

MEASUREMENT/TECHNICAL REPORT

**Company - Model: Hewlett-Packard
M3813A
FCC ID: B94M3813A
March 26, 1999**

Description: This is a report to support a request for an original grant of equipment authorization.

Equipment Type: Low Power Communications Device Transmitter

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Letter of Agency



Cynthia P. Danaher
Vice President and
Group General Manager

January 19, 1999

Curtis-Straus LLC
527 Great Road
Littleton, MA 01460

I am an officer of Hewlett-Packard Company, do hereby authorize, until further notice, Curtis-Straus LLC, of 527 Great Road, Littleton, MA 01460, to act on our behalf in dealings before the Federal Communications Commission with respect to the preparation, submission and filing of applications for equipment authorization under Title 47 of the Code of Federal Regulations for the following Hewlett-Packard products:

M3812A Home Hub
M3813A Home Scale Unit
M3815A Home Blood Pressure Unit
M3816A Home ECG Rhythm Strip Unit

This authorization includes, but is not limited to, the signing of Form 731.

I certify that no party (as defined in 47 CFR § 1.2002) to these applications, including myself, is subject to a denial of federal benefits, including FCC benefits, pursuant to section 5301 of the Anti-Drug Abuse Act of 1988, 21 U.S.C., § 862.

Certified by:

HEWLETT-PACKARD COMPANY

A handwritten signature in blue ink, appearing to read 'C. Danaher', written over a horizontal line.

Cynthia P. Danaher
Vice President and General Manager
Medical Products Group

Introduction

This report is an application for Certification of a Transmitter operating pursuant to Part 15.249 of the FCC Rules, Code of Federal Regulations 47. The model number covered by this report is M3813A. This report is designed to demonstrate the compliance of this device with the requirements outlined in Part 15 of CFR 47 using the methods outlined in Part 2 of CFR 47. The current revision date, October 1,1997, of each Part has been used for technical requirements.

The confidential information and descriptions included in this application are detailed descriptions of the products, block diagrams, component specifications, and schematic diagrams. We hereby respectfully request under the provision of section 0.457d of the code that the documents listed below be held confidential.

Exhibit 6.2: Schematics

Exhibit 6.3: Bill of Materials

Hewlett-Packard is requesting that the Schematics and Bill of Materials be kept confidential in the FCC application because of the proprietary design developed by Hewlett-Packard that is unique to the industry.

EXHIBIT 1:

1.0 Statement of Conformity

The Hewlett-Packard M3813A has been found to conform with the following parts of the 47 CFR as detailed below:

Part 2	Part 15	Comments
	15.15(b)	The product contains no user accessible controls that increase transmission power above allowable levels.
2.925	15.19	The label is shown in the label exhibit.
	15.21	Information to the user is shown in the instruction manual exhibit.
	15.27	No special accessories are required for compliance.
	15.203	The antenna is permanently attached to the printed circuit board.
	15.205 15.209	The fundamental is not in a Restricted band and the spurious and harmonic emissions in the Restricted bands comply with the general emission limits of 15.209.
	15.207	The unit is battery operated and the line conducted limits are, therefore, not applicable.
	15.249(a)	The unit complies with the field strength limits of the 15.249(a) table including the 20dB peak restriction of 15.35(b) and 15.249(d).
	15.249(c)	The unit complies with the field strength limits of the 15.209(a) table.

EXHIBIT 2

2.0 General Description

2.1 Product Description

The product is a self-contained battery operated home scale with transmitter. The scale measures the weight of patients in their homes. It then transmits its readings to a receiving HUB (916.5MHz) several times per day. The unit is battery operated and has no direct connections, other than the RF link, to any other device.

Unit Tested:

Model Number: M3813A

Serial Number: S20001

2.2 Related Submittal(s) Grants

There are no other approvals required for this device.

2.3 Test Methodology

Radiated emission testing was performed according to the procedures in ANSI C63.4 (1992). Radiated testing was performed at an antenna to EUT distance of 3 meters below 1 GHz, and at a distance of 3 or 1 meter(s) above 1 GHz. The actual test distance used is noted in the test data sheets. The device's performance was investigated to 10 times the fundamental frequency. A fresh battery was used for all testing. Although the device does contain voltage regulating circuitry, the emissions in each configuration were maximized and the battery changed in the maximized configuration just prior to the reading being taken to insure that maximum emissions were recorded.

All other performance tests were made in accordance with the procedures outlined in Part 15 of CFR 47. The applicable sections provided under Part 15 are provided in the measurement section of this report, Exhibit 3.

2.4 Test Facility

The open area test site and conducted measurement facility used to collect the radiated data is located at 527 Great Road, Littleton, MA 01460. Sites "A" and "T" were used. These test facilities have been fully described in a report submitted to your office, and a letters from your office dated August 8, 1997 and March 10, 1998 verified receipt of this report and confirmed compliance of these sites. Please reference your file # 31040/SIT 1300F2 should you have any questions regarding the test site construction.

2.5 Test Equipment Used

SPECTRUM ANALYZER(S)

GREEN 8593E 9 kHz-26.5 GHz	HP	S/N:3829A03618	Calibration Due:31-AUG-99
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ANTENNA(S)

GREEN-BLACK CBL6112B Bilog 30 MHz-2 GHz	Chase	S/N:2412	Calibration Due:30-MAR-99
BLACK 3115 Horn Antenna	EMCO	S/N:9703-5148	Calibration Due:16-MAR-99
YELLOW 3115 Horn Antenna	EMCO	S/N:9608-4989	Calibration Due:10-MAR-00
BLUE 3143 Biconilog 30 MHz-1.1 GHz	EMCO	S/N:1271	Calibration Due:28-MAY-99

PREAMPLIFIER(S)

GOLD ZFL-1000-LN RF Preamplifier 10 - 2000 MHz	MiniCircuits		Calibration Due:25-AUG-99
GREEN ZFL-1000-LN RF Preamplifier 0.01- 2000 MHz	MiniCircuits		Calibration Due:04-FEB-00
WHITE SMC-12A RF Preamplifier 2000 - 18000 MHz	MITEQ	S/N:426643	Calibration Due:30-OCT-99

OPEN AREA TEST SITE(S)

SITE "A"	Calibration Due:26-SEP-99
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Unless otherwise noted the calibration interval is one year. All equipment is calibrated using standards traceable to NIST or other nationally recognized calibration standard.

EXHIBIT 3

3.0 Measurement Results

3.1 Operating Frequency

The devices operating frequency is 916.5 MHz.

3.2 Electric Field Strength Radiation Measurements

Data was obtained using the procedures outlined in ANSI C63.4 (1992). All signals from the transmitter within 20 dB of the emission limit are reported in the following data tables.

Radiated Emissions Table									Curtis-Straus LLC		
Date: 22-Mar-99			Company: Hewlett-Packard						Table 1		
Engineer: Michael Buchholz			EUT Desc: Scale						Work Order: 990002		
Frequency Range: 916.5-9165.0MHz						Measurement Distance: 3 m					
Notes: 1st ten harmonics of 916.5MHz in continuous wave mode.											
Antenna Polarization (H / V)	Frequency (MHz)	Reading (dBμV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Averaging Factor (dB)	Distance Factor (dB)	Adjusted Reading (dBμV/m)	FCC Part 15C Sec 249		
									Limit (dBμV/m)	Margin (dB)	Result (Pass/Fail)
H	916.5	83.9	22.4	23.7	3.1	0.0	0.0	88.3	93.97	-5.7	Pass
V	1832.9	33.5	19.1	28.6	4.9	6.0	0.0	41.9	54.0	-12.1	Pass
H	2749.4	34.8	20.2	31.4	1.6	6.0	0.0	41.6	54.0	-12.4	Pass
H	3665.9	41.8	19.9	33.3	1.9	6.0	0.0	51.1	54.0	-2.9	Pass
H / V	4582.4	35.3	20.2	35.0	2.2	6.0	0.0	46.3	54.0	-7.7	Pass
V	5498.9	34.3	19.9	36.9	2.5	6.0	0.0	47.8	54.0	-6.2	Pass
V	6415.4	31.1	18.1	37.0	2.8	6.0	0.0	46.8	54.0	-7.2	Pass
Noise Floor	7331.9	32.0	16.6	38.7	3.0	6.0	9.5	41.6	54.0	-12.4	Pass
Noise Floor	8248.4	34.2	16.8	39.7	3.3	6.0	9.5	44.9	54.0	-9.1	Pass
Noise Floor	9164.9	33.5	18.1	40.8	3.5	6.0	9.5	44.2	54.0	-9.8	Pass
Final Result: Pass by 2.9 dB Worst Freq: 3665.9 MHz											
Test Site: "A" Pre-Amp: Gld,Wht Cable: 50,12 ft RG8A/U Analyzer: Green Antenna: Blue, Yellow											

Radiated Emissions Chart								Curtis-Straus LLC				
Date: 05-Jan-99			Company: Hewlett Packard					Distance: 3 m				
Engineer: Michael Buchholz			EUT Desc: Scale Transmitter					Table No: 2				
Notes: Full scan (non-harmonics of 916.5MHz) 30-10000MHz								Work Order: 990002				
Antenna Polarization (H / V)	Frequency (MHz)	Reading (dBμV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Reading (dBμV/m)	FCC Class B			FCC Class B		
							Limit (dBμV/m)	Margin (dB)	Result (Pass/Fail)	Limit (dBμV/m)	Margin (dB)	Result (Pass/Fail)
H	367.2	37.5	21.3	14.7	1.6	32.5	46.0	-13.5	Pass	46.0	-13.5	Pass
H	379.3	32.3	21.3	15.0	1.7	27.7	46.0	-18.3	Pass	46.0	-18.3	Pass
H	392.2	41.2	21.3	15.4	1.7	37.0	46.0	-9.0	Pass	46.0	-9.0	Pass
H	812.1	29.5	20.9	20.0	2.8	31.4	46.0	-14.6	Pass	46.0	-14.6	Pass
H	817.0	36.9	20.9	20.1	2.8	38.9	46.0	-7.1	Pass	46.0	-7.1	Pass
H	824.1	31.4	20.9	20.2	2.9	33.6	46.0	-12.4	Pass	46.0	-12.4	Pass
Pre-Amp: Green		OATS: "A"		Cable: 50' RG8A/U		Analyzer: Green		Antenna: Green-Black, Black				

