出國報告（出國類別：其它）

「新增松山機場 VOR/DME 設備乙套」
工廠測試
出國報告書

服務機關：民用航空局飛航服務總臺
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王桂雄工務員
派赴國家：美國堪薩斯
出國期間：103.03.02 ~103.03.13
報告日期：103.04.08

目　　次

一、目的

本次廠測之主要目的在於測試「新增松山機場 VOR/DME 設備乙套」所採購之都卜勒特高頻多向導航臺(DVOR)及測距儀(DME)等設備是否符合本總臺之合約規範，藉以確保本總臺所購各設備之品質與性能。

臺北松山機場位處臺北盆地內，各種天然及人為障礙環繞，進場航機不得實施目視進場(VFR)，惟松山機場 10 跑道 ILS/DME 程序除使用 GPS 作為備援程序外，目前並無其他儀器備援程序，爰本次新增松山 DVOR/DME 設備後，將可另外提供機場內各跑道所需之儀器備用程序，確保航機進場安全。本總臺將於本購案中新增松山機場 DVOR/DME 設備各乙套及相關備份零組件各 1 批，於民國 102~103 年（2013~2014 年）架設於松山機場地區，提高飛航服務品質。

依據本購案之採購契約規定，廠商交運相關設備前，應由本總臺派員前往原製造廠進行相關設備查測。故本次廠測之主要目的乃希藉由原廠提供之各項儀表、模擬器設備與資深工程師之協助，進行都卜勒特高頻多向導航臺(DVOR)及測距儀(DME)之工廠階段性能測試。

在本次工廠測試過程中，本總臺廠測人員藉由原廠各項儀表與工程師之協助，針對各項設備之性能詳加量測與檢驗，在經由雙方所認可的測試步驟，在合約規範下逐一檢視每個測試的結果並做紀錄，依據測試的結果，做好設備運送前之品質把關工作，避免事後的修改，對維護人員造成困擾，以降低採購風險，確保本採購案依合約規定成功執行。

二、廠測與會人員

總臺代表：

張元明　航電技術室/機電課/工務員

王桂雄　飛航服務總臺/臺北裝修區臺助航設備臺/工務員

SELEX 公司代表：

John Wood/ Program Manager

Chris Martin/ Sr Quality Engineer

三、過程

（一）、行程

本次廠測，本總臺選派 2 名人員前往美國堪薩斯執行工廠測試工作。

本次廠測係於設備原製造商 SELEX Sistemi Integrati 公司之#1 測試廠房（FAT Room 1）舉行，測試期程共計 7 日(註：如含行程及星期例假日共計 12 天)，相關行程如后：

1.103 年 3 月 2 日搭乘長榮航空班機，由臺北經美國洛杉磯、休斯頓轉機，於 3 月 3 日飛抵堪薩斯。

2.103 年 3 月 4 日至 3 月 8 日：進行為期 5 天之工廠測試。

3.103 年 3 月 9 日：進行廠測資料整理。

4.103 年 3 月 10 日：下午 14：00~16：00，完成所有測試，由雙方代表於總結會議簽署本次廠測紀錄。

5.103 年 3 月 11 日：回程搭乘長榮航空班機。

（二）、會議議程

Tuesday 4/3/14

-09:00 ~ 09:30	Opening Meeting – Introduction of Participants
-09:30 ~ 11:30	Factory Tour
-13:30 ~ 17:00	Start SHUN-SHAN DVOR System Testing
-17:00	End of 1st Day of FAT

Wednesday 5/3/14

-09:00 ~ 15:00	Continue SHUN-SHAN DVOR System Testing
-17:00	End of 2nd Day of FAT

Thursday 6/3/14

-09:00 ~ 15:00	Continue SHUN-SHAN DVOR System Testing
-17:00	End of 3rd Day of FAT

Friday 7/3/14

-009:00 ~ 15:00	Start SHUN-SHAN DME System Testing
-17:00	End of 4rd Day of FAT

Saturday 8/3/14

-09:00 ~ 15:00	Continue SHUN-SHAN DME System Testing
-17:00	End of 5rd Day of FAT

Monday 10/3/14

-14:00PM ~ 15:00PM	Preparation - Signing of FAT Documentation
-15:00PM ~ 16:00PM	Closing and Open Issues Meeting

四、廠測內容

本次工廠測試於 103 年 3 月 2 日至 3 月 13 日由本總臺派員會同承包商 SELEX Sistemi Integrati Inc.公司人員於美國堪薩斯工廠進行，本次採購項目包含松山機場 DVOR/DME 乙套，於測試過程中將測試結果逐項紀錄。

（一）、測試項目列表

DVOR
001150A-0202,0212

1SCOPE
This specification covers the FAT and data sheets that will determine the equipment performance to SELEX-SI specifications. It is the basis for equipment acceptance with respect to electrical/electronic testing required by SELEX Systems Integration Inc.
2 DEFINITIONS and ABBREVIATIONS
2.1 Definitions and Abbreviations
AC Alternating Current
AM Amplitude Modulation
Az Azimuth
BCPS Battery Charger Power Supply
C Centigrade
CCA Circuit Card Assembly
CPU Central Processing Unit
dB decibels
dBm decibels relative to 1mW
dBc decibels below carrier
DC Direct Current
deg degrees
FAT Factory Acceptance Test
FM Frequency Modulation
FWD Forward
Hz Hertz
MHZ Megahertz
mW milliwatt

PMDT Portable Maintenance Data Terminal
REFL Reflected
RF Radio Frequency
RSCU Remote Status Control Unit
SVD Simultaneous Voice and Data
VAC Volts AC
VHF Very High Frequency
VOR VHF Omnirange
VSWR Voltage Standing Wave RatioFAT001150A-0202,0212 Rev. G 3 March 9, 2011 PROPRIETARY DATA

3 TEST REQUIREMENTS

3.1 Required Test Equipment

The test equipment to be used for this procedure is listed below. In all cases equivalent test equipment may be used in place of the equipment listed. Throughout the remainder of this document, all required test equipment needed to perform a specific test will be referred to using its industry standard designation; i.e. scope, counter, DMM, etc.

1-DIGITAL MULTIMETER FLUKE 83
1-OSCILLOSCOPE TEK 2445
1-FREQUENCY COUNTER HP 53181A
1-SPECTRUM ANALYZER HP 8560A
1-MODULATION ANALYZER HP 8901B
1-SENSOR MODULE HP 11722A
1-MULTIFUNCTION SYNTHESIZER HP 33120A
1-COMPUTER W/MODEM AND LATEST PMDT IBM PC™ Compatible
1-BI-DIRECTIONAL COUPLER NARDA 3020A
1-ANTENNA SIMULATOR
4-12V LEAD ACID BATTERIES
1-250 WATT 50 OHM DUMMY LOAD BIRD
4-5 WATT 50 OHM DUMMY LOADS BIRD
1-CURRENT PROBE FLUKE 337
1-20.0db COAXIAL ATTENUATOR 50 Ohm, 5.0 watt minimum, Type-N
1- RCSU SELEX-SI 2238 or 2240
1-EXTENDER CIRCUIT CARD SELEX 012207-0001
2-TELEPHONE CABLES MINIMUM OF 6 FEET EACH
1-MICROPHONE JACK
1-10K OHM RESISTOR ¼ WATT, LEADED
2-COAXIAL CABLES TYPE N MALE
1-COAXIAL CABLE ADAPTER TYPE N FEMALE TO SMA MALE
1-COAXIAL CABLE ADAPTER TYPE N FEMALE TO BNC MALE
1-NETWORK ANALYZER AGILENT E5062A
1-DIGITAL PEAK POWER METER N1911A
1-POWER SENSOR N1921A

NOTE 1: Any values called out without tolerances are approximate only.

NOTE 2: Changing output impedance matching will require readjustment of the output power level(s) of the signal(s) being measured or checked.

NOTE 3: Some HP equipment is now branded as Agilent.

Record the Asset Number, Equivalent model number used (if applicable) and

calibration due date of the equipment used on data sheet. Ensure that the equipment used for internal FAT is consistent with the equipment used for Factory FAT.

3.2 Hazard Warnings and Notices

WARNING: HIGH VOLTAGES: May be present during testing. Personal injury or equipment damage may result. Qualified personnel only!

WARNING: ELECTROSTATIC SENSITIVE DEVICES PRESENT: Follow all ESD precautions during any handling of circuit cards!

WARNING: ELECTROMAGNETIC RADIATION: RF Outputs must be properly loaded before power is applied!FAT001150A-0202,0212 Rev. G 4 March 9, 2011

PROPRIETARY DATA

3.3 General Requirements

3.3.1 Normal Operating Parameters

All tests will be performed under normal operating parameters unless otherwise stated. Terminate all RF outputs with 50 ohm loads. Check all power supply outputs for any shorting to ground. Connect computer to USB port on the RMS CCA. Connect power cord to TB3 of VOR cabinet AC Monitor CCA. Connect DVOR ANTENNA SIMULATOR to Commutator Ports on the both sides of cabinet. Connect RF cable from 30 dB attenuator of ANTENNA SIMULATOR to DIRECTIONAL COUPLER inside the cabinet.

3.3.2 Primary DC Voltages

a. Switch on System AC, BUSS and Battery circuit breakers on the lower front power panel.

b. Open the rear door of the VOR. Locate the Control Rack 1A3. Connect DMM to 1A3 +48V1 BCPS terminal E1 and ground E2 terminal. Record the DC value on the Test Data sheet.

c. Connect DMM to 1A3 +48V2 BCPS terminal E3 and ground E2 terminal. Read the DC value and record.

d. Ensure batteries are connected and the breakers on the battery box are turned on.

NOTE

Battery charge voltage may be between 43VDC and 55VDC depending on battery voltage level. Battery charge voltage for fully charged batteries should be 53VDC +/-2VDC.

Perform steps e through I for the 001150A-0202 only, skip for the 001150A-0212.

e. Turn on Transmitter #1 to antenna. This will cause BCPS #2 to supply battery charge. Wait one minute.

f. Remove the cover from the Battery Set. Connect DMM to the Battery positive terminal with the DMM return to the cabinet buss bar (ground). Record.

g. Turn on Transmitter #2 to antenna. This will cause BCPS #1 to supply battery charge. Wait one minute.

h. Connect DMM to the Battery positive terminal with the DMM return to the cabinet buss bar (ground). Record.

i. Place the cover back onto the Battery set.

3.3.3 Low Voltage Power Supplies (LVPS)

a. Turn off the VOR DC Buss circuit breaker for Transmitter 1.

b. Place the LVPS 1A3A4 on the extender circuit card.

c. Turn on the VOR DC Buss circuit breaker for Transmitter 1.

d. Connect DMM Positive lead to LVPS 1A3A4 TP9 for +12 VDC, Negative lead to TP4 (GND), record.
e. Connect DMM Positive lead to LVPS 1A3A4 TP8 for -12 VDC, Negative lead to TP4 (GND), record.
f. Connect DMM Positive lead to LVPS 1A3A4 TP2 for +5 VDC, Negative lead to TP4 (GND), record.
g. Connect DMM Positive lead to LVPS 1A3A4 TP3 for +28 VDC, Negative lead to TP4 (GND), record.
h. Turn off the VOR DC Buss circuit breaker for both Transmitter 1 and Transmitter 2.
i. Remove LVPS from extender CCA and return to cabinet.
j. Place the LVPS 1A3A8 on the extender circuit card.
k. Turn on the VOR DC Buss circuit breaker for Transmitter 2.
l. Repeat steps d. through g. for 1A3A8. Record.
m. Turn off the VOR DC Buss circuit breaker for both Transmitter 1 and Transmitter 2.
n. Remove LVPS from extender CCA and return to cabinet.
o. Turn on the VOR DC Buss circuit breaker for both Transmitter 1 and Transmitter 2.
p. Verify that all DC Power OK and CPU OK LEDs are on.

3.3.4 Software Versions

a. {PMDT}: SYSTEM>>PMDT SETUP, Select Print Screens “AS GRAPHIC IMAGE”.
b. {PMDT}: Log on Level Three
c. {PMDT}: RMS>>STATUS>>SOFTWARE REVISIONS…Print this screen.
d. {PMDT}: INFO>>ABOUT PMDT…Print this screen.FAT001150A-0202,0212 Rev. G 5 March 9, 2011 **PROPRIETARY DATA**
e. Verify and print the following screens:

NOTE

Verify that the current settings match figures (except for Monitor 1 and 2 Monitor Input Attenuation on Figure 3-2 and Transmitter Frequency on Figure 3-4).

Figure 3-1FAT001150A-0202,0212 Rev. G 6 March 9, 2011 **PROPRIETARY DATA**

VSWR = (√FWD + √REFL) ÷ (√FWD - √REFL)

New Power Level= (New Setting%/Present Setting%)2 * Current Power Level

New SBO Power= (Desired SBO Mod%/Current SBO Mod%) * Current Setting for SBO Power

3.4 Test Procedure

3.4.1 Carrier and Sideband Output Level Control

NOTE

Set system to monitor bypass to avoid shutdown.

1. {PMDT}; Transmitters>>Configuration>>Nominal…Set Voice, Ident, and Reference to 0.0% modulation.
2. Disable transmission from the VOR and disconnect the cable from J3 of the system directional coupler (1DC1).
3. Enter the station frequency into the Power Meter and enter the offset (pre-measured insertion loss of the directional coupler plus the pre-measured insertion loss of an external 20dB attenuator) into the power meter.
4. Connect Power Meter sensor head through the external 20dB attenuator to the FWD port (J3) of carrier directional coupler.
5. Set Transmitters>> Configuration>>Nominal carrier output power to 100 watts and enable transmission.
6. Adjust, if necessary, using Transmitters>>Configuration>>Offsets and Scale Factors for to 100 watts on the Power Meter..
7. Check data sheet that power levels have been adjusted.

8. Record Transmitter power levels. Disable transmission, reconnect system cable to J3 of directional coupler, enable transmission
9. {PMDT}: Transmitters>>Data>>Transmitter Data, check carrier power for transmitter one. Power level should be ± 5% of the recorded level in step 6 above. If not, adjust 1A4A4 RF Monitor R2 for recorded value ± 5%. Record
10. {PMDT}: Transmitter>>Configuration>>Nominal. Set carrier output level to 50 watts. Check carrier output level and verify that the actual output level is within ±10% of the readings on the transmitter data screen. Record.
11. Return power output level to 100 watts
12. Repeat steps 1-11 for transmitter 2.
13. Disable transmission from the LCU panel.
14. Disconnect the Power Meter from J3 and reconnect the system cable.
15. Reset the offset value in the Power Meter to pre-measured insertion loss of the external 20 dB attenuator for a direct readout of average sideband power.
16. Connect power sensor through the 20 dB attenuator to Sideband 1 output (input to Commutator J25)
17. Enable the transmitter and select {PMDT}: Transmitters>>Configuration>>Offsets and Scale Factors… Set Sidebands 1-4 RF Level Scale to 100% for both transmitters.

a. Check SB 1 output level for 3.0 watts, adjust sideband 1 output power with R3 PWR ADJ potentiometer on the sideband amplifier if necessary.
b. Check data sheet that power level has been adjusted.
c. Record SB1 power level.
d. Select Transmitters>>Data>>Transmitter Data with PMDT.
e. Check sideband 1 power level after readings stabilize. Power levels should be ± 5% of the adjusted levels in step a. If not, adjust R2 on the front of sideband 1.
f. Record PMDT SB1 reading.
g. {PMDT}: Transmitter>>Configuration>>Nominal…Set carrier output level to 50 watts. Check sideband 1 output level and verify that the actual output level is within ± 10% of the reading on the Transmitter>>Data screen for SB1.
h. Record power reading (Actual and Displayed).
i. {PMDT}: Transmitter>>Configuration>>Nominal…Set carrier output level to 100 watts.
j. Disable the transmitter.
18. Repeat steps 17a. through j. for transmitter 2.
19. Install the 20dB attenuator to Sideband 2 output (input to Commutator J25). Repeat step 16 and 17 for SB2 adjusting R6 and R5 in place of R3 and R2.
20. Repeat step 17 for transmitter 2.
21. Install the 20dB attenuator to Sideband 3 output (input to Commutator J26) Repeat step 16 and 17 for SB3.
22. Repeat step 17 for transmitter 2.
23. Install the 20dB attenuator to Sideband 4 output (input to Commutator J26). Repeat step 16 and 17 for SB4 adjusting R6 and R5 in place of R3 and R2.
24. Repeat step 17 for transmitter 2.
25. Remove the 20dB attenuator and reconnect the commutator cable to SB 4 and return system to normal operation.

3.4.2 Sideband VSWR

NOTE

The Sideband VSWR is dependent on the antenna simulator used.

1. Select TX1 and record the VSWR readings for sidebands 1-4.
2. Select TX2 and record the VSWR readings for sidebands 1-4.
3. Turn off transmitter power.
4. Remove sideband 1 input to the Commutator. Turn TX1 on.
5. Record that the PMDT value for SB 1 VSWR has changed. Select TX2, record that the PMDT value for SB1 VSWR has changed.

6. Turn off transmitter; reconnect sideband 1 input to Commutator. Repeat steps 3-5 for the remaining sidebands.

3.4.3 Carrier VSWR

1. Select TX1 and turn off transmitter power. Add a Type N Tee to the output of Bi-directional coupler DC1 in the VOR cabinet. Connect the 30 dB attenuator of Simulator to the output end of the Tee.
2. Place a Type N "barrel and bullet" connected to the open line to simulate a 1.2:1 load.
3. Temporarily remove the system cables from the forward and reflected port paths of DC1 and connect the Power Meter.
4. Set the power meter offset as described in step 3.4.1.3, turn on transmitter power and measure the forward and reflected values at DC1 with Power Meter and/or Spectrum Analyzer).
5. Calculate the VSWR of Carrier by using the formula below. Record the measured VSWR.

NOTE

A spectrum analyzer may be used in lieu of the power meter to measure low levels of forward and reflected power. If using the spectrum analyzer to measure power, configure it to read in watts (not dBm) and enter the offset value of the directional coupler into the spectrum analyzer for these tests. Calculate the Carrier VSWR on Transmitter 1 using the formula below.

VSWR = (√FWD + √REFL) ÷ (√FWD - √REFL)

NOTE

It may be necessary to change output cable length to set actual and displayed VSWR readings equal.

6. Turn off the transmitter power. Replace the system cables to the forward and reflected port paths of DC1 and turn on transmitter power.
7. {PMDT}: Transmitters>>Data>>Transmitter Data… Set the displayed value to equal the calculated value by adjusting the CSB REFLD potentiometer (R2) on the 1A4A4 RF Monitor assembly.
8. Turn the transmitter power off
9. Remove the type N-Tee between the Bi-directional coupler and the attenuator. Connect the simulator attenuator directly to the Bi-directional coupler output.
10. Turn the transmitter power on, measure forward and reflected power and calculate the VSWR for TX1 using the same formula. Record on the data sheet.
11. The calculated and displayed values on the Transmitters>>Data (transmitter 1)

screen must be less than 1.15: 1.
12. Record the displayed values.
13. Select TX2 and repeat steps 1 to 12 for TX2. VSWR reading must be less than 1.15:1 on the transmitter data screen.

3.4.4 Amplifier Protection Test with 3:1 VSWR

1. Select TX1 and turn off transmitter power. Add a Type N Tee to the directional coupler DC1 in the VOR cabinet. Place a 30 dB attenuator to the open end of the Tee.
2. Place the system in bypass. Check that the carrier power is set to 100 watts ± 10%.
3. Add the "3:1" mismatch cable stub to the "T" connector. This will provide a minimum of 3:1 VSWR across the VOR band.
4. Turn on TX 1. Verify that that the power output cycles on or off, or the forward power is reduced significantly. Record.
5. Turn off Transmitter 1. Select Transmitter 2 as Main (connected to antenna).
6. Repeat steps 1 to 4 for TX2.
7. Turn off transmitter and restore to normal configuration.

3.4.5 Frequency Verifications

1. Turn off all power. Remove TX 1 Audio Generator (1A3A2) CCA. Install an extender CCA and attach the Audio Generator CCA to the extender.
2. Turn on System AC and DC Buss Circuit Breakers.
3. Place TX 1 on Antenna. Place system in Bypass.
4. Connect external test equipment (frequency counter or O-scope) to 360Hz Sine Modulation test point TP18 of the 1A3A2 CCA and verify that a 360 Hz signal is present. Record.
5. Connect external test equipment to 360 Hz Cosine Modulation test point TP20 of the 1A3A2 CCA and verify that a 360 Hz signal is present. Record.
6. Connect external test equipment to 30 Hz Reference test point TP24 of the 1A3A2 CCA and verify that a 30 Hz signal is present. Record.
7. {PMDT}: Transmitters>>Commands>>Transmitter Ident…Set the identification to continuous. Ensure Ident is set to 8%.
8. Connect external test equipment to Ident test point TP2 of the 1A3A2 CCA. Record 1020 Hz.
9. Turn off all power. Remove the 1A3A2 CCA and extender and reinsert the 1A3A2 into its slot.
10. Remove Transmitter 2 Audio Generator (1A3A9) CCA, install an extender CCA and attach the Audio Generator CCA to the extender.
11. Turn on System AC and DC Buss power.

12. Place TX 2 on Antenna. Place system in Bypass.
13. Repeat steps 4 through 9 above for Transmitter 2.
14. Turn on System AC and DC Buss Circuit Breakers. Select TX 1 operating into antenna.
15. Connect frequency counter to “CARRIER FREQUENCY” jack J2 of TX 1 Synthesizer Generator Assembly (1A3A1).
16. Observe the station operating frequency while the transmitter is operating. Record.
17. Select TX 2.
18. Connect frequency counter to “CARRIER FREQUENCY” jack J2 of TX 2 Synthesizer Generator Assembly (1A3A11).
19. Observe the station operating frequency while the transmitter is operating. Record frequency.
20. Turn off both Transmitters.
21. Remove the cable from the 1A11 Commutator (left side viewing from the rear) J25 position. Insert a 20 dB attenuator in series with the cable from Sideband 1 output of the Transmitter.
22. Turn on TX 1. Place system in Bypass.
23. Connect external test equipment (frequency counter) to the attenuator output. Record the LSB frequency for TX 1.
24. Select TX 2.
25. Record the LSB frequency for TX 2.
26. Turn off both Transmitters.
27. Remove the attenuator from the Sideband 1 output and reconnect the cable to 1A11 J25.
28. Remove the cable from the 1A11 Commutator (left side viewing from the rear) J26 position. Insert a 20 dB attenuator in series with the cable from Sideband 3 output of the Transmitter (frequency counter still attached).
29. Turn on TX 1.
30. Record the USB frequency for TX 1.
31. Select TX 2.
32. Record the USB frequency for TX 2.
33. Turn off both Transmitters.
34. Remove the attenuator from the Sideband 3 output and reconnect the cable to 1A11 J26.
35. Restore the VOR system to normal operation.

3.4.6 Monitor Alarm Limit Verification

1. {PMDT}: Monitors>>Configuration>>Alarm Limits 2. Verify that the current

settings (except for Monitor input attenuation) 3. {PMDT}: RMS>>Configuration>>General…Check the box (enable) Monitor Integrity Tests. This activates the monitor integrity tests that validate each monitor's ability to correctly determine out of tolerance conditions. Failure of this test will disable a monitor from voting on the shutdown and/or changeover of the equipment. 4. {PMDT}: Monitor 1>>Test Results >>Completed…Review the date and time to verify that current test results are displayed (updated results should appear in approximately 5 minutes). 5. Validate that all parameters are within the high and low limit as indicated by a green background. 6. Print the screen and attach to the data sheets. 7. {PMDT}: Monitor 2>>Test Results >>Completed…Review the date and time to verify that current test results are displayed (updated results should appear in approximately 5 minutes). 8. Validate that all parameters are within the high and low limit as indicated by a green background. 9. Print the screen and attach to the data sheets. Record. **3.4.7 Audio Response **Optional Test, Performed at Customer Request**** 1. Connect External Audio Generator to MIC input on 1A3A5 Test Generator module at 850 mv and connect Modulation Analyzer to Transmitter 1 CSB SAMPLE 1A5A3 P1 (TX1) or 1A5A4 P1 (TX2) test jack. 2. {PMDT}: Transmitter>> Configuration>> Nominal…Set voice modulation to 30.0%, reference and Ident modulation to 0%. 3. Step the frequency on the External Audio Generator at and 100 Hz increments, from 300 Hz to 3000 Hz while monitoring the Modulation Analyzer. At the modulation peak (maximum modulation level), adjust Transmitter>> Configuration>> Offsets and Scale Factors>>Voice Modulation Scale for a 29.0 % ± 0.5 % modulation output. Verify the following levels: After each frequency setting, wait 1 minute to record data. Record the average modulation level for each frequency setting

300, 600, 1500, 2000, and 3000 Hz are 25% ± 5%

30, 1020, and 6000 Hz are less than 5%

4. Repeat steps 1 through 3 for TX2.

5. Restore equipment to normal operating configuration.

3.4.8 VOR Monitored Voltages

1. {PMDT}: RMS>>Data>> Power Supply Data. Select Print screen.

Perform steps 2 and 3 for the 001150A-0202, skip for the 001150A-0212

2. Turn off AC and DC Buss for TX1 and print screen for TX2 BCPS data. Note, TX 2 BCPS data will be displayed only when TX 1 AC power and DC buss are turned off.

3. Turn on AC and DC Buss breakers for TX1.

3.4.9 Output Signal Spectrum and Sample Output

1. {PMDT}; Transmitters>>Configuration>>Nominal…Set Ident and reference modulation to 0.0%. Connect spectrum analyzer to CSB SAMPLE 1A5A3 P1 (TX1) or 1A5A4 P1 (TX2). Measurements are to be made with reference carrier output level at 100 watts. FAT001150A-0202,0212 Rev. G 14 March 9, 2011 **PROPRIETARY DATA**

NOTE

It may be necessary to add external attenuation to the analyzer to prevent over driving the analyzer, causing it to generate internal harmonics. Vary the analyzer's internal RF attenuator and insure that the harmonic levels do not change with respect to the carrier before taking this measurement.

Adjust Spectrum Analyzer as needed to measure carrier harmonics.

Station (reference) 0 dB

Second Harmonic ≥66 dBC

Third Harmonic ≥66 dBC

2. Record results.

3. Measure the level of CSB SAMPLE at 1A514 P1 with the power meter and verify that level is between 100-300 mW. Record.

4. Repeat steps 1 to 3 for TX2.

3.4.10 Ident Keying

1. {PMDT}: Transmitters>> Configuration>>Nominal…Set Ident modulation to 8%. Set Ident Keyer Input to Disabled (Self Keyed).

2. Select Transmitter 1 on antenna.

3. {PMDT}: Transmitters>Commands>>Transmitter Ident…Set to Normal.

4. Attach a scope probe to the P2, Detected CSB test point on TX1 Carrier Amplifier. Measure the time for seven Ident cycles to occur. (START OF ONE TO START OF EIGHT.) Time for 7 cycles must be 55 seconds ± 5 seconds. Record

5. {PMDT}: RMS>> Configuration>>General… Set Colocated DME/TACAN to SELEX DME.

6. {PMDT}: Transmitters>>Configuration>>Nominal…Set Keyer Output, External Keying to Morse Code.

7. On the Cabinet Interface Assembly attach a 10K ohm resistor between TB-2 position 14 (KEY_OUT+) and TB-2 position 9 (+24 VDC). Connect TB-2 position 15 (KEY_OUT-) to TB-2 position 18 (ground).

8. Verify that DME keying is present by monitoring TB-2 position 14. (NOTE: For every fourth VOR key, the output voltage will transition from approximately 24 VDC to less than 1 VDC.)

9. Check if OK.

10. Repeat steps 8 and 9 for TX2.

11. Remove resistor and ground from TB-2.

3.4.11 Battery Backup

1. Turn off AC/DC power for both systems. Connect four nearly discharged batteries in series to VOR battery input connector and the ground buss bar.

2. Place current probe around battery cable, then turn on AC/DC power for both systems.
3. Set TX 1 on antenna. Wait one minute and check that the battery charger (from TX 2) is supplying 4 to 7 amps of charge current for 001150A-0202 or 2 to 4 amps for 001150A-0212. Record.
4. Set TX 2 on antenna. Wait one minute and check that the battery charger is (from TX 1) is supplying 4 to 7 amps of charge current for 001150A-0202 or 2 to 4 amps for 001150A-0212. Record.

NOTE
If the batteries are fully charged it may be necessary to check when batteries are at a lower level.
5. Remove AC power (unplug system from outlet) from System. Verify that TX1 and TX2 continues to function and that RMS>>Status>>VOR Status "On Batteries" and "AC Failure" changes to "Y" on screen. Record.
6. Restore AC power.

3.4.12 VOR Alarm Monitoring

NOTE
If necessary, during Factory Acceptance Test, this test may be performed prior to Step 3.4.1, in conjunction with the Commutator Test.
Setup: Connect VOR to Commutator and Antenna Simulator for this test. Disable bypass from the system.
1. Place TX1 in normal operating mode.
2. a. {PMDT}: Transmitters>> Configuration>> Offsets and Scale Factors… Note the TX1 reference modulation scale setting.
b. AdjustTX1 reference modulation scale for a reading below 27 % as displayed on the Monitors>> Data>>Integral screen.
c. Verify that TX1 shuts down/TX2 starts up after approximately 20 seconds. Set Tx1 reference modulation scale back to normal. Record.
d. Place TX1 in normal operating mode.
3. a. {PMDT}: Transmitters>> Configuration>> Offsets and Scale Factors… Note the reference modulation scale setting.
b. Adjust TX1 reference modulation scale for a reading above 33 % as displayed on the Monitors>> Data>>Integral screen.
c. Verify that TX1 shuts down/ TX2 starts up after approximately 20 seconds. Set TX1 reference modulation scale back to normal. Record.
d. Place TX1 in normal operating mode.

