

# **MEASUREMENT/TECHNICAL REPORT**

**Company: Philips Medical Systems**

**Model: M3813A**

**FCC ID: PQCM3813A2**

**January 21, 2002**

Description: This is a report to support a request for a Class II permissive change.

Equipment Type: Low Power Communications Device Transmitter (DXX)

Report prepared for:

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## Introduction

The purpose of this report is to demonstrate the continued compliance of a Transmitter operating pursuant to 47 CFR 15.249 following a change in the EUT's configuration. The configuration tested originally was just the transmitter in its plastic chassis sitting on a turntable. The configuration covered by this report has the EUT mounted on a column, which is in turn mounted on a base (scale). There have been no changes made to the circuitry of the device. The reason that a Class II permissive change is required is the increased amplitude of certain emissions due to the changed configuration. An additional configuration was also tested and is covered in report EC0041-2. The model number covered by this report is M3813A. The setup photo appears below.



Setup Photo

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## Test Methodology

Radiated emission testing was performed according to the procedures in ANSI C63.4 (1992). The 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 10GHz. The EUT was powered by four Duracell PC1500 PROCELL 1.5Volt AA batteries. Fresh batteries were used for all testing. The circuit board was hardwired so as to produce a continuous transmission signal as opposed to the momentary transmission that occurs during regular operation. Since the device is floor standing, the emissions were maximized around the vertical axis and the maximum reading was recorded. The integrated antenna cannot be maximized separately.

### Test Facility

#### *Curtis-Straus LLC*

All testing for the range 30–10,000MHz was performed at Curtis-Straus (A2LA Certificate Number 1627-01). The open area test site used to collect the radiated data is located at 527 Great Road, Littleton, MA 01460. Site “F” was used.

## Test Equipment Used

| <b>SPECTRUM ANALYZERS</b> |                              |                  |                |                   |                        |
|---------------------------|------------------------------|------------------|----------------|-------------------|------------------------|
| <b>x</b>                  | <b>Analyzer</b>              | <b>Model No.</b> | <b>Company</b> | <b>Serial No.</b> | <b>Calibration Due</b> |
|                           | <b>GREEN</b><br>9kHz-26.5GHz | 8593E            | HP             | 3829A03618        | 04-OCT-2002            |

| <b>OPEN AREA TEST SITES (OATS)</b> |                       |                 |                |                  |                        |
|------------------------------------|-----------------------|-----------------|----------------|------------------|------------------------|
| <b>x</b>                           | <b>Site</b>           | <b>FCC Code</b> | <b>IC Code</b> | <b>VCCI Code</b> | <b>Calibration Due</b> |
|                                    | <b>"F"</b><br>Florida | 93448           | IC 2762-F      | R-468/ C-480     | 23-JUN-2002            |

| <b>ANTENNAS</b> |                                         |                  |                |                   |                        |
|-----------------|-----------------------------------------|------------------|----------------|-------------------|------------------------|
| <b>x</b>        | <b>Antenna</b>                          | <b>Model No.</b> | <b>Company</b> | <b>Serial No.</b> | <b>Calibration Due</b> |
|                 | <b>GREEN-WHITE</b><br>Bilog: 30MHz-2GHz | CBL6112B         | Chase          | 2574              | 28-JUN-2002            |
|                 | <b>ORANGE</b><br>Horn: 1-18GHz          | 3115             | EMCO           | 0004-6123         | 27-MAY-2002            |

| <b>PREAMPLIFIERS</b> |                                   |                  |                      |                   |                        |
|----------------------|-----------------------------------|------------------|----------------------|-------------------|------------------------|
| <b>x</b>             | <b>Preamplifier</b>               | <b>Model No.</b> | <b>Company</b>       | <b>Serial No.</b> | <b>Calibration Due</b> |
|                      | <b>BLUE-BLACK</b><br>0.01-2000MHz | ZFL-1000-LN      | MiniCircuits/<br>C-S | n/a               | 24-SEP-2002            |
|                      | <b>ORANGE-BLACK</b><br>1-20GHz    | SMC-12A          | MITEQ                | 690639            | 06-AUG-2002            |

Unless otherwise noted the calibration interval is one year. All equipment is calibrated using standards traceable to NIST or other nationally recognized calibration standard.

## Measurement Results

### Operating Frequency

This device operates at 916.5MHz.

