dme CORPORATION

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ORIGINAL

ACCEPTANCE TEST PROCEDURE
for the
SRB, Model 406

Where used: A3-07-1032

Y1-02-1053

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FM 39229

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REVISIONS

Revision	Date	Change Description	Approval
-	021016	ERN-SRB/406-07	J. KOTYK
A	030326	INC NOR (-)1	C Middleton

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1.0 PURPOSE

The purpose of this procedure is to electrically test the SRB-406 beacon in accordance with the specifications outlined in the DO-183, DO-204 and C/S T.007

2.0 REQUIRED EQUIPMENT AND DOCUMENTS (or equivalent)

2.1 Equipment

Digital Multimeter 3 required	Fluke 8060A
Oscilloscope	HP54510B
Spectrum Analyzer	HP8593A
Modulation Analyzer with CW probe	HP8901B analyzer ; Probe HP8481A
Time interval analyzer	HP5371A
RF Signal Generator	HP8656B
Frequency Counter	HP5345A
Scanning Test Receiver, AM 121.5/243 MHz	IFR FM/AM 500
1 Directional Coupler	NARDA Model 3020A
20 db attentuator 20watts sma (f)-sma (f)	Inmet 2066-20F
Power splitter	Hp11667A
Desktop PC with Labview measurement software with control software and GPIB card	As required
Laptop PC for downloading and modifying cal factors and beacon satellite codes and serial number (with Hyper-Term terminal emulation software [supplied with windows])	As required
Test cable to connect beacon to power supply and laptop RS 232	As required
Coax Adapters to interconnect diode detector ,attenuator, and RF reference	As required.
Empty beacon case to test –002 dual antenna beacons.	AS required.
Beacon deactivation test magnet and tether (used with empty beacon case and to deactivate –001 beacon during tests)	AS required
Detector diode	HP8473B
Cables to connect to directional coupler main output and detector diode. (BNC)	RG58
Cables with approximate <1db loss (N) to be used with directional coupler input and output.	QMI KU1818-48

2.2 Documents

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Assembly Drawing beacon	A3-07-1032
Schematic RF board	Y1-01-0039
Schematic digital board	Y1-01-0038
Firmware boot code	S2-04-0016
Beacon control code (executable)	S2-04-0009
VDD for the Beacon Programmer Software	9350005
VDD for SRB 406 Qualification Testing Control	9350006
VDD for the Acceptance Test Program Software	9350007

3.0 SETUP INSTRUCTIONS AND SPECTRUM ANALYZER DB OFFSET DETERMINATION

3.1 ZERO/CAL the HP8901B power meter sensor function with the HP 8481A sensor at 50 MHZ frequency mode using the HP8901B front panel cal connector. Connect the equipment as shown in Figure 1.

3.2 Set the HP8901B frequency mode to 121.5 MHZ then change to the power meter mode. Connect the HP8481A power sensor to the HP8656B RF output connector.

3.3 Set the HP8656B to 121.5 **MHZ** and both AM and FM modulation set to OFF. Adjust the HP8656B amplitude (in 0.1 db increments) till the HP8901B reads 0.00 dbm +/- 0.05. **Record** the amplitude setting on the HP8656B to obtain that level.

3.4 Set the HP8656B to 243 **MHZ** and both AM and FM modulation set to OFF. Set the HP8901B frequency mode to 243 HZ then change to the power meter mode. Adjust the HP8656B amplitude (in 0.1 db increments) till the HP8901B reads 0.00 dbm +/- 0.05. **Record** the amplitude setting on the HP8656B to obtain that level.

3.5 Set the HP8656B to 406.028 **MHZ** and both AM and FM modulation set to OFF. Set the HP8901B frequency mode to 406.028HZ then change to the power meter mode. Adjust the HP8656B amplitude (in 0.1 db increments) till the HP8901B reads 0.00 dbm +/- 0.05. **Record** the amplitude setting on the HP8656B to obtain that level.

3.6 Remove the sensor from the HP8656B generator and put it aside. Place an N (m) to SMA (f) adapter on the HP8656B RF output.

3.7 Connect the coupler input cable to the HP8656B RF output.

3.8 Set the HP8656B to **121.5 MHZ** and both AM and FM modulation set to OFF. Set the HP8656B to the power level recorded in **paragraph 3.3** Set the Spectrum analyzer center frequency for **121.5 MHz**, and span frequency of 10MHZ, an amplitude of **+14dBm** and use **manual 2 sec sweep.** Use MARKER PEAK SEARCH and MARKER DELTA to normalize the spectrum analyzer. Use the **store location 1** on the spectrum analyzer to hold the setup and normalized reading.

