

Application Note

AN2670/D
Rev. 0, 01/2004

FS Oncore™
PCB Layout



OVERVIEW

Whether your product is in the design phase or is even an existing platform – the FS Oncore module can be added easily in an extremely small space and footprint.

Motorola Instant GPS MG4100 device, it contains the necessary functional blocks to perform autonomous, Mobile Station-based (MS-based) or MS Assisted-GPS (A-GPS). Motorola-provided software is boot-loaded into the FS Oncore from the host at power-up.

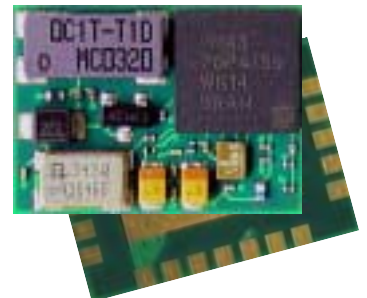
This complete, self-contained GPS receiver is designed to allow fast, cost-effective, and easy integration of GPS functionality into new and existing platforms. FS Oncore supports passive antenna input and either UART or SPI serial communications. Featuring advanced power management modes and signal detection to -152 dBm, FS Oncore is the optimal choice for your GPS requirements.

FS ONCORE MODULE FEATURES

The Instant GPS chip includes all the power management features you would expect from a low-power device. LNA, downconverter, baseband processing power, frequency synthesizer, and ARM-7 processor are all under control of the power-management features.

- High Performance
- Simple to use
- Reduces program risk
- Speeds customers' design and qualification cycle
- Supplied tested, simplifying EOL test requirements
- Built with high temperature solder for standard reflow process
- Eliminates unnecessary RF and Data connector costs

- Saves money in low to medium volume compared to sourcing the components and building you own GPS
- Small size (12mm x 16.6mm LGA) enables you to achieve a very small form factor without resorting to high cost / low yield esoteric packaging technologies.



LOW POWER

To conserve power, the on board TCXO is only on while position measurements are active. Once the measurement is complete, the TCXO is powered off, and the processor runs from a clock generated from the on board low power 32KHz oscillator. Total current consumption in standby mode between measurements is estimated to be 15uA, making battery powered asset and theft tracking a reality.

INTEGRATED SRAM

The integrated SRAM is used to store the firmware. After the Instant GPS chip is powered up, your application needs to download the firmware in a series of blocks. Either the SPI or UART port can be used for this process. Downloadable firmware means that field upgradeability is possible in your application.

ARM-7 CORE

An integrated ARM-7 core performs all of the processing functions you would expect from a GPS receiver. No firmware integration in your application is required to obtain a position solution, beyond a simple operating code bootload at power-up. FS Oncore from Motorola is truly an RF in – position solution out – GPS receiver.

Because all the processing required in a standard GPS receiver is built into the FS Oncore module, no further processing of the output is required.

FS ONCORE – BASED AROUND THE INSTANT GPS MG4100

Incorporating 256 Kb of program and data space, the MG4100 allows a full standalone system to be developed in your application.

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**For More Information On This Product,
Go to: www.freescale.com**

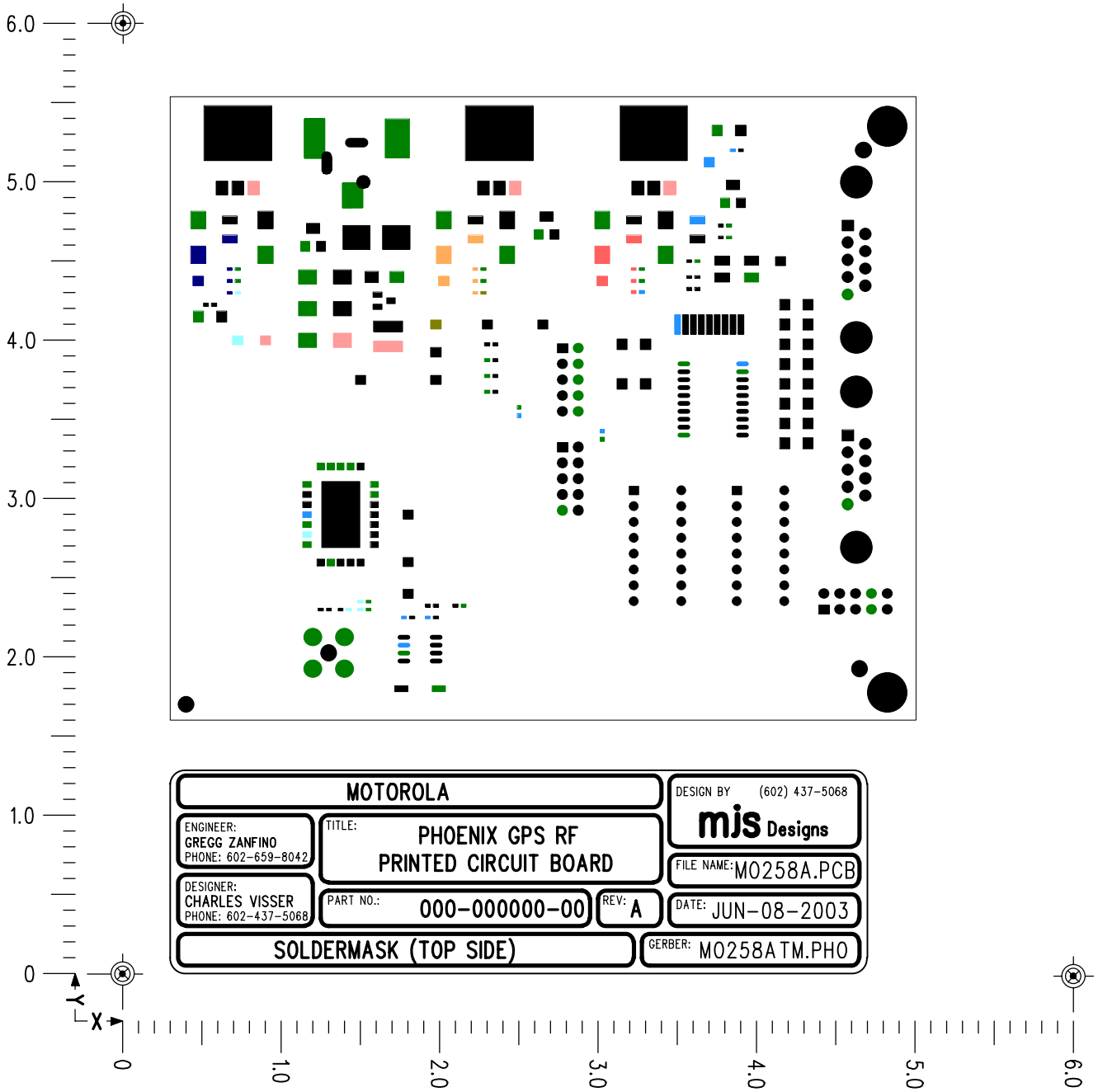


Figure 1.

