Test Procedure for EZREADER HF 13.56MHZ RFID READER

Part #1000065715

1.0 PURPOSE

This document provides instructions to perform functional testing of the EZReader HF "C" plate assembly and the EZReader HF final assembly. The "C" plate assembly is tested to assure that all the electronics of the Reader are functional before placing in the enclosure. The finished assembly is then checked just as the "C" plate was to ensure complete functionality.

2.0 SCOPE

This document pertains to the RFID CELL.

3.0 RESPONSIBILITY

Primary: Manufacturing

Support: Manufacturing/Test Engineering, Manufacturing

4.0 REFERENCES

SP-QAF-009	Control of Quality Records
WI-QAF-003	ESD Control Instructions
GU-ENM-029	Guide to PCA Test Engineering Reference Documentation
SP-QAF-005	Control Of Nonconforming Product
GU-ERP-019	Guide to ERP Quality Module Data Entry
ECO 07-1028	Initial Release Rev. 1
0110866101	Schematic EZReader Reader Board
0110867101	Schematic EZReader Power Supply Board
0110868101	Schematic Auto-Tune Antenna 5 x 7
0110869101	Schematic Auto-Tune Antenna 5 x 16

4.1 Test Control Software Revision History

Program revision	Release date	Reason
(N.A.)	9/9/99	new program

5.0 DEFINITIONS

DUT

Device Under Test

Test control software

This refers to external software used to exercise the DUT hardware/software functions.

6.0 REQUIREMENTS

6.1 Test Equipment

- 6.1.1 Spectrum Analyzer: AGILENT E4404B ESA-E Series 9kHz -6.7 GHz
- 6.1.2 Frequency Counter: TENMA Universal Test Center 72-5085
- 6.1.3 Multimeter
- 6.1.4 Test PC with Windows XP

6.2 Support Equipment

- 6.2.1 AUTO-TUNING HFANTENNA,5IN X 7IN,13.56MHZ Part #1000065705
- 6.2.2 CABLE ASSEMBLY,INTERNAL ETHERNET,EZREADER HF Part #0111302001
- 6.2.3 CABLE ASSEMBLY,ETHERNET,PATCH,FOR READER,EZREADER Part # 1000065711
- 6.2.4 Test HF RFID Tags
  - 6.2.4.1 ISO15693 (T.I.)
  - 6.2.4.2 ICODE1
  - 6.2.4.3 ISO15693 (Philip)
- 6.2.5 RS422 to RS232 Converter B&B Electronics Model 422LCON Part # 1000057142
- 6.2.6 Power Supply for RS422 to RS232 Converter B&B Electronics Model AD35-12002 12VCD@100ma Part # 1000051901
- 6.2.7 Custom Serial Cable RS232 Converter to PC
- 6.2.8 Custom Serial Cable RS422 Converter to EZReader Host Serial Port
- 6.2.9 Ethernet Cable
- 6.2.10 20 dB RF Attenuator (Min 2 Watts) Bird Electronics Model # 5-A-MFN-20 or equivalent
- 6.2.11 RF Coaxial Adapter Cable EZReader Antenna Port to Spectrum Analyzer
- 6.2.12 Serial Test Cable DB 9 Female to DB 9 Male Shielded.
  - 6.2.12.1 Wiring: 2 to 2, 3 to 3, 5 to 5, Shield soldered to Connector housing
- 6.2.13 EZReader I/O Port Test Fixture
- 6.2.14 PVC Spacer 10" long for elevating Test Tag above Test Antenna
- 6.2.15 Test Power Supply 24 VDC 40 W Part # 0111020001

6.3 Support Software/Files

- 6.3.1 EZReader HF Interface GUI
- 6.3.2 Procomm Plus for Windows
- 6.3.3 Hyperterminal

6.3.4 RFID EZReader MAC ID Setup program
6.3.5 Spectrum Analyzer Test State Files
6.3.5.1 EZ1356
6.3.5.2 EZ2712
6.3.5.3 EZ4068
6.3.5.4 EZ5424
6.3.5.5 EZ6780
6.3.5.6 EZ10TO70

7.0 TEST SETUP

7.1 It is assumed that the EZReader Reader Board Assembly #011086650x has already been programmed. See Test Procedure EZReader Reader Board 011086650x Programming Instructions

7.2 Before starting any testing assure that Spectrum Analyzer and Frequency counter have been powered on for 1 hour to allow for measurement stabilization.

7.3 **Make sure that the 20 dB RF attenuator is attached to the RF Input of the Spectrum Analyzer.** [redacted].

7.4 This test will be performed in two parts, part 1 tests the "C" plate assembly of the EZReader which consist of the Reader and Power supply boards attached to a aluminum plate. This is the entire electronic assembly of the EZReader and is fully tested before being mounted in the EZReader's housing, this is done to avoid having to disassemble the unit if a test would fail. Part 2 of the testing is done with the unit fully assembled.

8.0 ADDITIONAL TEST NOTES

8.1 The following conventions will be used when referring to key presses on the Spectrum Analyzer.

8.1.1 **BOLD CAPITALS** = Hard key presses; example would be the "**FREQUENCY**" key.

8.1.2 **BOLD ITALIC** = Soft key presses which are located directly to the right of the display; example would be "***Max Hold***".

8.1.3 Success key presses will be separated by a semi-colon. Example **VIEW/TRACE; *Max Hol;*, PEAK SEARCH.** This would be a method for measuring a signals maximum level. Special instructions will enclosed by parenthesis.

9.0 PROCEDURE

9.1 Visually verify that the Reader and Power supply board are securely mounted to the "C" plate assembly, key areas of concern are as follows.

9.1.1 All voltage regulators attached to the "C" plate have a thermal insulating pad under them and a insulating shoulder washer between mounting screw and regulator; Reader board has two regulators and the Power Supply has one. All pins between the Reader board CN2 and the Power Supply Board CN2 are correctly aligned and seated. See Figures 1 and 2 below.

9.1.2 [redacted]
Record the following information in the EZReader HF Check Out Sheet under the unit information section.

Serial #:_____
Firmware Version:_____
Bootloader Version:_____
Reader Board Assy #:_____ Rev:_____
Power Supply Board Assy #:_____ Rev:_____

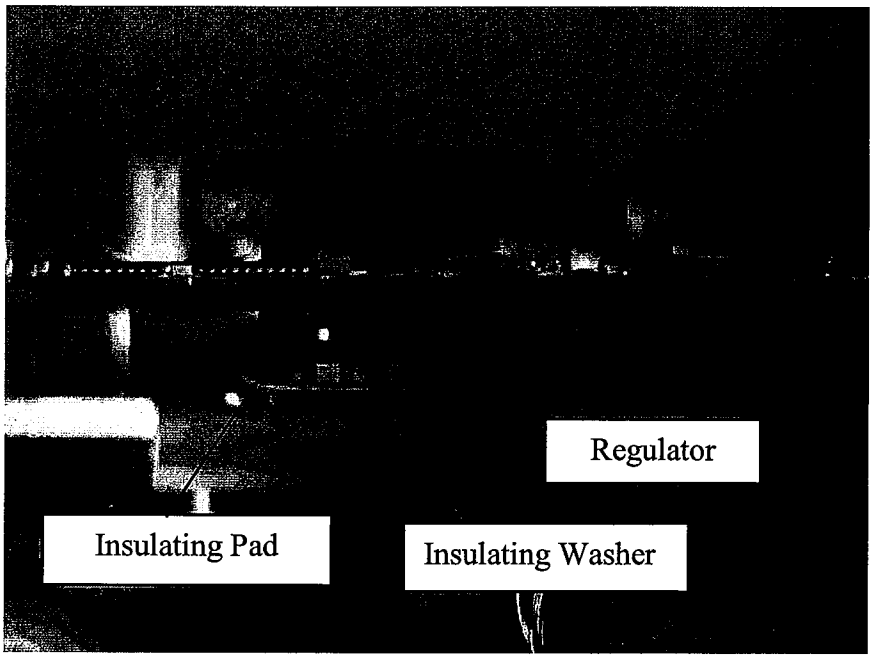

Figure 1

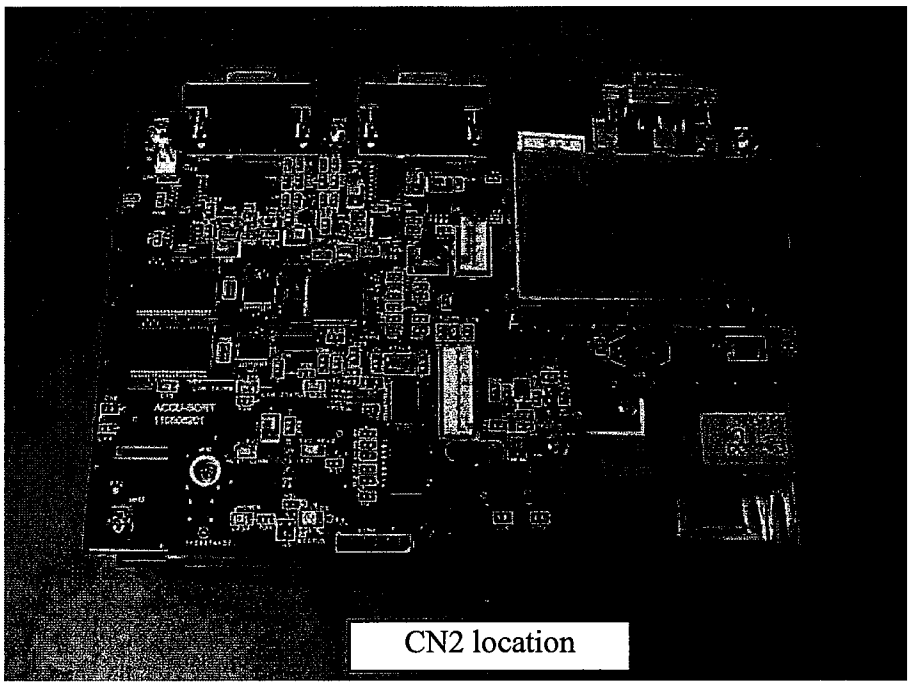

Figure 2

9.2 On the Spectrum Analyzer load **EZ1356.sta** file by pressing the following:

9.2.1 **FILE;** ***Load; Dir Select;*** (Highlight "C" using Rotary Knob); ***Dir Select;*** (Highlight EZREADER Directory); ***Dir Select;*** (Highlight File EZ1356.sta);***Load Now.***

9.2.2 For reference settings are as follows:

9.2.2.1 Freq: 13.56 MHz

9.2.2.2 Amplitude: +35 dBm

9.2.2.3 Res BW: 1Khz

9.2.2.4 Span: 50kHz

9.2.2.5 Attenuation: 35 dB (man)

9.2.2.6 Ref Lvl Offset: 20dB (compensation for external 20 dB attenuator)

9.3 Screen should look like Figure 3. **Right hand column may differ.**

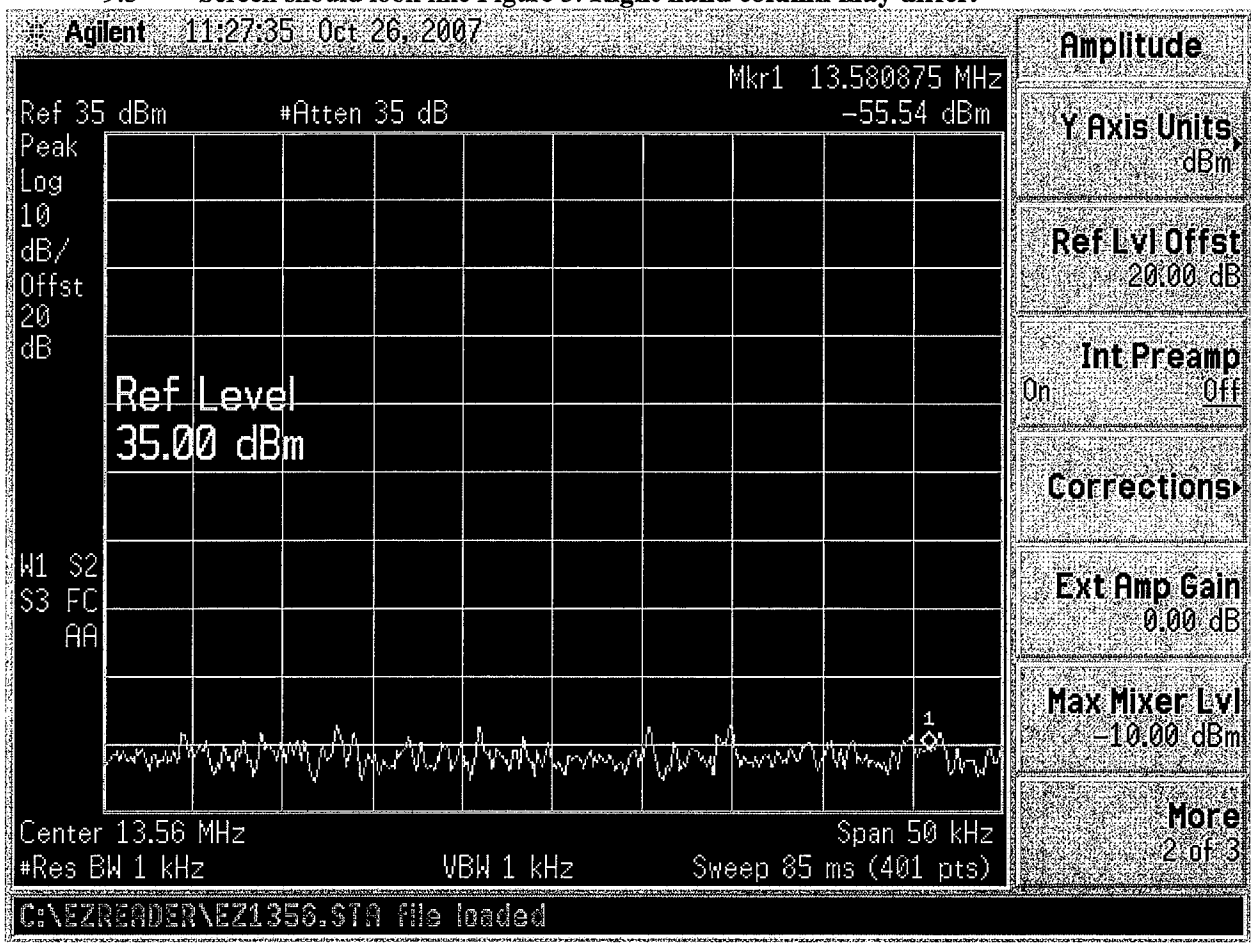

Figure 3

9.3 Connecting Test cables to DUT.

9.3.1 Make the following connections to the DUT.

9.3.1.1 Internal Ethernet Cable Assy Part #0111302001 to CN1 of Reader Board

9.3.1.2 Ethernet Patch Cable to Internal Ethernet Cable Assy

9.3.1.3 Ethernet Cable between Test PC and Ethernet Patch Cable.

9.3.1.4 RF Coaxial Adapter Cable between Reader CN3 and Spectrum Analyzer

9.3.1.5 EZReader I/O Test Fixture to Power Supply Board CN4

9.3.1.6 Serial Test Cable DB 9 Female to DB 9 Male Shielded between Test PC Serial Comm Port 1 and CN8 of Reader Board.

9.3.1.7 24 VDC Power Supply (**Ensure that Supply is off when connecting**) to CN1 of Power Supply Board.