3.9 Set the HP8656B to **243 MHZ** and both AM and FM modulation set to OFF. Set the HP8656B to the power level recorded in **paragraph 3.4** Set the Spectrum analyzer center frequency for **243 MHz**, and span frequency of 10MHZ, an amplitude of **+14dBm** and use **manual 2 sec sweep.** Use MARKER PEAK SEARCH and MARKER DELTA to normalize the spectrum analyzer. Use the **store location 2** on the spectrum analyzer to hold the setup and normalized reading.

3.10 Set the HP8656B to **406.028 MHZ** and both AM and FM modulation set to OFF. Set the HP8656B to the power level recorded in **paragraph 3.5** Set the Spectrum analyzer center frequency for **406.028 MHz**, and span frequency of 100 kHz, an amplitude of **+14dBm** and use **auto sweep**. Use MARKER PEAK SEARCH and MARKER DELTA to normalize the spectrum analyzer. Use the **store location 3** on the spectrum analyzer to hold the setup and normalized reading.

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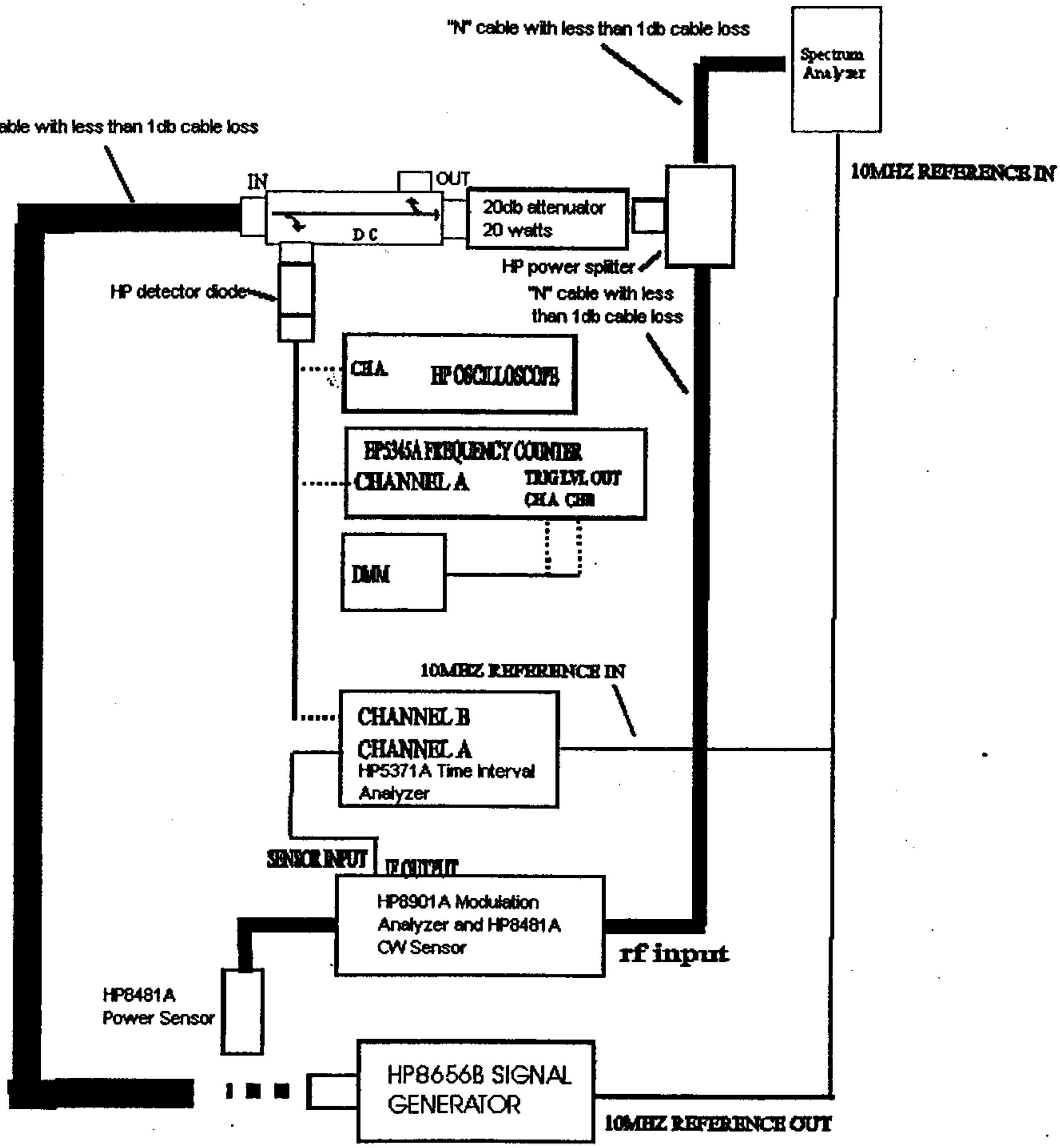