4. a. {PMDT}: Transmitters>> Configuration>> Offsets and Scale Factors… Note the TX1 SBO RF Level scale setting.
b. Adjust TX1 SBO RF Level scale so the 9960 Hz level indicates below 27 % as displayed on the Monitors>> Data>>Integral screen.
c. Verify that TX1 shuts down/TX2 starts up after approximately 20 seconds. Set TX1 SBO RF Level scale back to normal. Record.
d. Place TX1 in normal operating mode.
5. a. {PMDT}: Transmitters>> Configuration>> Offsets and Scale Factors… Note the TX1 SBO RF Level scale setting.
b. Adjust TX1 SBO RF Level scale so the 9960 Hz level indicates above 33 % as displayed on the Monitors>> Data>>Integral screen.
c. Verify that TX1 shuts down/TX2 starts up after approximately 20 seconds. Set TX1 SBO RF Level scale back to normal. Record.
d. Place TX1 in normal operating mode.
6. a. {PMDT}: Monitor 1 and 2 >> Offsets and Scale Factors screen note deviation scale factor.
b. Adjust deviation scale factor to less than 14.5% as displayed on the Monitors>> Data>>Integral screen.
c. Verify that TX1 shuts down/TX2 starts up after approximately 20 seconds. Set deviation scale factor back to normal. Record
d. Place TX1 in normal operating mode.
7. a. {PMDT}: Monitor 1 and 2 >> Offsets and Scale Factors screen note deviation scale factor.
b. Adjust deviation scale factor to greater than 17.5% as displayed on the Monitors>> Data>>Integral screen.
c. Verify that TX1 shuts down/TX2 starts up after approximately 20 seconds. Set deviation scale factor back to normal. Record
d. Place TX1 in normal operating mode.FAT001150A-0202,0212 Rev. G 16 March 9, 2011 **PROPRIETARY DATA** 8. a. {PMDT}: Transmitters>> Configuration>> Offsets and Scale Factors, note the Id modulation scale value.
b. Adjust TX1 Ident modulation scale to 10%.
c. Verify that TX1 shuts down/TX2 starts up after approximately 20 seconds. Set ident modulation scale back to normal. Record
d. Place TX1 in normal operating mode.
9. a. {PMDT}: Transmitters>> Configuration>> Offsets and Scale Factors screen, Note TX1 Carrier power scale setting.
b. Adjust TX1 Carrier power scale setting for a reading below 50W carrier power as displayed on the Monitors>> Data>>Integral screen.

c. Verify that TX1 shuts down/TX2 starts up after approximately 20 seconds. Restore system to normal. Record.

d. Place TX1 in normal operating mode.

3.4.13 Commutator Test

NOTE

If necessary, during Factory Acceptance Test, this test may be performed prior to step 3.4.1.

1. Place system in bypass operation.

2 {PMDT}: Transmitters>> Configuration>> Nominal…Set azimuth index to 0.0.

{PMDT}: Transmitters>> Offsets and Scale Factors…Set azimuth index to 0.0.

3. {PMDT}: Monitors>> Data screen; Azimuth angle should read 4.75 degrees ±0.5 degrees (Dependent upon antenna simulator used). Record.

4. Reset Azimuth Index for normal.

5. Transfer to TX 2 and repeat steps 2-4.

3.4.14 Fault Isolation

NOTE

If necessary, during Factory Acceptance Test, this test may be performed prior to step 3.4.1.

1. {PMDT}: Diagnostics >>Fault Isolation…Run On-Air and Full Diagnostics.

2. Record and print results.

3.4.15 RSCU Controls

1. Connect a dedicated pair of wires from the RCSU to the VOR at the Interface CCA terminals TB2 pins 1 and 2 (polarity is not important)

2. Logon to the VOR at Security Level Three and put the system in Local Mode.

3. From the RMS>>Configuration screen, set RCSU Present and Connection Type to "Dedicated Modem". Press "Apply" then select RMS>>Config Backup to save the settings.

4. Logoff the PMDT then press the RESET button on the LCU.

5. After the VOR boots up, verify that there is communication indication between the RCSU and the VOR by viewing the communication status. Check Data Sheet if OK.

6. Verify a normal condition on Main. Check Data Sheet if OK.

7. From the RCSU turn the VOR OFF. Verify both transmitters respond by shutting down. Silence any audible alarms at the RCSU or VOR. Check Data Sheet if OK.

8. Wait more than 20 seconds then press the VOR ON button at the RCSU. Verify the Integral and Standby monitors are normal and the main transmitter is running. Check Data Sheet if OK.

9. From the RCSU press the TRANSFER button. Verify system transfer. Check Data Sheet if OK.

3.4.16 Modem Remote Monitoring

1. Connect a telephone line to the VOR modem at the Interface CCA (TB2 Pins 3 and 4). Using a remote computer with PMDT software, call the VOR and establish communication. Log on to the system.
2. Check data sheet if OK then logoff the PMDT.

3.4.17 Final Prep

1. {PMDT}: System>> Configuration Print …Print.
2. Attach the printout to the test data sheets.
3. Record all CCA and module serial numbers and Revision levels.
4. Remove jumper from E1 to E2 on RMS CPU to disable the Lithium battery.
5. Check all CCA and modules for Test stamps.

DME
001118A-0102

1. SCOPE

This specification covers the Factory Acceptance Test procedure (FAT) and includes the data sheets to be prepared demonstrating that the equipment meets SELEX Systems Integration Inc. electrical performance standards. This document is the basis for equipment acceptance detailing the required tests necessary to verify that all electrical parameters fall within quoted specifications.

This procedure is not intended to verify any mechanical properties such as vibration or shock, nor is it intended to test the equipment over all possible combinations of environmental stress and/or electrical inputs/loads. It is also not intended to provide a complete evaluation of software performance.

2. APPLICABLE DOCUMENTS AND DEFINITIONS

2.1 Applicable Documents

a. ICAO Annex 10, Volume 1, Part I Aeronautical Telecommunications, Equipment and Systems

2.2 Definitions and Abbreviations

2.2.1 Definitions

There are no definitions which require additional explanation in this document.

2.2.2 Abbreviations

AC Alternating Current
AGC Automatic Gain Control
ANT Antenna
ATTEN Attenuator
CCA Circuit Card Assembly
CW Continuous Wave (No modulation)
DC Direct Current
DLY Delay
DME Distance Measuring Equipment
DMM Digital Multimeter
EFF Efficiency
ESD Electro Static Discharge
FREQ Frequency
HV High Voltage
IDENT Identification Keying
KHz Kilohertz

LED Light Emitting Diode
MHz Megahertz
PRF Pulse Repetition Frequency
PWR Power
RMM Remote Maintenance Monitoring
RSCU Remote Status Control Unit
RF Radio Frequency
SIG GEN Signal Generator
SPAC Spacing
SPC Spacing
TX Transmitter
VAC Volts AC

3. TEST REQUIREMENTS

3.1 Required Test Equipment

3.2 Hazard Warnings and Notices

WARNING: HIGH VOLTAGE - Voltages as high as 240 VAC may be present during test and maintenance operations. Personal injury or equipment damage may result due to unauthorized access to equipment. Qualified personnel only.

WARNING: POISON - Sealed rechargeable batteries contain sulfuric acid. Read all labels and manufacturer's recommendations affixed to batteries before installation and equipment turn-on.

WARNING: ELECTROMAGNETIC RADIATION - RF Outputs must be properly loaded before power is applied!

WARNING: ELECTROSTATIC SENSITIVE DEVICES - Follow all ESD precautions during any circuit card handling.

3.3 General Requirements

This section provides the general requirements for performing the Factory Acceptance Tests.

3.3.1 Standard Environmental Conditions

Temperature: 23°C +/- 5°C

Humidity: Normal room ambient

AC line Voltage 85 to 264 VAC

AC line frequency 47-63 Hz

DC Voltages: Specified voltage +/- 5%

3.3.2 Normal Operating Parameters

All tests will be performed under normal operating conditions unless otherwise stated.

Transmitter:

Pulse shape

Half Amp Width 3.5µs ±0.5µs

Rise Time 2.5µs ±0.5µs

Decay Time 2.5µs ±0.5µs

Pulse Pair Spacing

X Channel 12.0µs ±0.1µs

Y Channel 30.0µs ±0.1µs
System Delay
X Channel 50.0µs ±0.2µs
Y Channel 56.0µs ±0.2µs
Power ≥100W
Frequency Assigned ±0.001%
Monitor:
Interrogation Signal
Half Amp Width 3.5µs ±0.5µs
Spacing
X Channel 12.0µs ±0.1µs
Y Channel 36.0µs ±0.1µs
3.3.3 Calculation Formulas
No calculations are required in this procedure.

3.4 Test Procedures
Description of Equipment
Refer to Figure 3-1 through Figure 3-2 for identification of modules in the Low Power DME.
Figure 3-1 Low Power DME Front View

Figure 3-2 Low Power DME Rear View

3.4.1 Setup for Frequency Verification Test

Refer to Figure 3-3. This block diagram details the test setup.

Figure 3-3 Frequency Verification Test Setup

3.4.1.1 Frequency Verifications

1. With the Power off, set up the DME for test as shown in Figure 3-3.
2. Turn on the system by switching the AC TX1, AC TX2, DC TX1 and DC TX2 breaker switches to the ON position.
3. On the LCU put the DME in LOCAL mode. Select BYPASS on INTEGRAL and STANDBY Monitors. Turn ON both the MAIN and STANDBY transmitters.
4. Connect frequency counter to TX1 Low Power Amplifier (1A9) J1 TX LO connector. Measure and record the frequency.
5. Connect frequency counter to TX2 Low Power Amplifier (1A17) J1 TX LO connector. Measure and record the frequency.
6. Connect frequency counter to Monitor Interrogator (1A11) INT LO connector. Measure and record the frequency.
7. Connect frequency counter to Monitor Interrogator (1A15) INT LO connector. Measure and record the frequency.
8. Connect frequency counter to the Receiver Transmitter Controller (1A10) RX LO connector. This frequency is 125 MHz lower than the assigned receive frequency. Measure and record the frequency.
9. Connect frequency counter to the Receiver Transmitter Controller (1A16) RX LO connector. This frequency is 125 MHz lower than the assigned receive frequency. Measure and record the frequency.

3.4.2 Setup for Transmitter Power Output Test

Refer to Figure 3-4. This block diagram details the test setup. Connect the PMDT to the USB Connector on the front of the RMS CCA using a USB computer cable.

Figure 3-4 Transmitter Power Output Test Setup

3.4.2.1 Transmitter Power Output

1. On the LCU turn off both transmitters. Connect the Peak Power Sensor with a 10dB attenuator in line to the coupled port of the coupler, as shown in Figure 3-4.
2. Set the peak power meter test frequency to the DME transmitter frequency under the Channel Setup screen. Also verify Video B/W is Off.

3. Calibrate the peak power meter by pressing the CAL button then selecting Zero+Cal.
4. Turn on both transmitters with TX1 on antenna.
5. Position the cursors around the first TX pulse. Observe and record the peak meter reading.
6. Position the cursors around the second TX pulse. Observe and record peak meter reading.
7. Calculate the pulse pair difference reading from values obtained in Steps 7 and 8.
8. Log on to the DME with the PMDT. Click on System>>Log RMS>> and enter User ID (SEC3) and Password (THREE). Observe and record TX PWR displayed on PMDT >> Monitors >> Data >> Integral, TX Power.
9. Select Transmitter 2.
10. Observe and record TX PWR displayed on PMDT >> Monitors >> Data >> Integral, TX Power.

3.4.3 Setup for Spectral Characteristics Test
Refer to Figure 3-5. This block diagram details the test setup.
Figure 3-5 Spectral Characteristics Test Setup
3.4.3.1 Spectral Characteristics
1. Disconnect Peak Power Meter from the directional coupler at the top of the DME cabinet. Connect Spectrum Analyzer to directional coupler, as shown in Figure 3-5.
2. Turn On Transmitter 1.
3. Adjust the spectrum analyzer for center frequency on the assigned frequency.
4. Adjust the total span to 5 MHz. Adjust the resolution bandwidth to 30 KHz, Video bandwidth to 30 kHz and sweep time to 2 seconds.
5. Select Marker Peak Search.. Record Center Frequency amplitude.
6. Measure and record the difference between the reference level from step 5 and the level at each of the points listed on the data sheet.
7. Select Transmitter 2.
8. Set the top of displayed spectrum to the top reference line. Record Center Frequency amplitude.
9. Measure and record the difference between the reference level from step 5 and the level at each of the points listed on the data sheet.

3.4.4 PMDT Setup

On the PMDT select System >> PMDT Setup and set Print Screens as Graphic Image.

Press the LOCAL CONTROL button on the LCU to put the DME into Local Mode.

3.4.4.1 General Monitor Configuration Verification

1. Select Monitors>>Monitor Configuration>>General
2. Verify that the current settings match Figure 3-6. If not, change to match.
3. Print the screen and attach to the data sheet.

Figure 3-6 General Monitor Configuration Screen

3.4.4.2Monitor Alarm Limits Configuration Verification

1. Select Monitors>>Monitor Configuration>>Alarm Limits
2. Verify that the current settings (except for Monitor Reply Attenuation and Directional Coupler Loss) match Figure 3-7. If Y-Channel, substitute 56.00 us for the Nominal Delay. If not, change to match.
3. Print the screen and attach to the data sheet.

Figure 3-7 Monitor Alarm Limits Configuration Screen

3.4.4.3Monitor Alarm Limit Verification

Select RMS>>Configuration>>General and check the box (enable) Monitor Integrity Tests. This activates the monitor integrity tests that validate each monitor’s ability to correctly determine out of tolerance conditions. Failure of this test will disable a monitor from voting on the shutdown and/or changeover of the equipment.

1. From the PMDT select Monitor 1 >> Test Results >> Alarm Limits.
2. Review the Date and Time to verify that current test results are displayed.
3. Validate that all parameters are within the high and low limit as indicated by a green background.
4. Print the Screen and attach to the test data sheets.
5. From the PMDT select Monitor 2 >> Test Results >> Alarm Limits.
6. Review the Date and Time to verify that current test results are displayed.
7. Validate that all parameters are within the high and low limit as indicated by a green background.
8. Print the Screen and attach to the test data sheets.

Figure 3-8 Sample Monitor Alarm Limits Test Results Screen

3.4.4.4Monitor Interrogator Signal Generator Tests

1. From the PMDT select Monitor 1 >> Test Results >> Interrogator.
2. Review the Date and Time to verify that current test results are displayed.
3. Validate that all parameters are within the high and low limit as indicated by a green background.
4. Print the Screen and attach to the test data sheets.
5. From the PMDT select Monitor 2 >> Test Results >> Interrogator.
6. Review the Date and Time to verify that current test results are displayed.
7. Validate that all parameters are within the high and low limit as indicated by a green background.
8. Print the Screen and attach to the test data sheets.

Figure 3-9 Sample Interrogator Monitor Test Results Screen

3.4.4.5 Transponder Signal Test

1. From the PMDT select Monitor 1 >> Test Results >> Transponder.
2. Review the Date and Time to verify that current test results are displayed.

3. Validate that all parameters are within the high and low limit as indicated by a green background.
4. Print the Screen and attach to the test data sheets.
5. From the PMDT select Monitor 2 >> Test Results >> Transponder.
6. Review the Date and Time to verify that current test results are displayed.
7. Validate that all parameters are within the high and low limit as indicated by a green background.
8. Print the Screen and attach to the test data sheets.
9. Put TX2 on antenna and repeat steps 1 to 8 for transmitter 2.
Figure 3-10 Sample Transponder Monitor Test Results Screen

3.4.4.6 Transponder Decoder Tests
1. Using the LCU controls bypass the Integral and Standby monitors.
2. Put TX1 on antenna
3. From the PMDT select Monitors>>Special Tests. Select Decoder Tests for Monitor 1 and 2 then press the “Apply” button followed by the “Start” button.
4. From the PMDT select Monitor 1 >> Test Results >> Decoder. Wait for all tests to complete.
5. Validate that all parameters are within the high and low limits as indicated by a green background.
6. Print the Screen and attach to the test data sheets.
7. From the PMDT select Monitor 2 >> Test Results >> Decoder. Wait for all tests to complete.
8. Validate that all parameters are within the high and low limits as indicated by a green background.
9. Print the Screen and attach to the test data sheets.
10. Put TX2 on antenna and repeat steps 3 to 9 for transmitter 2.
11. Logoff the PMDT then press the RESET button on the LCU.
Figure 3-11 Sample Decoder Monitor Test Results Screen

to others for any purposes without written permission from SELEX Systems Integration Inc.

3.4.5 RSCU Controls

1. Connect a dedicated pair of wires from the RCSU to the DME at the Interface CCA terminals TB2 pins 1 and 2 (polarity is not important)
2. Logon to the DME at Security Level Three and put the system in Local Mode.
3. From the RMS>>Configuration screen, set RCSU Present and Connection Type to "Dedicated Modem". Press "Apply" then select RMS>>Config Backup to save the settings.
4. Logoff the PMDT then press the RESET button on the LCU.
5. After the DME boots up, verify that there is communication indication between the RCSU and the DME by viewing the communication status. Check Data Sheet if OK.
6. Verify a normal condition on both Main and Standby DMEs. Check Data Sheet if OK.
7. From the RCSU turn OFF the DME. Verify both transmitters respond by shutting down. Silence any audible alarms at the RCSU or DME. Check Data Sheet if OK.
8. Wait more than 20 seconds then turn the DME ON from the RCSU.Verify the Integral and Standby monitors are normal and the main transmitter is running. Check Data Sheet if OK.
9. On the RCSU press the TRANSFER button. Verify system transfer. Check Data Sheet if OK.

3.4.6Modem Remote Monitoring

1. Log OFF from PMDT. Connect a telephone line to the DME modem at the Interface CCA (TB2 Pins 3 and 4). Using a remote computer with PMDT software, call the DME and establish communications. Log on to the system.
2. Check data sheet if OK then logoff the PMDT.

3.4.7 Battery Backup

1. Turn off the AC and DC breakers for both systems. Connect four discharged 12Vdc batteries in series to the DME TX1 and TX2 DC breakers and the ground buss bar.

NOTE

If the batteries are fully charged it may be necessary to check when batteries are at a lower level.

2. Place a DC current probe around the negative battery cable then turn on the AC and DC breakers for TX1. Verify that BCPS1 is supplying 4 to 7 amps of peak charge current. Record on the data sheet.

NOTE

The battery charge current will dip every five seconds as the BCSP is performing a battery fault test.

3. Turn off TX1 AC circuit breaker and verify TX1 continues to operate on battery power. Check data sheet if OK. Turn off TX1 DC breaker.
4. Turn on TX2 AC and DC breakers. Verify that BCPS2 is supplying 4 to 7 amps of peak charge current. Record on the data sheet.
5. Turn off TX2 AC circuit breaker and verify TX2 continues to operate on battery power. Check data sheet if OK. Turn off TX2 DC breaker.
6. Turn on TX1 and TX2 AC and DC breakers. Verify that the summed chargers are supplying 8 to 14 amps of charge current. Record on the data sheet.
3.4.8 Fault Isolation
1. Put the DME in Local mode
2. Logon locally at Security Level 3
3. From the PMDT select Diagnostics >> Fault Isolation. Press the Run Full Diagnostics button.
4. Verify the DME passes fault isolation with no faults found.
5. Print the Screen and attach to the test data sheets.

3.4.9 Configuration at time of Final Testing
1. Select system configuration from the PMDT
2. Select System >> Configuration print
3. Attach the printout to the test data sheets.
3.4.10 Part Number and Serial Number Documentation
Record all assembly serial numbers called out on the test data record for the system.

（二）、測試結果

1 DVOR 系統原工廠測試共有 92 個測試項目，若依照測試訊號的特性來區分，又可區分為 20 大類測試項目。
2 DME 系統原工廠測試共有 7 大類測試項目。

本次工廠測試進行各項測試項目，測試結果均符合合約規範。

五、心得

一、 廠測的環境相當於一個實驗室，若能成立一個類似的檢修環境，對於航電人員的在職訓練會有相當的幫助。航電設備一般在上線後因為廿四小時工作，均無法實際做調校測試，除非設備故障停工。但此時卻因為修復的急迫性亦無法長時間做檢測，若能有一相當的模擬設備能隨意拆裝調測，相信對航電人員的技術能力必定會有所提昇，本總臺業已於清泉崗成立航電人員訓練中心，且定期辦理新進及在職人員複訓，對於航電人員專業提升將有莫大助益。

二、 航電人員於維護裝備時，經常遇到相同設備卻由不同廠商得標，不僅設備的設計理念不同而且零組件也無法互相調用，使得航電人員需要學習多種裝備且不同廠商的硬體維修與軟體應用，備用零組件也常無法發揮互相支援的最大功效，所幸近期在本總臺航電技術室的努力下，多件標案合併採購，終於解決了這些困擾的問題，減少了許多訓練及備用零組件經費的支出。

六、建議

一、 「工欲善其事，必先利其器」，此次工廠測試過程中，發現原廠測試的儀器齊全完備，且使用中之儀器均定期後送校驗，以維儀器之精確，相對的維護人員對儀器操作的熟練度愈高，對裝備維護及故障排除將有莫大的助益。所以儀器的操作訓練應加以重視，除一般助導航設備的在職訓練課程外，建議在不影響線上裝備的工作情況下，無論是單獨開課或併隨設備課程，都應加強儀器實際操作訓練。

二、 此次之工廠測試之程序步驟，其實即為設備原始調校的過程，也就是說若能熟悉瞭解廠測的步驟，對於日後設備故障之排除及修復，均有莫大的助益。建議能多派員參與工廠測試，瞭解調校測試及故障排除的過程，亦為日後維護工作，非常重要的一環。

六、附錄：工廠測試文件

Selex ES
A Finmeccanica Company

CERTIFICATE OF FACTORY ACCEPTANCE

Date: March 10, 2014
SELEX Sales Order: 13395P
Customer Name: Pertech Technology Inc
Customer Order: 13072501.SELEX

Description of Goods: (1ea) Dual DVOR System, (1ea) Dual LP DME System, (1ea) RCSU System, and spares for the SHUN SHAN site.

This is to certify that the above named goods have undergone and passed Factory Acceptance as witnessed by the representative of the Customer, and have been accepted in accordance with above referenced contract.

SELLER	CUSTOMER
Mar 10, 2014	張元明 王建輝 Mar 10, 2014
Signed / Dated	Signed / Dated
CHRIS MARTIN	張元明 王建輝
Name-printed	Name-printed
Sr. Quality Engineer	ANWS
Title	Title

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Fax +1 913 492 0870

A Selex ES International Ltd Company
Finmeccanica Group

4.0 DVOR FAT DATA SHEETS

DUAL DOPPLER VOR

EQUIPMENT

DATA SHEETS

VOR MODEL #	001150A-0202
SYSTEM SERIAL #	110050
ASSIGNED FREQUENCY	113.50 MHZ
SALES ORDER #	13395P
DESTINATION	TAIWAN, SHUN SHAN
DATE TESTED	12/18/2013
TESTED BY	
QA APPROVAL	
WITNESSED BY	張元明 王柱耀 Mar 10, 2014

DOPPLER VOR

DUAL EQUIPMENT
SERIAL #'S

PART #'S	DES.	DESCRIPTION	SERIAL #	REV.
030801-0002	1A1	LOCAL CONTROL	110075	E
012179-1002	1A1A1	LOCAL CONTROL UNIT CCA	ARC000447	AA
030829-0001	1A4A4	RF MONITOR	110091	D
012220-0001	1A4A4A1	RF MONITOR CCA	ARC000129	H
030825-0002	1A5A3	POWER AMP	110029	R
012249-0001	1A5A3A1	POWER AMP DRIVER CCA	ARC000155	D
012266-0001	1A5A3A2	POWER AMP FINAL CCA	ARC000154	B
030838-1001	1A3A1	FREQUENCY GEN	110164	G
012258-0001	1A3A1A1	SYNTH SIDEBAND CCA	ARC000296	D
012263-0001	1A3A1A2	SYNTH CARRIER CCA	ARC000279	D
012262-0001	1A3A1A3	SYNTH INTERFACE CCA	ARC000256	E
030824-0001	1A4A1	SIDEBAND GEN	NA	NA
012218-0001	1A4A1A1	SIDEBAND AMP CCA	NA	NA
OR				
030824-0002	1A4A1	SIDEBAND GEN	110300	G
012291-0001	1A4A1A1	SIDEBAND AMP CCA	ARC000419	F
030824-0001	1A4A2	SIDEBAND GEN	NA	NA
012218-0001	1A4A2A1	SIDEBAND AMP CCA	NA	NA
OR				
030824-0002	1A4A2	SIDEBAND GEN	110298	G
012291-0001	1A4A2A1	SIDEBAND AMP CCA	ARC000416	F
012254-1001	1A3A2	AUDIO GEN CCA	ARC000320	U
012245-1001	1A3A3	MONITOR CCA	ARC000314	AG
012167-0001	1A9	INTERFACE	ARC000537	B
012171-0002	1A3A7	FACILITIES CCA	ARC000523	K
012223-1001	1A3A5	TEST GEN. CCA	ARC000162	K
012172-1002	1A3A6	RMS CCA	ARC000285	AT
012222-0001	1A3A4	LVPS	ARC000306	D
012222-0001	1A3A8	LVPS	ARC000305	D
030825-0002	1A5A4	POWER AMP	110164	R
012249-0001	1A5A4A1	POWER AMP DRIVER CCA	ARC000288	D
012266-0001	1A5A4A2	POWER AMP FINAL CCA	ARC000309	B
030838-1001	1A3A11	FREQUENCY GEN	110165	G
012258-0001	1A3A11A1	SYNTH SIDEBAND CCA	ARC000297	D
012263-0001	1A3A11A2	SYNTH CARRIER CCA	ARC000278	D
012262-0001	1A3A11A3	SYNTH INTERFACE CCA	ARC000259	E
030824-0001	1A4A6	SIDEBAND GEN	NA	NA
012218-0001	1A4A6A1	SIDEBAND AMP CCA	NA	NA
OR				
030824-0002	1A4A6	SIDEBAND GEN	110299	G
012291-0001	1A4A6A1	SIDEBAND AMP CCA	ARC000418	F
030824-0001	1A4A7	SIDEBAND GEN	NA	NA
012218-0001	1A4A7A1	SIDEBAND AMP CCA	NA	NA
OR				
030824-0002	1A4A7	SIDEBAND GEN	110297	G
012291-0001	1A4A7A1	SIDEBAND AMP CCA	ARC000417	F
012254-1001	1A3A9	AUDIO GEN CCA	ARC000321	U
012245-1001	1A3A10	MONITOR CCA	ARC000309	AG
030798-1001	1A5A1	BCPS	110181	W

DUAL EQUIPMENT
SERIAL #'S

PART #'S	DES.	DESCRIPTION	SERIAL #	REV.
012261-0001	1A5A1A1	BCPS CCA	ARC000336	P
030798-1001	1A5A2	BCPS	110182	W
012261-0001	1A5A2A1	BCPS CCA	ARC000337	P
012104-0001	1A10	COMMUTATOR	ARC000191	B
012104-0001	1A11	COMMUTATOR	ARC000190	B
012257-1001	1A4A5	COMMUTATOR CONT	ARC000111	D
012187-0001	1A13	FAN CONTROL (001150A-0212 only)	NA	NA

3.1 Test Equipment Record

Record the model, asset number and cal due date for equipment used during the test. If equivalent equipment is used record the model number as appropriate.

Test Equipment	Mfg / Model#	Equivalent Model Used	Asset Number	Calibration Due Date
Digital Multimeter	Fluke 83		T1420	08/14/2014
Oscilloscope	TEK 2445		T1331	05/16/2014
Frequency counter	HP 53181A		T1436	10/11/2014
Spectrum Analyzer	HP 8560A		T1431	09/13/2014
Modulation Analyzer	HP 8901B		T1169	02/14/2014
Sensor Module	HP 11722A		T1270	05/21/2014
Multifunction Synthesizer	HP 33120A		T1260	05/10/2014
Power Meter	N1911A			
Power Sensor	N1921A			
Antenna Simulator	SELEX-SI		NA	NA
Network Analyzer	Agilent E5062A		T1396	03/27/2014
Current Probe	Fluke 337		T1301	04/14/2014

Note: Some HP equipment is now branded as Agilent.

3.3.2 Primary DC Voltages (Reference Only)

RQMT: As Indicated

	BCPS - Transmitter #1		BCPS - Transmitter #2 (Dual Systems)
b.	52.0 +48 (45 to 55 Vdc)	c.	50.6 +48 (45 to 55 Vdc)

Steps f and h are for the 001150A-0202 only, skip for the 001150A-0212

h.	52.3 BCPS #1 Battery Charge Vdc	f.	52.2 BCPS #2 Battery Charge Vdc

3.3.3 DC Voltages, LV Power Supplies

RQMT: As Indicated

	LVPS 1A3A4	LVPS 1A3A8
d.	11.8 +12 ± 0.5Vdc (TP9)	11.8 +12 ± 0.5Vdc (TP9)
e.	-11.9 -12 ± 0.5Vdc (TP8)	-11.9 -12 ± 0.5Vdc (TP8)
f.	5.09 +5 ± 0.25Vdc (TP2)	5.10 +5 ± 0.25Vdc (TP2)
g.	27.7 +28 ± 1.0 V dc (TP3)	27.5 +28 ± 1.0 V dc (TP3)

p. ☒ All DC Power OK and CPU OK LEDs on

3.3.4 Software Versions

c.	Software Revision Print	☒ OK
d.	PMDT Info Print	☒ OK
e.	Configurations Print	☒ OK

3.4.1 Carrier and Sideband Output Power

		TX1	TX2	
7.	Power Level	☒	☒	Adjusted (check)
8.	Carrier Power Set	100.5	100.6	100 Watts ± 2%
9.	Carrier Power Displayed	100.2	100.3	± 5% of level set
10.	Carrier Power Actual	47.7	49.7	50 Watts ± 10%
	Carrier Power Displayed	49.5	50.5	± 10% of level set
17b.	SB1 Power Level	☒	☒	Adjusted (Check)
17c.	SB1 Power Set	3.00	3.00	3.0 Watts ± 2%
17f.	SB1 Power Displayed	3.00	3.00	± 5% of level set
17h.	SB1 Power Actual	1.49	1.52	1.50 Watts ± 10%
	SB1 Power Displayed	1.55	1.57	± 10% of measured
19b.	SB2 Power Level	☒	☒	Adjusted (Check)
19c.	SB2 Power Set	3.00	3.00	3.0 Watts ± 2%
19f.	SB2 Power Displayed	3.00	3.00	±5% of level set

		TX1	TX2	
19h.	SB2 Power Actual	1.49	1.55	1.50 Watts ± 10%
	SB2 Power Displayed	1.54	1.59	± 10% of measured
21b.	SB3 Power Level	☒	☒	Adjusted (Check)
21c.	SB3 Power Set	3.00	3.00	3.0 Watts ± 2%
21f.	SB3 Power Displayed	3.00	3.00	±5% of level set
21h.	SB3 Power Actual	1.51	1.49	1.50 Watts ± 10%
	SB3 Power Displayed	1.56	1.53	± 10% of measured
23b.	SB4 Power Level	☒	☒	Adjusted (Check)
23c.	SB4 Power Set	3.00	3.00	3.0 Watts ± 2%
23f.	SB4 Power Displayed	3.00	3.00	±5% of level set
23h.	SB4 Power Actual	1.53	1.55	1.50 Watts ± 10%
	SB4 Power Displayed	1.59	1.60	± 10% of measured

3.4.2 Sideband VSWR

	TX1	TX2	
SB1 VSWR Displayed	1.27	1.28	< 1.35:1
SB2 VSWR Displayed	1.26	1.27	< 1.35:1
SB3 VSWR Displayed	1.32	1.28	< 1.35:1
SB4 VSWR Displayed	1.26	1.26	< 1.35:1
SB1 VSWR Changed	☒ OK	☒ OK	
SB2 VSWR Changed	☒ OK	☒ OK	
SB3 VSWR Changed	☒ OK	☒ OK	
SB4 VSWR Changed	☒ OK	☒ OK	

3.4.3 Carrier VSWR

5.	Carrier VSWR Measured	1.22	1.22	~1.25:1 with tee
10.	Carrier VSWR Calculated	1.04	1.04	< 1.15:1 without tee
12.	Carrier VSWR Displayed	1.05	1.05	< 1.15:1 without tee

3.4.4 Amplifier Protection Test

Amplifier protection with actual VSWR of 3:1 carrier power either cycles on or off, or reduces and returns to 100 watts ± 10% upon removing mismatch.