9.3.2 Refer to Figure 4 below for further details of connections.

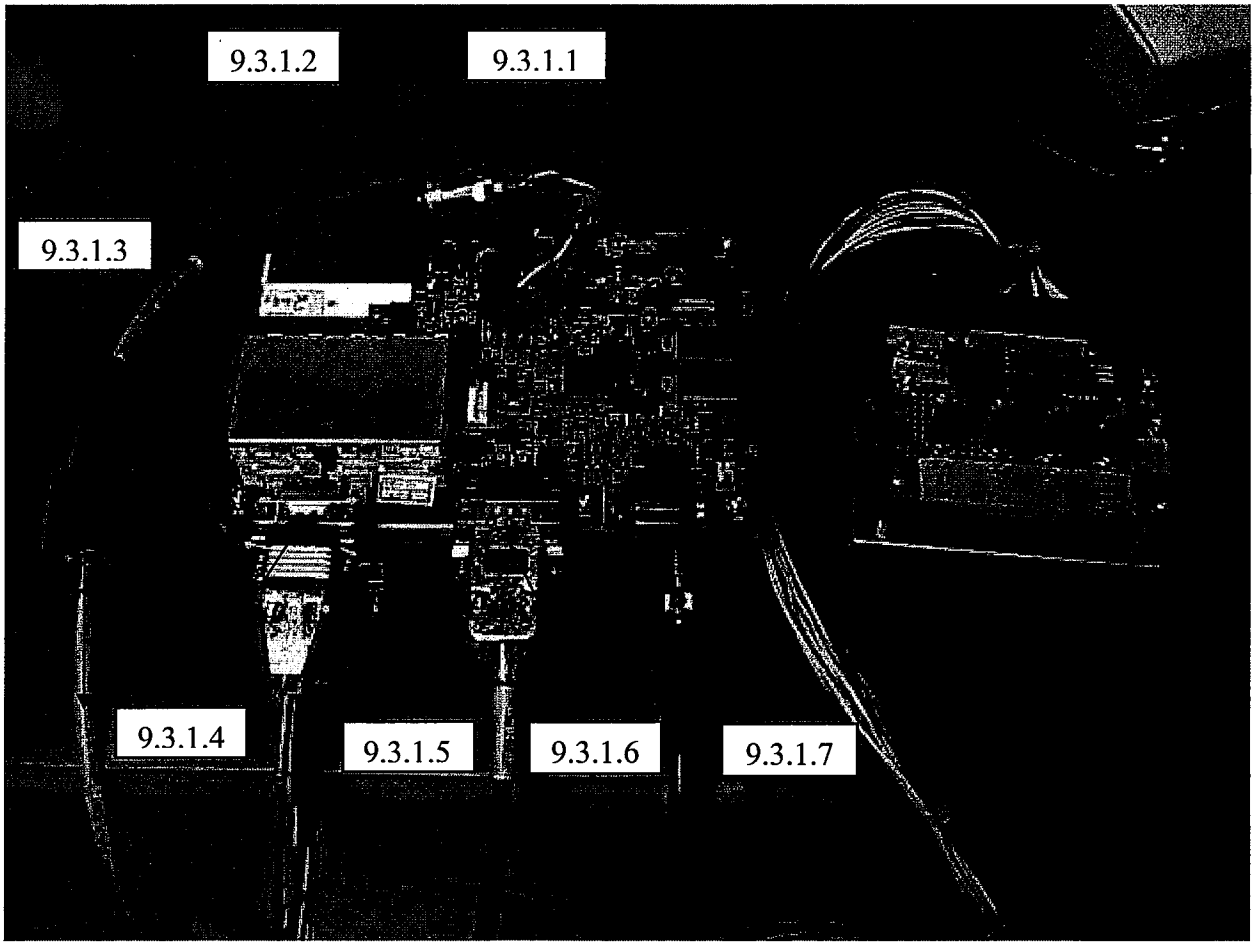

Figure 4

9.4 **Power Up Test**

9.4.1 Open Procomm For Windows and ensure that you have the following settings.

9.4.1.1 IBM PC
9.4.1.2 ASCII
9.4.1.3 Direct connect Com-1
9.4.1.4 57600 (Baud)
9.4.1.5 N-8-1 (Serial Framing)

9.4.2 If any of the setting do not match simple left click on the Tab and select the correct one.

9.4.3 Below Figure 5 shows further detail.

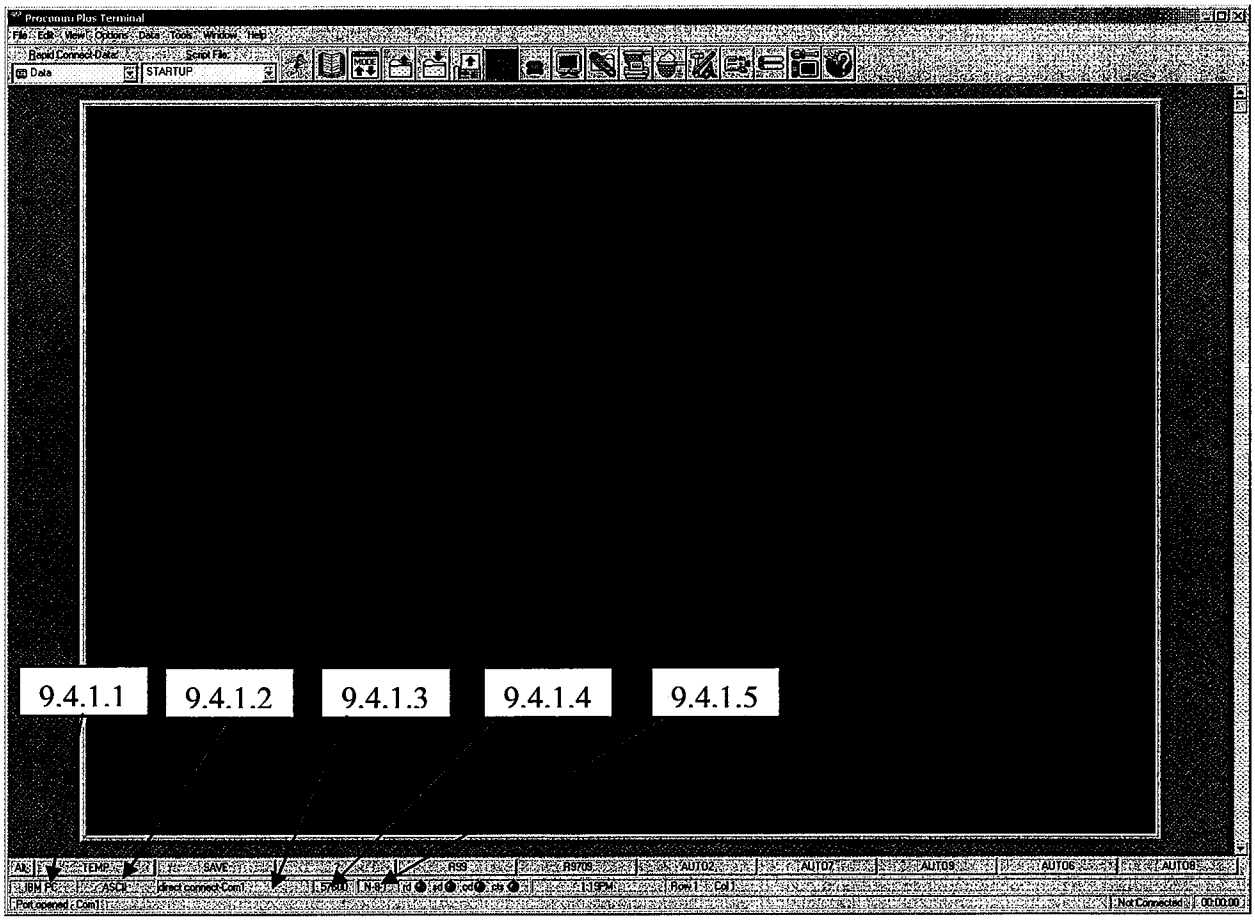

Figure 5

9.4.4 Apply power to DUT by plugging 24VDC PS into AC power. Your Screen should look like Figure 6 after approximately 1 minute.

9.4.5 The Reader performs self diagnostics whenever it is powered on. These tests take certain amount of time refer to figure 6 for details.

9.4.5.1 Note it is normal to have Antenna Communication Failure because no antenna is connected at this time.

9.4.5.2 Check to Ensure that system status word is 0308

Note if screen appears different then below unit has not been defaulted. Press METAKEY's labeled "DEFAULT" and then "SAVE", repeat steps 9.4.4

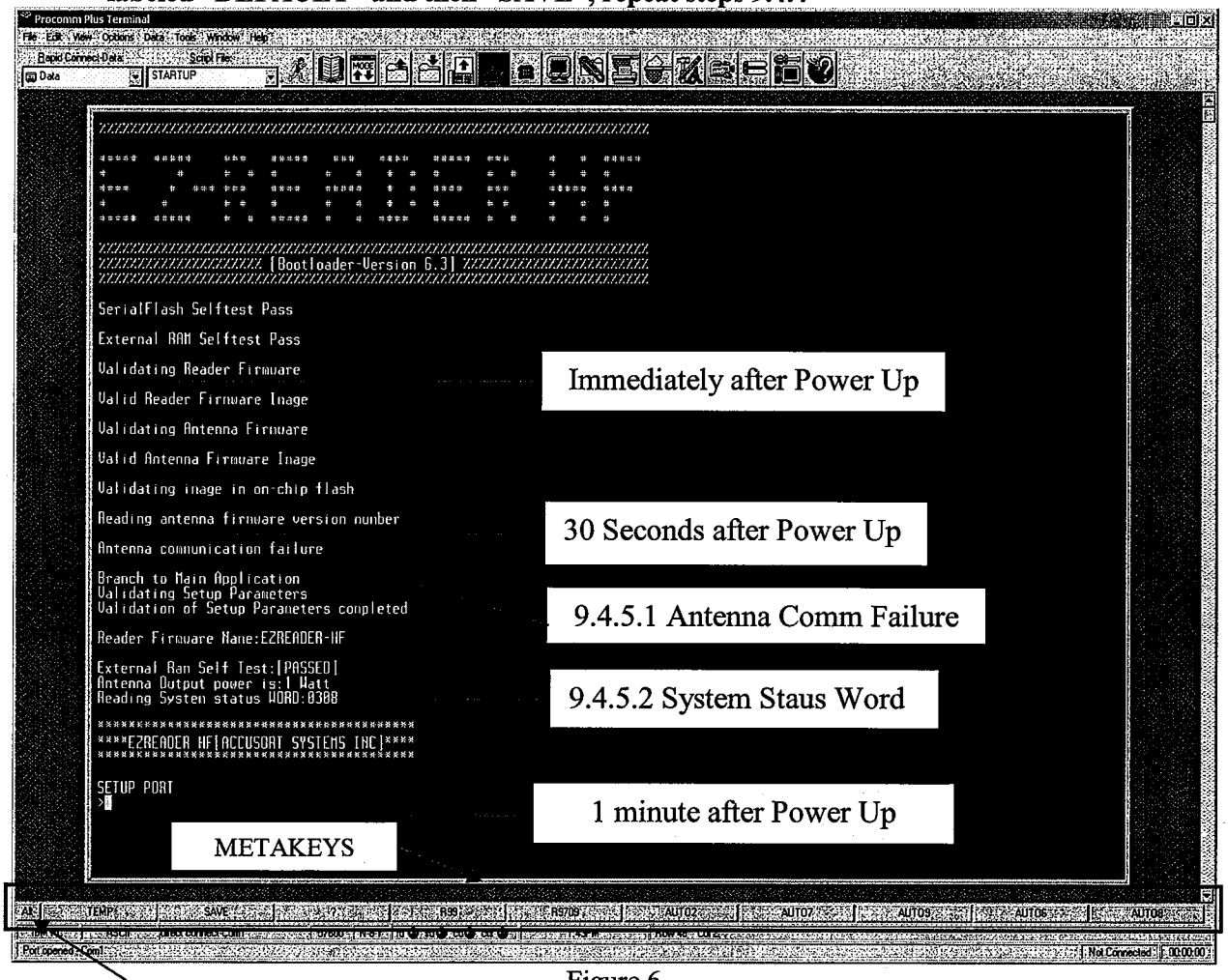

Figure 6

9.4.6 Verify that there is a signal present on the spectrum analyzer similar to the one show in Figure 7. **Amplitude should be within a +/- 2 dB at this point.**

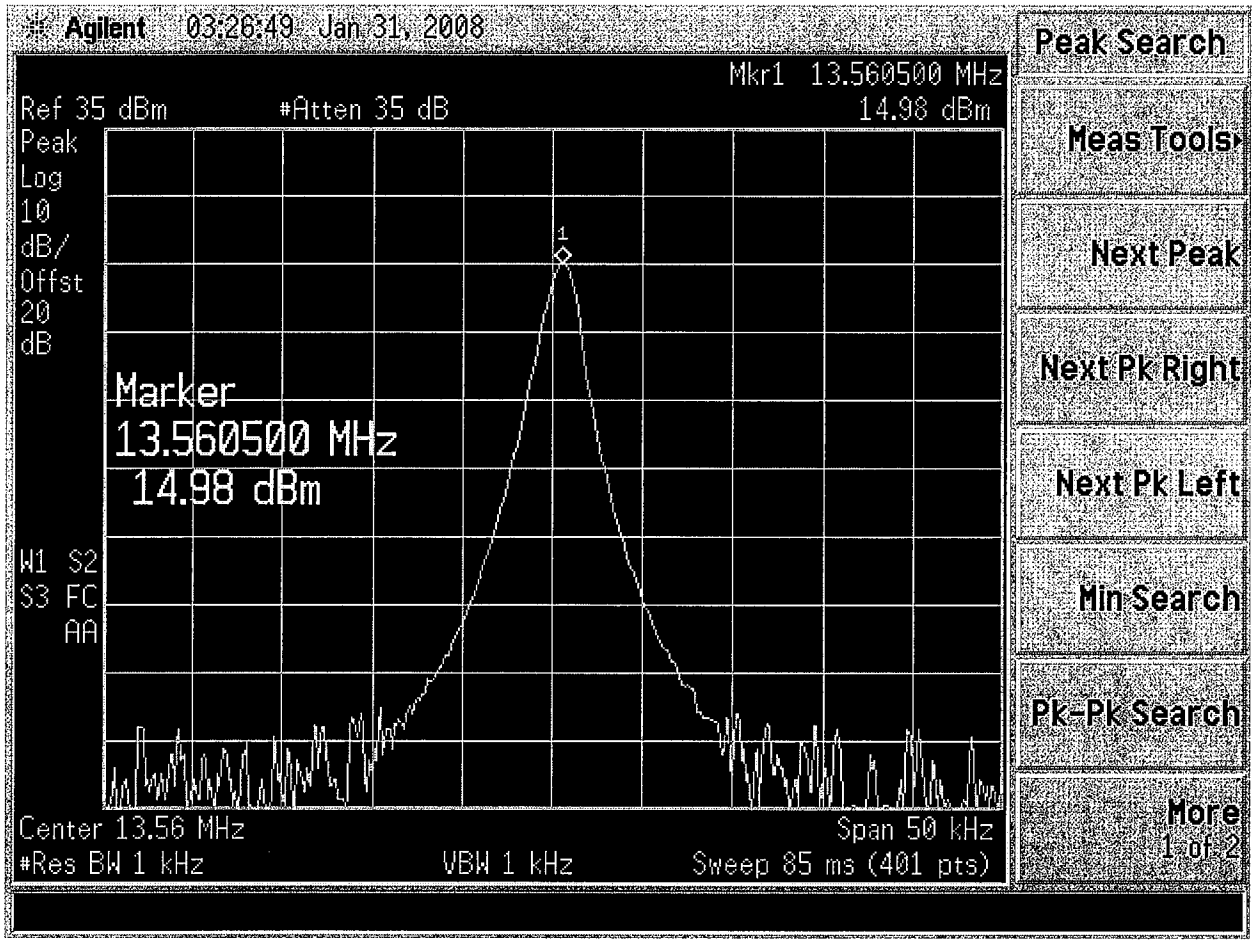

Figure 7

9.4.7 Check that the following LEDS are on or flashing as described below.
Note LED 5 and 6 Silkscreen labeling is wrong with respect to their function, but is ignored for clarity. See figure 8 for LED locations.

