F SVeeEight Plus GPS Specifications and Mechanical Drawings

The SVeeEight Plus GPS module is designed for embedded industrial computing or control, mobile computing or data collection, precision timing, and vehicle tracking applications. This appendix includes the system specifications and mechanical drawings for the SVeeEight Plus GPS receiver module and the miniature magnetic mount GPS antenna.

Table F-1. Environmental Specifications

Temperature	Operating:-40^{O}C to +85^{O}C Storage: -55^{O}C to +100^{O}C
Humidity	95% R.H. non-condensing @ +60^{O}C
Vibration	0.008g^{2}/Hz: 5Hz–20 Hz 0.05g^{2}/Hz:20Hz–100Hz -3dB/octave: 100Hz–900Hz Specifications comply with SAE J1211 requirements
Altitude	-400 to +18,000 meters MSL
Velocity	515 m/sec. (maximum)
Acceleration	4g (39.2 m/sec.^{2})
SMDevice Reflow	± 0.5 ppm max change after 240°C for 20 seconds
Shock	± 0.5 ppm max change after 5000G 6 msec .5 sine
Jerk	20 m/sec.^{3}
G Sensitivity	± 0.100 5 ppm max per G

Table F-2. Physical Specifications

Size	Metal Enclosure 4.03"D x 4.97"W x 1.1"H (10 L mm x 127 mm x 28 mm) excluding mounting flange Mounting Flange 4.03"D x 6.81"W x 0.062"H (10 L mm x 173 mm x 2 mm)
Weight	0.57 lb (0.26 kg) board + enclosure + flange
Power	Prime Power: 9 - 32 VDC; 80 mA; 0.95 w at 12 V with antenna RAM Backup: optional +3.5 - +12 VDC input via the yellow wire on the power connector; 2.1µA x 3.5 VDC
Connectors	Antenna: SMB Serial Data (2): DB9 Power: 3-Pin Conxall

Table F-3. Electrical Specifications

Operating Frequency	12.504 MHz
Crystal Frequency	12.504 MHz, Fundamental Mode
Tolerance	±1 ppm @ room temp
Temperature stability	2.5 ppm /°C

Table F-4. GPS Receiver

General	L1 frequency (1575.42 MHz), C/A code (Standard Positioning Service), 8-channel, continuous tracking receiver, 32 correlator
Datum	WGS-84, factory default (180 user-selectable datums)

Table F-5. GPS Receiver Accuracy

Accuracy	Position	25 meters CEP (Circular Error Probability) (50%) without SA
	Velocity	0.1 m/sec. (1 Sigma) steady state conditions (without SA)
	Time	UTC to nearest microsecond with 1 pulse per second available
DGPS Accuracy	Position	2 meters CEP (50%)
	Velocity	0.05 m/sec. (1 Sigma) steady state conditions
Acquisition Rate	Cold Start	<130 seconds (90%)
	Warm Start	<45 seconds (90%)
	Hot Start	<20 seconds (90%)

Table F-6. Input/Output

Interface	Two RS 232 serial I/O
Protocols Available	Trimble Standard Interface Protocol (TSIP); binary data I/O provides maximum bi-directional control over all GPS board functions. Sample C source code interface routines are available.
	Trimble ASCII Interface Protocol (TAIP); ASCII message data for I/O control over a serial communication link. Controls scheduled and polled responces from the GPS receiver. Sample C source code interface routines are available.
	NMEA 0183: Industry standard ASCII protocol for marine electronics applications. Supports NMEA sentences GGA, VTG, GLL, ZDA, and GSV, GSA, RMC. Note - GGA and VTG are factory default messages

Table F-7. Pulse Per Second

Timing	Under normal conditions, in the middle latitudes, the falling edge of the pulse is synchronized to UTC within 95 ns, one Sigma.
Pulse Width	10 microsecond wide pulse Falling edge is 20 nanoseconds or less, depending upon distributed capacitance in cable
Output	RS 232; 1 pps open collector