Radiated Test Configuration Photographs:

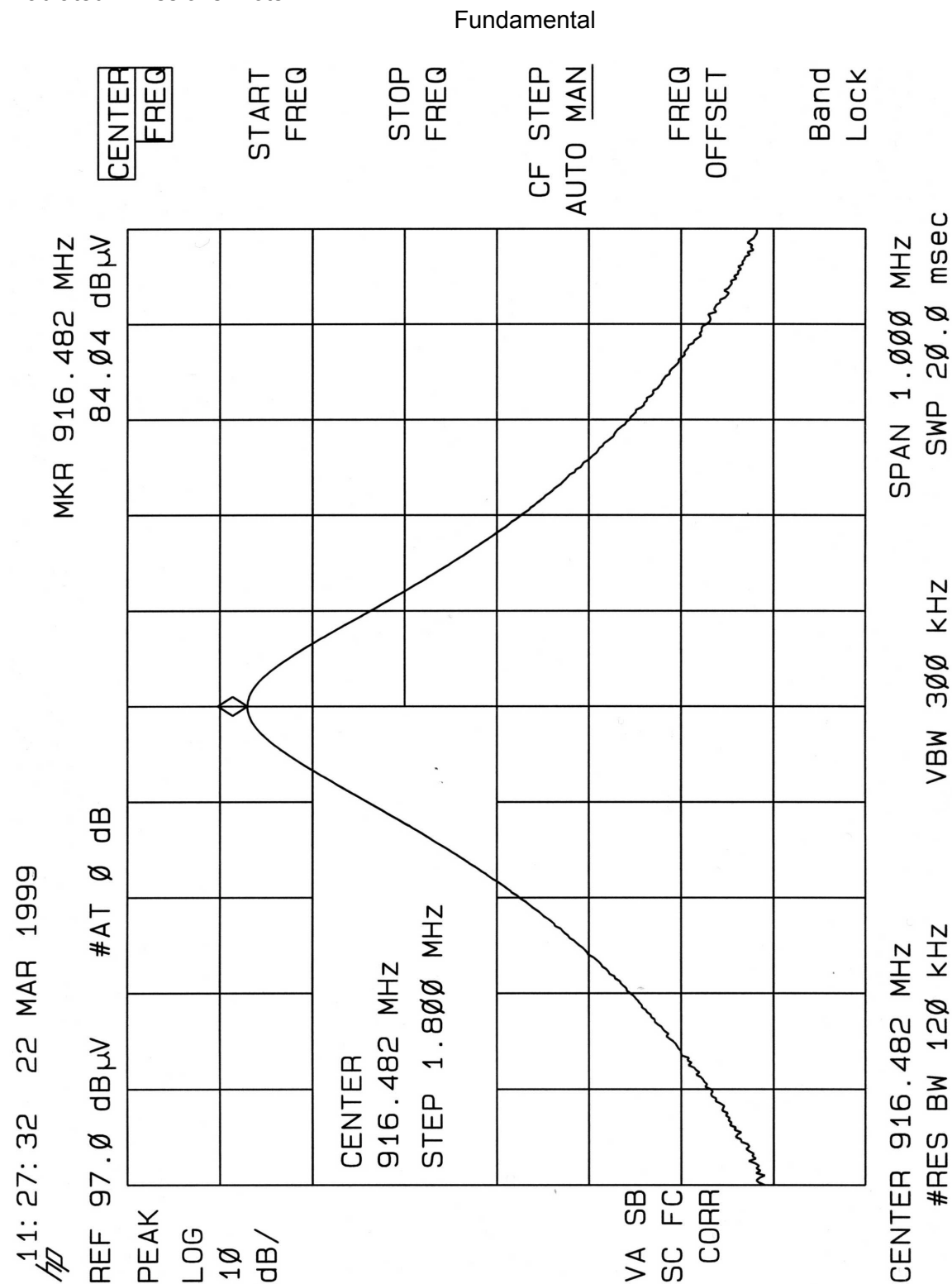


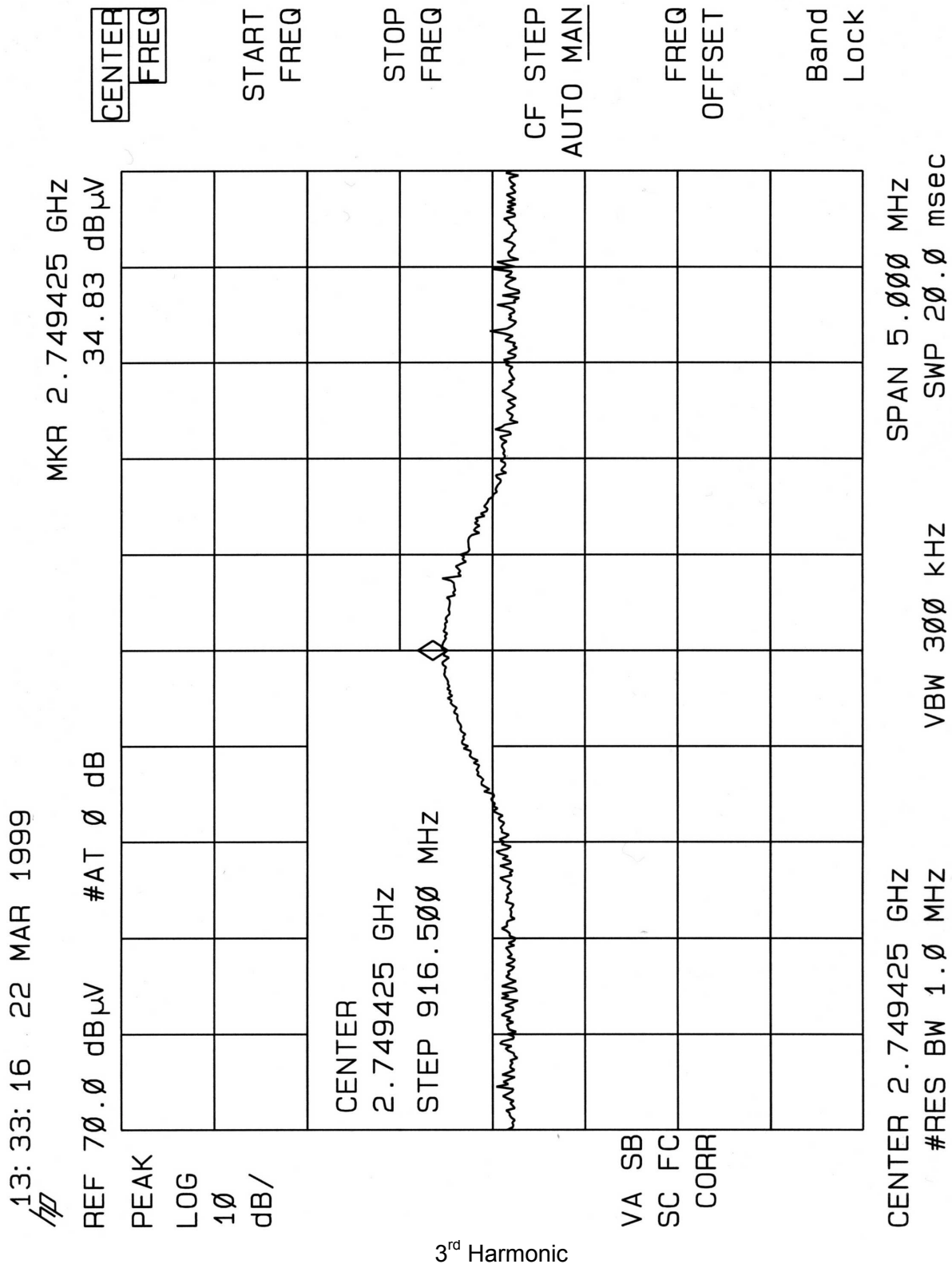
Radiated Emissions



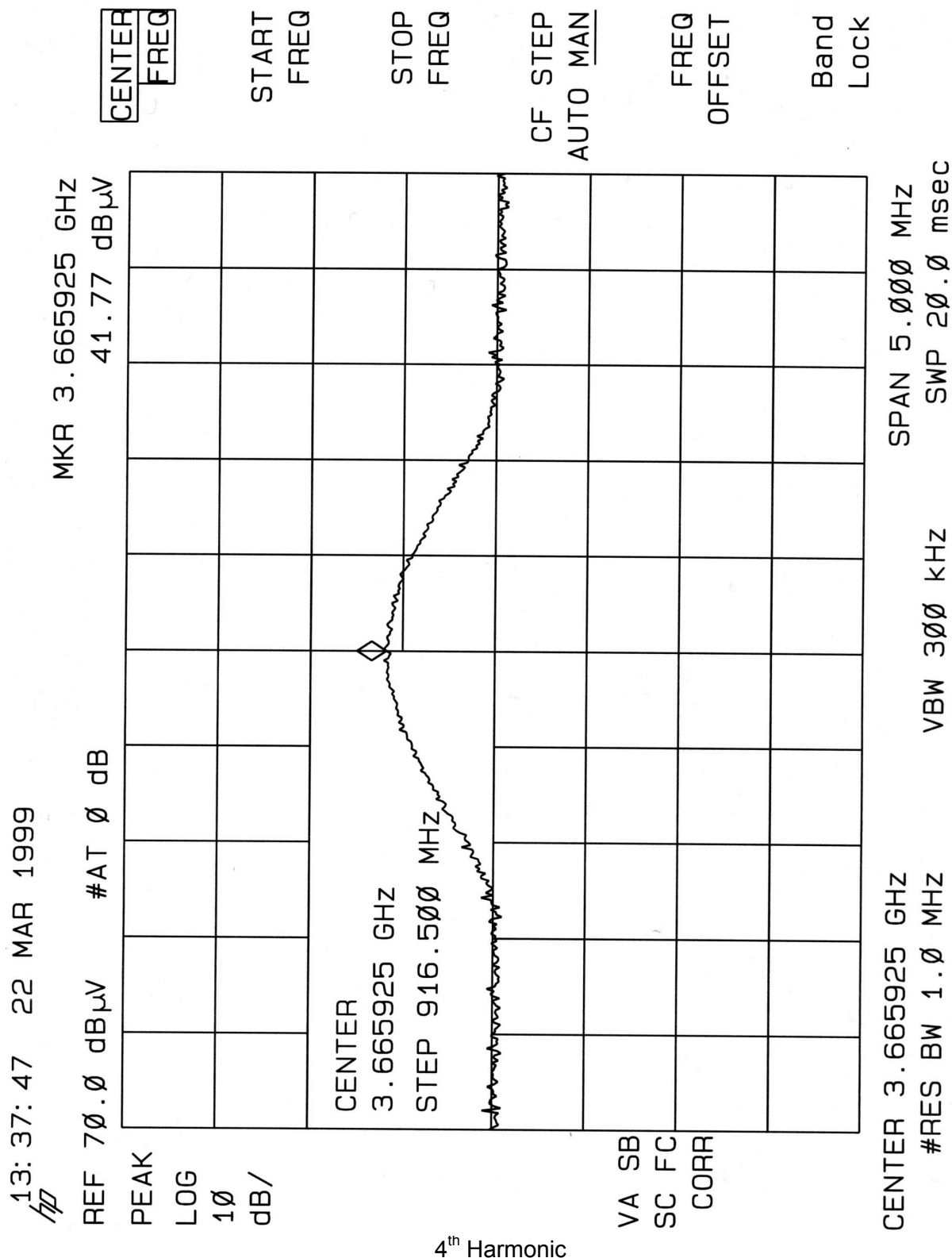
Radiated Emissions

Radiated Emissions Plots:





1-Jul-01



1/4

MKR 4.582425 GHz
35.25 dB μ W

SPAN 5.000 MHz
SWP 20.0 msec

CENTER	FREQ
10	1
20	1
30	1
40	1
50	1
60	1
70	1
80	1
90	1
100	1

START
FREQ

STOP
FREQ

CF STEP
AUTO MAN

FREQ
OFFSET

Band
Lock

5th Harmonic

知

171

PEAK

10

6th Harmonic

Band
Lock

CENTER 5.498925 GHz

SWP 20.0 msec

1. 40

MKR 6.415425 GHz

31.14 dB_{μV}[illegible]

CENTER

ZHIM ØC:OTC
F7IC

→

CF STEP
AUTO MAN

[illegible]

Journal Pre-proof

CENTER 6.415425 GHz
SPAN 5 000 MHz

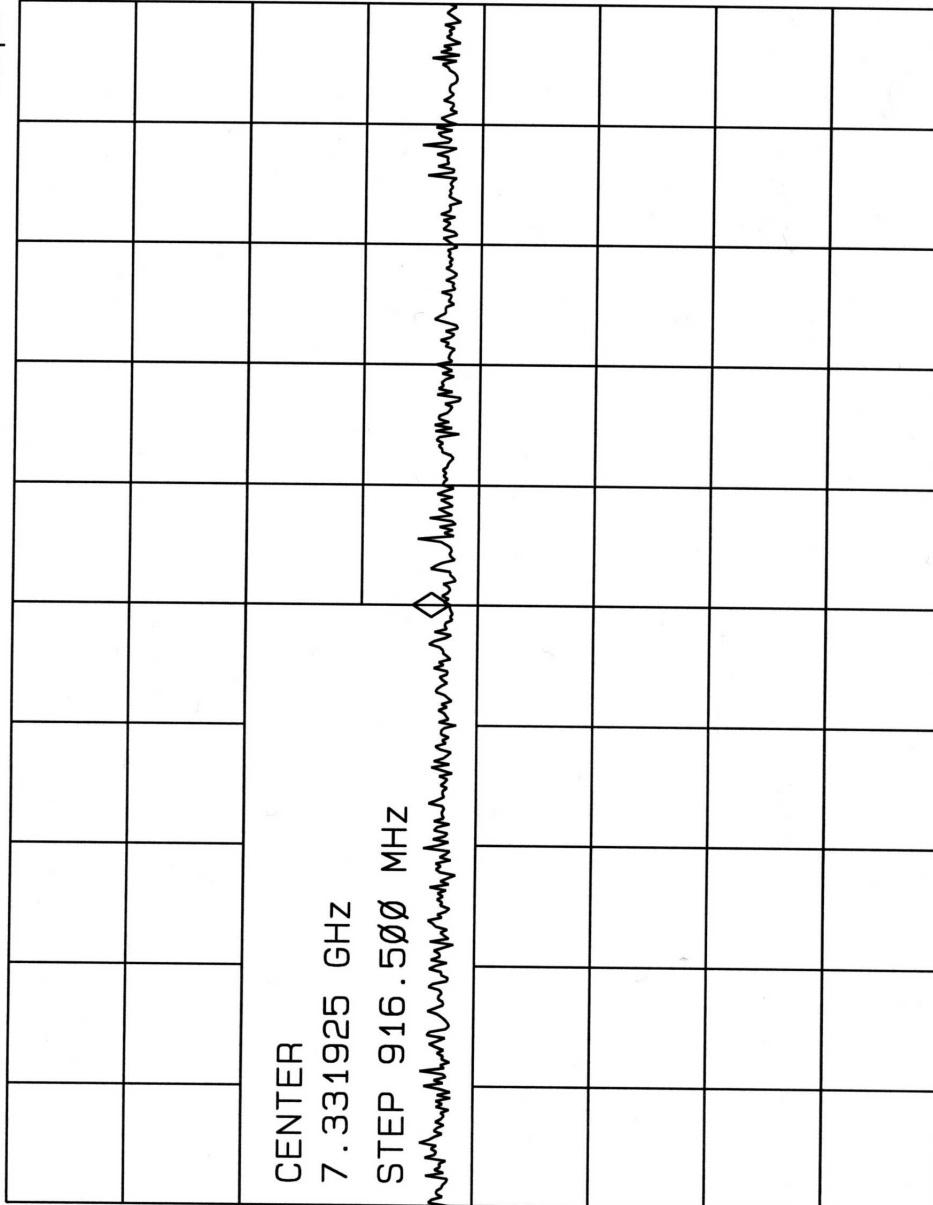
VBW 300 KHz

14:36:36 22 MAR 1999
hp

REF 70.0 dBμV #AT 0 dB

MKR 7.331925 GHz
32.38 dBμV

PEAK
LOG
10
dB/



VA SB
SC FC
CORR

CENTER
FREQ

START
FREQ

STOP
FREQ

CF STEP
AUTO MAN

FREQ
OFFSET

Band
Lock

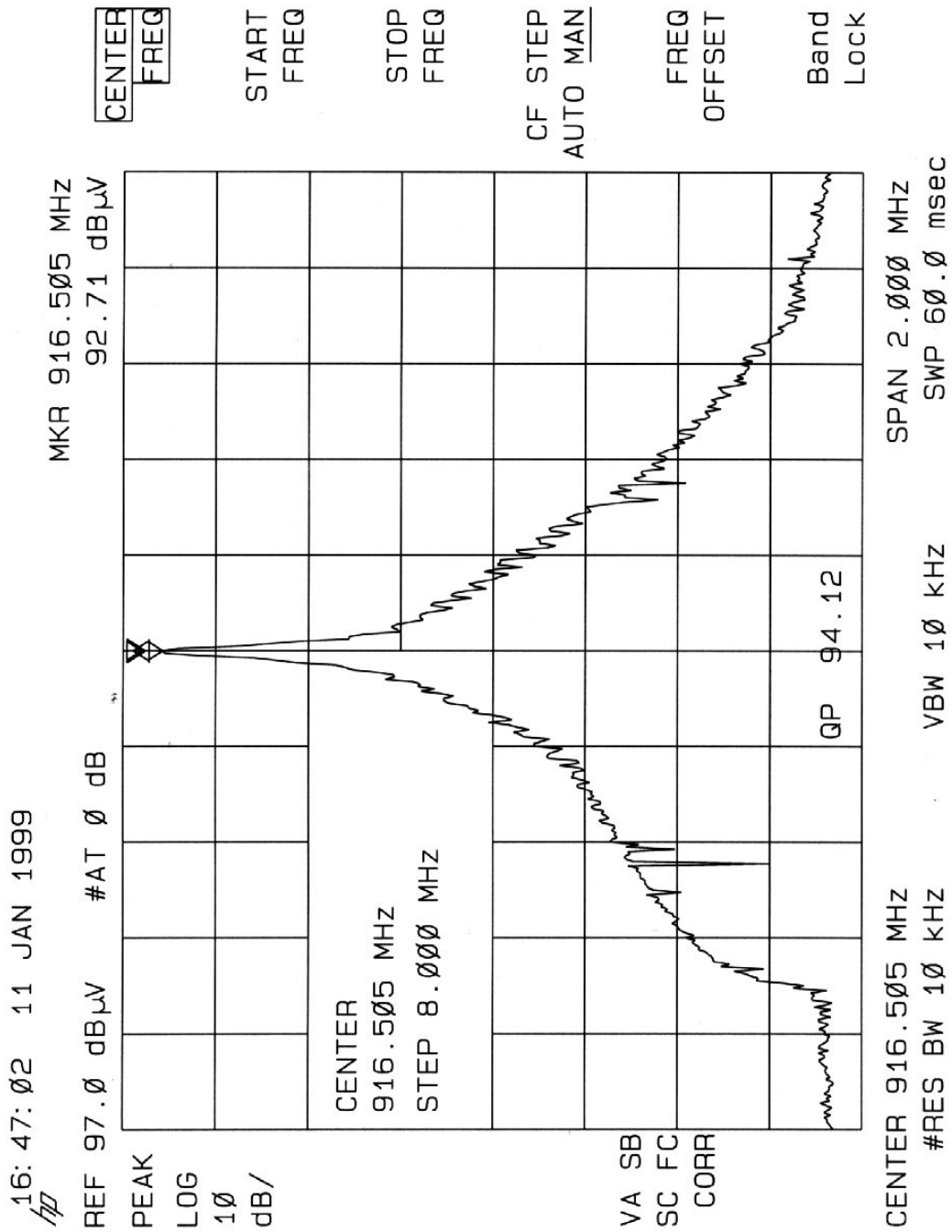
CENTER 7.331925 GHz
#RES BW 1.0 MHz

SPAN 5.000 MHz
SWP 20.0 msec
VBW 300 kHz

8th Harmonic

3.3 Occupied Bandwidth Measurements

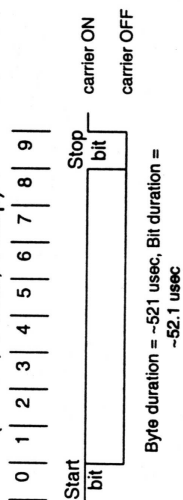
A plot was obtained with the unit operating with modulation. The bandwidth observed does not extend outside of the operating band 902-928MHz.



