

Attachment T
Humidity Test Results

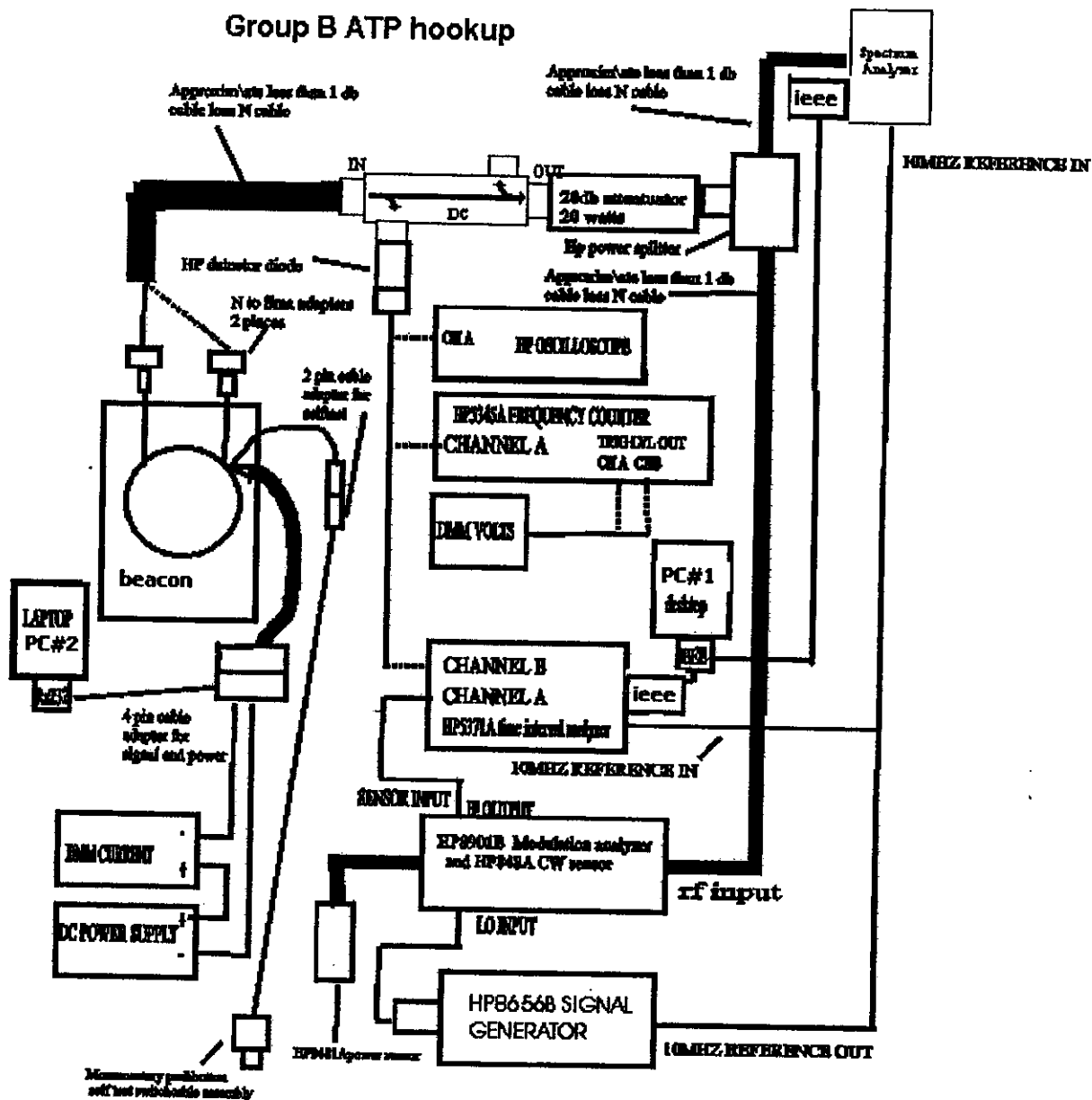
Qualification Data Sheet

Date: 10/11/02	Test: HUMIDITY
Test Unit Description	SRB-406 ELT, PN P3403-0041-001, revision 05, Serial # 2007
Test Unit Configuration	Antenna "A" PN A3-06-2053-001 rev 02 SN 0034 Antenna "B" PN A3-06-2053-001 rev 02 SN 0031 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)	Eurocae-ED 62, page 31, para 4.5.1
Pass/Fail Criteria	Eurocae-ED 62, page 31, para 4.5.1.1
Authorized Deviations	none
Test Location	QUALTEST, ORLANDO
Purchase Order #	—
Test Equipment Arrangement (if necessary)	Aluminum case for transmission buffer
List of Calibrated Equipment	—
DME Test Engineer	K. HEPPT
DME QA Representative	K. KOTYK
Lab Test Engineer/Technician	ED
Other Witness	MIKE WCOSTER
Test Unit Authorized Deviations	none
Test Data	1. pulled pin, unit remained off. 2. immersed ANT 'B', unit activated properly (3 seconds) 3. replaced pin, unit shut down properly. 4. repeated using ANT 'A'. → PASS
Data Reduction/Calculations	PASS
Test Deviations	none
Test Performed Prior to this Test	VIBRATION TEST
Next Test to be Performed	SPRAY TEST
Test Engineer Signature	Ken Kotyk
QA Signature	Ken Kotyk
Other Witness Signature	—
NMR #	—
Notes	—

DO204/183 Group B PC controlled ATP tests

- 1) OBTAIN dme DOC Y1-02-1053, Y1-02-1054 and DO-204,183 documents FOR REFERENCE AND SET UP.
- 2) Perform the Y1-02-1054 test procedure.
- 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 GROUP B HOOKUP.
- 5) Activate the "spur121.vi", "spur243.vi", and "spur406.vi" software on PC#1 with a serial number based 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 the beacon antenna A port to the test equipment and activate the beacon by removing the magnet.
- 8) Perform Y1-02-1053 tests after 15 minutes of warm up sequentially utilizing "spur121.vi", "spur243.vi", and "spur406.vi" on the PC#1 to collect the frequency and side band data needed by the Y1-02-1053 data sheet for paragraphs 4.1.2-3, 4.1.5-6, and 4.2.2 Run the "beaconminiexec.exe" software after to collect the 406 modulation information for the data sheet.
