

Attachment AL
VSWR Test Results

DO204 VSWR Post short open tests 2.3.2.5

- 1) OBTAIN dme DOC Y1-02-1053, Y1-02-1054 and DO-204,183 documents FOR REFERENCE AND SET UP.
- 2) CONNECT EQUIPMENT UP AS INDICATED IN PARAGRAPH 3.1 of Y1-02-1053
- 3) Perform para. 3.1 through 3.10 of Y1-02-1053
- 4) Instead of connecting equipment as shown in figure 1A of Y1-02-1053, set up as shown here in this attachment called VSWR SHORT/OPEN TEST setup using a fresh battery in the beacon.
- 5) Activate the "burn_in_test_select2.vi" software on PC#1 with all of the test annunciation points turned on with a 59 minute interval and a high temperature file name for the beacon in question. Do not start the acquire process yet.
- 6) Activate the "beaconminiexec.exe" software and highlight all the test annunciation points to gather all the 406 modulation data. Do not start the acquire process yet.
- 7) Connect an RF short to the beacon antenna A connector and pull the magnet out to activate the beacon.
- 8) After 15 minutes of operation with the RF short attached reinsert the magnet. Connect the beacon antenna A to the test equipment and then test to Y1-02-1054 to verify functional aliveness DO-204 compliance again.
- 9) Continue to perform Y1-02-1053 tests after 15 minutes of warm up utilizing "burn_in_test_select2.vi" on the PC#1 to collect most of the data needed by the Y1-02-1053 data sheet. Run the "beaconminiexec.exe" software after to collect the 406 modulation information for the data sheet.
- 10) Perform paragraphs 4.1.8, and 4.2.3, through 4.2.7 to finish up the data sheet.
- 11) Copy the "binarydata1.txt" file to a working directory elsewhere on the hard drive and copy hexid.exe to that directory too.
- 12) Go to the dos window and execute this string in the working directory as follows: "hexid binarydata1.txt"
- 13) Copy and rename the resulting file "hexid.txt" to "sn2007postvswrshort.txt" (or equiv) and print output.
- 14) Print all the "burn_in_test_select2.VI" data collected and the beaconminiexec.exe data collected.
- 15) Reinsert the beacon magnet and connect an open (remove the test equipment cable) to the beacon.
- 16) Pull the magnet out and use antenna B to activate the beacon and let operate with the open for 15 minutes.
- 17) Reinsert the magnet and reconnect beacon antenna A port to the test equipment and then test to Y1-02-1054 to verify functional aliveness DO-204 compliance again.
- 18) Continue to perform Y1-02-1053 tests after 15 minutes of warm up utilizing "burn_in_test_select2.vi" on the PC#1 to collect most of the data needed by the Y1-02-1053 data sheet. Run the "beaconminiexec.exe" software after to collect the 406 modulation information for the data sheet.
- 19) Perform paragraphs 4.1.8, and 4.2.3, through 4.2.7 to finish up the data sheet.
- 20) Copy the "binarydata1.txt" file to a working directory elsewhere on the hard drive and copy hexid.exe to that directory too.
- 21) Go to the dos window and execute this string in the working directory as follows: "hexid binarydata1.txt"
- 22) Copy and rename the resulting file "hexid.txt" to "sn2007postvswropen.txt" (or equiv) and print output.
- 23) Print all the "burn_in_test_select2.VI" data collected and the beaconminiexec.exe data collected.

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Qualification Data Sheet

Date: 12/23/02	Test: POST VSWR SHORT/OPEN TEST
Test Unit Description	SRB-406 ELT, PN P3-03-0041-001, revision 05, Serial # 2007
Test Unit Configuration	Antenna "A" PN A3-06-2053-001 rev 02 SN N/A Antenna "B" PN A3-06-2053-001 rev 02 SN 0059 Digital CCA PN A3-07-0038-800 rev 07 SN 0016 RF CCA PN A3-07-0039-800 rev 07 SN 0002 Battery pack A3-03-1006-001 rev 04 SN 020149 Lanyard PN A3-05-0099-001 rev 03.
Description of Test Method (ex: Eurocae ED-62, para x.x)	DO-204 2.3.2.5
Pass/Fail Criteria	PASS BOTH Y1-02-1053, 1054 AND DO-204 2.3.2.5
Authorized Deviations	NONE
Test Location	DME ORLANDO
Purchase Order #	N/A
Test Equipment Arrangement (if necessary)	N/A
List of Calibrated Equipment	SEE ATTACHED DATA
DME Test Engineer	KEN HEART
DME QA Representative	KEN KOTYK
Lab Test Engineer/Technician	NONE
Other Witness	NONE
Test Unit Authorized Deviations	NONE
Test Data	SEE ATTACHED DATA. FOR POST OPEN AND POST SHORT TEST. Y1-02-1053, 1054 HEX ID PASS N/A.
Data Reduction/Calculations	SEE ATTACHED DATA
Test Deviations	NONE
Test Performed Prior to this Test	HIGH TEMP LIFE
Next Test to be Performed	THERMAL SHOCK
Test Engineer Signature	K. HEART
QA Signature	K. KOTYK
Other Witness Signature	N/A
NMR #	N/A
Notes	N/A

