

TEST NUMBER - 136-01

TESTING TO

INDUSTRY CANADA RSS 210 SECTION 6.2.2m
FEDERAL COMMUNICATIONS COMMISSION CFR47 PART15.249

Low Power License-Exempt Radiocommunication Devices
Intentional Radiators

for

Leprecon/CAE, Inc.
PO Box 430
Hamburg, MI 48139-0430
810-231-9373

of

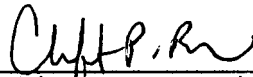
Focus Brain

FCC ID:PPV-FOCUSTX900

on

3/7/01

Tested by



Clifton P. Brick

Reviewed by



Larry K. Stillings

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TEST DESCRIPTION

1. TEST OBJECTIVE

To test the Focus Brain Brain to RSS 210 / Part 15 Subpart C Rules and write a report.

2. E.U.T. DESCRIPTION

GENERAL

The Focus Brain Brain is a momentarily operated 900MHz Low Power Transmitter device used as a remote control for the Focus lighting controller system.

SERIAL NUMBERS:

Production Prototype

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TEST RESULTS AND CONCLUSIONS

PRODUCT TESTED - Focus Brain

MODEL NUMBER - Brain

RADIATED TEST RESULTS

The test results show that the emissions radiated from this equipment are in compliance with IC Rules RSS 210 / FCC Rules Part 15 Subpart C.

OCCUPIED BANDWIDTH & OUTPUT POWER

The test results show that the occupied bandwidth and output power of this equipment are in compliance with IC Rules RSS 210 / FCC Rules Part 15 Subpart C .

CONDUCTED TEST RESULTS

The test results show that the emissions conducted through the power line from this equipment are in compliance with IC Rules RSS 210 / FCC Rules Part 15 Subpart C.

ANALYSIS AND CONCLUSIONS

Based upon the radiated and conducted measurements we find that this equipment is within the limits of the IC Rules RSS 210 / FCC Rules Part 15 Subpart C. All results are based on a test of one sample, and represent other production units, only in as much as a sample represents other production units. If any significant changes are made to the unit, the changes shall be evaluated and a retest may be required.

NOTES (Special conditions unique to this test)

EUT is battery powered only.

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TEST PROCEDURES

1. TEST EQUIPMENT

- A. HP 8546A (9 kHz - 6.5 GHz) EMI Receiver w/ RF Filter Section, S/N 3704A00323 / 3650A00360. Calibration Date 7-18-2000, calibrated annually.
- B. HP 8593E (9 kHz - 26.5 GHz) Spectrum Analyzer, S/N 3829A03887. Calibration Date 10-21-2000, calibrated annually.
- C. Electro-Metrics BiConical Antenna, Model EM6912A, S/N 149. Calibration Date 1-2-2001, calibrated annually.
- D. Electro-Metrics Log Periodic Antenna, Model EM-6950, S/N 1017. Calibration Date: 1-2-2000, calibrated annually.
- E. Com Power Double Ridged Guide Antenna, Model AH118, S/N 10078. Calibration Date: 8-11-2000, calibrated annually.
- F. HP 1 - 26.5 GHz Preamplifier, Model 08449B, S/N 3008A01323. Calibration Date: 10-21-2000, calibrated annually.
- G. LISN, Compliance Worldwide, Model 50 μ H / 50 ohm, S/N 100. Calibration Date 2-22-2001, calibrated annually.

2. FREQUENCY RANGE TO BE SCANNED.

- A. Radiated Test from 30 MHz to 40 GHz (or the 10th harmonic of the highest frequency whichever is lower).
- B. Conducted Test from 450 kHz to 30 MHz.

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3. TEST PROCEDURES.

Radiated test procedure:

The EUT, associated cables and peripheral devices are placed on the supporting table and any support equipment is placed off the site. The EUT is turned on and any necessary operating or test software installed and allowed to warm up. The frequency band from 30 MHz to 40 GHz is scanned. When an emission is found the emission is maximized by varying the bundle position of the connecting cables, the antenna height, the antenna polarization (vertical and horizontal) and the table orientation (360 degrees). The maximum reading is recorded and the next signal is searched for.

