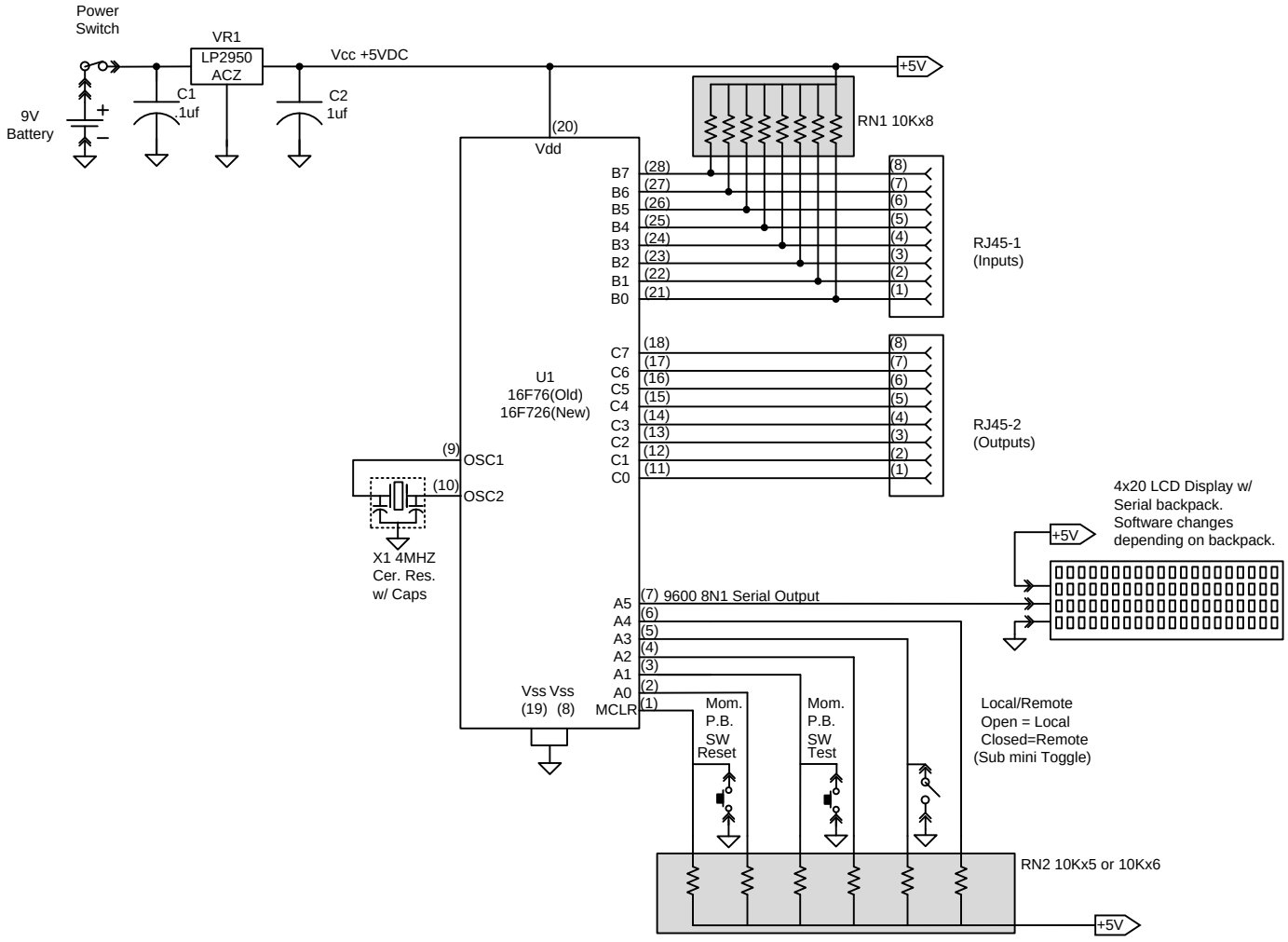
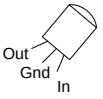


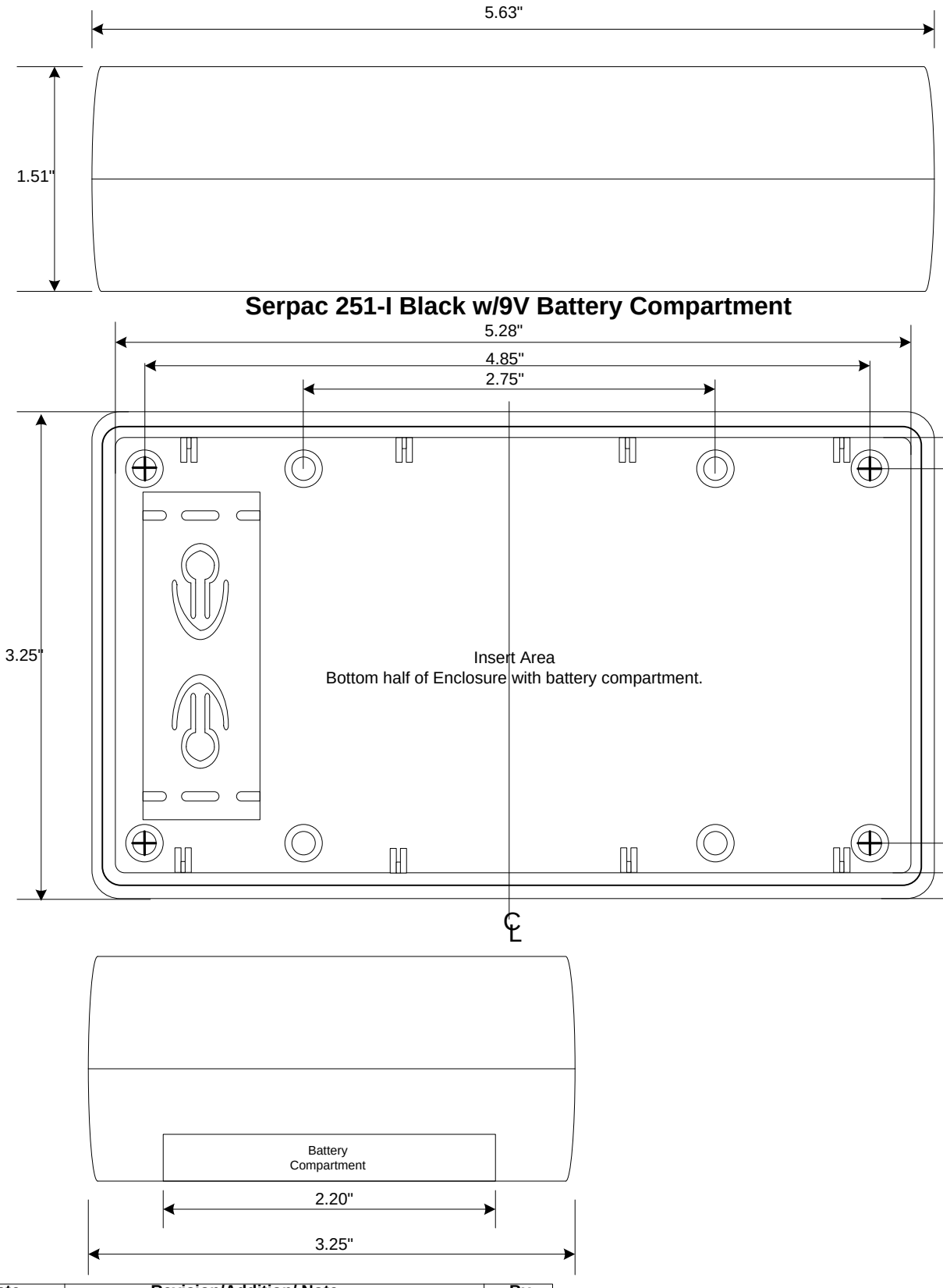
Date:	Revision/Addition/ Note	By:
Nov 26, 2003	Initial drawing, 16F76 Based cable mapper	GSC
Dec 18, 2017	Combining all the drawings from the 2003 original project into this drawing. Schematic, Mechanical, PWB, Component placement.	GSC
Dec 18, 2017	Original Software for 16F76,RJ45CM34.hex 2347 words of 8192 words.	GSC
Dec 18, 2017	16F722 wont work as replacement. Has 2048 words of memory. Ordered 10, 16F726 with 8192 words of memory to try as replacement. Parts arrived 12/20/17. 16F723 has 4096 words.	GSC
Dec 21, 2017	Resistor network, Bourns 4609X-101-103LF or equivalent.	GSC
Dec 21, 2017	Since I am going to have to revise the SW for the 16F726, am going to change the serial output port for the LCD from PORTA.0 to PORTA.5 to simplify some things on the PCB. This is going to be a major rewrite.	GSC
Dec 23, 2017	SW RJ45CM728v1.hex 2339 words used of 8192 words.	GSC
Dec 26, 2017	Added connectors to schematic and PWB. XH JST (2.5MM spacing) connectors for switches and battery and LCD display.	GSC
Dec 27, 2017	Successful test of SW RJ45CM728v1.hex with the 16F728 and a 4x20 LCD display with SEETRON serial backpack. Still want to make a few tweaks on timing and text to LCD.	GSC
Dec 27, 2017	Adding a Local/Remote test switch and combining the software from two projects into one. Adding resistor networks, RN1, RN2 to replace discrete resistors. As good as the original test set is, still lacked the ability to test an existing cable already in a wall. The remote test unit being added to the drawing.	GSC
Jan 3, 2017	SW RJ45CM728v2.hex 2919 words used of 8192 words for SEETRON 4x20 LCD Display. SW RJ45CM728v4.hex 3111 words used of 8192 words for Hobbybotics 4x20 LCD Display.	GSC
Jan 11, 2018	Replaced power slide switch with sub-mini toggle switch. Added local remote sub mini toggle switch.	GSC
Jan 21, 2018	Existing Hobbybotics Serial backpack (PCB Version 6.6 PCB) did not work in the Serpack enclosure. Made a new version PCB 6.7. Reoriented the input connector and changed the size. This fit and worked.	GSC

