

**MEASUREMENT AND TECHNICAL REPORT**

**HM ELECTRONICS**  
**6675 Mesa Ridge Road**  
**San Diego, CA 92121-2937**

**DATE: 17 January 2002**

<b>This Report Concerns:</b>	Original Grant: <input checked="" type="checkbox"/> X	Class II Change: <input type="checkbox"/>
<b>Equipment Type:</b>	SYS800 Wireless IntercomBase Station, Model RW800	
<b>Deferred grant requested per 47 CFR 0.457(d)(1)(ii)?</b>	Yes: <input type="checkbox"/>	No: <input checked="" type="checkbox"/> X
	<b>Defer until:</b>	
<b>Company Name agrees to notify the Commission by:</b>	N/A	
<b>of the intended date of announcement of the product so that the grant can be issued on that date.</b>		
<b>Transition Rules Request per 15.37?</b>	Yes: <input type="checkbox"/>	*No: <input type="checkbox"/>
<i>(*) FCC Part 2, Paragraphs 2.1046, 2.1047, 2.1049, 2.1051, 2.1053, 2.1055; and Part 74, Paragraph 74.861(e)</i>		
<b>Report Prepared by:</b>	<b>TÜV PRODUCT SERVICE</b> <b>10040 Mesa Rim Road</b> <b>San Diego, CA 92121-2912</b> <b>Phone: 858 546 3999</b> <b>Fax: 858 546 0364</b>	

**SUMMARY**

Purpose of Test: To demonstrate compliance with the ANSI C63.4 setup.

<b>PASS/FAIL</b>	<b>TEST PERFORMED</b>
PASS	RF Power Output 2.1046
PASS	Modulation Characteristics 2.1047
PASS	Occupied Bandwidth 2.1049, 74.861(e)
PASS	Spurious Emissions at Antenna Terminals 2.1051
PASS	Radiated Spurious Emissions 2.1053, 74.861(e)
PASS	Frequency Stability 2.1055, 74.861(e)

**TABLE OF CONTENTS**

		<b>Pages</b>
<b>1</b>	<b>GENERAL INFORMATION</b>	4
1.1	Product Description	4
1.2	Related Submittal Grant	10
1.3	Tested System Details	10
1.4	Test Methodology	10
1.5	Test Facility	10
1.6	Part 2 Requirements	11
<b>2</b>	<b>SYSTEM TEST CONFIGURATION</b>	13
2.1	Justification	13
2.2	EUT Exercise Software	13
2.3	Special Accessories	13
2.4	Equipment Modifications	13
2.5	Configuration of Tested System	13
3	RF Power Output	14
4	Modulation Characteristics	19
5	Occupied Bandwidth	23
6	Spurious Emissions at Antenna Terminals	28
7	Radiated Spurious Emissions	39
	3.1 Field Strength Calculation	43
8	Frequency Stability	44
9	Attestation Statement	50

## 1 GENERAL INFORMATION

Form

**EMC Test Plan and Constructional Data Form**



PLEASE COMPLETE THIS DOCUMENT IN FULL, ENTERING N/A IF THE FIELD IS NOT APPLICABLE.  
**Applicant -- NOTE: This information will be input into your test report as shown below.**  
 Press the F1 key at any time to get HELP for the current field selected.

Company: HM Electronics, Inc.  
 Address: 6675 Mesa Ridge Road  
San Diego, Ca. 92121  
 Contact: Tom Riches Position: Engineering Services Manager  
 Phone: 858-535-6098 Fax: 858-535-6019  
 E-mail Address: triches@hme.com

**General Equipment Description -- NOTE: This information will be input into your test report as shown below.**

EUT Description SYS800 Wireless Intercom Base Station  
 EUT Name \_\_\_\_\_  
 Model No.: RW800 Serial No.: 49C00281  
 Product Options: Headset  
 Configurations to be tested: Standard

**Test Objective**

- |  |   |
|--|---|
| <input type="checkbox"/> EMC Directive 89/336/EEC (EMC)                                      | <input checked="" type="checkbox"/> FCC: Class <input type="checkbox"/> A <input type="checkbox"/> B Part <u>2/74</u> |
| Std: _____   | <input type="checkbox"/> VCCI: Class <input type="checkbox"/> A <input type="checkbox"/> B                            |
| <input type="checkbox"/> Machinery Directive 89/392/EEC (EMC)                                | <input type="checkbox"/> BCIQ: Class <input type="checkbox"/> A <input type="checkbox"/> B                            |
| Std: _____   | <input type="checkbox"/> Canada: Class <input type="checkbox"/> A <input type="checkbox"/> B                          |
| <input type="checkbox"/> Medical Device Directive 93/42/EEC (EMC)                            | <input type="checkbox"/> Australia: Class <input type="checkbox"/> A <input type="checkbox"/> B                       |
| Std: _____   | <input checked="" type="checkbox"/> Other: <u>Canada Part 2/74 Equivalent (RSS123?)</u>                               |
| <input type="checkbox"/> Vehicle Directive 72/245/EEC (EMC)                                  |   |
| Std: _____   |   |
| <input type="checkbox"/> FDA Reviewers Guidance for Premarket Notification Submissions (EMC) |   |

Form

**EMC Test Plan and Constructional Data Form**



**TÜV Product Service Certification Requested**

- Attestation of Conformity (AoC)                       International EMC Mark (IEM)  
 Certificate of Conformity (CoC)                       Compliance Document  
 Protection Class (N/A for vehicles)                       Class I                       Class II                       Class III  
 (Press **F1** when field is selected to show additional information on Protection Class.)

**Attendance**

Test will be:     Attended by the customer                       Unattended by the customer

**Failure - Complete this section if testing will not be attended by the customer.**

- If a failure occurs, TÜV Product Service should:
- Call contact listed above, if not available then stop testing.    (After hrs phone): \_\_\_\_\_  
 Continue testing to complete test series.  
 Continue testing to define corrective action.  
 Stop testing.

**EUT Specifications and Requirements**

Length: 11.5 inches    Width: 19 inches    Height: 1.7 inches    Weight: 13 lbs

**Power Requirements**

*Regulations require testing to be performed at typical power ratings in the countries of intended use. (i.e., European power is typically 230 VAC 50 Hz or 400 VAC 50 Hz, single and three phase, respectively)*

Voltage:            11-30VDC                      (If battery powered, make sure battery life is sufficient to complete testing.)

# of Phases:      1

Current                                      Current  
 (Amps/phase(max)): .5                      (Amps/phase(nominal)): .1

Other                      Power Supplied by Step down wall transformer

**Other Special Requirements**

N/A

**Typical Installation and/or Operating Environment**

(ie. Hospital, Small Business, Industrial/Factory, etc.)  
 Broadcast Television Studio

Form

**EMC Test Plan and Constructional Data Form**



<b>EUT Power Cable</b>			
<input type="checkbox"/> Permanent	OR	<input checked="" type="checkbox"/> Removable	Length (in meters): <u>2</u>
<input type="checkbox"/> Shielded	OR	<input checked="" type="checkbox"/> Unshielded	
<input type="checkbox"/> Not Applicable			

Form

EMC Test Plan and Constructional Data Form



**EUT Interface Ports and Cables**

Interface		Shielding			Type	Termination	Connector Type	Port Termination	Length (in meters)	Removable	Permanent	
Analog	Digital	Cty	Yes	No								
<b>EXAMPLE:</b>												
RS232	<input type="checkbox"/>	<input checked="" type="checkbox"/>	2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Foil over braid	Coaxial	Metalized 9-pin D-Sub	Characteristic Impedance	6	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Headset	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	N/A	N/A	4 Pin XLR	1K (Mic) 50 Ohms (Earpiece)	2	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4-Wire	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Braid	N/A	4 Pin XLR	20K ohms Balanced		<input checked="" type="checkbox"/>	<input type="checkbox"/>
AUX Input	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Braid	N/A	3 Pin XLR	600 Ohm Balanced		<input checked="" type="checkbox"/>	<input type="checkbox"/>
Cabled Intercom	<input checked="" type="checkbox"/>	<input type="checkbox"/>	2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Braid	N/A	3 Pin XLR	10K Ohms		<input checked="" type="checkbox"/>	<input type="checkbox"/>
TX Antenna	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	N/A	N/A	BNC	50 Ohms		<input checked="" type="checkbox"/>	<input type="checkbox"/>
RX Antenna	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	N/A	N/A	BNC	50 Ohms		<input checked="" type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>



Form

**EMC Test Plan and Constructional Data Form**



**EUT Software.**

Revision Level: N/A  
 Description: N/A

**EUT Operating Modes to be Tested** -- list the operating modes to be used during test. It is recommended the equipment be tested while operating in a typical operation mode. FCC testing of personal computers and/or peripherals requires that a simple program generate a complete line of upper case H's. Provide a general description of all software, firmware, and PLD algorithms used in the equipment. List all code modules as described above, with the revision level used during testing. Consult with your TÜV Product Service Representative if additional assistance is required.

1. Transmit
  
2. Receive
  
3. Idle

**EUT System Components** -- List and describe all components which are part of the EUT. For FCC testing a minimum configuration is required. (ie. Mouse, Printer, Monitor, External Disk Drive, Motherboard, etc.)

Description	Model #	Serial #	FCC ID #
SYS800 Base Station	RW800	49C00281	RW80074
Transmit Antenna	101038	N/A	N/A
Receive Antenna	101038	N/A	N/A

## **1 GENERAL INFORMATION (continued)**

### **1.2 Related Submittal/Grant**

None

### **1.3 Tested System Details**

The FCC IDs for all equipment, plus descriptions of all cables used in the tested system are:

None

### **1.4 Test Methodology**

Purpose of Test: To demonstrate compliance with the ANSI C63.4 setup.

### **1.5 Test Facility**

The open area test site and conducted measurement data were tested by:

TÜV PRODUCT SERVICE  
10040 Mesa Rim Road  
San Diego, CA 92121-2912  
Phone: 858 546 3999  
Fax: 858 546 0364

The Test Site Data and performance comply with ANSI 63.4 and are registered with the FCC, 7435 Oakland Mills Rd, Columbia Maryland 21046. All Measurement Data is acquired according to the content of FCC Measurement Procedure and ANSI C63.4, unless supplemented with additional requirements as noted in the test report.