-------- Indicates alternate connections

Figure 1 System Pre-Test Setup

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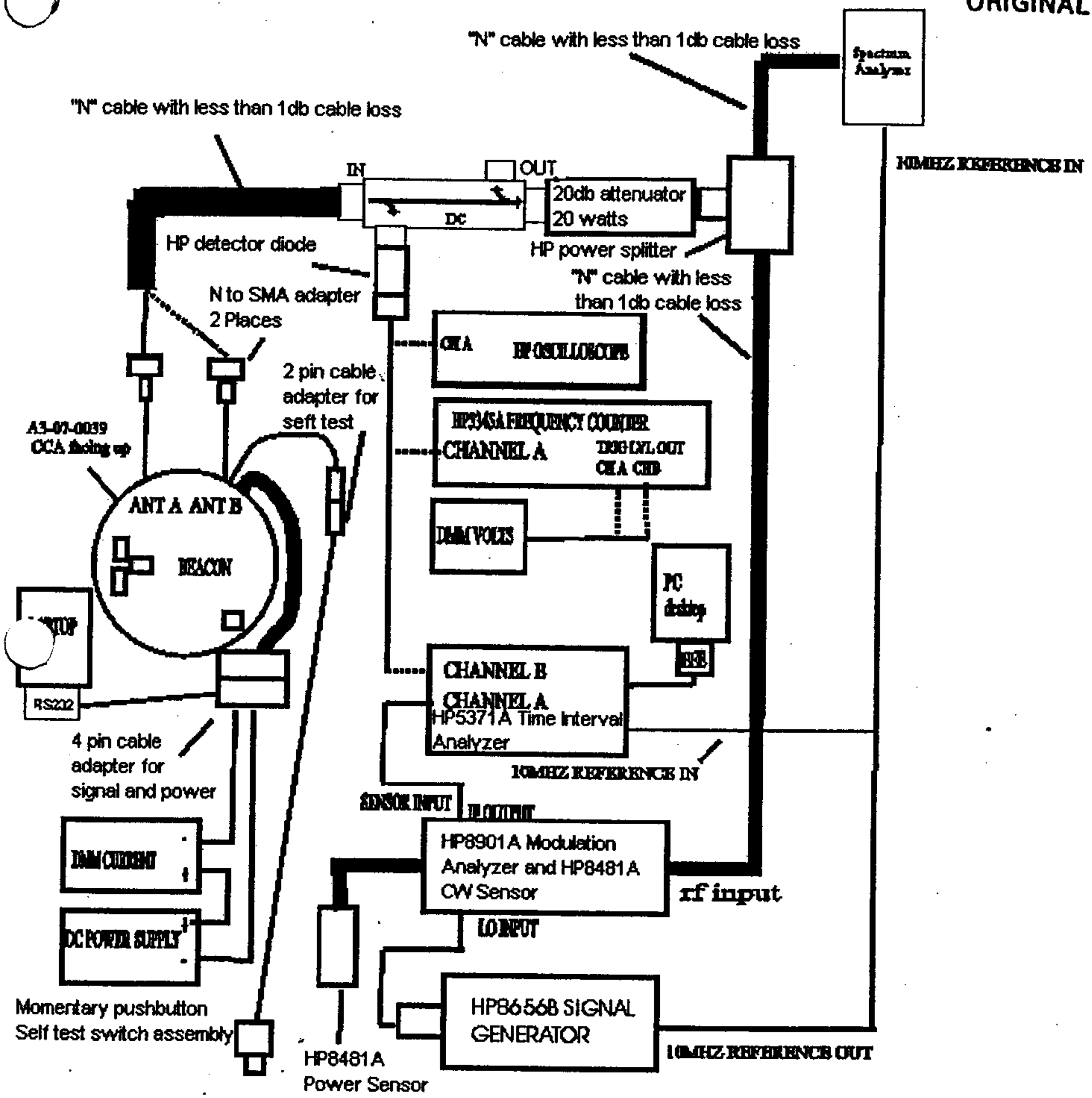