9.4.7.1 LED 4 (Power): Green - On Steady
9.4.7.2 LED 3 (Status): Red – Blinks 2 times every 1 second
9.4.7.3 LED 1 (Tag Read): Blue – Off
9.4.7.4 LED 2 (Host Comm): Yellow – Off
9.4.7.5 LED 5 (LAN Tx/RX): Green – On Steady
9.4.7.6 LED 6 (LAN Status): Yellow – Short Flash approx every second

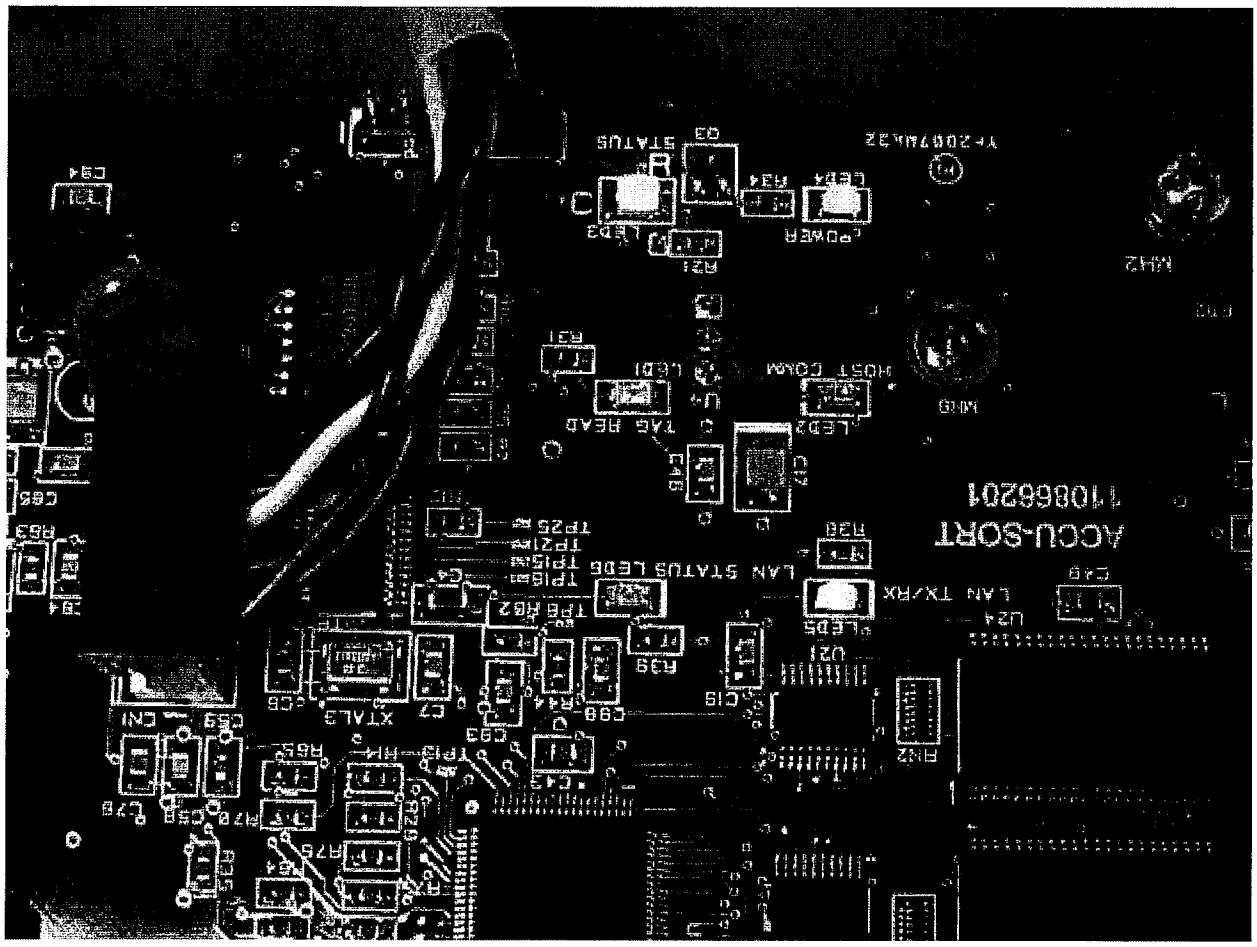

Figure 8

9.4.8 Verify the following on the EZReader I/O Port Test Fixture.

9.4.8.1 Blue Power LED is the only one on.

9.4.8.2 Verify that voltage out of I/O port is 11.80 +/- [redacted] by measuring DC voltage into regulator. Black probe of multi-meter to tab of LM7805 regulator, Red probe to input pin. See Figure 10 for details.

9.4.8.3 Verify the following voltage measurement on the reader board. Negative reference for DMM stated first. See figure 9 for locations of Test Points.

9.4.8.3.1 TP31 to U13-3 = 17.2 to 18.2 VDC (17.5 Nom)

9.4.8.3.2 TP31 to L20-2 = 4.90 to 5.10 VDC (5.0 Nom.)

9.4.8.3.3 TP26 to TP19 = 4.85 to 5.15 VDC (5.0 Nom)

9.4.8.3.4 TP30 to TP20 = 4.90 to 5.10 VDC (5.0 Nom)

9.4.8.3.5 TP30 to TP25 = 3.20 to 3.40 (3.30 Nom)

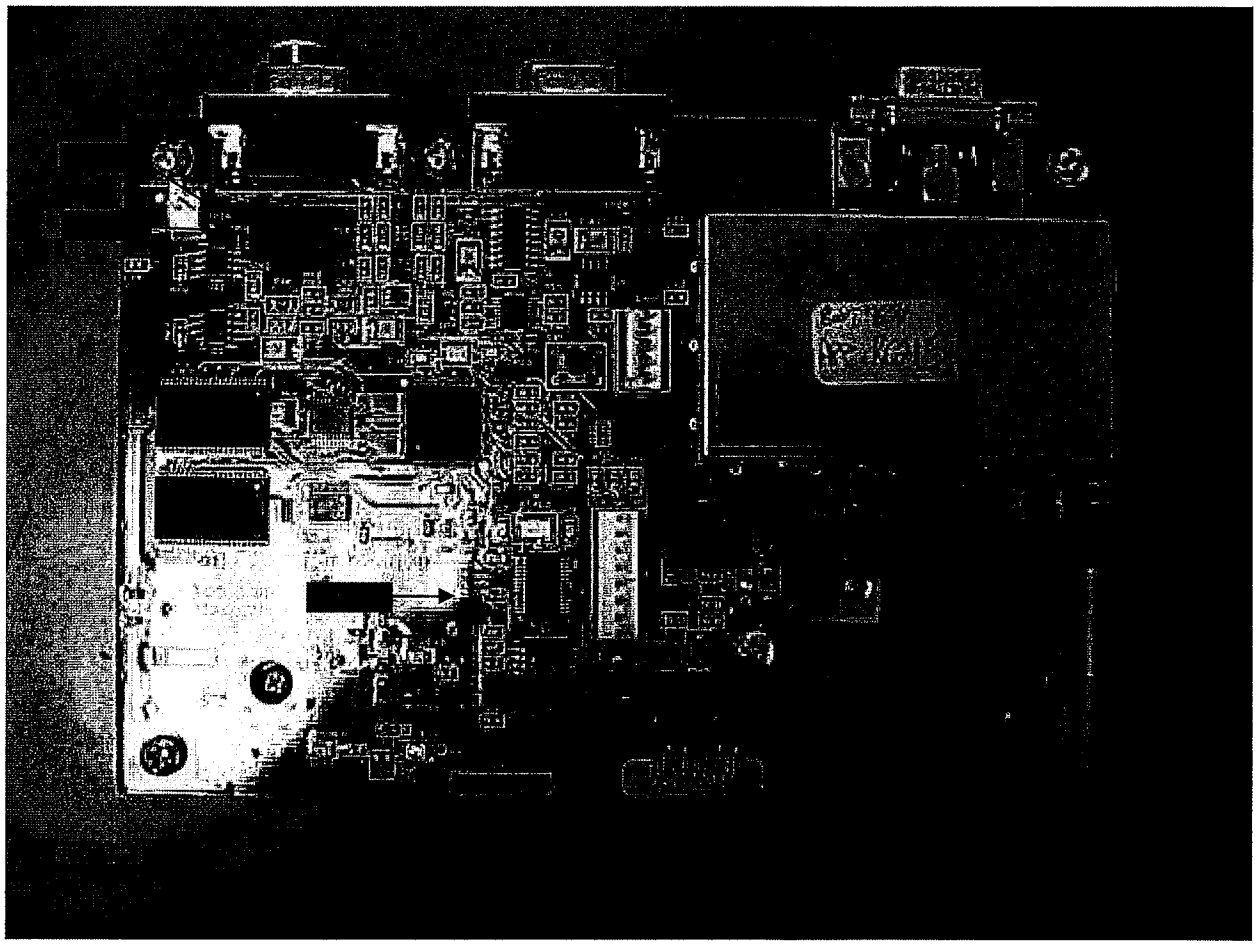

Figure 9

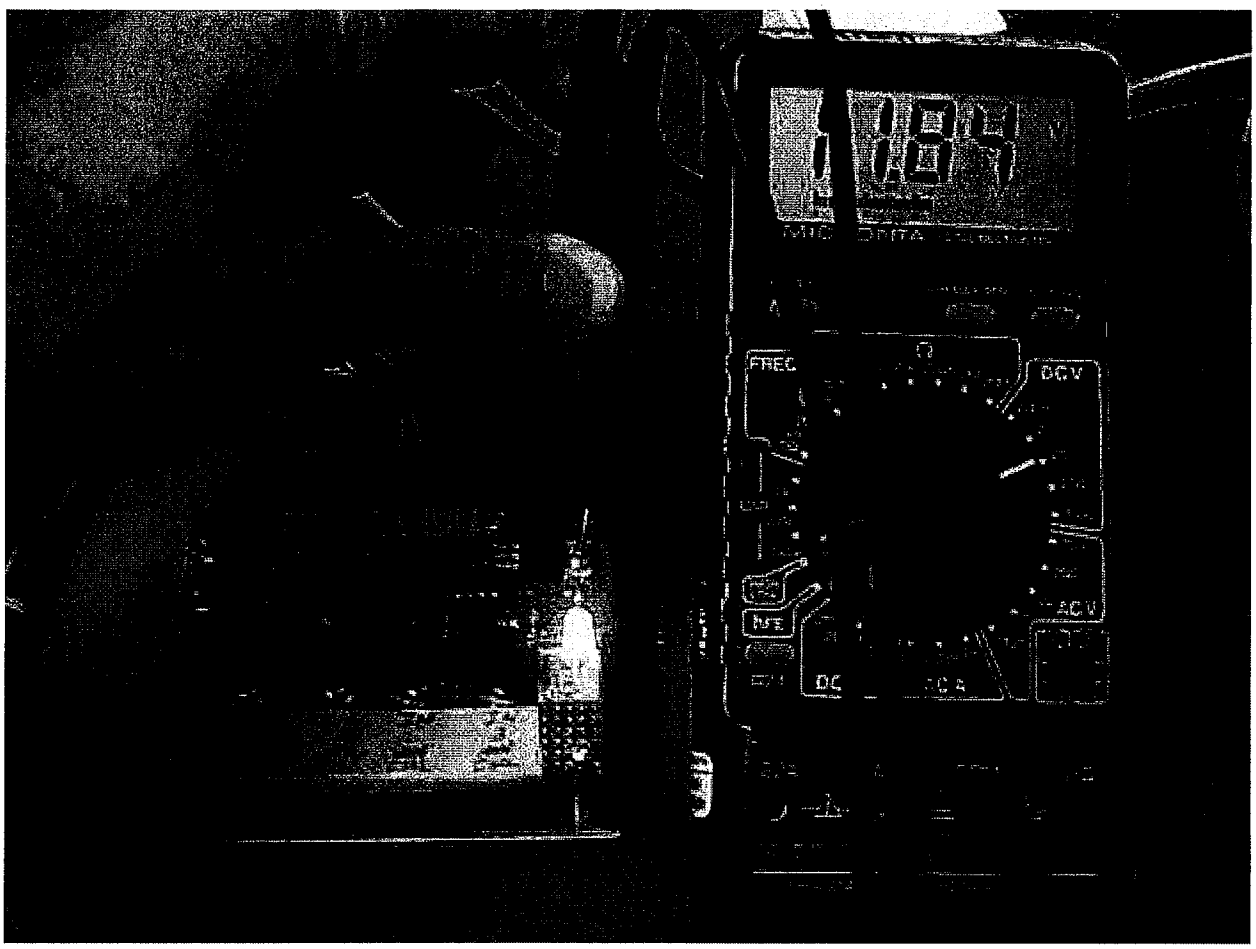

Figure 10

[redacted]

If all steps in section 9.4 have passed mark Initial Power Up Test as Passed in CHECK OUT SHEET, then continue on

9.6 **Serial Setup Port Test**

9.6.1 Close PROCOMM PLUS program.

9.6.2 Open EZReader HF Interface GUI program.

9.6.3 Click on the Connect folder and then select Setup Cable under the Connection Mode and click the Open Port Button ensuring that COM1 is selected. Your screen should now look like Figure 11.

9.6.4 Make sure that the message "Reader Parameters are loaded Successfully..." appears at the bottom of the page.

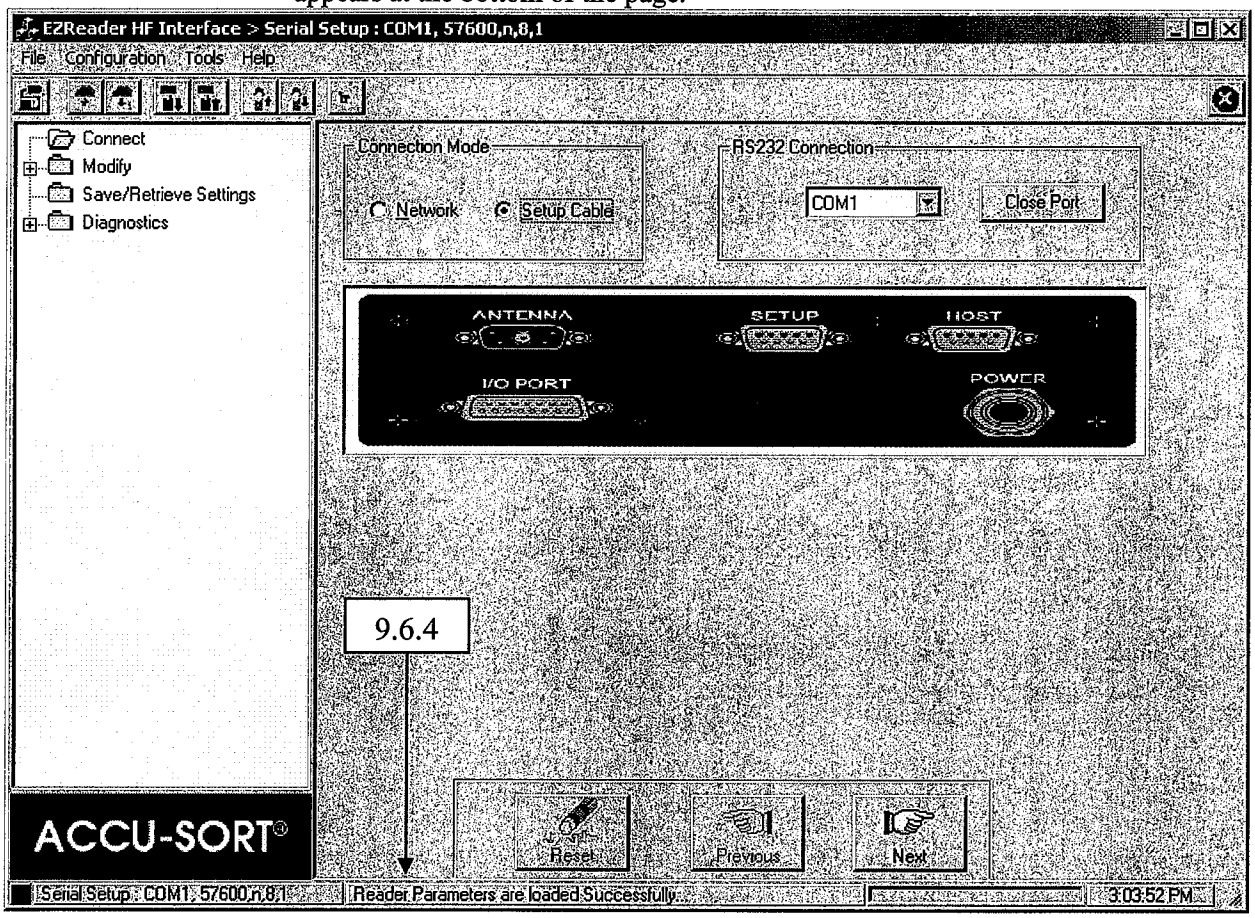

Figure 11

[redacted] If all of the steps in section 9.6 have passed mark [redacted] as Passed in CHECK OUT SHEET under "C" Plate section, then continue on.