**1.6 Part 2 Requirements**

Report No. 107952-03 (FCC ID: BYMRW80074)



December 14, 2001

---

*General Information Regarding the SYS800 Base Station Part 74 FCC Submittal:*

**Manufacturer and Applicant for Certification:**

HM Electronics, Inc.  
6675 Mesa Ridge Road  
San Diego, Ca. 92121  
USA

**Manufacturer and Applicant FCC Registration Number**

FRN# 0005-8707-04

**FCC Identifier:**

BYMRW80074

**Frequency Range in MHz:**

~~470-476~~ 470-476

**Frequency Tolerance:**

+/- 5 PPM

**Range of Operating Power Levels:**

.080 - .120 Watts (not user adjustable)

**Maximum Power Rating:**

.120 Watts

**Type of Emission:**

United States - 25K6F3E  
Canada - 16K0F3E

**Microprocessor:**

Not Applicable

6675 Mesa Ridge Rd. San Diego, California 92121 Corporate Phone: (858) 535-6000 / Fax: (858) 452-7207

## **2. SYSTEM TEST CONFIGURATION**

### 2.1 Justification

The EUT was initially tested for FCC emission in the following configuration:

See Block Diagram.

### 2.2 EUT Exercise Software

None

### 2.3 Special Accessories

None

### 2.4 Modification

None

### 2.5 Configuration of Tested System

See Block Diagram.

**3 RF POWER OUTPUT, FCC Part 2, Paragraph 2.1046**

Report No. SC107952

Test Conditions: FCC 76.861

Photos taken?  Yes

- SR 2, Shielded Room, 12' x 24' x 10', Metal Chamber
- Canyon 2, Open Site      3 meter    10 meter

**Test Equipment Used:**

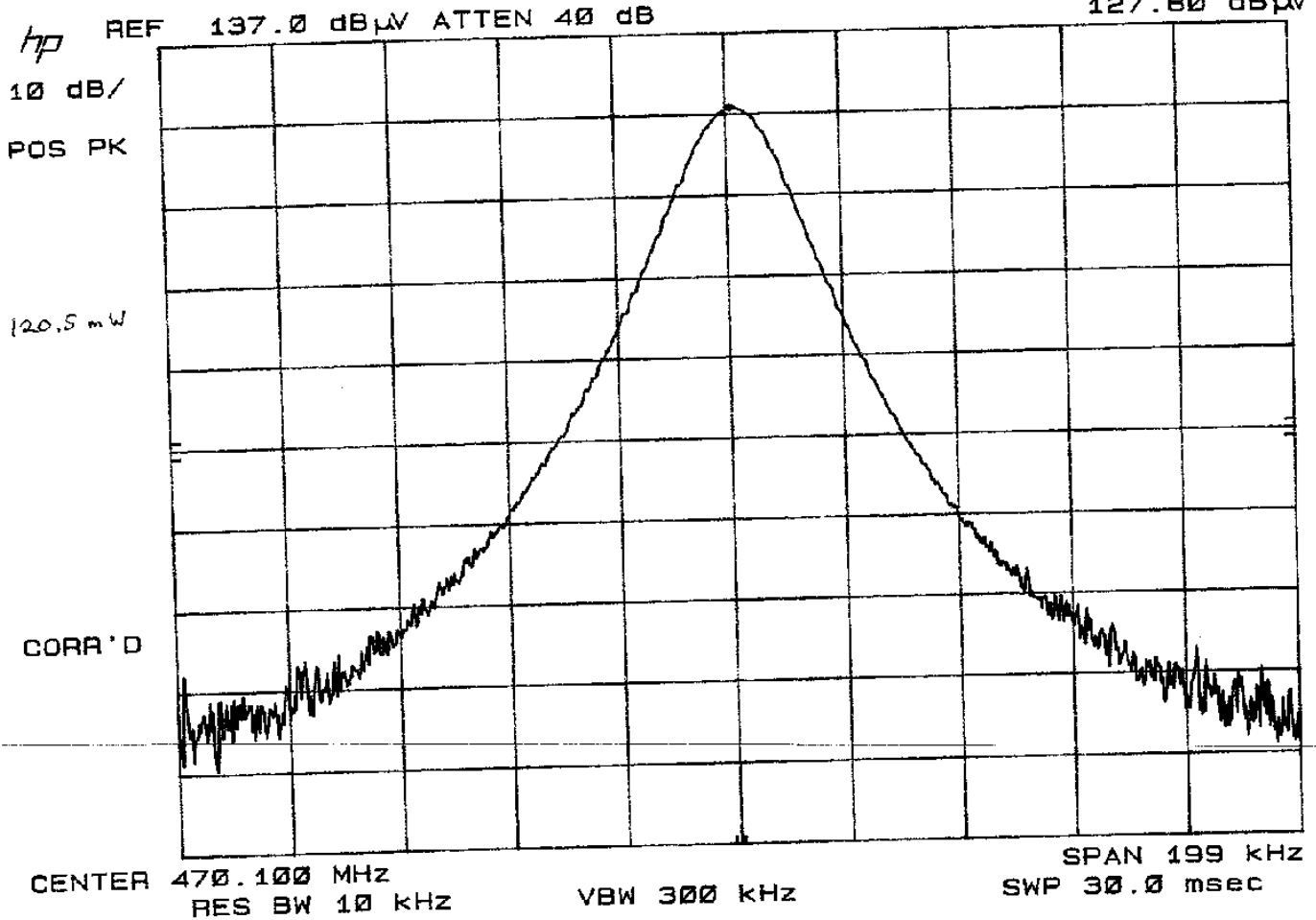
Model Number	Prop. #	Description	Manufacturer	Serial No.	Cal. Date	2.1046	2.1047	2.1049	2.1051	2.1055	2.1053
hp8586B	721	Spectrum Analyzer	Hewlett Packard	2542A12099	8/21/02						
ESVS20	427	EMI Receiver	Rohde & Schwarz	830350/006	12/8/02						
hp3314A	133	Signal Generator	Hewlett Packard	2151A03391	4/3/02						
PreAmp 2-20 GHZ	719	PreAmp	TUV Product Service	719	3/26/02						
3115	453	Antenna, Horn	Electro Mechanics Co	5412-4364	12/1/03						
LPB2520/A	739	Antenna	Antenna Research	1170	3/21/02						

SC-107952  
HM Electronics, Inc.

RW800 BASE STATION  
2.1046 RF POWER OUTPUT

DEC. 20, 2001  
AAL *RAF*

MKR 470.100 6 MHz  
127.60 dBμV





SC-107952  
HME

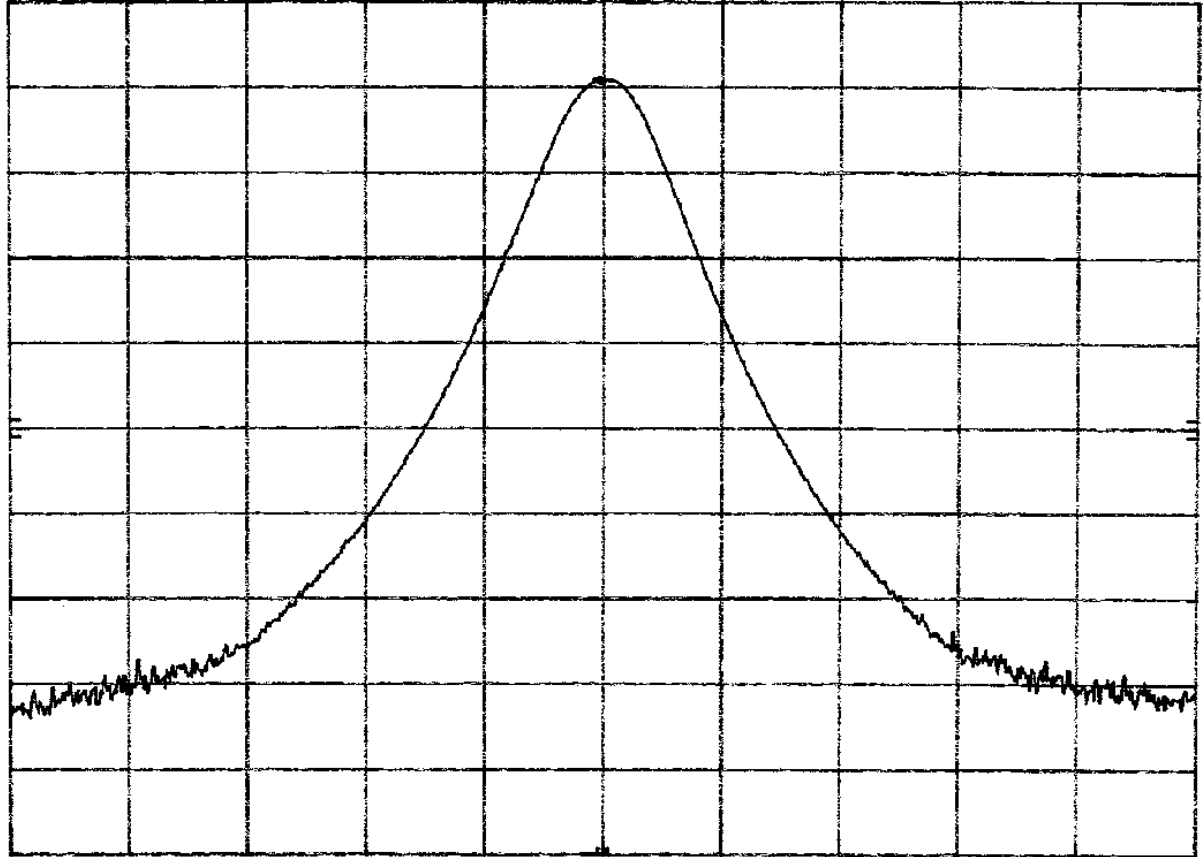
RW 800 BASE STATION  
2.104E RF POWER OUTPUT