4.	TX1	☒ OK
6.	TX2	☒ OK

3.4.5 Frequency Verifications

		TX1	TX2	
4.	TP18 of Audio Gen.	360.0	360.0	360 Hz ± 1%
5.	TP20 of Audio Gen.	360.0	360.0	360 Hz ± 1%
6.	TP24 of Audio Gen.	30.0	30.0	30 Hz ± 1%
8.	TP2 of Audio Gen.	1020.0	1020.0	1020 Hz ± 1%
16/19.	RF out on Freq Gen	113,500,145	113,500,056	±.002% of assigned freq.
23/25.	Lower Sideband	113,490,185	113,490,096	-9960Hz ±100Hz of carr.
30/32.	Upper Sideband	113,510,106	113,510,016	+9960 Hz ±100Hz of carr.

3.4.6 Monitor Alarm Limit Verification

6/9.	Alarm Limit Verification Screen Print	☒ OK

3.4.7 Audio Response **Optional Test, Performed at Customer Request**

		TX1	TX2	
Step 3.	30 Hz	0.2	0.2	< 5%
	300 Hz	28.2	28.1	25% ± 5%
	600 Hz	28.4	28.1	25% ± 5%
	1020 Hz	0.2	0.2	< 5%
	1500 Hz	27.9	27.7	25% ± 5%
	2000 Hz	28.3	27.5	25% ± 5%
	3000 Hz	27.0	26.8	25% ± 5%
	6000 Hz	0.2	0.2	< 5%

3.4.8 VOR Monitored Voltages

Power Supply Data Screen Print	☒ OK

3.4.9 Output Signal Spectrum and Sample Output

		TX 1	TX 2	
2/4.	Station Frequency	0	0	0 dB Reference
	Second Harmonic	71	71	≥66 dBc
	Third Harmonic	81	81	≥66 dBc
	Sample Output Power	229	213	100-300mW @100W

3.4.10 Ident Keying

4.	Time for 7 Cycles	52	52	55 seconds ± 5 sec
9.	DME Keying	☒ OK	☒ OK	

3.4.11 Battery Backup

		TX1	TX2	
3/4.	BCPS Charge Current	5.9	5.9	(4 to 7 A) 001150A-0202 (2 to 4 A) 001150A-0212
	"On Batteries" Changes to "Y"	☒ OK	☒ OK	
	"AC Failure" Changes to "Y"	☒ OK	☒ OK	

3.4.12 VOR Alarm Monitoring

		MON 1	MON 2
2.	Low 30 Hz Mod	☒ OK	☒ OK
3.	High 30 Hz Mod	☒ OK	☒ OK
4.	Low 9960 Hz Mod	☒ OK	☒ OK
5.	High 9960 Hz Mod	☒ OK	☒ OK
6.	Low Deviation Ratio	☒ OK	☒ OK
7.	High Deviation Ratio	☒ OK	☒ OK
8.	Loss of Ident	☒ OK	☒ OK
9.	Carrier Low level	☒ OK	☒ OK

3.4.13 Commutator Test

		TX1	TX2	
3/5.	Monitor 1 Azimuth Angle	4.74	4.76	4.75 ±0.5
	Monitor 2 Azimuth Angle	4.70	4.73	4.75 ±0.5

3.4.14 Fault Isolation

2.	Run Fault Isolation on PMDT	☒ OK	

3.4.15 RCSU Controls

5.	Communication established as indicated on the 2238 VOR icon	☒	(Check if OK)
6.	RCSU indicates Main and Standby in Normal condition	☒	(Check if OK)
7.	Both Main and Standby VORs Shutdown	☒	(Check if OK)
8.	Both Main and Standby VORs Startup after 20 sec	☒	(Check if OK)
9.	Transfer Command switches main	☒	(Check if OK)

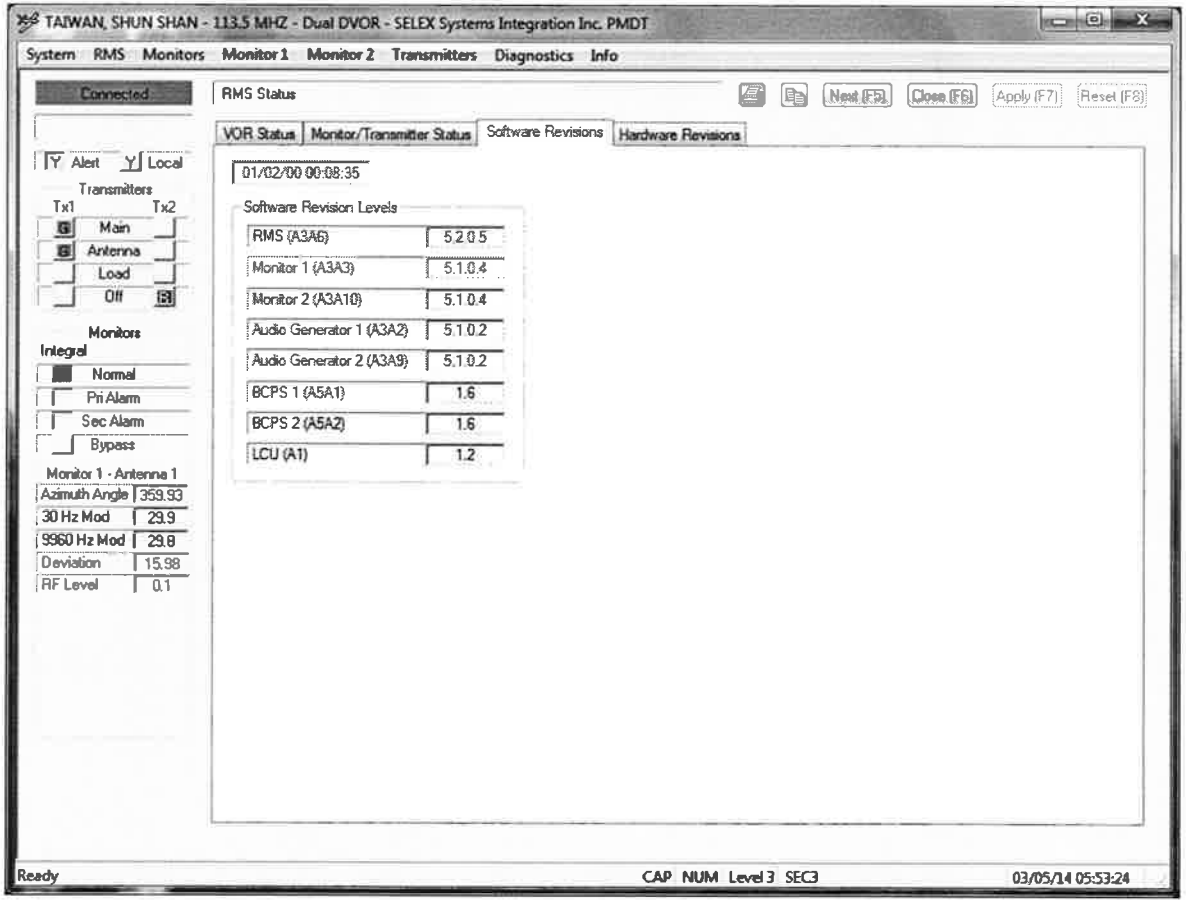
3.4.16 Modem Remote Monitoring

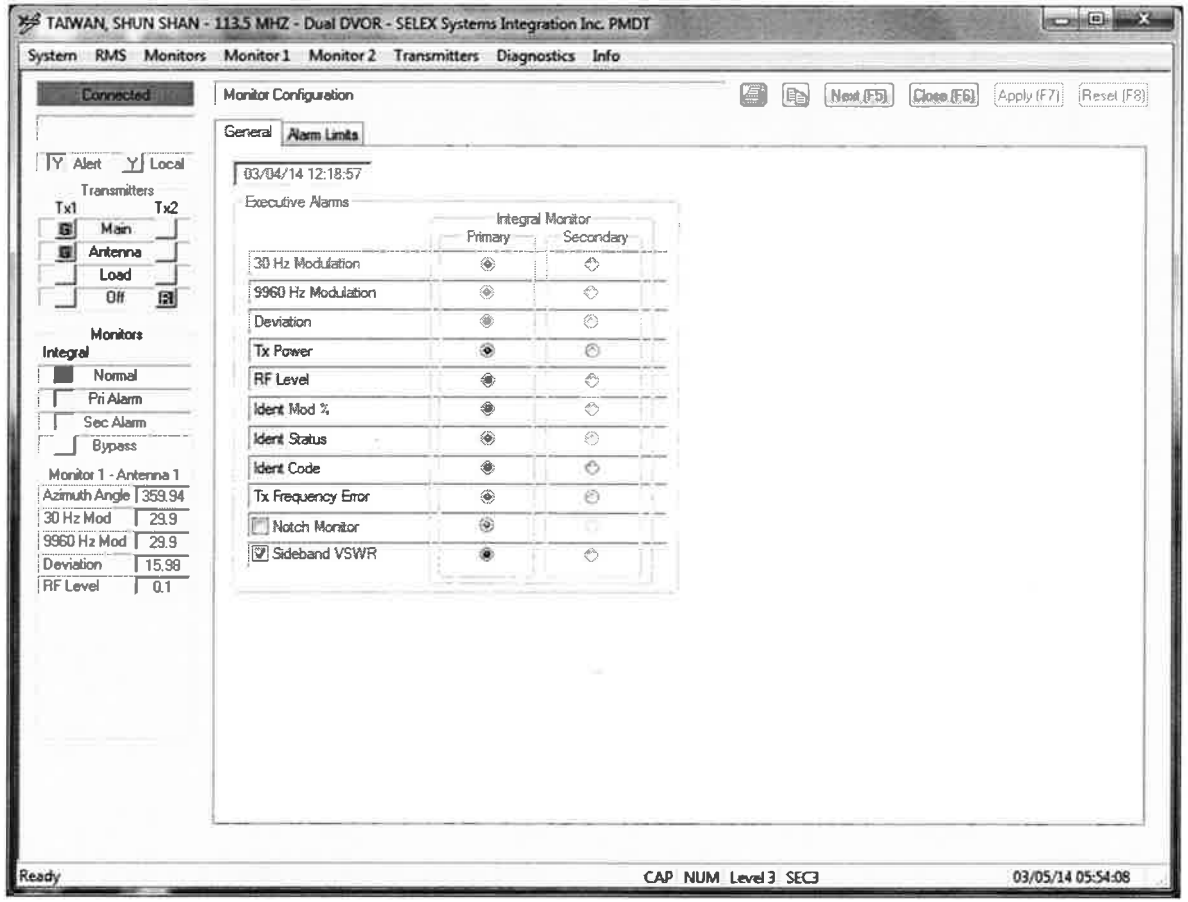
2.	Communications to the VOR with the remote PMDT established	☒	(Check if OK)

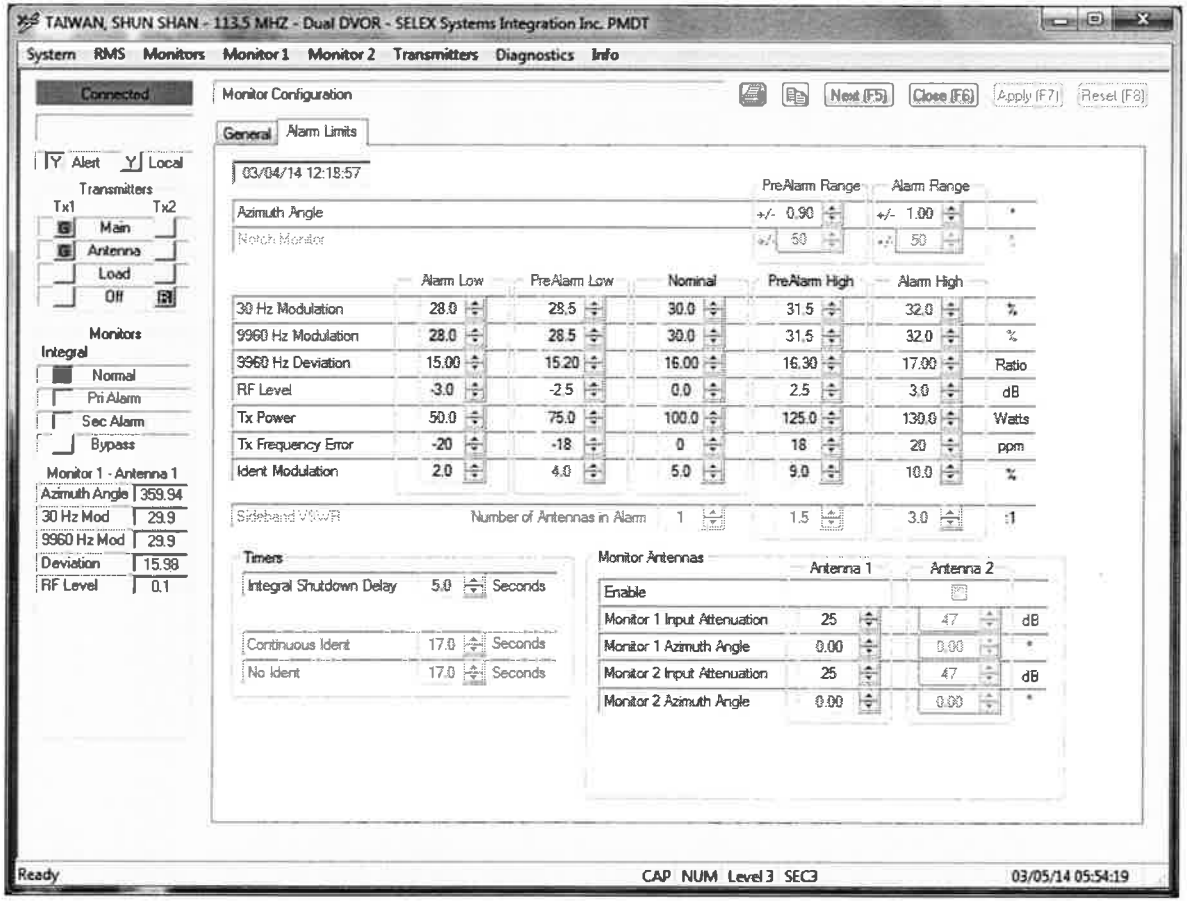
3.4.17 Final Prep

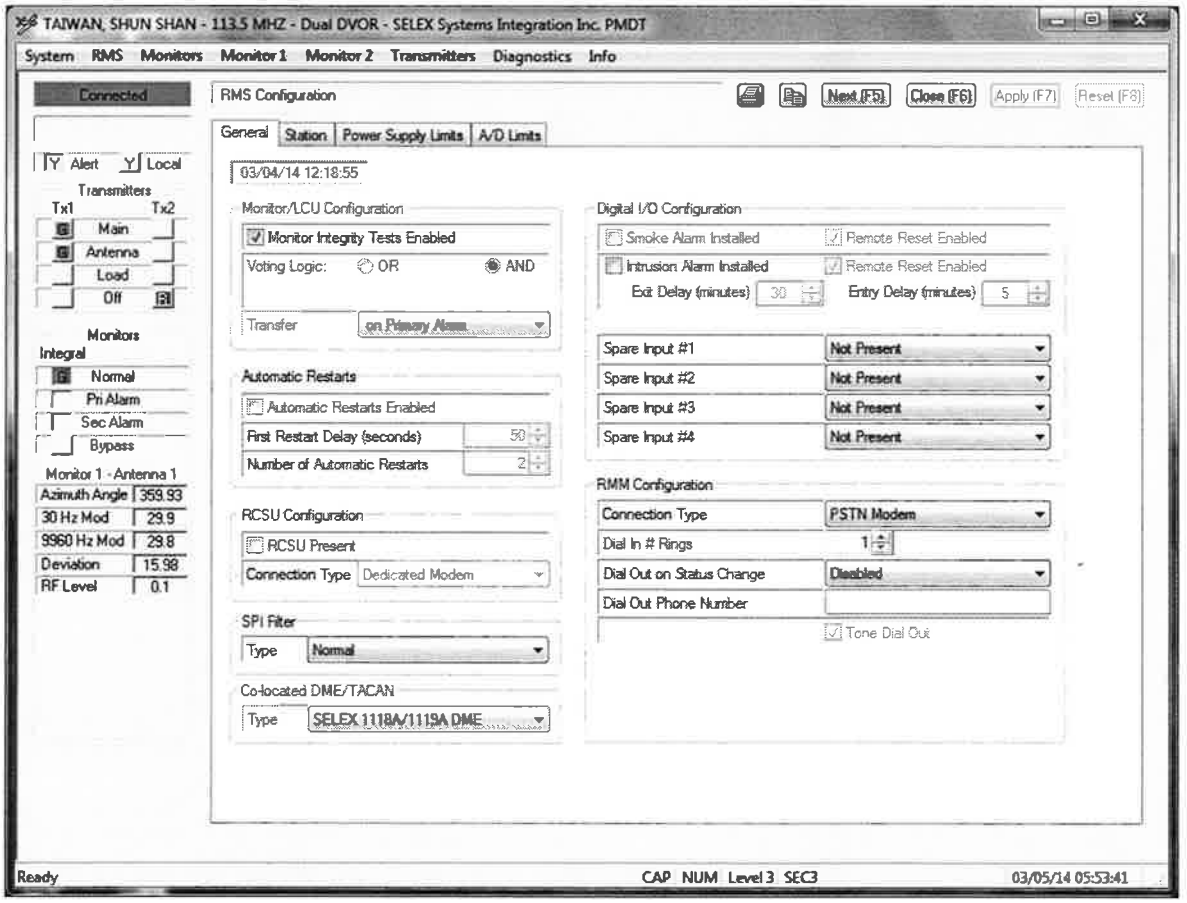
1-5.	Ready	☒ OK	

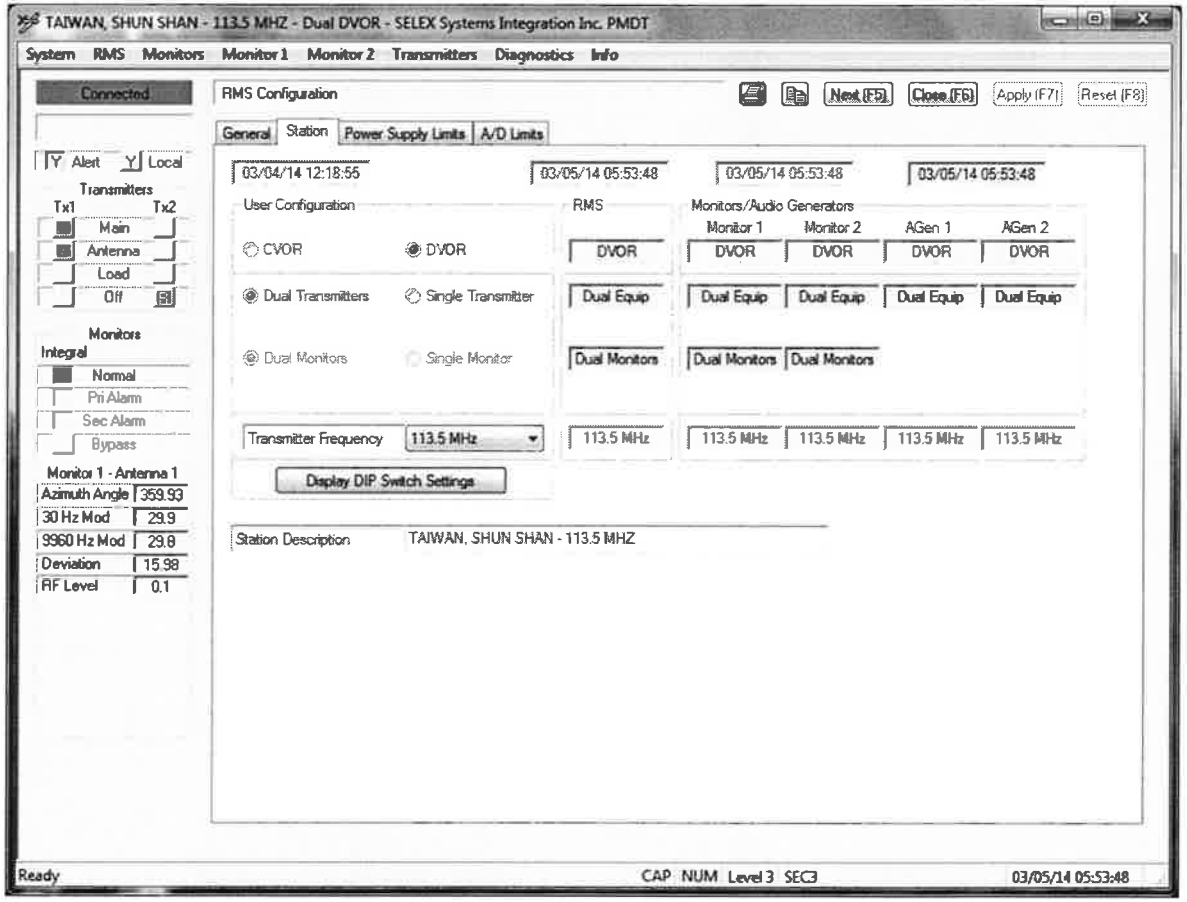

About
Portable Maintenance Data Terminal
978178-0079
Version 8.7.1.0
(Library Version 78)
Build: 10/29/13 10:26 AM
Copyright © 1998 - 2013
SELEX Systems Integration, Inc.
IP Addresses:
127.0.0.1
OK

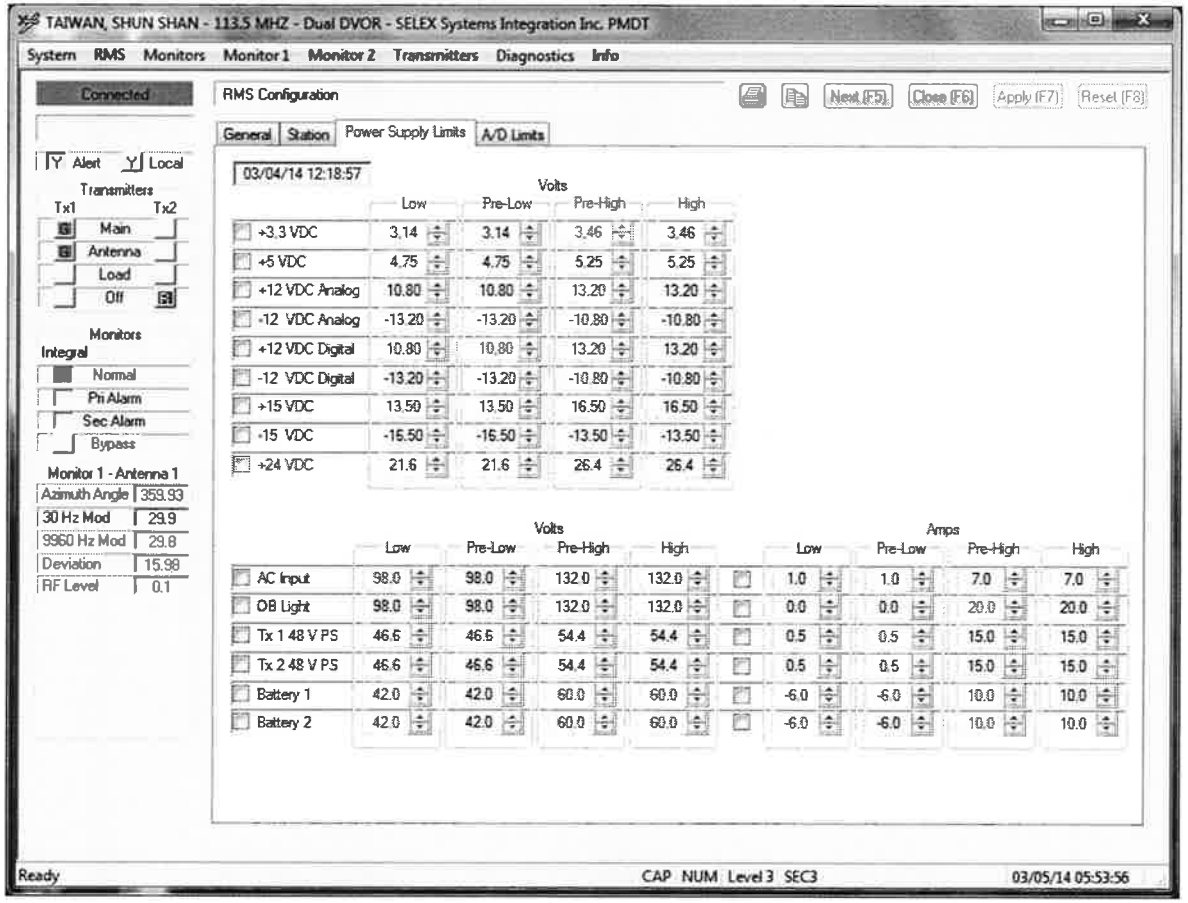

TAIWAN, SHUN SHAN - 113.5 MHZ - Dual DVOR - SELEX Systems Integration Inc. PMDT
System RMS Monitors Monitor 1 Monitor 2 Transmitters Diagnostics Info
Connected
RMS Status
Next (F5) Close (F6) Apply (F7) Reset (F8)
VOR Status Monitor/Transmitter Status Software Revisions Hardware Revisions
01/02/00 00:08:35
Software Revision Levels
RMS (A3A6) 5.2.0.5
Monitor 1 (A3A3) 5.1.0.4
Monitor 2 (A3A10) 5.1.0.4
Audio Generator 1 (A3A2) 5.1.0.2
Audio Generator 2 (A3A9) 5.1.0.2
BCPS 1 (A5A1) 1.6
BCPS 2 (A5A2) 1.6
LCU (A1) 1.2
Alert Local
Transmitters
Tx1 Tx2
Main
Antenna
Load
Off
Monitors
Integral
Normal
Pri Alarm
Sec Alarm
Bypass
Monitor 1 - Antenna 1
Azimuth Angle 359.93
30 Hz Mod 29.9
9960 Hz Mod 29.8
Deviation 15.98
RF Level 0.1
Ready
CAP NUM Level 3 SEC3
03/05/14 05:53:24

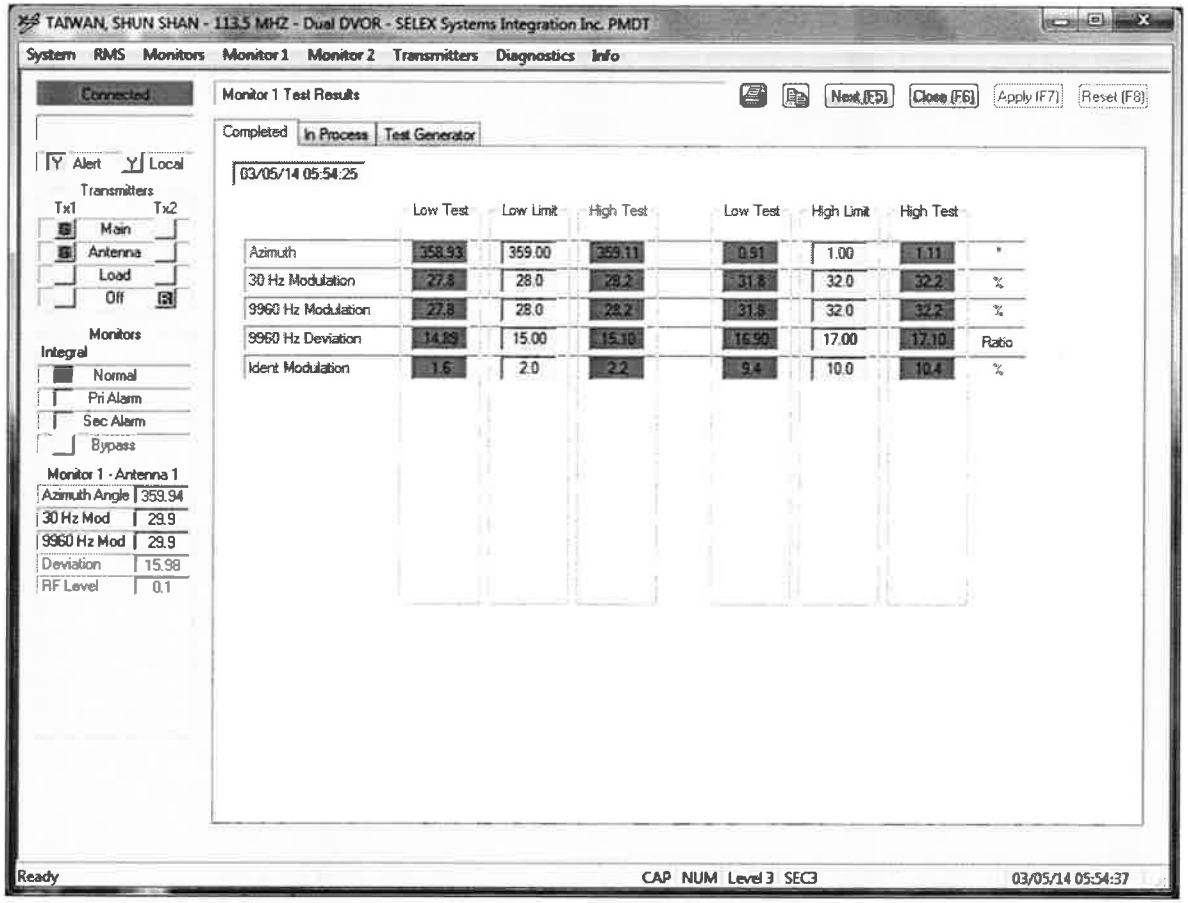

TAIWAN, SHUN SHAN - 113.5 MHZ - Dual DVOR - SELEX Systems Integration Inc. PMDT
System RMS Monitors Monitor 1 Monitor 2 Transmitters Diagnostics Info
Connected
Alert Local
Transmitters
Tx1 Tx2
Main
Antenna
Load
Off
Monitors
Integral
Normal
Pri Alarm
Sec Alarm
Bypass
Monitor 1 - Antenna 1
Azimuth Angle 359.94
30 Hz Mod 29.9
9960 Hz Mod 29.9
Deviation 15.98
RF Level 0.1
Monitor Configuration
Next (F5) Close (F6) Apply (F7) Reset (F8)
General Alarm Limits
03/04/14 12:18:57
Executive Alarms
Integral Monitor
Primary Secondary
30 Hz Modulation
9960 Hz Modulation
Deviation
Tx Power
RF Level
Ident Mod %
Ident Status
Ident Code
Tx Frequency Error
Notch Monitor
Sideband VSWR
Ready
CAP NUM Level 3 SEC3
03/05/14 05:54:08