- 9) Perform the remaining paragraphs manually to finish up the data sheet.
- 10) Print all the "spur121.vi", "spur243.vi", and "spur406.vi" output data collected and the beaconminiexec.exe output data collected.

Group B ATP hookup



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

Tested By: W. H. H. H.

DATE: 11/13/02

Beacon P3-03-0041-001

Serial Number: 2007

ANT A=34
ANT B=31
RF = 9M2
DLE = 9M16
MATT = 020149

Test Equipment	Model	Serial No. or Control No.	Cal. Due
SPECAN	HP 8593	ORL 628	9/10/03
GENERATOR	HP 8656B	ORL 091	9/18/03
MOD AWA	HP 8901 B	ORL 093	11/30/03
TBR 500/3	TDS 7030	ORL 038	8/21/03
Power Meter	HP 7000A	ORL 588	9/12/03
CW GENERATOR	HP 8981A	ORL 0112	2/22/03



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>+0.2</u> dBm	+0.5	(P) F
3.5	HP8656 setting for 406.028 MHZ	-0.5	<u>+0.2</u> dBm	+0.5	(P) F

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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>✓</u> chk	N/A	(P) F
4.1.6	Beacon goes off when magnet is installed.	N/A	<u>✓</u> chk	N/A	(P) F

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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>20.46</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	N/A
	Peak power + antenna gain= EIRP	<u>20dbm</u> EIRP	<u>19.46</u> dBm	N/A	(P) F
4.2.2	Frequency 121.5 MHz $\pm$ 6 kHz	121.494	<u>121.502</u> MHz	121.506	(P) F
4.2.3	Peak Power at 243 MHZ	17.0dBm	<u>20.9</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	N/A
	Peak power + antenna gain= EIRP	<u>20dbm</u> EIRP	<u>24.8</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>-91.89</u> dBc	-22dBc	(P) F
4.2.6	121.5 /243 Mhz Duty cycle	45%	<u>62.0</u> %	67%	(P) F
4.2.7	Max audio frequency	N/A	<u>1918</u> Hz	1600	(P) F
	Min audio frequency	300	<u>383</u> Hz	N/A	(P) F
	Max - Min	<u>100</u>	<u>1035</u> Hz	<u>100</u> N/A	(P) F
4.2.8	Sweeps in 10 seconds	20	<u>30</u> count	40	(P) F