TEST DATA SHEETS
RF BEACON ASSEMBLY
P3-03-0041-001

Y1-02-1054 Rev. -
September 12, 2002

POST USWR SHORT/NEW
TEST

Tested By: R. HEMM

DATE: 12/23/02 TEST START @ 4:46 PM ACTIVATION

Beacon P3-03-0041-001

Serial Number: 2007

AWT A NOT USED (TEST EQUIPMENT
TO AWT A)

AWT B = SIN 0059

Test Equipment	Model	Serial No. or Control No.	Cal. Due
SPECAW	HP 8568B	OR3063	9/18/03
GENERATOR	HP 8656B	OR1091	5/18/03
MODAWA #1	HP 8901B	OR1093	1/30/03
SLOPO	HP 54510B	OR0627	8/29/03
MODAWA #2 (FOR SLOPO)	HP 8901B	SIN 3704A0577	12/11/03
POWER SENSOR	HP 8481A	OR092	1/29/03



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TEST DATA SHEETS
RF BEACON ASSEMBLY
P3-03-0041-001

SPECTRUM ANALYZER OFFSET DETERMINATION AND PRETEST					
Para.	Description	Min.	Results	Max.	Pass / Fail (circle one)
3.3	HP8656 setting for 121.5MHZ	-0.5	0.3 dBm	+0.5	P F
3.4	HP8656 setting for 243 MHZ	-0.5	0.3 dBm	+0.5	P F
3.5	HP8656 setting for 406.028 MHZ	-0.5	0.3 dBm	+0.5	P F

OAL
SQ001
DME
K18

BIST and turn on tests					
Para.	Description	Min.	Results	Max.	Pass / Fail (circle one)
4.1.1	Beacon passes self test and goes off	N/A	✓ chk	N/A	P F
4.1.2	Beacon stays off	N/A	✓ chk	N/A	P F
4.1.3	Beacon transmits when B antenna is touched. (PUT IN WATER) N/A	N/A	✓ chk	N/A	P F
4.1.4	Beacon goes off when magnet is installed.	N/A	✓ chk	N/A	P F
4.1.5	Beacon transmits when A antenna is touched.	N/A	N/A chk	N/A	P F
4.1.6	Beacon goes off when magnet is installed.	N/A	N/A chk	N/A	P F

N/A

ANT A CONNECTED TO
TEST EQUIPMENT
N/A

OAL
SQ001
DME
F12



TEST DATA SHEETS
RF BEACON ASSEMBLY
P3-03-0041-001

RF beacon 121.5/243 Mhz Tests

Para.	Description	Min.	Results	Max.	Pass / Fail (circle one)
4.2.1	Peak Power at 121.5 MHZ	17.0dBm	<u>19.2</u> dBm	N/A	☒ P ☐ F
	Antenna gain including feeder and mismatch losses for 121.5 Mhz obtained from antenna field tests.	N/A	<u>-1.0</u> dB	N/A	☒ P ☐ F
	Peak power + antenna gain= EIRP	<u>17.0</u> dBm	<u>18.2</u> dBm	N/A	☒ P ☐ F
4.2.2	Frequency 121.5 MHz $\pm$ 6 kHz	121.494	<u>121.5018</u> MHz	121.506	☒ P ☐ F
4.2.3	Peak Power at 243 MHZ	17.0dBm	<u>20.5</u> dBm	N/A	☒ P ☐ F
	Antenna gain including feeder and mismatch losses for 243 Mhz obtained from antenna field tests.	N/A	<u>-3.7</u> dB	N/A	☒ P ☐ F
	Peak power + antenna gain= EIRP	<u>20.5</u> dBm	<u>24.2</u> dBm	N/A	☒ P ☐ F
4.2.4	Frequency 243 MHz $\pm$ 12 kHz	242.988	<u>243.003</u> MHz	243.012	☒ P ☐ F
4.2.5	121.5 Mhz Modulation depth	N/A	<u>-42.1</u> dBc	-22dBc	☒ P ☐ F
4.2.6	121.5 /243 Mhz Duty cycle	45%	<u>61.5</u> %	67%	☒ P ☐ F
4.2.7	Max audio frequency	N/A	<u>1477</u> Hz	1600	☒ P ☐ F
	Min audio frequency	300	<u>336</u> Hz	N/A	☒ P ☐ F
	Max - Min	<u>1141</u> Hz	<u>1141</u> Hz	<u>2000</u> Hz	☒ P ☐ F
4.2.8	Sweeps in 10 seconds	20	<u>30</u> count	40	☒ P ☐ F

ANT A CONNECTED TO TEST EQUIPMENT

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TEST DATA SHEETS
RF BEACON ASSEMBLY
P3-03-0041-001

RF beacon 406.028 Mhz Tests					
Para.	Description	Min.	Results	Max.	Pass / Fail (circle one)
4.3.1	Peak Power at 406.028 MHZ	35.0dBm	<u>36.2</u> dBm	N/A	(P) F
	Antenna gain including feeder and mismatch losses for 406.028 Mhz obtained from antenna field tests.	N/A	<u>0.15</u> N/A dB	N/A	N/A
	Peak power + antenna gain= EIRP	32.0dbm EIRP	<u>36.2</u> N/A dB	N/A	(P) F
4.3.2	Frequency Accuracy 406.028 MHz $\pm$ 1 kHz	406.0270	<u>406.0284</u> MHz	406.0290	(P) F

KHK
ORL
5001
DME
KHK



SHORT

TEST DATA SHEETS
RF BEACON ASSEMBLY

A3-07-1032

PORT USWL SHORT/OPEN TEST

Tested By:

M. Helt

PCDATA START AT 4:53:56 PM

DATE:

12/27/029/1/2007

RF PCB

(A3-07-0039) Serial Number:

0002

DIGITAL PCB (A3-07-0038) Serial Number:

0010

Test Equipment	Model	Serial No. or Control No.	Cal. Due
SPECAN	HP 568B	OR3063	9/18/03
GENERATOR	HP 8656B	OR1091	5/18/03
MDO ANA #1	HP 8901B	OR1093	1/30/03
SLOPE	HP 54510B	OR0677	8/29/03
TIME+FREQ ANA	HP 5371A	2842A00760	6/11/03
MDO ANA #2 (FALSTAD)	HP 8901B	SIN 3204A0571	2/11/03
POWER SENSOR	HP 8481A	OR1092	1/29/03

ORL
5001
DME

KF

TEST DATA SHEETS
RF BEACON ASSEMBLY
A3-07-1032

SPECTRUM ANALYZER OFFSET DETERMINATION AND PRETEST					
Para.	Description	Min.	Results	Max.	Pass / Fail (circle one)
3.3	HP8656 setting for 121.5MHZ	-0.5	<u>0.3</u> dBm	+0.5	P F
3.4	HP8656 setting for 243 MHZ	-0.5	<u>0.3</u> dBm	+0.5	P F
3.5	HP8656 setting for 406.028 MHZ	-0.5	<u>0.3</u> dBm	+0.5	P F

ORL
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RF beacon 121.5/243 Mhz Tests					
Para.	Description	Min.	Results	Max.	Pass / Fail (circle one)
4.1.1	Peak Power at 121.5 MHz	17.0dBm	<u>19.3</u> dBm	N/A	P F
	UUT current during 121.5/243 Mhz broadcast	N/A	<u>N/A</u> mA	100mA	P F
4.1.2	Frequency 121.5 MHz $\pm$ 6 kHz	121.494	<u>121.5016</u> MHz	121.506	P F
4.1.3	121.5 MHz Bandwidth $\geq$ +12.5 kHz	N/A	<u>-29.70</u> dBc	-25dBc	P F
	121.5 MHz Bandwidth $\leq$ -12.5 kHz	N/A	<u>-29.30</u> dBc	-25dBc	P F
	121.5 MHz Bandwidth $\geq$ +25 kHz	N/A	<u>-34.50</u> dBc	-30dBc	P F
	121.5 MHz Bandwidth $\leq$ -25 kHz	N/A	<u>-34.30</u> dBc	-30dBc	P F
4.1.4	Peak Power at 243 MHz	17.0dBm	<u>20.3</u> dBm	N/A	P F
4.1.5	Frequency 243 MHz $\pm$ 12 kHz	242.988	<u>243.0025</u> MHz	243.012	P F
4.1.6	243 MHz Bandwidth $\geq$ +12.5 kHz	N/A	<u>-29.6</u> dBc	-25dBc	P F
	243 MHz Bandwidth $\leq$ -12.5 kHz	N/A	<u>-29.7</u> dBc	-25dBc	P F
	243 MHz Bandwidth $\geq$ +25 kHz	N/A	<u>-34.3</u> dBc	-30dBc	P F
	243 MHz Bandwidth $\leq$ -25 kHz	N/A	<u>-34.4</u> dBc	-30dBc	P F
4.1.7	121.5 Mhz Modulation depth	N/A	<u>-62.1</u> dBc	-22dBc	P F
4.1.8	364.5 MHz harmonic	N/A	<u>-49.2</u> dBc	-30dBc	P F
	486 MHz harmonic	N/A	<u>-51.3</u> dBc	-30dBc	P F
4.1.9	121.5 /243 Mhz Duty cycle	45%	<u>61.2</u> %	67%	P F

LOW BATTERY

ORL
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DME

TEST DATA SHEETS
RF BEACON ASSEMBLY
A3-07-1032

RF beacon 406.028 Mhz Tests					
Para.	Description	Min.	Results	Max.	Pass / Fail (circle one)
4.2.1	Peak Power at 406.028 MHZ	35.0dBm	<u>36.3</u> dBm	39.0dbm	P F
	UUT peak current during 406 Mhz broadcast	N/A	<u>N/A</u> A	1.7A	P F
4.2.2	406.028 MHz Bandwidth $\geq +12.0$ kHz	N/A	<u>-42.1</u> dBc	-30dBc	P F
	406.028 MHz Bandwidth ≤ -12.0 kHz	N/A	<u>-40.3</u> dBc	-30dBc	P F
	406.028 MHz Bandwidth $\geq +24$ kHz	N/A	<u>-48.5</u> dBc	-40dBc	P F
	406.028 MHz Bandwidth ≤ -24 kHz	N/A	<u>-31.1</u> dBc	-40dBc	P F
4.2.3	812 MHz harmonic	N/A	<u>-42.5</u> dBc	-30dBc	P F
4.2.4	406 pulse falling (starting edge) time	0.3	<u>0.854</u> msec	5.0	P F
4.2.5	406 pulse rising (stopping edge) time	0.3	<u>1.48</u> msec	5.0	P F
4.2.6	Total transmission pulse time measured with diode detector.	435.6	<u>442.298</u> msec	444.4	P F
4.2.7	Total transmission time burst spacing measured with diode detector.	47.5	<u>51.0</u> sec	52.5	P F
4.2.9	Phase modulation +1.10 radian peak	1.00	<u>1.158</u> Rad	1.20	P F
4.2.10	Phase modulation -1.10 radian peak	-1.20	<u>-1.05</u> Rad	-1.00	P F
4.2.11	Phase modulation rise time	50usec	<u>172.2</u> usec	250 usec	P F
4.2.12	Phase modulation fall time	50usec	<u>158.8</u> usec	250 usec	P F
4.2.13	Phase modulation rise/fall symmetry	N/A	<u>0.02</u> ratio	0.05	P F
4.2.14	Modulation Bit rate 400 bits/sec	396.0	<u>401.071</u> Hz	404.0	P F
4.2.15	CW preamble time	158.4	<u>160.977</u> msec	161.6	P F
4.2.16	NOAA HEX ID ID/SN matches programmed in	N/A	<u>ADDC07K014401</u>	N/A	P F
4.2.17	Frequency Accuracy 406.028 MHz ± 1 kHz	406.0270	<u>406.028136</u> mHz	406.0290	P F
4.2.18	Short term stability	-2e-9	<u>402x10⁻¹²</u> n/a	2e-9	P F
4.2.19	medium term residual variation	-3e-9	<u>344.9x10⁻¹²</u> n/a	3e-9	P F
4.2.20	medium term slope	-1e-9	<u>-72.0x10⁻¹²</u> n/a	1e-9	P F