-------- Indicates alternate connections

Figure 1A System Test Setup

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4.0 RF Beacon Tests

4.1 RF beacon 121.5/243 Mhz Operational Parameters

Output Power @ 121.5/243MHz	+17dbm min into a 50ohm load
10 V power supply current	100mA max (modulation on all loads VCO on)
Harmonics 364.5 and 486 MHz	-30 dBc max
Bandwidth	
$\pm$12.5 kHz to $\pm$ 24.99 kHz	$\leq$ -25 dB
$\pm$25 kHz or greater	$\leq$ -30 dB

4.1.1 **NOTE: For single antenna output versions only (ie –001 beacons). For dual antenna versions (ie –002) perform paragraph 4.1.1A instead.** (Note: the empty beacon test case is not necessary for this version since no antenna orientation sensor is installed) Connect the equipment as shown in Figure 1A with the directional coupler input cable connected to the beacon antenna A output. Turn the HP8656b **RF output ON/OFF to OFF.** Set up the laptop PC with the Hyper-term software loaded and running. Connect the beacon test cable RS232 connector to the RS232 port of the laptop. Set the power supply to 10VDC at 3 amps maximum current limit. Set DMM connected to the power supply to display the UUT current in mA (use 2000ma range). Use the **recall location 1** on the spectrum analyzer to obtain the setup and normalized reading for the 121.5Mhz signal. Place beacon test magnet next to reed switch on the digital board to keep the unit off when the supply is turned on. Turn on the power supply output and note there is no swept tone from the scanner receiver set to 121.5MHZ or current drawn from the power supply. Remove the magnet from the reed switch. Note there is a **swept tone, current is drawn** from the supply, the beacon LED "single blinks" (blink is equal to ¼ second) every few seconds, and the **laptop reads "pass self test". Use MARKER PEAK SEARCH.** Measure and record on the test data sheet the output power and the average power supply current on the power supply current DMM.

4.1.1A **NOTE: For Dual antenna output versions only (ie –002 beacons). For single antenna versions (ie –001) perform paragraph 4.1.1 instead.** Mount the beacon CCA pair inside an empty beacon case without routing the RF cables through the antenna A and B holes on the case (Note: the test case is necessary for the antenna orientation sensor to be correctly positioned for antenna A or B output tests). Lay the case on its side so that the Antenna A connector is on top and the antenna B connector is closer to the table. Connect the equipment as shown in Figure 1A with the directional coupler input cable connected to the beacon antenna A output. Turn the HP8656b **RF output ON/OFF to OFF.** Set the power supply to 10VDC at 3 amps maximum current limit. Set DMM connected to the power supply to display the UUT current in mA (use 2000ma range). Use the **recall location 1** on the spectrum analyzer to obtain the setup and normalized reading for the 121.5Mhz signal. Place beacon test magnet in the beacon case recess that holds the magnet in place to keep the unit off when the supply is turned on. Turn on the power supply output and note there is no swept tone from the scanner receiver set to 121.5MHZ or current drawn from the power supply. Remove the magnet from the case recess. Note there is a **swept tone, current is drawn** from the supply,and the **laptop reads pass self test. Use MARKER PEAK SEARCH.** Measure and record on the test data sheet the output power and the average power supply current on the power supply current DMM.

4.1.2 Set the span frequency for 100KHZ . Set the TRACE HOLD on and let the display "fill in" the modulation peaks on the Spectrum analyzer display for at least 20 seconds. Use normal MARKER PEAK SEARCH (marker delta off) on the spectrum analyzer and read the marker peak frequency. Measure and record on the test data sheet the 121.5 Mhz marker frequency.

4.1.3 Set the TRACE HOLD on and let the display "fill in" the modulation peaks on the Spectrum analyzer display for at least 20 seconds. Use MARKER PEAK SEARCH and MARKER DELTA to perform the bandwidth checks at $\pm$12.5 kHz and $\geq$ $\pm$25 kHz. Record results on the test data sheet.

