

Nemko Test Report: 2L0369RUS1

Applicant: M P H Industries
316 East 9th Street
Owensboro, Ky 42303

**Equipment Under Test:
(E.U.T.)** BEE III 990713

In Accordance With: FCC Part 90, Subpart I

Tested By: Nemko Dallas Inc.
802 N. Kealy
Lewisville, TX 75057-3136

Authorized By:



Tom Tidwell, Wireless Group Manager

Date: 8/20/02

Total Number of Pages: 17

EQUIPMENT: **BEE III 990713**PROJECT NO.: **2L0369RUS1**

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EQUIPMENT: **BEE III 990713***PROJECT NO.:* **2L0369RUS1**

Section 1. Summary of Test Results

Manufacturer: M P H Industries

Model No.: BEE III 990713

Serial No.: BEN713000002

General: **All measurements are traceable to national standards.**

These tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with FCC Part 90, Subpart I.



New Submission



Production Unit



Class II Permissive Change



Pre-Production Unit

THIS TEST REPORT RELATES ONLY TO THE ITEM(S) TESTED.

THE FOLLOWING DEVIATIONS FROM, ADDITIONS TO, OR EXCLUSIONS FROM THE TEST SPECIFICATIONS HAVE BEEN MADE. NONE

See “ Summary of Test Data”.

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EQUIPMENT: **BEE III 990713***PROJECT NO.:* **2L0369RUS1**

Summary Of Test Data

RF Power Output	2.1046	Complies
Occupied Bandwidth	2.1049	Complies
Spurious Emissions at Antenna Terminals	2.1051	Complies
Field Strength of Spurious Emissions	2.1053	Complies
Frequency Stability	2.1055	Complies

Footnotes:

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Transmitter

Tunable Bands:	N/A
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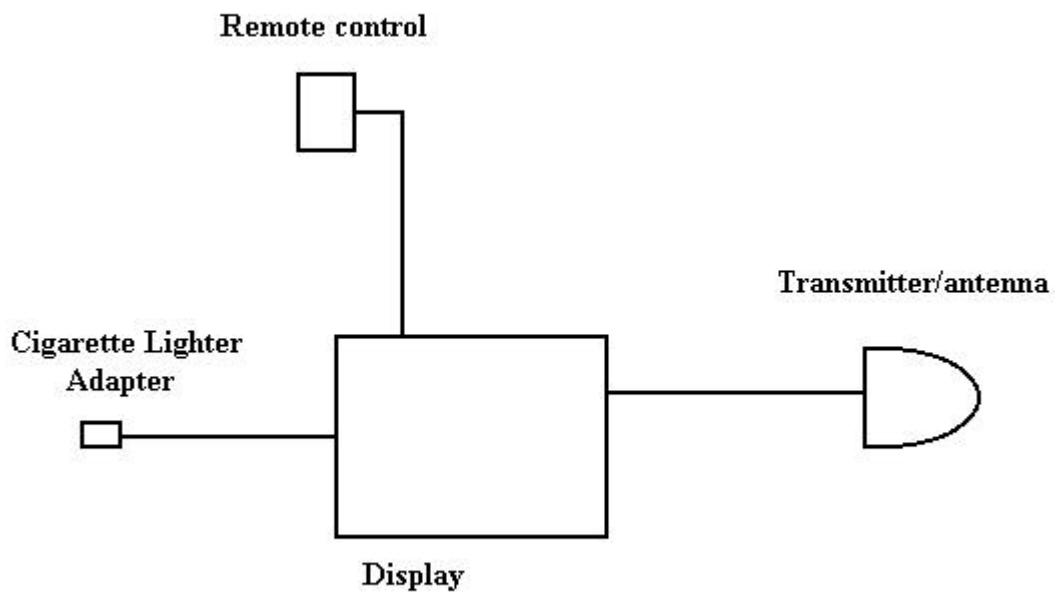
Power Output Adjustment Capability:	None
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System Description

The BEE III is a radar system for police use.