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>35.74</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> dB THO	N/A	N/A
	Peak power + antenna gain= EIRP	32.0dbm EIRP	<u>35.89</u> dBm THO	N/A	(P) F
4.3.2	Frequency Accuracy 406.028 MHz $\pm$ 1 kHz	406.0270	<u>406.028240</u> mHz	406.0290	(P) F

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SC001
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(K)

TEST DATA SHEETS
RF BEACON ASSEMBLY
A3-07-1032

TEST JWP
502

Tested By:

KH/MT

9/11/2007

DATE:

10/17/02

RF PCB

(A3-07-0039) Serial Number:

0002

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

0016

Test Equipment	Model	Serial No. or Control No.	Cal. Due
SPECTRUM	HP 8593	OR 628	9/10/03
GENERATOR	HP 8656	OR 091	9/8/03
MOD. ANT	HP 8901	OR 043	1/20/03
TBL SLOPE	ADS 3034	OR 3038	8/21/03
DMM	FLUKE 8020	OR 1090	6/14/03
TIME + PRR ANT	HP 5371A	2842A00760	6/11/03
POWER METER	HP 70100	6FBS88	9/12/03
CW GENERATOR	HP 8481A	6PB 0112	2/22/03

ORL
SC01
DME

KP

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>+0.2</u> dBm	+0.5	(P) F
3.5	HP8656 setting for 406.028 MHZ	-0.5	<u>+0.2</u> dBm	+0.5	(P) F

RF beacon 121.5/243 Mhz Tests

Para.	Description	Min.	Results	Max.	Pass / Fail (circle one)
	Peak Power at 121.5 MHZ	17.0dBm	<u>18.02</u> dBm	N/A	(P) F
	UUT current during 121.5/243 Mhz broadcast	N/A	<u>85</u> mA	100mA	(P) F
4.1.2	Frequency 121.5 MHZ $\pm$ 6 kHz	121.494	<u>121.5015</u> MHz	121.506	(P) F
4.1.3	121.5 MHz Bandwidth $\geq$ +12.5 kHz	N/A	<u>-28.3</u> dBc	-25dBc	(P) F
	121.5 MHz Bandwidth $\leq$ -12.5 kHz	N/A	<u>-28.46</u> dBc	-25dBc	(P) F
	121.5 MHz Bandwidth $\geq$ +25 kHz	N/A	<u>-32.08</u> dBc	-30dBc	(P) F
	121.5 MHz Bandwidth $\leq$ -25 kHz	N/A	<u>-32.78</u> dBc	-30dBc	(P) F
4.1.4	Peak Power at 243 MHZ	17.0dBm	<u>18.89</u> dBm	N/A	(P) F
4.1.5	Frequency 243 MHZ $\pm$ 12 kHz	242.988	<u>243.0038</u> MHz	243.012	(P) F
4.1.6	243 MHz Bandwidth $\geq$ +12.5 kHz	N/A	<u>-26.27</u> dBc	-25dBc	(P) F
	243 MHz Bandwidth $\leq$ -12.5 kHz	N/A	<u>-26.67</u> dBc	-25dBc	(P) F
	243 MHz Bandwidth $\geq$ +25 kHz	N/A	<u>-31.69</u> dBc	-30dBc	(P) F
	243 MHz Bandwidth $\leq$ -25 kHz	N/A	<u>-32.15</u> dBc	-30dBc	(P) F
4.1.7	121.5 Mhz Modulation depth	N/A	<u>-38.28</u> dBc	-22dBc	(P) F
4.1.8	364.5 MHz harmonic	N/A	<u>-46.9</u> dBc	-30dBc	(P) F
	486 MHz harmonic	N/A	<u>-48.7</u> dBc	-30dBc	(P) F
4.1.9	121.5 /243 Mhz Duty cycle	45%	<u>61</u> %	67%	(P) F