LP2950ACZ-5.0
LM78L05



Print Check .5"x.5"

Drawn By:	Gerald Crenshaw WD4BIS	Date:	Dec. 18, 2017	From the bench of: Amateur Radio Station WD4BIS	Page 1 of 11
Designed By:	Gerald Crenshaw WD4BIS	Date:	Dec. 18, 2017	Title: RJ45 Cable Tester Mapper V2	Scale:
Checked By:	Janet Crenshaw WB9ZPH	Date:	Dec. 18, 2017		

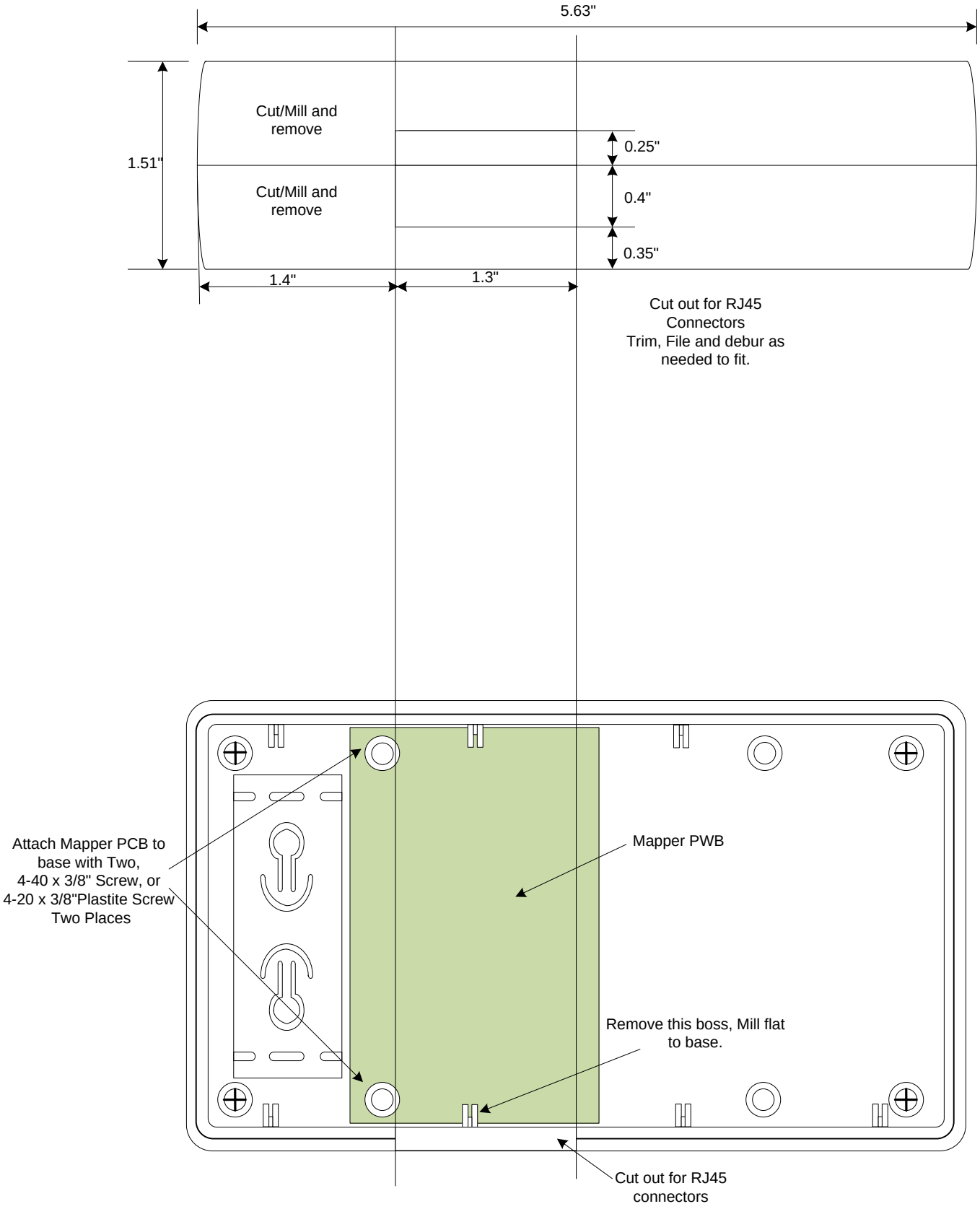


Serpac 251-I Black w/9V Battery Compartment

Date:	Revision/Addition/ Note	By:
Nov 26, 2003	Initial Drawings	GSC
Dec 18, 2017	Combining all the drawing from the original project into this drawing.	GSC

Print Check .5"x.5"

