

**Attachment R**  
**Vibration Test Result**

## 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.



ISO 9001  
CERTIFIED  
REGISTERED FIRM  
FM 39229

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

POST  
VIBRATION  
PRE HUMIDITY

Tested By:

*[Signature]*

DATE:

10/7/02

Beacon P3-03-0041-001

Serial Number:

02007

ANT A=0034  
ANT B=001  
RF=9N2  
DIG=9N16  
MATT=020149  
TESTED  
WITH  
50.2  
LOAD

| Test Equipment | Model   | Serial No. or Control No. | Cal. Due |
|----------------|---------|---------------------------|----------|
| SPEAKER        | HP8593  | OR628                     | 9/6/03   |
| GEARBOX        | HP8636B | OR1091                    | 9/8/03   |
| MOD PWA        | HP8901B | OR1093                    | 1/30/03  |
| TBK SCOPE      | TD93034 | ORL 7078                  | 8/2/03   |
| CN TAILOK      | HP8481A | ORL1092                   | 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 | <u>f0.3</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>+0.2</u> dBm | +0.5 | (P) F                    |

| 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                    |

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>20.05</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<br><u>FB0</u>   | N/A                        | N/A                      |
|       | Peak power + antenna gain= EIRP                                                                    | <u>17</u> <del>20</del> dbm<br>EIRP | <u>19.05</u> dBm<br><u>FB0</u> | N/A                        | (P) F                    |
| 4.2.2 | Frequency 121.5 MHz $\pm$ 6 kHz                                                                    | 121.494                             | <u>121.5020</u> MHz            | 121.506                    | (P) F                    |
| 4.2.3 | Peak Power at 243 MHZ                                                                              | 17.0dBm                             | <u>20.81</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<br><u>FB0</u>    | N/A                        | N/A                      |
|       | Peak power + antenna gain= EIRP                                                                    | <u>17</u> <del>20</del> dbm<br>EIRP | <u>24.51</u> dBm<br><u>FB0</u> | N/A                        | (P) F                    |
| 4.2.4 | Frequency 243 MHz $\pm$ 12 kHz                                                                     | 242.988                             | <u>243.0035</u> MHz            | 243.012                    | (P) F                    |
| 4.2.5 | 121.5 Mhz Modulation depth                                                                         | N/A                                 | <u>-42</u> dBc                 | -22dBc                     | P F                      |
| 4.2.6 | 121.5 /243 Mhz Duty cycle                                                                          | 45%                                 | <u>61%</u> %                   | 67%                        | (P) F                    |
| 4.2.7 | Max audio frequency                                                                                | N/A                                 | <u>1470</u> Hz                 | 1600                       | (P) F                    |
|       | Min audio frequency                                                                                | 300                                 | <u>362</u> Hz                  | N/A                        | (P) F                    |
|       | Max - Min                                                                                          | <u>100</u> <del>N/A</del>           | <u>1108</u> Hz                 | <u>1700</u> <del>N/A</del> | (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>35.69</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<br><u>FBO</u>   | N/A      | N/A                      |
|                             | Peak power + antenna gain= EIRP                                                                      | 32.0dbm EIRP | <u>35.84</u> dBm<br><u>FBO</u> | N/A      | (P) F                    |
| 4.3.2                       | Frequency Accuracy 406.028 MHz $\pm$ 1 kHz                                                           | 406.0270     | <u>406.0285</u> mHz            | 406.0290 | (P) F                    |

*Wt pass*  
  


☐☐Test Start 10/7/02, 8:51 AM

---MODULATION TEST---

PosPhase

UL = 1.2000000

LL = 1.0000000

Results = 1.0792807

NegPhase

UL = -1.0000000

LL = -1.2000000

Results = -1.0340551

Test Status: PASSED

---MOD\_SYM TEST---

ModRise

UL = 0.0002500

LL = 0.0000500

Results = 0.0001662

ModFall

UL = 0.0002500

LL = 0.0000500

Results = 0.0001578

ModSym

UL = 0.0500000

LL = N/A

Results = 0.0169690

Test Status: PASSED

---DECODER TEST---

Baud

UL = 404.0000000

LL = 396.0000000

Results = 402.1904579

Preamble

UL = 0.161600

LL = 0.158400

Results = 0.160873

ID/SN: ADDC07C01440401

Test Status: PASSED

---FREQUENCY TEST---

MeanFreq

UL = 406.0290000E+6

LL = 406.0270000E+6

Results = 406.0281106E+6

ShortTerm

UL = 2.0000000E-9

LL = -2.0000000E-9

Results = 261.1529195E-12

MediumTerm

UL = 3.0000000E-9

LL = -3.0000000E-9

Results = 693.9534034E-12

MeanSlope

UL = 1.0000000E-9

LL = -1.0000000E-9

Results = 886.9354372E-12

Test Status: PASSED

Test Finished 10/7/02, 9:09 AM

Handwritten signature and initials.