3.4 Averaging factor derivation based on worst case 100mS period.

Attached is a timing diagram and a discussion of the pulse code modulation scheme employed by the device. As can be seen, the worst case 100mS second period results in an averaging factor of 6.0dB.

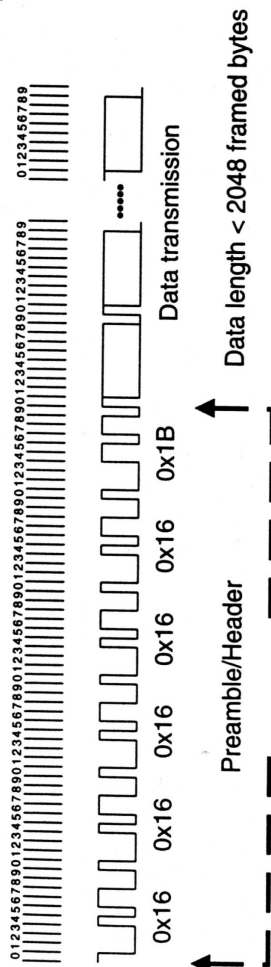
Typical Framed Data Byte
(1 start, 8 data, 1 stop)



See discussion for
duty cycle calculation.

NOTES:

1. Start bit is always a 1 (i.e. "carrier on").
2. Stop bit is always a 0 (i.e. "carrier off").
3. Special coding in the transmitting devices guarantees that not more than 3 consecutive bits of the data field (i.e. bits 1 through 8) will ever be the same (i.e. 3 consecutive 1's in the data field must be followed by a 0, and viceversa).



RF Timing Diagram for Hewlett Packard M3810A system components (i.e. M3812A, M3813A, M3815A and M3816A)

Hewlett Packard Company Confidential, 17 February 1999

M3813A RF Data Encoding Algorithm**RFM Receiver Limitations**

The RFM receiver requires a data pattern such that there are no more than 3 bits of the same value (1 or 0) in a row. Ideally, the duty-cycle of any transmission will average 50% so that the receiver threshold is optimized for sensitivity and noise rejection. The receiver can operate reliably when the threshold is between %25 and %75 of the peak-to-peak value of the transmitted signal (hence the 3-bit limitation). This requirement applies to the transmitted bit stream, which in our case includes the "start" and "stop" framing bits inserted by the 16550-compatible UART.

FCC Limitations

We have computed our worst case duty cycle with a program that moved a 0.10-second window over traces of 145,997 and 28,565 bytes of real device data. The duty cycles for these traces were 0.5312 and 0.5307 respectively, resulting in -5.495dB and -5.503dB averaging factors. For FCC certification, we are claiming a less aggressive -5.2dB averaging factor providing an additional 0.3dB of margin beyond the measured values.

We are using a serial data format of 19200 bits/sec with a format of 1 start bit, 8 data bits, and one stop bit. Using this format, 0.1 seconds is equivalent to 192 bytes of data.

RF Data Transmission

Data is transmitted using OOK (On-Off Keying) such that the equivalent of an RS-232 idle line (MARK) is carrier OFF.

For RS232 transmission, a binary data value of '1' is transmitted as a MARK = idle = carrier-OFF value and a binary data value of '0' is transmitted as a SPACE = carrier-ON value. A START bit is a SPACE and can be represented with a binary data value of '0'. A STOP bit is a MARK and can be represented with a binary data value of '1'.

Given this, a binary data value of '**1**' is **equivalent to carrier OFF**, and a binary value of '**0**' is **equivalent to carrier ON**. This will be important when calculating the transmitted duty-cycle of a given data byte.

We are framing each 8-bit data byte with 1 start bit, 1 stop bit, and no parity bit. Note that data is always transmitted LSB first. A given byte of data is transmitted as follows:

```
-----time----->>>>
<start> D0 D1 D2 D3 D4 D5 D6 D7 <stop>
or
0 D0 D1 D2 D3 D4 D5 D6 D7 1
```

When a binary value is written "normally", the MSB is on the left, so the values in the rest of this description are written as:

```
1 D7 D6 D5 D4 D3 D2 D1 D0 0
```

A hex value of "0x11" becomes a binary "00010001" which, when framed, is "1000100010".

Duty Cycle Calculation

Table 1 shows all of the allowable "data" values that meet this criterion when transmitted using an 8-bit data byte transmitted LSB-first framed with 1 start (logic 0) and 1 stop (logic 1) bit. The duty cycle of the carrier for the given data value is shown in the right-hand column.

The maximum RF duty cycle for any of the allowable codes is 70% and the minimum duty cycle is 30%. Since there are only 137 allowable codes, certain data values must be sent as a two-byte pair ("escaped" or "shifted"). In order to maximize throughput, only 119 values will be escaped.

Since the "shift" character will be a dominant character in the data stream, it should be chosen such that it has a 50% duty cycle. The ASCII "escape" character, 0x1B works nicely for this purpose.

TABLE 1: Allowable data values in ascending order

N.B. '1' = carrier OFF, '0' = carrier ON

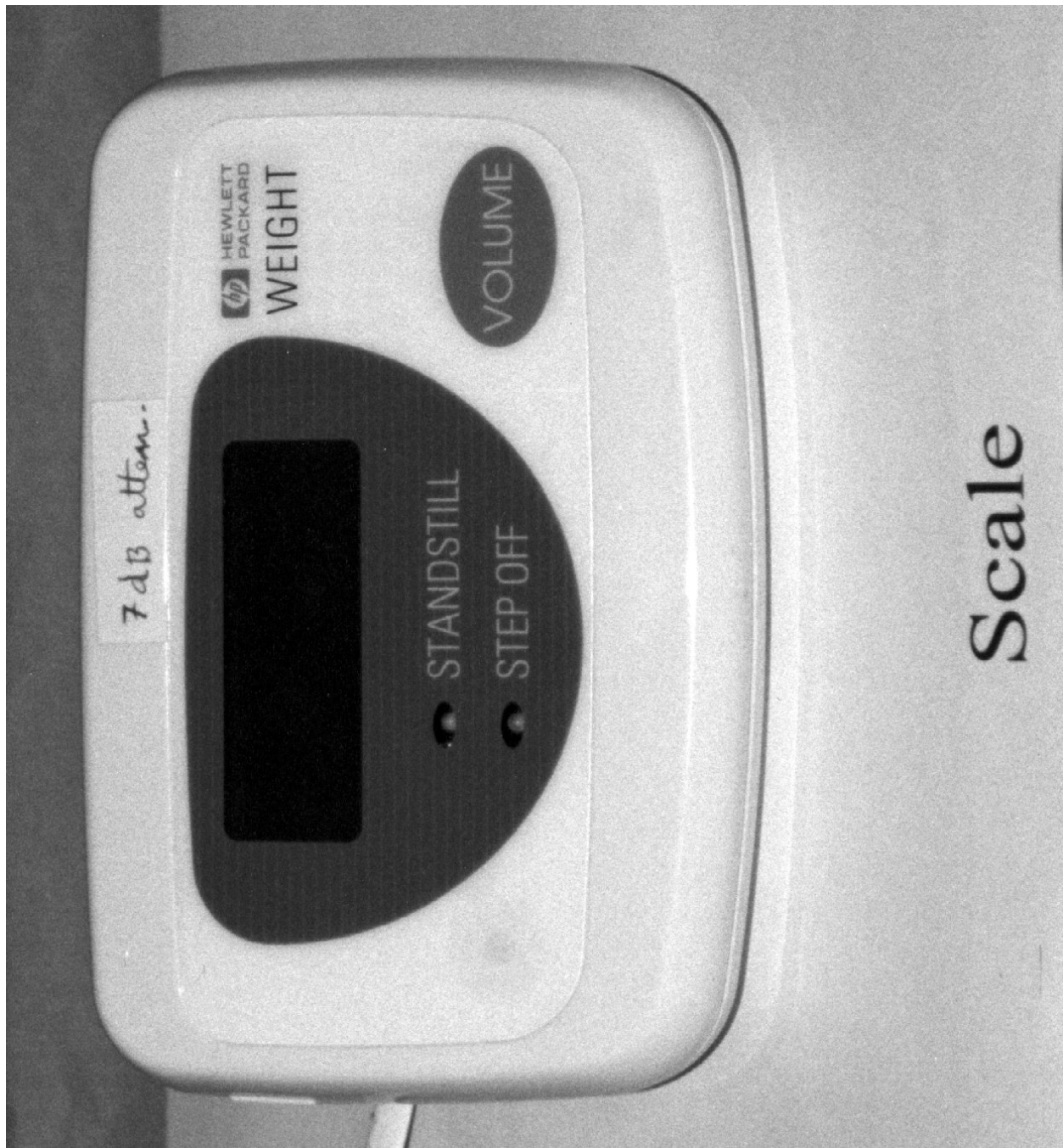
=====		
11	= 00010001 = 1000100010 (/ 7.0 (+ 7.0 3.0))	0.70
12	= 00010010 = 1000100100 (/ 7.0 (+ 7.0 3.0))	0.70
13	= 00010011 = 1000100110 (/ 6.0 (+ 6.0 4.0))	0.60
14	= 00010100 = 1000101000 (/ 7.0 (+ 7.0 3.0))	0.70
15	= 00010101 = 1000101010 (/ 6.0 (+ 6.0 4.0))	0.60
16	= 00010110 = 1000101100 (/ 6.0 (+ 6.0 4.0))	0.60
17	= 00010111 = 1000101110 (/ 5.0 (+ 5.0 5.0))	0.50
19	= 00011001 = 1000110010 (/ 6.0 (+ 6.0 4.0))	0.60
1A	= 00011010 = 1000110100 (/ 6.0 (+ 6.0 4.0))	0.60
1B	= 00011011 = 1000110110 (/ 5.0 (+ 5.0 5.0))	0.50
1C	= 00011100 = 1000111000 (/ 6.0 (+ 6.0 4.0))	0.60
1D	= 00011101 = 1000111010 (/ 5.0 (+ 5.0 5.0))	0.50
22	= 00100010 = 1001000100 (/ 7.0 (+ 7.0 3.0))	0.70
23	= 00100011 = 1001000110 (/ 6.0 (+ 6.0 4.0))	0.60
24	= 00100100 = 1001001000 (/ 7.0 (+ 7.0 3.0))	0.70
25	= 00100101 = 1001001010 (/ 6.0 (+ 6.0 4.0))	0.60
26	= 00100110 = 1001001100 (/ 6.0 (+ 6.0 4.0))	0.60
27	= 00100111 = 1001001110 (/ 5.0 (+ 5.0 5.0))	0.50
29	= 00101001 = 1001010010 (/ 6.0 (+ 6.0 4.0))	0.60
2A	= 00101010 = 1001010100 (/ 6.0 (+ 6.0 4.0))	0.60
2B	= 00101011 = 1001010110 (/ 5.0 (+ 5.0 5.0))	0.50
2C	= 00101100 = 1001011000 (/ 6.0 (+ 6.0 4.0))	0.60
2D	= 00101101 = 1001011010 (/ 5.0 (+ 5.0 5.0))	0.50
2E	= 00101110 = 1001011100 (/ 5.0 (+ 5.0 5.0))	0.50
31	= 00110001 = 1001100010 (/ 6.0 (+ 6.0 4.0))	0.60
32	= 00110010 = 1001100100 (/ 6.0 (+ 6.0 4.0))	0.60
33	= 00110011 = 1001100110 (/ 5.0 (+ 5.0 5.0))	0.50
34	= 00110100 = 1001101000 (/ 6.0 (+ 6.0 4.0))	0.60
35	= 00110101 = 1001101010 (/ 5.0 (+ 5.0 5.0))	0.50
36	= 00110110 = 1001101100 (/ 5.0 (+ 5.0 5.0))	0.50
37	= 00110111 = 1001101110 (/ 4.0 (+ 4.0 6.0))	0.40
39	= 00111001 = 1001110010 (/ 5.0 (+ 5.0 5.0))	0.50
3A	= 00111010 = 1001110100 (/ 5.0 (+ 5.0 5.0))	0.50
3B	= 00111011 = 1001110110 (/ 4.0 (+ 4.0 6.0))	0.40
44	= 01000100 = 1010001000 (/ 7.0 (+ 7.0 3.0))	0.70
45	= 01000101 = 1010001010 (/ 6.0 (+ 6.0 4.0))	0.60
46	= 01000110 = 1010001100 (/ 6.0 (+ 6.0 4.0))	0.60
47	= 01000111 = 1010001110 (/ 5.0 (+ 5.0 5.0))	0.50
49	= 01001001 = 1010010010 (/ 6.0 (+ 6.0 4.0))	0.60