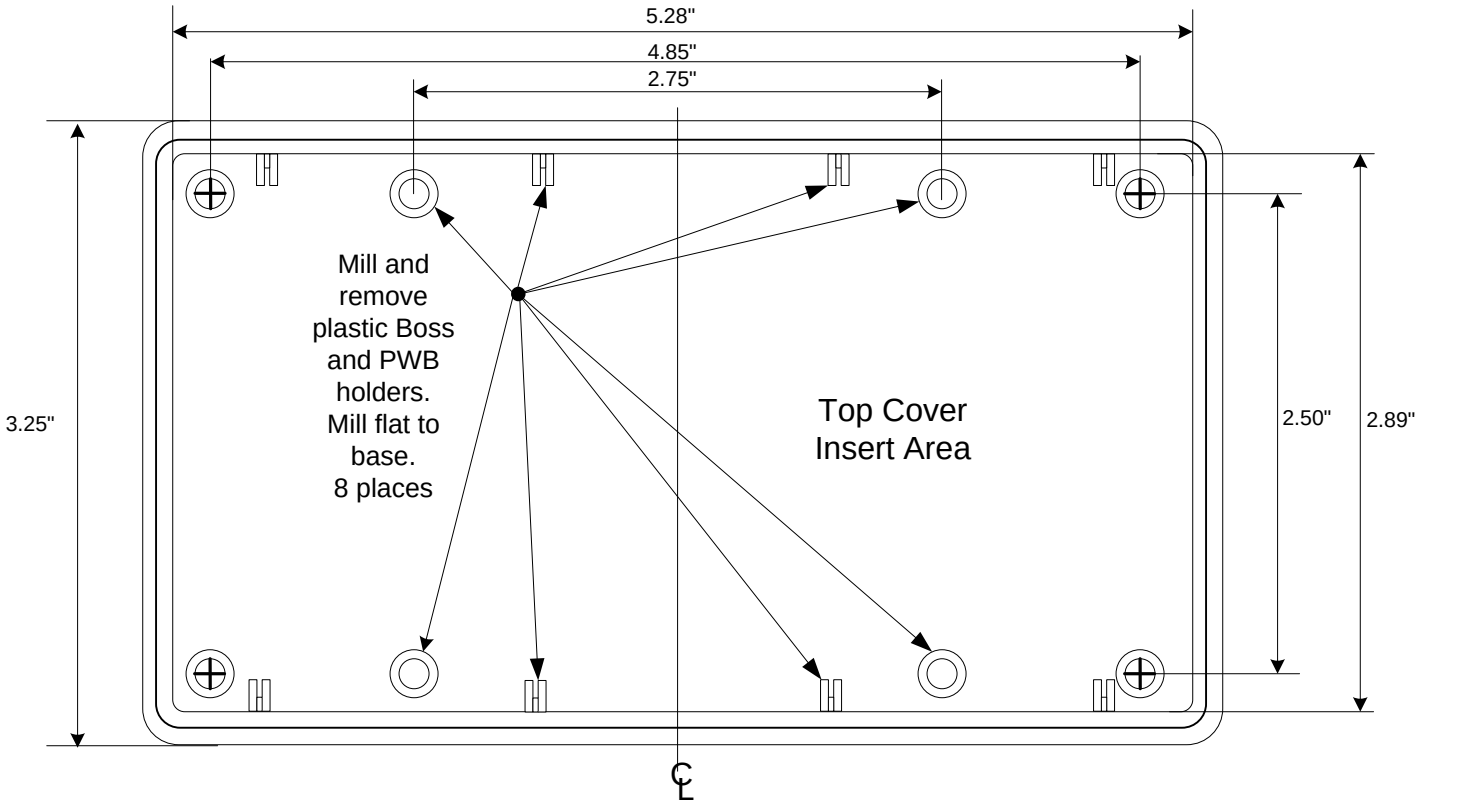
Drawn By:	Gerald Crenshaw WD4BIS	Date: Dec. 18, 2017	From the bench of: Amateur Radio Station WD4BIS	Page 2 of 11	
Designed By:	Gerald Crenshaw WD4BIS	Date: Dec 18, 2017	Title: RJ45 Cable Tester Mapper V2 Mech. 1	Scale: 1:1	
Checked By:	Janet Crenshaw WB9ZPH	Date: Dec 18, 2017			

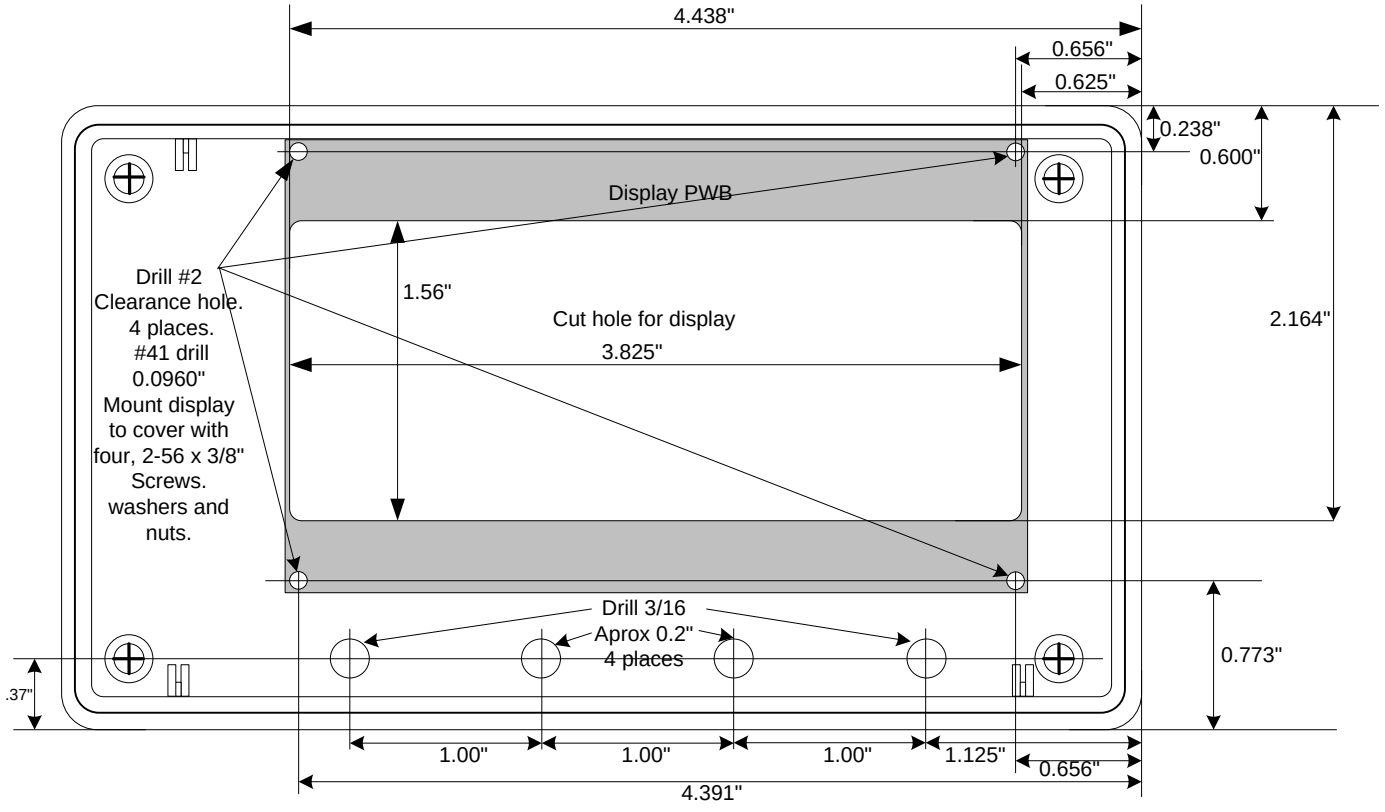


Date:	Revision/Addition/ Note	By:
Nov 26, 2003	Initial Drawings	GSC
Dec 18, 2017	Combining all the drawing from the original project into this drawing.	GSC

Print Check .5"x.5"

Drawn By:	Gerald Crenshaw WD4BIS	Date:	Dec. 18, 2017	From the bench of: Amateur Radio Station WD4BIS	Page 3 of 11
Designed By:	Gerald Crenshaw WD4BIS	Date:	Dec. 18, 2017	Title: RJ45 Cable Tester Mapper V2 Mech 2	Scale: 1:1
Checked By:	Janet Crenshaw WB9ZPH	Date:	Dec. 18, 2017		