Conducted test procedure:

The power line of the EUT is connected to the LISN (Line Impedance Stabilization Network). A measurement of the emissions are made from the power line for both phase and neutral on the analyzer in the frequency range from 450 kHz to 30 MHz. The maximum readings are recorded for each phase.

All measurements are made according to the procedures defined in: "ANSI C63.4-1992 Standard Methods of Measurement of Radio Noise Emissions from Low-Voltage Electrical and Electronics Equipment in the Range of 9 kHz to 40 GHz, American National Standard for (ISBN 1-55937-215-5).

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RSS 210 TEST LIMITS

1. RSS 210 Section 6.2.2, Table 3 Radiation Limits (Quasi-Peak):
FCC Part 15.209, 15.235, 15.249 Radiation Limits (Quasi-Peak):

Frequency MHz	Distance meters	Limit dB μ V/m	Limit μ V/m
1.705 - 30	30	29.5*	30*
30 - 88	3	40.0	100
49.82 - 49.90	3	80.0*	10,000*
88 - 216	3	43.5	150
216 - 960	3	46.0	200
902 - 928	3	94.0*	50,000*
960 - 1000	3	54.0	500
1000 - 40000	3	54.0*	500*

*NOTE: Average Limits

2. RSS 210 Section 6.6a Conduction Limits (Quasi-Peak):
FCC Part 15.207 Conduction Limits (Quasi-Peak)

Frequency MHz	Limit dB μ V/m	Limit μ V/m
0.450 - 30.0	48.0	250

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TEST FACILITY DESCRIPTION

Compliance Worldwide is located on 357 Main Street in Sandown, New Hampshire. The conducted and radiated test sites, located at C.W. are used for Federal Communications Commission (FCC) testing and Industry Canada Testing. A site description is on file with the FCC in Columbia, MD USA. Site information is also on file with Industry Canada, anyone wishing to review this Test Facility Description is referred to file number **IC 3023**. This is currently on file at Industry Canada, 1241 Clyde Avenue, Ottawa, ON K2C 1Y3.

The radiated site is a 3/10 meter indoor site with an enclosure for the product and a basement for the personnel, support equipment and test equipment.

The conducted site is part of a 16' x 20' x 12' ferrite tile chamber and uses one of the walls for the vertical metal wall required by EN 55022.

Both sites are designed to test products or systems 1.5 meter x 1.0 meter, floor standing or table top.

DATE ON FILE FCC: August 10, 2000

DATE ON FILE IC: August 11, 2000

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**TEST SET UP
AND
PERIPHERAL CONNECTION INFORMATION**

EUT

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PLEASE NOTE - EUT (equipment under test) is Focus Brain.

The cables directly connected to this equipment are listed below.
Please see below for a complete list of FCC ID's etc. on the
supporting equipment.

Connection Descriptions

1. No Cables were associated with this test
(description)

(from device)

(to device)

CABLE LENGTH _____ (S) SHIELDED or (U) UNSHIELDED _____

2. N/A
(description)

(from device)

(to device)

CABLE LENGTH _____ (S) SHIELDED or (U) UNSHIELDED _____

3. N/A
(description)

(from device)

(to device)

CABLE LENGTH _____ (S) SHIELDED or (U) UNSHIELDED _____

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RADIATED TEST RESULTS

Frequency Range: 30 - 9280.
Measurement Distance: 3.0 Meters.
Bandwidth: 120 kHz, Per ANSI C63.4-1992.*
Detector Functions: Peak, Quasi Peak, Average
Video Filter: 300 kHz
Table Height: 0.8 meters
Antenna Height Variation: 1 - 4 Meters.
Horizontal and Vertical Polarization Measurements Taken.