9.8 **RF Power Level Setting.**

See Figure 12 for reference.

9.8.1 Expand the Modify Folder by clicking on the "+" next to it.

9.8.2 Click on the EZReader HF Configuration and make sure that 1 Watt is selected under the Reader Antenna Output power Level.

9.8.3 Click the "Save Parameters To EZReader HF" ICON,

9.8.4 You should get a acknowledgement that "Changes are Saved Successfully" as in Figure 13

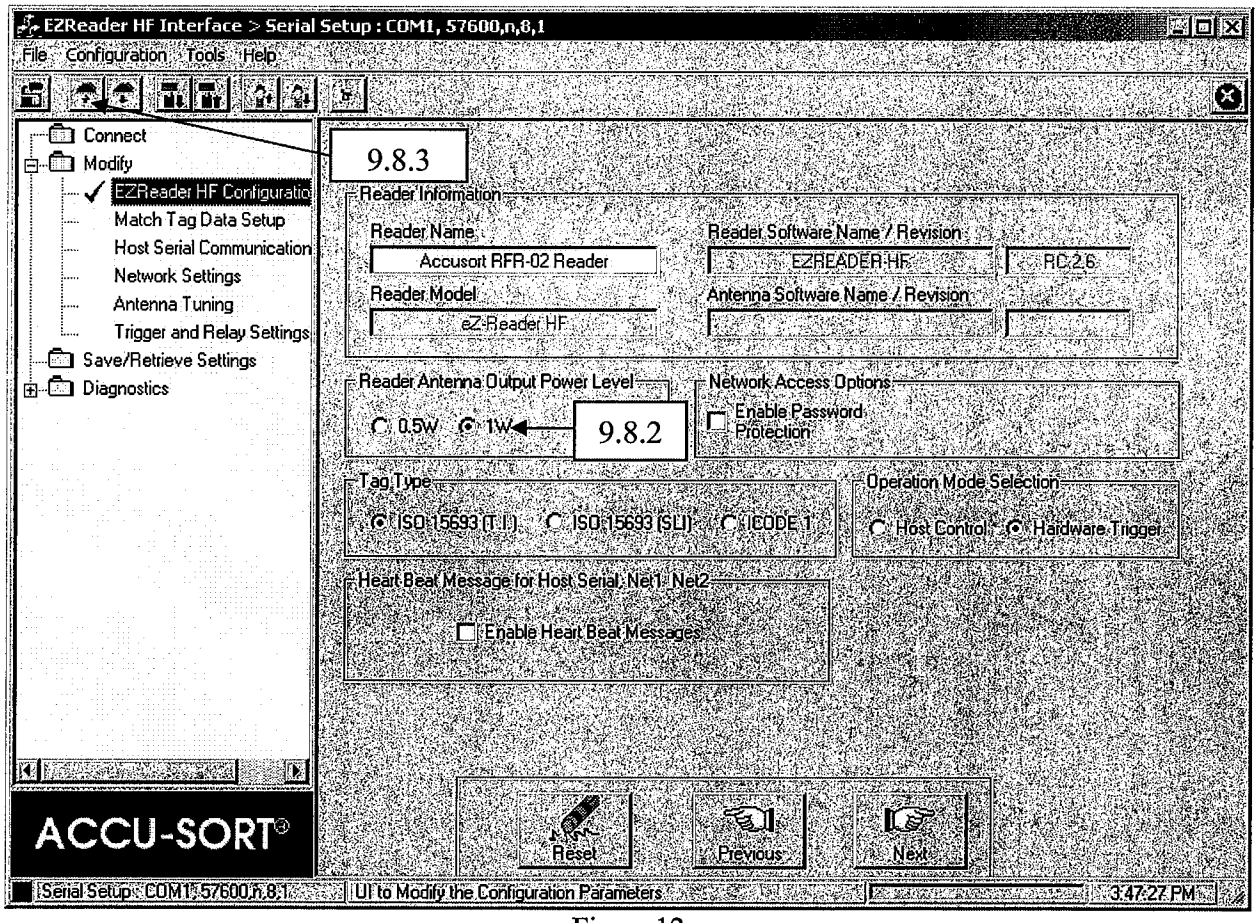

Figure 12

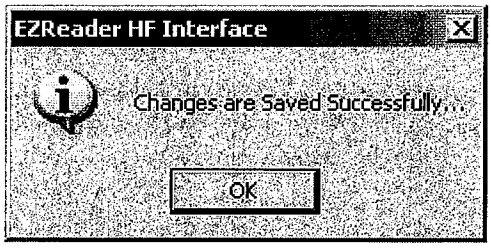

Figure 13

9.8.5 Press the "F9" key then select "Antenna Power Fine Adjustment" from under the Tools Menu. You will be prompted to enter a password. Enter the following "EZReader" (case sensitive) then click "OK". You should now have the "Antenna Power Fine Adjustment" screen shown in Figure 14.

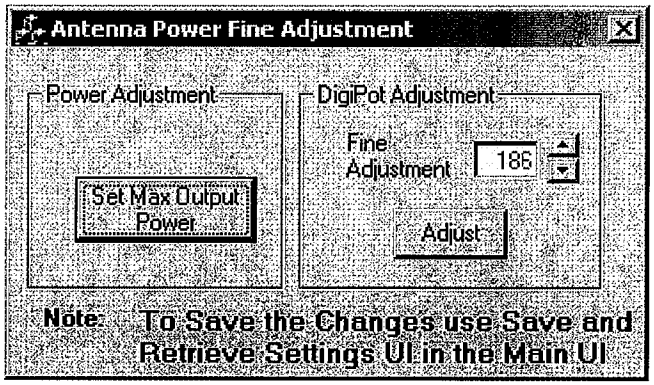

Figure 14

9.8.6 On the Spectrum Analyzer press: **VIEW/TRACE**; **PEAK SEARCH**.

9.8.7 Move the DigiPot Adjustment up or down until you reach a level of 29.5 dBm (+/- .2 dB) as shown in Figure 15. Note in order for the "Fine Adjustment" value to be applied the Adjust button must be clicked for each new setting. **The lower the Fine Adjustment value the higher the RF amplitude.**

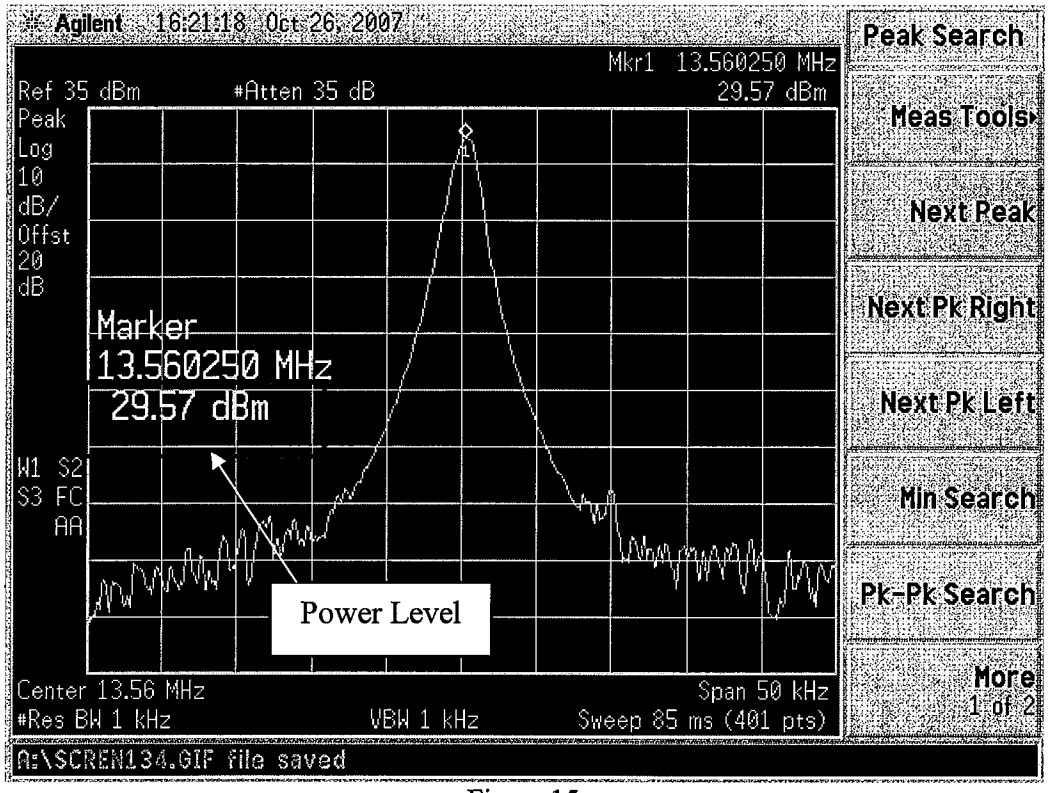

Figure 15

9.8.8 Once the level has been set; close the Antenna Power Fine Adjustment Screen and **SAVE** the Reader Parameters by pressing the button shown in Figure 12 and 13.

[redacted]

Record Power Level and DigiPot Adjustment Value in Check Out Sheet for 1 Watt RF TX Power under "C" Plate section.

9.8.10 Referring back to Figure 12 select .5W for Reader Antenna Output Power Level and then **SAVE** the Reader Parameters.

9.8.11 Repeat steps 9.8.5 thru 9.8.8 for the .5Watt setting, use 27 dBm (+/- .2dB) as the level you are trying to achieve, your result should look like Figure 16.

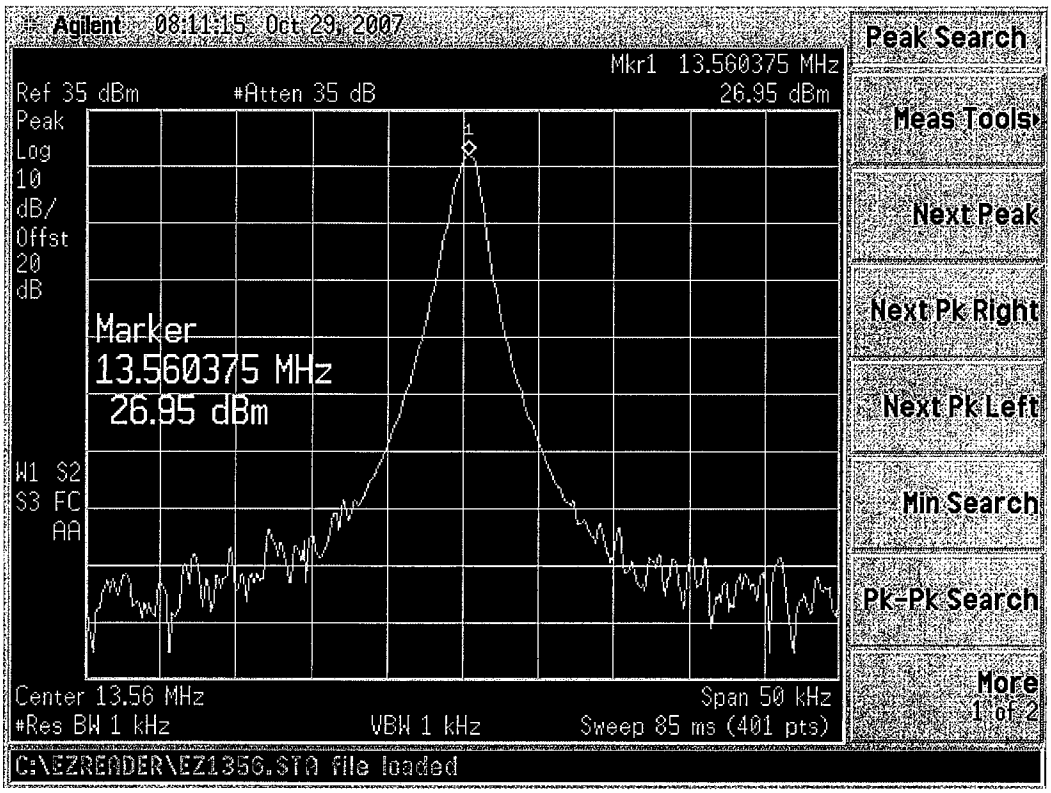

Figure 16

9.8.12 [redacted]
Record Power Level and DigiPot Adjustment Value in Check Out Sheet for 1/2 Watt RF Power Section under "C" Plate section.

9.8.13 Return Reader Antenna Output Power Level to 1 Watt see 9.8.2 thru 9.8.4. The spectrum analyzer screen should look like Figure 15.

9.8.14 Load the following Spectrum Analyzer state **EZ2712.sta** by pressing the following on the Spectrum Analyzer. **FILE;** ***Load; Dir Select;*** (Highlight "C" using Rotary Knob); ***Dir Select;*** (Highlight EZREADER Directory); ***Dir Select;*** (Highlight File EZ2712.sta);***Load Now.***

Your screen should look similar to Figure 17.

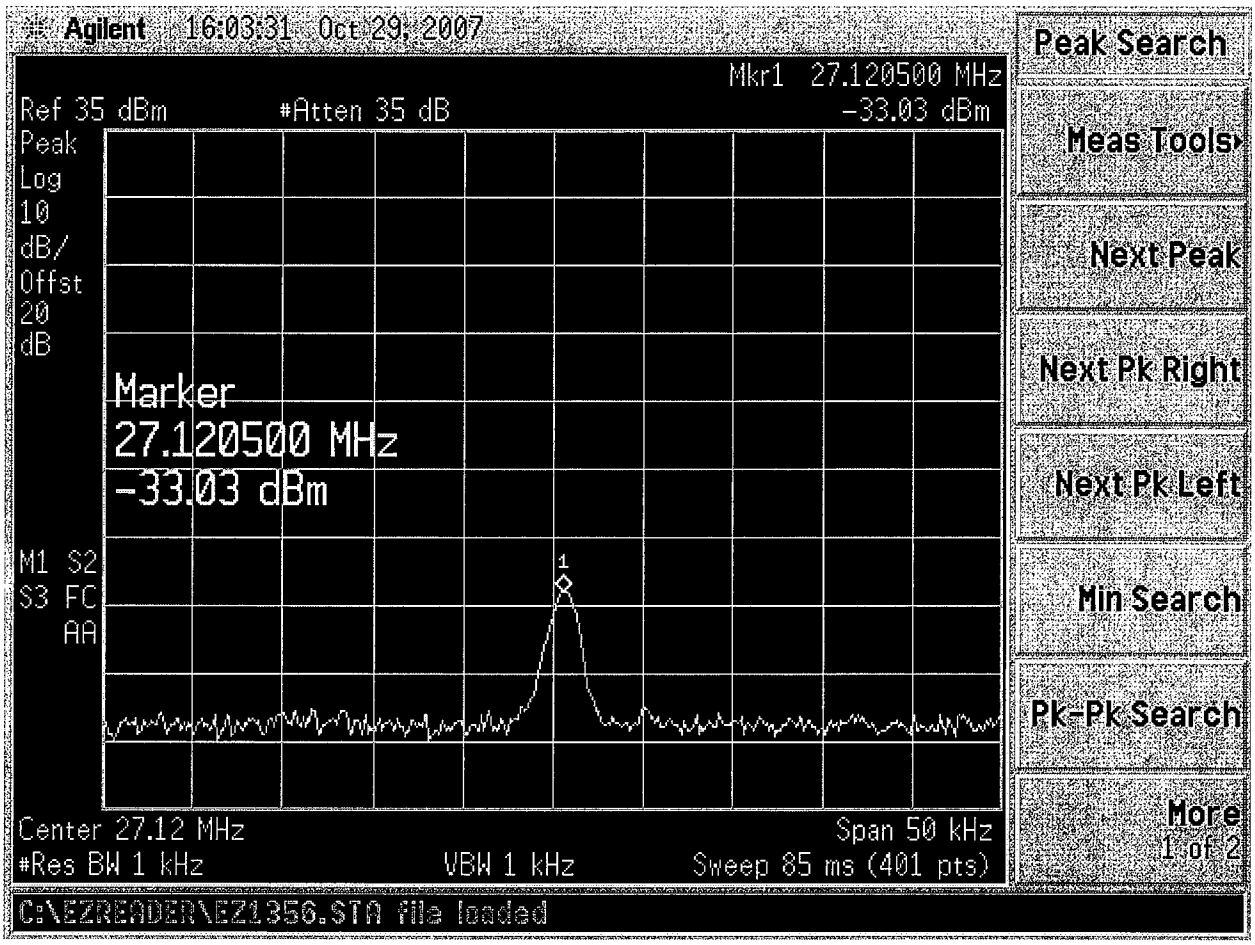

Figure 17

9.8.15 [redacted].
Measure and record the amplitude in the Test Check Out Sheet for 27.12 Mhz Level under "C" Plate section. To Measure press: **VIEW/TRACE*; Max Hold***; **PEAK SEARCH**. Amplitude of signal @ 27.12 MHz should be less than -30dBm to pass.