System Diagram



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Section 3. RF Power Output

NAME OF TEST: RF Power Output	PARA. NO.: 2.1046
TESTED BY: David Light	DATE: 8/8/2002

Minimum Standard: ± 1 dB**Measurement Results:** Complies.

Measurement Data: Tx 24.150 GHz
Measured 16.5 dBm @ nominal supply voltage
Measured 16.3 dBm @ +15% supply voltage
Measured 15.8 dBm @ -15% supply voltage
Rated 16 dBm

Measurement Conditions:

Temperature: 22 °C
Humidity: 40 %

Measurement Uncertainty: +/- 1.6 dB**Test Equipment Used:** 1464-1043-1474

EQUIPMENT: BEE III 990713

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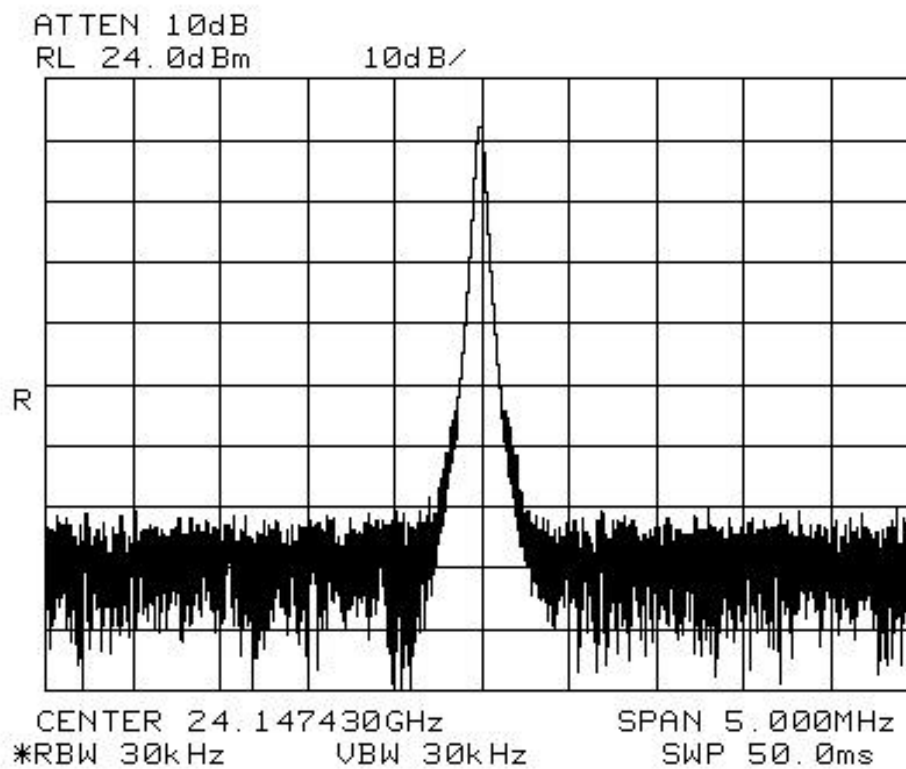
Section 4. Occupied Bandwidth

NAME OF TEST: Occupied Bandwidth

PARA. NO.: 2.1049

TESTED BY: David Light

DATE:8/8/2002

Measurement Results: Complies.**Measurement Data:** See attached data**Measurement Conditions:** Temperature: 22 °C
Humidity: 40 %**Measurement Uncertainty:** +/-

EQUIPMENT: **BEE III 990713**PROJECT NO.: **2L0369RUS1****Section 5. Spurious Emissions at Antenna Terminals**

NAME OF TEST: Spurious Emissions @ Antenna Terminals PARA. NO.: 2.1051

TESTED BY: David Light

DATE: 8/8/2002

Measurement Results: Complies.**Measurement Data:**

Frequency of Emission (GHz)	Emission Level (dBm)
72.34	-36.7
96.46	-39.7

The spectrum was searched up to 100 GHz. All emissions within 20 dB of the specification limit were reported.