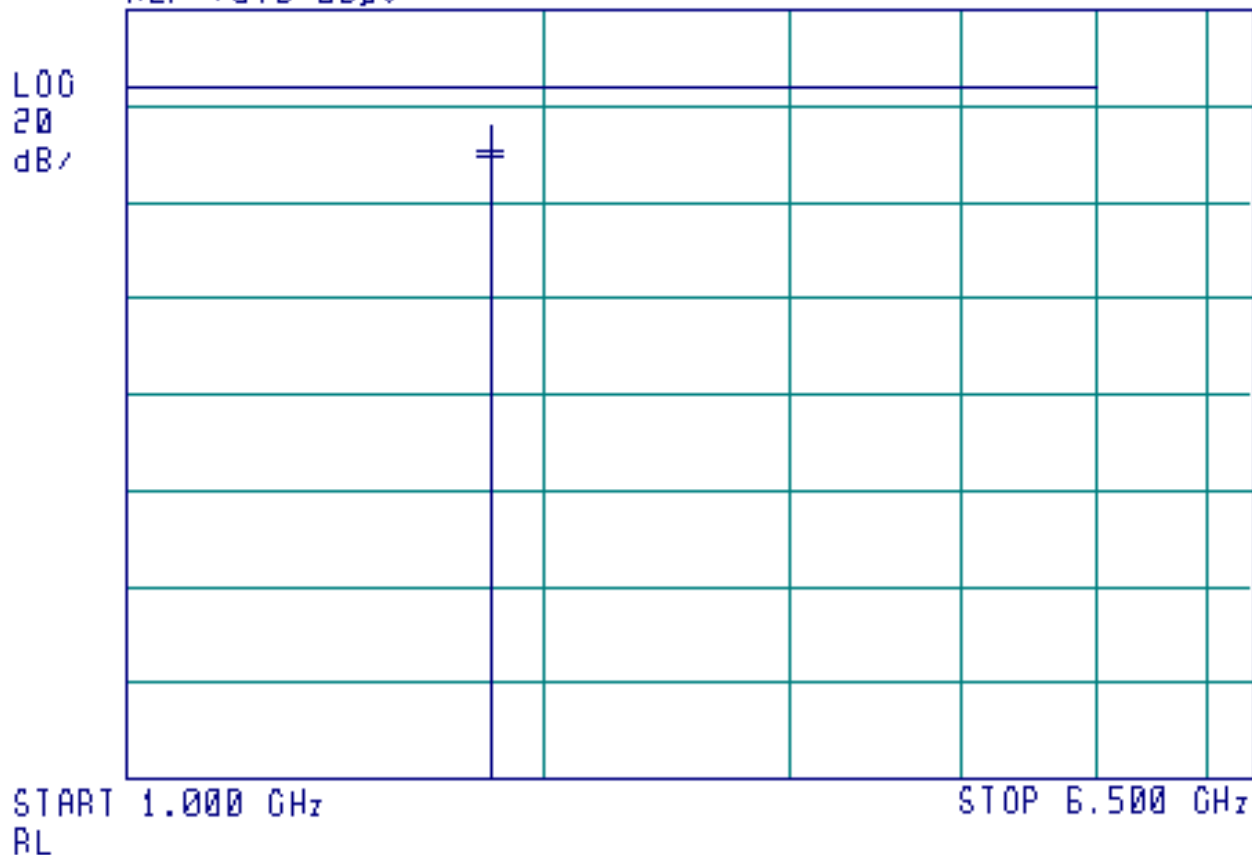
*Measurement Bandwidth is 1 MHz above 1 GHz

PLEASE SEE NEXT PAGE FOR RADIATED TEST DATA

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Radiated Horizontal Data Log Plot