9.8.16 oad the following Spectrum Analyzer state **EZ4068.sta** by pressing the following on the Spectrum Analyzer. **FILE; *Load; Dir Select;*** (Highlight "C" using Rotary Knob); ***Dir Select;*** (Highlight EZREADER Directory); ***Dir Select;*** (Highlight File EZ4068.sta);***Load Now.***

Your screen should look similar to Figure 18.

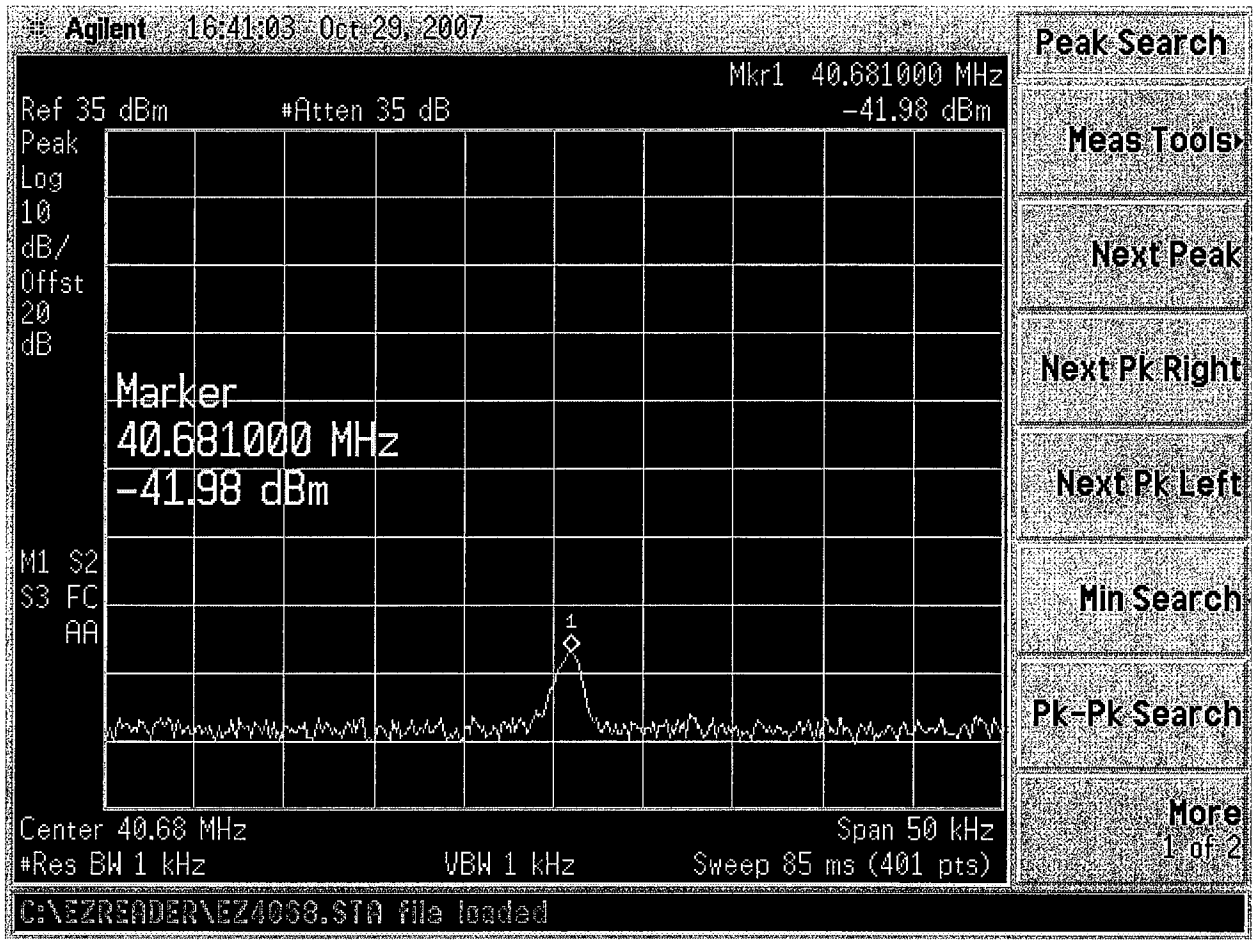

Figure 18

[redacted].

9.8.17 Measure and record the amplitude in the Test Check Out Sheet for 40.68 Mhz Level under "C" Plate section. To Measure press: **VIEW/TRACE;** ***Max Hold*;** **PEAK SEARCH**. Amplitude of signal @ 40.68 MHz should be less than -40dBm to pass.

9.8.18 Load the following Spectrum Analyzer state **EZ5424.sta** by pressing the following on the Spectrum Analyzer. **FILE;** ***Load; Dir Select;*** (Highlight "C" using Rotary Knob); ***Dir Select;*** (Highlight EZREADER Directory); ***Dir Select;*** (Highlight File EZ5424.sta);***Load Now.***

Your screen should look similar to Figure 19.

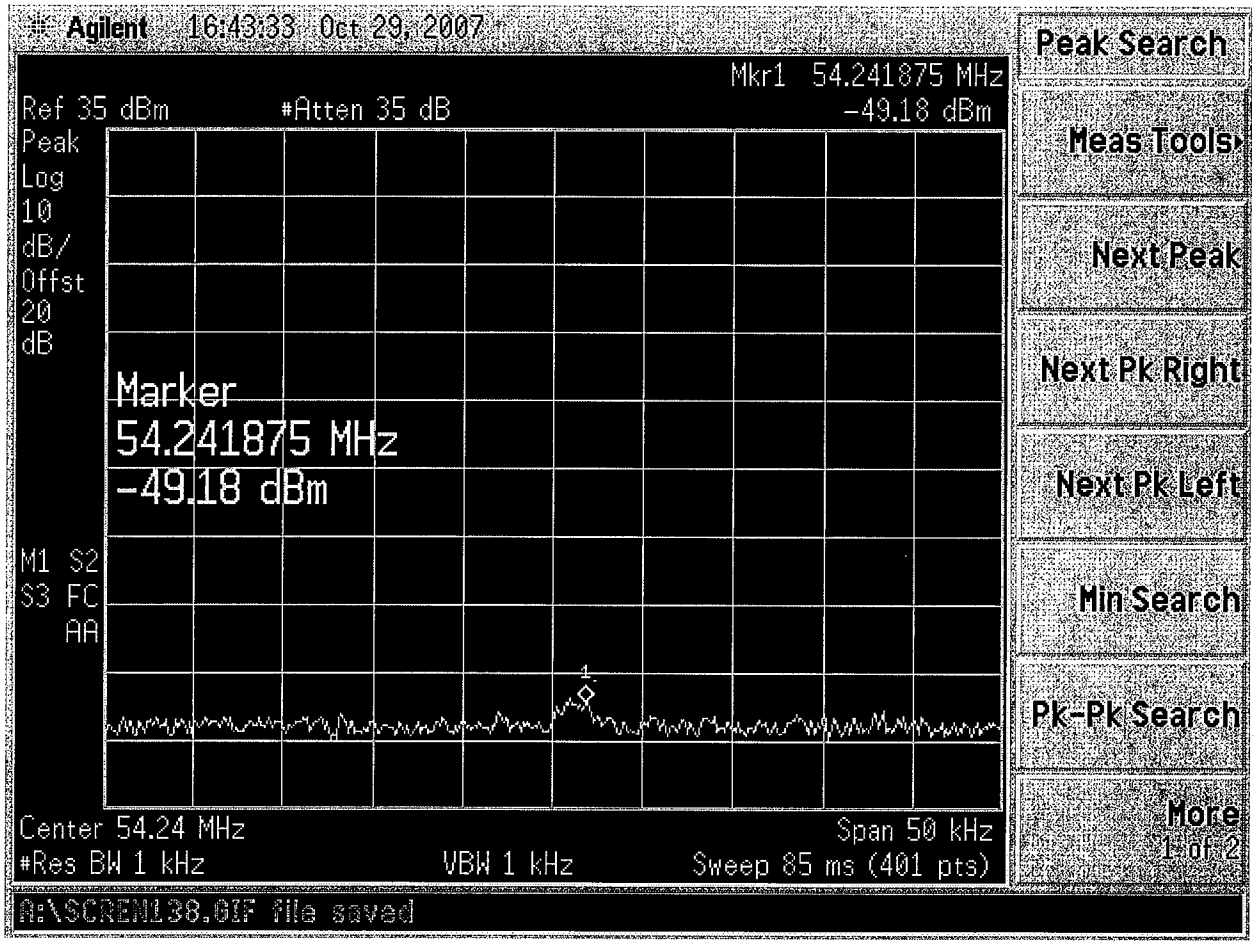

Figure 19

[redacted].

9.8.19 Measure and record the amplitude in the Test Check Out Sheet for 54.24 Mhz Level under "C" Plate section. To Measure press: **VIEW/TRACE;** ***Max Hold***; **PEAK SEARCH**. Amplitude of signal @ 54.24 MHz should be less than -46 dBm to pass.

9.9 Frequency Measurement

9.9.1 Turn power off to DUT and remove connection from Spectrum Analyzer Input and connect to Frequency Counter CH A 100 MHz Input. See Figure 20 below for details. Make sure that CHAN A is selected and GATE is at 1 usec.

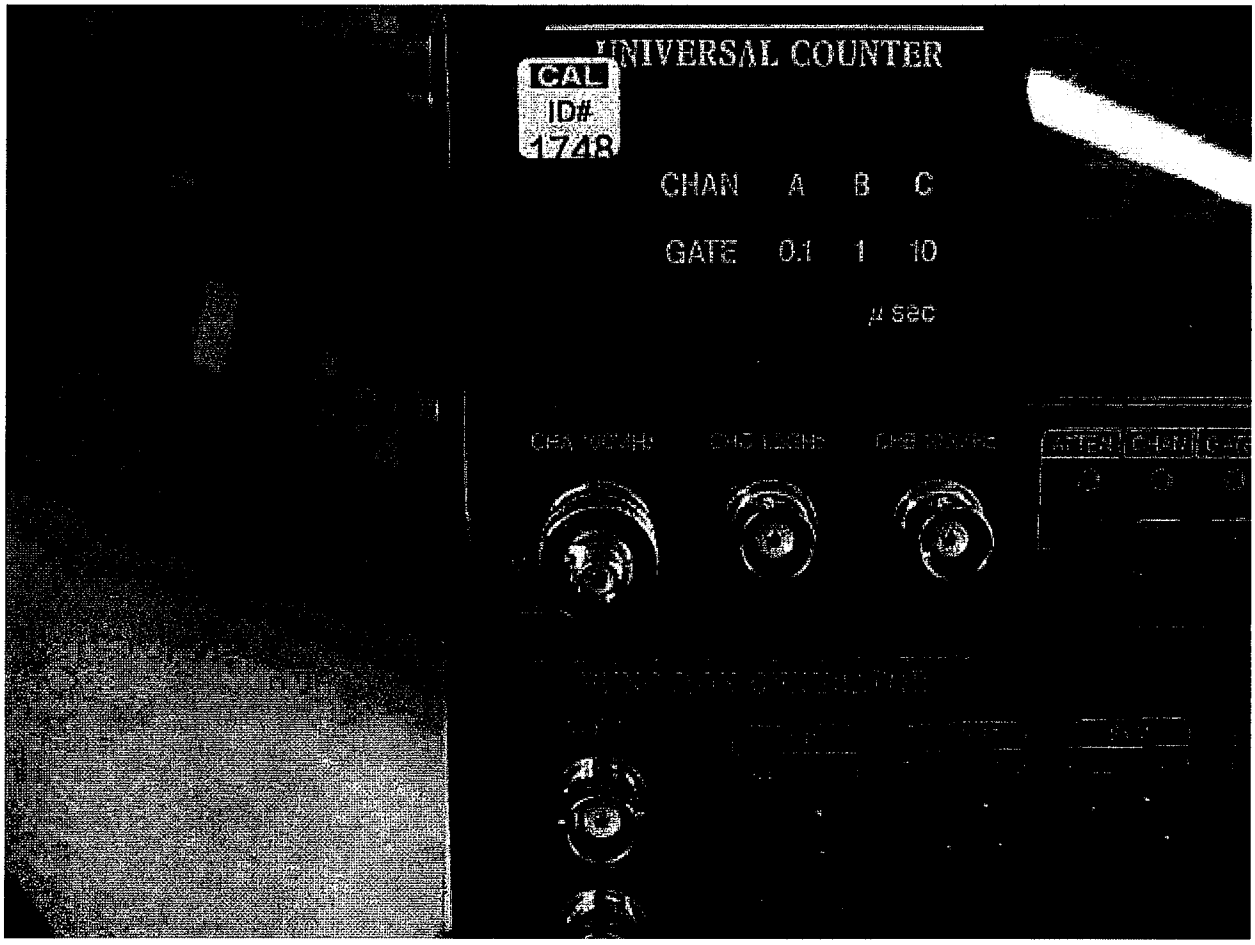

Figure 20

9.9.2 Turn Power back on and wait for DUT to boot, once the status LED is blinking at a rate of two times every second verify that the Frequency displayed by the counter is between 13.561 MHz and 13.559 MHZ.

9.9.3 [redacted]
Measure and record the frequency reading for Transmitter Frequency under the "C" Plate assembly section.

9.9.4 Turn DUT power off and remove connection from frequency counter and connect back to Spectrum Analyzer.

9.10 Antenna Port Power/Comm and Read Test.

9.10.1 Turn Power Off to DUT and connect the Test Auto Tune 5 x 7 antenna to DUT

port CN3, and close EZReader GUI.

9.10.2 Turn Power back on to DUT.

9.10.3 Using a DMM measure the voltage across C66 on Test Auto Tune 5 x 7 antenna. It's value should be 7 VDC +/- .3VDC. See Figure 21 for location.