4A = 01001010 = 1010010100 (/ 6.0 (+ 6.0 4.0)) 0.60
4B = 01001011 = 1010010110 (/ 5.0 (+ 5.0 5.0)) 0.50
4C = 01001100 = 1010011000 (/ 6.0 (+ 6.0 4.0)) 0.60
4D = 01001101 = 1010011010 (/ 5.0 (+ 5.0 5.0)) 0.50
4E = 01001110 = 1010011100 (/ 5.0 (+ 5.0 5.0)) 0.50
51 = 01010001 = 1010100010 (/ 6.0 (+ 6.0 4.0)) 0.60
52 = 01010010 = 1010100100 (/ 6.0 (+ 6.0 4.0)) 0.60
53 = 01010011 = 1010100110 (/ 5.0 (+ 5.0 5.0)) 0.50
54 = 01010100 = 1010101000 (/ 6.0 (+ 6.0 4.0)) 0.60
55 = 01010101 = 1010101010 (/ 5.0 (+ 5.0 5.0)) 0.50
56 = 01010110 = 1010101100 (/ 5.0 (+ 5.0 5.0)) 0.50
57 = 01010111 = 1010101110 (/ 4.0 (+ 4.0 6.0)) 0.40
59 = 01011001 = 1010110010 (/ 5.0 (+ 5.0 5.0)) 0.50
5A = 01011010 = 1010110100 (/ 5.0 (+ 5.0 5.0)) 0.50
5B = 01011011 = 1010110110 (/ 4.0 (+ 4.0 6.0)) 0.40
5C = 01011100 = 1010111000 (/ 5.0 (+ 5.0 5.0)) 0.50
5D = 01011101 = 1010111010 (/ 4.0 (+ 4.0 6.0)) 0.40
62 = 01100010 = 1011000100 (/ 6.0 (+ 6.0 4.0)) 0.60
63 = 01100011 = 1011000110 (/ 5.0 (+ 5.0 5.0)) 0.50
64 = 01100100 = 1011001000 (/ 6.0 (+ 6.0 4.0)) 0.60
65 = 01100101 = 1011001010 (/ 5.0 (+ 5.0 5.0)) 0.50
66 = 01100110 = 1011001100 (/ 5.0 (+ 5.0 5.0)) 0.50
67 = 01100111 = 1011001110 (/ 4.0 (+ 4.0 6.0)) 0.40
69 = 01101001 = 1011010010 (/ 5.0 (+ 5.0 5.0)) 0.50
6A = 01101010 = 1011010100 (/ 5.0 (+ 5.0 5.0)) 0.50
6B = 01101011 = 1011010110 (/ 4.0 (+ 4.0 6.0)) 0.40
6C = 01101100 = 1011011000 (/ 5.0 (+ 5.0 5.0)) 0.50
6D = 01101101 = 1011011010 (/ 4.0 (+ 4.0 6.0)) 0.40
6E = 01101110 = 1011011100 (/ 4.0 (+ 4.0 6.0)) 0.40
71 = 01110001 = 1011100010 (/ 5.0 (+ 5.0 5.0)) 0.50
72 = 01110010 = 1011100100 (/ 5.0 (+ 5.0 5.0)) 0.50
73 = 01110011 = 1011100110 (/ 4.0 (+ 4.0 6.0)) 0.40
74 = 01110100 = 1011101000 (/ 5.0 (+ 5.0 5.0)) 0.50
75 = 01110101 = 1011101010 (/ 4.0 (+ 4.0 6.0)) 0.40
76 = 01110110 = 1011101100 (/ 4.0 (+ 4.0 6.0)) 0.40
77 = 01110111 = 1011101110 (/ 3.0 (+ 3.0 7.0)) 0.30
89 = 10001001 = 1100010010 (/ 6.0 (+ 6.0 4.0)) 0.60
8A = 10001010 = 1100010100 (/ 6.0 (+ 6.0 4.0)) 0.60
8B = 10001011 = 1100010110 (/ 5.0 (+ 5.0 5.0)) 0.50
8C = 10001100 = 1100011000 (/ 6.0 (+ 6.0 4.0)) 0.60
8D = 10001101 = 1100011010 (/ 5.0 (+ 5.0 5.0)) 0.50
8E = 10001110 = 1100011100 (/ 5.0 (+ 5.0 5.0)) 0.50
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93 = 10010011 = 1100100110 (/ 5.0 (+ 5.0 5.0)) 0.50
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B2 = 10110010 = 1101100100 (/ 5.0 (+ 5.0 5.0)) 0.50
B3 = 10110011 = 1101100110 (/ 4.0 (+ 4.0 6.0)) 0.40
B4 = 10110100 = 1101101000 (/ 5.0 (+ 5.0 5.0)) 0.50
B5 = 10110101 = 1101101010 (/ 4.0 (+ 4.0 6.0)) 0.40
B6 = 10110110 = 1101101100 (/ 4.0 (+ 4.0 6.0)) 0.40
B7 = 10110111 = 1101101110 (/ 3.0 (+ 3.0 7.0)) 0.30
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C7 = 11000111 = 1110001110 (/ 4.0 (+ 4.0 6.0)) 0.40
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CA = 11001010 = 1110010100 (/ 5.0 (+ 5.0 5.0)) 0.50
CB = 11001011 = 1110010110 (/ 4.0 (+ 4.0 6.0)) 0.40
CC = 11001100 = 1110011000 (/ 5.0 (+ 5.0 5.0)) 0.50
CD = 11001101 = 1110011010 (/ 4.0 (+ 4.0 6.0)) 0.40
CE = 11001110 = 1110011100 (/ 4.0 (+ 4.0 6.0)) 0.40
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D4 = 11010100 = 1110101000 (/ 5.0 (+ 5.0 5.0)) 0.50
D5 = 11010101 = 1110101010 (/ 4.0 (+ 4.0 6.0)) 0.40
D6 = 11010110 = 1110101100 (/ 4.0 (+ 4.0 6.0)) 0.40
D7 = 11010111 = 1110101110 (/ 3.0 (+ 3.0 7.0)) 0.30
D9 = 11011001 = 1110110010 (/ 4.0 (+ 4.0 6.0)) 0.40
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EXHIBIT 4