ORL  
SQ01  
DME

TEST DATA SHEETS  
RF BEACON ASSEMBLY  
A3-07-1032

p3-07-0041-001  
3/11/2007

Tested By: [Signature]

DATE: 10/7/03

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 |
|----------------|-------------|---------------------------|----------|
| 9/BECAW        | HP8543      | OR628                     | 9/10/03  |
| 6/BECAW        | HP8543      | OR1091                    | 5/8/03   |
| 400 ANA        | HP8901      | OR1093                    | 1/30/03  |
| 500 9000       | HP8901      | OR1093                    | 1/30/03  |
| 2W 9000        | HP8901      | OR1093                    | 1/30/03  |
| DUM            | FLUKE 8020A | 10M1090                   | 6/14/03  |
| TIMET FREQU    | HP8971      | 2812A00700                | 6/11/03  |
|                |             |                           |          |
|                |             |                           |          |
|                |             |                           |          |
|                |             |                           |          |
|                |             |                           |          |

ORAL  
FOOT  
ONE  
RP

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>-0.2</u> dBm | +0.5 | (P) F                    |

KH  
PA 2/9

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>17.15</u> dBm    | N/A     | (P) F                    |
|       | UUT current during 121.5/243 Mhz broadcast | N/A     | <u>84</u> mA        | 100mA   | (P) F                    |
| 4.1.2 | Frequency 121.5 MHz $\pm$ 6 kHz            | 121.494 | <u>121.5018</u> MHz | 121.506 | (P) F                    |
| 4.1.3 | 121.5 MHz Bandwidth $\geq$ +12.5 kHz       | N/A     | <u>-27.71</u> dBc   | -25dBc  | (P) F                    |
|       | 121.5 MHz Bandwidth $\leq$ -12.5 kHz       | N/A     | <u>-27.43</u> dBc   | -25dBc  | (P) F                    |
|       | 121.5 MHz Bandwidth $\geq$ +25 kHz         | N/A     | <u>-34.31</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>18.82</u> dBm    | N/A     | (P) F                    |
| 4.1.5 | Frequency 243 MHz $\pm$ 12 kHz             | 242.988 | <u>243.0033</u> MHz | 243.012 | (P) F                    |
| 4.1.6 | 243 MHz Bandwidth $\geq$ +12.5 kHz         | N/A     | <u>-27.55</u> dBc   | -25dBc  | (P) F                    |
|       | 243 MHz Bandwidth $\leq$ -12.5 kHz         | N/A     | <u>-28.32</u> dBc   | -25dBc  | (P) F                    |
|       | 243 MHz Bandwidth $\geq$ +25 kHz           | N/A     | <u>-34.89</u> dBc   | -30dBc  | (P) F                    |
|       | 243 MHz Bandwidth $\leq$ -25 kHz           | N/A     | <u>-34.62</u> dBc   | -30dBc  | (P) F                    |
| 4.1.7 | 121.5 Mhz Modulation depth                 | N/A     | <u>-39.49</u> dBc   | -22dBc  | (P) F                    |
| 4.1.8 | 364.5 MHz harmonic                         | N/A     | <u>-45.35</u> dBc   | -30dBc  | (P) F                    |
|       | 486 MHz harmonic                           | N/A     | <u>-49.65</u> dBc   | -30dBc  | (P) F                    |
| 4.1.9 | 121.5 /243 Mhz Duty cycle                  | 45%     | <u>61%</u> %        | 67%     | (P) F                    |