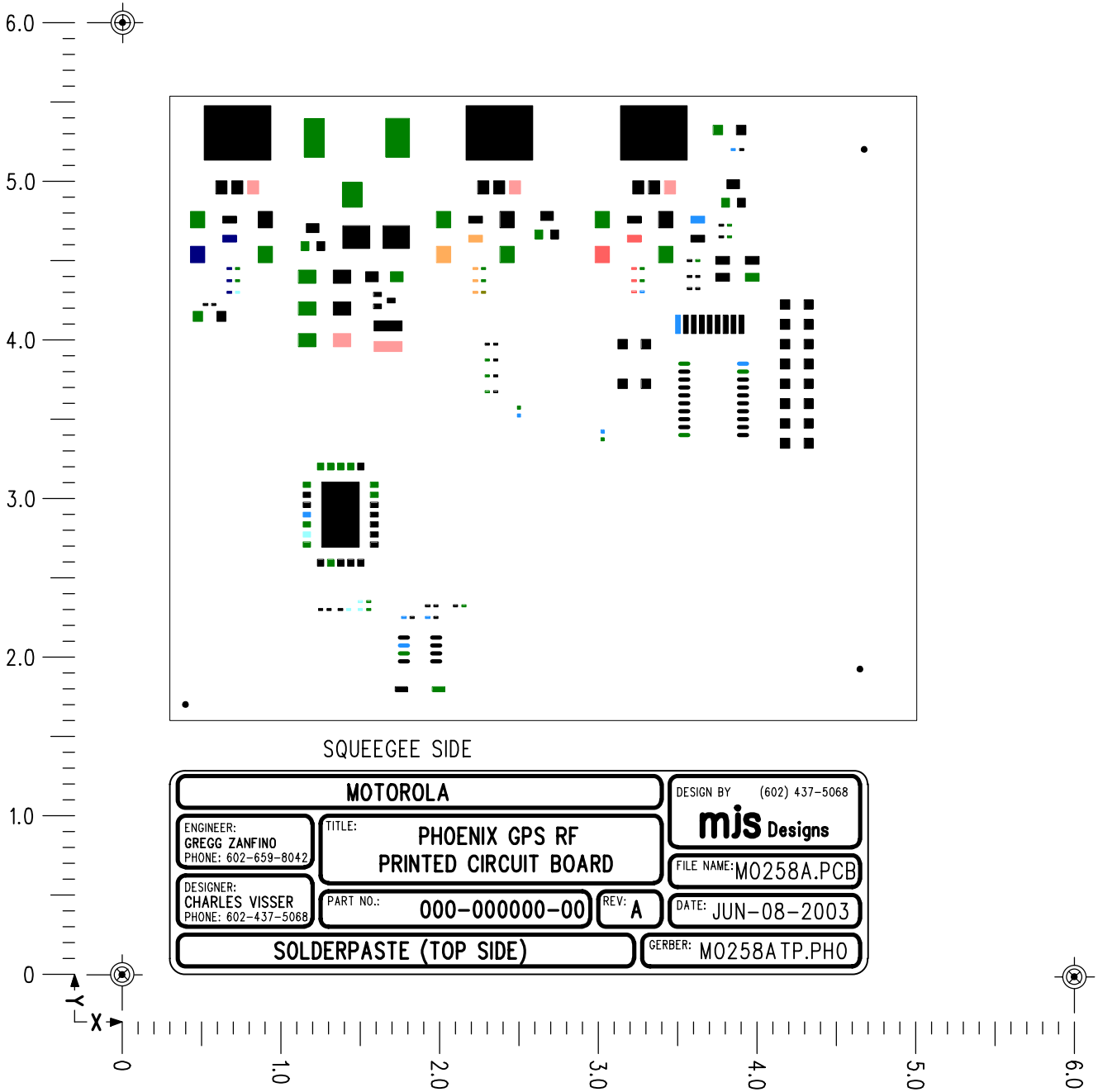


Figure 2.