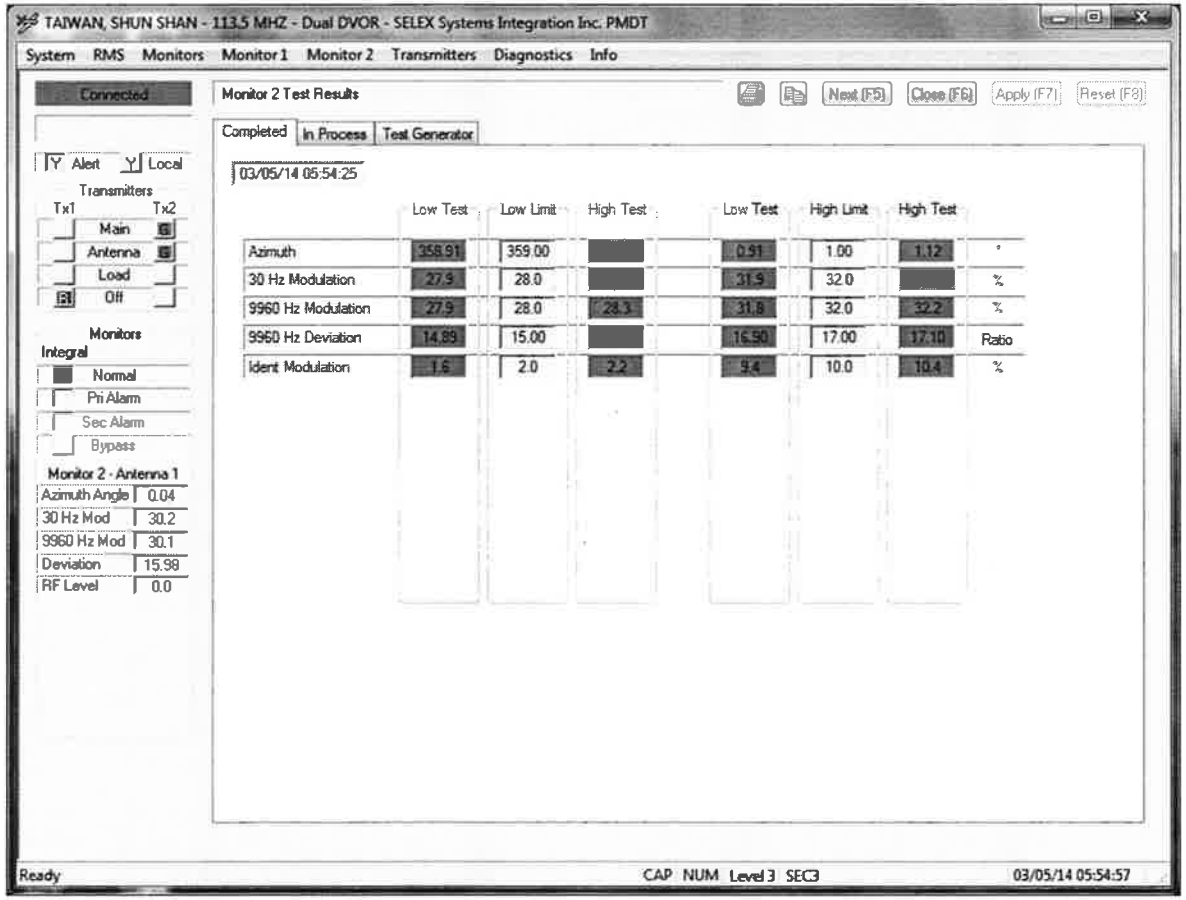

TAIWAN, SHUN SHAN - 113.5 MHZ - Dual DVOR - SELEX Systems Integration Inc. PMDT
System RMS Monitors Monitor 1 Monitor 2 Transmitters Diagnostics Info
Connected
Alert Local
Transmitters
Tx1 Tx2
Main
Antenna
Load
Off
Monitors
Integral
Normal
Pri Alarm
Sec Alarm
Bypass
Monitor 1 - Antenna 1
Azimuth Angle 359.94
30 Hz Mod 29.9
9960 Hz Mod 29.9
Deviation 15.98
RF Level 0.1
Monitor Configuration
Next (F5)
Close (F6)
Apply (F7)
Reset (F8)
General
Alarm Limits
03/04/14 12:18:57
PreAlarm Range
Alarm Range
Azimuth Angle +/- 0.90 +/- 1.00 °
Notch Monitor +/- 50 +/- 50 °
Alarm Low
PreAlarm Low
Nominal
PreAlarm High
Alarm High
30 Hz Modulation 28.0 28.5 30.0 31.5 32.0 %
9960 Hz Modulation 28.0 28.5 30.0 31.5 32.0 %
9960 Hz Deviation 15.00 15.20 16.00 16.30 17.00 Ratio
RF Level -3.0 -2.5 0.0 2.5 3.0 dB
Tx Power 50.0 75.0 100.0 125.0 130.0 Watts
Tx Frequency Error -20 -18 0 18 20 ppm
Ident Modulation 2.0 4.0 5.0 9.0 10.0 %
Sideband VSWR
Number of Antennas in Alarm 1 1.5 3.0 :1
Timers
Integral Shutdown Delay 5.0 Seconds
Continuous Ident 17.0 Seconds
No Ident 17.0 Seconds
Monitor Antennas
Antenna 1
Antenna 2
Enable
Monitor 1 Input Attenuation 25 47 dB
Monitor 1 Azimuth Angle 0.00 0.00 °
Monitor 2 Input Attenuation 25 47 dB
Monitor 2 Azimuth Angle 0.00 0.00 °
Ready
CAP NUM Level 3 SEC3
03/05/14 05:54:19

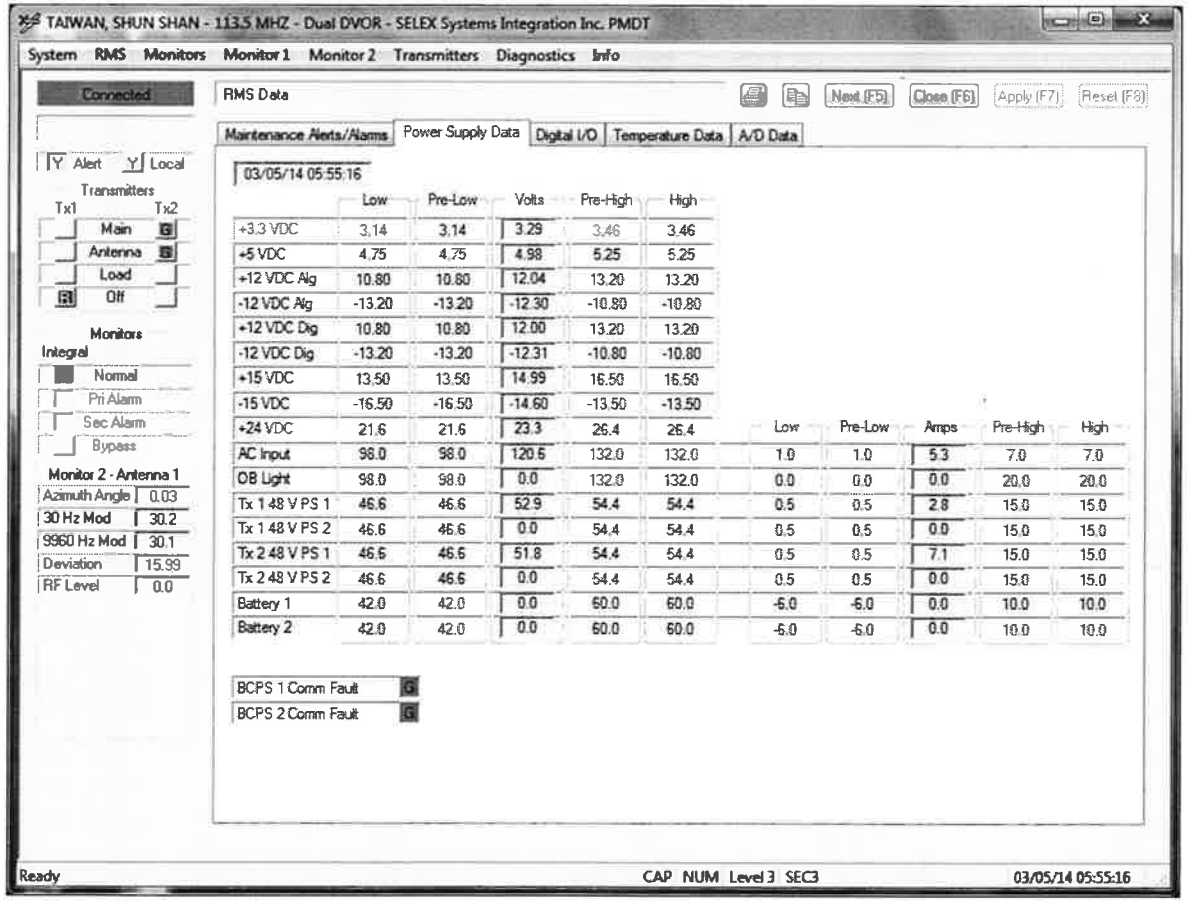

TAIWAN, SHUN SHAN - 113.5 MHZ - Dual DVOR - SELEX Systems Integration Inc. PMDT
System RMS Monitors Monitor 1 Monitor 2 Transmitters Diagnostics Info
Connected
Alert Local
Transmitters
Tx1 Tx2
Main
Antenna
Load
Off
Monitors
Integral
Normal
Pri Alarm
Sec Alarm
Bypass
Monitor 1 - Antenna 1
Azimuth Angle 359.93
30 Hz Mod 29.9
9960 Hz Mod 29.8
Deviation 15.98
RF Level 0.1
RMS Configuration
Next (F5)
Close (F6)
Apply (F7)
Reset (F8)
General
Station
Power Supply Limits
A/D Limits
03/04/14 12:18:55
Monitor/LCU Configuration
Monitor Integrity Tests Enabled
Voting Logic: OR AND
Transfer
Automatic Restarts
Automatic Restarts Enabled
First Restart Delay (seconds) 50
Number of Automatic Restarts 2
RCSU Configuration
RCSU Present
Connection Type Dedicated Modem
SPI Filter
Type Normal
Co-located DME/TACAN
Type SELEX 1118A/1119A DME
Digital I/O Configuration
Smoke Alarm Installed
Remote Reset Enabled
Intrusion Alarm Installed
Remote Reset Enabled
Exit Delay (minutes) 30
Entry Delay (minutes) 5
Spare Input #1 Not Present
Spare Input #2 Not Present
Spare Input #3 Not Present
Spare Input #4 Not Present
RMM Configuration
Connection Type PSTN Modem
Dial In # Rings 1
Dial Out on Status Change Disabled
Dial Out Phone Number
Tone Dial Out
Ready
CAP NUM Level 3 SEC3
03/05/14 05:53:41

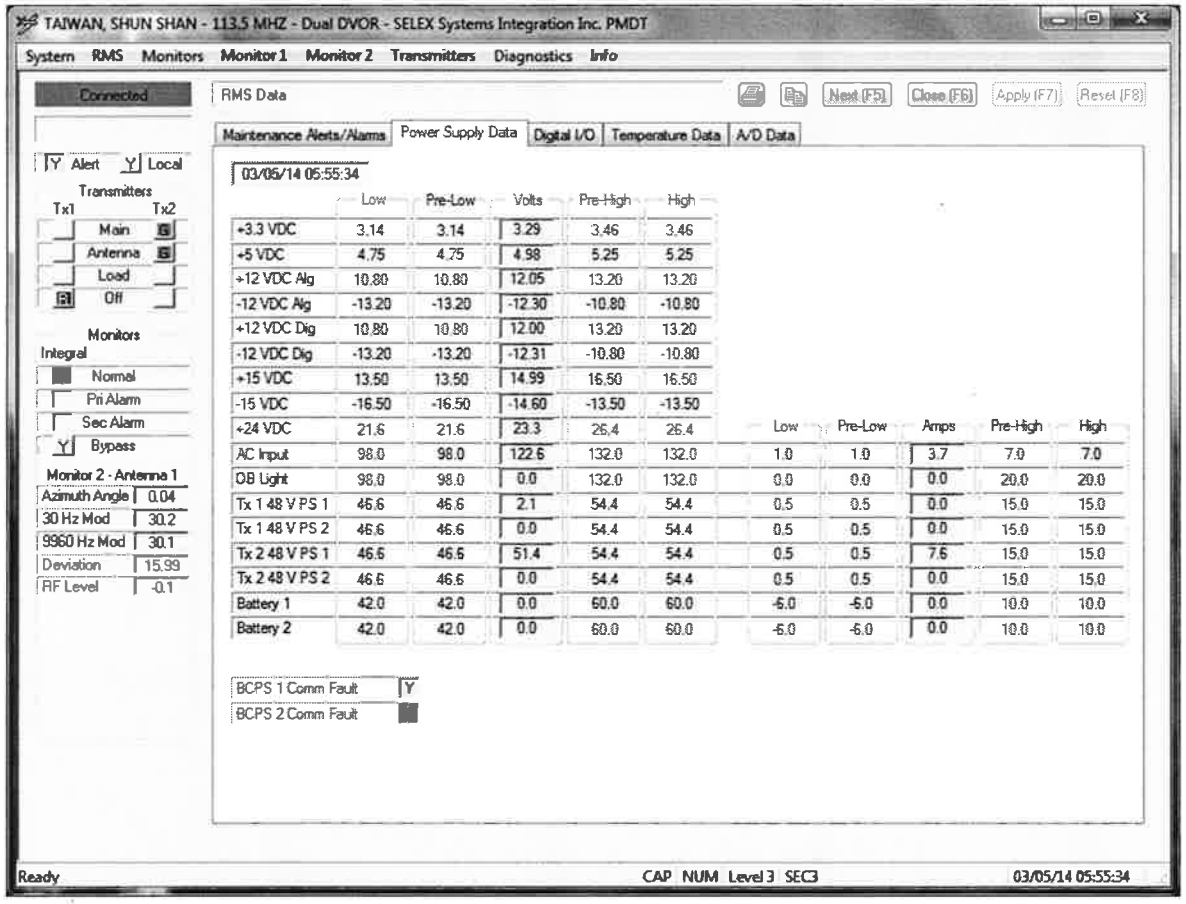

TAIWAN, SHUN SHAN - 113.5 MHZ - Dual DVOR - SELEX Systems Integration Inc. PMDT
System RMS Monitors Monitor 1 Monitor 2 Transmitters Diagnostics Info
Connected
RMS Configuration
Next (F5)
Close (F6)
Apply (F7)
Reset (F8)
General Station Power Supply Limits A/D Limits
Alert Local
Transmitters
Tx1 Tx2
Main
Antenna
Load
Off
Monitors
Integral
Normal
Pri Alarm
Sec Alarm
Bypass
Monitor 1 - Antenna 1
Azimuth Angle 359.93
30 Hz Mod 29.9
9960 Hz Mod 29.8
Deviation 15.98
RF Level 0.1
03/04/14 12:18:55
03/05/14 05:53:48
03/05/14 05:53:48
03/05/14 05:53:48
User Configuration
RMS
Monitors/Audio Generators
Monitor 1 Monitor 2 AGen 1 AGen 2
CVOR DVOR
DVOR DVOR DVOR DVOR DVOR
Dual Transmitters Single Transmitter
Dual Equip Dual Equip Dual Equip Dual Equip Dual Equip
Dual Monitors Single Monitor
Dual Monitors Dual Monitors Dual Monitors
Transmitter Frequency 113.5 MHz
113.5 MHz 113.5 MHz 113.5 MHz 113.5 MHz 113.5 MHz 113.5 MHz
Display DIP Switch Settings
Station Description TAIWAN, SHUN SHAN - 113.5 MHZ
Ready
CAP NUM Level 3 SEC3
03/05/14 05:53:48


TAIWAN, SHUN SHAN - 113.5 MHZ - Dual DVOR - SELEX Systems Integration Inc. PMDT
System RMS Monitors Monitor 1 Monitor 2 Transmitters Diagnostics Info
Connected
RMS Configuration
Next (F5) Close (F6) Apply (F7) Reset (F8)
General Station Power Supply Limits A/D Limits
Alert Local
Transmitters
Tx1 Tx2
Main
Antenna
Load
Off
Monitors
Integral
Normal
Pri Alarm
Sec Alarm
Bypass
Monitor 1 - Antenna 1
Azimuth Angle 359.93
30 Hz Mod 29.9
9960 Hz Mod 29.8
Deviation 15.98
RF Level 0.1
03/04/14 12:18:57
Volts
Low Pre-Low Pre-High High
+3.3 VDC 3.14 3.14 3.46 3.46
+5 VDC 4.75 4.75 5.25 5.25
+12 VDC Analog 10.80 10.80 13.20 13.20
-12 VDC Analog -13.20 -13.20 -10.80 -10.80
+12 VDC Digital 10.80 10.80 13.20 13.20
-12 VDC Digital -13.20 -13.20 -10.80 -10.80
+15 VDC 13.50 13.50 16.50 16.50
-15 VDC -16.50 -16.50 -13.50 -13.50
+24 VDC 21.6 21.6 26.4 26.4
Volts
Low Pre-Low Pre-High High
Amps
Low Pre-Low Pre-High High
AC Input 98.0 98.0 132.0 132.0 1.0 1.0 7.0 7.0
OB Light 98.0 98.0 132.0 132.0 0.0 0.0 20.0 20.0
Tx 1 48 V PS 46.6 46.6 54.4 54.4 0.5 0.5 15.0 15.0
Tx 2 48 V PS 46.6 46.6 54.4 54.4 0.5 0.5 15.0 15.0
Battery 1 42.0 42.0 60.0 60.0 -6.0 -6.0 10.0 10.0
Battery 2 42.0 42.0 60.0 60.0 -6.0 -6.0 10.0 10.0
Ready
CAP NUM Level 3 SEC3
03/05/14 05:53:56


TAIWAN, SHUN SHAN - 113.5 MHZ - Dual DVOR - SELEX Systems Integration Inc. PMDT
System RMS Monitors Monitor 1 Monitor 2 Transmitters Diagnostics Info
Connected
Alert Local
Transmitters
Tx1 Tx2
Main
Antenna
Load
Off
Monitors
Integral
Normal
Pri Alarm
Sec Alarm
Bypass
Monitor 1 - Antenna 1
Azimuth Angle 359.94
30 Hz Mod 29.9
9960 Hz Mod 29.9
Deviation 15.98
RF Level 0.1
Monitor 1 Test Results
Next (F5)
Close (F6)
Apply (F7)
Reset (F8)
Completed
In Process
Test Generator
03/05/14 05:54:25
Low Test
Low Limit
High Test
Low Test
High Limit
High Test
Azimuth 358.93 359.00 359.11 0.91 1.00 1.11 °
30 Hz Modulation 27.8 28.0 28.2 31.8 32.0 32.2 %
9960 Hz Modulation 27.8 28.0 28.2 31.8 32.0 32.2 %
9960 Hz Deviation 14.89 15.00 15.10 16.90 17.00 17.10 Ratio
Ident Modulation 1.6 2.0 2.2 9.4 10.0 10.4 %
Ready
CAP NUM Level 3 SEC3
03/05/14 05:54:37

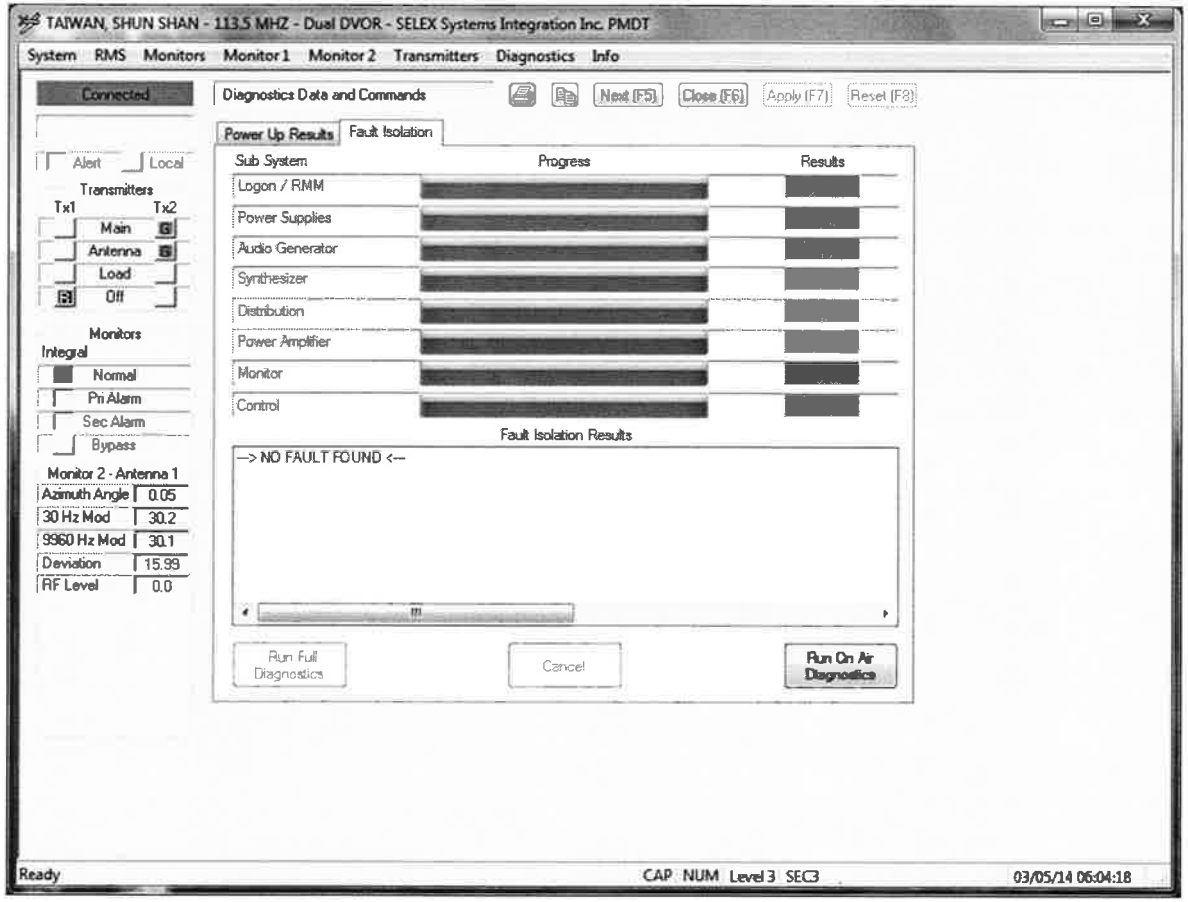

TAIWAN, SHUN SHAN - 113.5 MHZ - Dual DVOR - SELEX Systems Integration Inc. PMDT
System RMS Monitors Monitor 1 Monitor 2 Transmitters Diagnostics Info
Connected
Alert Local
Transmitters
Tx1 Tx2
Main
Antenna
Load
Off
Monitors
Integral
Normal
Pri Alarm
Sec Alarm
Bypass
Monitor 2 - Antenna 1
Azimuth Angle 0.04
30 Hz Mod 30.2
9960 Hz Mod 30.1
Deviation 15.98
RF Level 0.0
Monitor 2 Test Results
Next (F5)
Close (F6)
Apply (F7)
Reset (F8)
Completed
In Process
Test Generator
03/05/14 05:54:25
Low Test
Low Limit
High Test
Low Test
High Limit
High Test
Azimuth 358.91 359.00 0.91 1.00 1.12 °
30 Hz Modulation 27.9 28.0 31.9 32.0 %
9960 Hz Modulation 27.9 28.0 28.3 31.8 32.0 32.2 %
9960 Hz Deviation 14.89 15.00 16.90 17.00 17.10 Ratio
Ident Modulation 1.6 2.0 2.2 9.4 10.0 10.4 %
Ready
CAP NUM Level 3 SEC3
03/05/14 05:54:57

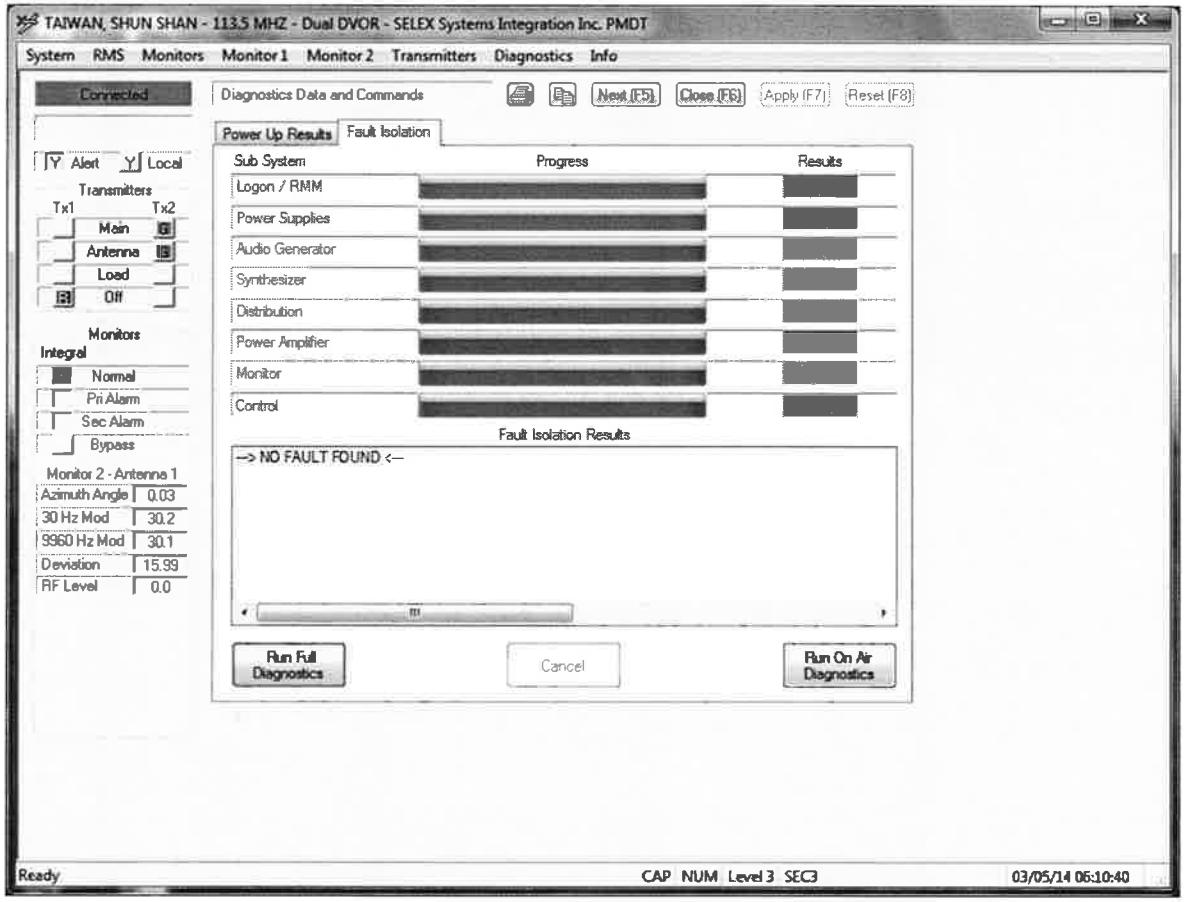

TAIWAN, SHUN SHAN - 113.5 MHZ - Dual DVOR - SELEX Systems Integration Inc. PMDT
System RMS Monitors Monitor 1 Monitor 2 Transmitters Diagnostics Info
Connected
RMS Data
Next (F5) Close (F6) Apply (F7) Reset (F8)
Alert Local
Transmitters
Tx1 Tx2
Main G
Antenna B
Load
B Off
Monitors
Integral
Normal
Pri Alarm
Sec Alarm
Bypass
Monitor 2 - Antenna 1
Azimuth Angle 0.03
30 Hz Mod 30.2
9960 Hz Mod 30.1
Deviation 15.99
RF Level 0.0
Maintenance Alerts/Alarms
Power Supply Data
Digital I/O
Temperature Data
A/D Data
03/05/14 05:55:16
Low Pre-Low Volts Pre-High High
+3.3 VDC 3.14 3.14 3.29 3.46 3.46
+5 VDC 4.75 4.75 4.98 5.25 5.25
+12 VDC Alg 10.80 10.80 12.04 13.20 13.20
-12 VDC Alg -13.20 -13.20 -12.30 -10.80 -10.80
+12 VDC Dig 10.80 10.80 12.00 13.20 13.20
-12 VDC Dig -13.20 -13.20 -12.31 -10.80 -10.80
+15 VDC 13.50 13.50 14.99 16.50 16.50
-15 VDC -16.50 -16.50 -14.60 -13.50 -13.50
+24 VDC 21.6 21.6 23.3 26.4 26.4
Low Pre-Low Amps Pre-High High
AC Input 98.0 98.0 120.6 132.0 132.0 1.0 1.0 5.3 7.0 7.0
OB Light 98.0 98.0 0.0 132.0 132.0 0.0 0.0 0.0 20.0 20.0
Tx 1 48 V PS 1 46.6 46.6 52.9 54.4 54.4 0.5 0.5 2.8 15.0 15.0
Tx 1 48 V PS 2 46.6 46.6 0.0 54.4 54.4 0.5 0.5 0.0 15.0 15.0
Tx 2 48 V PS 1 46.6 46.6 51.8 54.4 54.4 0.5 0.5 7.1 15.0 15.0
Tx 2 48 V PS 2 46.6 46.6 0.0 54.4 54.4 0.5 0.5 0.0 15.0 15.0
Battery 1 42.0 42.0 0.0 60.0 60.0 -6.0 -6.0 0.0 10.0 10.0
Battery 2 42.0 42.0 0.0 60.0 60.0 -6.0 -6.0 0.0 10.0 10.0
BCPS 1 Comm Fault G
BCPS 2 Comm Fault G
Ready
CAP NUM Level 3 SEC3
03/05/14 05:55:16