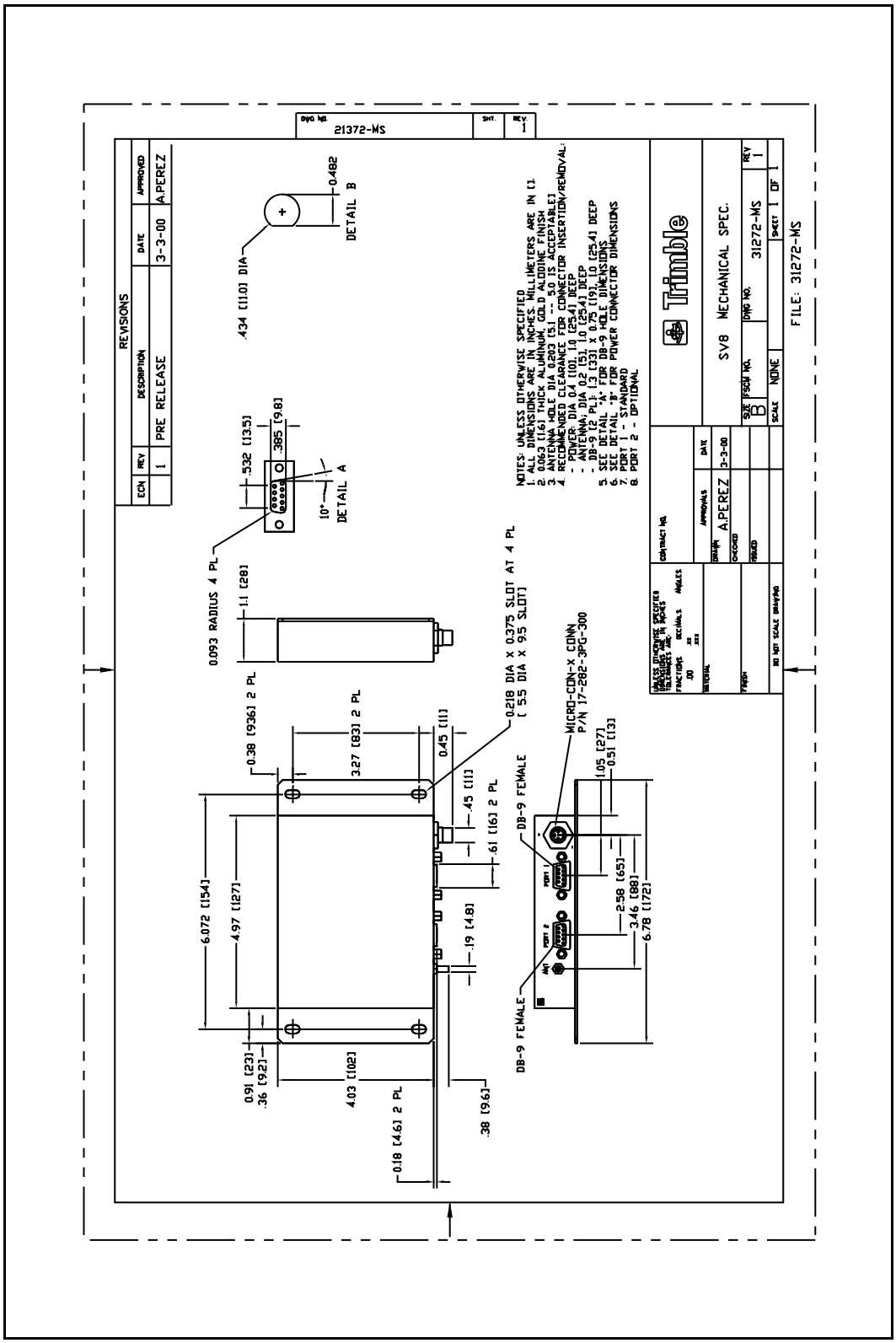

Figure F-1 SVeeEight Plus GPS Circuit Board