01/17/02

MKR 476.100 2 MHz  
20.80 dBm

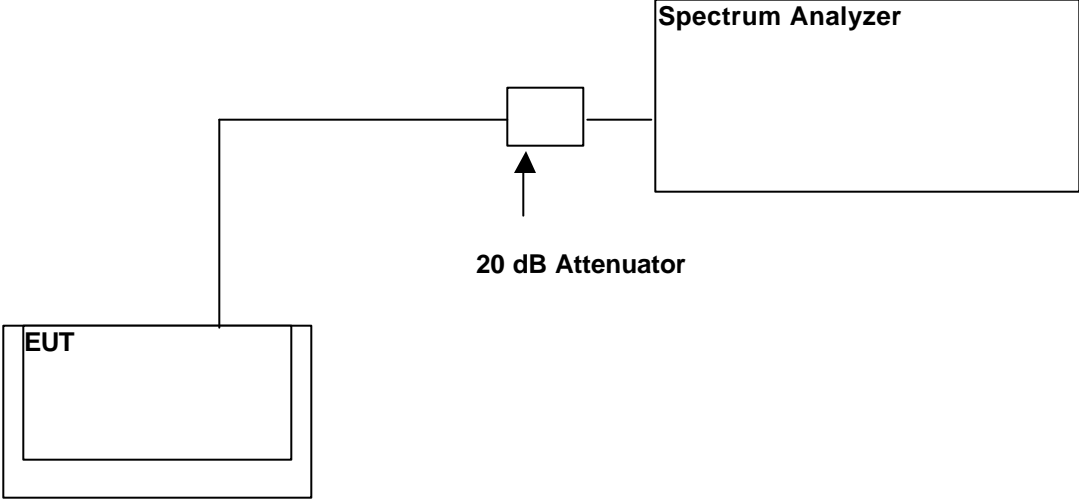
hp REF 30.0 dBm ATTN 40 dB

10 dB/  
POS PK



CENTER 476.100 MHz RES BW 10 kHz VBW 30 kHz SPAN 200 kHz  
SWP 30.0 msec

**RF Power Output**



#### **4 MODULATION CHARACTERISTICS, FCC Part 2, Paragraph 2.1047**

Report No. SC107952

Test Conditions: FCC 76.861

Photos taken?  Yes

- SR 2, Shielded Room, 12' x 24' x 10', Metal Chamber
- Canyon 2, Open Site      3 meter    10 meter

**Test Equipment Used:**

Model Number	Prop. #	Description	Manufacturer	Serial No.	Cal. Date	2.1046	2.1047	2.1049	2.1051	2.1055	2.1053
hp8586B	721	Spectrum Analyzer	Hewlett Packard	2542A12099	8/21/02						
ESVS20	427	EMI Receiver	Rohde & Schwarz	830350/006	12/8/02						
hp3314A	133	Signal Generator	Hewlett Packard	2151A03391	4/3/02						
PreAmp 2-20 GHZ	719	PreAmp	TUV Product Service	719	3/26/02						
3115	453	Antenna, Horn	Electro Mechanics Co	5412-4364	12/1/03						
LPB2520/A	739	Antenna	Antenna Research	1170	3/21/02						

SC-107952  
HM Electronics, Inc.

RW800 BASE STATION  
2.1047 MODULATION CHARACTERISTICS

DEC. 20, 2001  
AAL *AAJ*

MKR 470.095 MHz  
127.60 dBµV

*hp* REF 137.0 dBµV ATTEN 40 dB

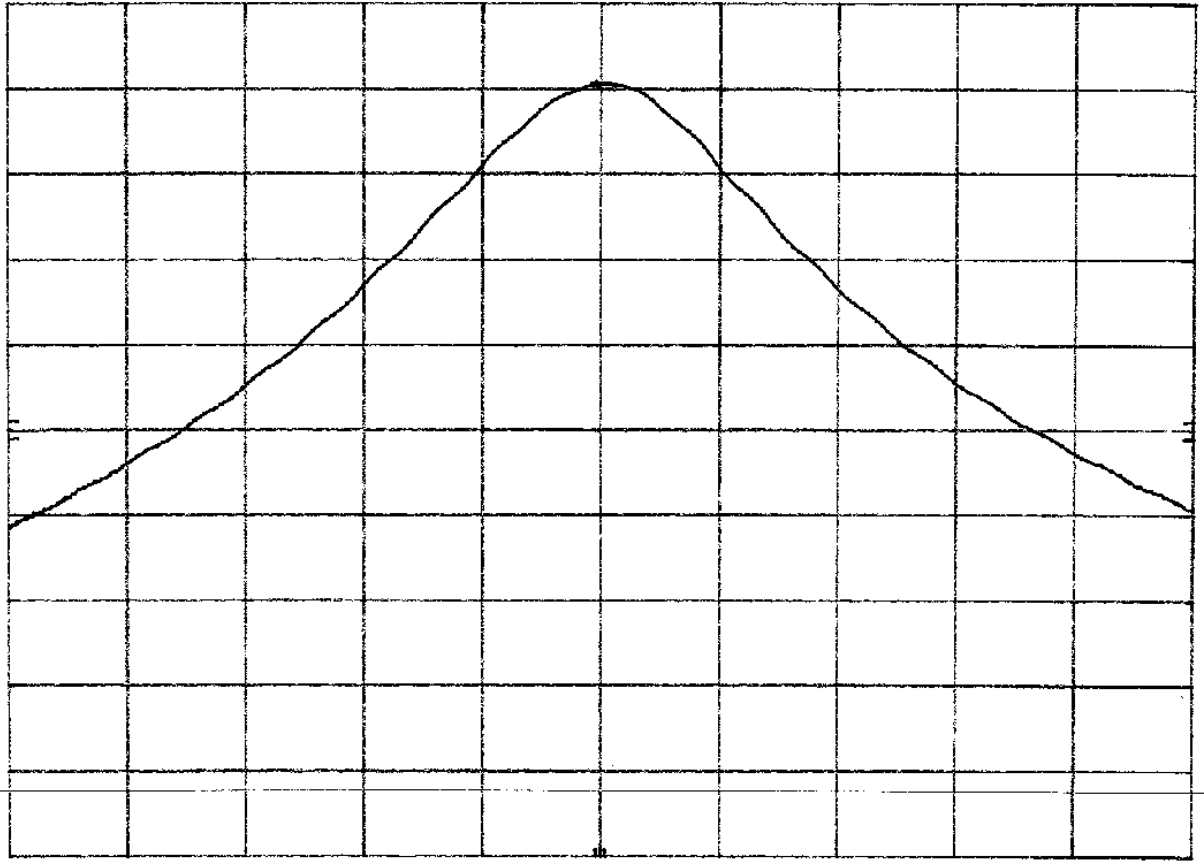
10 dB/

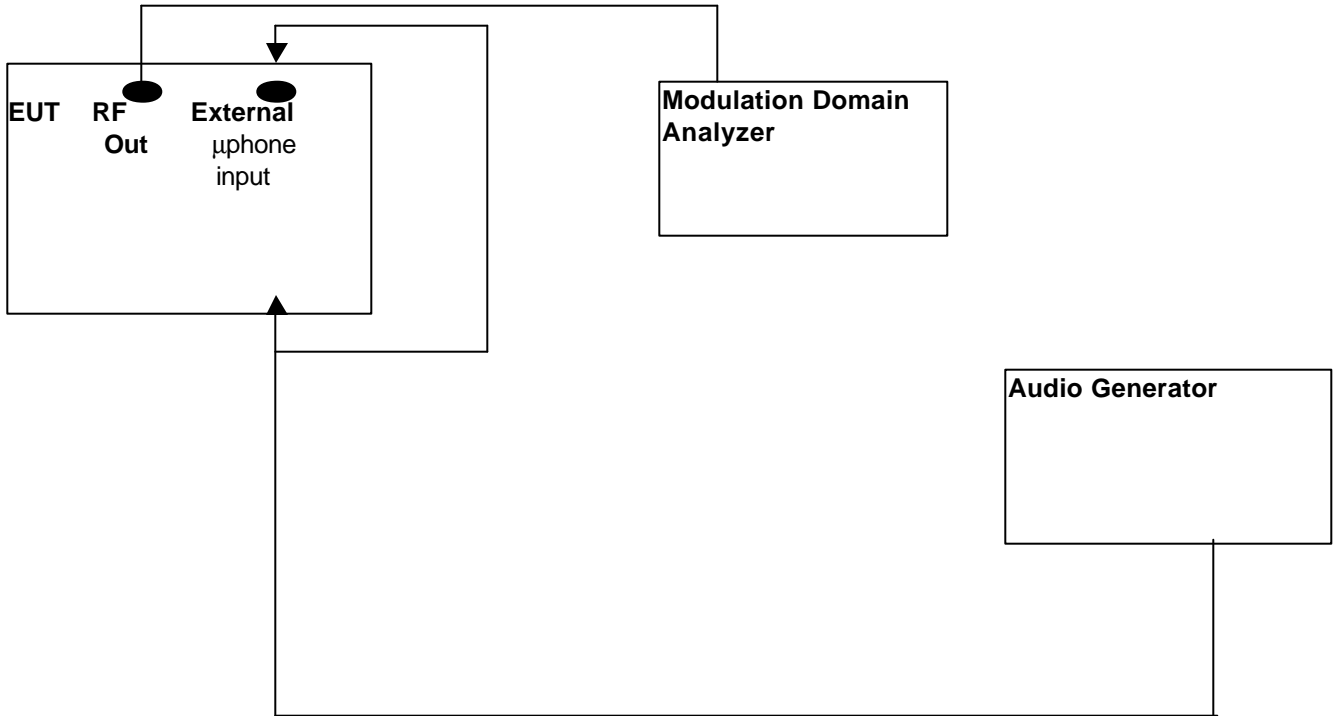
POS PK

Audio Input:  
780 mV  
1000 Hz  
Typical

CORR'D

CENTER 470.10 MHz      RES BW 100 KHz      VBW 300 KHz      SPAN 1.00 MHz  
SWP 20.0 msec





**5 OCCUPIED BANDWIDTH, 2.1049, , Part 74, Para. 74.861(e)**

Report No. SC107952

Test Conditions: FCC 76.861

Photos taken?  Yes

- SR 2, Shielded Room, 12' x 24' x 10', Metal Chamber
- Canyon 2, Open Site      3 meter    10 meter

**Test Equipment Used:**

Model Number	Prop. #	Description	Manufacturer	Serial No.	Cal. Date	2.1046	2.1047	2.1049	2.1051	2.1055	2.1053
hp8586B	721	Spectrum Analyzer	Hewlett Packard	2542A12099	8/21/02						
ESVS20	427	EMI Receiver	Rohde & Schwarz	830350/006	12/8/02						
hp3314A	133	Signal Generator	Hewlett Packard	2151A03391	4/3/02						
PreAmp 2-20 GHZ	719	PreAmp	TUV Product Service	719	3/26/02						
3115	453	Antenna, Horn	Electro Mechanics Co	5412-4364	12/1/03						
LPB2520/A	739	Antenna	Antenna Research	1170	3/21/02						



SC-107952  
HM Electronics, Inc.

