.3	- 1.5	- 2.6	- 3.0	- 0.4	- 0.6	- 2.6	- 1.4
@ 60 - 90 ° Elevation:	> - 8	> - 5	> -1	> 1.8	> - 2.4	> 1.2	> + 0.8	> + 0.2	> 2.9	> + 2.5	> + 0.8	> + 1.8
BEAM WIDTH (3dB):	105 Deg.	100 Deg.	105 Deg.	105 Deg.	90 Deg.	105 Deg.	95 Deg.	97 Deg.	95 Deg.	100 Deg.	95 Deg.	100 Deg.
AXIAL RATIO:	1.5 dB	3 dB	1 dB	1 dB	1 dB	1 dB	1 dB	1 dB	1 dB	1 dB	2 dB	2 dB
LIGHTNING PROTECTION:	DC GROUNDING											
LNA GAIN:	N/A		N/A		N/A		N/A		N/A		N/A	
LNA NOISE FIGURE:	3.0 dB		3.0 dB		3.0 dB		3.0 dB		3.0 dB		3.0 dB	
LNA P1dB Out:	+13 dBm		+13 dBm		+13 dBm		+13 dBm		+13 dBm		+13 dBm	
LNA DC POWER:	2.5V/20mA, 3V/29mA, 3.3V/35mA, (2.5-24)V/<50mA											
POWER HANDLING:	1 Watt CW, Optional: 10 Watts 1 Microsec Pulse (-AL-)											

MECHANICAL:

SIZE:	DIAMETER: 2.63 in. [66.8 mm] HEIGHT: 0.985 in. [25 mm]
WEIGHT:	5.5 oz. (156 g)
FINISH:	SKYDROL RESISTANT POLYURETHANE ENAMEL BASE IRIDITE PER MIL-C-5541F Class 1A
MATERIAL:	6061-T6 ALUMINUM ALLOY BASE COMPOSITE RADOME, IMPACT, ABRASION, UV, SOLVENT, SKYDROL RESISTANCE, AND FIRE RETARDANT
CONNECTOR:	TNC FEMALE BULKHEAD CONNECTOR (OPTION: SMA, BNC, N, N Bulkhead, MCX, MMCX)

ENVIRONMENTAL:

TEMPERATURE:	-67 °F TO +185 °F [-55 °C TO +85 °C] 70,000 ft.
VIBRATION:	> 30 G's HERMETICALLY SEAL

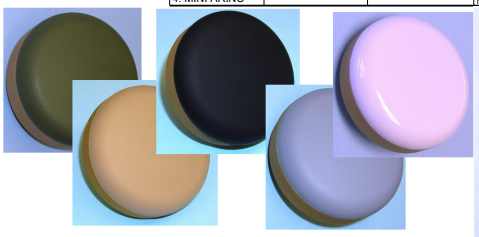
FEDERAL & MILITARY SPECIFICATIONS:

FAA TSO-C144, DO-160D, D0-228, MIL-C-5541, MIL-E-5400, MIL-I-45208A, MIL-STD-810, AND SAE J1455

ACCEPTANCE TEST PROCEDURE: ATP-GPS-L1L2-100

P/N: G5Ant-2PN4

SIZE:	LNA:	CABLE'S LENGTH:	CONNECTOR:	COLOR:
1: 2" SQ.	A: WITH LNA	X: NO CABLE	S: SMA; B: BNC	-1: GLOSS WHITE #17925 PER FED-STD-595B
1.9: 1.9" SQ.	P: WITHOUT LNA		M: MCX; MM: MMCX	-2: LUSTERLESS GRAY #36320 PER FED-STD-595B
2: 2.6" DIA.			N: N; NB: N-Bulkhead	-3: OLIVE DRAB GREEN #34094 PER FED-STD-595B
3: 3.5" DIA.			T: TNC; TB: TNC-Bulkhead	-4: LUSTERLESS BLACK #37038 PER FED-STD-595B
4: MINI ARINC			TNB: TNC-Bulkhead with N Connector Thread on Bulkhead	-5: TAN #: FS 23446 or 33446, FED-STD-595