4.0 *Equipment Photographs*



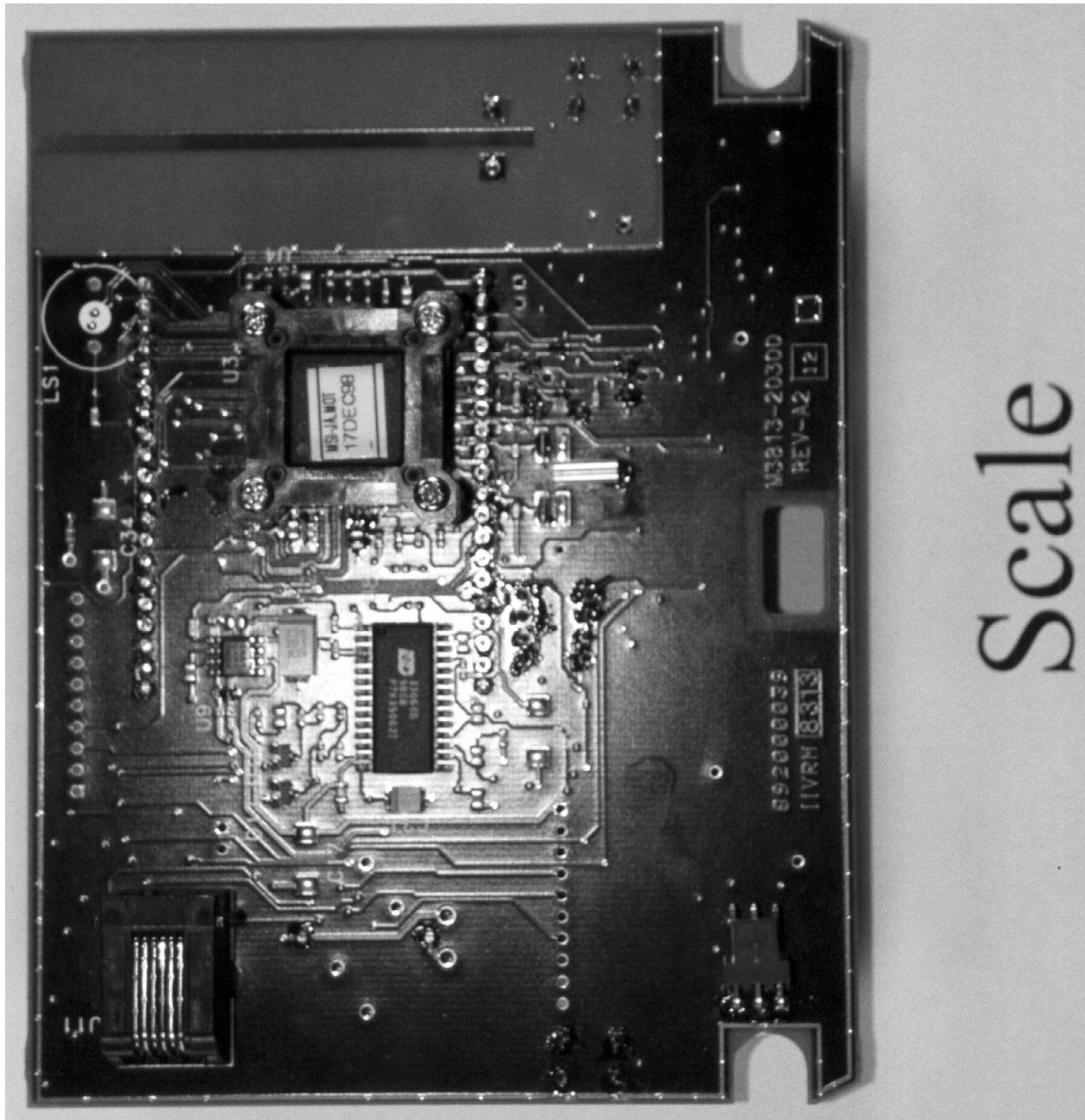




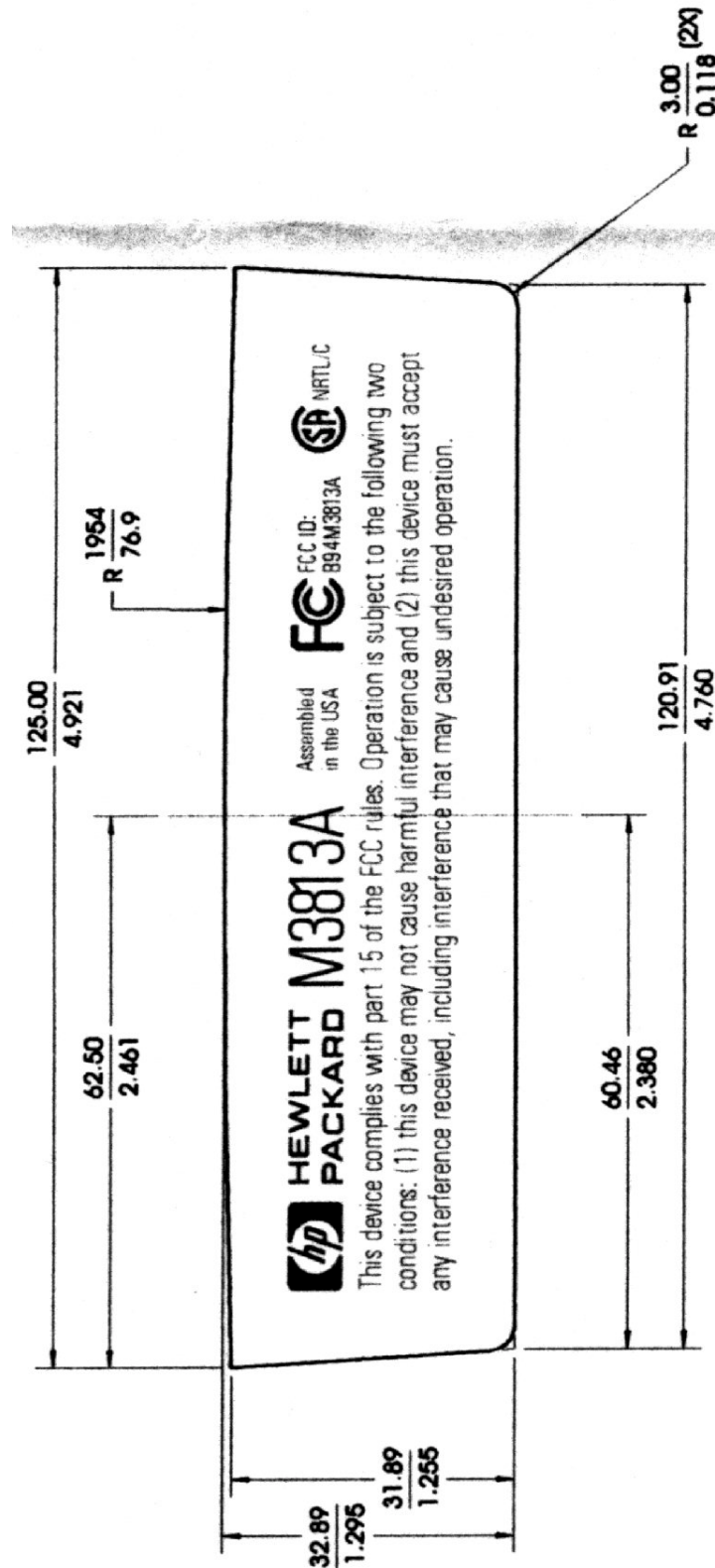
EXHIBIT 5

5.0 *Product Labeling*

5.1 Label Artwork

The label shown in the attached drawing will be permanently affixed to the system at the location shown in Exhibit 5.2.

1-Jul-01



5.2 Label Location

The label location is shown in the following diagram.