### Electric Field Strength Radiation Measurements

| Radiated Emissions Table                                                                                                     |                    |                           |                                                      |                                   |                      |                                           | Curtis-Straus LLC             |                |                       |
|------------------------------------------------------------------------------------------------------------------------------|--------------------|---------------------------|------------------------------------------------------|-----------------------------------|----------------------|-------------------------------------------|-------------------------------|----------------|-----------------------|
| Date: 18-Jan-02<br>Engineer: Evan Gould                                                                                      |                    |                           | Company: Philips Medical Systems<br>EUT Desc: M3813A |                                   |                      |                                           | Table 1<br>Work Order: C0041  |                |                       |
| Frequency Range: 30MHz-1GHz                                                                                                  |                    |                           |                                                      |                                   |                      | Measurement Distance: 1 m                 |                               |                |                       |
| Notes: EUT mounted on column.<br>Fundamental and second through tenth harmonics.<br>916.5MHz and 1833.1MHz were taken at 3m. |                    |                           |                                                      |                                   |                      | EUT Max Freq: 916.5MHz<br>Analyzer: Green |                               |                |                       |
| Antenna Polarization<br>(H / V)                                                                                              | Frequency<br>(MHz) | Reading<br>(dBμV)         | Preamp Factor<br>(dB)                                | Antenna Factor<br>(dB/m)          | Cable Factor<br>(dB) | Adjusted Reading<br>(dBμV/m)              | FCC Class B                   |                |                       |
|                                                                                                                              |                    |                           |                                                      |                                   |                      |                                           | Limit<br>(dBμV/m)             | Margin<br>(dB) | Result<br>(Pass/Fail) |
| H                                                                                                                            | 916.5              | 90.6                      | 22.4                                                 | 20.7                              | 4.1                  | 93.0                                      | 94.0                          | -1.0           | Pass                  |
| H                                                                                                                            | 1833.1             | 36.2                      | 16.8                                                 | 26.5                              | 6.5                  | 52.4                                      | 54.0                          | -1.6           | Pass                  |
| V                                                                                                                            | 2749.7             | 41.5                      | 24.4                                                 | 28.8                              | 2.5                  | 48.4                                      | 63.5                          | -15.1          | Pass                  |
| H                                                                                                                            | 3666.2             | 32.9                      | 24.2                                                 | 31.8                              | 3.3                  | 43.8                                      | 63.5                          | -19.7          | Pass                  |
| H                                                                                                                            | 4582.8             | 29.7                      | 24.3                                                 | 32.3                              | 3.7                  | 41.4                                      | 63.5                          | -22.1          | Pass                  |
| H                                                                                                                            | 5499.3             | 30.1                      | 24.0                                                 | 34.4                              | 3.8                  | 44.3                                      | 63.5                          | -19.2          | Pass                  |
| H                                                                                                                            | 6415.8             | 28.9                      | 23.1                                                 | 34.2                              | 3.9                  | 43.9                                      | 63.5                          | -19.6          | Pass                  |
| H                                                                                                                            | 7332.4             | 32.9                      | 22.2                                                 | 36.8                              | 4.0                  | 51.5                                      | 63.5                          | -12.0          | Pass                  |
| H                                                                                                                            | 8249.5             | 34.4                      | 21.2                                                 | 37.3                              | 4.1                  | 54.6                                      | 63.5                          | -8.9           | Pass                  |
| H                                                                                                                            | 9166.1             | 34.4                      | 20.6                                                 | 37.9                              | 4.3                  | 56.0                                      | 63.5                          | -7.5           | Pass                  |
| Table Result: Pass by -1.0 dB                                                                                                |                    |                           |                                                      |                                   |                      |                                           | Worst Freq: 916.5 MHz         |                |                       |
| Test Site: "F"                                                                                                               |                    | Pre-Amp: Blue-Blk, Or-Blk |                                                      | Cable: 3m Microflex, 65 ft RG8A/U |                      |                                           | Antenna: Grn-Wht, Orange Horn |                |                       |

| Radiated Emissions Table                            |                    |                           |                                                      |                                   |                         |                                           | Curtis-Straus LLC             |                |                       |
|-----------------------------------------------------|--------------------|---------------------------|------------------------------------------------------|-----------------------------------|-------------------------|-------------------------------------------|-------------------------------|----------------|-----------------------|
| Date: 18-Jan-02<br>Engineer: Evan Gould             |                    |                           | Company: Philips Medical Systems<br>EUT Desc: M3813A |                                   |                         |                                           | Table 2<br>Work Order: C0041  |                |                       |
| Frequency Range: 30MHz-10GHz                        |                    |                           |                                                      |                                   |                         | Measurement Distance: 3 m                 |                               |                |                       |
| Notes: EUT mounted on column.<br>spurious emissions |                    |                           |                                                      |                                   |                         | EUT Max Freq: 916.5MHz<br>Analyzer: Green |                               |                |                       |
| Antenna<br>Polarization<br>(H / V)                  | Frequency<br>(MHz) | Reading<br>(dBμV)         | Preamp<br>Factor<br>(dB)                             | Antenna<br>Factor<br>(dB/m)       | Cable<br>Factor<br>(dB) | Adjusted<br>Reading<br>(dBμV/m)           | FCC Class B                   |                |                       |
|                                                     |                    |                           |                                                      |                                   |                         |                                           | Limit<br>(dBμV/m)             | Margin<br>(dB) | Result<br>(Pass/Fail) |
| H                                                   | 817.1              | 44.2                      | 22.5                                                 | 20.1                              | 3.9                     | 45.7                                      | 46.0                          | -0.3           | Pass                  |
| H                                                   | 971.8              | 31.3                      | 22.3                                                 | 21.1                              | 4.3                     | 34.4                                      | 54.0                          | -19.6          | Pass                  |
| H                                                   | 983.8              | 30.1                      | 22.3                                                 | 21.2                              | 4.3                     | 33.3                                      | 54.0                          | -20.7          | Pass                  |
| H                                                   | 1016.0             | 43.6                      | 22.1                                                 | 21.4                              | 4.4                     | 47.3                                      | 54.0                          | -6.7           | Pass                  |
| H                                                   | 1375.0             | 35.7                      | 20.4                                                 | 24.2                              | 5.5                     | 45.0                                      | 54.0                          | -9.0           | Pass                  |
| H                                                   | 2291.4             | 42.6                      | 24.5                                                 | 27.4                              | 2.2                     | 47.7                                      | 63.5                          | -15.8          | Pass                  |
| Table Result: Pass by -0.3 dB Worst Freq: 817.1 MHz |                    |                           |                                                      |                                   |                         |                                           |                               |                |                       |
| Test Site: "F"                                      |                    | Pre-Amp: Blue-Blk, Or-Blk |                                                      | Cable: 3m Microflex, 65 ft RG8A/U |                         |                                           | Antenna: Grn-Wht, Orange Horn |                |                       |

## Emissions Plots

## Fundamental