RW800 BASE STATION  
2.1049 OCCUPIED BANDWIDTH

DEC. 20, 2001  
AAL *AS*

*Port 74.861(e)*

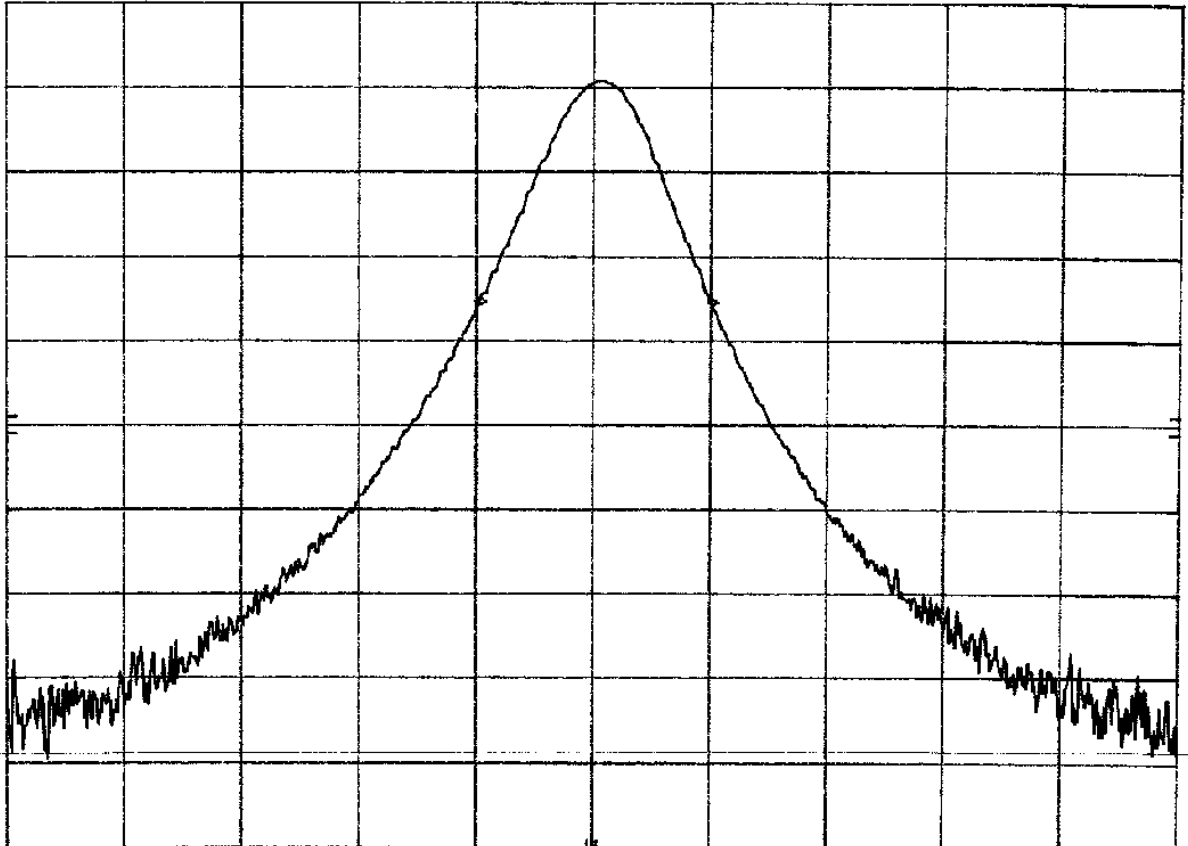
MKR  $\Delta$  39.4 kHz  
-0.10 dB

*hp* REF 137.0 dB $\mu$ V ATTEN 40 dB

10 dB/  
POS PK

-26dB  
BW

CORR'D



CENTER 470.100 MHz

RES BW 10 kHz

VBW 300 kHz

SPAN 199 kHz

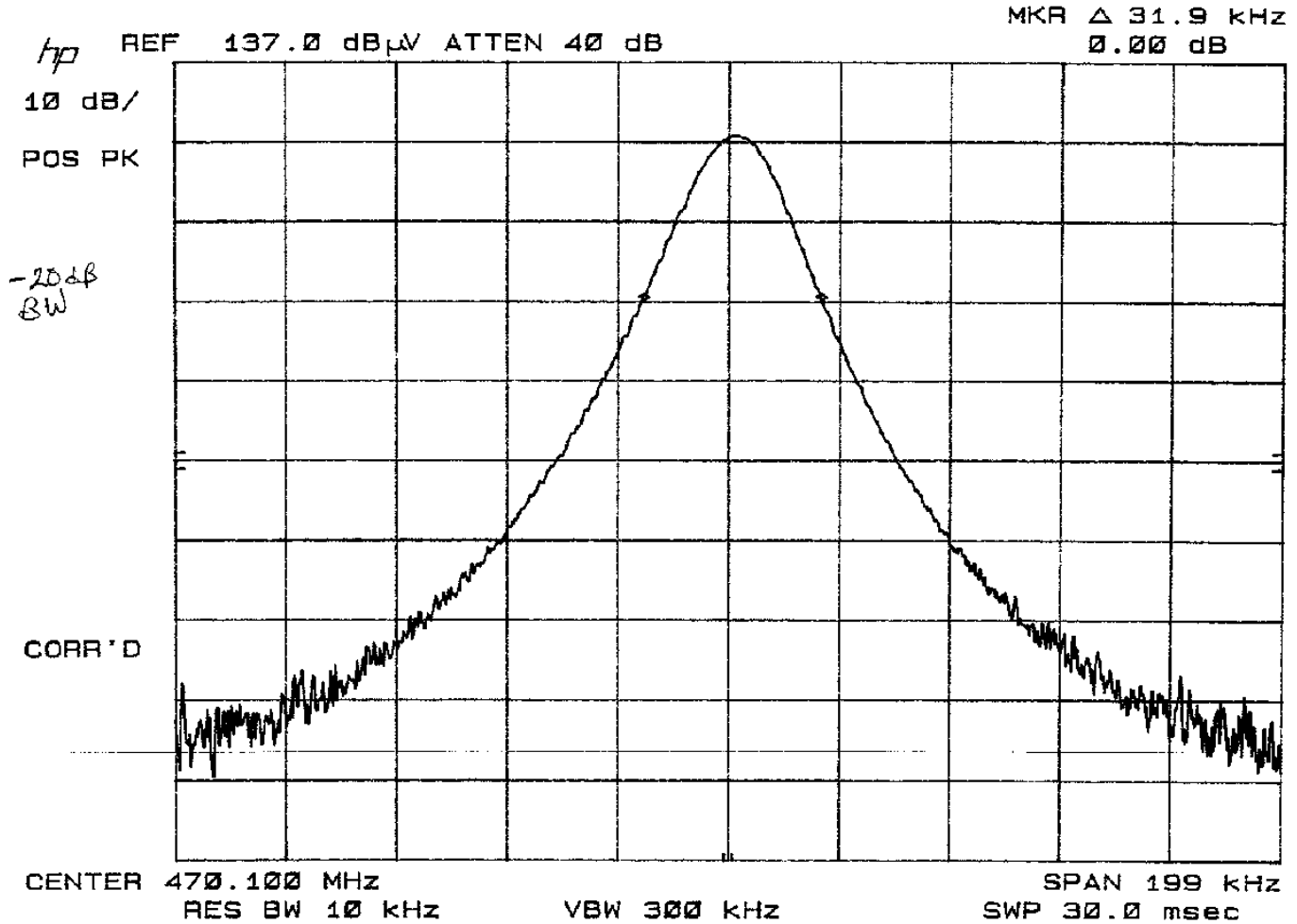
SWP 30.0 msec

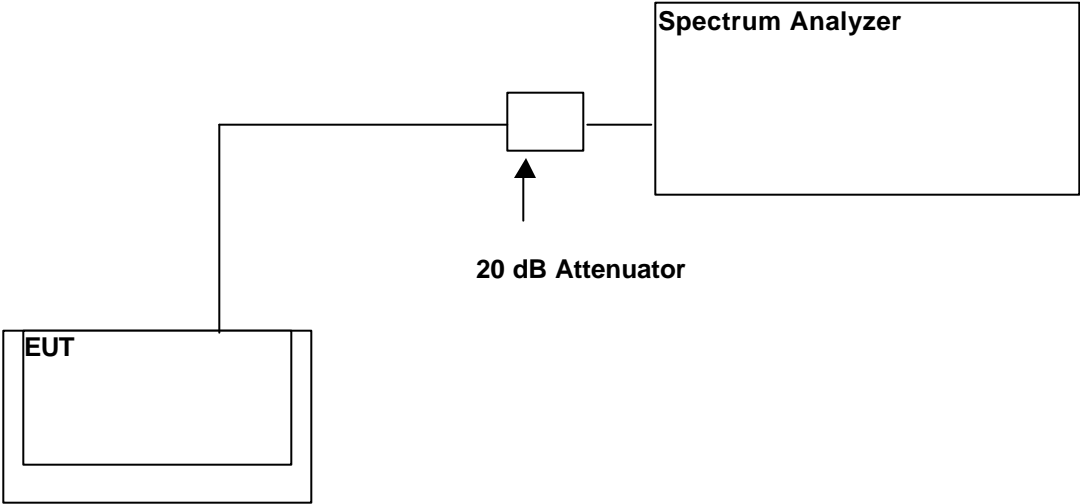
SC-107952  
HM Electronics, Inc.

RW800 BASE STATION  
2.1049 OCCUPIED BANDWIDTH

DEC. 20, 2001  
AAL *[initials]*

*Part 74.861(e)*





**6 SPURIOUS EMISSIONS AT ANTENNA TERMINALS, FCC Part 2, Paragraph 2.1051**

Report No. SC107952

Test Conditions: FCC 76.861

Photos taken?  Yes

- SR 2, Shielded Room, 12' x 24' x 10', Metal Chamber
- Canyon 2, Open Site       3 meter     10 meter

**Test Equipment Used:**

Model Number	Prop. #	Description	Manufacturer	Serial No.	Cal. Date	2.1046	2.1047	2.1049	2.1051	2.1055	2.1053
hp8586B	721	Spectrum Analyzer	Hewlett Packard	2542A12099	8/21/02						
ESVS20	427	EMI Receiver	Rohde & Schwarz	830350/006	12/8/02						
hp3314A	133	Signal Generator	Hewlett Packard	2151A03391	4/3/02						
PreAmp 2-20 GHZ	719	PreAmp	TUV Product Service	719	3/26/02						
3115	453	Antenna, Horn	Electro Mechanics Co	5412-4364	12/1/03						
LPB2520/A	739	Antenna	Antenna Research	1170	3/21/02						

SC-107952  
HM Electronics, Inc.