ORL  
SC01  
DME

KH  
PA 2/9

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>35.65</u> dBm      | 39.0dbm  | (P) F                    |
|        | UUT peak current during 406 Mhz broadcast                           | N/A      | <u>1.50</u> A         | 1.7A     | (P) F                    |
| 4.2.2  | 406.028 MHz Bandwidth $\geq +12.0$ kHz                              | N/A      | <u>-35.60</u> dBc     | -30dBc   | (P) F                    |
|        | 406.028 MHz Bandwidth $\leq -12.0$ kHz                              | N/A      | <u>-35.32</u> dBc     | -30dBc   | (P) F                    |
|        | 406.028 MHz Bandwidth $\geq +24$ kHz                                | N/A      | <u>-48.89</u> dBc     | -40dBc   | (P) F                    |
|        | 406.028 MHz Bandwidth $\leq -24$ kHz                                | N/A      | <u>-47.32</u> dBc     | -40dBc   | (P) F                    |
| 4.2.3  | 812 MHz harmonic                                                    | N/A      | <u>-43.77</u> dBc     | -30dBc   | (P) F                    |
| 4.2.4  | 406 pulse falling (starting edge) time                              | 0.3      | <u>.825</u> msec      | 5.0      | (P) F                    |
| 4.2.5  | 406 pulse rising (stopping edge) time                               | 0.3      | <u>.928</u> msec      | 5.0      | (P) F                    |
| 4.2.6  | Total transmission pulse time measured with diode detector.         | 435.6    | <u>442.8</u> msec     | 444.4    | (P) F                    |
| 4.2.7  | Total transmission time burst spacing measured with diode detector. | 47.5     | <u>51.22</u> sec      | 52.5     | (P) F                    |
| 4.2.9  | Phase modulation +1.10 radian peak                                  | 1.00     | <u>1.079</u> Rad      | 1.20     | (P) F                    |
| 4.2.10 | Phase modulation -1.10 radian peak                                  | -1.20    | <u>-1.039</u> Rad     | -1.00    | (P) F                    |
| 4.2.11 | Phase modulation rise time                                          | 50usec   | <u>166.2</u> usec     | 250 usec | (P) F                    |
| 4.2.12 | Phase modulation fall time                                          | 50usec   | <u>157.8</u> usec     | 250 usec | (P) F                    |
| 4.2.13 | Phase modulation rise/fall symmetry                                 | N/A      | <u>0.0169</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>0.160873</u> msec  | 161.6    | (P) F                    |
| 4.2.16 | NOAA HEX ID ID/SN matches programmed in                             | N/A      | <u>ADDC0K01440401</u> | N/A      | (P) F                    |
| 4.2.17 | Frequency Accuracy 406.028 MHz $\pm 1$ kHz                          | 406.0270 | <u>406.028110</u> mHz | 406.0290 | (P) F                    |
| 4.2.18 | Short term stability                                                | -2e-9    | <u>2618.072</u> n/a   | 2e-9     | (P) F                    |
| 4.2.19 | medium term residual variation                                      | -3e-9    | <u>6934.072</u> n/a   | 3e-9     | (P) F                    |
| 4.2.20 | medium term slope                                                   | -1e-9    | <u>8864.072</u> n/a   | 1e-9     | (P) F                    |

ORL  
5001  
DME  
KP

UUT  
PASS

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     | <input checked="" type="checkbox"/> chk | N/A     | <input checked="" type="radio"/> P <input type="radio"/> F |
| 4.3.3                                             | Beacon passes self test and goes off                 | N/A     | <input checked="" type="checkbox"/> chk | N/A     | <input checked="" type="radio"/> P <input type="radio"/> F |
| 4.3.4                                             | Beacon transmits when load is connected to B antenna | N/A     | <input checked="" type="checkbox"/> chk | N/A     | <input checked="" type="radio"/> P <input type="radio"/> F |
| 4.3.6 (-002 version only)                         | Peak Power at 121.5 MHZ                              | 17.0dBm | <del>N/A</del> dBm                      | N/A     | <input type="radio"/> P <input type="radio"/> F            |
| 4.3.7 (-002 version only)                         | Peak Power at 243 MHZ                                | 17.0dBm | <del>N/A</del> dBm                      | N/A     | <input type="radio"/> P <input type="radio"/> F            |
| 4.3.8 (-002 version only)                         | Peak Power at 406.028 MHZ                            | 35.0dBm | <del>N/A</del> dBm                      | 39.0dBm | <input type="radio"/> P <input type="radio"/> F            |

ORL  
5001  
DME

CK

NUT  
PASS

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<br>(Q1 location) | 3500              | 3300            | 3100              |
| 4.4.5                               | 12 volt gain settings for 406 power<br>(Q3 location)     | 0                 | 0               | 0                 |
| 4.4.6                               | 406 phase modulation +1.1 radian<br>(Q5 location)        | 1522              | 1522            | 1522              |
|                                     | 406 phase modulation 0.0 radian<br>(Q5 location)         | 998               | 998             | 198               |
|                                     | 406 phase modulation -1.1 radian<br>(Q5 location)        | 421               | 421             | 474               |
| 4.4.7                               | 406 gain A<br>(Q7 location)                              | 2400              | 2500            | 2600              |
| 4.4.8                               | 406 gain B<br>(Q9 location)                              | 2400              | 2500            | 2600              |
| Para.                               | Description                                              | N/A               | Time in msec    | N/A               |
| 4.4.9                               | Preamble time.<br>(Q11 location)                         | N/A               | 1518            | N/A               |
| Para.                               | Description                                              | Over voltage mode | Nominal voltage | Undervoltage mode |
| 4.4.10                              | 406 gain B offset<br>(Q13 location)                      | 0                 | 0               | 0                 |
| Para.                               | Description                                              | Over voltage mode | N/A             | Undervoltage mode |
| 4.4.11                              | Battery threshold<br>(Q15 location)                      | 11002             | N/A             | 900               |

KH  
OK

ORL  
SOOT  
DME  
CR