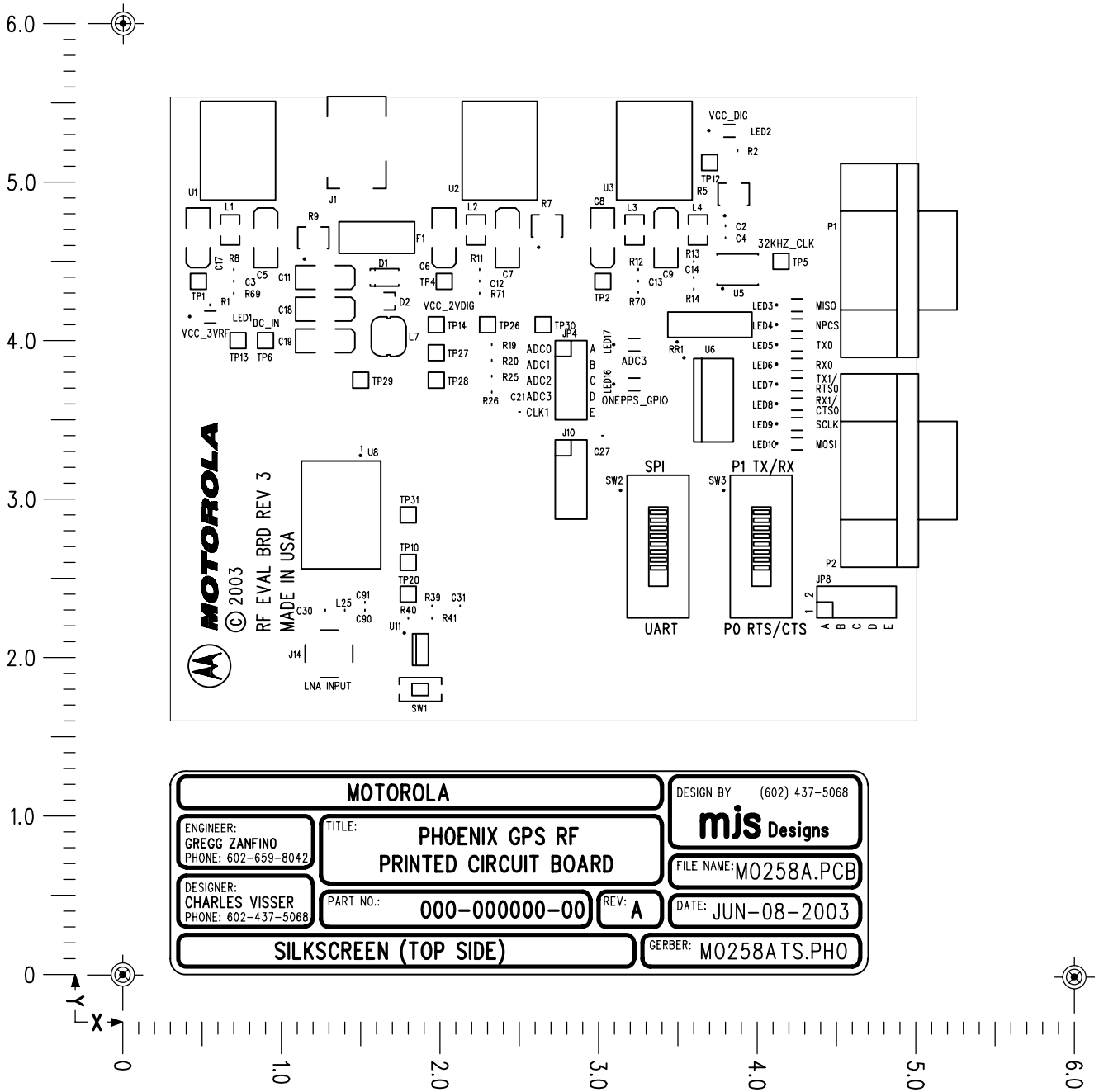


Figure 3.

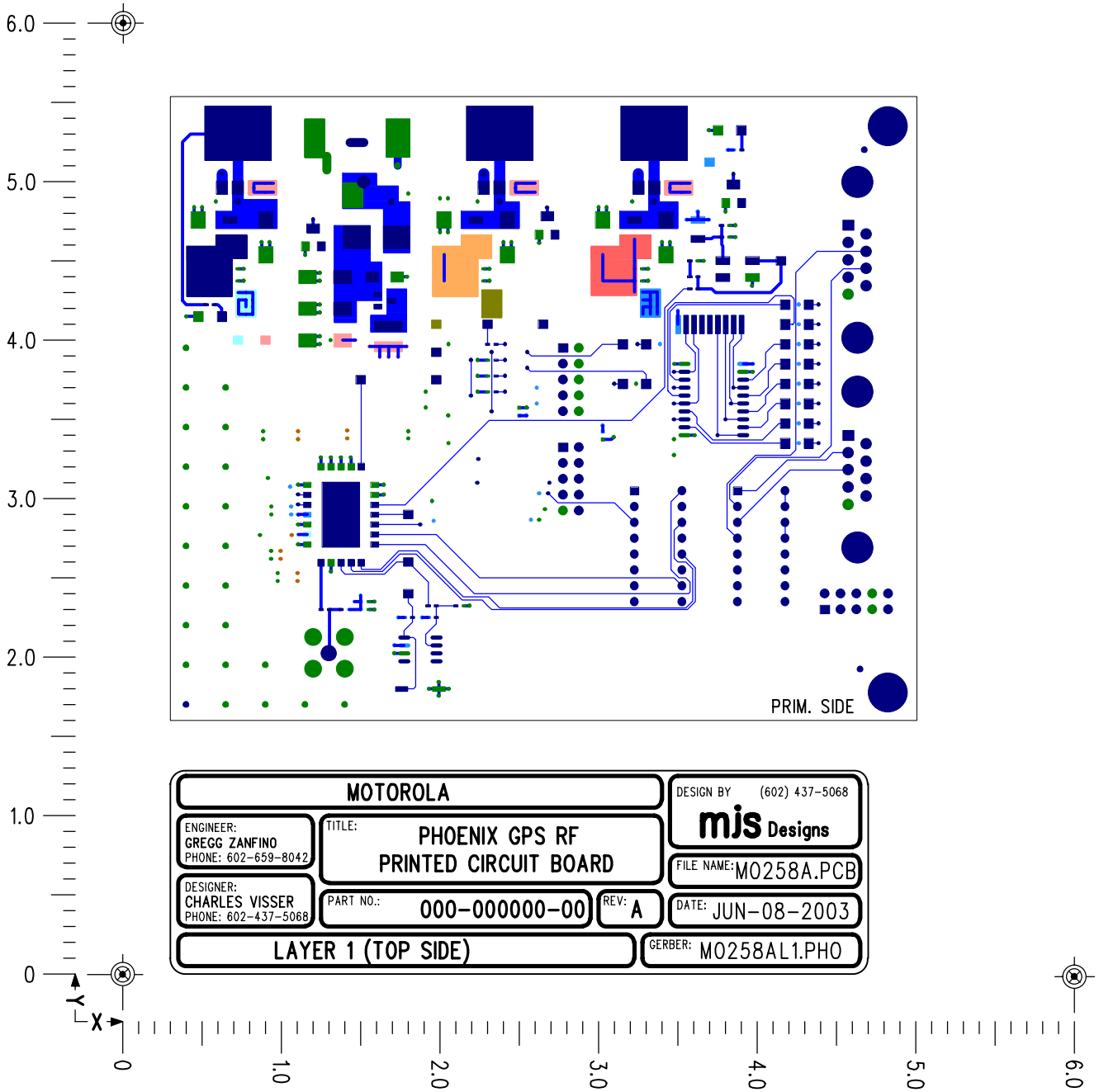


Figure 5.