Measurement Conditions: Temperature: **22** °C
Humidity: **40** %

Measurement Uncertainty: +/-1.7 dB**Test Equipment Used:** 989-1464-1046-1043-987-986

EQUIPMENT: **BEE III 990713**PROJECT NO.: **2L0369RUS1**

Section 6. Field Strength of Spurious Emissions

NAME OF TEST: Field Strength of Spurious Emissions	PARA. NO.: 2.1053
TESTED BY: David Light	DATE: 8/19/2002

Measurement Results: Complies.**Measurement Data:** No emissions detected.

The spectrum was searched up to 100 GHz. All emissions within 20 dB of the specification limit were reported.

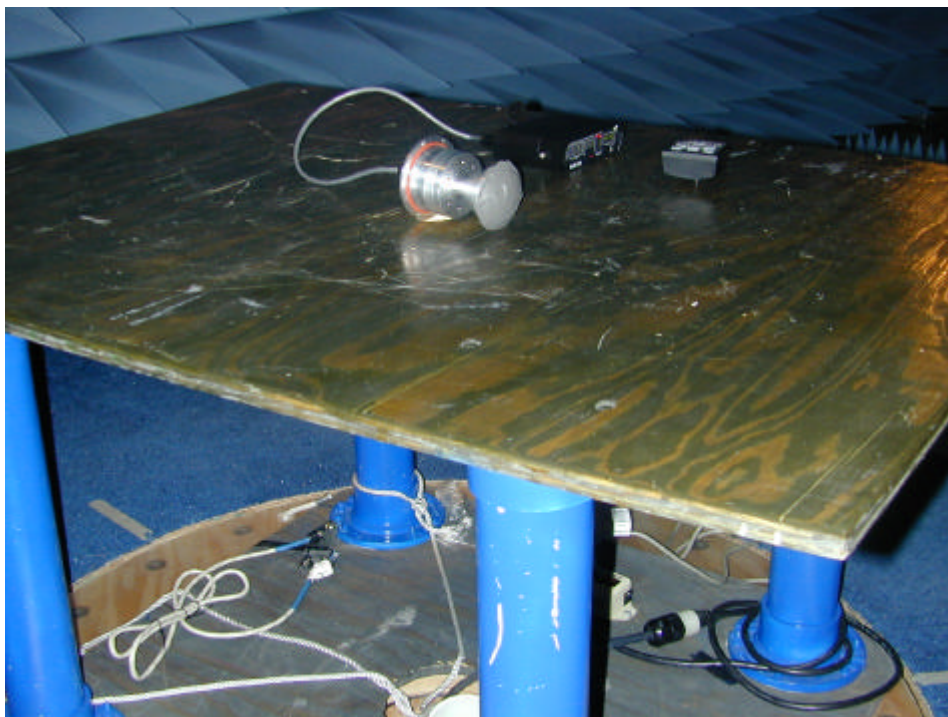
Measurement Conditions: Temperature: **22** °C
 Humidity: **40** %

Test equipment used: 1464-987-990-984-989-986-985**Measurement Uncertainty:** +/-1.7 dB

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Photographs of Test Setup



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Section 7. Frequency Stability

NAME OF TEST: Frequency Stability

PARA. NO.: 2.1055

TESTED BY: David Light

DATE: 8/9/2002

Measurement Results: Complies.**Measurement Data:** See attached data**Measurement Conditions:** Temperature: 22 °C

Humidity: 40 %

Measurement Uncertainty: +/- **1 x 10⁻⁷ ppm**

EQUIPMENT: **BEE III 990713**PROJECT NO.: **2L0369RUS1****Dallas Headquarters:**

802 N. Kealy
Lewisville, TX 75057
Tel: (972) 436-9600
Fax: (972) 436-2667

Frequency StabilityClient: MPHW.O.# 2L0369EUT: BEE IIIS/N: BEN713000002Date: 8/9/2002Tech: Light