* ON BATTERY

12/1/02
K2

TEST DATA SHEETS
RF BEACON ASSEMBLY
A3-07-1032

BIST ,activation and B antenna output power tests					
Para.	Description	Min.	Results	Max.	Pass / Fail (circle one)
4.3.2	Beacon stays off	N/A	<u>✓</u> chk	N/A	<u>P</u> F
4.3.3	Beacon passes self test and goes off	N/A	<u>✓</u> chk	N/A	<u>P</u> F
4.3.4	Beacon transmits when load is connected to B antenna	N/A	<u>NA</u> chk	N/A	<u>P</u> F
4.3.6 (-002 version only)	Peak Power at 121.5 MHZ	17.0dBm	<u>NA</u> dBm	N/A	P <u>F</u>
4.3.7 (-002 version only)	Peak Power at 243 MHZ	17.0dBm	<u>NA</u> dBm	N/A	P <u>F</u>
4.3.8 (-002 version only)	Peak Power at 406.028 MHZ	35.0dBm	<u>NA</u> dBm	39.0dBm	P <u>F</u>

ORL
9001
DME
RP

Test continues
UNINTERRUPTED ON BATTERY
M. Hest

TEST DATA SHEETS
RF BEACON ASSEMBLY
A3-07-1032

Beacon Calibration factor recording				
Para.	Description	Under 0 deg c	0 to 35 deg c	Over 35 deg c
4.4.4	12 volt gain settings for 121/243 power (Q1 location)			
4.4.5	12 volt gain settings for 406 power (Q3 location)			
4.4.6	406 phase modulation +1.1 radian (Q5 location)			
	406 phase modulation 0.0 radian (Q5 location)			
	406 phase modulation -1.1 radian (Q5 location)			
4.4.7	406 gain A (Q7 location)			
4.4.8	406 gain B (Q9 location)			
Para.	Description	N/A	Time in msec	N/A
4.4.9	Preamble time. (Q11 location)	N/A		N/A
Para.	Description	Over voltage mode	Nominal voltage	Undervoltage mode
4.4.10	406 gain B offset (Q13 location)			
Para.	Description	Over voltage mode	N/A	Undervoltage mode
4.4.11	Battery threshold (Q15 location)		N/A	

TEST CONTINUES
UNINTERRUPTED ON
BATTERY
11/16/02

BEACON SN 2007_12_23_02postVSWRshort_opentest
TIME START 4:53:56 PM
DATE START 12/23/02

DATA
THRU 11/11/03
TO 41-02-1053
AND 41-02-1054



BEACON 121 OUTPUT POWER PASS
121 POWER PASS AT 19.30

BEACON 243 OUTPUT POWER PASS
243 POWER PASS AT 20.30

BEACON 406 OUTPUT POWER PASS
406 POWER PASS AT 36.30

BEACON 121 85% MINIMUM MODULATION DEPTH PASS
-22DB MODULATION DEPTH LIMIT -62.10

BEACON 243 85% MINIMUM MODULATION DEPTH PASS
-22DB MODULATION DEPTH LIMIT -53.60

BEACON DUTY CYCLE A PASS
DUTY CYCLE A PASS AT +6.12028E-01

AUDIO FREQ PASS
AUDIO FREQ LOW PASS AT +3.57354E+02
AUDIO FREQ HIGH PASS AT +1.49970E+03

BEACON 121 SIDEBAND PASS
CENTER FREQ PASS AT 121.5016E6

-25DB MAX VALUE FOR 12.5K TO 24.99K	12500	-29.70
-30DB MAX VALUE FOR 25.0K TO 44.00K	25000	-34.50
-25DB MAX VALUE FOR -12.5K TO -24.99K	-14600	-29.50
-30DB MAX VALUE FOR -25.0K TO -44.00K	-26600	-34.30

BEACON 243 SIDEBAND PASS
CENTER FREQ PASS AT 243.0025E6

-25DB MAX VALUE FOR 12.5K TO 24.99K	12600	-29.60
-30DB MAX VALUE FOR 25.0K TO 44.00K	26400	-34.50
-25DB MAX VALUE FOR -12.5K TO -24.99K	-13600	-29.70
-30DB MAX VALUE FOR -25.0K TO -44.00K	-26300	-34.40