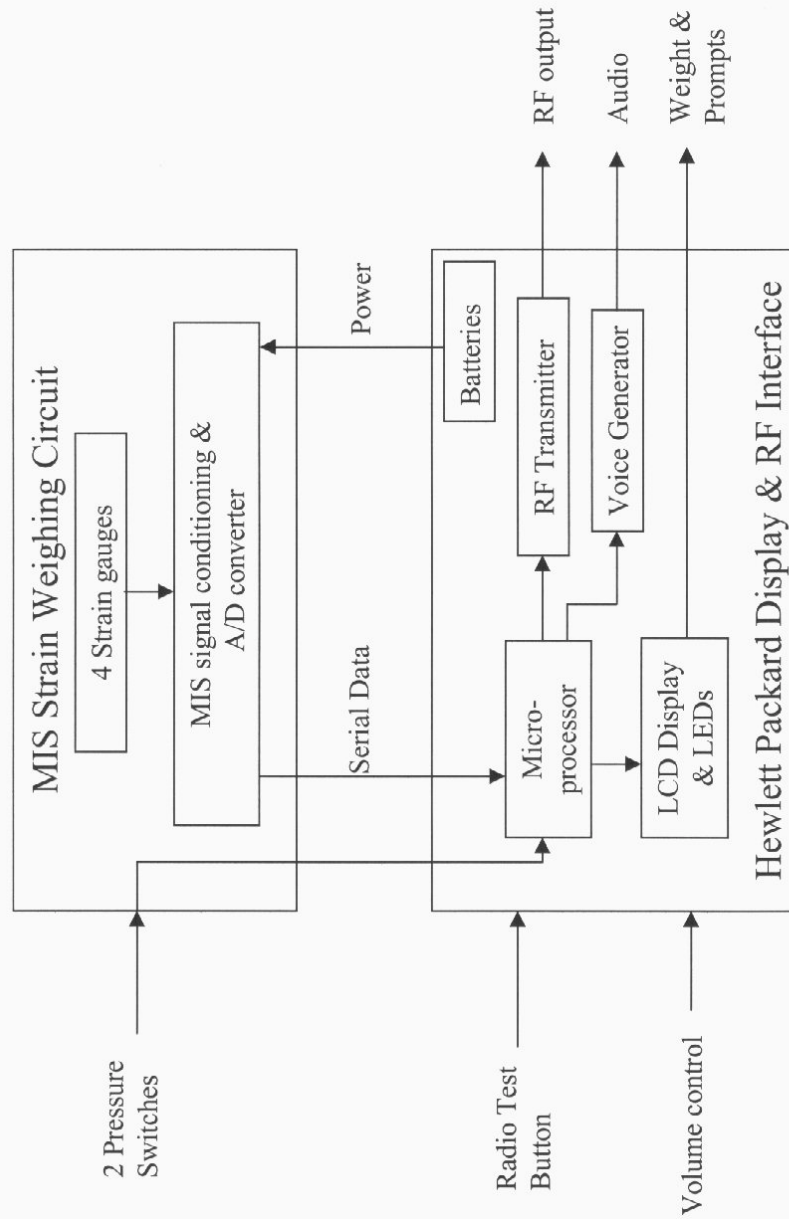
EXHIBIT 6

6.0 *Technical Specifications*

6.1 Technical Description and Block Diagram

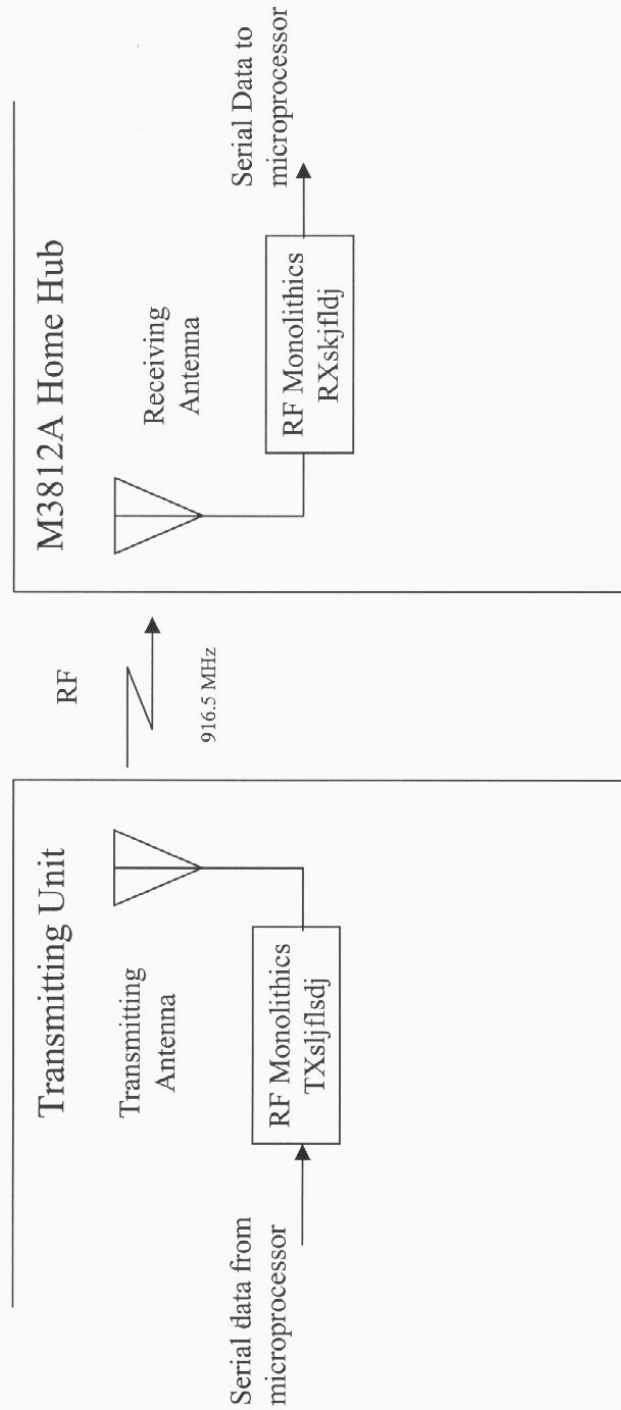
HP M3813A Home Scale Unit

Block Diagram

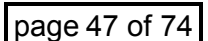


HP M3810A RF Block Diagram

Block Diagram



6.2 Schematics



6.3 Bill of Materials

Revised: Tuesday, March 23, 1999

Revision:

Bill Of Materials March 23,1999 9:33:00 Page1

Item	Quantity	Reference	Part
1	1	ANT1	PCB Trace Antenna
2	7	C1, C5, C6, C11, C15, C31, C38	0.010uF 0160-7751
3	13	C2, C7, C8, C12, C20, C22, C24, C25, C26, C27, C28, C32, C39	.100uF 0160-7798 0805
4	3	C9, C10, C33	15pF 0160-7841
5	2	C13, C14	12pF 0160-7837
6	1	C16	1.0uF 0160-7736 1206
7	5	C17, C29, C30, C34, C37	68.0uF/10V 0180-4559 D
8	1	C18	470pF 0160-7988
9	1	C21	1.0uF/10V 0180-3751 B
10	1	C23	22.0uF/20V 0180-4116 D
11	2	C35, C36	1000pF 0160-7748
12	2	C40, C41	56pF 0160-7864
13	1	D2	ChicagoMin 5310F7 YEL
14	1	D7	ChicagoMin 5310F5 GRN
15	7	D11, D13, D14, D15, D16, D17, D18	BAV99 1906-0291 SOT23L
16	1	D12	5.6V/500mW MMSZ5232BT1 SOD-123
17	1	D19	15V 1901-1408 SOT23
18	1	F2	SMD-030 0837-0500 PolyFuse
19	2	JP1, JP5	JUMPER1 1251-5380
20	2	J2, J9	CON10x0.1 1251-5387
21	1	J6	CON3x0.1 1251-5384
22	1	J11	RJ11 1251-7330
23	1	LCD1	Excel 4700-RPQ-0.60
24	1	LS1	muRata PKM13EPY-4002
25	1	LS2	S125R-PC
26	1	LS3	S110R-PC
27	3	L1, L2, L3	Ferrite 9170-1681 0805
28	2	Q2, Q4	TP0610T 1855-0798 SOT23L
29	1	Q3	MMBT3904L 1854-1037 SOT23L
30	2	R2, R3	23.7 0699-3910
31	1	R4	40.2 0699-4367
32	1	R6	1.0M 0699-4016
33	3	R7, R87, R112	100K 0699-3993
34	12	R13, R14, R15, R16, R17, R18, R19, R20, R93, R102, R103, R104	1.00K 0699-3947
35	7	R21, R28, R29, R30, R97, R106, R109	0.0 0699-3574

36	2	R54, R31	511 0699-3941
37	2	R51, R32	0.0 0699-2643 0805
38	1	R55	1.96K 0699-3954
39	8	R63, R80, R94, R98, R99, R105, R108, R110	OPEN 0603
40	8	R65, R77, R78, R79, R82, R96, R107, R117	19.6K 0699-3977
41	1	R74	56.2K 0699-3368
42	6	R76, R81, R90, R91, R92, R100	10.0K 0699-3970
43	3	R85, R86, R88	3.83K 0699-3961
44	1	R101	90.9 0699-3923
45	1	R111	10.0 0699-3698 0805
46	1	S1	Omron B3F-1025
47	1	S2	Omron B3W-1052
48	1	U3	HD6473834UH Hitachi
49	1	U4	MAX821UUS-T Maxim SOT-143
50	1	U5	NM93C66LZN Fairchild dip-8
51	1	U6	MIC5219-3.0BM5 MICREL SOT-23-5
52	1	U8	ISD33060S
53	1	U9	TPA4861D S08
54	1	U10	HX2000
55	1	U11	74HC00 1820-4692 S014N
56	1	U12	NM93C66M8 1818-5236 S08N
57	1	Y1	32.768kHz 0410-2153
58	1	Y2	2.4576M 0410-1872 HC-49U

EXHIBIT 7

7.0 *Instruction Manual*

Attached is a draft instruction manual for the device. Note the required FCC warning information on the second to last page.

♥
**USER
GUIDE**
♥

HP© Home Scale Unit

Model M3813A

Professional-quality instruments for home health care

♥NOTICE

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WARNING!: Failure on the part of the responsible Health Care Provider
prescribing the use of this equipment to implement satisfactory training for
installation, use, and maintenance may cause undue equipment failure and
possible health hazards.

♥INTRODUCTION

Welcome to Hewlett-Packard's line of professional-quality instruments for home health care. HP and your Health Care Provider have joined together to provide medical monitoring instruments that allow you to take your vital statistics from the convenience and comfort of your own home.

In less than a minute, the HP Home Scale Unit prompts you and then measures your weight. Then the Scale Unit announces/displays the weight and transmits the weight to your Health Care Provider, who records and interprets your vital statistics.

The Health Care Provider will assist you in learning how to install, operate, and maintain your Scale Unit. Afterwards, please refer to this guide when using the Scale Unit.

Take your weight as instructed by your Health Care Provider.

♥*PRECAUTIONS*

- Use this Home Scale Unit only as directed by your Health Care Provider. Use of this medical instrument is not a substitute for medical care. Only your Health Care Provider is qualified to interpret the results.
- If you feel unwell, contact your Health Care Provider or call 911.
- Because this Scale Unit is intended for your personal medical history, please do not allow others to use this Scale.
- Do not attempt to service or repair the Scale yourself. If a mechanical problem occurs, contact your Health Care Provider and replace the Scale, as required.
- Clean the Scale with a dry, soft cloth or a cloth dampened with tap water and mild detergent, if desired. **Never use alcohol, benzene, thinner, or other harsh chemicals** to clean the Scale.

♥*SCALE UNIT COMPONENTS*

The Scale Unit is made up of a platform and monitor. Optional accessories include a column attachment with grab bars and a connection cord assembly.

The top of the Scale has a recessed area with 3M™ Dual Lock™ Reclosable Fasteners. The bottom of the Scale has a plug-in connection.

The monitor face has a VOLUME button, two lights (STANDSTILL and STEP OFF), a display window, and a Radio Test button. The monitor back has a battery compartment, a connection cord, and 3M™ Dual Lock™ Reclosable Fasteners.

The optional column attachment has a curly extension cord with extension adapter secured inside the column. The top of the column has 3M™ Dual Lock™ Reclosable Fasteners. The column comes with two knobs.

♥BEFORE YOU START

Locate the Scale Unit so that it is:

- Placed on a level, hard surface
- Within 20 feet of the Hub (make sure that no large metal object, such as a refrigerator, is between the Scale and the Hub)
- Within three inches of the wall (but not directly against the wall) if using the column attachment
- Away from heater or air conditioning vents (rapid changes in temperature can affect the electronics)
- Not exposed to direct sunlight, standing water, humidity, shock, and dust
- Away from large animals or children

- Not used to store/hold objects when not in use

The only setup required is to install alkaline batteries, install the Scale based on the standard or optional setup, and perform the Radio Test.

Insert four type AA (1.5 volt) alkaline batteries

CAUTION: Use alkaline batteries only. Replace all four batteries at the same time. Do not replace them individually. Always follow instructions on the battery package when handling batteries.

1. Remove the battery compartment cover on the back of the monitor by gently pushing down on the arrow symbol (Δ) and popping the cover off.
2. Place the batteries in the compartment with the positive (+) and negative (-) terminals matching those shown in the compartment. Be sure that the battery terminals make contact with the compartment terminals.
3. Replace the cover by sliding it into the compartment and gently pressing it into place.
4. The STANDSTILL and STEP OFF lights both come on for two seconds. Then the STEP OFF light flashes and **8.8:8.8** displays briefly.