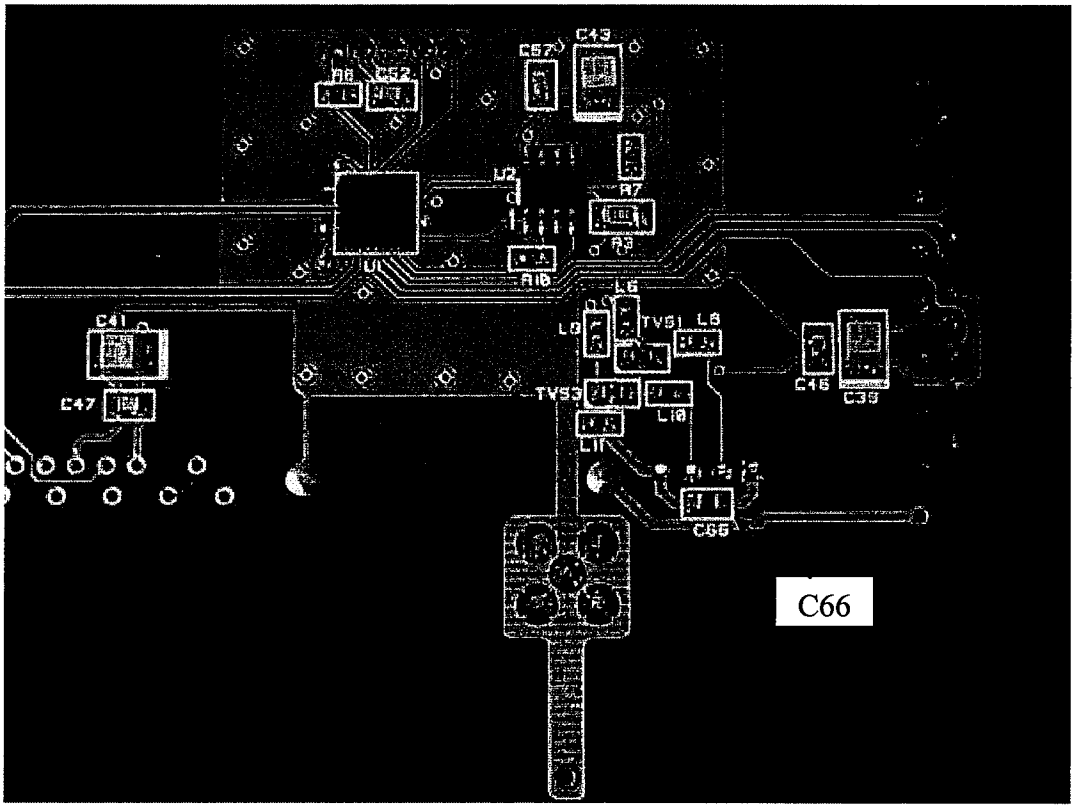

Figure 21

9.10.4 Open the EZReader GUI and connect to the Reader as shown in step 9.6.

9.10.5 Click on the Modify Folder and then on Antenna Tuning, you should see a screen similar to that shown in Figure 22. Check the following:

9.10.5.1Status is connected.

9.10.5.2A Pick Up Voltage is shown.

9.10.5.3A value is shown in the Freq1 field.

9.10.5.4Antenna Parameters are Loaded Correctly Message

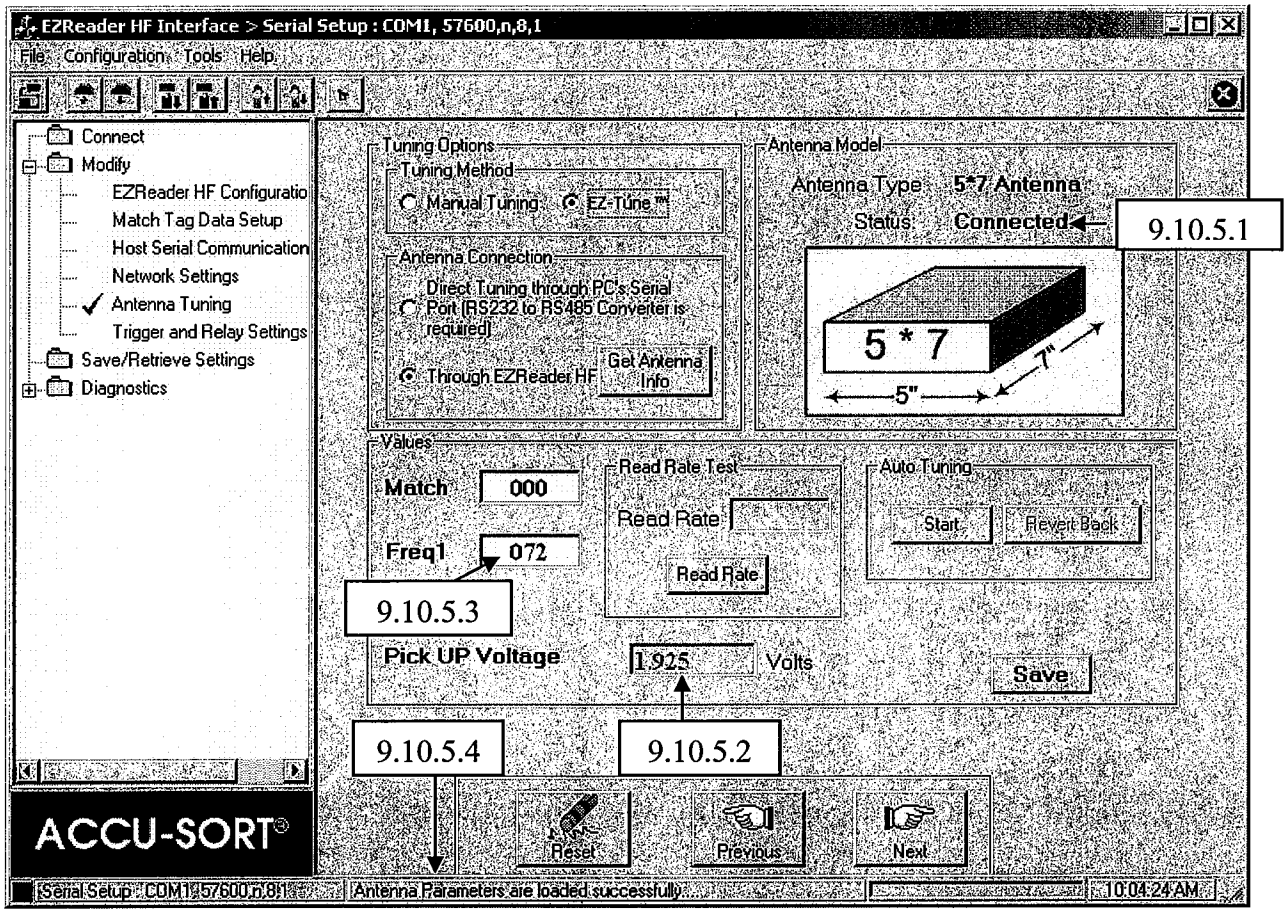

Figure 22

9.10.6 Click the "Start" button under the Auto Tuning Section, verify that an Auto-Tune has been performed by the antenna. The following items will indicate that is was performed:

9.10.6.1 Message at bottom of screen indicating that "Auto Tune of Antenna completed Successfully".

9.10.6.2 Antenna will emit a buzzing sound for approximately 1 second (Relay switching in different cap combinations).

9.10.6.3 Freq 1 value and Pick Up Voltage may change (dependent on last time antenna was tuned).

9.10.7 Place the ISO 15693 (TI) HF Test Tag on the PVC spacer and then hit the Read Rate button verify you get a 100/100 as shown in Figure 23. Note some times you may see a number such as 98/100 or 99/100 but it should be mostly 100/100.

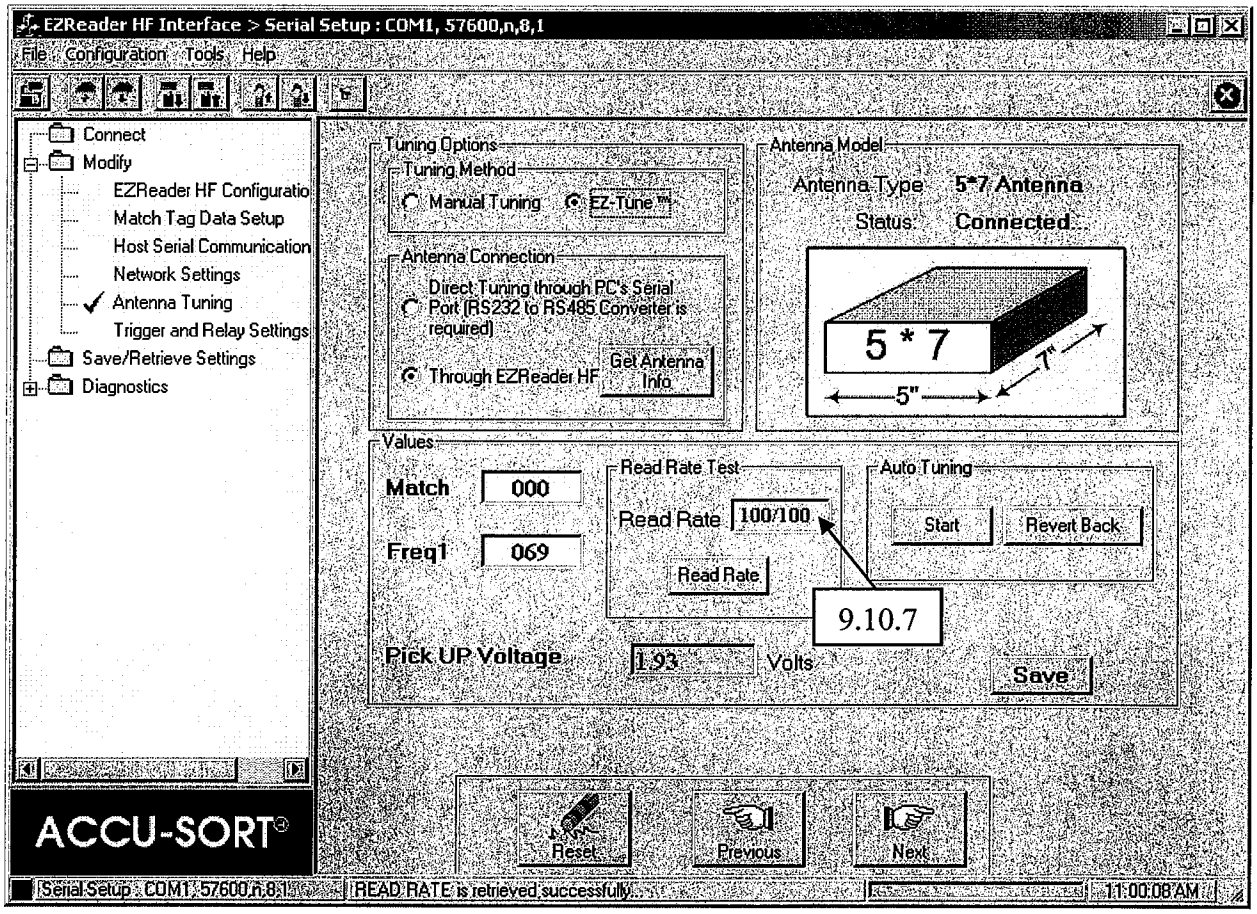

Figure 23

[redacted]

If all steps in section 9.9 have passed mark Check Out sheet for **Antenna Port Power/Comm and Read Rate Test** under "C" Plate section as passed.

9.11 Host Serial Port Test RS232/422

9.11.1 Make sure that the EZReader is configured as shown below in Figures 24 and 25 if not make the required changes and SAVE them.

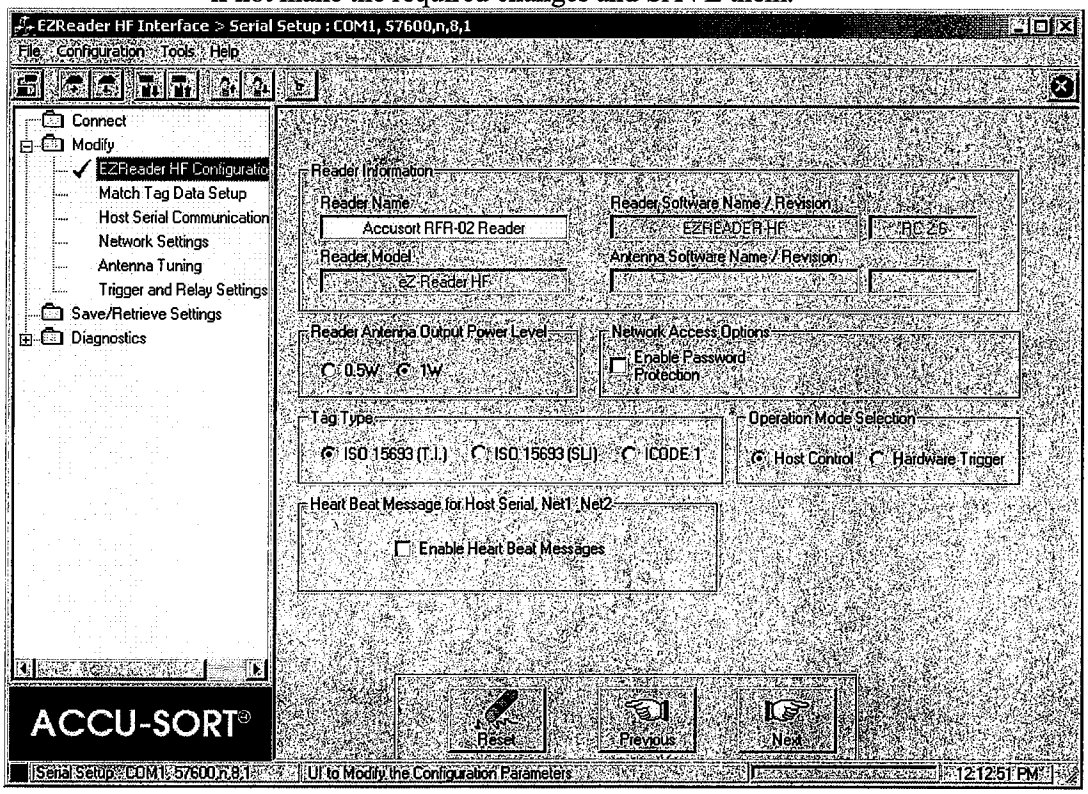

Figure 24

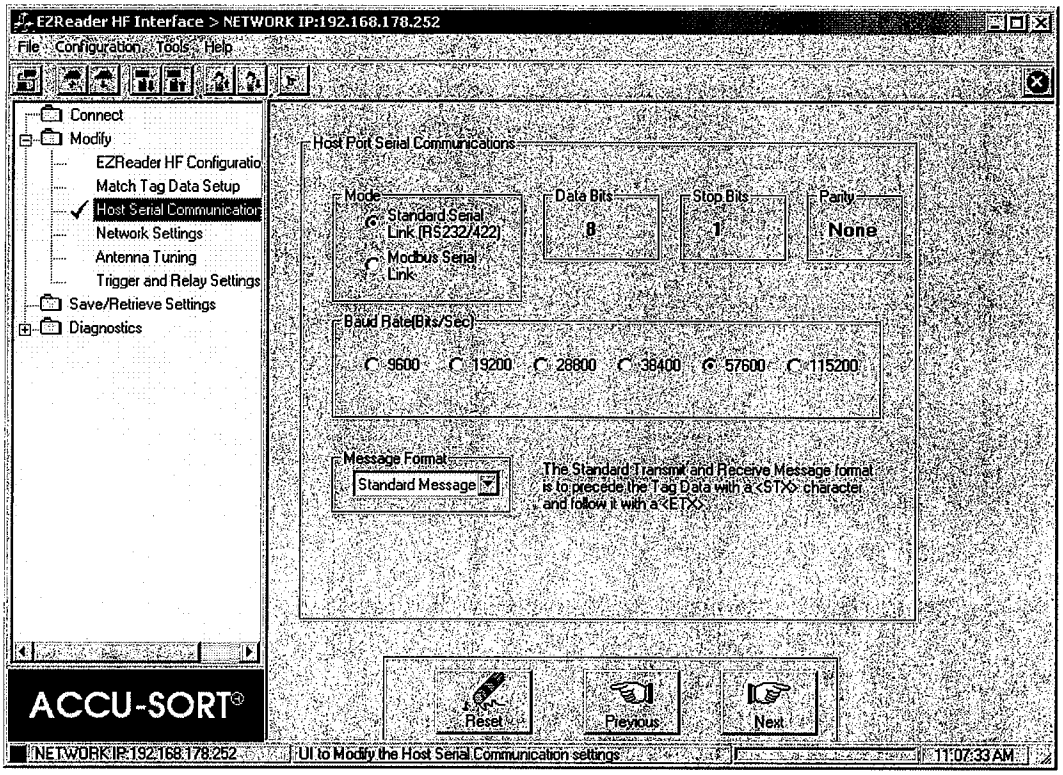

Figure 25

9.11.2 Close the EZReader GUI and then open PROCOMM PLUS from your desktop and make sure the settings circled in Figure 26 shown below match your screen, if they do not change by clicking on the setting and selecting the correct one. **Move the serial cable from the SETUP Port to the HOST Port.**

9.11.3 Click the Meta-Key labeled EZ R0000 this will send information to the DUT thru the RS232 pins of the UUT. Once the Key is pressed the screen should display the following data: "☻---0♥" shown below. Note if no Tag is in the antenna field or if the Tag is too far away from the antenna the "☻NO TAG♥ message will be sent.