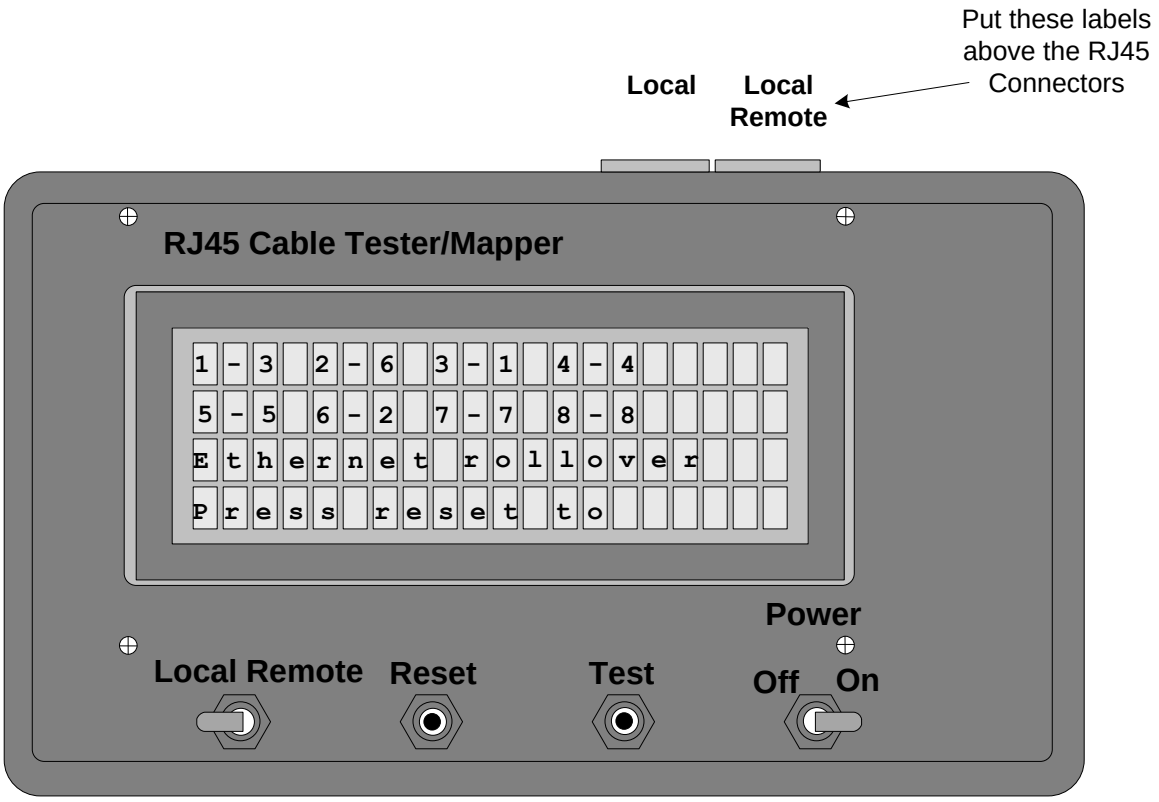
All dimensions in inches
Trim and fit as necessary.

Date:	Revision/Addition/ Note	By:
Nov 26, 2003	Initial Drawings	GSC
Dec 18, 2017	Combining all the drawing from the original project into this drawing.	GSC
Dec 26, 2017	Double check dimensions on display when mounting, Adjust as required. Found that LCD dimensions varied vendor to vendor. Latest display from Mouser Part# 992-LCD-20X4Y. Then used the LCD Serial backpack from Hobbybotics.	GSC
Jan 22, 2018	Started all switch holes 3/16" then hand reamed to fit. Final size depended on what switch I had in stock.	GSC

Print Check .5"x.5"

Drawn By:	Gerald Crenshaw WD4BIS	Date: Dec. 18, 2017	From the bench of: Amateur Radio Station WD4BIS
Designed By:	Gerald Crenshaw WD4BIS	Date: Dec. 18, 2017	Page 4 of 11
Checked By:	Janet Crenshaw WB9ZPH	Date: Dec. 18, 2017	Title: RJ45 Cable Tester Mapper V2 Mech 3 — Scale: 1:1

Label with Brother P-Touch tape. Black background, Gold Text. 9 Places

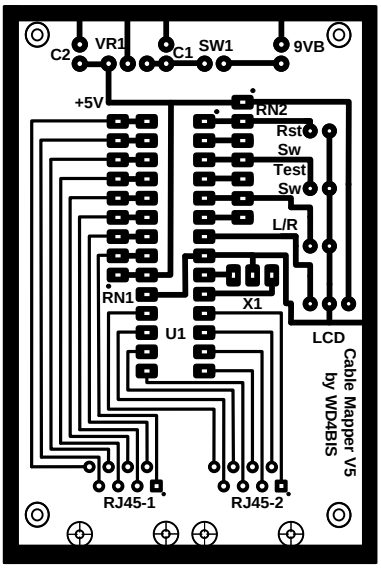


Date:	Revision/Addition/ Note	By:
Nov 26, 2003	Initial Drawings	GSC
Dec 18, 2017	Combining all the drawing from the original project into this drawing.	GSC
Jan 11, 2018	Replaced power slide switch with sub-mini toggle switch. Added local remote switch.	GSC

Print Check .5"x.5"

Drawn By:	Gerald Crenshaw WD4BIS	Date:	Dec. 18, 2017	From the bench of: Amateur Radio Station WD4BIS	Page 5 of 11
Designed By:	Gerald Crenshaw WD4BIS	Date:	Dec. 18, 2017		
Checked By:	Janet Crenshaw WB9ZPH	Date:	Dec. 18, 2017	Title: RJ45 Cable Tester Mapper V2 Mech 4	Scale: 1:1

Artwork proved out

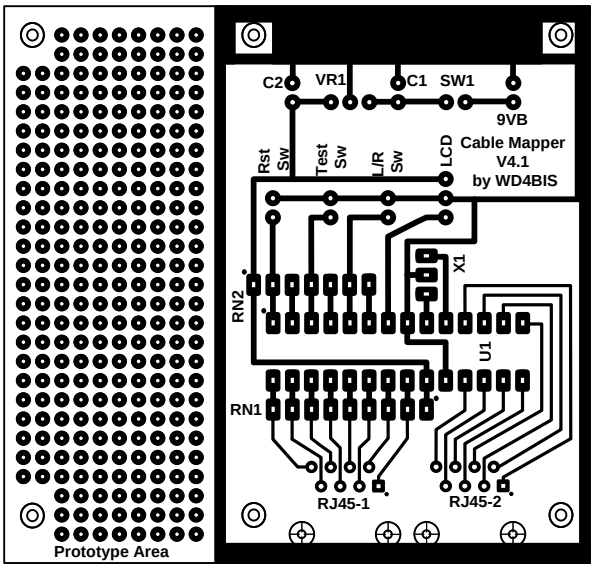


RJ45 mounting holes
Drill to .125" (1/8") in two or more steps

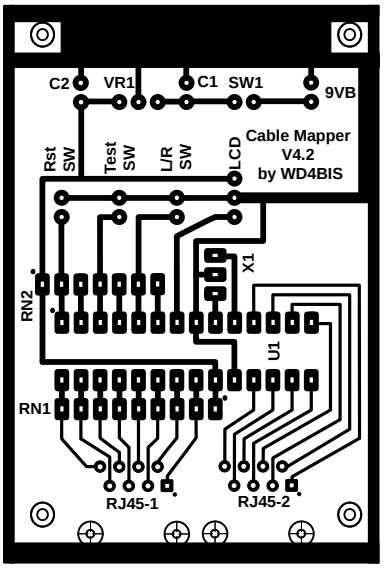
Corner Mounting Holes
Drill to .125" (1/8") in two or more steps