4.1.4 Use the **recall location 2** on the spectrum analyzer to obtain the setup and normalized reading for the 243 Mhz signal. Use MARKER PEAK SEARCH. Measure and record on the test data sheet the output power.

4.1.5 Set the span frequency for 100KHZ . Set the TRACE HOLD on and let the display "fill in" the modulation peaks on the Spectrum analyzer display for at least 20 seconds. Use normal MARKER PEAK SEARCH (marker delta off) on the spectrum analyzer and read the marker peak frequency. Measure and record on the test data sheet the 243 Mhz marker frequency.

4.1.6 Set the TRACE HOLD on and let the display "fill in" the modulation peaks on the Spectrum analyzer display for at least 20 seconds. Use MARKER PEAK SEARCH and MARKER DELTA to perform the bandwidth checks at $\pm$12.5 kHz and $\geq$ $\pm$25 kHz. Record results on the test data sheet.

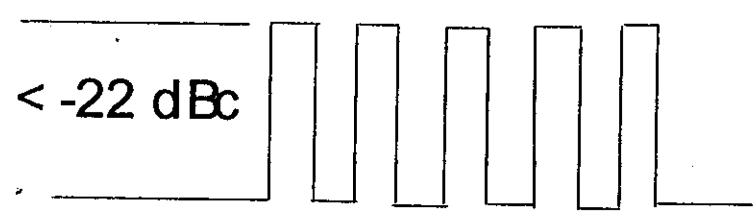

Figure 4. Modulation Depth

4.1.7 Set the TRACE HOLD off and SWEEP TIME to AUTO. Set RESOLUTION BANDWIDTH to 3 MHz. Set the span frequency for 3 MHz. Set the sweep for SINGLE SWEEP. Use MARKER PEAK SEARCH and MARKER DELTA to perform the modulation depth check. This is accomplished by moving the DELTA MARKER to a modulation "valley" to determine the modulation "depth" from its peak. The "valley" must be less than -22 dBc (i.e. this equates to >85% modulation). See Figure 4. It is typically below –35dBc. Record results on the test data sheet.

4.1.8 Set the Spectrum analyzer start frequency for 10 MHz, and stop frequency for 550 MHz, an amplitude of 0dB, a sweep time of 2 seconds and the BW to AUTO to display the harmonics levels (dBc) of 364.5 MHz and 486 MHz. Use MARKER PEAK SEARCH and MARKER DELTA to perform the harmonic check at 364.5 MHz and 486 MHz. Record results on the test data sheet

4.1.9 Connect the diode detector output directly to the scope input. Set the oscilloscope controls to view the negative going pulse whose pulse width and period are constantly varying. (note: disregard the large 406 MHZ pulse every 50 seconds or so) Use the normal mode and level adjustment to capture a waveform duty cycle on the scope and verify that the positive pulse width duty cycle is between 45% and 67%. If the scope has the ability calculate the duty cycle internally then turn that mode on and record the average reading. Record results on the test data sheet.

4.2 RF beacon 406.028 Mhz Operational Parameters

Output Power @ 406.028MHz	+35-39 dbm into a 50ohm load
10 V power supply current	1.7 amps max (peak current occurring every 50 seconds)
Harmonics 812 MHz	-30 dBc max
Bandwidth at 1khz resolution BW	
$\pm$12 kHz to $\pm$ 23.99 kHz	$\leq$ -30 dB
$\pm$ 24.0 kHz or greater	$\leq$ -40 dB

4.2.1 Turn the HP8656b RF output **ON/OFF to OFF.** Remove the laptop RS232 connection from the rear of the laptop. (Note: the laptop sometimes adds unwanted spurs to the paragraph 4.2.2 tests). Use the **recall location 3** on the spectrum analyzer to obtain the setup and normalized reading for the 406.028 Mhz signal. Set the TRACE HOLD on and let the display "fill in" the modulation peaks on the Spectrum analyzer display for at least 5 minutes. Use MARKER PEAK SEARCH. Measure and record on the test data sheet the output power and peak current burst that occurs about every 50 seconds on the power supply current DMM.

4.2.2 With the modulation peaks still filled in from paragraph 4.2.1, Use MARKER PEAK SEARCH and MARKER DELTA to perform the bandwidth checks at $\pm$12.0 kHz and $\geq \pm$24 kHz. Record results on the test data sheet.