Test Equipment used: 283-1036

Temperature	Voltage	Frequency Error
20 °C	13.6 Vdc (Nominal)	+2.23 MHz
20 °C	11.6 Vdc	+2.19 MHz
20 °C	15.6 Vdc	+2.18 MHz
10 °C	Nominal	+22 MHz
0 °C	Nominal	+22.3 MHz
-10 °C	Nominal	+33.3 MHz
-20 °C	Nominal	+35.1 MHz
-30 °C	Nominal	+40.5 MHz
30 °C	Nominal	+8.8 MHz
40 °C	Nominal	+2.8 MHz
50 °C	Nominal	-2.8 MHz

EQUIPMENT: **BEE III 990713**PROJECT NO.: **2L0369RUS1****Section 8. Test Equipment List**

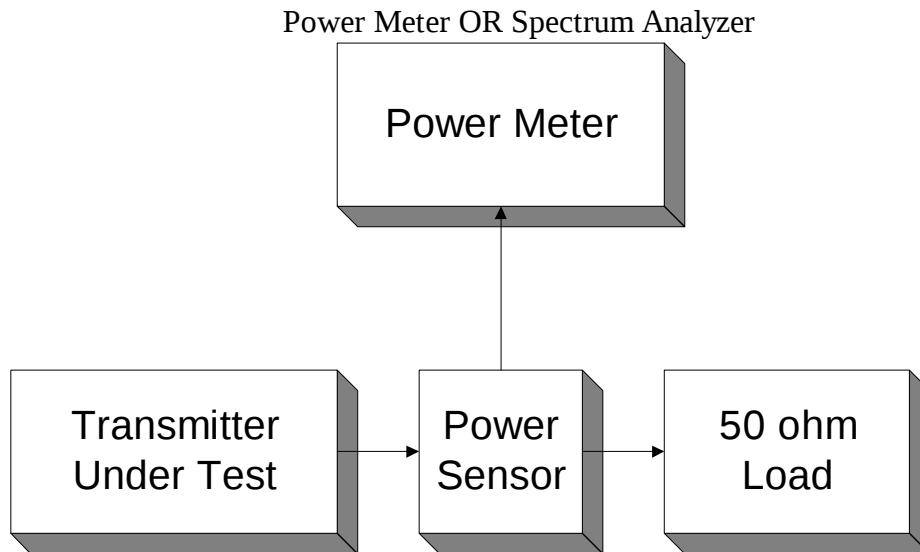
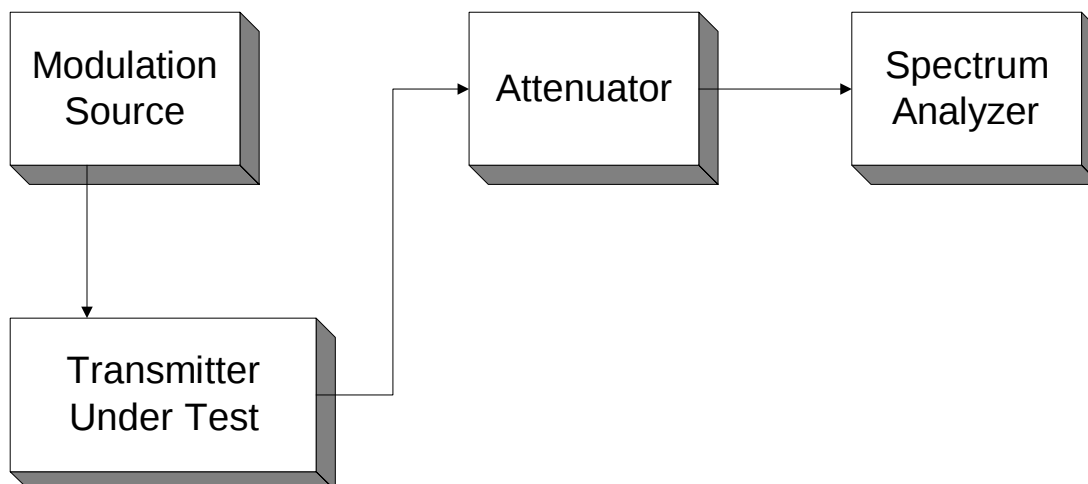
Nemko ID	Description	Manufacturer Model Number	Serial Number	Calibration Date	Calibration Due
283	Environmental Chamber with controller # 1189006	ENVIROTRONICS SH27 & 2030-22844	129010083	01/10/02	01/10/03
1039	CABLE, 8.5m	KTL RG223	N/A	03/05/02	03/05/03
1464	Spectrum analyzer	Hewlett Packard 8563E	3551A04428	01/02/01	01/03/03
987	HARMONIC MIXER	Hewlett Packard 5356D	2521A00583	01/00/00	N/A
990	HORN ANTENNA	MILLITECH NONE	NONE	CNR	N/A
984	HORN ANTENNA	MILLITECH NONE	NONE	CNR	N/A
989	HARMONIC MIXER	Hewlett Packard 11970U	2332A00116	01/00/00	N/A
986	HARMONIC MIXER	Hewlett Packard 11970V	2521A01222	01/00/00	N/A
985	HORN ANTENNA	MILLITECH NONE	NONE	CNR	N/A
1046	Flex cable 1m	Astrolab Inc. 32022-2-29094K-1M	N/A	01/18/02	01/18/03
1043	Flexible cable 1m	Astrolab Inc. 32027-2-29094K-1M	0	01/18/02	01/18/03
1474	20db Attenuator DC 18 Ghz	MCL Inc. BW-S20W2	NONE	CBU	N/A