RW800 BASE STATION  
2.1051 SPURIOUS EMISSIONS AT ANTENNA TERMINALS

DEC. 20, 2001  
AAL *AKS*

MKR 1.411 GHz  
66.80 dB $\mu$ V

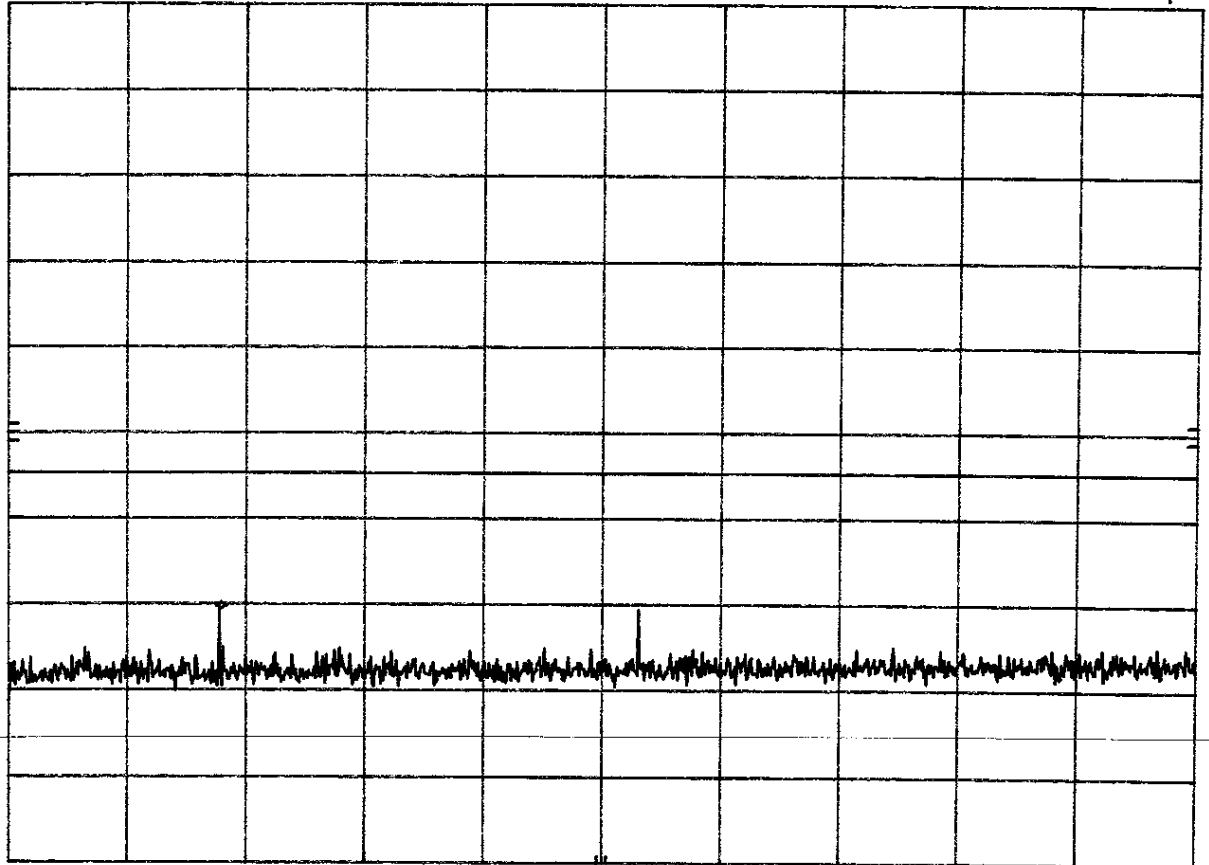
*hp* REF 137.0 dB $\mu$ V ATTEN 40 dB

10 dB/  
POS PK

DL  
82.3  
dB $\mu$ V

CORR'D

CENTER 1.83 GHz      RES BW 100 kHz      VBW 300 kHz      SPAN 1.33 GHz  
SWP 398 msec

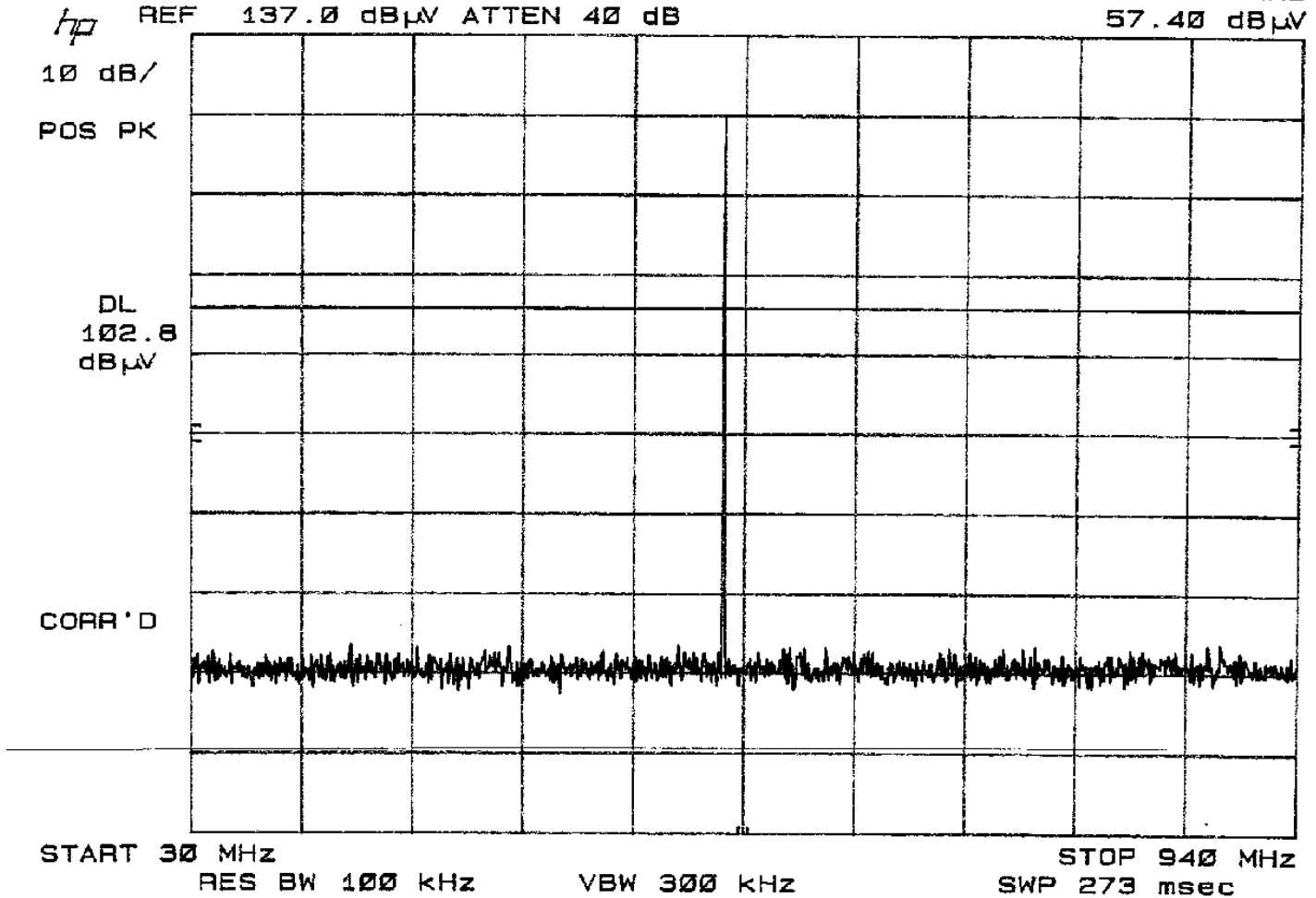


SC-107952  
HM Electronics, Inc.

RW800 BASE STATION  
2.1051 SPURIOUS EMISSIONS AT ANTENNA TERMINALS

DEC. 20, 2001  
AAL *AAL*

MKR 71.0 MHz  
57.40 dB $\mu$ V



SC-107952  
HM Electronics, Inc.