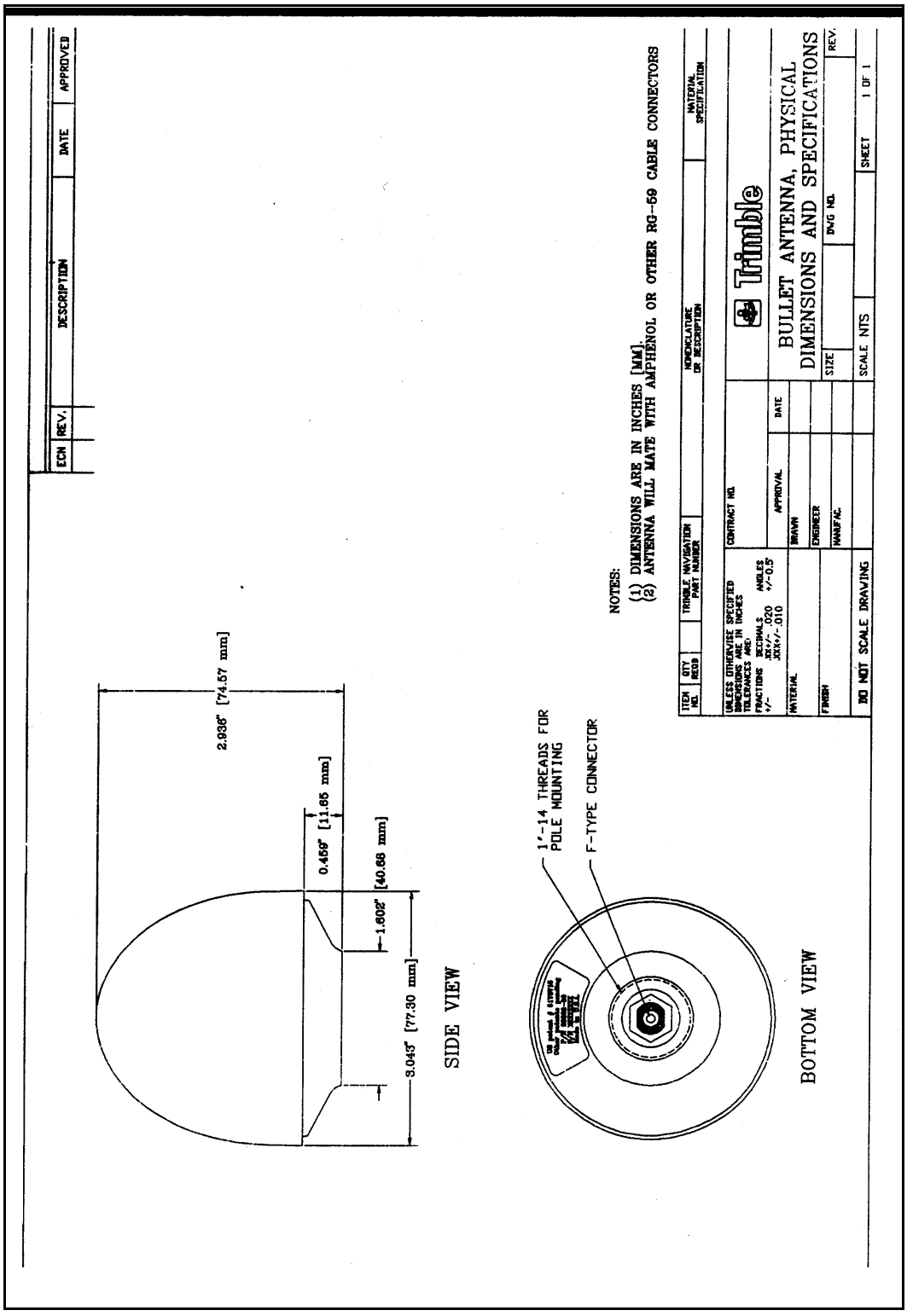

Figure F-2 Bullet II Antenna