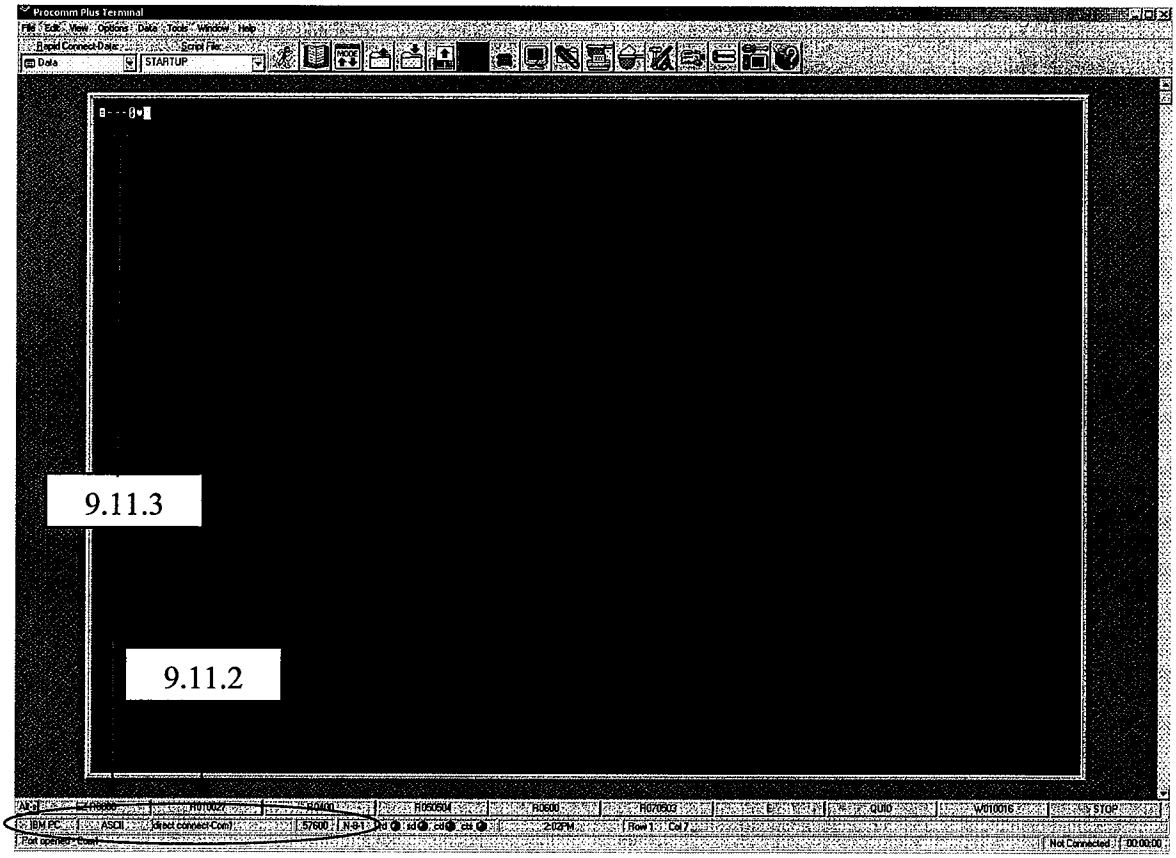

Figure 26

9.11.4 Insert the RS422 to RS232 converter between the Serial cable presently connected to the Test PC and the DUT's Host Port. Repeat steps 9.10.3. the same result should be seen.

[redacted]

If all steps in section 9.10 have passed mark Check Out sheet for **Host Serial Port Test** under "C" Plate section as passed.

9.12 Ethernet Port Test

9.12.1 Power cycle the DUT and wait for the unit to fully boot up. Open the GUI and connect to DUT using the Network Port by doing the following steps:

9.12.1.1 Select Network under the Connection Mode

9.12.1.2 Select the Default IP Address of 192.168.178.252 (Note if the address is not showing select Add IP and manual enter the Default address).

9.12.1.3 Click the Connect button, DUT status should show connected and the status message at the bottom of the screen should state "Reader Parameters are loaded successfully". See figure 27.

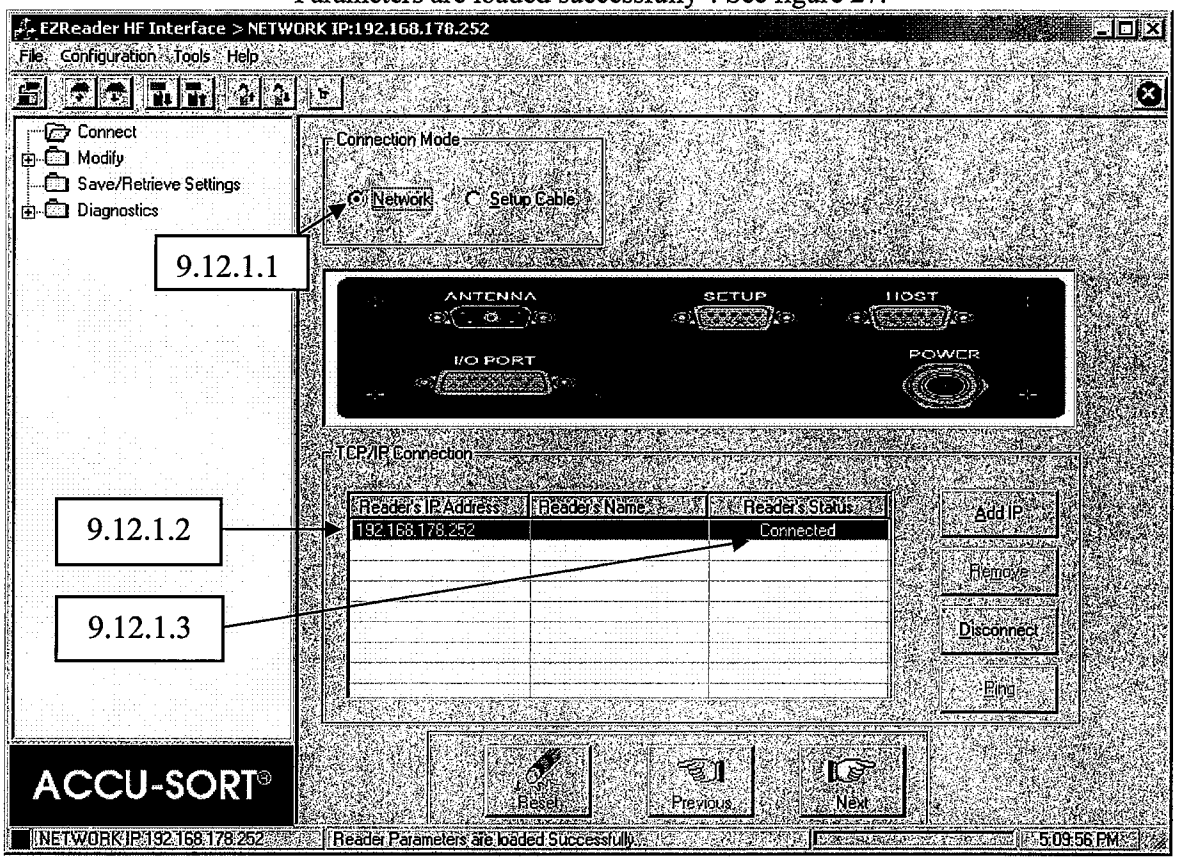

Figure 27

[redacted]

If all steps in section 9.11.1 have passed mark Check Out sheet for **Ethernet Port Test** under "C" Plate section as passed.

9.13 **I/O Port Test**

9.13.1 Using the GUI change the DUT's Operation Mode from Host Control to Hardware Trigger and SAVE the settings. This change is made under the EZReader HF Configuration Page, see Figure 28.

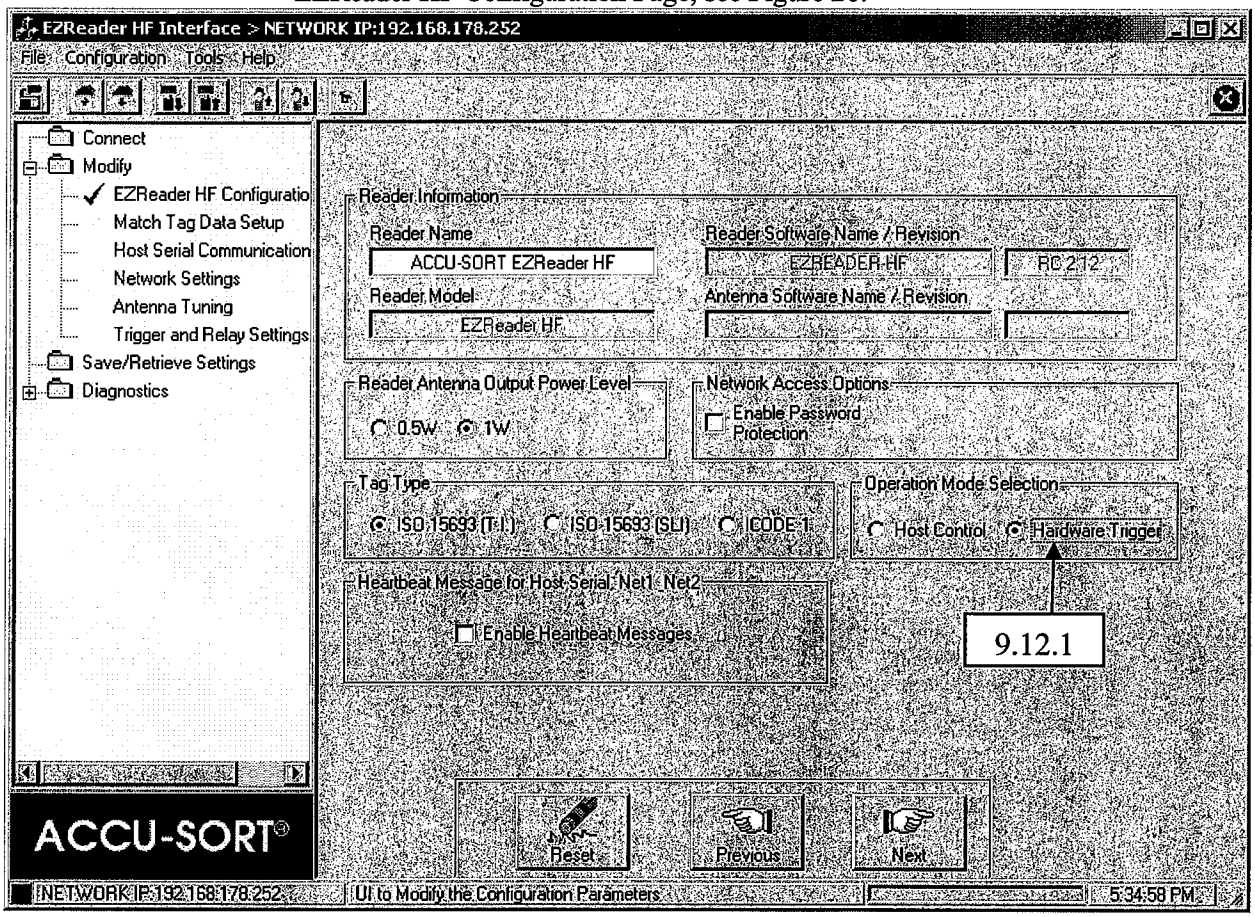

Figure 28

9.13.2 Under the GUI's Trigger and Relays Settings page make the changes shown in Figure 29 and SAVE them. Fields requiring changes are circled.

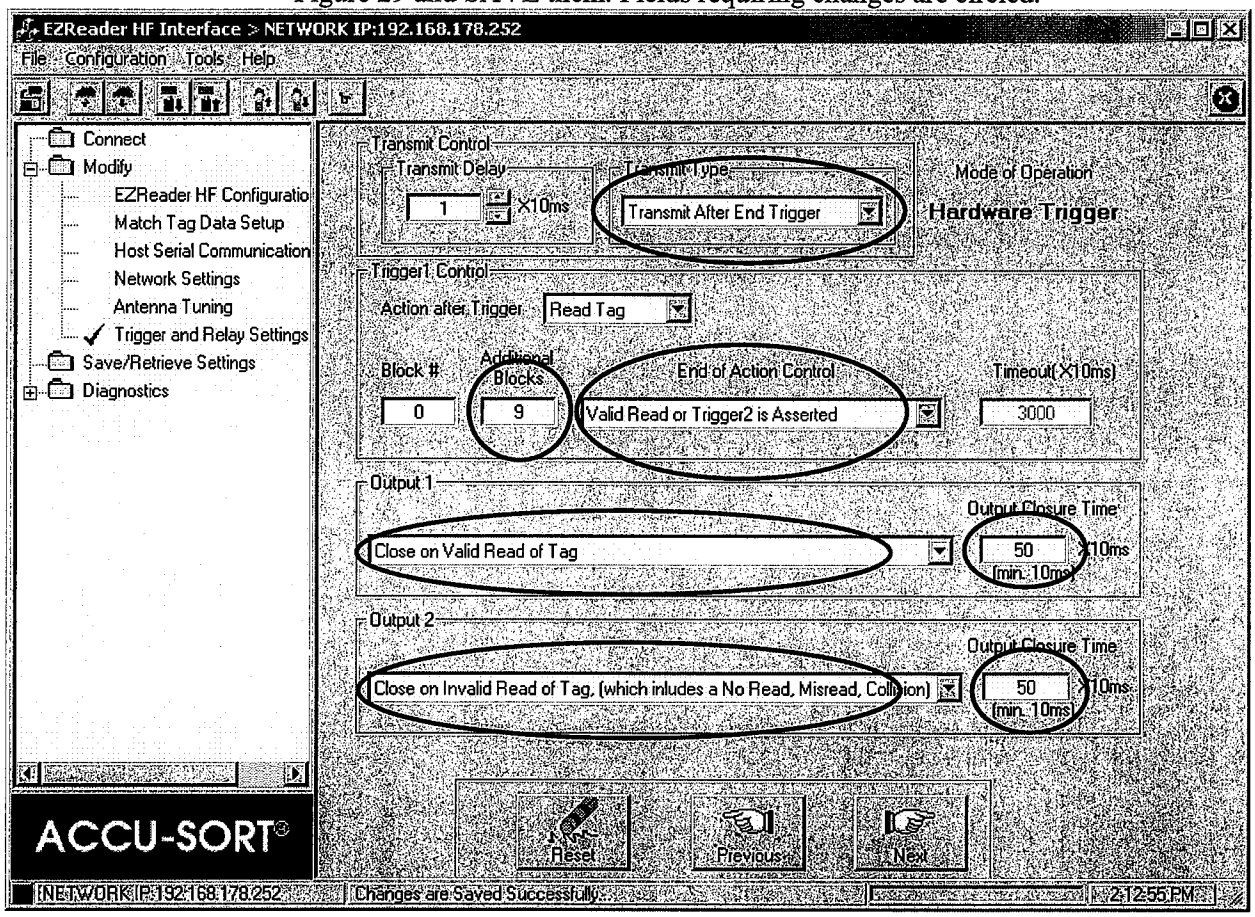

Figure 29

9.13.3 On the EZReader I/O Port Test fixture perform the following actions.

9.13.4 Press and release the "**IN 1 ISOL**" button verify the following:

Only the Blue LEDs located above the "IN 1 ISOL" and "IN 1 NON ISOL" buttons lite and **no** information appears on the PROCOMM screen.