RW800 BASE STATION  
2.1051 SPURIOUS EMISSIONS AT ANTENNA TERMINALS

DEC. 20, 2001  
AAL *GAZ*

MKR 1.101 2 GHz  
60.70 dB $\mu$ V

*hp* REF 137.0 dB $\mu$ V ATTEN 40 dB

10 dB/  
POS PK

DL  
92.6  
dB $\mu$ V

CORR'D

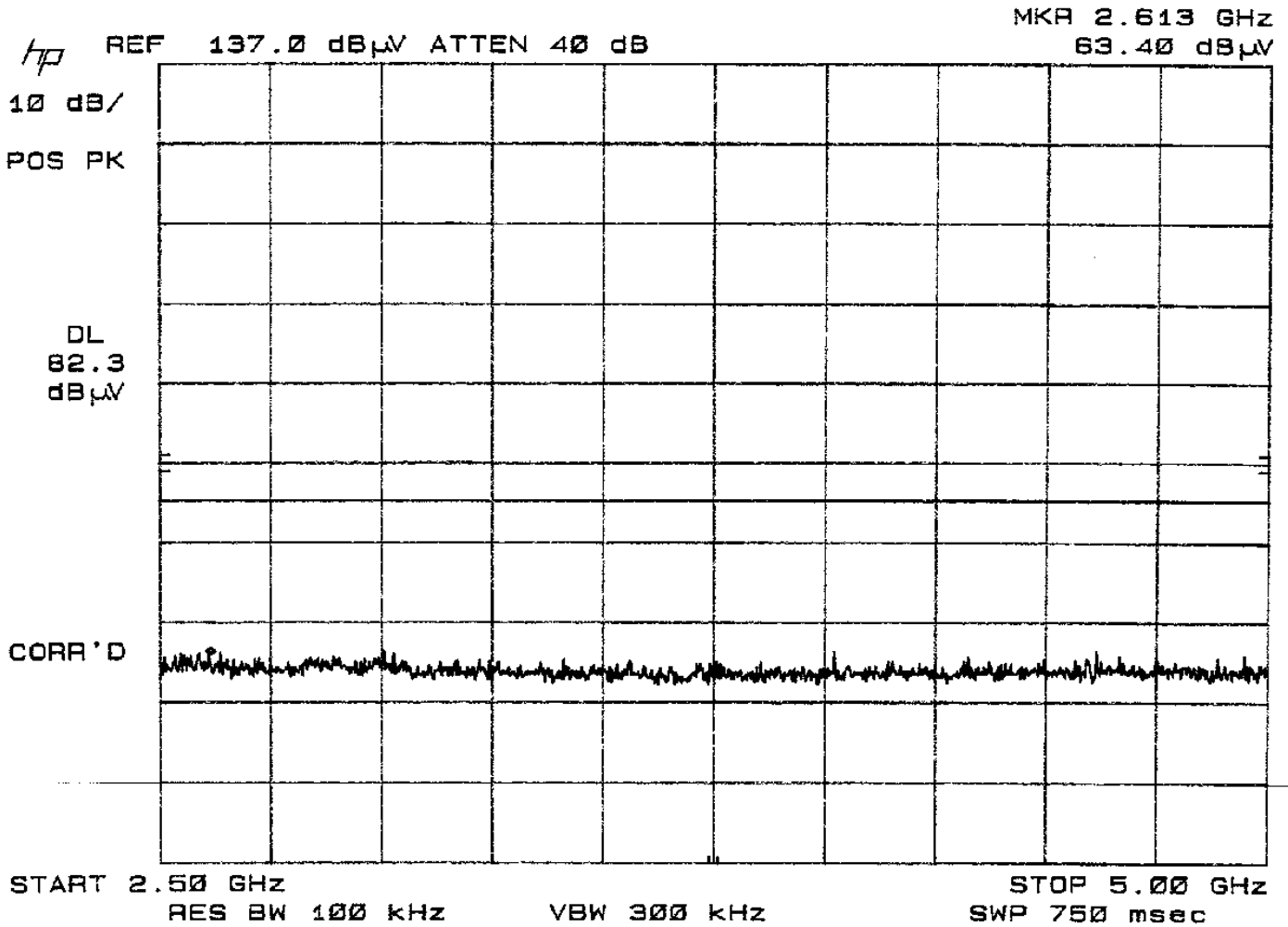
START 940 MHz RES BW 100 kHz VBW 300 kHz STOP 1.175 GHz  
SWP 70.5 msec



SC-107952  
HM Electronics, Inc.