11:53:53 MAR 07, 2001 RADIATED HORIZONTAL
LEPRECON/CAE FOCUS BRAIN TEST#136-01
REF 70.0 dBμV



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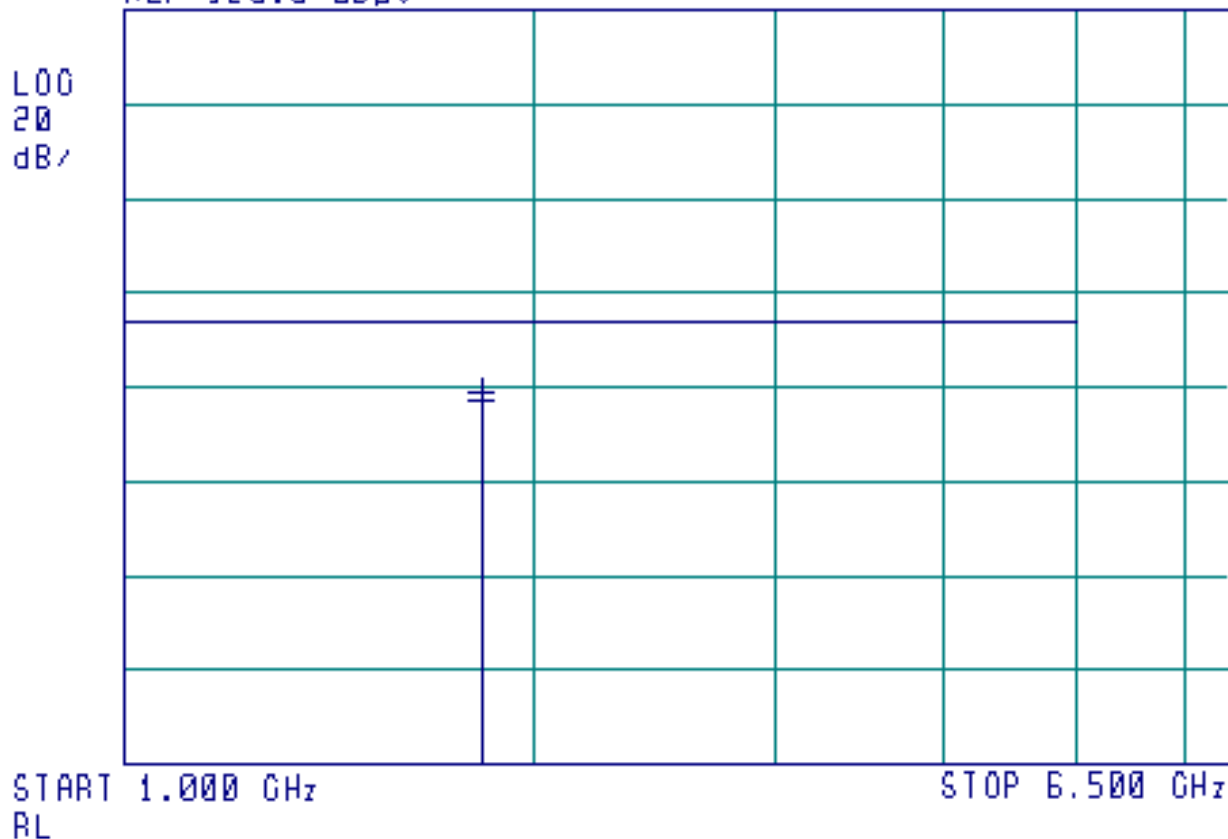
Radiated Horizontal Tabular Data

Freq (MHz)	Azimuth (Degrees)	Antenna Height (Meters)	Peak Amp (dBuV)	Avg Amp (dBuV)	Avg Limit (dBuV)	Avg Margin (dB)
1,829.082003	334	1.3	46.44	39.69	54.00	-14.31
2743.6	>20dB Below Limit					
3658.1						
4572.6						
5487.2						

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Radiated Vertical Data Log Plot

11:58:36 MAR 07, 2001 RADIATED VERTICAL
LEPRECON/CAE FOCUS BRAIN TEST#136-01
REF 120.0 dBμV



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Radiated Vertical Tabular Data

Freq (MHz)	Azimuth (Degrees)	Antenna Height (Meters)	Peak Amp (dBuV)	Avg Amp (dBuV)	Avg Limit (dBuV)	Avg Margin (dB)
1,829.082003	328	1.6	41.95	37.74	54.00	-16.26
2743.6	>20dB Below Limit					
3658.1						
4572.6						
5487.2						

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RADIATED OUTPUT POWER & OCCUPIED BANDWIDTH TEST RESULTS

Frequency Range: 902 - 928 MHz.