	Low	Pre-Low	Volts	Pre-High	High
+3.3 VDC	3.14	3.14	3.29	3.46	3.46
+5 VDC	4.75	4.75	4.98	5.25	5.25
+12 VDC Alg	10.80	10.80	12.05	13.20	13.20
-12 VDC Alg	-13.20	-13.20	-12.30	-10.80	-10.80
+12 VDC Dig	10.80	10.80	12.00	13.20	13.20
-12 VDC Dig	-13.20	-13.20	-12.31	-10.80	-10.80
+15 VDC	13.50	13.50	14.99	16.50	16.50
-15 VDC	-16.50	-16.50	-14.60	-13.50	-13.50
+24 VDC	21.6	21.6	23.3	26.4	26.4

	Low	Pre-Low	Amps	Pre-High	High
AC Input	1.0	1.0	3.7	7.0	7.0
OB Light	0.0	0.0	0.0	20.0	20.0
Tx 1 48 V PS 1	0.5	0.5	0.0	15.0	15.0
Tx 1 48 V PS 2	0.5	0.5	0.0	15.0	15.0
Tx 2 48 V PS 1	0.5	0.5	7.6	15.0	15.0
Tx 2 48 V PS 2	0.5	0.5	0.0	15.0	15.0
Battery 1	-5.0	-5.0	0.0	10.0	10.0
Battery 2	-5.0	-5.0	0.0	10.0	10.0


TAIWAN, SHUN SHAN - 113.5 MHZ - Dual DVOR - SELEX Systems Integration Inc. PMDT
System RMS Monitors Monitor 1 Monitor 2 Transmitters Diagnostics Info
Connected
Alert Local
Transmitters
Tx1 Tx2
Main
Antenna
Load
Off
Monitors
Integral
Normal
Pri Alarm
Sec Alarm
Bypass
Monitor 2 - Antenna 1
Azimuth Angle 0.05
30 Hz Mod 30.2
9960 Hz Mod 30.1
Deviation 15.99
RF Level 0.0
Diagnostics Data and Commands
Next (F5)
Close (F6)
Apply (F7)
Reset (F8)
Power Up Results
Fault Isolation
Sub System
Progress
Results
Logon / RMM
Power Supplies
Audio Generator
Synthesizer
Distribution
Power Amplifier
Monitor
Control
Fault Isolation Results
--> NO FAULT FOUND <--
Run Full Diagnostics
Cancel
Run On Air Diagnostics
Ready
CAP NUM Level 3 SEC3
03/05/14 06:04:18


TAIWAN, SHUN SHAN - 113.5 MHZ - Dual DVOR - SELEX Systems Integration Inc. PMDT
System RMS Monitors Monitor 1 Monitor 2 Transmitters Diagnostics Info
Connected
Alert Local
Transmitters
Tx1 Tx2
Main
Antenna
Load
Off
Monitors
Integral
Normal
Pri Alarm
Sec Alarm
Bypass
Monitor 2 - Antenna 1
Azimuth Angle 0.03
30 Hz Mod 30.2
9960 Hz Mod 30.1
Deviation 15.99
RF Level 0.0
Diagnostics Data and Commands
Next (F5) Close (F6) Apply (F7) Reset (F8)
Power Up Results
Fault Isolation
Sub System
Progress
Results
Logon / RMM
Power Supplies
Audio Generator
Synthesizer
Distribution
Power Amplifier
Monitor
Control
Fault Isolation Results
--> NO FAULT FOUND <--
Run Full Diagnostics
Cancel
Run On Air Diagnostics
Ready
CAP NUM Level 3 SEC3
03/05/14 06:10:40

RMS Configuration

Time Stamp	: 03/04/14 - 12:18:55
Smoke Detector Enabled	: False
Smoke Detector Remote Reset Enabled	: True
Intrusion Det Enabled	: False
Intrusion Detector Remote Reset Enabled	: True
Intrusion Exit Delay	: 30 sec
Intrusion Entry Delay	: 5 sec
Spare Digital 1	: Not Present
Spare Digital 2	: Not Present
Spare Digital 3	: Not Present
Spare Digital 4	: Not Present
Restart Delay	: 50 sec
Auto Restart	: Disabled
Dial Out Phone Number	:
Dial In Rings	: 1
Tone Dial	: True
Logic AND/OR	: And
AND logic when on Standby	: False
Best Avail Mode Enabled	: False
Integrity Tests Enabled	: True
RCSU Present	: False
Co-located DME/TACAN Type	: 1118A/1119A DME
Co-located DME is Dual Equipment	: False
VOR Type	: Doppler
Dual Equipment	: True
Hot Standby	: False
Dual Monitors	: True
Dual Monitor Inputs	: False
RF Channel	: 113.5 MHz
Dial Out Identifier	: TAIWAN, SHUN SHAN - 113.5 MHZ

Software Versions

Time Stamp	: 03/05/14 - 06:05:28
RMS	: Version 5.2.0.5
Monitor #1	: Version 5.1.0.4
Monitor #2	: Version 5.1.0.4
Audio Gen #1	: Version 5.1.0.2
Audio Gen #2	: Version 5.1.0.2
BCPS #1	: Version 1.6
BCPS #2	: Version 1.6
LCU	: Version 1.2
PMDT	: Version 8.7.1.0

Hardware Configuration Information

Time Stamp : 03/05/14 - 06:10:25

Module	Part Number	Revision	Serial Number
Synthesizer 1	030838-1001	G	110164
Carrier PA 1	030825-0002	R	110029
Sideband 1/2 PA	030824-0002	G	110300
Sideband 3/4 PA	030824-0002	G	110298
Synthesizer 2	030838-1001	G	110165
Carrier PA 2	030825-0002	R	110164
Sideband 1/2 PA	030824-0002	G	110299
Sideband 3/4 PA	030824-0002	G	110297

RF Monitor 030829-0001 D 110091

Notes:
None

RMS A/D Limits
Time Stamp : 03/04/14 - 12:18:57
Alert Limits

Spare 1 Low	: -5.00 Volts
Spare 1 High	: 5.00 Volts
Spare 2 Low	: -5.00 Volts
Spare 2 High	: 5.00 Volts
Spare 3 Low	: -5.00 Volts
Spare 3 High	: 5.00 Volts
Spare 4 Low	: -5.00 Volts
Spare 4 High	: 5.00 Volts
Spare 5 Low	: -5.00 Volts
Spare 5 High	: 5.00 Volts
Spare 6 Low	: -5.00 Volts
Spare 6 High	: 5.00 Volts
Spare 7 Low	: -5.00 Volts
Spare 7 High	: 5.00 Volts
Spare 8 Low	: -5.00 Volts
Spare 8 High	: 5.00 Volts
Spare 9 Low	: -5.00 Volts
Spare 9 High	: 5.00 Volts
Spare 10 Low	: -5.00 Volts
Spare 10 High	: 5.00 Volts
AC Voltage Low	: 98.0 Volts
AC Voltage High	: 132.0 Volts
AC Current Low	: 1.0 Amps
AC Current High	: 7.0 Amps
Ob Light Volts Low	: 98.0 Volts
Ob Light Volts High	: 132.0 Volts
Ob Light Amps Low	: 0.0 Amps
Ob Light Amps High	: 20.0 Amps
Tx 1 48V PS Low	: 46.6 Volts
Tx 1 48V PS High	: 54.4 Volts
Tx 2 48V PS Low	: 46.6 Volts
Tx 2 48V PS High	: 54.4 Volts
Tx 1 48V PS Low	: 0.5 Amps
Tx 1 48V PS High	: 15.0 Amps
Tx 2 48V PS Low	: 0.5 Amps
Tx 2 48V PS High	: 15.0 Amps
Battery 1 Voltage Low	: 42.0 Volts
Battery 1 Voltage High	: 60.0 Volts
Battery 2 Voltage Low	: 42.0 Volts
Battery 2 Voltage High	: 60.0 Volts
Battery 1 Current Low	: -6.0 Amps
Battery 1 Current High	: 10.0 Amps
Battery 2 Current Low	: -6.0 Amps
Battery 2 Current High	: 10.0 Amps
RMS 3.3 Volts Low	: 3.14 Volts
RMS 3.3 Volts High	: 3.46 Volts
RMS 5 Volts Low	: 4.75 Volts
RMS 5 Volts High	: 5.25 Volts

RMS 12 V, Analog Low	: 10.80 Volts
RMS 12 V, Analog High	: 13.20 Volts
RMS -12 V, Analog Low	: -13.20 Volts
RMS -12 V, Analog High	: -10.80 Volts
RMS 12 V, Digital Low	: 10.80 Volts
RMS 12 V, Digital High	: 13.20 Volts
RMS -12 V, Digital Low	: -13.20 Volts
RMS -12 V, Digital High	: -10.80 Volts
RMS 15 V Low	: 13.50 Volts
RMS 15 V High	: 16.50 Volts
RMS -15 V Low	: -16.50 Volts
RMS -15 V High	: -13.50 Volts
RMS 24 V Low	: 21.6 Volts
RMS 24 V High	: 26.4 Volts
Cabinet Interface Temperature Low	: 0 Deg C
Cabinet Interface Temperature High	: 40 Deg C
External Sensor Temperature Low	: -25 Deg C
External Sensor Temperature High	: 70 Deg C
PA Temperature High	: 85 Deg C
Pre-Alert Limits	
Spare 1 Low	: -5.00 Volts
Spare 1 High	: 5.00 Volts
Spare 2 Low	: -5.00 Volts
Spare 2 High	: 5.00 Volts
Spare 3 Low	: -5.00 Volts
Spare 3 High	: 5.00 Volts
Spare 4 Low	: -5.00 Volts
Spare 4 High	: 5.00 Volts
Spare 5 Low	: -5.00 Volts
Spare 5 High	: 5.00 Volts
Spare 6 Low	: -5.00 Volts
Spare 6 High	: 5.00 Volts
Spare 7 Low	: -5.00 Volts
Spare 7 High	: 5.00 Volts
Spare 8 Low	: -5.00 Volts
Spare 8 High	: 5.00 Volts
Spare 9 Low	: -5.00 Volts
Spare 9 High	: 5.00 Volts
Spare 10 Low	: -5.00 Volts
Spare 10 High	: 5.00 Volts
AC Voltage Low	: 98.0 Volts
AC Voltage High	: 132.0 Volts
AC Current Low	: 1.0 Amps
AC Current High	: 7.0 Amps
Ob Light Volts Low	: 98.0 Volts
Ob Light Volts High	: 132.0 Volts
Ob Light Amps Low	: 0.0 Amps
Ob Light Amps High	: 20.0 Amps
Tx 1 PS Volts Low	: 46.6 Volts
Tx 1 PS Volts High	: 54.4 Volts
Tx 2 PS Volts Low	: 46.6 Volts
Tx 2 PS Volts High	: 54.4 Volts
Tx 1 PS Amps Low	: 0.5 Amps
Tx 1 PS Amps High	: 15.0 Amps
Tx 2 PS Amps Low	: 0.5 Amps
Tx 2 PS Amps High	: 15.0 Amps

Battery 1 Volts Low	: 42.0 Volts
Battery 1 Volts High	: 60.0 Volts
Battery 2 Volts Low	: 42.0 Volts
Battery 2 Volts High	: 60.0 Volts
Battery 1 Amps Low	: -6.0 Amps
Battery 1 Amps High	: 10.0 Amps
Battery 2 Amps Low	: -6.0 Amps
Battery 2 Amps High	: 10.0 Amps
RMS 3.3 Volts Low	: 3.14 Volts
RMS 3.3 Volts High	: 3.46 Volts
RMS 5 Volts Low	: 4.75 Volts
RMS 5 Volts High	: 5.25 Volts
RMS 12 V, Analog Low	: 10.80 Volts
RMS 12 V, Analog High	: 13.20 Volts
RMS -12 V, Analog Low	: -13.20 Volts
RMS -12 V, Analog High	: -10.80 Volts
RMS 12 V, Digital Low	: 10.80 Volts
RMS 12 V, Digital High	: 13.20 Volts
RMS -12 V, Digital Low	: -13.20 Volts
RMS -12 V, Digital High	: -10.80 Volts
RMS 15 V Low	: 13.50 Volts
RMS 15 V High	: 16.50 Volts
RMS -15 V Low	: -16.50 Volts
RMS -15 V High	: -13.50 Volts
RMS 24 V Low	: 21.6 Volts
RMS 24 V High	: 26.4 Volts
Cabinet Interface Temperature Low	: 0 Deg C
Cabinet Interface Temperature High	: 40 Deg C
External Sensor Temperature Low	: -25 Deg C
External Sensor Temperature High	: 70 Deg C
PA Temperature High	: 80 Deg C
RMS A/D Maintenance Alert Enables:	
Spare 1	: False
Spare 2	: False
Spare 3	: False
Spare 4	: False
Spare 5	: False
Spare 6	: False
Spare 7	: False
Spare 8	: False
Spare 9	: False
Spare 10	: False
AC Voltage	: False
AC Current	: False
Ob Light Volts	: False
Ob Light Amps	: False
Tx 1 PS Volts	: False
Tx 1 PS Amps	: False
Battery 1 Volts	: False
Battery 1 Amps	: False
Tx 2 PS Volts	: False
Tx 2 PS Amps	: False
Battery 2 Volts	: False
Battery 2 Amps	: False
Cabinet Interface Temperature	: False
External Sensor Temperature	: False

RMS 3.3 Volts	: False
RMS 5 Volts	: False
RMS 12 V, Analog	: False
RMS -12 V, Analog	: False
RMS 12 V, Digital	: False
RMS -12 V, Digital	: False
RMS 15 V	: False
RMS -15 V	: False
RMS 24 V	: False

Monitor Configuration

Time Stamp	: 03/04/14 - 12:18:57
Integral Monitor Timer	: 5.0 sec
Standby Monitor Timer	: 5.0 sec
Continuous Ident Timer	: 17.0 sec
No Ident Timer	: 17.0 sec

Alarm Limits

Az Angle	: +/-1.00 Degrees
30Hz Modulation Low	: 28.0 %
30Hz Modulation High	: 32.0 %
9960Hz Modulation Low	: 28.0 %
9960Hz Modulation High	: 32.0 %
Deviation Low	: 15.00 (Ratio)
Deviation High	: 17.00 (Ratio)
RF Level Low	: -3.0 dB
RF Level High	: 3.0 dB
Ident Modulation Low	: 2.0 %
Ident Modulation High	: 10.0 %
Tx Frequency Error Low	: -20 ppm
Tx Frequency Error High	: 20 ppm
Tx Power Low	: 50.0 Watts
Tx Power High	: 130.0 Watts
Notch Monitor	: +/-50
Sideband VSWR	: 3.0:1
# of Antennas in Alarm	: 1

Alert Limits

Az Angle	: +/-0.90 Degrees
30Hz Modulation Low	: 28.5 %
30Hz Modulation High	: 31.5 %
9960Hz Modulation Low	: 28.5 %
9960Hz Modulation High	: 31.5 %
Deviation Low	: 15.20 (Ratio)
Deviation High	: 16.30 (Ratio)
RF Level Low	: -2.5 dB
RF Level High	: 2.5 dB
Ident Modulation Low	: 4.0 %
Ident Modulation High	: 9.0 %
Tx Frequency Error Low	: -18 ppm
Tx Frequency Error High	: 18 ppm
Tx Power Low	: 75.0 Watts
Tx Power High	: 125.0 Watts
Notch Monitor	: +/-50
Sideband VSWR	: 1.5:1
Primary Alarm Enables:	
Az Angle	: True
30Hz Modulation	: True

Deviation	: True
RF Level	: True
Ident Status	: True
Ident Code	: True
Ident Modulation	: True
Tx Frequency Error	: True
Tx Power	: True
Notch Monitor	: True
Sideband VSWR	: True
Notch Monitor Enabled	: False
SB VSWR Monitor Enabled	: True
Mon 1 Input Attenuation	: 25 dB
Mon 2 Input Attenuation	: 25 dB

Monitor #1 Offsets and Scale Factors

Time Stamp	: 03/04/14 - 12:41:50
Azimuth Angle Offset	: 0.07 Degrees
30 Hz Modulation Scale	: 101.6 %
9960 Hz Modulation Scale	: 92.6 %
9960 Hz Deviation Scale	: 101.0 %
RF Level Offset	: 0.3 dB
Ident Modulation Scale	: 103.0 %
Tx Power	: 100.0 %
Tx Power Offset	: 0.0 dB
Tx Freq Diff Offset	: 0.0 ppm
Notch Monitor Scale Factor	: 100.0 %
Odd Antenna Sideband Return Loss	: 0.0 dB
Even Antenna Sideband Return Loss	: 0.0 dB
Test Generator Az Angle Offset	: 0.04 dB
Test Generator 30Hz Modulation Scale	: 100.3 %
Test Generator 9960Hz Modulation Scale	: 96.1 %
Test Generator Deviation Scale	: 100.2 %
Test Generator Ident Modulation Scale	: 100.0 %

Monitor #2 Offsets and Scale Factors

Time Stamp	: 03/04/14 - 12:41:41
Azimuth Angle Offset	: 0.07 Degrees
30 Hz Modulation Scale	: 101.7 %
9960 Hz Modulation Scale	: 94.2 %
9960 Hz Deviation Scale	: 101.0 %
RF Level Offset	: 0.5 dB
Ident Modulation Scale	: 103.0 %
Tx Power	: 100.6 %
Tx Power Offset	: 0.0 dB
Tx Freq Diff Offset	: 0.0 ppm
Notch Monitor Scale Factor	: 100.0 %
Odd Antenna Sideband Return Loss	: 0.0 dB
Even Antenna Sideband Return Loss	: 0.0 dB
Test Generator Az Angle Offset	: 0.04 dB
Test Generator 30Hz Modulation Scale	: 100.8 %
Test Generator 9960Hz Modulation Scale	: 96.5 %
Test Generator Deviation Scale	: 100.2 %
Test Generator Ident Modulation Scale	: 100.0 %

Notch Monitor Baselines

Time Stamp	: 03/04/14 - 12:18:58

Transmitter #1

Antenna #1 Baseline	: 0.00
Antenna #2 Baseline	: 0.00
Antenna #3 Baseline	: 0.00
Antenna #4 Baseline	: 0.00
Antenna #5 Baseline	: 0.00
Antenna #6 Baseline	: 0.00
Antenna #7 Baseline	: 0.00
Antenna #8 Baseline	: 0.00
Antenna #9 Baseline	: 0.00
Antenna #10 Baseline	: 0.00
Antenna #11 Baseline	: 0.00
Antenna #12 Baseline	: 0.00
Antenna #13 Baseline	: 0.00
Antenna #14 Baseline	: 0.00
Antenna #15 Baseline	: 0.00
Antenna #16 Baseline	: 0.00
Antenna #17 Baseline	: 0.00
Antenna #18 Baseline	: 0.00
Antenna #19 Baseline	: 0.00
Antenna #20 Baseline	: 0.00
Antenna #21 Baseline	: 0.00
Antenna #22 Baseline	: 0.00
Antenna #23 Baseline	: 0.00
Antenna #24 Baseline	: 0.00
Antenna #25 Baseline	: 0.00
Antenna #26 Baseline	: 0.00
Antenna #27 Baseline	: 0.00
Antenna #28 Baseline	: 0.00
Antenna #29 Baseline	: 0.00
Antenna #30 Baseline	: 0.00
Antenna #31 Baseline	: 0.00
Antenna #32 Baseline	: 0.00
Antenna #33 Baseline	: 0.00
Antenna #34 Baseline	: 0.00
Antenna #35 Baseline	: 0.00
Antenna #36 Baseline	: 0.00
Antenna #37 Baseline	: 0.00
Antenna #38 Baseline	: 0.00
Antenna #39 Baseline	: 0.00
Antenna #40 Baseline	: 0.00
Antenna #41 Baseline	: 0.00
Antenna #42 Baseline	: 0.00
Antenna #43 Baseline	: 0.00
Antenna #44 Baseline	: 0.00
Antenna #45 Baseline	: 0.00
Antenna #46 Baseline	: 0.00
Antenna #47 Baseline	: 0.00
Antenna #48 Baseline	: 0.00

Transmitter #2

Antenna #1 Baseline	: 0.00
Antenna #2 Baseline	: 0.00
Antenna #3 Baseline	: 0.00
Antenna #4 Baseline	: 0.00

Antenna #5 Baseline	: 0.00
Antenna #6 Baseline	: 0.00
Antenna #7 Baseline	: 0.00
Antenna #8 Baseline	: 0.00
Antenna #9 Baseline	: 0.00
Antenna #10 Baseline	: 0.00
Antenna #11 Baseline	: 0.00
Antenna #12 Baseline	: 0.00
Antenna #13 Baseline	: 0.00
Antenna #14 Baseline	: 0.00
Antenna #15 Baseline	: 0.00
Antenna #16 Baseline	: 0.00
Antenna #17 Baseline	: 0.00
Antenna #18 Baseline	: 0.00
Antenna #19 Baseline	: 0.00
Antenna #20 Baseline	: 0.00
Antenna #21 Baseline	: 0.00
Antenna #22 Baseline	: 0.00
Antenna #23 Baseline	: 0.00
Antenna #24 Baseline	: 0.00
Antenna #25 Baseline	: 0.00
Antenna #26 Baseline	: 0.00
Antenna #27 Baseline	: 0.00
Antenna #28 Baseline	: 0.00
Antenna #29 Baseline	: 0.00
Antenna #30 Baseline	: 0.00
Antenna #31 Baseline	: 0.00
Antenna #32 Baseline	: 0.00
Antenna #33 Baseline	: 0.00
Antenna #34 Baseline	: 0.00
Antenna #35 Baseline	: 0.00
Antenna #36 Baseline	: 0.00
Antenna #37 Baseline	: 0.00
Antenna #38 Baseline	: 0.00
Antenna #39 Baseline	: 0.00
Antenna #40 Baseline	: 0.00
Antenna #41 Baseline	: 0.00
Antenna #42 Baseline	: 0.00
Antenna #43 Baseline	: 0.00
Antenna #44 Baseline	: 0.00
Antenna #45 Baseline	: 0.00
Antenna #46 Baseline	: 0.00
Antenna #47 Baseline	: 0.00
Antenna #48 Baseline	: 0.00

Monitor #1 Test Generator Configuration

Time Stamp	: 03/04/14 - 12:18:58
Azimuth Angle	: 0.00 Degrees
30 Hz Modulation	: 30.0 %
9960 Hz Modulation	: 30.0 %
9960 Hz Deviation	: 16.00 (Ratio)
Ident Modulation	: 8.0 %
Ident Config	: Normal
Audio Modulation	: 0.0 %
Audio Frequency	: 300 Hz

Monitor #2 Test Generator Configuration

Time Stamp	: 03/04/14 - 12:18:59
Azimuth Angle	: 0.00 Degrees
30 Hz Modulation	: 30.0 %
9960 Hz Modulation	: 30.0 %
9960 Hz Deviation	: 16.00 (Ratio)
Ident Modulation	: 8.0 %
Ident Config	: Normal
Audio Modulation	: 0.0 %
Audio Frequency	: 300 Hz

Nominal Monitor Values

Time Stamp	: 03/04/14 - 12:18:59

Antenna 1:

Monitor #1 Azimuth Angle	: 0.00 Degrees
Monitor #2 Azimuth Angle	: 0.00 Degrees
30 Hz Modulation	: 30.0 %
9960 Hz Modulation	: 30.0 %
9960 Hz Deviation	: 16.00 (Ratio)
RF Level	: 0.0 dB
Ident Modulation	: 5.0 %
Tx Power	: 100.0 Watts
Tx Frequency Error	: 0 ppm

Transmitter Nominal Configuration

Time Stamp	: 03/04/14 - 12:26:30
Azimuth Angle	: 0.00 Degrees
Carrier Power	: 100.0 Watts
Voice Modulation	: 0.0 %
Ident Modulation	: 8.0 %
Reference Modulation	: 30.0 %
SBO RF Level	: 100.0 %

Ident:

External Keyer Input Enabled	: False
Main Ident Code	: TSI
Standby Ident Code	: TSI
Standby Ident Rule	: Stby Ident same as Main
External Keyer Output	: Disabled

Transmitter #1 Offsets and Scale Factors

Time Stamp	: 03/04/14 - 12:44:41
Azimuth Angle Offset	: -1.10 Degrees
Output Power Scale	: 91.3 %
Voice Modulation Scale	: 97.0 %
Ident Modulation Scale	: 101.0 %
Reference Mod Scale	: 88.5 %
Tx Sideband RF Level Scale	: 87.0 %
Sideband 1 Phase Offset	: 0 Degrees
Sideband 1 RF Scale	: 100.0 %
Sideband 2 Phase Offset	: 0 Degrees
Sideband 2 RF Scale	: 100.0 %
Sideband 3 Phase Offset	: 0 Degrees
Sideband 3 RF Scale	: 100.0 %
Sideband 4 Phase Offset	: 0 Degrees
Sideband 4 RF Scale	: 100.0 %
Carrier-Sideband Phase Offset (Coarse)	: 0 Degrees

Carrier-Sideband Phase Offset (Fine)	: 32 Degrees
Carrier PLL Control	: 46.5 %
Carrier Power Scale	: 100.0 %
Carrier Power Offset	: 0.0 Degrees

Transmitter #2 Offsets and Scale Factors

Time Stamp	: 03/04/14 - 12:44:41
Azimuth Angle Offset	: -1.03 Degrees
Output Power Scale	: 98.0 %
Voice Modulation Scale	: 102.0 %
Ident Modulation Scale	: 105.0 %
Reference Mod Scale	: 93.6 %
Tx Sideband RF Level Scale	: 87.0 %
Sideband 1 Phase Offset	: 0 Degrees
Sideband 1 RF Scale	: 100.0 %
Sideband 2 Phase Offset	: 0 Degrees
Sideband 2 RF Scale	: 100.0 %
Sideband 3 Phase Offset	: 0 Degrees
Sideband 3 RF Scale	: 100.0 %
Sideband 4 Phase Offset	: 0 Degrees
Sideband 4 RF Scale	: 100.0 %
Carrier-Sideband Phase Offset (Coarse)	: 90 Degrees
Carrier-Sideband Phase Offset (Fine)	: -16 Degrees
Carrier PLL Control	: 51.0 %
Carrier Power Scale	: 100.0 %
Carrier Power Offset	: 0.0 Degrees

4 FAT Test Data Sheets

Model Number: 001118A-0102
Serial Number: 110042
Frequency or Channel Number: 82X
Destination: TAIWAN, SHUN SHAN
Contract #: 13395P

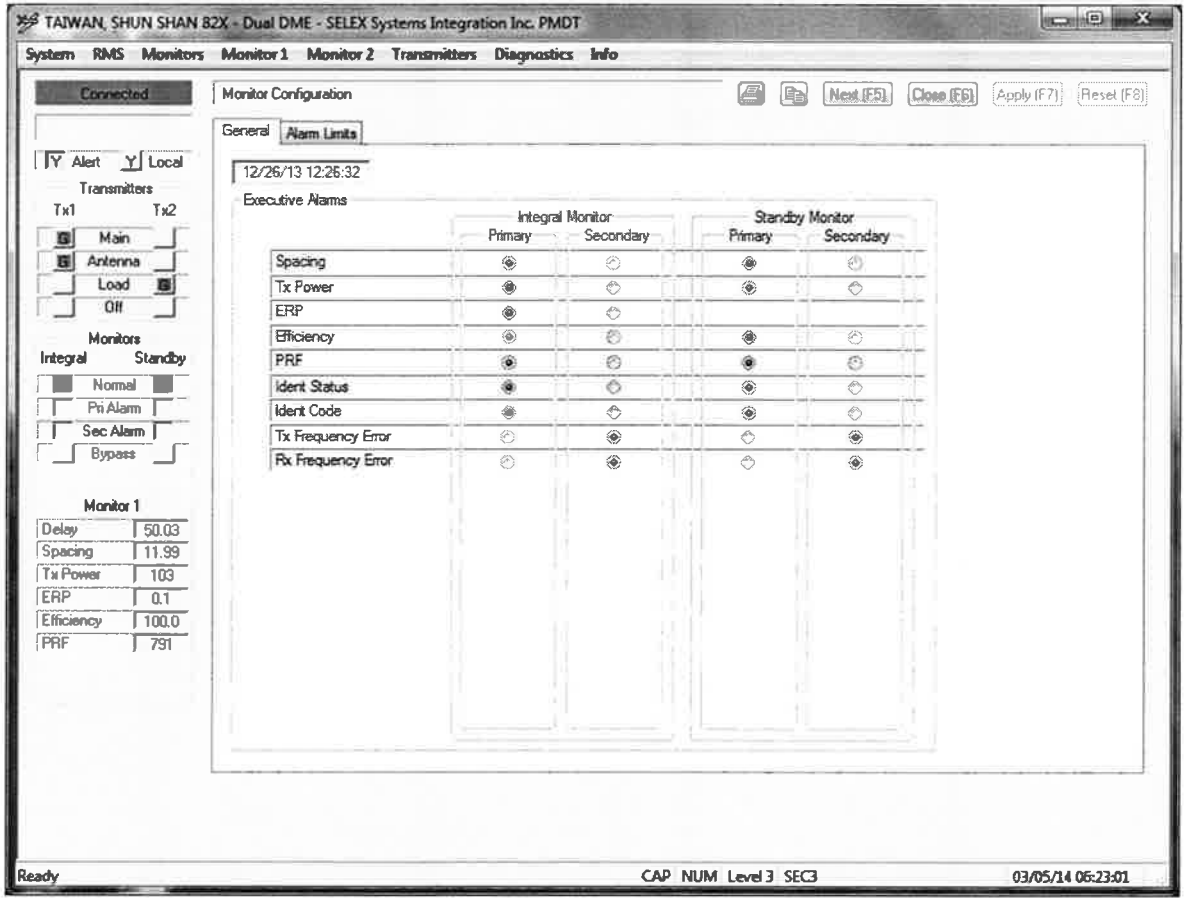
Tested By:
QAR Witness By:
Witnessed By: 張元明 王祥麗 Mar 10, 2014
Date Tested: 12/20/2013