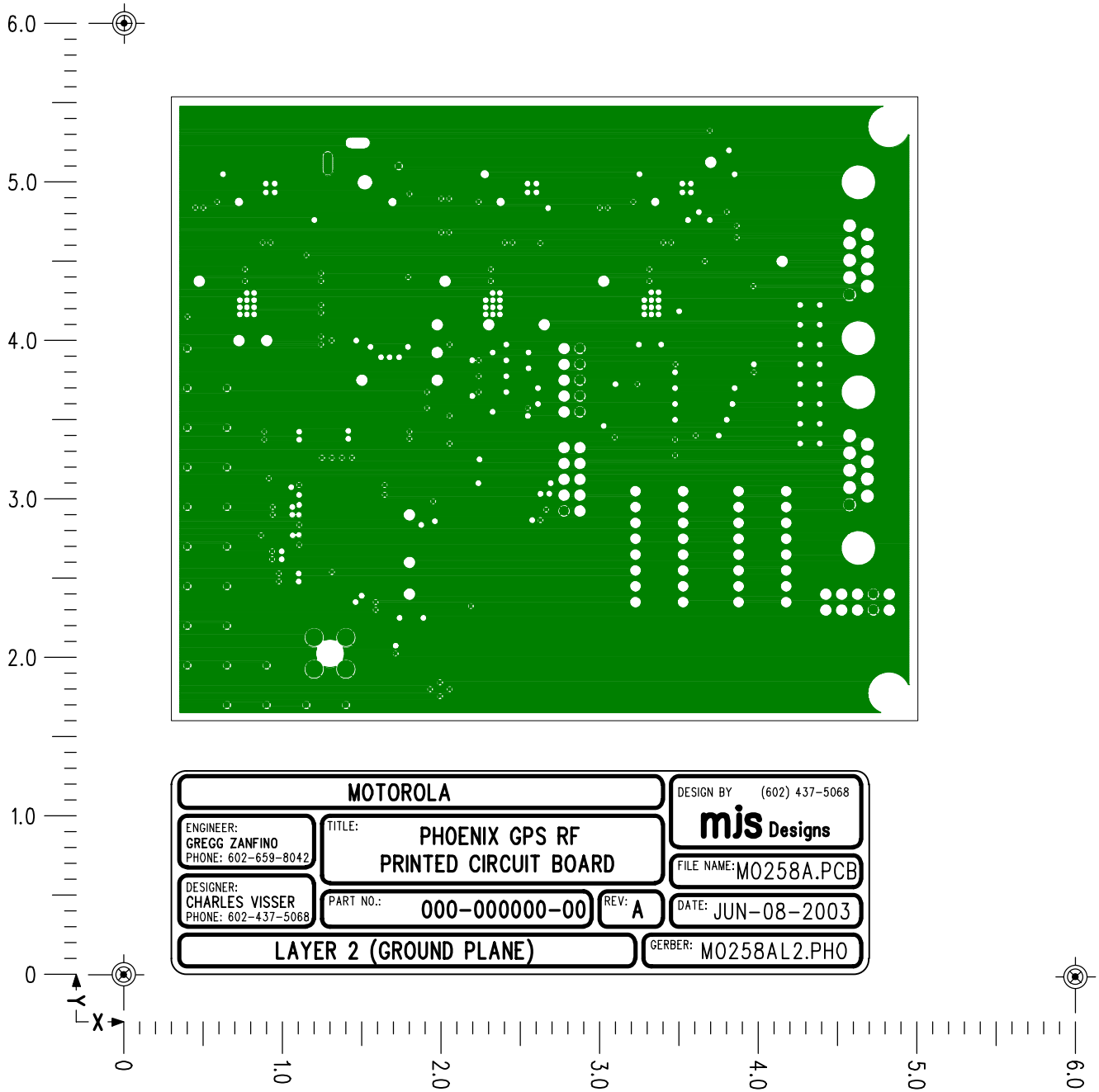


Figure 6.

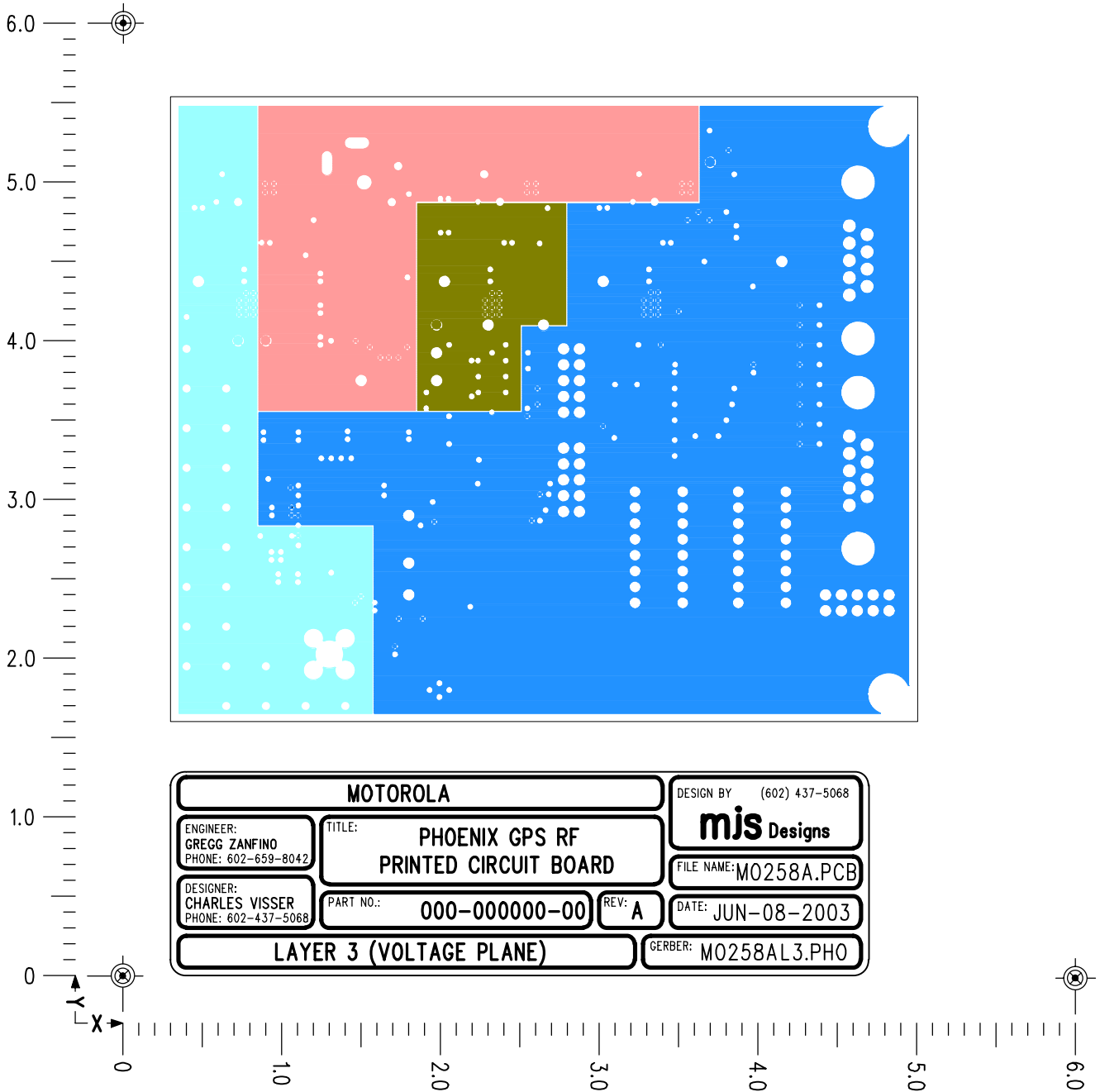


Figure 7.