RW800 BASE STATION  
2.1051 SPURIOUS EMISSIONS AT ANTENNA TERMINALS

DEC. 20, 2001  
AAL *ark*

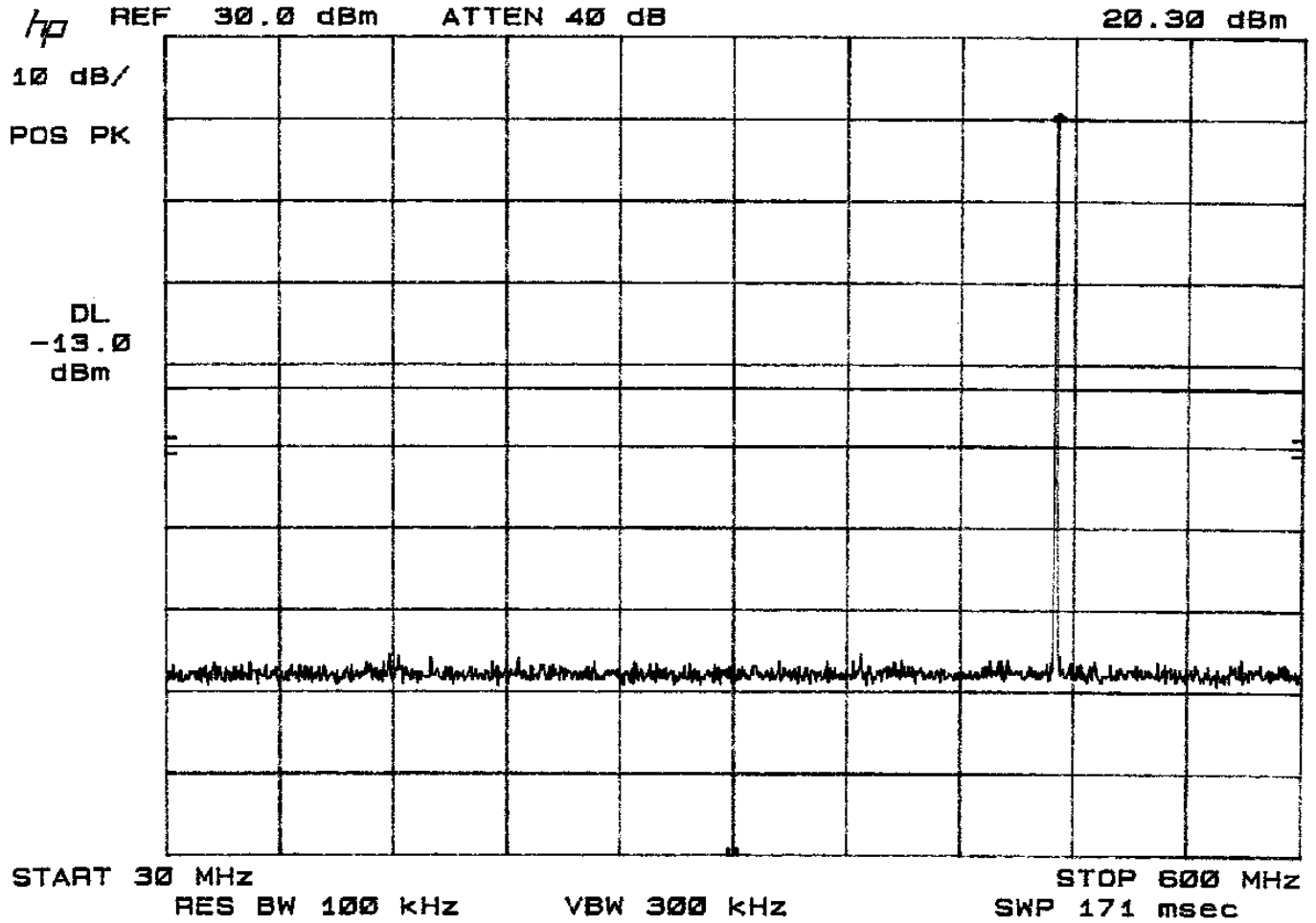


SC107952  
NMB

RW800 BASE STATION  
2.1051 SPURIOUS EMISSIONS AT ANTENNA TERMINALS

11762

MKR 477.5 MHz  
20.30 dBm

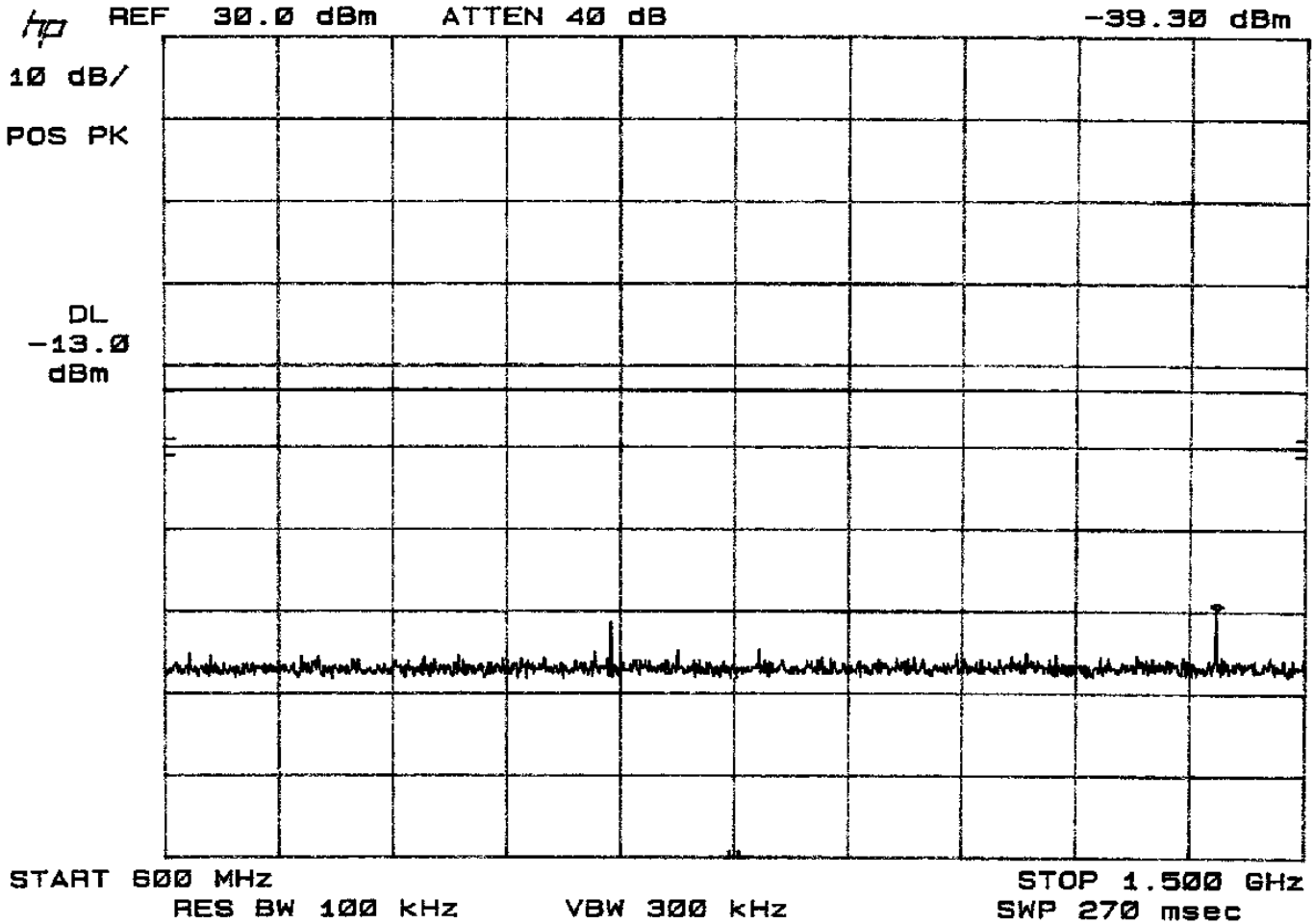


SC107952  
HME

RW 800 BASE STATION  
2.1051 SPURIOUS EMISSIONS AT ANTENNA TERMINALS

1/17/02

MKR 1.430 7 GHz  
-39.30 dBm



SC107952  
HME

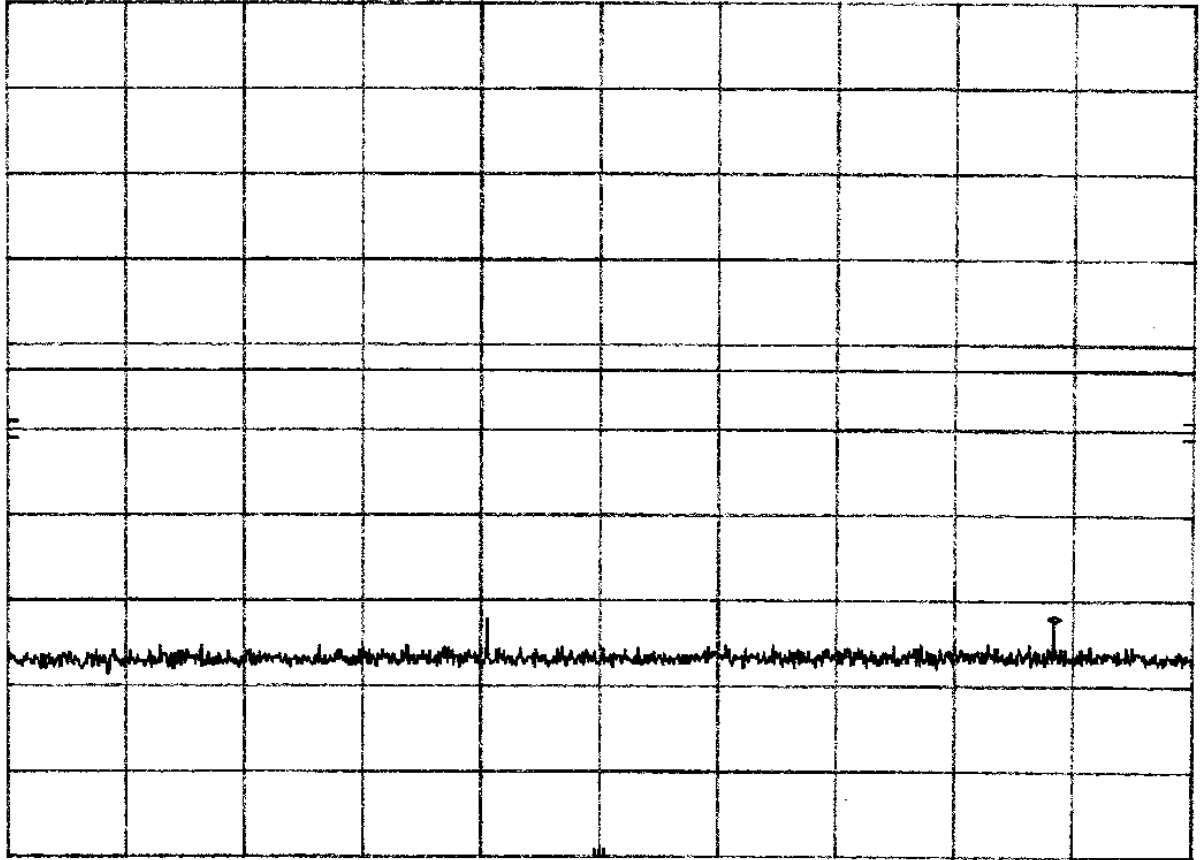
RW 800 BASE STATION  
2.1051 SPURIOUS EMISSIONS AT ANTENNA TERMINALS

11/10/02  
MKR 2.384 GHz  
-42.10 dBm

HP REF 30.0 dBm ATTN 40 dB

10 dB/  
POS PK

DL  
-13.0  
dBm



START 1.50 GHz RES BW 100 kHz VBW 300 kHz STOP 2.50 GHz SWP 300 msec

sc 107952  
RME

2W 800 BASE STATION  
2.1051 SPURIOUS EMISSIONS AT ANTENNA TERMINALS

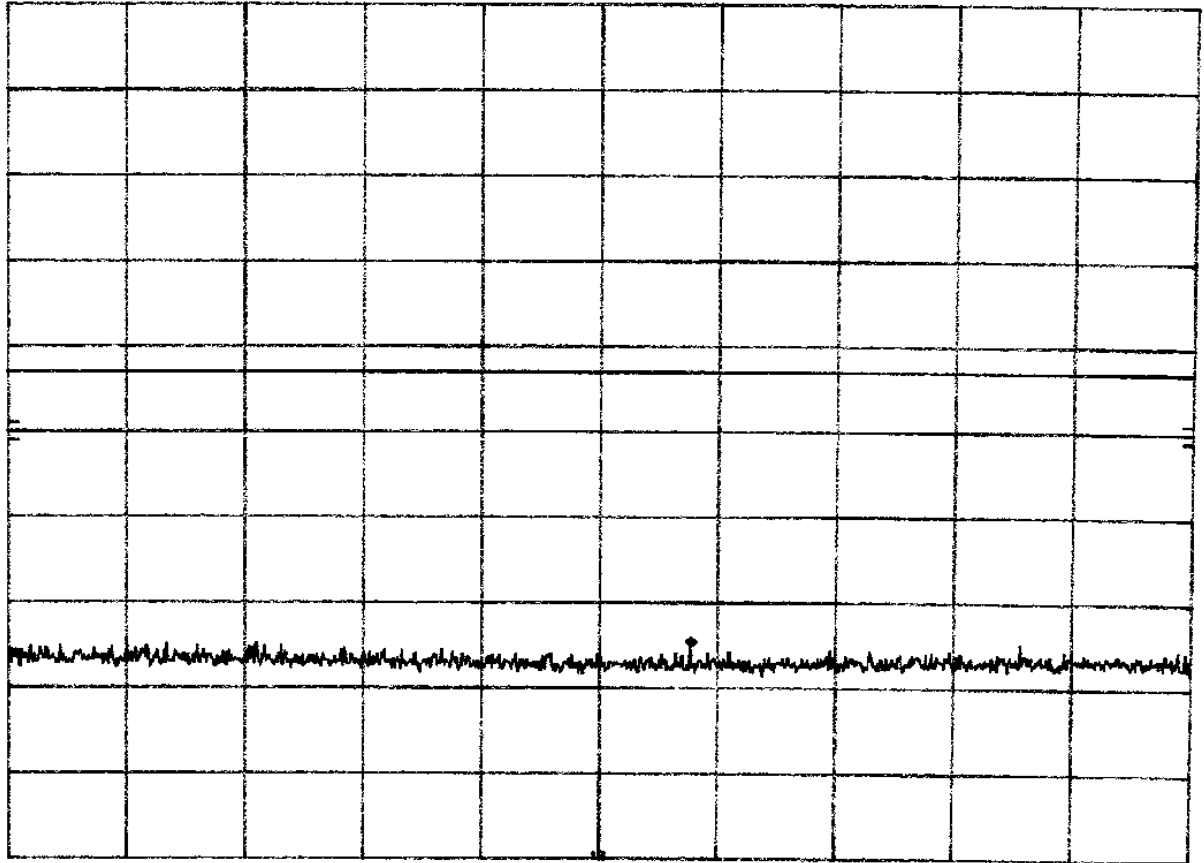
1/17/02

MKR 3.943 GHz  
-44.60 dBm

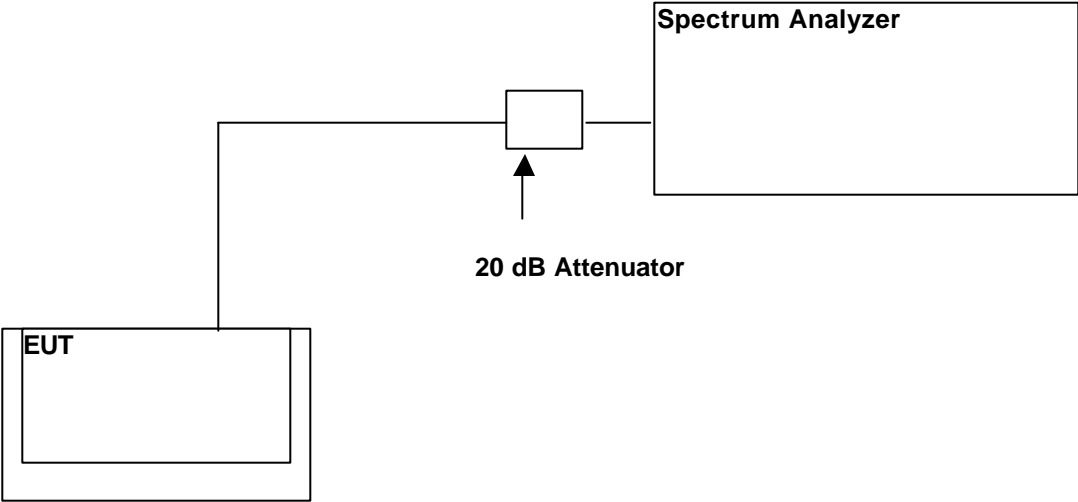
hp REF 30.0 dBm ATTEN 40 dB

10 dB/  
POS PK

DL  
-13.0  
dBm



START 2.50 GHz RES BW 100 KHZ VBW 300 KHZ STOP 5.00 GHz  
SWP 750 msec



Report No. 107952-03 (FCC ID: BYMRW80074)



**RADIATED SPURIOUS EMISSION DATA/EQUIPMENT, FCC Part 2, Paragraph 2.1053**  
**See photo for test setup.**

Report No. SC107952

Test Conditions: FCC 76.861

Photos taken?  Yes

- SR 2, Shielded Room, 12' x 24' x 10', Metal Chamber
- Canyon 2, Open Site      3 meter    10 meter