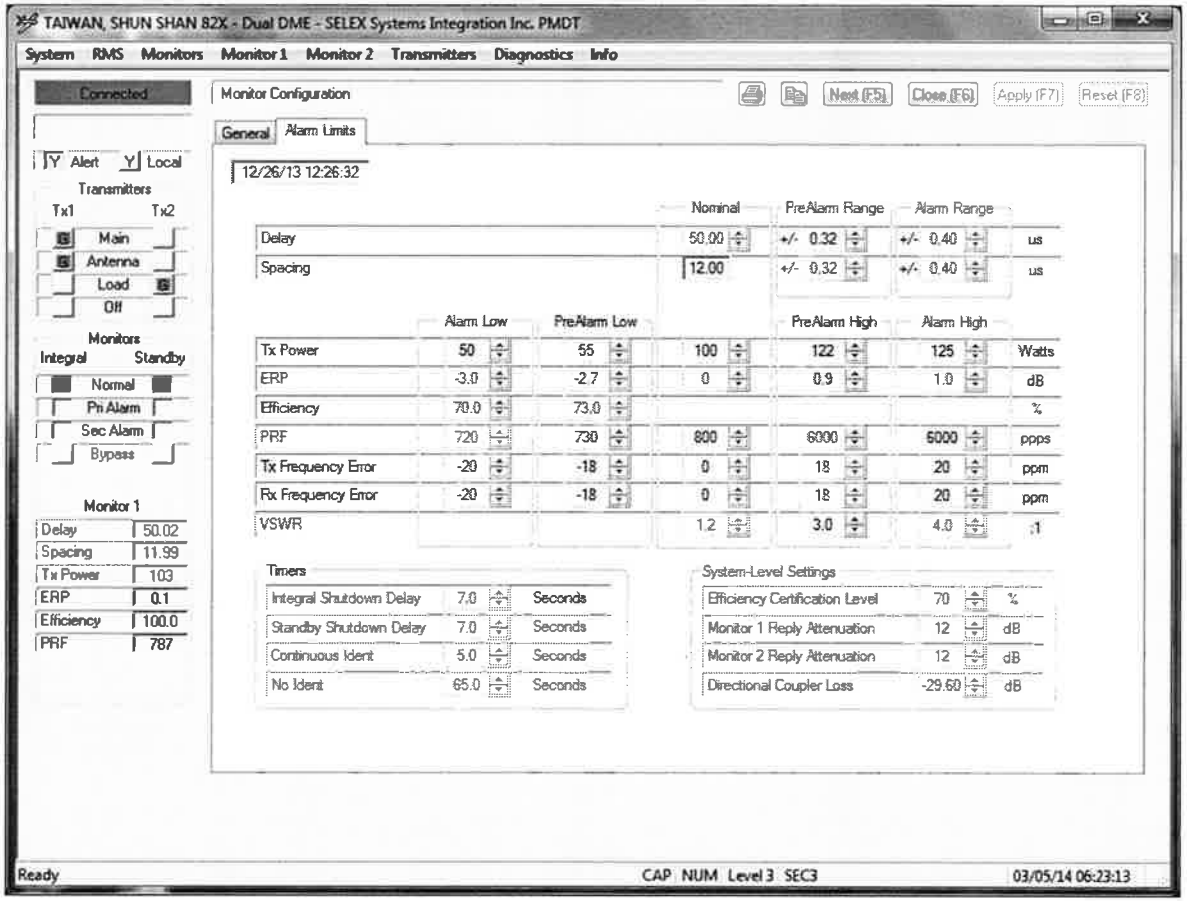
MODULES

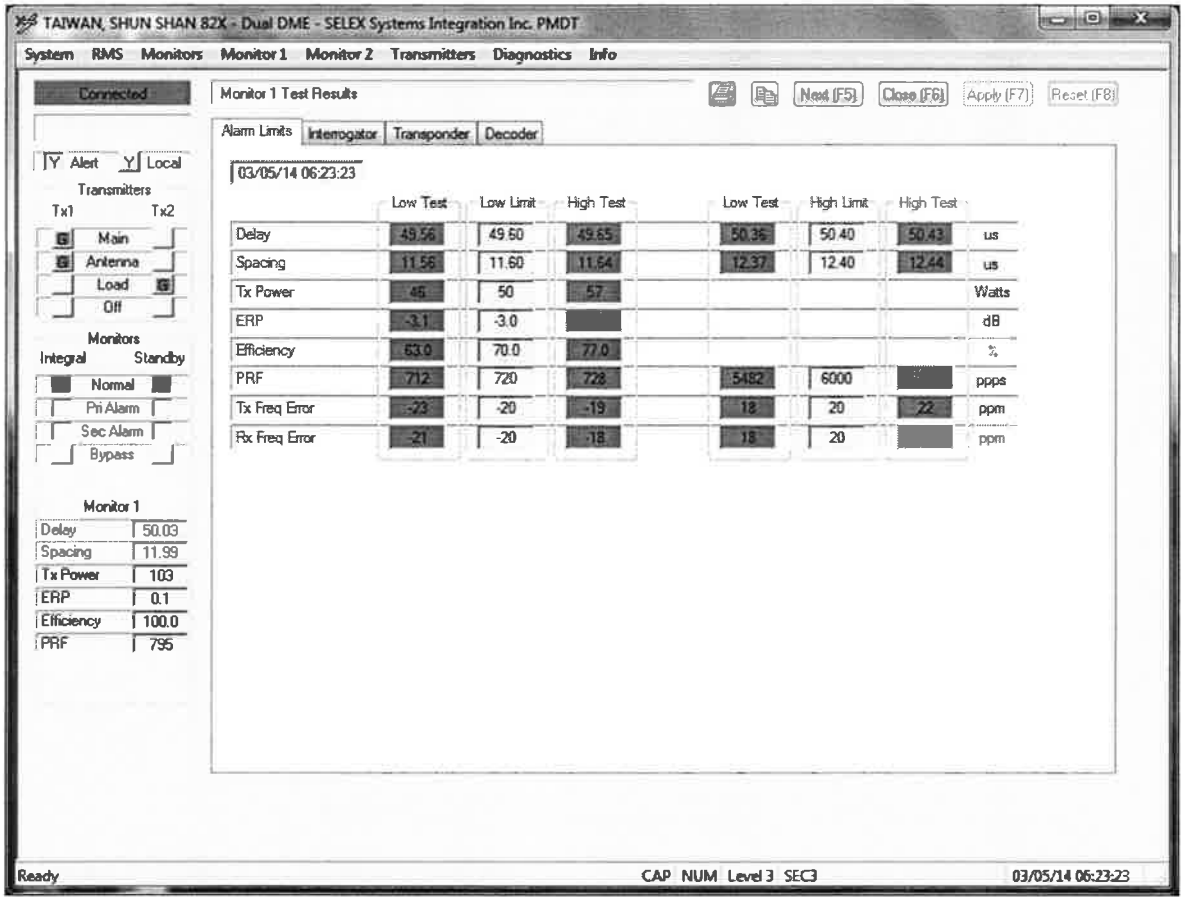
Part Number	Description	Serial Number	Revision
PN 030801-0001	Local Control Unit Assy (LCU) (1A1)	110165	F
PN 012179-1001	Local Control Unit CCA (1A1A1)	ARC000450	AA
PN 950154-1000	LCD Display (1A1A2)	NA	NA
PN 030806-0001	Monitor Interrogator Assy (1A11)	110312	AC
PN 012169-1001	Monitor Interrogator CCA (1A11A1)	ARC000585	U
PN 012181-0001	Monitor Interrogator RF CCA (1A11A2)	ARC000617	J
PN 030806-0001	Monitor Interrogator Assy (1A15)	110313	AC
PN 012169-1001	Monitor Interrogator CCA (1A15A1)	ARC000584	U
PN 012181-0001	Monitor Interrogator RF CCA (1A15A2)	ARC000616	J
PN 030805-0001	Receiver/ Transmitter Controller (RTC) Assy (1A10)	110067	AM
PN 012168-1001	Receiver/ Transmitter Controller CCA (1A10A1)	ARC000358	M
PN 012180-0001	Receiver/ Transmitter Controller RF CCA (1A10A2)	ARC000228	F
PN 030805-0001	Receiver/ Transmitter Controller (RTC) Assy (1A16)	110281	AM
PN 012168-1001	Receiver/ Transmitter Controller CCA (1A16A1)	ARC000621	N
PN 012180-0001	Receiver/ Transmitter Controller RF CCA (1A16A2)	ARC000586	F
PN 030802-0003	Low Power Amplifier Assy (1A9)	110326	J
PN 012173-0003	Synthesizer CCA (1A9A1)	ARC000336	H
PN 012282-0001	LP Modulator CCA (1A9A4)	ARC000621	F
PN 030802-0003	Low Power Amplifier Assy (1A17)	110293	H
PN 012173-0003	Synthesizer CCA (1A17A1)	ARC000279	F
PN 012282-0001	LP Modulator CCA (1A1A4)	ARC000550	F
PN 012172-1001	RMS (CPU) CCA (1A13)	ARC000499	AT
PN 012171-0001	Facilities CCA (1A14)	ARC000515	K
PN 012167-0001	Interface CCA (1A19)	ARC000525	B
PN 012186-0001	AC Monitor CCA (1A22)	ARC000429	B
PN 012170-1001	Battery Charging Power Supply (BCPS) CCA (1A21)	ARC000699	U
PN 012170-1001	Battery Charging Power Supply (BCPS) CCA (1A20)	ARC000692	U
PN 012206-0001	Status Display CCA (1A26A1)	ARC000410	A
PN 012206-0001	Status Display CCA (1A26A2)	ARC000412	A
PN 012033-0001	Low Noise Amplifier (1A8A2)	ARC000055	A
PN 012166-0001	Low Power Backplane (1A8A1)	ARC000255	C

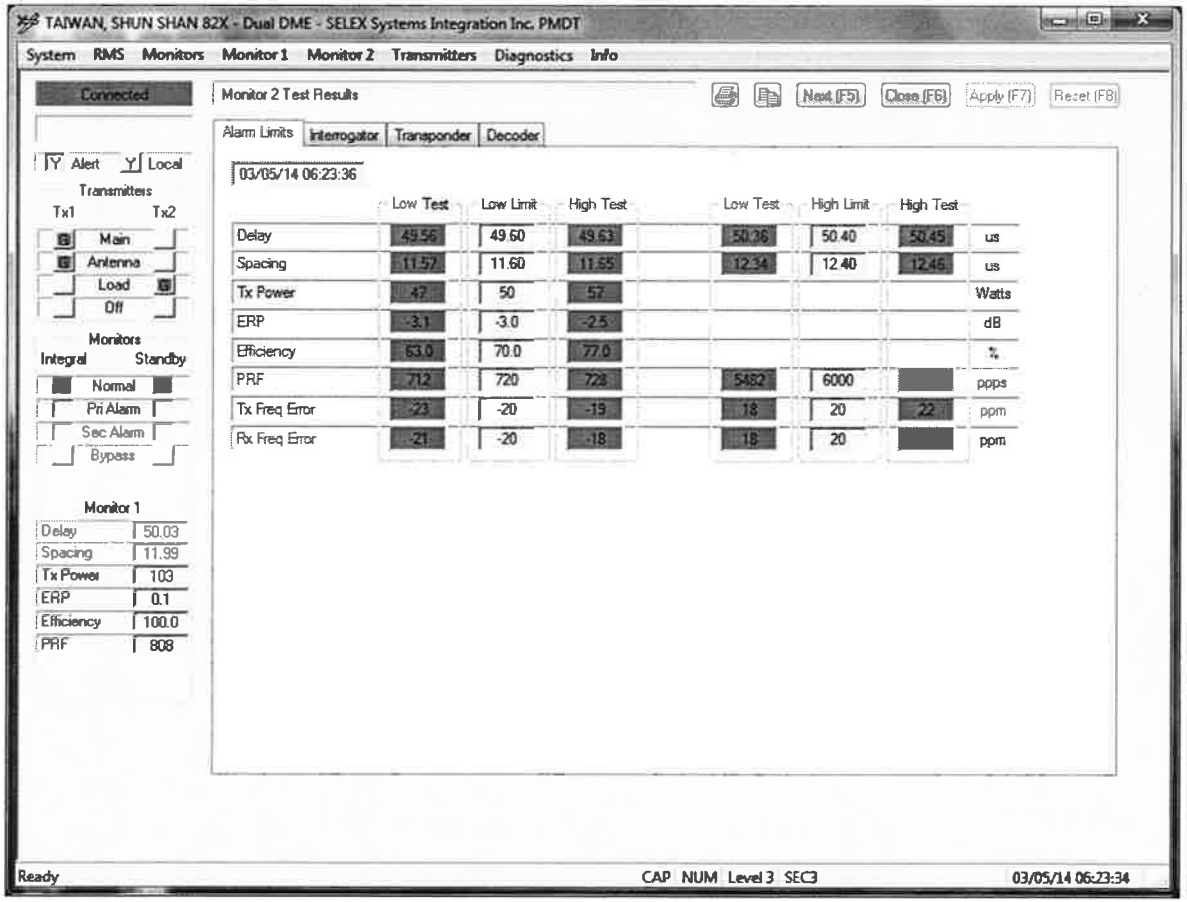
Ref	Measurement	Recorded Data	Standard Specification
3.4.1.1 Frequency Verifications			
4.	TX1 Output Frequency (1A9 J1 TX LO)	1168.999 MHz	Assigned TX Freq ± 0.001%
5.	TX2 Output Frequency (1A17 J1 TX LO)	1168.999 MHz	Assigned TX Freq ± 0.001%
6.	Monitor/Int 1 Output Freq (1A11 INT LO)	1106.000 MHz	Assigned RX Freq ± 0.001%
7.	Monitor/Int 2 Output Freq (1A15 INT LO)	1106.000 MHz	Assigned RX Freq ± 0.001%
8.	Receiver (RTC) Local Oscillator Frequency (1A10 RX LO)	980.999 MHz	Assigned RX Freq -125 MHz ± 0.001%
9.	Receiver (RTC) Local Oscillator Frequency (1A16 RX LO)	980.998 MHz	Assigned RX Freq -125 MHz ± 0.001%
3.4.2.1 Transmitter Output Power			
5.	First TX Pulse Peak Power (P1)	105	≥100W
6.	Second TX Pulse Peak Power (P2)	105	≥100W
7.	Pulse Pair Amplitude Difference (P1 – P2)	0.0	≤ 0.5dB
8.	Display Monitor 1	105	P2 ±2.5W
	Display Monitor 2	105	P2 ±2.5W
10.	TX 2 Display Monitor 1	104	≥100W
	TX 2 Display Monitor 2	105	≥100W
3.4.3.1 Spectral Characteristics			
5	TX 1 Center Frequency Amplitude	0	Reference (0 dB)
6.	TX1 Offset Frequency of +2 MHz	68	≥ 47 dB from reference
	TX 1Offset Frequency of +800 kHz	56	≥ 27 dB from reference
	TX 1Offset Frequency of -800 kHz	59	≥ 27 dB from reference
	TX 1 Offset Frequency of – 2 MHz	66	≥ 47 dB from reference
8.	TX 2 Center Frequency Amplitude	0	Reference (0 dB)
9.	TX2 Offset Frequency of +2 MHz	69	≥ 47 dB from reference
	TX 2Offset Frequency of +800 kHz	59	≥ 27 dB from reference
	TX 2Offset Frequency of -800 kHz	55	≥ 27 dB from reference
	TX 2 Offset Frequency of – 2 MHz	66	≥ 47 dB from reference

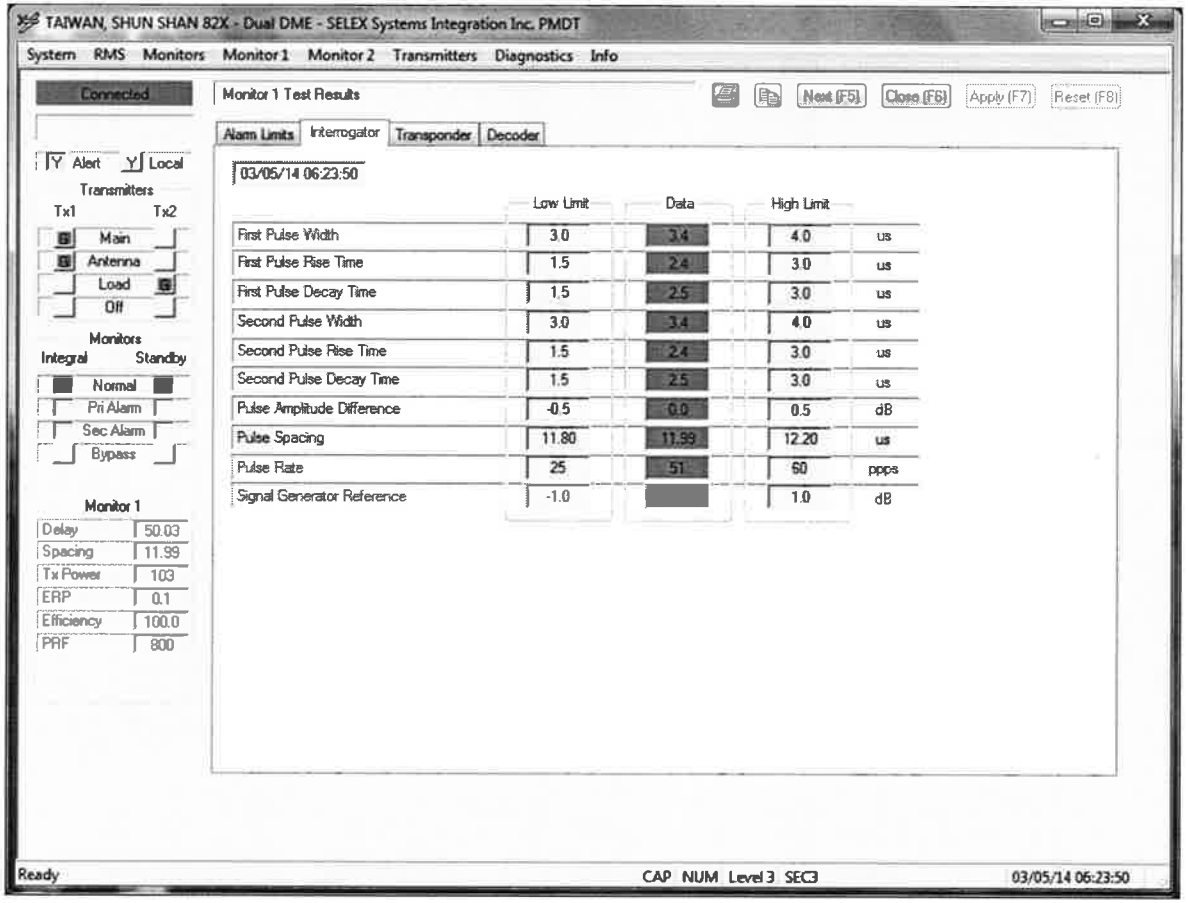
Ref	Measurement	Recorded Data	Standard Specification
3.4.5 RCSU Controls			
5.	Communication established as indicated on the RCSU	☒	(Check if OK)
6.	RCSU indicates Main and Standby in Normal condition	☒	(Check if OK)
7.	Both Main and Standby DMEs Shutdown	☒	(Check if OK)
8.	Both Main and Standby DMEs Startup after 20 sec	☒	(Check if OK)
9.	Transfer Command switches main	☒	(Check if OK)
3.4.6 Modem Remote Monitoring			
2.	Communications to the DME with the remote PMDT established	☒	(Check if OK)
3.4.7 Battery Backup			
2.	BCPS1 Charge current	5.8	4 to 7 amps
3.	TX1 operates on Batteries	☒	(Check if OK)
4.	BCPS2 Charge current	5.8	4 to 7 amps
5.	TX2 operates on Batteries	☒	(Check if OK)
6.	Summed Charge current	11.6	8 to 14 amps

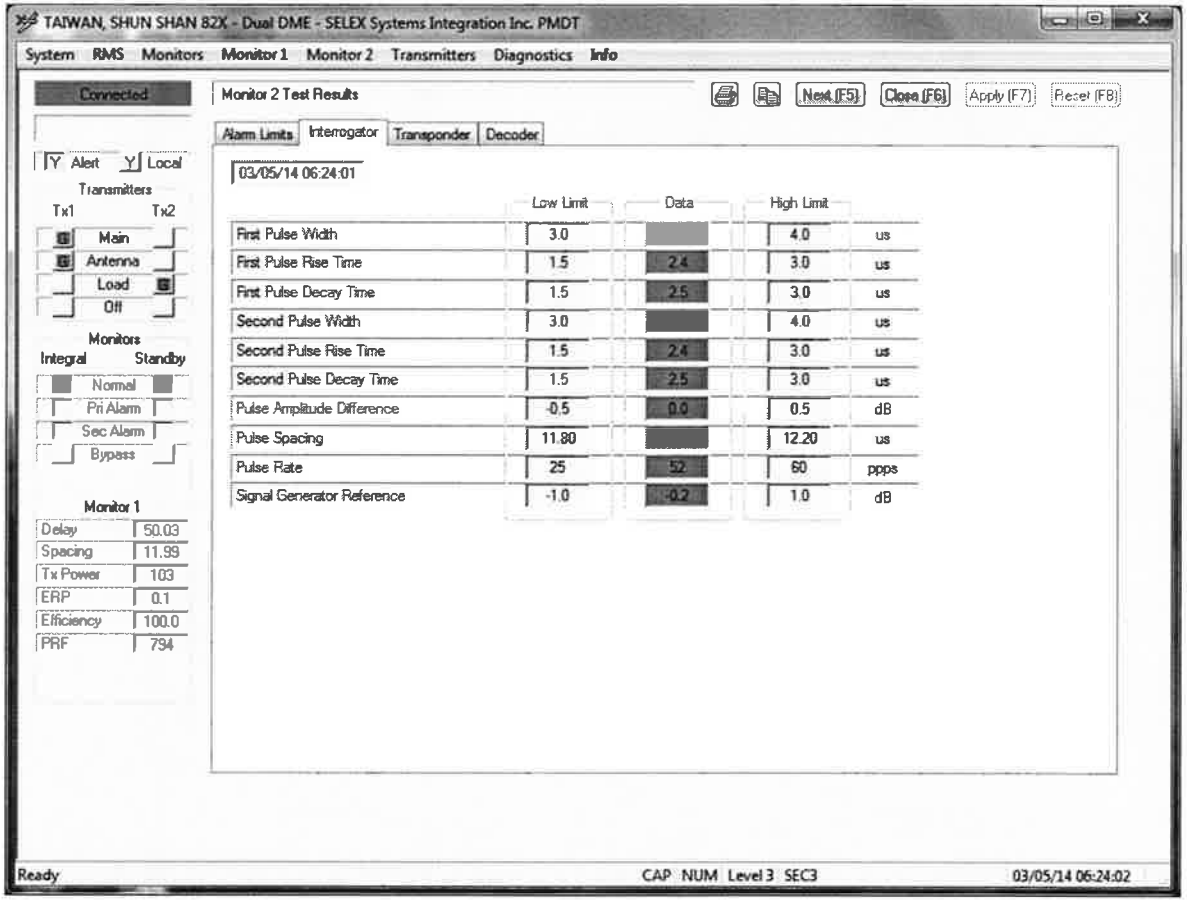

TAIWAN, SHUN SHAN 82X - Dual DME - SELEX Systems Integration Inc. PMDT
System RMS Monitors Monitor 1 Monitor 2 Transmitters Diagnostics Info
Connected
Monitor Configuration
Next (F5) Close (F6) Apply (F7) Reset (F8)
General Alarm Limits
Alert Local
Transmitters
Tx1 Tx2
Main
Antenna
Load
Off
Monitors
Integral Standby
Normal
Pri Alarm
Sec Alarm
Bypass
Monitor 1
Delay 50.03
Spacing 11.99
Tx Power 103
ERP 0.1
Efficiency 100.0
PRF 791
12/26/13 12:26:32
Executive Alarms
Integral Monitor
Primary Secondary
Standby Monitor
Primary Secondary
Spacing
Tx Power
ERP
Efficiency
PRF
Ident Status
Ident Code
Tx Frequency Error
Rx Frequency Error
Ready
CAP NUM Level 3 SEC3
03/05/14 06:23:01

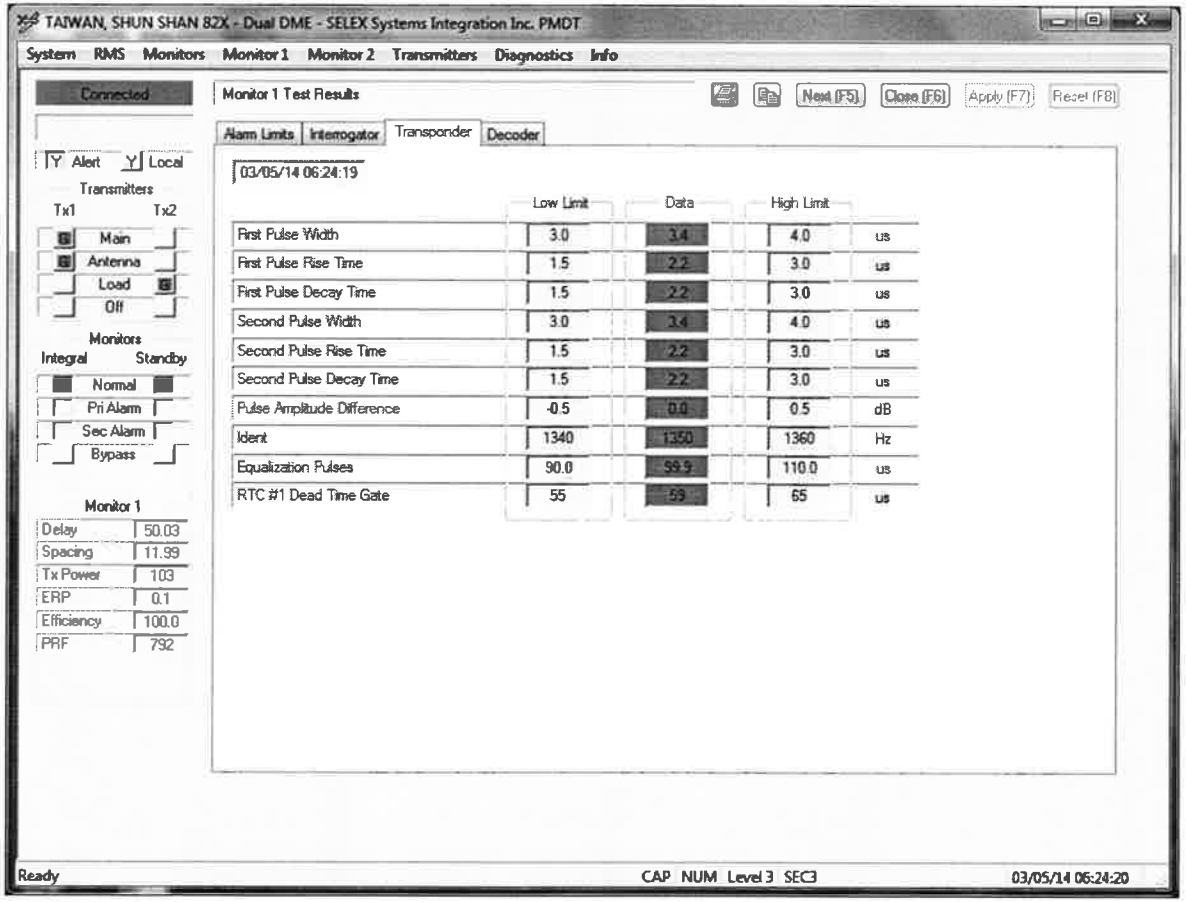

TAIWAN, SHUN SHAN 82X - Dual DME - SELEX Systems Integration Inc. PMDT
System RMS Monitors Monitor 1 Monitor 2 Transmitters Diagnostics Info
Connected
Alert Local
Transmitters
Tx1 Tx2
Main
Antenna
Load
Off
Monitors
Integral Standby
Normal
Pri Alarm
Sec Alarm
Bypass
Monitor 1
Delay 50.02
Spacing 11.99
Tx Power 103
ERP 0.1
Efficiency 100.0
PRF 787
Monitor Configuration
Next (F5) Close (F6) Apply (F7) Reset (F8)
General Alarm Limits
12/26/13 12:26:32
Nominal PreAlarm Range Alarm Range
Delay 50.00 +/- 0.32 +/- 0.40 us
Spacing 12.00 +/- 0.32 +/- 0.40 us
Alarm Low PreAlarm Low PreAlarm High Alarm High
Tx Power 50 55 100 122 125 Watts
ERP -3.0 -2.7 0 0.9 1.0 dB
Efficiency 70.0 73.0 %
PRF 720 730 800 6000 6000 ppps
Tx Frequency Error -20 -18 0 18 20 ppm
Rx Frequency Error -20 -18 0 18 20 ppm
VSWR 1.2 3.0 4.0 :1
Timers
Integral Shutdown Delay 7.0 Seconds
Standby Shutdown Delay 7.0 Seconds
Continuous Ident 5.0 Seconds
No Ident 65.0 Seconds
System-Level Settings
Efficiency Certification Level 70 %
Monitor 1 Reply Attenuation 12 dB
Monitor 2 Reply Attenuation 12 dB
Directional Coupler Loss -29.60 dB
Ready
CAP NUM Level 3 SEC3
03/05/14 06:23:13