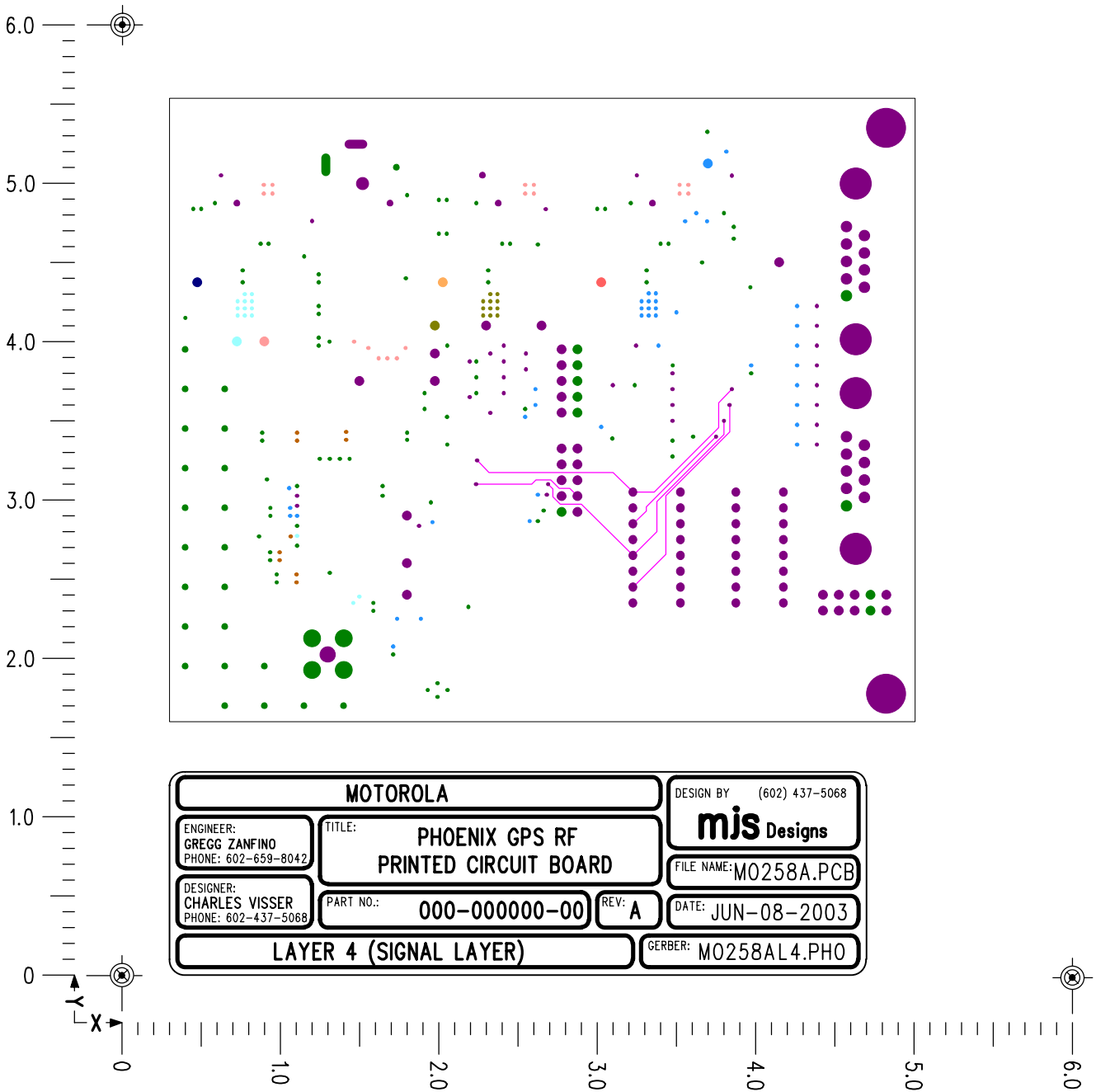


Figure 8.