4.2.3 Set the TRACE HOLD off . Set the Spectrum analyzer start frequency for 350 MHz, and stop frequency for 900 MHz, an amplitude of 14dB, SWEEP TIME to AUTO , and the BW to AUTO to display the harmonics levels (dBc) of 812 MHZ. . Set the TRACE HOLD on and let the display "fill in" the modulation peaks on the Spectrum analyzer display for at least 1 minute. Use MARKER PEAK SEARCH and MARKER DELTA to perform the harmonic check at 812 MHz. Record results on the test data sheet

4.2.4 Connect the diode detector output directly to the scope input. Set the oscilloscope controls to view the **negative going pulse edge** whose pulse width and period occur every 50 seconds. (note: trigger level to be set to approximately negative 0.5 to negative 1VDC and disregard the smaller 121.5/243 pulses) Use the normal mode and level adjustment to capture a **falling edge** and verify that the fall time is between 300usec and 5 msec taken at the –30% and -95% points Record results on the test data sheet.

4.2.5 Connect the diode detector output directly to the scope input. Set the oscilloscope controls to view the **positive going pulse edge** whose pulse width and period occur every 50 seconds. (note: trigger level to be set to approximately negative 0.5 to negative 1VDC and disregard the smaller 121.5/243 pulses) Use the normal mode and level adjustment to capture a **rising edge** and verify that the rise time is between 300usec and 5 msec taken at the –30% and -95% points. Record results on the test data sheet.

4.2.6 Connect the diode detector output directly to the frequency counter input channel A. Set the counter to time interval A to B. Gate time to min and digits to auto. Set the remaining switches as follows: channel A falling (-) edge 1Mohm input X1 attenuation and trigger level set to –0.75 volt using Dmm connected to trigger level output A on rear of counter ;channel B rising (+) edge 1Mohm input X1 attenuation and trigger level set to –0.75 volt using Dmm connected to trigger level output B on rear of counter. Set input switch to common. (note: the measurement takes about 55 seconds to complete) Record results on the test data sheet.

4.2.7 Connect the diode detector output directly to the frequency counter input channel A. Set the counter to time period A . Gate time to min and digits to auto. Set the remaining switches as follows: channel A falling (-) edge 1Mohm input X1 attenuation and trigger level set to –0.75 volt using Dmm connected to trigger level output A on rear of counter . Set input switch to separate . (note: the measurement takes about 50 – 160 seconds to complete) Record results on the test data sheet.

4.2.8 Reconnect diode output to the HP5371A channel B. Set up the desktop PC beacon miniexec software to run all four 406 Mhz modulation tests. Set the **HP8656B** to **407.528 Mhz at 0.0 dbm** . Set the **HP8901B** to frequency mode at **406.028 Mhz with range hold on**. Start running the software after the beacon has been on for more than 15 minutes. Save results to a file based on serial number and record the results in the following paragraphs.

4.2.9 Record positive phase deviation measurement from the software.

4.2.10 Record negative phase deviation measurement from the software.

4.2.11 Record modulation rise time measurement from the software.

4.2.12 Record modulation fall time measurement from the software.

4.2.13 Record modulation symmetry measurement from the software.

4.2.14 Record baud rate measurement from the software.

4.2.15 Record preamble time measurement from the software.

4.2.16 Record mean frequency measurement from the software.

4.2.17 Record NOAA HEX ID/SN from the software. Verify it matches the one programmed for that specific beacon serial number.

4.2.18 Record short term deviation measurement from the software.

4.2.19 Record medium term deviation measurement from the software.

4.2.20 Record mean slope measurement from the software.

4.3 **BIST ,activation and B antenna output power tests**

4.3.1 Turn off the power supply and disconnect the antenna cable from the unit. Place test magnet near digital board (A3-07-0038) reed switch (single mode antenna) or in the beacon recess on the test case (for dual mode antenna).

4.3.2 Turn on power supply, then remove the magnet and verify that the beacon stays off (no swept sound from scanner) and the beacon LED does not light up. Record results on the test data sheet.

4.3.3 Place test magnet near digital board (A3-07-0038) reed switch (single mode antenna) or in the beacon recess on the test case (for dual mode antenna). Press the beacon test switch and verify the beacon LED "double blinks" (blink is equal to ¼ second) about every few seconds for about 60 seconds indicating the beacon self test passes and then goes off. Record results on the test data sheet.