Drill all PCB circuit holes #65

Artwork proved out



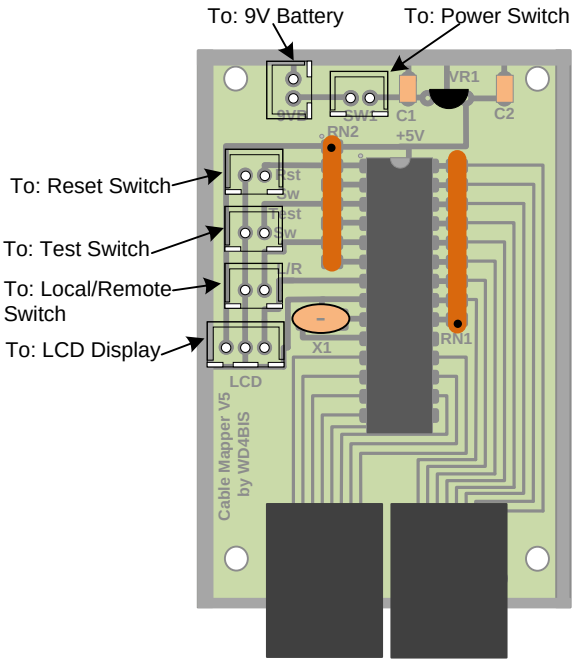
Artwork proved out

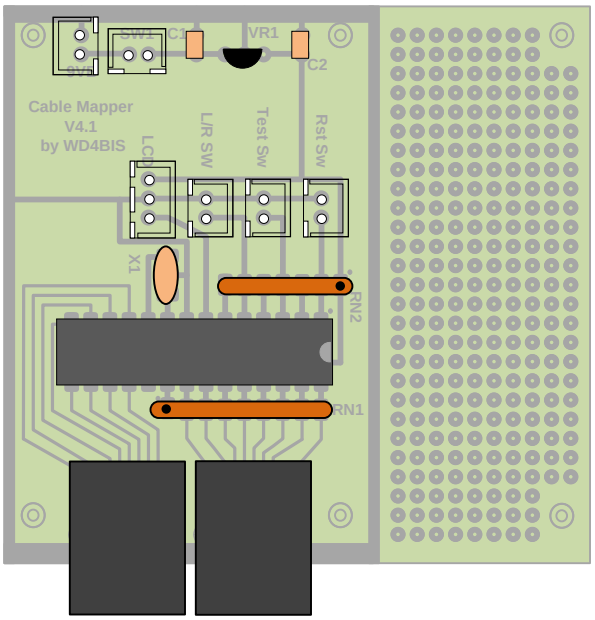


Date:	Revision/Addition/ Note	By:
Nov 26, 2003	Initial Drawings	GSC
Dec 18, 2017	Combining all the drawing from the original project into this drawing.	GSC
Dec 18, 2017	RJ45 with .05" centers. Both the Stewart SS-6488ND (Digikey PN: 380-1022-ND) and Amphenol FCI 54602-980LF (Digikey PN: 609-1046-ND) match the PWB footprint. Stewart connector has the longer body (preferred for this application). Both have the latch on the bottom. Mouser part number 710-615008143721 (by Wurth) will work but has the shorter body.	GSC
Dec 22, 2017	1st redraw. Added option of 2 pin XH JST connectors (2.5mm) for test switch, reset switch, battery and power switch. Added option of 3 pin XH JST connector for LCD display. Still sized for the SERPAC 251 enclosure.	GSC
Dec 29, 2017	Artwork proved out all three versions	GSC
Feb 20,2018	After trying all thee versions in the enclosure, Version 4.2 was the easiest to use.	GSC

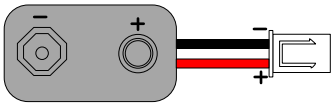
Print Check .5"x.5"

Drawn By:	Gerald Crenshaw WD4BIS	Date:	Dec. 18, 2017	From the bench of: Amateur Radio Station WD4BIS	Page 6 of 11
Designed By:	Gerald Crenshaw WD4BIS	Date:	Dec. 18, 2017	Title: RJ45 Cable Tester Mapper V4,5 PWB	Scale: 1:1
Checked By:	Janet Crenshaw WB9ZPH	Date:	Dec. 18, 2017		





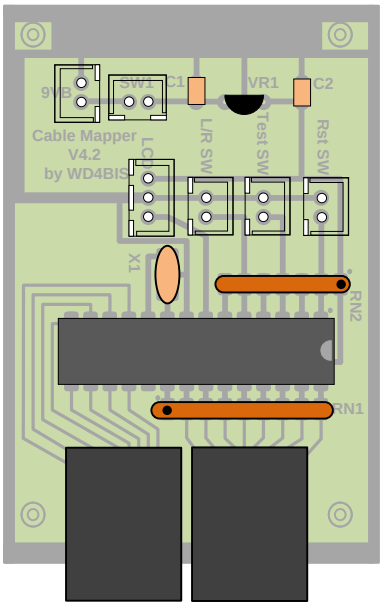
9V Battery Snap to XH JST 2pin connector



LCD XH JST 3pin connector to XH JST 4 pin connector for hobbybotics serial backpack

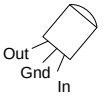
LCD XH JST 3pin connector to XH JST 5 pin connector for SEETRON serial backpack

Seetron Serial backpack has a cantilevered connector input scheme. Connector will work either orientation. Just make sure all 5 pins are mated and the connector is not offset.



Date:	Revision/Addition/ Note	By:
Nov 26, 2003	Initial Drawings	GSC
Dec 18, 2017	Combining all the drawing from the original project into this drawing.	GSC
Dec 18, 2017	RJ45 with .05" centers. Both the Stewart SS-6488ND (Digikey PN: 380-1022-ND) and Amphenol FCI 54602-980LF (Digikey PN: 609-1046-ND) match the PWB footprint. Stewart connector has a longer body. Both have the latch on the bottom	GSC
Dec 22, 2017	1st redraw. Added option of 2 pin XH JST connectors (2.5mm) for test switch, reset switch, battery and power switch. Added option of 3 pin XH JST connector for LCD display. Still sized for the SERPAC 251I enclosure.	GSC
Jan 20, 2018	Purchased premade 3 pin XH JST cables. Added details for making the battery and LCD Cables.	GSC