9.13.5 Press and release the "**IN 2 ISOL**" button verify the following LEDS lite:

IN 2 ISOL
IN 2 NON ISOL
OUT 1 (On for only ½ second)

9.13.6 Verify that once the "**IN 2 ISOL**" button is depressed the following data string appears on the PROCOMM screen:

☻ ---0---1---2---3---4---5---6---7---8---9♥

This string shows the Tags memory contents in Block 0 thru 9.

9.13.7 Remove Test Tag from antenna's field and press "**IN 1NON ISOL**" button and verify the following:

Only the Blue LED above "IN 1 NON ISOL" button lites.
No Data is seen on the PROCOMM screen.

9.13.8 Press the "**IN 2 NON ISOL**" button and verify the following:

Blue LED above IN 2 NON ISOL button lites.
OUT 2 Blue LED lites for ½ second.
☻ NO TAG♥ data is seen on PROCOMM screen

[redacted]

If all steps in section 9.12 have passed mark Check Out sheet for **I/O Port Test** under "C" Plate section as passed.

9.13.10 Using the GUI return to the EZReader HF Configuration screen and select Host Control as the Operation Mode, then SAVE changes.

9.14 **EZTune Button Test**

9.14.1 Remove Test PC serial cable form RS232/422 converter and connect back to SETUP port of DUT.

9.14.2 Make sure that PROCOMM is still open and has the correct settings as shown in Figure 26.

9.14.3 Press and release the EZTune button located in the center of the DUT's reader board. The PROCOMM screen should display the data shown below in Figure 30. Note that the C2 value and ADC OUTPUT values will differ slightly. The important thing is to see Auto-Tuning started and completed.

9.14.4 Observe that once Auto-Tune process has been completed the Status LED will blink 3 times.

9.14.5 [redacted]

If all steps in section 9.14 have been passed mark Check Out Sheet for EZTune Button Test under the "C" Plate section as passed.

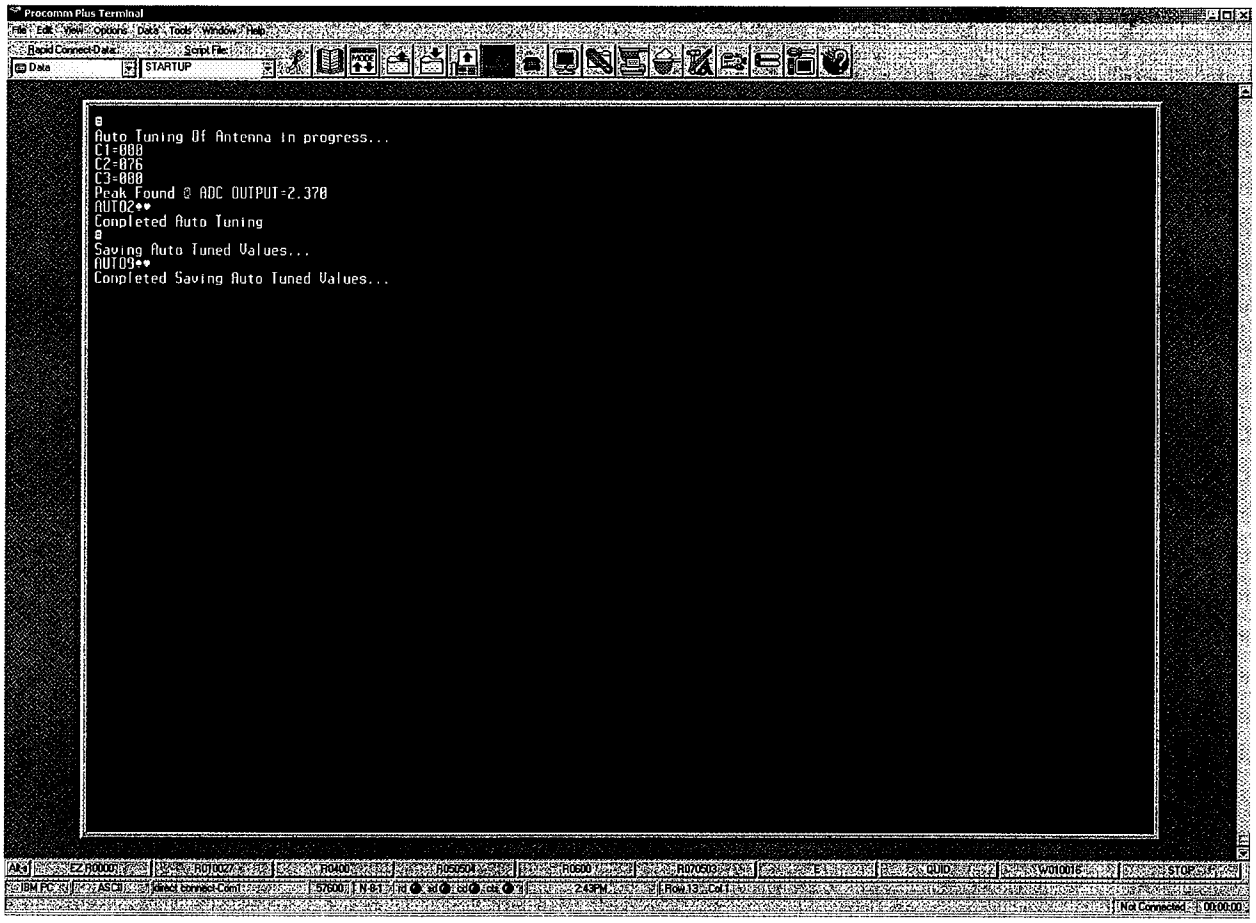

Figure 30

9.15 Program MAC ID into DUT using RFID EZReader MAC ID Setup program. See Figure 31.

9.15.1 Make sure that PROCOMM Plus is closed.

9.15.2 Turn Power Off to DUT.

9.15.3 Connect COMM 1 of PC to Setup Port (Reader board CN8).

9.15.4 Press Start and then Power On DUT.

9.15.5 Follow on screen instructions.

9.15.6 Note there is no checking of current MAC ID so a unit with a valid MAC ID will be programmed with a new MAC ID if connected to Setup program more than once.

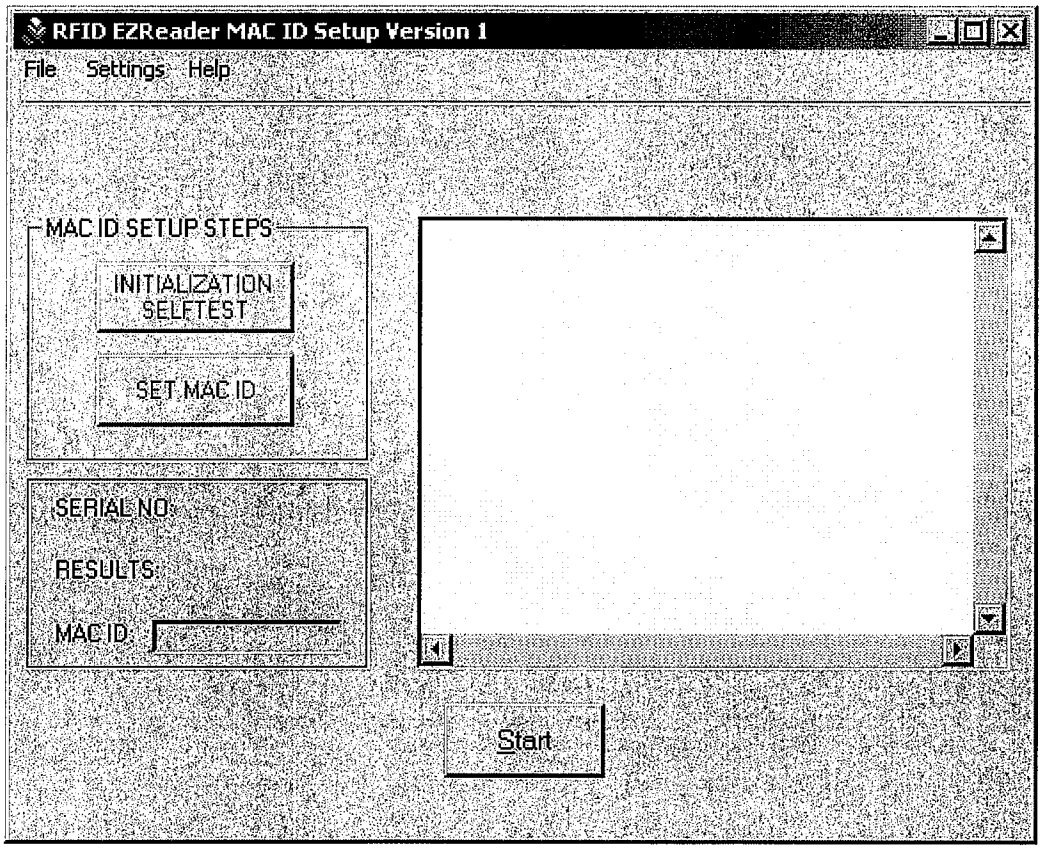

Figure 31

[redacted]

[redacted]

THIS SECTION COVERS TESTING THE FINISHED ENCLOSURE

9.18 Repeat steps **9.2 thru 9.14.5** marking off the corresponding section under the finished Enclosure section of the Check out sheet when instructed to do so. Note for the RF section the levels only need to be verified that they are within tolerance and recorded, resetting is only required if they are out specified limits.

9.19 Place units on burn in for 24 hours, assuring that the RF output of the antenna port is terminated with a 50 ohm 1 watt load.

THIS SECTION COVERS POST BURN IN TESTING

9.19 On the Spectrum Analyzer load **EZ1356.sta** file by pressing the following: **FILE; *Load; Dir Select;*** (Highlight "C" using Rotary Knob); ***Dir Select;*** (Highlight EZREADER Directory); ***Dir Select;*** (Highlight File EZ1356.sta);***Load Now.***

9.20 Remove EZReader from burn-in and connect the antenna port to spectrum analyzer using RF Coaxial adapter cable.

9.21 Connect the Serial Cable from the Test PC to the DUT Setup Port and apply power.

9.22 Verify on the Spectrum Analyzer that the signal at 13.56 MHz is 29.5 dBm +/- .3 dB. See Figure 14 for reference.

9.23 [redacted]. Record level in Checkout Sheet for 1 Watt Transmitter Amplitude Test under the Post burn-in section.

9.24 Turn DUT Power off and connect its antenna port to the test 5 x 7 antenna. Turn power back and let reader boot then connect to the reader using EZReader GUI using the Setup Cable and Comm 1. Note: Make sure that PROCOMM is closed or GUI will not connect.

9.25 After connecting to DUT open the Antenna Tuning Screen, make sure that the 5 x 7 antenna is shown as connected.

9.26 Remove Test Tag from antenna Field and perform an Auto Tuning then place Test Tag 8" above the antenna center with the long axis of the tag parallel to the antenna's long axis.

9.27 Perform 5 consecutive read Rate tests the over all average should be greater than 98% with no single iteration of the test yielding a result of less than 98%.

9.28 [redacted]. Mark read rate test as passed under the Post burn-in section.

9.29 Go to the Save/Retrieve Screen of the GUI and click the 'Default EZReader HF Button after setting the defaults click the SAVE ICON. See Figure 30 for reference.

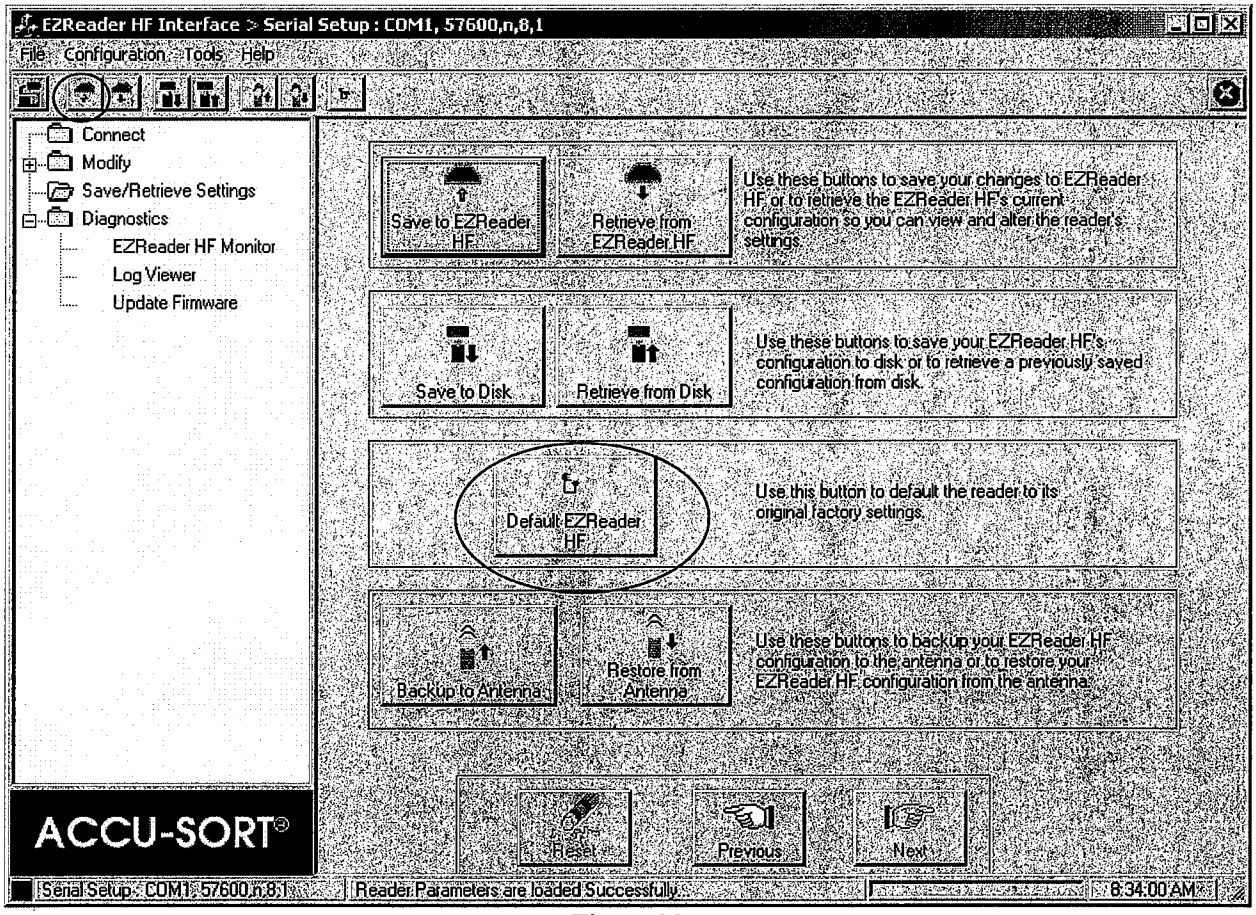

Figure 30

9.30 **This completes testing of the EZReader HF.**

10.0 REVISION HISTORY

Test Procedure for EZREADER HF 13.56MHZ RFID READER

Part #1000065715

REVISION	DATE	INITIATED BY	REASON
A-1	11/28/07	(RRH)	Initial Release
1	1/22/08	RRH	Added ECO #
2	2/01/08	RRH	Fig 7 changed. Added additional voltage checks in section 9.4.8.3. Added details on programming MAC ID using Auto-Mated software. Added notation toDEFAULT unit if Setup Port message is not matching Figure 6

Approved By _____ Approved By _____

Please Print _____ Please Print _____

Quality Assurance Engineer Production Representative