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>36.16</u> dBm	39.0dbm	(P) F
	UUT peak current during 406 Mhz broadcast	N/A	<u>1.60</u> A	1.7A	(P) F
4.2.2	406.028 MHz Bandwidth $\geq +12.0$ kHz	N/A	<u>-36.39</u> dBc	-30dBc	(P) F
	406.028 MHz Bandwidth ≤ -12.0 kHz	N/A	<u>-35.08</u> dBc	-30dBc	(P) F
	406.028 MHz Bandwidth $\geq +24$ kHz	N/A	<u>-45.57</u> dBc	-40dBc	(P) F
	406.028 MHz Bandwidth ≤ -24 kHz	N/A	<u>-44.47</u> dBc	-40dBc	(P) F
4.2.3	812 MHz harmonic	N/A	<u>-41.46</u> dBc	-30dBc	(P) F
4.2.4	406 pulse falling (starting edge) time	0.3	<u>.856</u> msec	5.0	(P) F
4.2.5	406 pulse rising (stopping edge) time	0.3	<u>1.201</u> msec	5.0	(P) F
	Total transmission pulse time measured with diode detector.	435.6	<u>442.5</u> msec	444.4	(P) F
4.2.7	Total transmission time burst spacing measured with diode detector.	47.5	<u>51.52</u> sec	52.5	(P) F
4.2.9	Phase modulation +1.10 radian peak	1.00	<u>1.1139</u> Rad	1.20	(P) F
4.2.10	Phase modulation -1.10 radian peak	-1.20	<u>-1.0357</u> Rad	-1.00	(P) F
4.2.11	Phase modulation rise time	50usec	<u>167.0</u> usec	250 usec	(P) F
4.2.12	Phase modulation fall time	50usec	<u>151.8</u> usec	250 usec	(P) F
4.2.13	Phase modulation rise/fall symmetry	N/A	<u>0.9161</u> ratio	0.05	(P) F
4.2.14	Modulation Bit rate 400 bits/sec	396.0	<u>402.19</u> Hz	404.0	(P) F
4.2.15	CW preamble time	158.4	<u>160.874</u> msec	161.6	(P) F
4.2.16	NOAA HEX ID ID/SN matches programmed in	N/A	<u>NOAA 020110101</u>	N/A	(P) F
4.2.17	Frequency Accuracy 406.028 MHz ± 1 kHz	406.0270	<u>406.028106</u> mHz	406.0290	(P) F
4.2.18	Short term stability	-2e-9	<u>8681012</u> n/a	2e-9	(P) F
4.2.19	medium term residual variation	-3e-9	<u>39581012</u> n/a	3e-9	(P) F
4.2.20	medium term slope	-1e-9	<u>55881012</u> n/a	1e-9	(P) F

ORL
SQ01
DME

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

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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	2400	2600
4.4.8	406 gain B (Q9 location)	2400	2900	2600
Para.	Description	N/A	Time in msec	N/A
4.4.9	Preamble time. (Q11 location)	N/A	1550	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	9003

ORL
SO01
DME

Test Start 10/13/02, 1:49 PM

---MODULATION TEST---

PosPhase

UL = 1.2000000

LL = 1.0000000

Results = 1.1139562

NegPhase

UL = -1.0000000

LL = -1.2000000

Results = -1.0357747

Test Status: PASSED

---MOD_SYM TEST---

ModRise

UL = 0.0002500

LL = 0.0000500

Results = 0.0001676

ModFall

UL = 0.0002500

LL = 0.0000500

Results = 0.0001518

ModSym

UL = 0.0500000

LL = N/A

Results = 0.0161493

Test Status: PASSED

---DECODER TEST---

Baud

UL = 404.0000000

LL = 396.0000000

Results = 402.1912257

Preamble

UL = 0.161600

LL = 0.158400

Results = 0.160874

ID/SN: ADDC07C01440401

Test Status: PASSED

---FREQUENCY TEST---

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MeanFreq

UL = 406.0290000E+6

LL = 406.0270000E+6

Results = 406.0281061E+6

ShortTerm

UL = 2.0000000E-9

LL = -2.0000000E-9

Results = 86.0936205E-12

MediumTerm

UL = 3.0000000E-9

LL = -3.0000000E-9

Results = 395.7667295E-12

MeanSlope

UL = 1.0000000E-9

LL = -1.0000000E-9

Results = 558.5072976E-12

Test Status: PASSED

Test Finished 10/13/02, 2:07 PM

13:05:15 OCT 18, 2002

REF 14.0 dBm

AT 30 dB

MKR Δ 0 Hz

35.15 dB

PEAK

LOG

10

dB/

RECALL: REG
State recalled

MA SB
SC FS
CORR

CENTER 406.0280 MHz
RES BW 1.0 kHz

VBW 1 kHz

SPAN 100.0 kHz
SWP 300 msec

MARKER
+ CF

MARKER
A

NEXT
PEAK

NEXT PK
RIGHT

NEXT PK
LEFT

More
1 of 2

*VENT GUPPO
EOR
9/11/2007*

*ALX
PRM*

ORL
SCOT
DME

CP