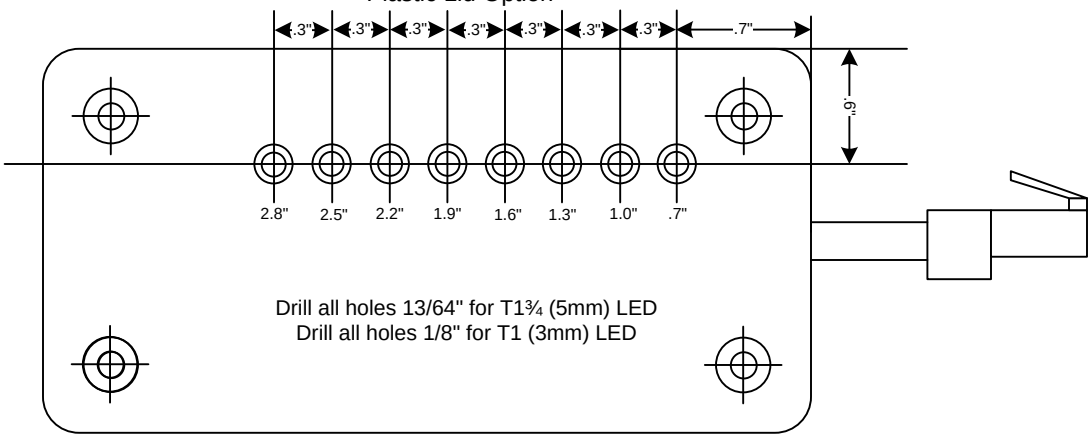
LP2950ACZ-5.0
LM78L05

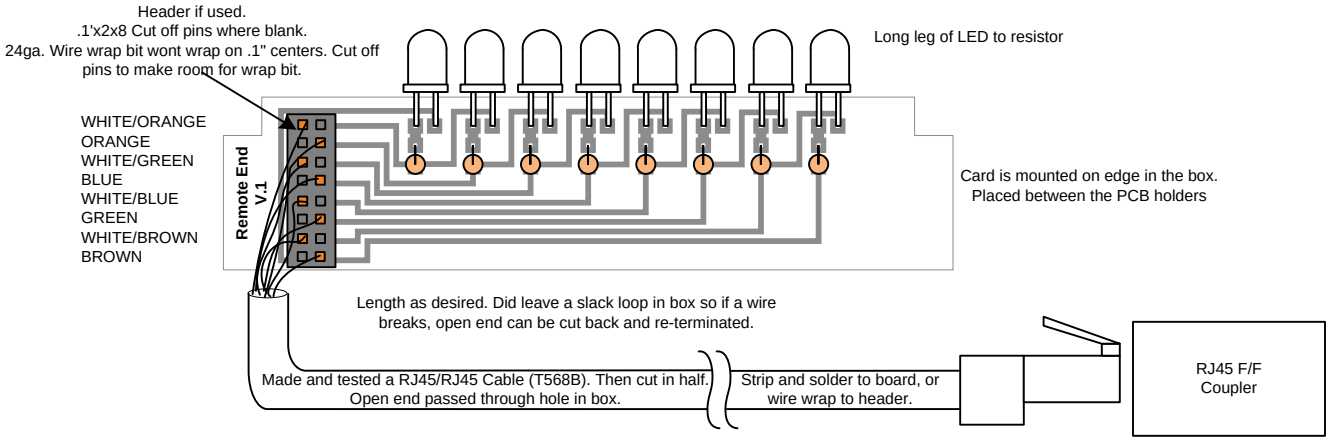


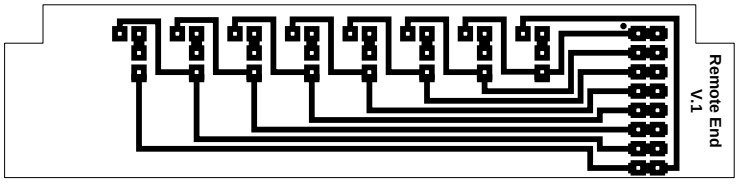
Print Check .5"x.5"

Drawn By:	Gerald Crenshaw WD4BIS	Date:	Dec. 18, 2017	From the bench of: Amateur Radio Station WD4BIS	Page 7 of 11
Designed By:	Gerald Crenshaw WD4BIS	Date:	Dec. 18, 2017	Title:	Scale: 1:1
Checked By:	Janet Crenshaw WB9ZPH	Date:	Dec. 18, 2017	RJ45 Cable Tester Mapper PWB Comp. Placement	

Radio Shack 4"x2"x1"
270-1802 Project Enclosure
Plastic Lid Option

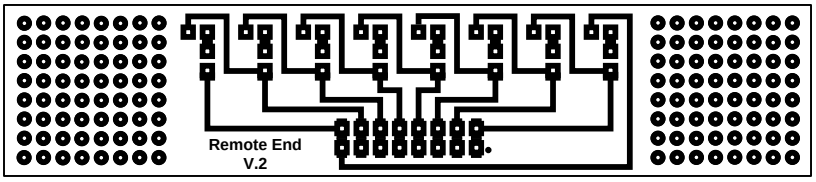




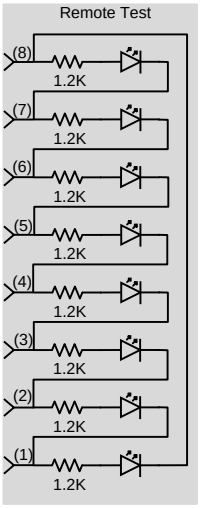


PWB Version

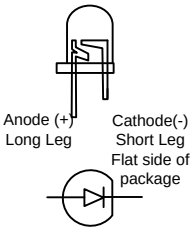
At turn on for the remote test, all the pins are held low.
Each pin is the then taken high, one at a time then a small time delay then returned low. Repeat pins 1-8
When the pin is tested and the LED turns on, it is picking up a low from another pin.



This version designed to be fit multiple standard electronic enclosures. Cut down to size to fit. Can also fit non standard enclosures such as pill bottles.

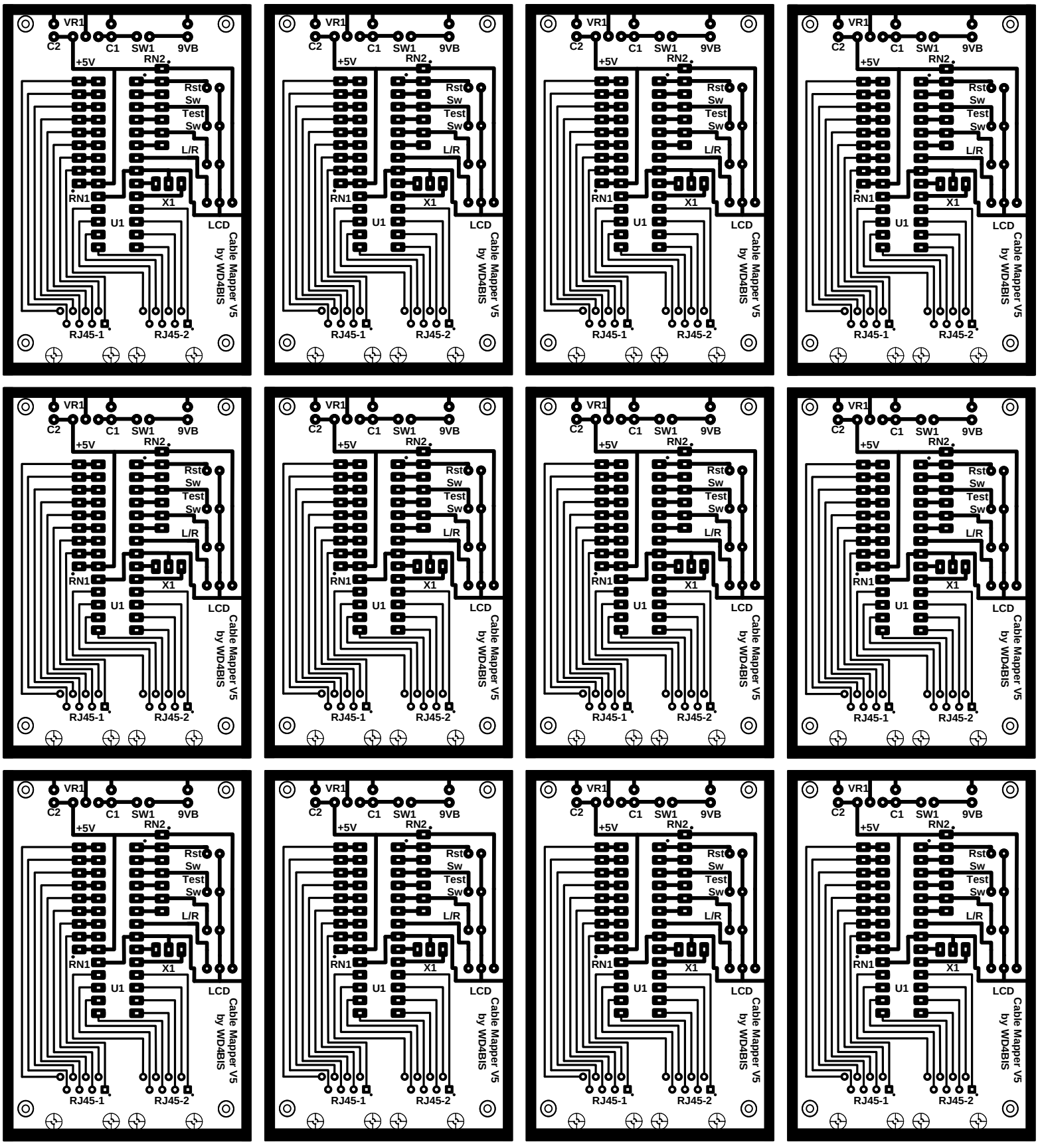


Date:	Revision/Addition/ Note	By:
Oct. 24, 2016	Initial Drawing: See drawing Radio Shack 4x2x1 Project Enclosure for reference.	GSC
Oct. 24, 2016	Found it was faster and easier to make and test a RJ45/RJ45 cable (T568B Scheme) then cut it in half. Add a RJ45/RJ45 F/F coupler to end rather than use a RJ45 socket on the board. Also made machining easier as I did not have to mill out a RJ45 socket hole. Center then drill a ¼" hole on one end of enclosure. Pass cable through hole, strip, then solder to board or wire wrap to header.	GSC
Oct. 24, 2016	Remote prototype worked and very sturdy.	GSC
Nov.7, 2016	Added PWB version and component placement. Sized the pads so surface mount resistors (size 1206) can be used if desired.	GSC
Nov.24, 2016	Artwork proved out with both discreet and surface mount resistors.	GSC