BEACON 406 SIDEBAND PASS
CENTER FREQ PASS AT 406.02831E6

-20DB MAX VALUE FOR 3K TO 6.99K	3010	-24.60
-30DB MAX VALUE FOR 7K TO 11.99K	7340	-36.20
-35DB MAX VALUE FOR 12K TO 23.99K	12190	-42.10



-40DB MAX VALUE FOR 24K TO 25K	24020	-48.50
-20DB MAX VALUE FOR -3K TO -6.99K	-3010	-24.50
-30DB MAX VALUE FOR -7K TO -11.99K	-7040	-33.90
-35DB MAX VALUE FOR -12K TO -23.99K	-12090	-40.30
-40DB MAX VALUE FOR -24K TO -25K	-24630	-51.10



☐☐Test Start 12/23/02, 5:30 PM

---MODULATION TEST---

PosPhase

UL = 1.2000000

LL = 1.0000000

Results = 1.1589078

NegPhase

UL = -1.0000000

LL = -1.2000000

Results = -1.0500130

Test Status: PASSED

---MOD_SYM TEST---

ModRise

UL = 0.0002500

LL = 0.0000500

Results = 0.0001722

ModFall

UL = 0.0002500

LL = 0.0000500

Results = 0.0001558

ModSym

UL = 0.0500000

LL = N/A

Results = 0.0202042

Test Status: PASSED

---DECODER TEST---

Baud

UL = 404.0000000

LL = 396.0000000

Results = 401.0713203

Preamble

UL = 0.161600

LL = 0.158400

Results = 0.160977

ID/SN: ADDC07C01440401

Test Status: PASSED

---FREQUENCY TEST---



MeanFreq

UL = 406.0290000E+6

LL = 406.0270000E+6

Results = 406.0281367E+6

ShortTerm

UL = 2.0000000E-9

LL = -2.0000000E-9

Results = 402.2982159E-12

MediumTerm

UL = 3.0000000E-9

LL = -3.0000000E-9

Results = 394.9900434E-12

MeanSlope

UL = 1.0000000E-9

LL = -1.0000000E-9

Results = -72.0563501E-12

Test Status: PASSED

Test Finished 12/23/02, 5:48 PM



HexID All bits
ADDC07C01440401 FFFE2F56EE03E00A20200C93EF50

TEST DATA SHEETS
RF BEACON ASSEMBLY
P3-03-0041-001

POST VSWR OPEN TEST

Tested By: [Signature]

DATE: 12/23/02

TEST STARTED AFTER UNIT RUN
15 MINUTES OPEN

Beacon P3-03-0041-001 Serial Number: 2007

Test Equipment	Model	Serial No. or Control No.	Cal. Due
SPECAW	HP 8568B	OR3063	9/18/03
GENERATOR	HP 8656B	OR1091	5/18/03
MODAWA #1	HP 8901B	6R1093	1/30/03
SLOPB	HP 54510B	OR0627	8/29/03
MODAWA #2 (PDR 3000)	HP 8901B	SIN 3704A0571	12/11/03
POWER GENERATOR	HP 8481A	OR092	1/29/03

ORL
SQ01
DME
KP



TEST DATA SHEETS
RF BEACON ASSEMBLY
P3-03-0041-001

SPECTRUM ANALYZER OFFSET DETERMINATION AND PRETEST					
Para.	Description	Min.	Results	Max.	Pass / Fail (circle one)
3.3	HP8656 setting for 121.5MHZ	-0.5	<u>0.3</u> dBm	+0.5	P F
3.4	HP8656 setting for 243 MHZ	-0.5	<u>0.3</u> dBm	+0.5	P F
3.5	HP8656 setting for 406.028 MHZ	-0.5	<u>0.3</u> dBm	+0.5	P F

ORL
SQ001
DME

BIST and turn on tests					
Para.	Description	Min.	Results	Max.	Pass / Fail (circle one)
4.1.1	Beacon passes self test and goes off	N/A	<u>✓</u> chk	N/A	P F
4.1.2	Beacon stays off	N/A	<u>✓</u> chk	N/A	P F
4.1.3	Beacon transmits when B antenna is touched.	N/A	<u>✓</u> chk	N/A	P F
4.1.4	Beacon goes off when magnet is installed.	N/A	<u>✓</u> chk	N/A	P F
4.1.5	Beacon transmits when A antenna is touched.	N/A	<u>N/A</u> chk	N/A	P F
4.1.6	Beacon goes off when magnet is installed.	N/A	<u>N/A</u> chk	N/A	P F