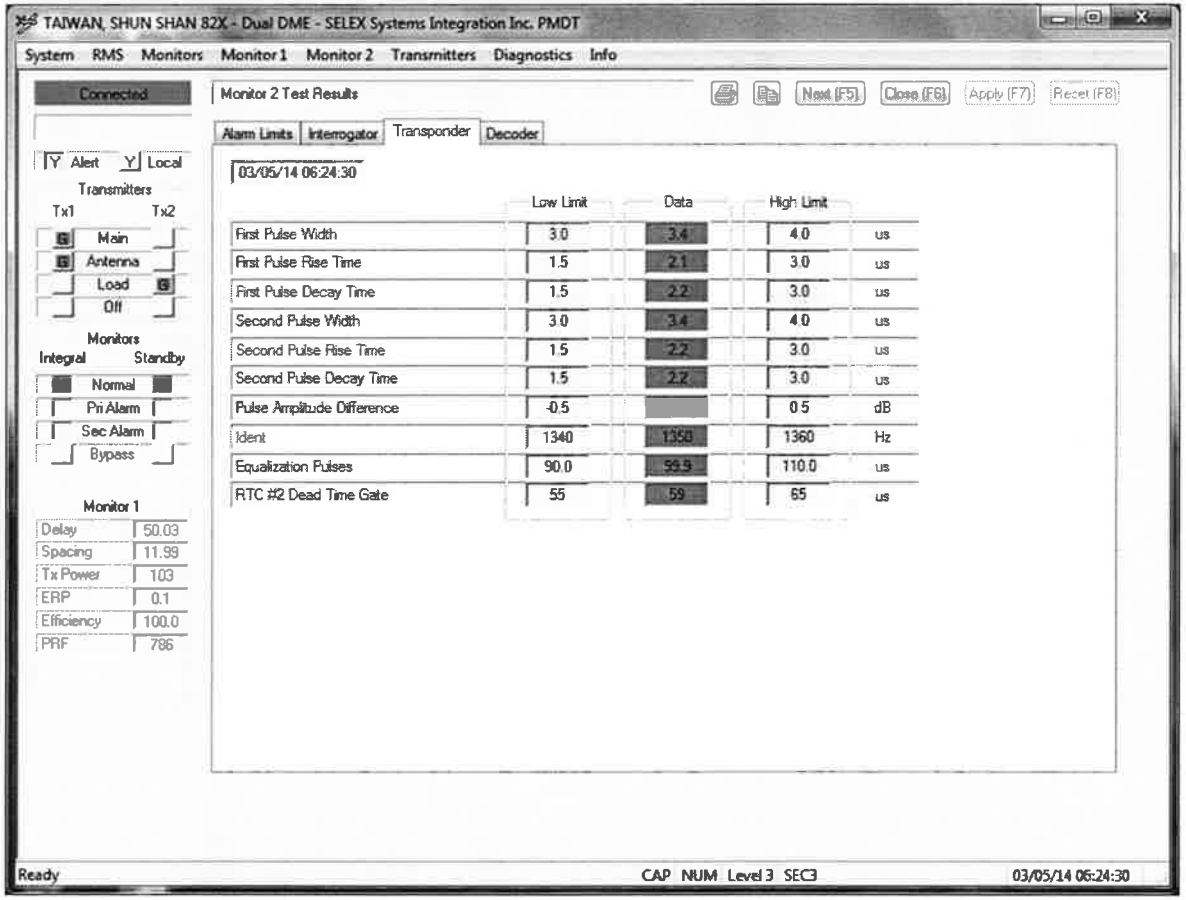

TAIWAN, SHUN SHAN 82X - Dual DME - SELEX Systems Integration Inc. PMDT
System RMS Monitors Monitor 1 Monitor 2 Transmitters Diagnostics Info
Connected
Monitor 1 Test Results
Next (F5) Close (F6) Apply (F7) Reset (F8)
Alert Local
Transmitters
Tx1 Tx2
Main
Antenna
Load
Off
Monitors
Integral Standby
Normal
Pri Alarm
Sec Alarm
Bypass
Monitor 1
Delay 50.03
Spacing 11.99
Tx Power 103
ERP 0.1
Efficiency 100.0
PRF 795
Alarm Limits Interrogator Transponder Decoder
03/05/14 06:23:23
Low Test Low Limit High Test Low Test High Limit High Test
Delay 49.56 49.60 49.65 50.36 50.40 50.43 us
Spacing 11.56 11.60 11.64 12.37 12.40 12.44 us
Tx Power 46 50 57 Watts
ERP -3.1 -3.0 dB
Efficiency 63.0 70.0 77.0 %
PRF 712 720 728 5482 6000 ppps
Tx Freq Error -23 -20 -19 18 20 22 ppm
Rx Freq Error -21 -20 -18 18 20 ppm
Ready
CAP NUM Level 3 SEC3
03/05/14 06:23:23

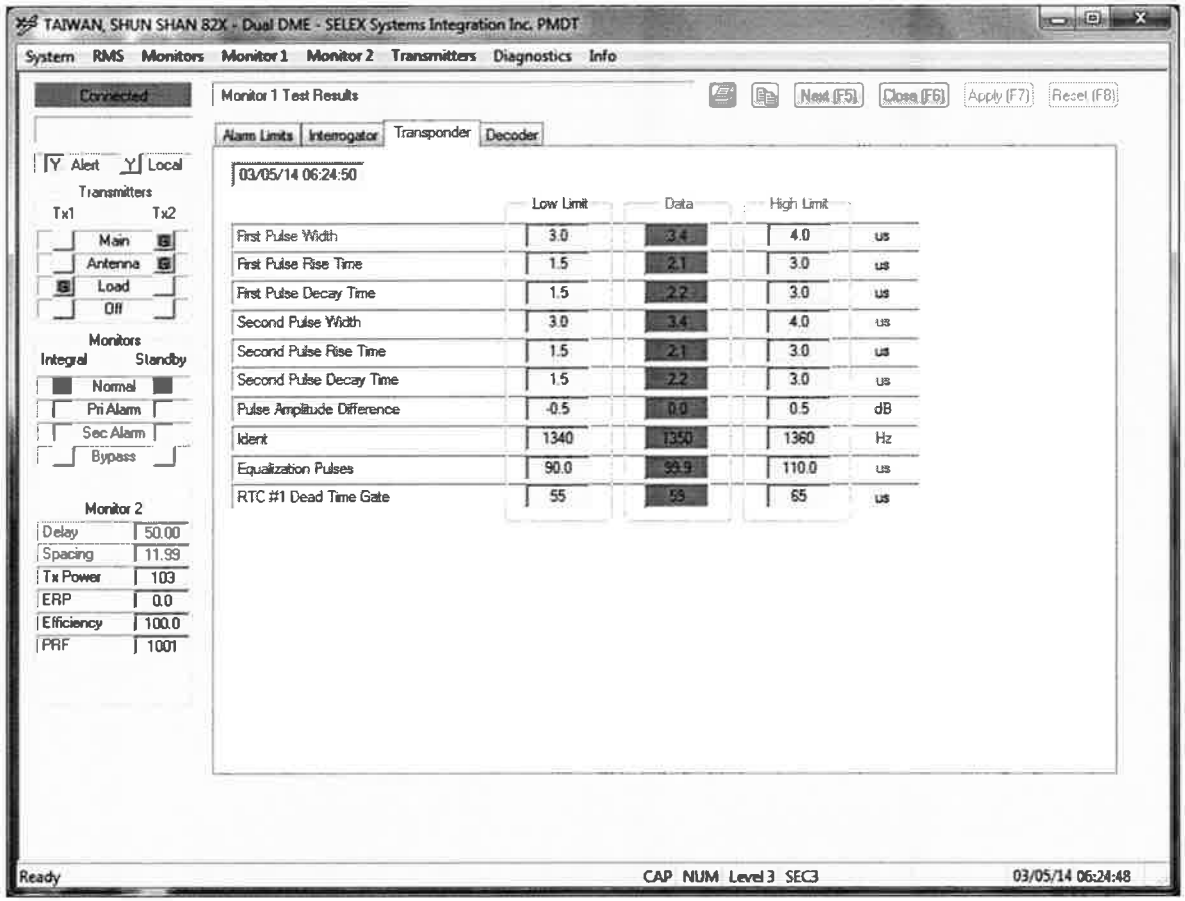

TAIWAN, SHUN SHAN 82X - Dual DME - SELEX Systems Integration Inc. PMDT
System RMS Monitors Monitor 1 Monitor 2 Transmitters Diagnostics Info
Connected
Alert Local
Transmitters
Tx1 Tx2
Main
Antenna
Load
Off
Monitors
Integral Standby
Normal
Pri Alarm
Sec Alarm
Bypass
Monitor 1
Delay 50.03
Spacing 11.99
Tx Power 103
ERP 0.1
Efficiency 100.0
PRF 808
Monitor 2 Test Results
Next (F5) Close (F6) Apply (F7) Reset (F8)
Alarm Limits Interrogator Transponder Decoder
03/05/14 06:23:36
Low Test Low Limit High Test Low Test High Limit High Test
Delay 49.56 49.60 49.63 50.36 50.40 50.45 us
Spacing 11.57 11.60 11.65 12.34 12.40 12.46 us
Tx Power 47 50 57 Watts
ERP -3.1 -3.0 -2.5 dB
Efficiency 63.0 70.0 77.0 %
PRF 712 720 728 5482 6000 pps
Tx Freq Error -23 -20 -15 18 20 22 ppm
Rx Freq Error -21 -20 -18 18 20 ppm
Ready
CAP NUM Level 3 SEC3
03/05/14 06:23:34

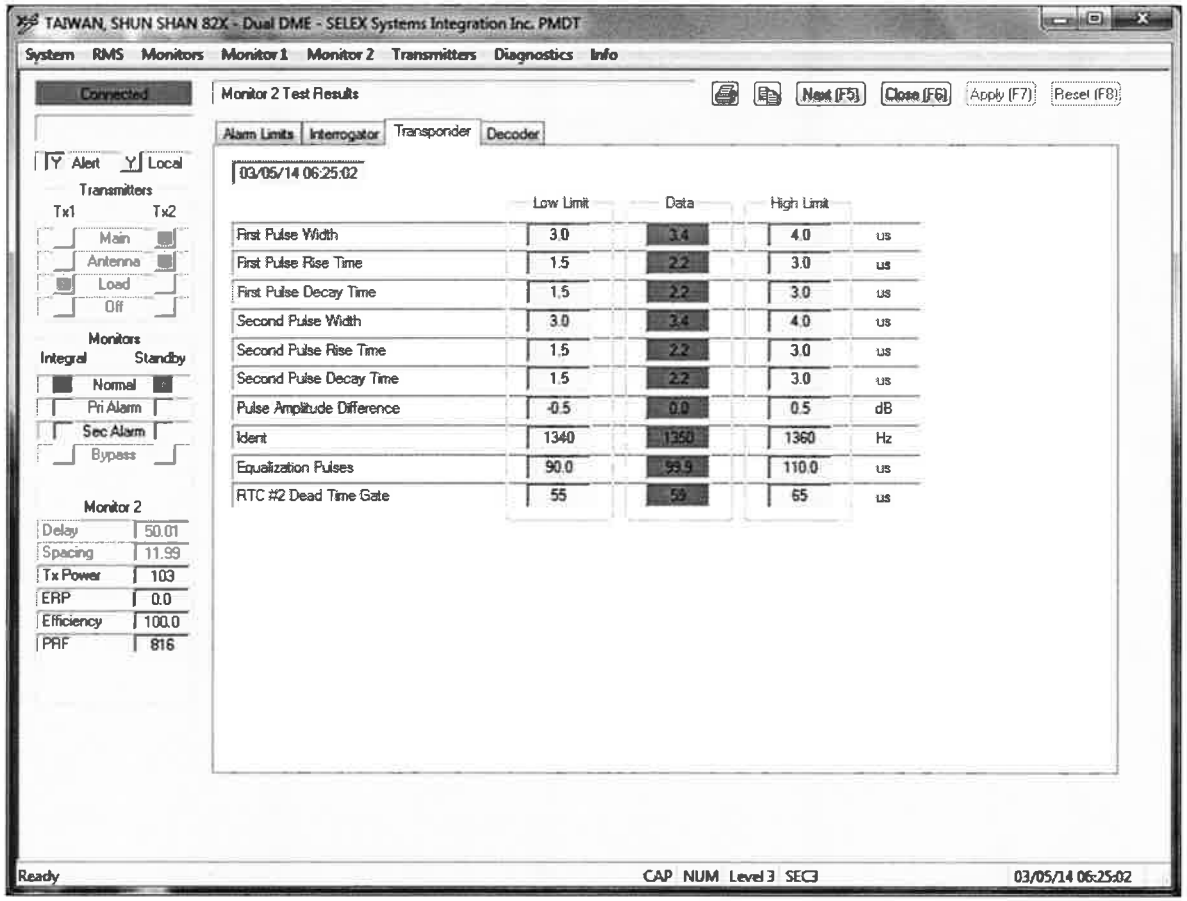

TAIWAN, SHUN SHAN 82X - Dual DME - SELEX Systems Integration Inc. PMDT
System RMS Monitors Monitor 1 Monitor 2 Transmitters Diagnostics Info
Connected
Monitor 1 Test Results
Next (F5) Close (F6) Apply (F7) Reset (F8)
Alarm Limits Interrogator Transponder Decoder
Alert Local
Transmitters
Tx1 Tx2
Main
Antenna
Load
Off
Monitors
Integral Standby
Normal
Pri Alarm
Sec Alarm
Bypass
Monitor 1
Delay 50.03
Spacing 11.99
Tx Power 103
ERP 0.1
Efficiency 100.0
PRF 800
03/05/14 06:23:50
Low Limit Data High Limit
First Pulse Width 3.0 3.4 4.0 us
First Pulse Rise Time 1.5 2.4 3.0 us
First Pulse Decay Time 1.5 2.5 3.0 us
Second Pulse Width 3.0 3.4 4.0 us
Second Pulse Rise Time 1.5 2.4 3.0 us
Second Pulse Decay Time 1.5 2.5 3.0 us
Pulse Amplitude Difference -0.5 0.0 0.5 dB
Pulse Spacing 11.80 11.99 12.20 us
Pulse Rate 25 51 60 ppps
Signal Generator Reference -1.0 1.0 dB
Ready
CAP NUM Level 3 SEC3
03/05/14 06:23:50

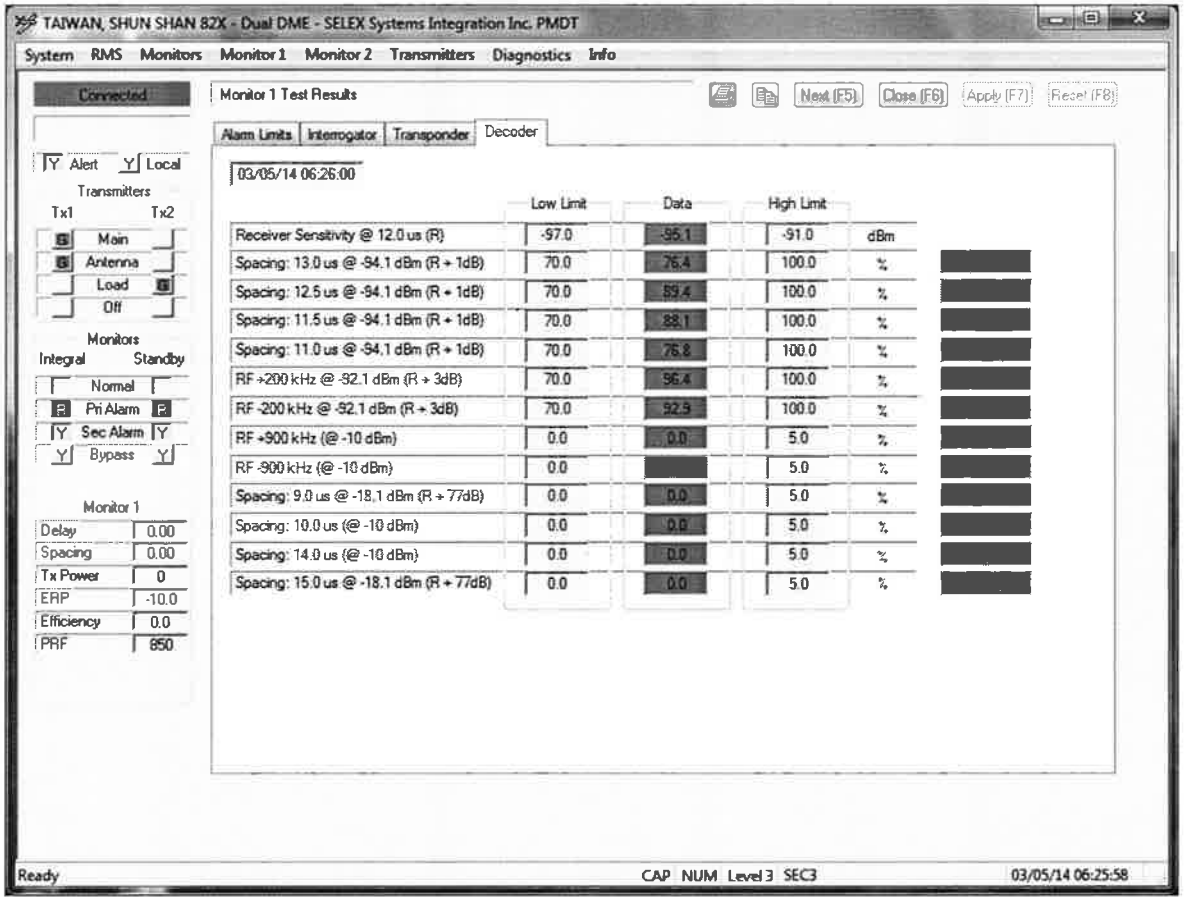

TAIWAN, SHUN SHAN 82X - Dual DME - SELEX Systems Integration Inc. PMDT
System RMS Monitors Monitor 1 Monitor 2 Transmitters Diagnostics Info
Connected
Monitor 2 Test Results
Next (F5)
Close (F6)
Apply (F7)
Reset (F8)
Alarm Limits
Interrogator
Transponder
Decoder
Alert
Local
Transmitters
Tx1
Tx2
Main
Antenna
Load
Off
Monitors
Integral
Standby
Normal
Pri Alarm
Sec Alarm
Bypass
Monitor 1
Delay 50.03
Spacing 11.99
Tx Power 103
ERP 0.1
Efficiency 100.0
PRF 794
03/05/14 06:24:01
Low Limit
Data
High Limit
First Pulse Width 3.0 4.0 us
First Pulse Rise Time 1.5 2.4 3.0 us
First Pulse Decay Time 1.5 2.5 3.0 us
Second Pulse Width 3.0 4.0 us
Second Pulse Rise Time 1.5 2.4 3.0 us
Second Pulse Decay Time 1.5 2.5 3.0 us
Pulse Amplitude Difference -0.5 0.0 0.5 dB
Pulse Spacing 11.80 12.20 us
Pulse Rate 25 52 60 ppps
Signal Generator Reference -1.0 -0.2 1.0 dB
Ready
CAP NUM Level 3 SEC3
03/05/14 06:24:02

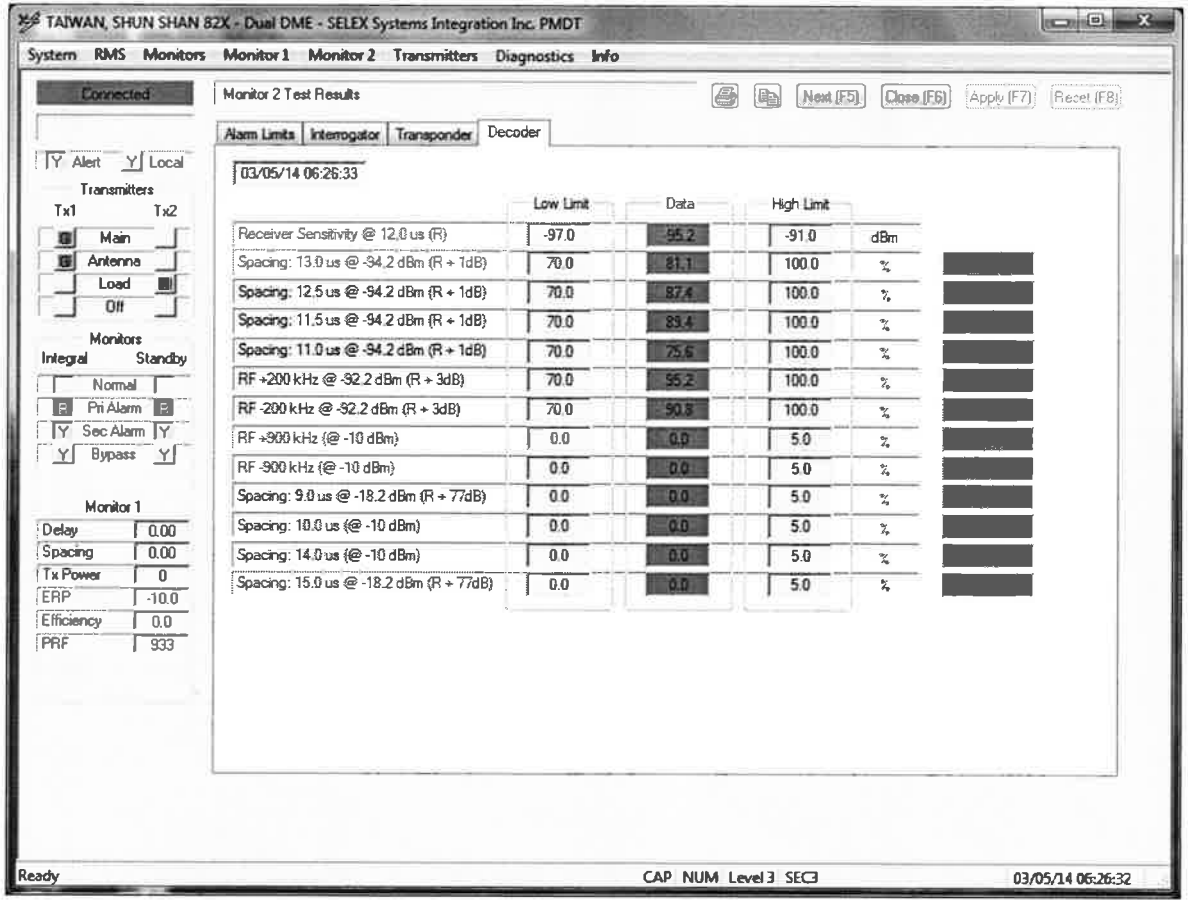

TAIWAN, SHUN SHAN 82X - Dual DME - SELEX Systems Integration Inc. PMDT
System RMS Monitors Monitor 1 Monitor 2 Transmitters Diagnostics Info
Connected
Alert Local
Transmitters
Tx1 Tx2
Main
Antenna
Load
Off
Monitors
Integral Standby
Normal
Pri Alarm
Sec Alarm
Bypass
Monitor 1
Delay 50.03
Spacing 11.99
Tx Power 103
ERP 0.1
Efficiency 100.0
PRF 792
Monitor 1 Test Results
New (F5) Close (F6) Apply (F7) Reset (F8)
Alarm Limits Interrogator Transponder Decoder
03/05/14 06:24:19
Low Limit Data High Limit
First Pulse Width 3.0 3.4 4.0 us
First Pulse Rise Time 1.5 2.2 3.0 us
First Pulse Decay Time 1.5 2.2 3.0 us
Second Pulse Width 3.0 3.4 4.0 us
Second Pulse Rise Time 1.5 2.2 3.0 us
Second Pulse Decay Time 1.5 2.2 3.0 us
Pulse Amplitude Difference -0.5 0.0 0.5 dB
Ident 1340 1350 1360 Hz
Equalization Pulses 90.0 99.9 110.0 us
RTC #1 Dead Time Gate 55 59 65 us
Ready
CAP NUM Level 3 SEC3
03/05/14 06:24:20

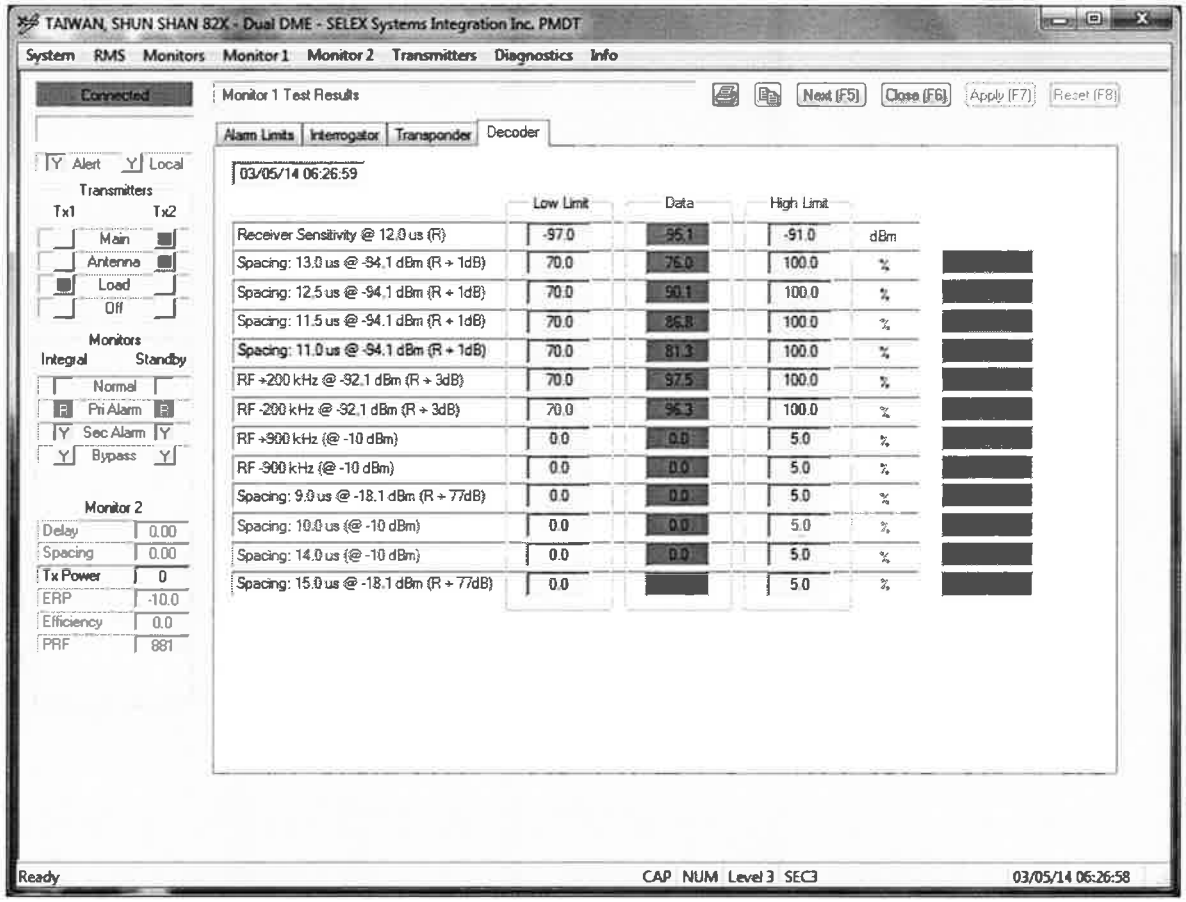

TAIWAN, SHUN SHAN 82X - Dual DME - SELEX Systems Integration Inc. PMDT
System RMS Monitors Monitor 1 Monitor 2 Transmitters Diagnostics Info
Connected
Monitor 2 Test Results
Next (F5) Close (F6) Apply (F7) Reset (F8)
Alarm Limits Interrogator Transponder Decoder
Alert Local
Transmitters
Tx1 Tx2
Main
Antenna
Load
Off
Monitors
Integral Standby
Normal
Pri Alarm
Sec Alarm
Bypass
Monitor 1
Delay 50.03
Spacing 11.99
Tx Power 103
ERP 0.1
Efficiency 100.0
PRF 786
03/05/14 06:24:30
Low Limit Data High Limit
First Pulse Width 3.0 3.4 4.0 us
First Pulse Rise Time 1.5 2.1 3.0 us
First Pulse Decay Time 1.5 2.2 3.0 us
Second Pulse Width 3.0 3.4 4.0 us
Second Pulse Rise Time 1.5 2.2 3.0 us
Second Pulse Decay Time 1.5 2.2 3.0 us
Pulse Amplitude Difference -0.5 0.5 dB
Ident 1340 1350 1360 Hz
Equalization Pulses 90.0 99.9 110.0 us
RTC #2 Dead Time Gate 55 59 65 us
Ready
CAP NUM Level 3 SEC3
03/05/14 06:24:30

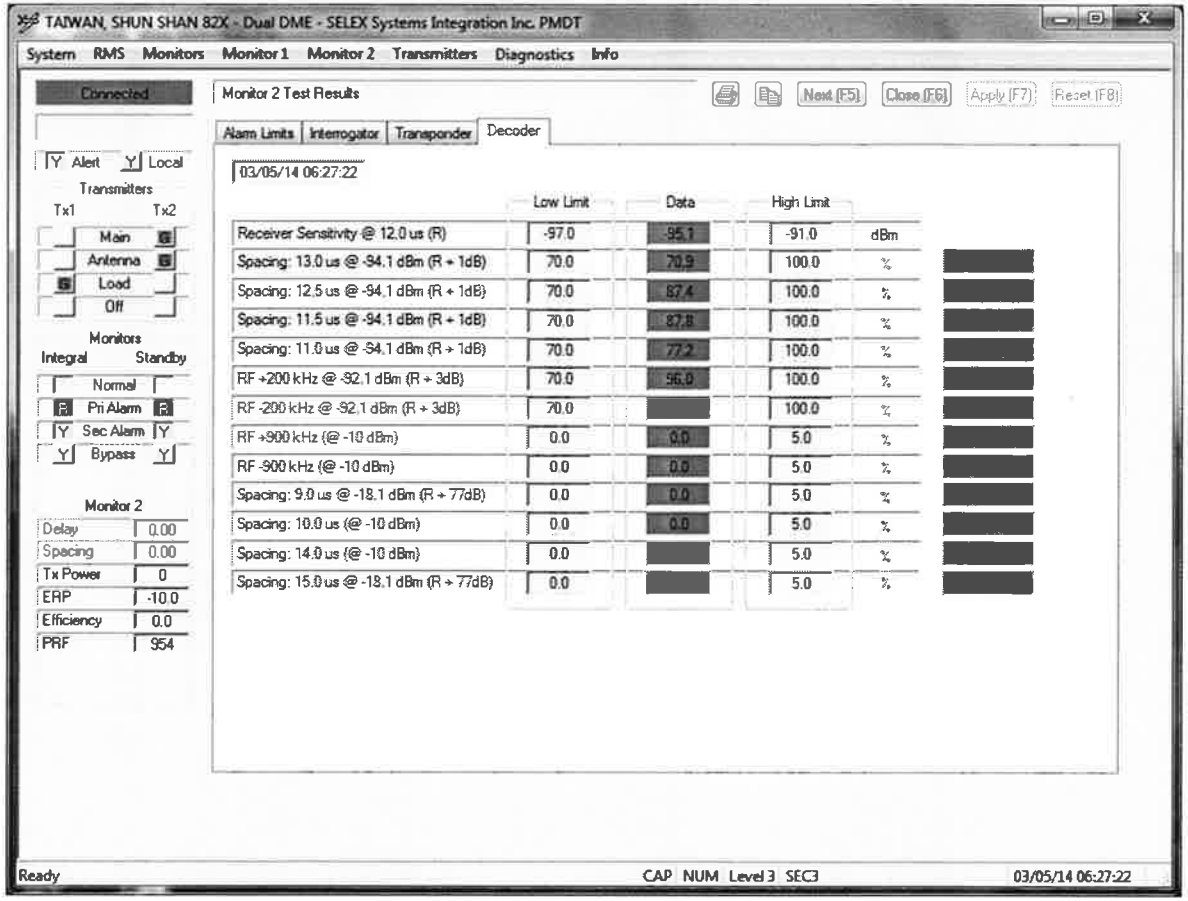

TAIWAN, SHUN SHAN 82X - Dual DME - SELEX Systems Integration Inc. PMDT
System RMS Monitors Monitor 1 Monitor 2 Transmitters Diagnostics Info
Connected
Alert Local
Transmitters
Tx1 Tx2
Main
Antenna
Load
Off
Monitors
Integral Standby
Normal
Pri Alarm
Sec Alarm
Bypass
Monitor 2
Delay 50.00
Spacing 11.99
Tx Power 103
ERP 0.0
Efficiency 100.0
PRF 1001
Monitor 1 Test Results
Next (F5) Close (F6) Apply (F7) Reset (F8)
Alarm Limits Interrogator Transponder Decoder
03/05/14 06:24:50
Low Limit Data High Limit
First Pulse Width 3.0 3.4 4.0 us
First Pulse Rise Time 1.5 2.1 3.0 us
First Pulse Decay Time 1.5 2.2 3.0 us
Second Pulse Width 3.0 3.4 4.0 us
Second Pulse Rise Time 1.5 2.1 3.0 us
Second Pulse Decay Time 1.5 2.2 3.0 us
Pulse Amplitude Difference -0.5 0.0 0.5 dB
Ident 1340 1350 1360 Hz
Equalization Pulses 90.0 99.9 110.0 us
RTC #1 Dead Time Gate 55 55 65 us
Ready
CAP NUM Level 3 SEC3
03/05/14 06:24:48