Mechanical

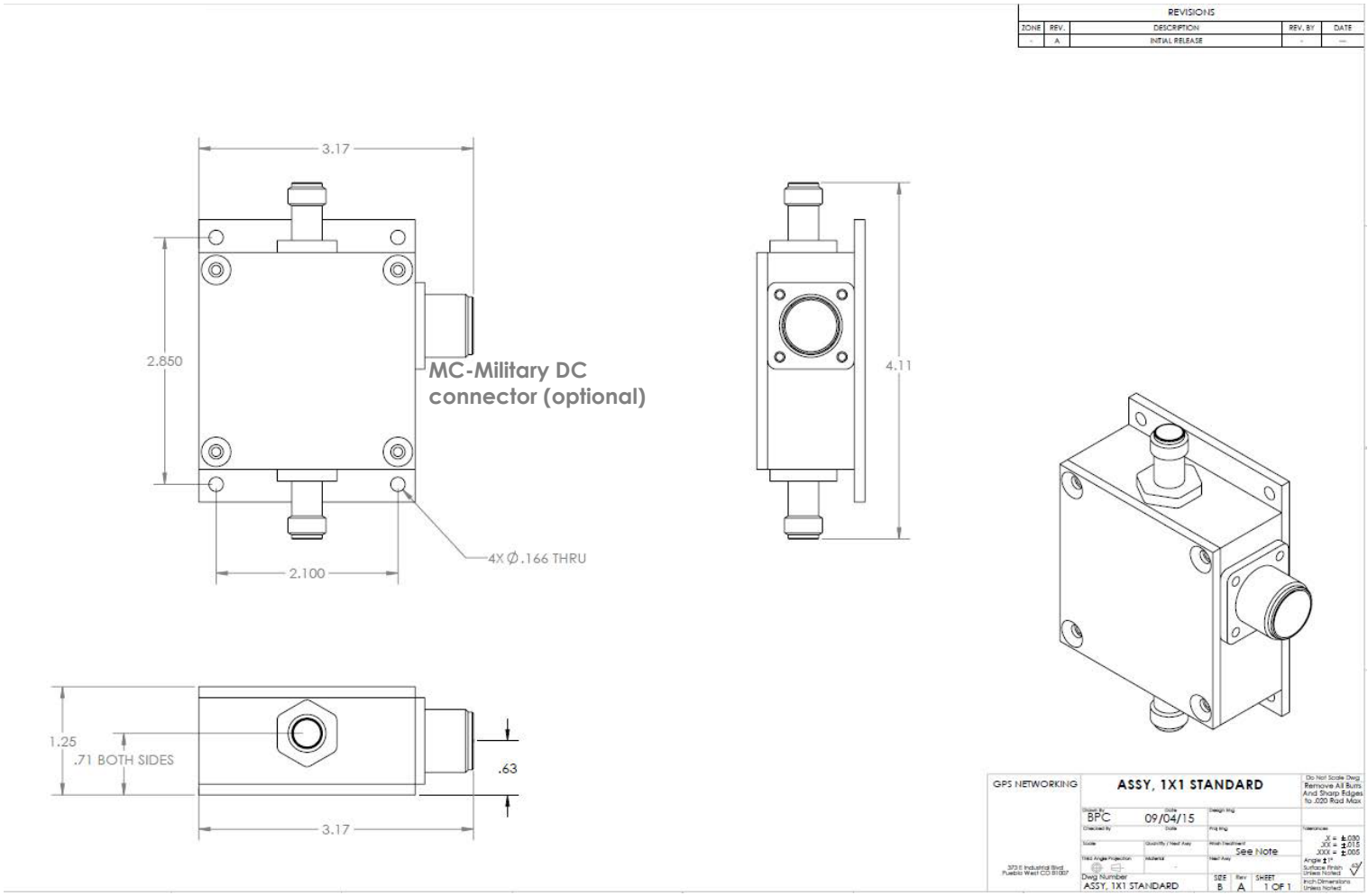
Re-Radiating Kit Amplifier

Dimensions: Height: 1.3”

Length (not including connectors) Body: 2.5”
Base Plate: 3.25”

Width (not including connectors): 2.5”

Weight: 11 oz. (316 grams)

Operating Temp. Range: -40^{o} to + 75^{o}C

Finish Housing and Base Plate: ELECTROLESS NICKEL PLATED
MIL-C-26074C CLASS 1, .0001-.0003 MAX
Finish Lid: ANODIZE, TYPE II, CLASS 2, BLACK, per MIL-A-8625