4.3.4 With the power supply still on, connect the antenna test cable back up to the antenna B port. Remove the magnet and verify the unit starts to transmit (swept sound from scanner) and the beacon LED "single blinks" (blink is equal to ¼ second) every few seconds. Record results on the test data sheet.

4.3.5 Turn power supply off.

4.3.6 **NOTE: For Dual antenna output versions only (ie –002 beacons) do not perform for single antenna beacons (ie. -001)** Mount the beacon CCA pair inside an empty beacon case without routing the RF cables through the antenna A and B holes on the case. Lay the case on its side so that the **Antenna B connector is on top and the antenna A connector is closer to the table.** Connect the equipment as shown in Figure 1A with the directional coupler input cable connected to the beacon **antenna B output**. Turn the HP8656b **RF output ON/OFF to OFF.** Use the **recall location 1** on the spectrum analyzer to obtain the setup and normalized reading for the 121.5Mhz signal. Place beacon test magnet in the beacon case recess that holds the magnet in place to keep the unit off when the supply is turned on. Turn on the power supply output and note there is no swept tone from the scanner receiver set to 121.5MHZ or current drawn from the power supply. Remove the magnet from the case recess. Note there is a **swept tone, current is drawn** from the supply, the beacon **LED "single blinks"** (blink is equal to ¼ second) every few seconds and the **laptop reads pass self test. Use MARKER PEAK SEARCH.** Measure and record on the test data sheet the output power .

4.3.7 **NOTE: For Dual antenna output versions only (ie –002 beacons) do not perform for single antenna beacons (ie. -001)** Use the **recall location 2** on the spectrum analyzer to obtain the setup and normalized reading for the 243 Mhz signal. Use MARKER PEAK SEARCH. Measure and record on the test data sheet the output power.

4.3.8 **NOTE: For Dual antenna output versions only (ie –002 beacons) do not perform for single antenna beacons (ie. -001)** Use the **recall location 3** on the spectrum analyzer to obtain the setup and normalized reading for the 406.028 Mhz signal. Set the TRACE HOLD on and let the display "fill in" the modulation peaks on the Spectrum analyzer display for at least 5 minutes after the beacon was turned on for at least 4 minutes. Use MARKER PEAK SEARCH. Measure and record on the test data sheet the output power .

4.3.9 Turn power supply off.

4.4 Beacon Calibration factor recording

4.4.1 Turn power supply off.

4.4.2 Set up the laptop PC with the Hyper-term software loaded and running. Connect the beacon test cable RS232 connector to the RS232 port of the laptop as shown in figure 1A.

4.4.3 Press the beacon test switch while turning the power supply on. Monitor the 30 second countdown response on the laptop in the Hyperterm software window. Press return on the laptop before the 30 seconds is completed . The laptop screen should then show "debug"

4.4.4 Press "Q" then "ENTER" and "1" then "ENTER". Record the default or modified cal factors on the test data sheet.

4.4.5 Press "Q" then "ENTER" and "3" then "ENTER". Record the default or modified cal factors on the test data sheet.

4.4.6 Press "Q" then "ENTER" and "5" then "ENTER". Record the default or modified cal factors on the test data sheet.

4.4.7 Press "Q" then "ENTER" and "7" then "ENTER". Record the default or modified cal factors on the test data sheet.

4.4.8 Press "Q" then "ENTER" and "9" then "ENTER". Record the default or modified cal factors on the test data sheet.

4.4.9 Press "Q" then "ENTER" and "11" then "ENTER". Record the default or modified cal factors on the test data sheet.

4.4.10 Press "Q" then "ENTER" and "13" then "ENTER". Record the default or modified cal factors on the test data sheet.

4.4.11 Press "Q" then "ENTER" and "15" then "ENTER". Record the default or modified cal factors on the test data sheet.

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: ____________________

Test Equipment	Model	Serial No. or Control No.	Cal. Due

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	____________dBm	+0.5	P F
3.4	HP8656 setting for 243 MHZ	-0.5	____________dBm	+0.5	P F
3.5	HP8656 setting for 406.028 MHZ	-0.5	____________dBm	+0.5	P F