Measurement Distance: 3.0 Meters.

Bandwidth: As Noted, Per ANSI C63.4-1992.

Detector Functions: Peak, Quasi Peak, Average.

Video Filter: 300 kHz

Table Height: 0.8 meters

Antenna Height Variation: 1 - 4 Meters.

Horizontal and Vertical Polarization Measurements Taken, Worst Case Reported.

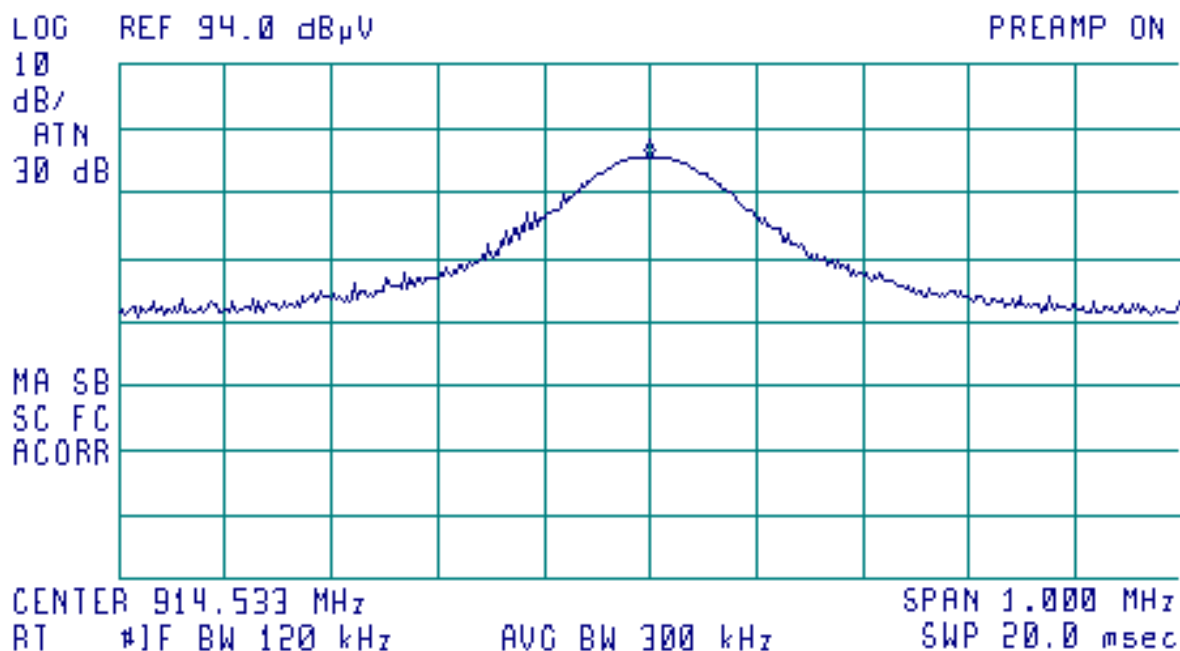
PLEASE SEE NEXT PAGE(S) FOR OCCUPIED BANDWIDTH RADIATED TEST DATA