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ANNEX A - TEST DIAGRAMS

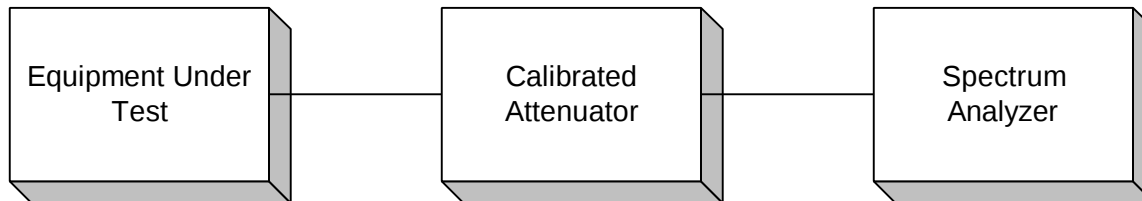
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Para. No. 2.1046 – R.F. Power Output**Para. No. 2.1049 - Occupied Bandwidth**

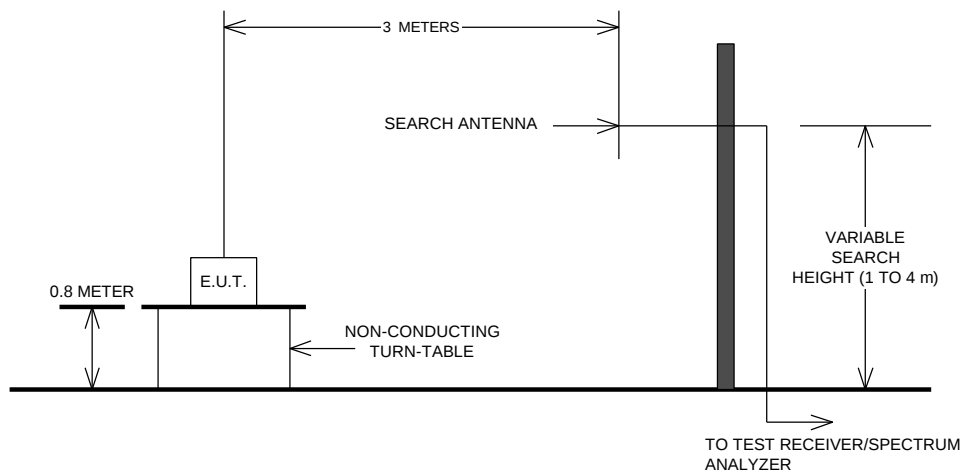
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Para. No. 2.1051 - Spurious Emissions at Antenna Terminals



Para. No. 2.1053 - Field Strength of Spurious Radiation



Para. No. 2.1055 - Frequency Stability