ORL
SQ001
DME

AUT A CONNECTED TO
TEST EQUIPMENT
N/A

TEST DATA SHEETS
RF BEACON ASSEMBLY
P3-03-0041-001

RF beacon 121.5/243 Mhz Tests

Para.	Description	Min.	Results	Max.	Pass / Fail (circle one)
4.2.1	Peak Power at 121.5 MHZ	17.0dBm	<u>19.5</u> dBm	N/A	<u>P</u> F
	Antenna gain including feeder and mismatch losses for 121.5 Mhz obtained from antenna field tests.	N/A	<u>-1.0</u> dB	N/A	N/A
	Peak power + antenna gain= EIRP	<u>17.0</u> dBm EIRP	<u>+18.5</u> dBm	N/A	<u>P</u> F
4.2.2	Frequency 121.5 MHz $\pm$ 6 kHz	121.494	<u>121.5017</u> MHz	121.506	<u>P</u> F
4.2.3	Peak Power at 243 MHZ	17.0dBm	<u>20.5</u> dBm	N/A	<u>P</u> F
	Antenna gain including feeder and mismatch losses for 243 Mhz obtained from antenna field tests.	N/A	<u>3.0</u> dB	N/A	N/A
	Peak power + antenna gain= EIRP	<u>20.0</u> dBm EIRP	<u>24.5</u> dBm	N/A	<u>P</u> F
4.2.4	Frequency 243 MHz $\pm$ 12 kHz	242.988	<u>243.0034</u> MHz	243.012	<u>P</u> F
4.2.5	121.5 Mhz Modulation depth	N/A	<u>-41.5</u> dBc	-22dBc	<u>P</u> F
4.2.6	121.5 /243 Mhz Duty cycle	45%	<u>62</u> %	67%	<u>P</u> F
4.2.7	Max audio frequency	N/A	<u>1483</u> Hz	1600	<u>P</u> F
	Min audio frequency	300	<u>340</u> Hz	N/A	<u>P</u> F
	Max - Min	<u>N/A 700</u>	<u>1133</u> Hz	<u>700 N/A</u>	<u>P</u> F
4.2.8	Sweeps in 10 seconds	20	<u>30</u> count	40	<u>P</u> F

6830 N.W. 16th Terrace, Fort Lauderdale, FL 33309
(954) 975-2100 *Fax (954) 979-3313 * www.dmecorp.com



TEST DATA SHEETS
RF BEACON ASSEMBLY
P3-03-0041-001

RF beacon 406.028 Mhz Tests					
Para.	Description	Min.	Results	Max.	Pass / Fail (circle one)
4.3.1	Peak Power at 406.028 MHZ	35.0dBm	<u>36.4</u> dBm	N/A	<u>P</u> F
	Antenna gain including feeder and mismatch losses for 406.028 Mhz obtained from antenna field tests.	N/A	<u>.15</u> dB <u>1750</u>	N/A	N/A
	Peak power + antenna gain= EIRP	32.0dbm EIRP	<u>36.55</u> dBm <u>1770</u>	N/A	<u>P</u> F
4.3.2	Frequency Accuracy 406.028 MHz $\pm$ 1 kHz	406.0270	<u>406.0283</u> mHz	406.0290	<u>P</u> F

ORL
SQ01
DMS
K.P.

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PAGE 15 OF 15



TEST DATA SHEETS
RF BEACON ASSEMBLY
A3-07-1032

Tested By:

DATE:

RF PCB

(A3-07-0039) Serial Number:

DIGITAL PCB (A3-07-0038) Serial Number:

POST VSWR OPEN
TEST

9/11/2007

0002

0016

Test Equipment	Model	Serial No. or Control No.	Cal. Due
SPEAN	HP568B	0R3063	9/18/03
GENERATOR	HP8656B	0R1091	5/18/03
MODANA #1	HP8901B	0R1093	1/30/03
SLOPE	HP54510B	0R0677	8/29/03
TIME+FREQ ANA	HP5371A	2842A0060	6/11/03
MODANA #2 (for source)	HP8901B	SIN 3704A0571	2/11/03
POWER SENSOR	HP8481A	0R1092	1/24/03

ORL
5001
DME

AP

TEST DATA SHEETS
RF BEACON ASSEMBLY
A3-07-1032

SPECTRUM ANALYZER OFFSET DETERMINATION AND PRETEST					
Para.	Description	Min.	Results	Max.	Pass / Fail (circle one)
3.3	HP8656 setting for 121.5MHZ	-0.5	<u>0.3</u> dBm	+0.5	☒ P ☐ F
3.4	HP8656 setting for 243 MHZ	-0.5	<u>0.3</u> dBm	+0.5	☒ P ☐ F
3.5	HP8656 setting for 406.028 MHZ	-0.5	<u>0.3</u> dBm	+0.5	☒ P ☐ F