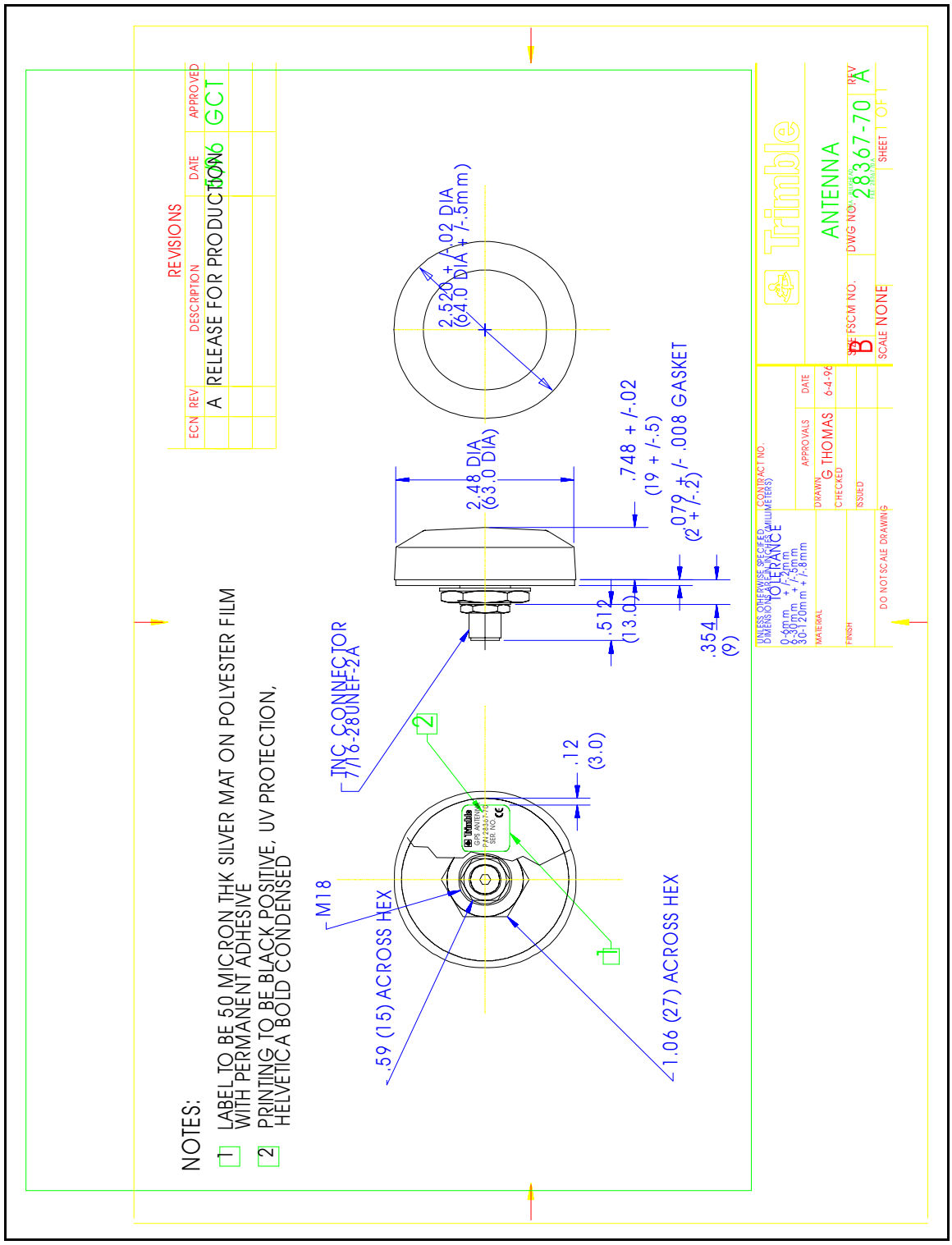

Figure F-3 Bulkhead Antenna