Print Check .5"x.5"

Drawn By:	Gerald Crenshaw WD4BIS	Date:	Oct. 24, 2016	From the bench of: Amateur Radio Station WD4BIS	Page 8 of 11
Designed By:	Gerald Crenshaw WD4BIS	Date:	Oct. 24, 2016		
Checked By:	Janet Crenshaw WB9ZPH	Date:	Oct. 24, 2016	Title: Remote End for RJ45 cable tester.	Scale: 1:1



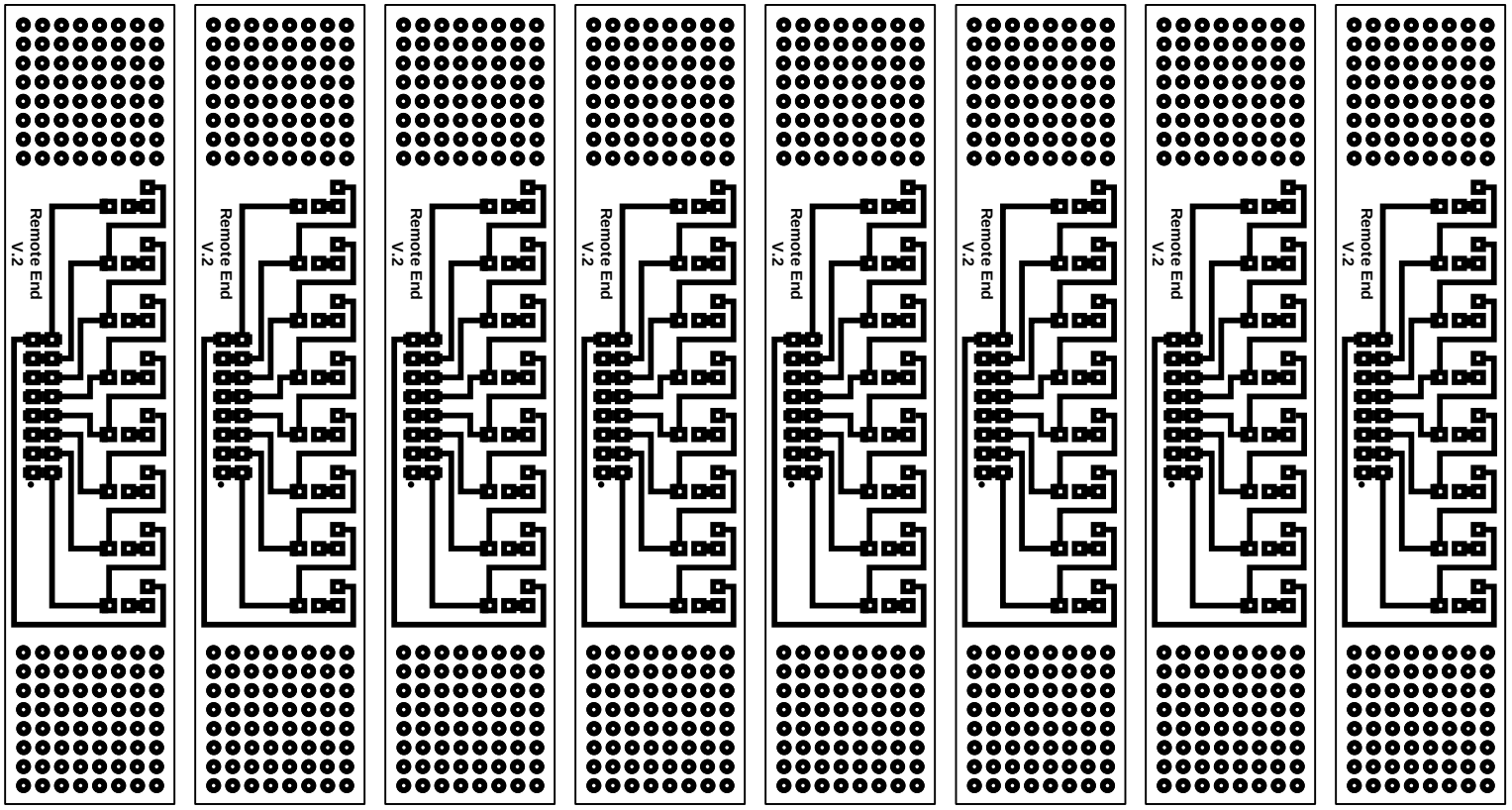
Date:	Revision/Addition/ Note	By:
Jan 10, 2018	Initial Drawing	GSC
Jan 11, 2018	Added printer and heat press notes.	GSC

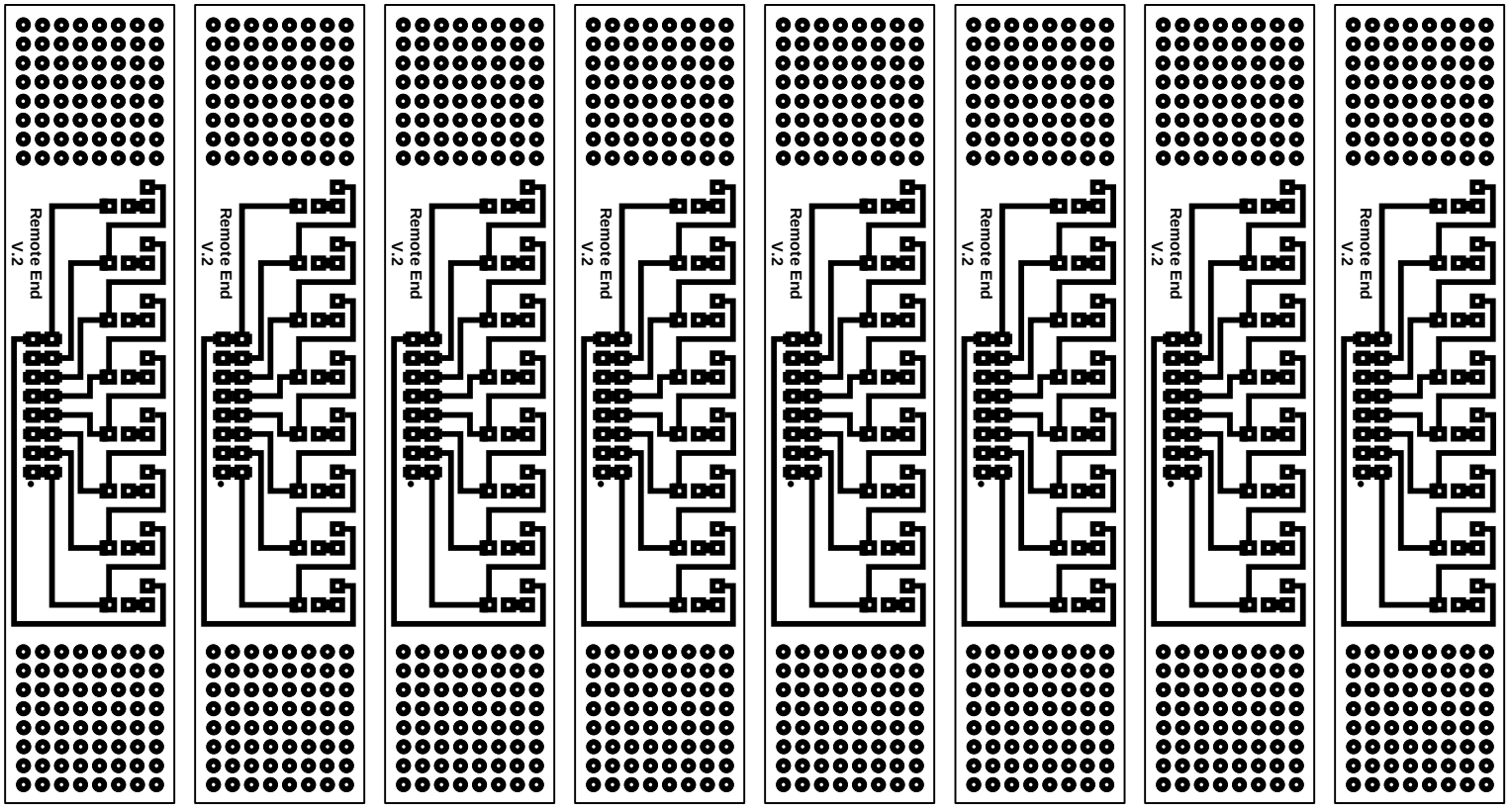
Print to HP Laserjet P3005, Single sheet feed Shiny side up, Staples basic photo stock paper.
Properties, Finishing, Mirror Image.
Paper/Quality Pro Res 1200 DPI
Heat press, 400 degrees for 240 seconds. (4 min.)