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	____________ dBm	N/A	P F
	UUT current during 121.5/243 Mhz broadcast	N/A	____________ mA	100mA	P F
4.1.2	Frequency 121.5 MHz ± 6 kHz	121.494	____________MHz	121.506	P F
4.1.3	121.5 MHz Bandwidth ≥+12.5 kHz	N/A	____________ dBc	-25dBc	P F
	121.5 MHz Bandwidth ≤-12.5 kHz	N/A	____________ dBc	-25dBc	P F
	121.5 MHz Bandwidth ≥ +25 kHz	N/A	____________ dBc	-30dBc	P F
	121.5 MHz Bandwidth ≤ -25 kHz	N/A	____________ dBc	-30dBc	P F
4.1.4	Peak Power at 243 MHZ	17.0dBm	____________ dBm	N/A	P F
4.1.5	Frequency 243 MHz ± 12 kHz	242.988	____________MHz	243.012	P F
4.1.6	243 MHz Bandwidth ≥+12.5 kHz	N/A	____________ dBc	-25dBc	P F
	243 MHz Bandwidth ≤-12.5 kHz	N/A	____________ dBc	-25dBc	P F
	243 MHz Bandwidth ≥ +25 kHz	N/A	____________ dBc	-30dBc	P F
	243 MHz Bandwidth ≤ -25 kHz	N/A	____________ dBc	-30dBc	P F
4.1.7	121.5 Mhz Modulation depth	N/A	____________dBc	-22dBc	P F
4.1.8	364.5 MHz harmonic	N/A	____________ dBc	-30dBc	P F
	486 MHz harmonic	N/A	____________ dBc	-30dBc	P F
4.1.9	121. 5 /243 Mhz Duty cycle	45%	____________%	67%	P F

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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	________dBm	39.0dbm	P F
	UUT peak current during 406 Mhz broadcast	N/A	________A	1.7A	P F
4.2.2	406.028 MHz Bandwidth ≥+12.0 kHz	N/A	________dBc	-30dBc	P F
	406.028 MHz Bandwidth ≤-12.0 kHz	N/A	________dBc	-30dBc	P F
	406.028 MHz Bandwidth ≥ +24 kHz	N/A	________dBc	-40dBc	P F
	406.028 MHz Bandwidth ≤ -24 kHz	N/A	________dBc	-40dBc	P F
4.2.3	812 MHz harmonic	N/A	________dBc	-30dBc	P F
4.2.4	406 pulse falling (starting edge) time	0.3	________msec	5.0	P F
4.2.5	406 pulse rising (stopping edge) time	0.3	________msec	5.0	P F
4.2.6	Total transmission pulse time measured with diode detector.	435.6	________msec	444.4	P F
4.2.7	Total transmission time burst spacing measured with diode detector.	47.5	________sec	52.5	P F
4.2.9	Phase modulation +1.10 radian peak	1.00	________Rad	1.20	P F
4.2.10	Phase modulation -1.10 radian peak	-1.20	________Rad	-1.00	P F
4.2.11	Phase modulation rise time	50usec	________usec	250 usec	P F
4.2.12	Phase modulation fall time	50usec	________usec	250 usec	P F
4.2.13	Phase modulation rise/fall symmetry	N/A	________ratio	0.05	P F
4.2.14	Modulation Bit rate 400 bits/sec	396.0	________Hz	404.0	P F
4.2.15	CW preamble time	158.4	________msec	161.6	P F
4.2.16	NOAA HEX ID ID/SN matches programmed in	N/A	________	N/A	P F
4.2.17	Frequency Accuracy 406.028 MHz ± 1 kHz	406.0270	________mHz	406.0290	P F
4.2.18	Short term stability	-2e-9	________n/a	2e-9	P F
4.2.19	medium term residual variation	-3e-9	________n/a	3e-9	P F
4.2.20	medium term slope	-1e-9	________n/a	1e-9	P F

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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	____________ chk	N/A	P F
4.3.3	Beacon passes self test and goes off	N/A	____________ chk	N/A	P F
4.3.4	Beacon transmits when load is connected to B antenna	N/A	____________ chk	N/A	P F
4.3.6 (-002 version only)	Peak Power at 121.5 MHZ	17.0dBm	____________ dBm	N/A	P F
4.3.7 (-002 version only)	Peak Power at 243 MHZ	17.0dBm	____________ dBm	N/A	P F
4.3.8 (-002 version only)	Peak Power at 406.028 MHZ	35.0dBm	____________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)			
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	