ORL
SQ01
DME

KP

RF beacon 121.5/243 Mhz Tests					
Para.	Description	Min.	Results	Max.	Pass / Fail (circle one)
4.1.1	Peak Power at 121.5 MHZ	17.0dBm	<u>19.6</u> dBm	N/A	☒ P ☐ F
	UUT current during 121.5/243 Mhz broadcast	N/A	<u>N/A</u> mA	100mA	☒ P ☐ F
4.1.2	Frequency 121.5 MHz $\pm$ 6 kHz	121.494	<u>121.5014</u> MHz	121.506	☒ P ☐ F
4.1.3	121.5 MHz Bandwidth $\geq$ +12.5 kHz	N/A	<u>-29.7</u> dBc	-25dBc	☒ P ☐ F
	121.5 MHz Bandwidth $\leq$ -12.5 kHz	N/A	<u>-29.2</u> dBc	-25dBc	☒ P ☐ F
	121.5 MHz Bandwidth $\geq$ +25 kHz	N/A	<u>-35.3</u> dBc	-30dBc	☒ P ☐ F
	121.5 MHz Bandwidth $\leq$ -25 kHz	N/A	<u>-34.6</u> dBc	-30dBc	☒ P ☐ F
4.1.4	Peak Power at 243 MHZ	17.0dBm	<u>20.5</u> dBm	N/A	☒ P ☐ F
4.1.5	Frequency 243 MHz $\pm$ 12 kHz	242.988	<u>243.0026</u> MHz	243.012	☒ P ☐ F
4.1.6	243 MHz Bandwidth $\geq$ +12.5 kHz	N/A	<u>-29.6</u> dBc	-25dBc	☒ P ☐ F
	243 MHz Bandwidth $\leq$ -12.5 kHz	N/A	<u>-29.80</u> dBc	-25dBc	☒ P ☐ F
	243 MHz Bandwidth $\geq$ +25 kHz	N/A	<u>-34.5</u> dBc	-30dBc	☒ P ☐ F
	243 MHz Bandwidth $\leq$ -25 kHz	N/A	<u>-35.7</u> dBc	-30dBc	☒ P ☐ F
4.1.7	121.5 Mhz Modulation depth	N/A	<u>-62.1</u> dBc	-22dBc	☒ P ☐ F
4.1.8	364.5 MHz harmonic	N/A	<u>-49.1</u> dBc	-30dBc	☒ P ☐ F
	486 MHz harmonic	N/A	<u>-52.3</u> dBc	-30dBc	☒ P ☐ F
4.1.9	121.5 /243 Mhz Duty cycle	45%	<u>61.7</u> %	67%	☒ P ☐ F

on MARCH

ORL
SQ01
DME

KP

TEST DATA SHEETS
RF BEACON ASSEMBLY
A3-07-1032

RF beacon 406.028 Mhz Tests					
Para.	Description	Min.	Results	Max.	Pass / Fail (circle one)
4.2.1	Peak Power at 406.028 MHZ	35.0dBm	<u>36.5</u> dBm	39.0dbm	(P) F
	UUT peak current during 406 Mhz broadcast	N/A	<u>N/A</u> A	1.7A	P F
4.2.2	406.028 MHz Bandwidth $\geq +12.0$ kHz	N/A	<u>-41.9</u> dBc	-30dBc	P F
	406.028 MHz Bandwidth ≤ -12.0 kHz	N/A	<u>-40.5</u> dBc	-30dBc	P F
	406.028 MHz Bandwidth $\geq +24$ kHz	N/A	<u>-53.8</u> dBc	-40dBc	P F
	406.028 MHz Bandwidth ≤ -24 kHz	N/A	<u>-52.2</u> dBc	-40dBc	P F
4.2.3	812 MHz harmonic	N/A	<u>-42.5</u> dBc	-30dBc	P F
4.2.4	406 pulse falling (starting edge) time	0.3	<u>0.855</u> msec	5.0	P F
4.2.5	406 pulse rising (stopping edge) time	0.3	<u>0.45</u> msec	5.0	P F
4.2.6	Total transmission pulse time measured with diode detector.	435.6	<u>442.29</u> msec	444.4	P F
4.2.7	Total transmission time burst spacing measured with diode detector.	47.5	<u>48.1</u> sec	52.5	P F
4.2.9	Phase modulation +1.10 radian peak	1.00	<u>1.1975</u> Rad	1.20	P F
4.2.10	Phase modulation -1.10 radian peak	-1.20	<u>-1.0741</u> Rad	-1.00	P F
4.2.11	Phase modulation rise time	50usec	<u>172.2</u> usec	250 usec	P F
4.2.12	Phase modulation fall time	50usec	<u>153.8</u> usec	250 usec	P F
4.2.13	Phase modulation rise/fall symmetry	N/A	<u>0.015</u> ratio	0.05	P F
4.2.14	Modulation Bit rate 400 bits/sec	396.0	<u>401.077</u> Hz	404.0	P F
4.2.15	CW preamble time	158.4	<u>160.97</u> msec	161.6	P F
4.2.16	NOAA HEX ID ID/SN matches programmed in	N/A	<u>ADD C07C01440401</u>	N/A	P F
4.2.17	Frequency Accuracy 406.028 MHz ± 1 kHz	406.0270	<u>406.02806</u> mHz	406.0290	P F
4.2.18	Short term stability	-2e-9	<u>372x10⁻¹²</u> n/a	2e-9	P F
4.2.19	medium term residual variation	-3e-9	<u>509x10⁻¹²</u> n/a	3e-9	P F
4.2.20	medium term slope	-1e-9	<u>492x10⁻¹²</u> n/a	1e-9	P F

ON MATTER



TEST DATA SHEETS
RF BEACON ASSEMBLY
A3-07-1032

BIST ,activation and B antenna output power tests					
Para.	Description	Min.	Results	Max.	Pass / Fail (circle one)
4.3.2	Beacon stays off	N/A	<u>✓</u> chk	N/A	P F
4.3.3	Beacon passes self test and goes off	N/A	<u>✓</u> chk	N/A	P F
4.3.4	Beacon transmits when load is connected to B antenna	N/A	<u>✓</u> chk	N/A	P F
4.3.6 (-002 version only)	Peak Power at 121.5 MHZ	17.0dBm	<u>N/A</u> dBm	N/A	P F
4.3.7 (-002 version only)	Peak Power at 243 MHZ	17.0dBm	<u>N/A</u> dBm	N/A	P F
4.3.8 (-002 version only)	Peak Power at 406.028 MHZ	35.0dBm	<u>N/A</u> dBm	39.0dBm	P F