Print to HP Laserjet P3005, Single sheet feed Blue side up TTF PCB transfer paper
Properties, Finishing, Mirror Image.
Paper/Quality Pro Res 1200 DPI
300 degrees for 1 Min.

Print Check .5"x.5"

Drawn By: Gerald Crenshaw WD4BIS	Date: Jan.10, 2018	From the bench of: Amateur Radio Station WD4BIS	Page 9 of 11
Designed By: Gerald Crenshaw WD4BIS	Date: Jan.10, 2018		
Checked By: Janet Crenshaw WB9ZPH	Date: Jan.10, 2018	Title: Group and Dupe, V5 Cable Mapper	Scale: 1:1





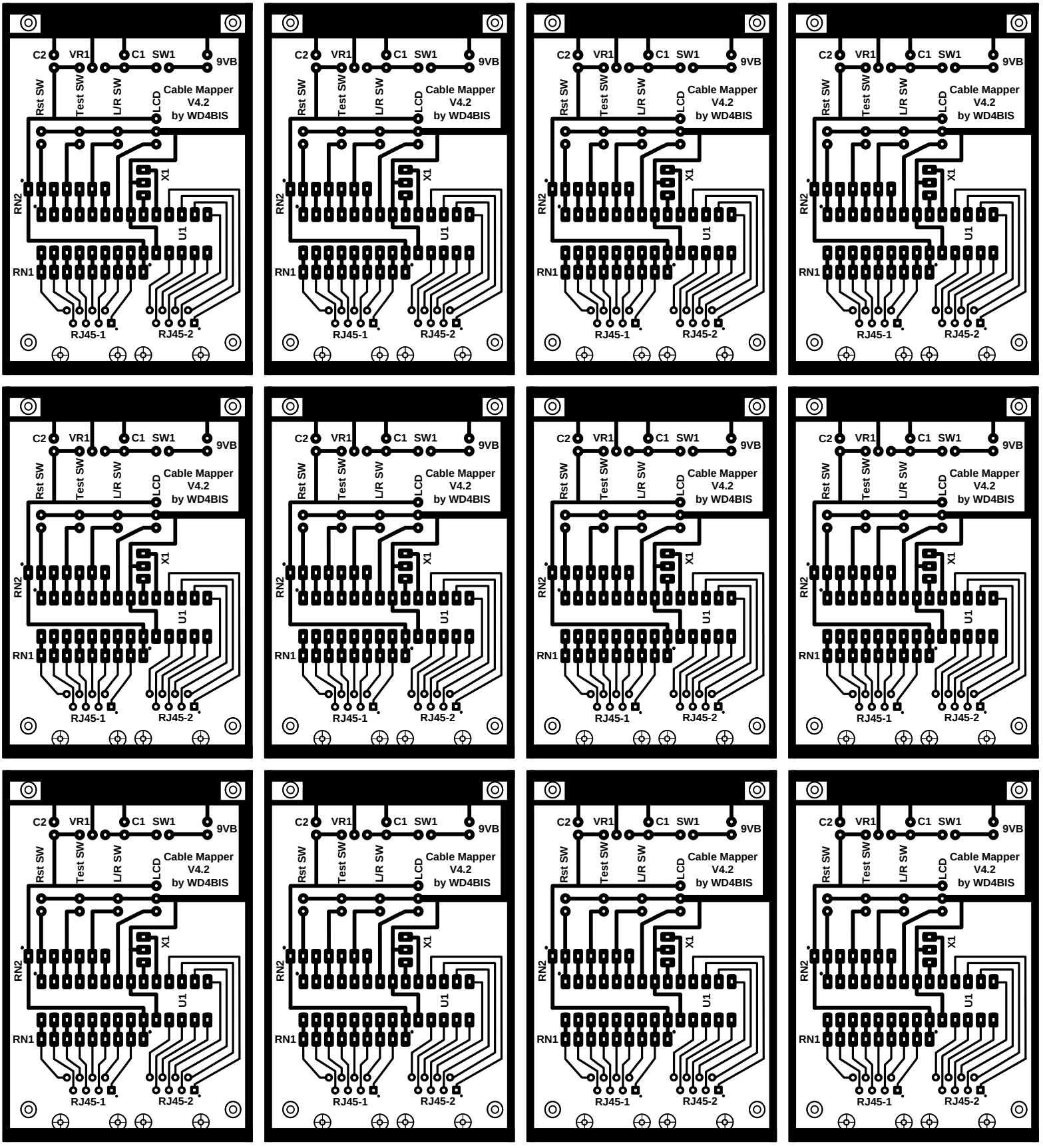
Date:	Revision/Addition/ Note	By:
Jan 10, 2018	Initial Drawing	GSC
Jan 11, 2018	Added printer and heat press notes.	GSC

Print to HP Laserjet P3005, Single sheet feed Shiny side up, Staples basic photo stock paper.
Properties, Finishing, Mirror Image.
Paper/Quality Pro Res 1200 DPI
Heat press, 400 degrees for 240 seconds. (4 min.)

Print to HP Laserjet P3005, Single sheet feed Blue side up TTF PCB transfer paper
Properties, Finishing, Mirror Image.
Paper/Quality Pro Res 1200 DPI
300 degrees for 1 Min.

Print Check .5"x.5"

Drawn By: Gerald Crenshaw WD4BIS	Date: Jan.10, 2018	From the bench of: Amateur Radio Station WD4BIS	Page 10 of 11
Designed By: Gerald Crenshaw WD4BIS	Date: Jan.10, 2018		
Checked By: Janet Crenshaw WB9ZPH	Date: Jan.10, 2018	Title: **Group and Dupe, Remote End V2**	Scale: 1:1



Date:	Revision/Addition/ Note	By:
Feb 7, 2018	Initial Drawing	GSC
Feb 7, 2018	Added printer and heat press notes.	GSC

Print to HP Laserjet P3005, Single sheet feed Shiny side up, Staples basic photo stock paper.
Properties, Finishing, Mirror Image.
Paper/Quality Pro Res 1200 DPI
Heat press, 400 degrees for 240 seconds. (4 min.)

Print to HP Laserjet P3005, Single sheet feed Blue side up TTF PCB transfer paper
Properties, Finishing, Mirror Image.
Paper/Quality Pro Res 1200 DPI
300 degrees for 1 Min.

Print Check .5"x.5"

Drawn By:	Gerald Crenshaw WD4BIS	Date:	Feb 7, 2018
Designed By:	Gerald Crenshaw WD4BIS	Date:	Feb 7, 2018
Checked By:	Janet Crenshaw WB9ZPH	Date:	Feb 7, 2018

From the bench of:
Amateur Radio Station WD4BIS

Page 11 of 11

Title: Group and Dupe, Cable Mapper v4.2

Scale: 1:1