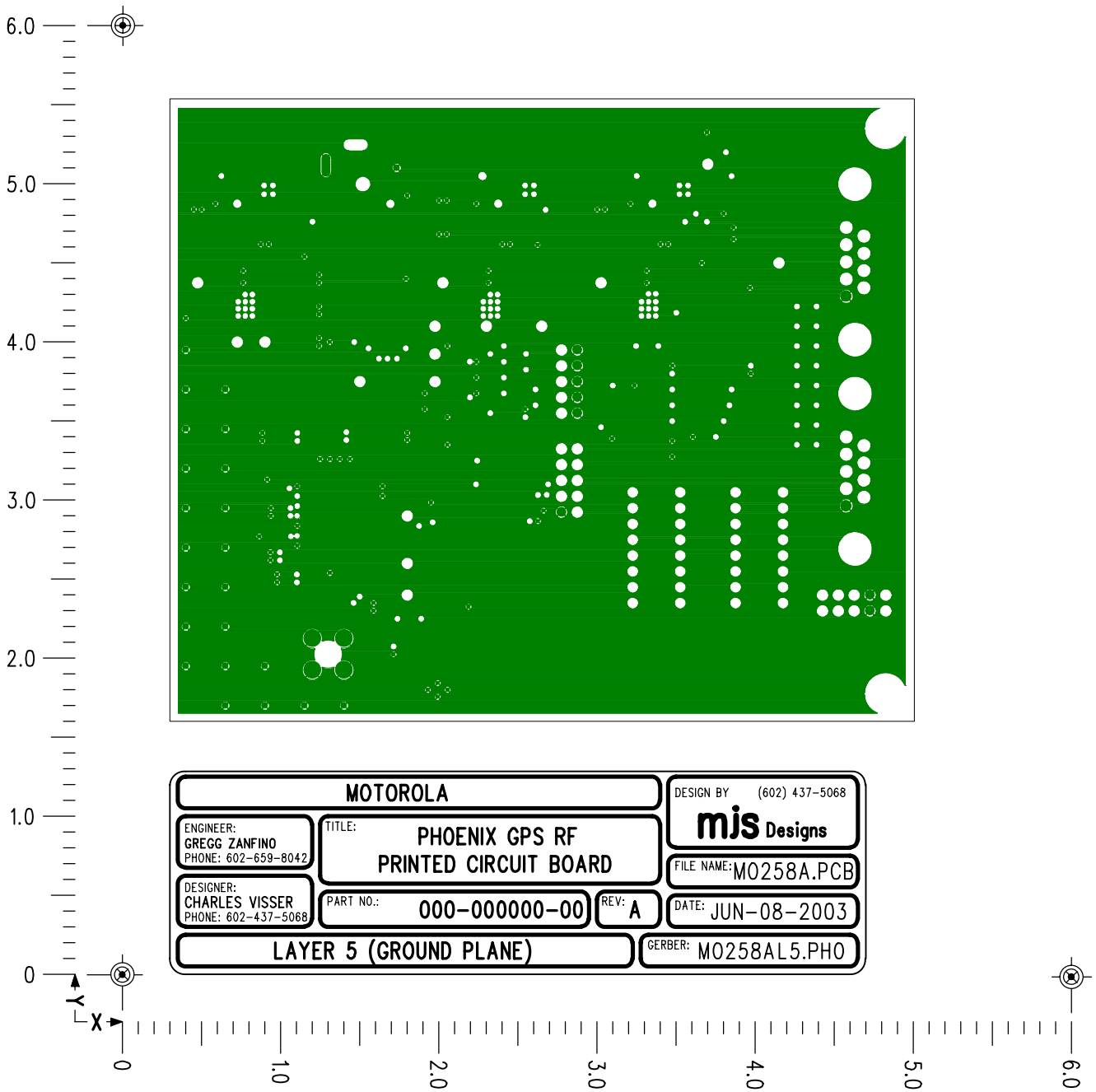
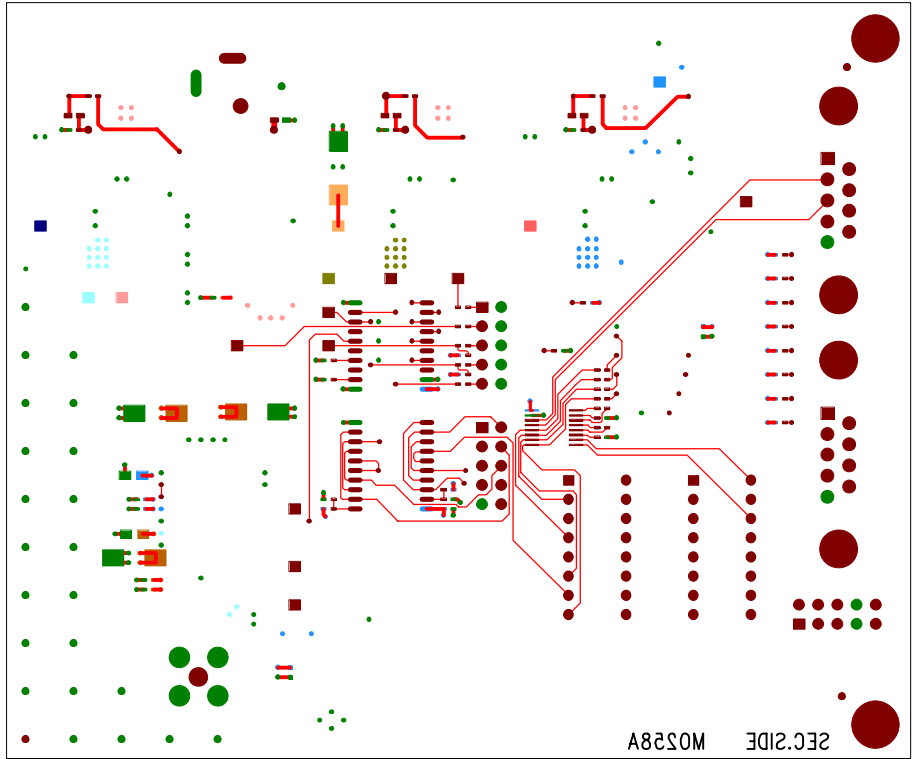
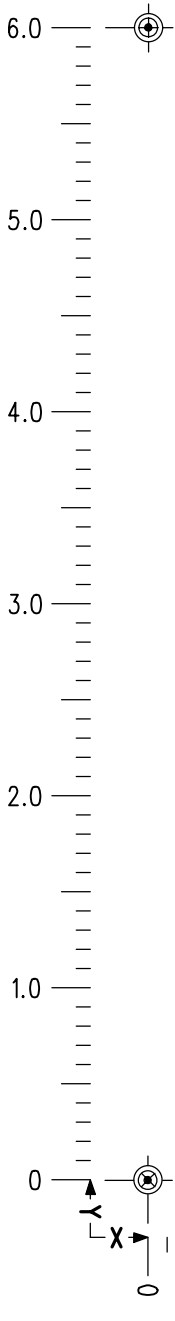


Figure 9.

READ THIS NOTE:

VCC_2VDIG AND VDD ARE NOT GOING ANYWHERE
 POWER FROM R71 USED TO BE VCC_2VDIG IS NOW CALLED VDD.
 WE CAN CONNECT C93 AND C95 TO VCC_DIG,
 AND CONNECT C53, C54 C55 AND C92 TO VCC_3VREF
 RIGHT NOW THEY ARE STILL CONNECTED TO VCC_2VDIG



MOTOROLA		DESIGN BY: (602) 437-5068
ENGINEER: GREGG ZANFINO PHONE: 602-659-8042	TITLE: PHOENIX GPS RF PRINTED CIRCUIT BOARD	mjs Designs
DESIGNER: CHARLES VISSER PHONE: 602-437-5068	PART NO.: 000-000000-00	REV: A
LAYER 6 (BOTTOM SIDE)		DATE: JUN-08-2003
		GERBER: M0258A.L6.PHO
		FILE NAME: M0258A.PCB

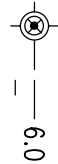


Figure 10.

Freescale Semiconductor, Inc.