5. After you set up the Scale Unit and connect the monitor to the Scale, perform the Radio Test as described on page X.

NOTE: Perform the Radio Test when you install batteries, set up the Scale, and change the testing location.

SET UP THE SCALE UNIT

The Scale Unit has two installation options:

- Scale and monitor on the floor
- Scale on the floor and monitor on top of the column attachment

Determine which setup you want. The standard setup is similar to any step-on scale in home use.

NOTE: The only difference between the Scale Unit and a regular step-on scale is that you do not have to tap the Scale platform before you step on it.

The Scale with the column attachment has grab bars to provide you with assistance for balance problems and moves the monitor within closer visual/audio range.

STANDARD SETUP

Perform standard setup for the Scale Unit on the floor as follows:

1. Insert batteries as described in page X.

2. If you are using the Scale on the floor, press the monitor into the platform. The 3M™ Dual Lock™ Reclosable Fasteners secure the monitor to the platform.
3. Turn the Scale over and insert the monitor connection cord to the Scale's plug-in connection.
4. The STANDSTILL and STEP OFF lights both come on for two seconds. Then the STEP OFF light flashes and **8.8:8.8** displays in the display window briefly. Turn the Scale over. You may not see the lights and display while you turn the scale turn over.
5. The first time you connect the monitor to the Scale, the prompt says "zero pounds." The monitor's STEP OFF light comes on and the monitor displays **000.0**.

NOTE: The initial setting is for pounds. If you wish to hear/see your weight in kilograms, finish setting up the scale and follow the directions on page 27.

MONITOR ON COLUMN SETUP

Perform setup for the Scale Unit with the column attachment with grab bars as follows:

1. Insert batteries as described on page X.

2. Install the column as follows:
 - a. Position the column so the grab bars are above the Scale.
 - b. Slide the bottom of the column onto the back of the Scale.
 - c. Insert and tighten the knobs to secure the column to the Scale.
3. Turn the Scale with attached column on its side. Inside of the column back, notice an extension adapter near the top of the column and a curly extension cord running down to the bottom of the column. Stretch the end of the curly extension cord and insert its end into the Scale platform's plug-in connection.
4. Turn the Scale upright and hold the monitor above the top of the column. Thread the cord through the cutaway so that the cord dangles behind the column.
5. Press the monitor onto the top of the column. The 3M™ Dual Lock™ Reclosable Fasteners secure the monitor on top of the column.
6. Attach the monitor cord to the extension adapter.
7. The first time you connect the monitor to the Scale, the prompt announces "zero

pounds.” The monitor’s STEP OFF light comes on and the display window shows **000.0**.

8. Place the Scale so that the back of the column is within three inches of the wall, but not directly against the wall.

WARNING!: Do not set up the Scale with column farther than three inches away from the wall. You may lose your balance and tip the Scale forward while on it.



NOTE: If the column rests against the wall, the Scale may give an incorrect weight.

Perform a Radio Test

1. The Radio Test button appears as a shadowy dot to the left of the STANDSTILL and STEP OFF lights on the front of the monitor. Press and hold the Radio Test button for at least two seconds until the Hub starts beeping (at a rate of one beep

per second). The display shows rF.

- a. If the Hub does not beep, determine if there are any obstacles (such as large metal objects) between the Scale and the Hub.
- b. If no obstacles are present, move the Scale closer to the Hub.
- c. Press the Radio Test button again. If the Hub beeps, the Scale Unit is operating properly. If the Hub does not beep, replace the Scale as instructed by your Health Care Provider.

NOTE: If you accidentally press the Radio Test button, there are no negative results.

The Scale Unit is ready for use!

♥HOW TO TAKE WEIGHT

All you have to do is step on the scale and follow the voice/light prompts. Your weight is measured, announced/displayed, and transmitted in less than a minute!

Take your weight

1. Step on the Scale Unit. The voice prompt says, "Please stand still," and the STANDSTILL light comes on. Remain still.



NOTE: If you have balance problems, ask someone to assist you onto the Scale that has the column attachment. You can grip the grab bars of the column while the Scale takes your weight.



2. After five seconds, the voice prompt says "Thank you. Step off the scale." The STEP OFF light comes on also. Step off of the Scale.

3. Five seconds after you step off of the Scale, the monitor announces/displays your weight. The monitor and Scale turn off automatically.

NOTE: You may notice that the Scale displays a different weight when you are standing on the Scale than the weight when you step off of the Scale. The final weight is your correct weight.

Use a walker with the Scale

The Scale with column attachment has been designed so that you can use a walker with the Scale. Use the walker as follows:

- 1. Position the walker so that the walker legs are on the outside of the Scale platform.***



- 2. Step on the Scale and make sure you are centered on the Scale.***



3. Place your hands on the grab bars.

NOTE: If you do not hold onto the grab bars, the Scale will not be able to read your true weight.



4. *After you step off the scale, move the walker backwards, and maintain your balance.*



Adjust the volume or to turn it off

Change the volume when you are not on the Scale.

1. Press the VOLUME button until you achieve the desired volume or silence.
2. The prompt is silent for a moment and then says “1, 2,” or “3” (for low, medium, or high) or silence (for no-volume). The display shows **0, 1, 2, 3,** or **0.**
3. When you reach the desired volume (or silence), release the VOLUME button.

NOTE: If you select silence, you must watch the monitor for instruction lights and weight display.

Change the unit of measurement from pounds to kilograms

Change the unit of measurement when you are not on the Scale. When you first setup the Scale, the measurement is in pounds. If you want to hear/see your weight in kilograms, do the following:

1. Press the Radio Test button and the VOLUME button, and hold for three seconds.
2. The monitor says the new unit of measure – “kilograms” or “pounds.” The display shows digital numbers that spell out **KGS** or **LBS**.

NOTE: When you change batteries, you do not have to repeat this step if you changed the Scale from pounds to kilograms. At any time, you may change the unit of measure without negative results.

♥MAINTENANCE

Replace batteries when instructed by your Health Care Provider or when you see a flashing STANDSTILL light on the monitor.

NOTE: It is important to take your weight on a daily basis or as instructed by your Health Care Provider. Your Health Care Provider may contact you if they do not receive rhythm measurements as scheduled.

♥TROUBLESHOOTING

Common problems while taking weight measurement

The most common errors occur if you do not follow the voice/light prompts. Errors, causes, and solutions appear in the TROUBLESHOOTING TABLE.

NOTE: When an ERROR message appears, check the cord connections and retake your weight before contacting your Health Care Provider. You may be able to

troubleshoot these ERROR messages as described in the TROUBLESHOOTING TABLE.

You may be able to perform minor troubleshooting when ERROR messages appear on the display. Here are some causes and corrective actions:

<i>TROUBLESHOOTING TABLE</i>		
ERROR MESSAGE	<i>CAUSE</i>	<i>SOLUTION</i>
Err.0 and the monitor's Step Off voice/light prompt occurs	You stepped off of the scale before your weight could be taken.	Repeat the weight measurement and wait for the STEP OFF voice/light prompt.
E.1, E.2, E.3, or E.6	The monitor is not connected to the Scale or there is a problem with the Scale	Make sure that the cords are securely connected to the plug-in connections; contact your Health Care Provider and replace the Scale as instructed.

E.3	During setup, something was on the Scale or disturbing the Scale OR During the weight measurement, you moved while on the Scale.	Make sure the Scale is stable and there is nothing on it before taking the weight measurement OR Repeat the weight measurement and remain still while on the Scale.
E.4	You moved during the weight measurement.	Step on the Scale and remain still.
E.5	The Scale was unable to read excessive weight.	Use a manual scale and determine if your weight is over the Scale's range. If so, report to your Health Care Provider.
E.6 and the STEP OFF voice/light	You did not step off of the Scale when prompted.	Step on the Scale and remain on the Scale until

prompt occurs		the STEP OFF prompt occurs
Flashing STANDSTILL light	This is a Low Battery signal.	Replace batteries.
The Scale does not turn on.	The Scale unable to take a weight measurement.	• Make sure all the cords are connected and that the Scale is connected to the monitor. • Stand on the Scale. • Rotate the Scale or find another location for the Scale. • Make sure the Scale is on a hard, level surface. • Contact your Health Care Provider – the batteries may

		be dead.
--	--	----------

If you are unable to troubleshoot the ERROR messages by following these corrective actions, replace the Scale Unit as instructed by your Health Care Provider.

NOTE: If you do not take a daily weight measurement, your Health Care Provider may contact you to determine why.

♥ SPECIFICATIONS

Model	M3815A
Audio	Voice readout of weight , prompts, and 3 volume settings
Display	Digital, 16 mm character height Weight displayed and announced simultaneously
Measurement range	>=20 Kg and <=150 Kg (80 to 300 lbs)
Accuracy	± 1% to ± .5 Kg
Display resolution	Pounds or kilograms, depending on units selected
Maximum allowable weight	>= 166 Kg
Grab bar and column attachment	Removable
Power source	Four type AA (1.5 volt) alkaline batteries (not included)
Battery life	Approximately 6 months with only 1 daily measurement
Operating environment	50° to 104°F (-10° to 60°C) Less than 85% relative humidity
Storage environment	14° to 140° F (-10° to 60°C) Less than 95% relative humidity
Dimension (approx.)	Length: 14" (> 40 cm) Width: 14" (> 40 cm) Height: 2" (< 5 cm) Height including grab bar: <95 cm > 85 cm
Weight (approx.)	<10 Kg, with grab bar, without batteries

♥FCC REGULATIONS

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy. If it is not installed and used in accordance with the instructions, it might cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase separation between equipment and receiver.
- Connect equipment to an outlet on a circuit different from that to which the receiver is located.
- Consult your reseller or an experienced radio/TV technician.

NOTE: Any changes or modifications to the equipment that are not expressly approved by HP could void the user's authority to operate this equipment.

♥CONCLUSION

HP and your Health Care Provider appreciate your efforts to participate in your home health care plan. By using the HP Home Scale Unit as directed, you actively participate in your Health Care Provider's plan to monitor your vital statistics.

If you have any problems or questions, please contact your Health Care Provider.

Place Health Care Provider label here



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Manufacturing

Part No.

M3813-90001

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