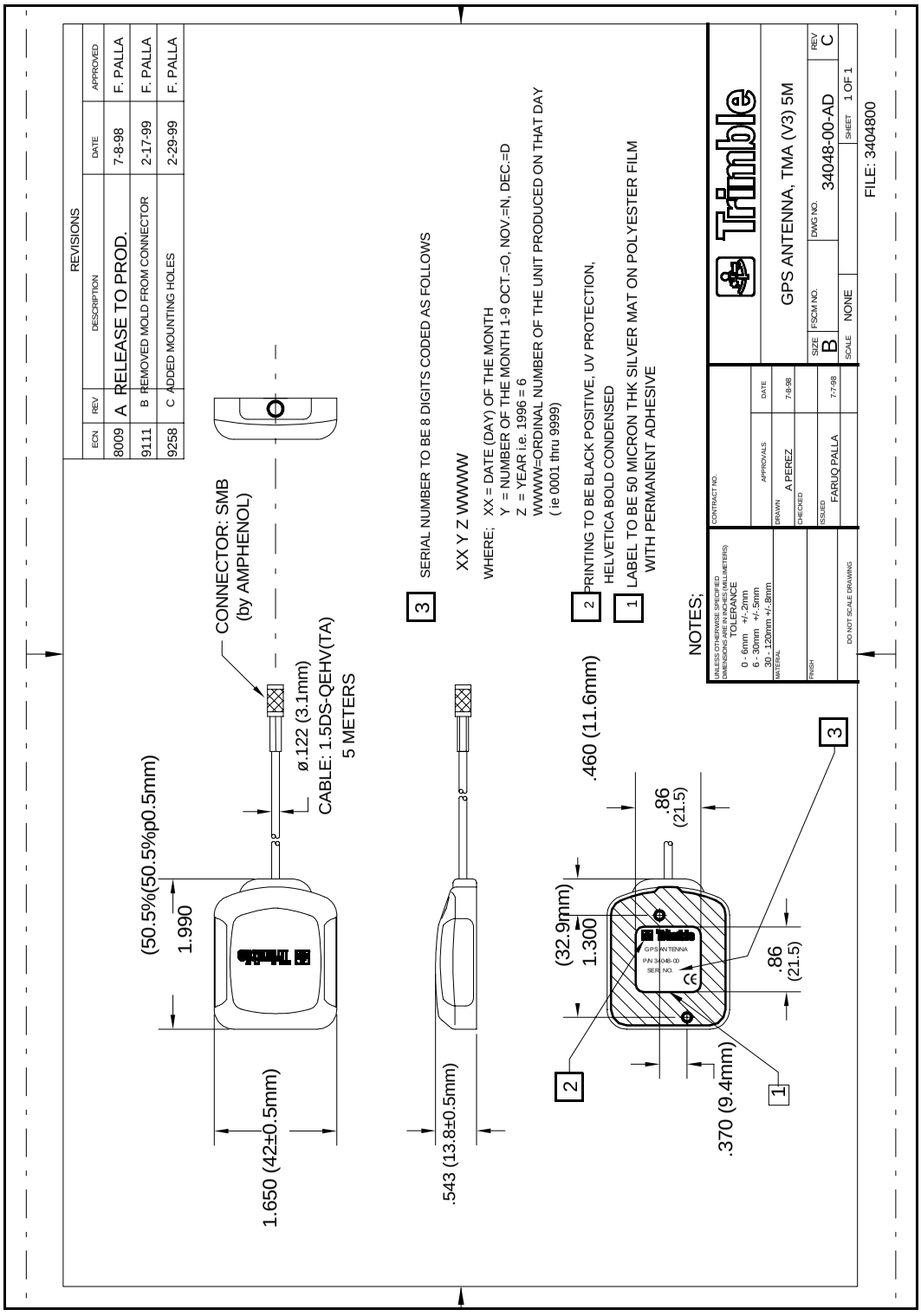

Figure F-4 GPS Miniature Antenna