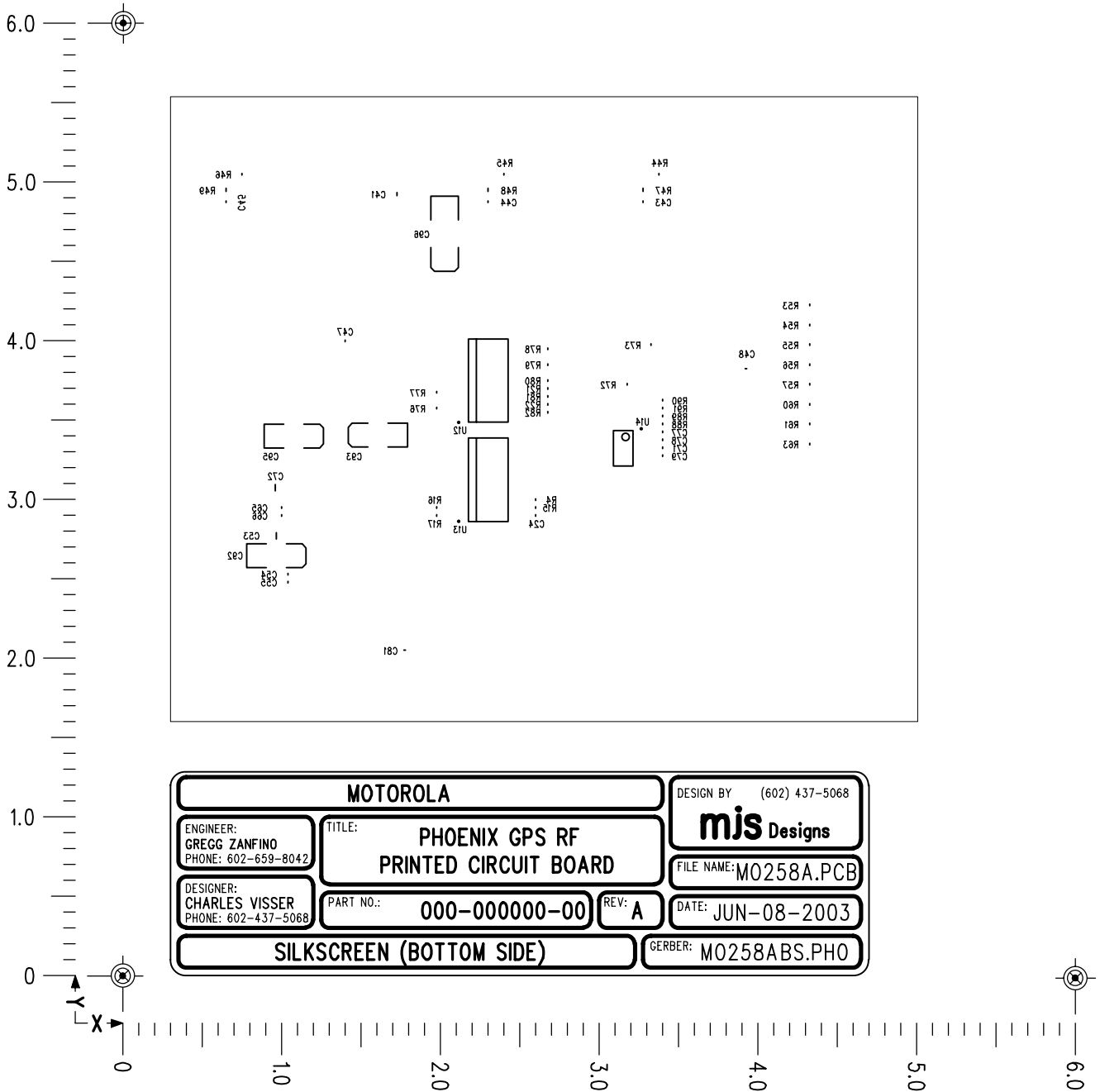


Figure 11.

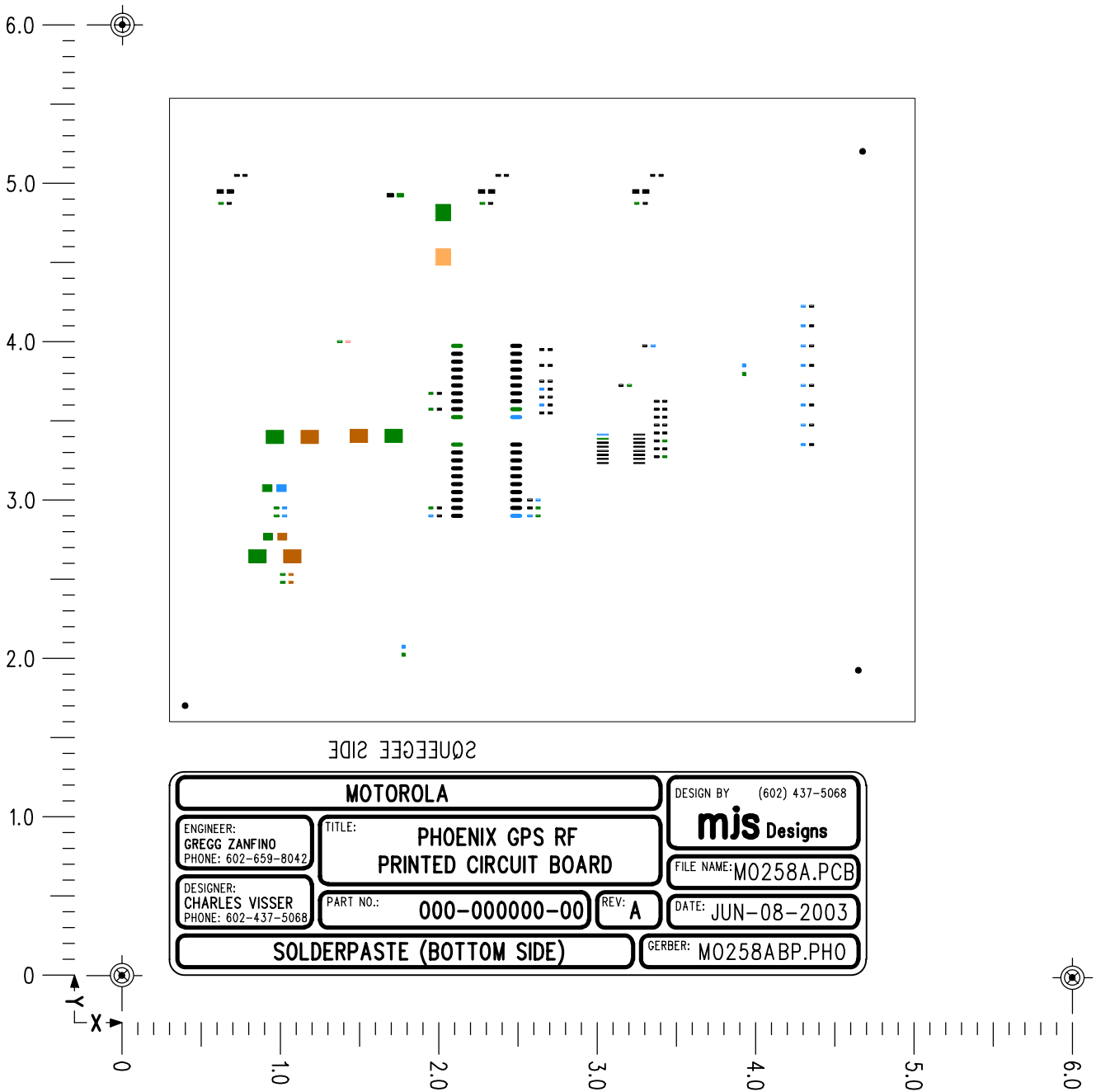


Figure 12.