ORL
SO01
DME

TEST DATA SHEETS
RF BEACON ASSEMBLY
A3-07-1032

Beacon Calibration factor recording				
Para.	Description	Under 0 deg c	0 to 35 deg c	Over 35 deg c
4.4.4	12 volt gain settings for 121/243 power (Q1 location)	3500	3300	3100
4.4.5	12 volt gain settings for 406 power (Q3 location)	0	0	0
4.4.6	406 phase modulation +1.1 radian (Q5 location)	1522	1522	1522
	406 phase modulation 0.0 radian (Q5 location)	998	998	998
	406 phase modulation -1.1 radian (Q5 location)	421	421	474
4.4.7	406 gain A (Q7 location)	2400	2300	2600
4.4.8	406 gain B (Q9 location)	2400	2400	2600
a.	Description	N/A	Time in msec	N/A
4.4.9	Preamble time. (Q11 location)	N/A	155.8	N/A
Para.	Description	Over voltage mode	Nominal voltage	Undervoltage mode
4.4.10	406 gain B offset (Q13 location)	0	0	0
Para.	Description	Over voltage mode	N/A	Undervoltage mode
4.4.11	Battery threshold (Q15 location)	11002	N/A	9001

ORL
SQ01
DME

FP

BEACON SN 2007_12_23_02postVSWR_opentest
TIME START 6:15:46 PM
DATE START 12/23/02

BEACON 121 OUTPUT POWER PASS
121 POWER PASS AT 19.60

BEACON 243 OUTPUT POWER PASS
243 POWER PASS AT 20.50

BEACON 406 OUTPUT POWER PASS
406 POWER PASS AT 36.50

BEACON 121 85% MINIMUM MODULATION DEPTH PASS
-22DB MODULATION DEPTH LIMIT -62.10

BEACON 243 85% MINIMUM MODULATION DEPTH PASS
-22DB MODULATION DEPTH LIMIT -53.80

BEACON DUTY CYCLE A PASS
DUTY CYCLE A PASS AT +6.17120E-01

AUDIO FREQ PASS
AUDIO FREQ LOW PASS AT +3.63607E+02
AUDIO FREQ HIGH PASS AT +1.46998E+03

BEACON 121 SIDEBAND PASS
CENTER FREQ PASS AT 121.5014E6

-25DB MAX VALUE FOR 12.5K TO 24.99K	12500	-29.70
-30DB MAX VALUE FOR 25.0K TO 44.00K	25500	-35.30
-25DB MAX VALUE FOR -12.5K TO -24.99K	-12500	-29.20
-30DB MAX VALUE FOR -25.0K TO -44.00K	-26500	-34.60

BEACON 243 SIDEBAND PASS
CENTER FREQ PASS AT 243.0026E6

-25DB MAX VALUE FOR 12.5K TO 24.99K	12500	-29.60
-30DB MAX VALUE FOR 25.0K TO 44.00K	25900	-34.50
-25DB MAX VALUE FOR -12.5K TO -24.99K	-12500	-29.80
-30DB MAX VALUE FOR -25.0K TO -44.00K	-26700	-35.70

BEACON 406 SIDEBAND PASS
CENTER FREQ PASS AT 406.02820E6

-20DB MAX VALUE FOR 3K TO 6.99K	3010	-24.70
-30DB MAX VALUE FOR 7K TO 11.99K	7040	-34.70
-35DB MAX VALUE FOR 12K TO 23.99K	12650	-41.90

DATA
TRANSCRIBED
TO Y1-02-1053
AND Y1-02-1054
DATA 9/4/8099
HLL





-40DB MAX VALUE FOR 24K TO 25K	24580	-53.80
-20DB MAX VALUE FOR -3K TO -6.99K	-3010	-24.70
-30DB MAX VALUE FOR -7K TO -11.99K	-7040	-33.40
-35DB MAX VALUE FOR -12K TO -23.99K	-12750	-40.50
-40DB MAX VALUE FOR -24K TO -25K	-24020	-52.20

Test Start 12/23/02, 6:53 PM

---MODULATION TEST---

PosPhase

UL = 1.2000000

LL = 1.0000000

Results = 1.1975572

NegPhase

UL = -1.0000000

LL = -1.2000000

Results = -1.0741460

Test Status: PASSED

---MOD_SYM TEST---

ModRise

UL = 0.0002500

LL = 0.0000500

Results = 0.0001722

ModFall

UL = 0.0002500

LL = 0.0000500

Results = 0.0001538

ModSym

UL = 0.0500000

LL = N/A

Results = 0.0153548

Test Status: PASSED

---DECODER TEST---

Baud

UL = 404.0000000

LL = 396.0000000

Results = 401.0777483

Preamble

UL = 0.161600

LL = 0.158400

Results = 0.160977

ID/SN: ADDC07C01440401

Test Status: PASSED

---FREQUENCY TEST---



MeanFreq

UL = 406.0290000E+6

LL = 406.0270000E+6

Results = 406.0280612E+6

ShortTerm

UL = 2.0000000E-9

LL = -2.0000000E-9

Results = 372.4739189E-12

MediumTerm

UL = 3.0000000E-9

LL = -3.0000000E-9

Results = 509.9684068E-12

MeanSlope

UL = 1.0000000E-9

LL = -1.0000000E-9

Results = 492.5651389E-12

Test Status: PASSED

Test Finished 12/23/02, 7:10 PM



HexID All bits
ADDC07C01440401 FFFE2F56EE03E00A20200C93EF50