**Test Equipment Used:**

Model Number	Prop. #	Description	Manufacturer	Serial No.	Cal. Date	2.1046	2.1047	2.1049	2.1051	2.1055	2.1053
hp8586B	721	Spectrum Analyzer	Hewlett Packard	2542A12099	8/21/02						
ESVS20	427	EMI Receiver	Rohde & Schwarz	830350/006	12/8/02						
hp3314A	133	Signal Generator	Hewlett Packard	2151A03391	4/3/02						
PreAmp 2-20 GHZ	719	PreAmp	TUV Product Service	719	3/26/02						
3115	453	Antenna, Horn	Electro Mechanics Co	5412-4364	12/1/03						
LPB2520/A	739	Antenna	Antenna Research	1170	3/21/02						







## 7.1 Field Strength Calculation

If a preamplifier was used during the Radiated Emission Testing, it is required that the amplifier gain must be subtracted from the Spectrum Analyzer (Meter) Reading. In addition, a correction factor for the antenna, cable used and a distance factor, if any, must be applied to the Meter Reading before a true field strength reading can be obtained. In the automatic measurement, these considerations are automatically presented as a part of the print out. In the case of manual measurements and for greater efficiency and convenience, instead of using these correlation factors for each meter reading, the specification limit was modified to reflect these correlation factors at each frequency value so that the meter readings can be compared directly to the modified specification limit. This modified specification limit is referred to as the "Corrected Meter Reading Limit" or simply the CMRL, which is the actual field strength present at the antenna. The quantity can be derived in the following manner:

$$\text{Corrected Meter Reading Limit (CMRL)} = \text{SAR} + \text{AF} + \text{CL} - \text{AG} - \text{DC}$$

Where, SAR = Spectrum Analyzer Reading  
 AF = Antenna Factor  
 CL = Cable Loss  
 AG = Amplifier Gain (if any)  
 DC = Distance Correction (if any)

Assume the following situation: A meter reading of 29.4 dBuV was obtained from a Class A computing device measured at 83 MHz. Assume an antenna factor of 9.2 dB, a cable loss of 1.4 dB and amplifier gain of 20.0 dB at 83 MHz. The final field strength would be determined as follows:

$$\text{CMRL} = 29.4 \text{ dBuV} + 9.2 \text{ dB} - 1.4 \text{ dB} - 20 \text{ dB/M} - 0.0 \text{ dB}$$

$$\text{CMRL} = 20.0 \text{ dBuV/M}$$

This result is well below the FCC and CSA Class A limit of 29.5 dbuV/m at 83 MHz.

For the manual mode of measurement, a table of corrected meter reading limit was used to permit immediate comparison of the meter reading to determine if the measure emission amplitude exceeded the specification limit at that specific frequency.

**8 FREQUENCY STABILITY, FCC Part 2, Paragraph 2.1051**

Report No. SC107952

Test Conditions: FCC 76.861

Photos taken?  Yes

- SR 2, Shielded Room, 12' x 24' x 10', Metal Chamber
- Canyon 2, Open Site      3 meter    10 meter

**Test Equipment Used:**

Model Number	Prop. #	Description	Manufacturer	Serial No.	Cal. Date	2.1046	2.1047	2.1049	2.1051	2.1055	2.1053
hp8586B	721	Spectrum Analyzer	Hewlett Packard	2542A12099	8/21/02						
ESVS20	427	EMI Receiver	Rohde & Schwarz	830350/006	12/8/02						
hp3314A	133	Signal Generator	Hewlett Packard	2151A03391	4/3/02						
PreAmp 2-20 GHZ	719	PreAmp	TUV Product Service	719	3/26/02						
3115	453	Antenna, Horn	Electro Mechanics Co	5412-4364	12/1/03						
LPB2520/A	739	Antenna	Antenna Research	1170	3/21/02						

### FREQUENCY STABILITY

Test Report #: SC-107952 Test Area: TR-2  
 Test Method: FCC PART 2.1055 Date: 19 DEC 2001  
FCC PART 74.861(2) 4  
 EUT Model #: RW800 EUT POWER:  230 Vac/50 Hz  120 Vac/60 Hz  
 Other:  
 EUT Description: BASE STATION  
 NOTES: NORMAL TRANSMIT MODE  
LIMIT = 0.005 %



Temperature: 25 °C  
 Air Pressure: 100.0 kPa  
 Relative Humidity: 36 %

TEST LEVEL FREQ. MHz	DURATION	FREQUENCY %	TEMP °C	COMPLIES		REMARKS
				YES	NO	
092750	30MIN	0	+25	✓		STABILIZED AT ROOM TEMP
092860	60MIN	0.00147	-30	✓		SOAK
093400	1MIN	0.00135		✓		TURN ON AFTER SOAK
093720	2 MIN	0.00128		✓		
094370	5	0.00114	↓	✓		
094800	10	0.00105	-30	✓		
096280	10	0.00094	-20	✓		SOAK
096370	1	0.00092		✓		
096680	2	0.00085		✓		
097150	5	0.00055	↓	✓		
097200	10	0.00052	-20	✓		
097960	10	0.00038	-10	✓		SOAK
098070	1	0.00036		✓		
098220	2	0.00033		✓		
098300	5	0.00031	↓	✓		
098450	10	0.00028	-10	✓		
098830	10	0.00020	0	✓		SOAK
098870	1	0.00019		✓		
098890	2	0.00018		✓		
099010	5	0.00016	↓	✓		
099120	10	0.00013	0	✓		
099310	10	0.00009	+10	✓		SOAK
099360	1	0.00008		✓		
099380	2	0.00008		✓		
099440	5	0.00007	↓	✓		

Tested By: DAVID BERNARDIN  
 Printed

David Bernardin  
 Signature

### FREQUENCY STABILITY

Test Report #: SC-107952 Test Area: TR-2  
 Test Method: FCC PART 2.1055 Date: 19 DEC 2001  
FCC PART 24.861(e) 4 EUT POWER:  
 230 Vac/50 Hz  120 Vac/60 Hz  
 EUT Model #: RW800  Other: \_\_\_\_\_  
 EUT Description: BASE STATION  
 NOTES: NORMAL TRANSMIT MODE  
Limit = 0.005%



Temperature: 25 °C  
 Air Pressure: 100.0 kPa  
 Relative Humidity: 36 %  
2 of 2

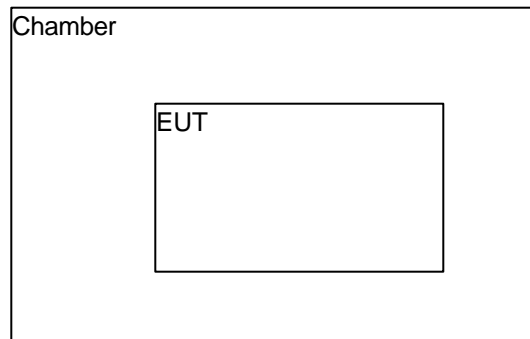
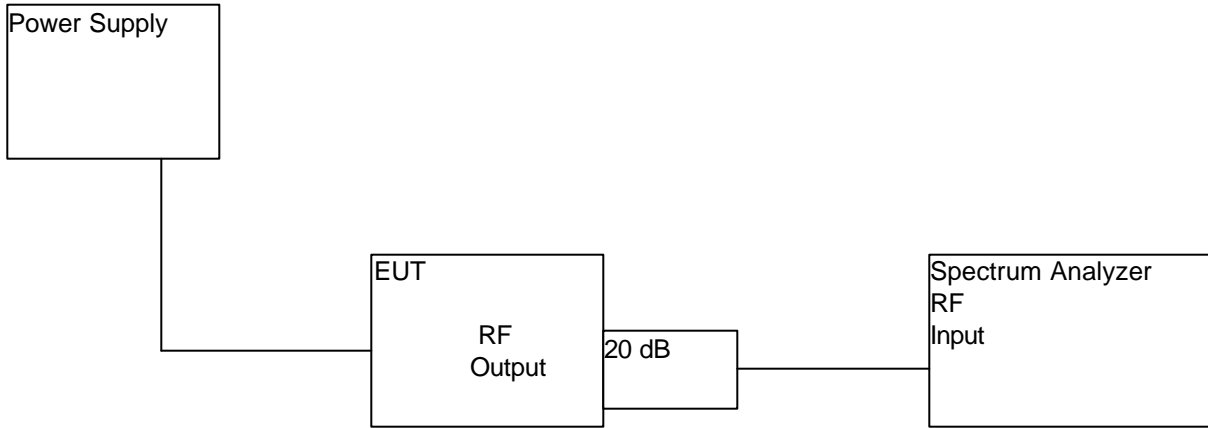
FREQ. MHz	DURATION	FREQUENCY %	TEMP °C	COMPLIES		REMARKS
				YES	NO	
09953	10 MIN	0.0005	+10	✓		
09969	10"	0.0001	+20	✓		SOAK
09972	1	0.0001	↓	✓		
09973	2	0.0000	↓	✓		
09974	5	0.0000	↓	✓		
09969	10	0.0001	+20	✓		
09971	10	0.0001	+30	✓		SOAK
09972	1	0.0001	↓	✓		
09975	2	0.0000	↓	✓		
09982	5	-0.0001	↓	✓		
09983	10	-0.0002	+30	✓		
09998	10	-0.0005	+40	✓		SOAK
10004	1	-0.0006	↓	✓		
10011	2	-0.0008	↓	✓		
10041	5	-0.0014	↓	✓		
10131	10	-0.0033	+40	✓		
10245	10	-0.0057	+50	✓		SOAK
10249	1	-0.0058	↓	✓		
10249	2	-0.0058	↓	✓		
10253	5	-0.0059	↓	✓		
10248	10	-0.0058	+50	✓		SOAK

Tested By: DAVE BERNARDIN  
 Printed

[Signature]  
 Signature







## 9 ATTESTATION STATEMENT

All tests according to *FCC Part 2, Paragraphs 2.1046, 2.1047, 2.1049, 2.1051, 2.1053, 2.1055; and Part 74, Paragraph 74.861(e)* were

- Performed

- **Not** Performed

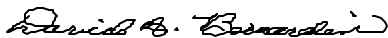
The Equipment Under Test

- **Fulfills** the *FCC Part 2, Paragraphs 2.1046, 2.1047, 2.1049, 2.1051, 2.1053, 2.1055; and Part 74, Paragraph 74.861(e)* requirements.

---

- TÜV PRODUCT SERVICE, INC. -

Responsible Engineer:



Dave Bernardin (EMC Engineer)