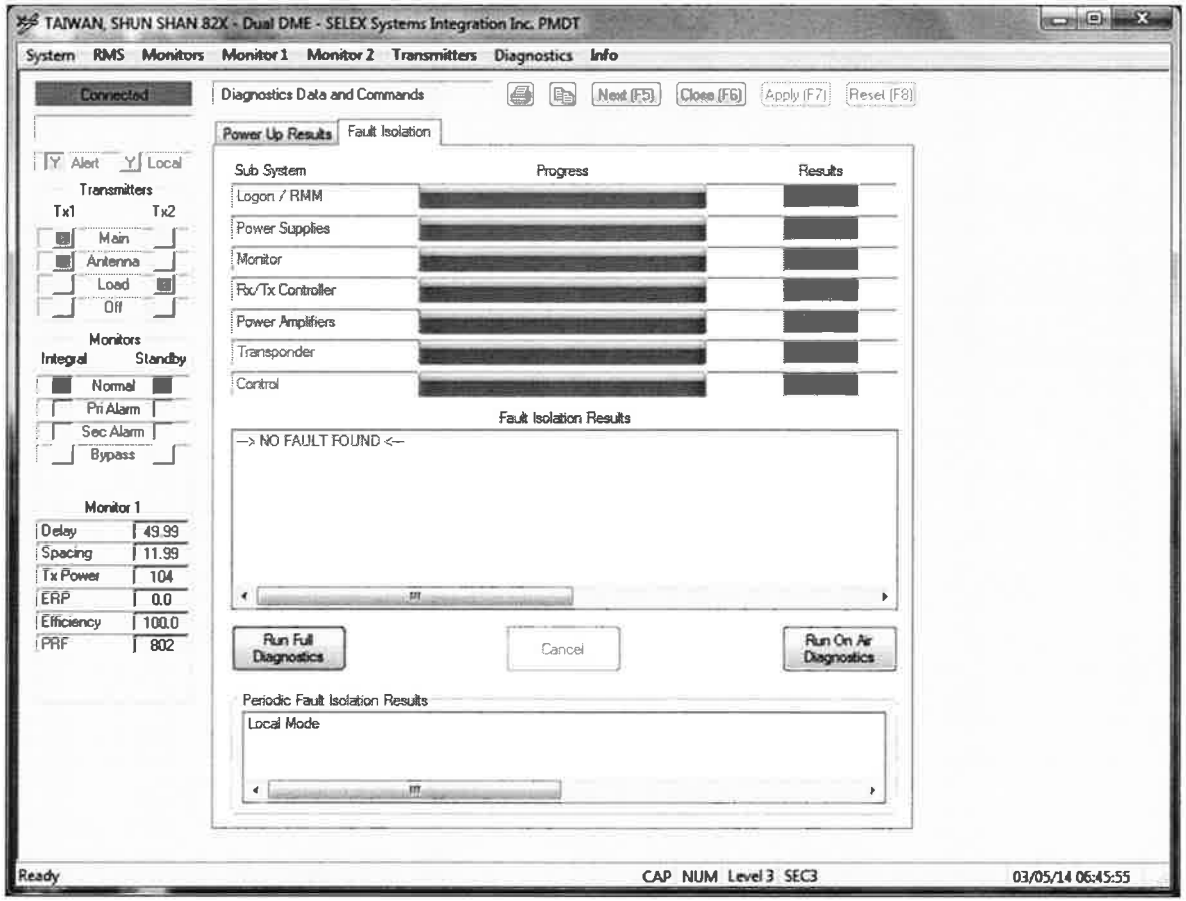

TAIWAN, SHUN SHAN 82X - Dual DME - SELEX Systems Integration Inc. PMDT
System RMS Monitors Monitor 1 Monitor 2 Transmitters Diagnostics Info
Connected
Monitor 2 Test Results
Next (F5) Close (F6) Apply (F7) Reset (F8)
Alarm Limits Interrogator Transponder Decoder
03/05/14 06:25:02
Low Limit Data High Limit
First Pulse Width 3.0 3.4 4.0 us
First Pulse Rise Time 1.5 2.2 3.0 us
First Pulse Decay Time 1.5 2.2 3.0 us
Second Pulse Width 3.0 3.4 4.0 us
Second Pulse Rise Time 1.5 2.2 3.0 us
Second Pulse Decay Time 1.5 2.2 3.0 us
Pulse Amplitude Difference -0.5 0.0 0.5 dB
Ident 1340 1360 1360 Hz
Equalization Pulses 90.0 99.9 110.0 us
RTC #2 Dead Time Gate 55 59 65 us
Alert Local
Transmitters
Tx1 Tx2
Main
Antenna
Load
Off
Monitors
Integral Standby
Normal
Pri Alarm
Sec Alarm
Bypass
Monitor 2
Delay 50.01
Spacing 11.99
Tx Power 103
ERP 0.0
Efficiency 100.0
PRF 816
Ready
CAP NUM Level 3 SEC3
03/05/14 06:25:02


TAIWAN, SHUN SHAN 82X - Dual DME - SELEX Systems Integration Inc. PMDT
System RMS Monitors Monitor 1 Monitor 2 Transmitters Diagnostics Info
Connected
Alert Local
Transmitters
Tx1 Tx2
Main
Antenna
Load
Off
Monitors
Integral Standby
Normal
Pri Alarm
Sec Alarm
Bypass
Monitor 1
Delay 0.00
Spacing 0.00
Tx Power 0
ERP -10.0
Efficiency 0.0
PRF 850
Monitor 1 Test Results
Next (F5) Close (F6) Apply (F7) Reset (F8)
Alarm Limits Interrogator Transponder Decoder
03/05/14 06:26:00
Low Limit Data High Limit
Receiver Sensitivity @ 12.0 us (R) -97.0 -95.1 -91.0 dBm
Spacing: 13.0 us @ -94.1 dBm (R + 1dB) 70.0 76.4 100.0 %
Spacing: 12.5 us @ -94.1 dBm (R + 1dB) 70.0 89.4 100.0 %
Spacing: 11.5 us @ -94.1 dBm (R + 1dB) 70.0 88.1 100.0 %
Spacing: 11.0 us @ -94.1 dBm (R + 1dB) 70.0 76.8 100.0 %
RF +200 kHz @ -92.1 dBm (R + 3dB) 70.0 96.4 100.0 %
RF -200 kHz @ -92.1 dBm (R + 3dB) 70.0 92.9 100.0 %
RF +900 kHz (@ -10 dBm) 0.0 0.0 5.0 %
RF -900 kHz (@ -10 dBm) 0.0 5.0 %
Spacing: 9.0 us @ -18.1 dBm (R + 77dB) 0.0 0.0 5.0 %
Spacing: 10.0 us (@ -10 dBm) 0.0 0.0 5.0 %
Spacing: 14.0 us (@ -10 dBm) 0.0 0.0 5.0 %
Spacing: 15.0 us @ -18.1 dBm (R + 77dB) 0.0 0.0 5.0 %
Ready
CAP NUM Level 3 SEC3
03/05/14 06:25:58


TAIWAN, SHUN SHAN 82X - Dual DME - SELEX Systems Integration Inc. PMDT
System RMS Monitors Monitor 1 Monitor 2 Transmitters Diagnostics Info
Connected
Monitor 2 Test Results
Next (F5) Close (F6) Apply (F7) Reset (F8)
Alarm Limits Interrogator Transponder Decoder
Alert Local
Transmitters
Tx1 Tx2
Main
Antenna
Load
Off
Monitors
Integral Standby
Normal
Pri Alarm
Sec Alarm
Bypass
Monitor 1
Delay 0.00
Spacing 0.00
Tx Power 0
ERP -10.0
Efficiency 0.0
PRF 933
03/05/14 06:26:33
Low Limit Data High Limit
Receiver Sensitivity @ 12.0 us (R) -97.0 -95.2 -91.0 dBm
Spacing: 13.0 us @ -94.2 dBm (R + 1dB) 70.0 81.1 100.0 %
Spacing: 12.5 us @ -94.2 dBm (R + 1dB) 70.0 87.4 100.0 %
Spacing: 11.5 us @ -94.2 dBm (R + 1dB) 70.0 89.4 100.0 %
Spacing: 11.0 us @ -94.2 dBm (R + 1dB) 70.0 75.6 100.0 %
RF +200 kHz @ -92.2 dBm (R + 3dB) 70.0 95.2 100.0 %
RF -200 kHz @ -92.2 dBm (R + 3dB) 70.0 90.8 100.0 %
RF +900 kHz (@ -10 dBm) 0.0 0.0 5.0 %
RF -900 kHz (@ -10 dBm) 0.0 0.0 5.0 %
Spacing: 9.0 us @ -18.2 dBm (R + 77dB) 0.0 0.0 5.0 %
Spacing: 10.0 us (@ -10 dBm) 0.0 0.0 5.0 %
Spacing: 14.0 us (@ -10 dBm) 0.0 0.0 5.0 %
Spacing: 15.0 us @ -18.2 dBm (R + 77dB) 0.0 0.0 5.0 %
Ready
CAP NUM Level 3 SEC3
03/05/14 06:26:32


TAIWAN, SHUN SHAN 82X - Dual DME - SELEX Systems Integration Inc. PMDT
System RMS Monitors Monitor 1 Monitor 2 Transmitters Diagnostics Info
Connected
Monitor 1 Test Results
Next (F5) Close (F6) Apply (F7) Reset (F8)
Alarm Limits Interrogator Transponder Decoder
Alert Local
Transmitters
Tx1 Tx2
Main
Antenna
Load
Off
Monitors
Integral Standby
Normal
Pri Alarm
Sec Alarm
Bypass
Monitor 2
Delay 0.00
Spacing 0.00
Tx Power 0
ERP -10.0
Efficiency 0.0
PRF 881
03/05/14 06:26:59
Low Limit Data High Limit
Receiver Sensitivity @ 12.0 us (R) -97.0 -96.1 -91.0 dBm
Spacing: 13.0 us @ -94.1 dBm (R + 1dB) 70.0 75.0 100.0 %
Spacing: 12.5 us @ -94.1 dBm (R + 1dB) 70.0 90.1 100.0 %
Spacing: 11.5 us @ -94.1 dBm (R + 1dB) 70.0 86.8 100.0 %
Spacing: 11.0 us @ -94.1 dBm (R + 1dB) 70.0 81.3 100.0 %
RF +200 kHz @ -92.1 dBm (R + 3dB) 70.0 97.5 100.0 %
RF -200 kHz @ -92.1 dBm (R + 3dB) 70.0 96.3 100.0 %
RF +900 kHz (@ -10 dBm) 0.0 0.0 5.0 %
RF -900 kHz (@ -10 dBm) 0.0 0.0 5.0 %
Spacing: 9.0 us @ -18.1 dBm (R + 77dB) 0.0 0.0 5.0 %
Spacing: 10.0 us (@ -10 dBm) 0.0 0.0 5.0 %
Spacing: 14.0 us (@ -10 dBm) 0.0 0.0 5.0 %
Spacing: 15.0 us @ -18.1 dBm (R + 77dB) 0.0 5.0 %
Ready
CAP NUM Level 3 SEC3
03/05/14 06:26:58


TAIWAN, SHUN SHAN 82X - Dual DME - SELEX Systems Integration Inc. PMDT
System RMS Monitors Monitor 1 Monitor 2 Transmitters Diagnostics Info
Connected
Monitor 2 Test Results
Next (F5) Close (F6) Apply (F7) Reset (F8)
Alarm Limits Interrogator Transponder Decoder
Y Alert Y Local
Transmitters
Tx1 Tx2
Main G
Antenna G
G Load
Off
Monitors
Integral Standby
Normal
R Pri Alarm R
Y Sec Alarm Y
Y Bypass Y
Monitor 2
Delay 0.00
Spacing 0.00
Tx Power 0
ERP -10.0
Efficiency 0.0
PRF 954
03/05/14 06:27:22
Low Limit Data High Limit
Receiver Sensitivity @ 12.0 us (R) -97.0 -95.1 -91.0 dBm
Spacing: 13.0 us @ -94.1 dBm (R + 1dB) 70.0 70.9 100.0 %
Spacing: 12.5 us @ -94.1 dBm (R + 1dB) 70.0 87.4 100.0 %
Spacing: 11.5 us @ -94.1 dBm (R + 1dB) 70.0 87.8 100.0 %
Spacing: 11.0 us @ -94.1 dBm (R + 1dB) 70.0 77.2 100.0 %
RF +200 kHz @ -92.1 dBm (R + 3dB) 70.0 96.0 100.0 %
RF -200 kHz @ -92.1 dBm (R + 3dB) 70.0 100.0 %
RF +900 kHz (@ -10 dBm) 0.0 0.0 5.0 %
RF -900 kHz (@ -10 dBm) 0.0 0.0 5.0 %
Spacing: 9.0 us @ -18.1 dBm (R + 77dB) 0.0 0.0 5.0 %
Spacing: 10.0 us (@ -10 dBm) 0.0 0.0 5.0 %
Spacing: 14.0 us (@ -10 dBm) 0.0 5.0 %
Spacing: 15.0 us @ -18.1 dBm (R + 77dB) 0.0 5.0 %
Ready
CAP NUM Level 3 SEC3
03/05/14 06:27:22


TAIWAN, SHUN SHAN 82X - Dual DME - SELEX Systems Integration Inc. PMDT
System RMS Monitors Monitor 1 Monitor 2 Transmitters Diagnostics Info
Connected
Diagnostics Data and Commands
Next (F5)
Close (F6)
Apply (F7)
Reset (F8)
Power Up Results
Fault Isolation
Alert
Local
Transmitters
Tx1
Tx2
Main
Antenna
Load
Off
Monitors
Integral
Standby
Normal
Pri Alarm
Sec Alarm
Bypass
Monitor 1
Delay 49.99
Spacing 11.99
Tx Power 104
ERP 0.0
Efficiency 100.0
PRF 802
Sub System
Progress
Results
Logon / RMM
Power Supplies
Monitor
Rx/Tx Controller
Power Amplifiers
Transponder
Control
Fault Isolation Results
--> NO FAULT FOUND <--
Run Full Diagnostics
Cancel
Run On Air Diagnostics
Periodic Fault Isolation Results
Local Mode
Ready
CAP NUM Level 3 SEC3
03/05/14 06:45:55

RMS Configuration

Time Stamp	: 01/01/00 - 09:27:45
Smoke Detector Enabled	: False
Intrusion Det Enabled	: False
Spare Digital 1	: Not Present
Spare Digital 2	: Not Present
Spare Digital 3	: Not Present
Spare Digital 4	: Not Present
Restart Delay	: 50 sec
Auto Restart	: Disabled
Dial Out Phone Number	:
Dial In Rings	: 3
Logic AND/OR	: And
Best Avail Mode Enabled	: False
Integrity Tests Enabled	: True
RCSU Present	: False
DME Interlock	: None
Dual Equipment	: True
TACAN Mode	: False
Low Power Mode	: True
Hot Standby	: True
X Channel Mode	: True
Channel	: 82
Dual Monitors	: True
Number of HPAs	: 0
Dial Out Identifier	: TAIWAN, SHUN SHAN 82X

Software Versions

Time Stamp	: 03/05/14 - 06:29:36
RMS	: Version 3.0.0.2
Monitor #1	: Version 3.0.0.3
Monitor #2	: Version 3.0.0.3
RTC #1	: Version 3.0.0.3
RTC #2	: Version 3.0.0.3
BCPS #1	: Version 1.6
BCPS #2	: Version 1.6
LCU	: Version 1.1
PMDT	: Version 8.7.1.0

RMS A/D Limits

Time Stamp	: 12/26/13 - 12:26:32

Alert Limits

Spare 1 Low	: -5.00 Volts
Spare 1 High	: 5.00 Volts
Spare 2 Low	: -5.00 Volts
Spare 2 High	: 5.00 Volts
Spare 3 Low	: -5.00 Volts
Spare 3 High	: 5.00 Volts
Spare 4 Low	: -5.00 Volts
Spare 4 High	: 5.00 Volts
Spare 5 Low	: -5.00 Volts
Spare 5 High	: 5.00 Volts
Spare 6 Low	: -5.00 Volts
Spare 6 High	: 5.00 Volts
Spare 7 Low	: -5.00 Volts

Spare 7 High	: 5.00 Volts
Spare 8 Low	: -5.00 Volts
Spare 8 High	: 5.00 Volts
Spare 9 Low	: -5.00 Volts
Spare 9 High	: 5.00 Volts
Spare 10 Low	: -5.00 Volts
Spare 10 High	: 5.00 Volts
AC Voltage Low	: 98.0 Volts
AC Voltage High	: 132.0 Volts
AC Current Low	: 1.0 Amps
AC Current High	: 7.0 Amps
Ob Light Volts Low	: 98.0 Volts
Ob Light Volts High	: 132.0 Volts
Ob Light Amps Low	: 0.0 Amps
Ob Light Amps High	: 20.0 Amps
Tx 1 48V PS Low	: 46.6 Volts
Tx 1 48V PS High	: 54.4 Volts
Tx 2 48V PS Low	: 46.6 Volts
Tx 2 48V PS High	: 54.4 Volts
Tx 1 48V PS Low	: 0.5 Amps
Tx 1 48V PS High	: 15.0 Amps
Tx 2 48V PS Low	: 0.5 Amps
Tx 2 48V PS High	: 15.0 Amps
Battery 1 Voltage Low	: 42.0 Volts
Battery 1 Voltage High	: 60.0 Volts
Battery 2 Voltage Low	: 42.0 Volts
Battery 2 Voltage High	: 60.0 Volts
Battery 1 Current Low	: -6.0 Amps
Battery 1 Current High	: 10.0 Amps
Battery 2 Current Low	: -6.0 Amps
Battery 2 Current High	: 10.0 Amps
Inside Temperature Low	: 0 Deg C
Inside Temperature High	: 40 Deg C
Outside Temperature Low	: -25 Deg C
Outside Temperature High	: 70 Deg C
RMS 3.3 Volts Low	: 3.14 Volts
RMS 3.3 Volts High	: 3.46 Volts
RMS 5 Volts Low	: 4.75 Volts
RMS 5 Volts High	: 5.25 Volts
RMS 12 V, Analog Low	: 10.80 Volts
RMS 12 V, Analog High	: 13.20 Volts
RMS -12 V, Analog Low	: -13.20 Volts
RMS -12 V, Analog High	: -10.80 Volts
RMS 12 V, Digital Low	: 10.80 Volts
RMS 12 V, Digital High	: 13.20 Volts
RMS -12 V, Digital Low	: -13.20 Volts
RMS -12 V, Digital High	: -10.80 Volts
RMS 15 V Low	: 13.50 Volts
RMS 15 V High	: 16.50 Volts
RMS -15 V Low	: -16.50 Volts
RMS -15 V High	: -13.50 Volts
RMS 24 V Low	: 21.6 Volts
RMS 24 V High	: 26.4 Volts
LPA Temperature High	: 80 Deg C
HPA Temperature High	: 80 Deg C

Pre-Alert Limits

Spare 1 Low	: -5.00 Volts
Spare 1 High	: 5.00 Volts
Spare 2 Low	: -5.00 Volts
Spare 2 High	: 5.00 Volts
Spare 3 Low	: -5.00 Volts
Spare 3 High	: 5.00 Volts
Spare 4 Low	: -5.00 Volts
Spare 4 High	: 5.00 Volts
Spare 5 Low	: -5.00 Volts
Spare 5 High	: 5.00 Volts
Spare 6 Low	: -5.00 Volts
Spare 6 High	: 5.00 Volts
Spare 7 Low	: -5.00 Volts
Spare 7 High	: 5.00 Volts
Spare 8 Low	: -5.00 Volts
Spare 8 High	: 5.00 Volts
Spare 9 Low	: -5.00 Volts
Spare 9 High	: 5.00 Volts
Spare 10 Low	: -5.00 Volts
Spare 10 High	: 5.00 Volts
AC Voltage Low	: 98.0 Volts
AC Voltage High	: 132.0 Volts
AC Current Low	: 1.0 Amps
AC Current High	: 7.0 Amps
Ob Light Volts Low	: 98.0 Volts
Ob Light Volts High	: 132.0 Volts
Ob Light Amps Low	: 0.0 Amps
Ob Light Amps High	: 20.0 Amps
Tx 1 PS Volts Low	: 46.6 Volts
Tx 1 PS Volts High	: 54.4 Volts
Tx 2 PS Volts Low	: 46.6 Volts
Tx 2 PS Volts High	: 54.4 Volts
Tx 1 PS Amps Low	: 0.5 Amps
Tx 1 PS Amps High	: 15.0 Amps
Tx 2 PS Amps Low	: 0.5 Amps
Tx 2 PS Amps High	: 15.0 Amps
Battery 1 Volts Low	: 42.0 Volts
Battery 1 Volts High	: 60.0 Volts
Battery 2 Volts Low	: 42.0 Volts
Battery 2 Volts High	: 60.0 Volts
Battery 1 Amps Low	: -6.0 Amps
Battery 1 Amps High	: 10.0 Amps
Battery 2 Amps Low	: -6.0 Amps
Battery 2 Amps High	: 10.0 Amps
Cabinet Interface Temperature Low	: 0 Deg C
Cabinet Interface Temperature High	: 40 Deg C
External Sensor Temperature Low	: -25 Deg C
External Sensor Temperature High	: 70 Deg C
RMS 3.3 Volts Low	: 3.14 Volts
RMS 3.3 Volts High	: 3.46 Volts
RMS 5 Volts Low	: 4.75 Volts
RMS 5 Volts High	: 5.25 Volts
RMS 12 V, Analog Low	: 10.80 Volts
RMS 12 V, Analog High	: 13.20 Volts
RMS -12 V, Analog Low	: -13.20 Volts
RMS -12 V, Analog High	: -10.80 Volts

RMS 12 V, Digital Low	: 10.80 Volts
RMS 12 V, Digital High	: 13.20 Volts
RMS -12 V, Digital Low	: -13.20 Volts
RMS -12 V, Digital High	: -10.80 Volts
RMS 15 V Low	: 13.50 Volts
RMS 15 V High	: 16.50 Volts
RMS -15 V Low	: -16.50 Volts
RMS -15 V High	: -13.50 Volts
RMS 24 V Low	: 21.6 Volts
RMS 24 V High	: 26.4 Volts
LPA Temperature High	: 60 Deg C
HPA Temperature High	: 60 Deg C
RMS A/D Maintenance Alert Enables:	
Spare 1	: False
Spare 2	: False
Spare 3	: False
Spare 4	: False
Spare 5	: False
Spare 6	: False
Spare 7	: False
Spare 8	: False
Spare 9	: False
Spare 10	: False
AC Voltage	: False
AC Current	: False
Ob Light Volts	: False
Ob Light Amps	: False
Tx 1 PS Volts	: False
Tx 1 PS Amps	: False
Battery 1 Volts	: False
Battery 1 Amps	: False
Tx 2 PS Volts	: False
Tx 2 PS Amps	: False
Battery 2 Volts	: False
Battery 2 Amps	: False
Cabinet Interface Temperature	: False
External Sensor Temperature	: False
RMS 3.3 Volts	: False
RMS 5 Volts	: False
RMS 12 V, Analog	: False
RMS -12 V, Analog	: False
RMS 12 V, Digital	: False
RMS -12 V, Digital	: False
RMS 15 V	: False
RMS -15 V	: False
RMS 24 V	: False
LPA 1 Temperature	: True
LPA 2 Temperature	: True

Monitor Configuration	
Time Stamp	: 12/26/13 - 12:26:32
Integral Monitor Timer	: 7.0 sec
Standby Monitor Timer	: 7.0 sec
Continuous Ident Timer	: 5.0 sec
No Ident Timer	: 65.0 sec
Alarm Limits	

Delay Range	: 0.40 us
Spacing Range	: 0.40 us
Tx Power Low	: 50 Watts
Tx Power High	: 125 Watts
ERP Low	: -3.0 dB
ERP High	: 1.0 dB
Efficiency Low	: 70.0 %
PRF Low	: 720 ppps
PRF High	: 6000 ppps
Rx Freq Diff Low	: -20 ppm
Rx Freq Diff High	: 20 ppm
Tx Freq Diff Low	: -20 ppm
Tx Freq Diff High	: 20 ppm
VSWR High	: 4.0:1
Alert Limits	
Delay Range	: 0.32 us
Spacing Range	: 0.32 us
Tx Power Low	: 55 Watts
Tx Power High	: 122 Watts
ERP Low	: -2.7 dB
ERP High	: 0.9 dB
Efficiency Low	: 73.0 %
PRF Low	: 730 ppps
PRF High	: 6000 ppps
Rx Freq Diff Low	: -18 ppm
Rx Freq Diff High	: 18 ppm
Tx Freq Diff Low	: -18 ppm
Tx Freq Diff High	: 18 ppm
VSWR High	: 3.0:1
Directional Coupler Loss	: -29.60 dB
Primary Alarm Enables:	
Delay	: True
Spacing	: True
Int Mon Tx Power	: True
Int Mon ERP	: True
Int Mon Efficiency	: True
Int Mon PRF	: True
Int Mon Rx Freq Diff	: False
Int Mon Tx Freq Diff	: False
Int Mon Ident	: True
Int Mon Ident Code	: True
VSWR High	: True
Delay	: True
Spacing	: True
Stby Mon Tx Power	: True
Stby Mon Efficiency	: True
Stby Mon PRF	: True
Stby Mon Rx Freq Diff	: False
Stby Mon Tx Freq Diff	: False
Stby Mon Ident	: True
Stby Mon Ident Code	: True
Monitor 1 Offsets and Scale Factors	
Time Stamp	: 12/26/13 - 12:26:32
Integral Monitor:	
Delay Offset	: 0.00 us

Spacing Offset	: 0.00 us
ERP Offset	: -0.3 dB
Efficiency Offset	: 0 %
PRF Offset	: 0 ppps
Rx Freq Diff Offset	: 0 ppm
Tx Freq Diff Offset	: 0 ppm
Return Loss Offset	: 0.0 dB
Standby Monitor:	
Delay Offset	: 0.00 us
Spacing Offset	: 0.00 us
Tx Power Scale	: 182.0 %
Tx Power Offset	: 0.0 dB
Efficiency Offset	: 0 %
PRF Offset	: 0 ppps
Rx Freq Diff Offset	: 0 ppm
Tx Freq Diff Offset	: 0 ppm

Monitor 2 Offsets and Scale Factors

Time Stamp	: 12/26/13 - 12:26:32
Integral Monitor:	
Delay Offset	: 0.00 us
Spacing Offset	: 0.00 us
ERP Offset	: 0.0 dB
Efficiency Offset	: 0 %
PRF Offset	: 0 ppps
Rx Freq Diff Offset	: 0 ppm
Tx Freq Diff Offset	: 0 ppm
Return Loss Offset	: 0.0 dB
Standby Monitor:	
Delay Offset	: 0.00 us
Spacing Offset	: 0.00 us
Tx Power Scale	: 180.0 %
Tx Power Offset	: 0.0 dB
Efficiency Offset	: 0 %
PRF Offset	: 0 ppps
Rx Freq Diff Offset	: 0 ppm
Tx Freq Diff Offset	: 0 ppm

RMS Nominal Monitor Values

Time Stamp	: 12/26/13 - 12:26:32
Delay	: 50.00 us
Spacing	: 12.00 us
Tx Power	: 100 Watts
ERP	: 0.0 dB
PRF	: 800 ppps
Rx Freq Diff	: 0 ppm
Tx Freq Diff	: 0 ppm
VSWR	: 1.2:1

Transmitter Nominal Configuration

Time Stamp	: 12/26/13 - 12:26:32
RTC Parameters:	
Power Output	: 100.0 %
Minimum Squitter	: 800 ppps
Maximum PRF	: 5400 ppps
LDES Window	: 150 us

LDES Threshold	: -70 dBm
Dead Time	: 60 us
Reply Delay Offset	: 0.00 us
Rx Sensitivity	: -94 dBm
Nominal Propagation Delay	: 9.38 us
Max Propagation Variance	: 0.50 us
Standby Propagation Offset	: 0.00 us
Power Amplifiers:	
Low Output Power Alert	: 30.0 %
Operation:	
1st Pulse Timing Enabled	: True
Squitter Enabled	: True
SDES Enabled	: False
LDES Enabled	: False
Ident:	
External Keyer Enabled	: False
Keyer In Active High	: True
Windowed Keying	: False
Self-Key on Keyer Loss	: False
Shutdown on Keyer Loss	: False
Restart on Keyer Resume	: False
Primary Main Ident Code	: TSI
Secondary Ident Enabled	: False
Standby Ident Rule	: Stby Ident same as Main
Primary Stdby Ident Code	: TSI
Transmitter 1 Offsets and Scale Factors	
Time Stamp	: 12/26/13 - 12:26:32
Output Power Scale	: 57.1 %
Rx Sensitivity Offset	: 0 dB
Transmitter 2 Offsets and Scale Factors	
Time Stamp	: 12/26/13 - 12:26:33
Output Power Scale	: 55.6 %
Rx Sensitivity Offset	: 0 dB