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Output Power Plot

11:15:52 MAR 07, 2001 TRANSMITTER POWER VERT.
LEPRECON/CAE FOCUS BRAIN TEST#136-01

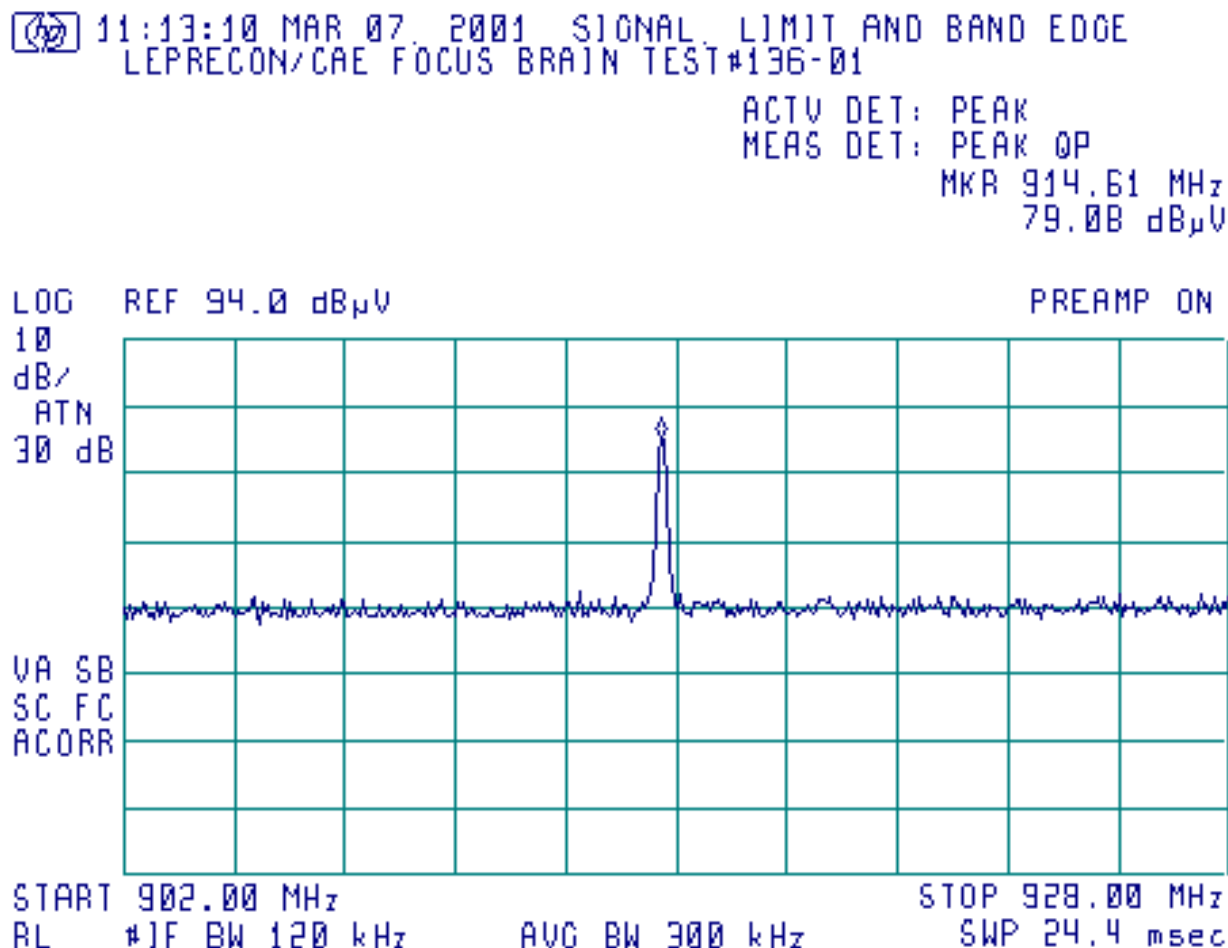
FREQ 914.5 MHz
PEAK 79.5 dB μ V
QP 79.2 dB μ V
AVG 79.1 dB μ V



Freq (MHz)	Peak Amp (dB μ V/m)	QP Amp (dB μ V)	QP Limit (dB μ V)	QP Margin (dB)
914.5	79.5	79.2	94.0	-14.8

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Occupied Bandwidth Plot



Plot shows band edges and signal bandwidth, showing signal is entirely within the band.

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CONDUCTED TEST RESULTS

Frequency Range:	450 kHz to 30.0 MHz.
Bandwidth:	9 kHz per ANSI C63.4-1992.
Detector Functions:	Peak, Quasi-Peak, Average
Table Height:	0.8 meters
Video Bandwidth:	30 kHz.

Conducted Limits are not applicable as this product is powered solely from a 9V battery.

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NOTES AND COMMENTS

(Special conditions unique to this test)

EUT is battery powered only, Tested with a new Duracell 9V Battery.