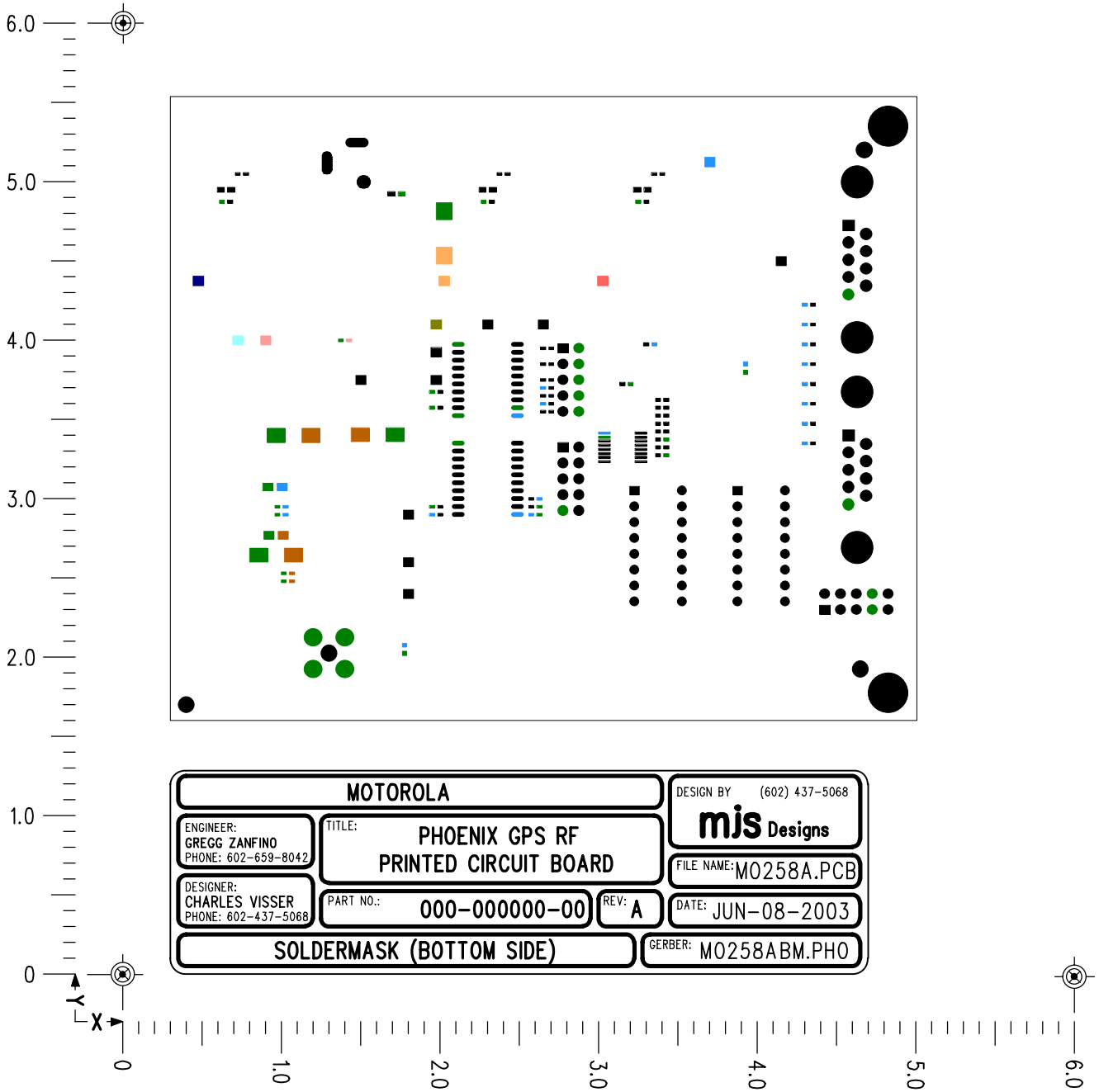


Figure 13.

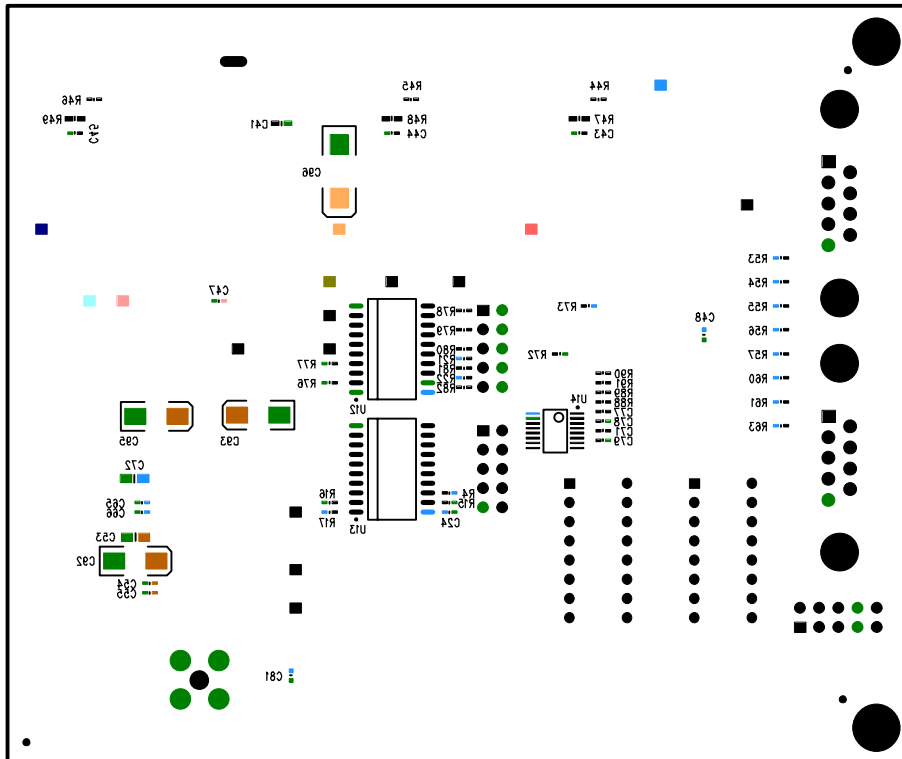


Figure 14.

FS Oncore™ PCB Layout
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