MEASUREMENT/TECHNICAL REPORT

Company: Philips Medical Systems
Model: M3813A
FCC ID: PQCM3813A2
October 10, 2001

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

Equipment Type: Low Power Communications Device Transmitter (DXX)

Report prepared for: Philips Medical Systems
3500 Deer Creek Road
Palo Alto, CA 94304
Phone: (650) 857-8720
Fax: (650) 236-9981

Report prepared by: Evan D. Gould
Curtis-Straus LLC
527 Great Road
Littleton, MA 01460 USA
Phone: 978-486-8880
FAX: 978-486-8828

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 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.

Schematics

Bill of Materials

Statement of Conformity

The Philips Medical Systems 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 built into the board and there is no external antenna connection.
	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 powered without the capability of being recharged or operated from the AC mains.
	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.

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 a table-top unit, the emissions were maximized around the vertical axis and the maximum reading was recorded. The integrated antenna cannot be maximized separately.

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.

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 “A” was used.

Test Equipment Used

SPECTRUM ANALYZERS					
x	**Analyzer**	**Model No.**	**Company**	**Serial No.**	**Calibration Due**
	BLACK 9kHz-12.8GHz	8596E	HP	3710A00944	29-JUN-2002

OPEN AREA TEST SITES (OATS)					
x	**Site**	**FCC Code**	**IC Code**	**VCCI Code**	**Calibration Due**
	"A" Alaska	93448	IC 2762-A	R-903/ C-480	23-JUN-2002

ANTENNAS					
x	**Antenna**	**Model No.**	**Company**	**Serial No.**	**Calibration Due**
	RED Bilog: 30MHz-1GHz	3143	EMCO	1270	28-JUN-2002
	YELLOW Horn: 1-18GHz	3115	EMCO	9608-4898	08-MAY-2002

PREAMPLIFIERS					
x	**Preamplifier**	**Model No.**	**Company**	**Serial No.**	**Calibration Due**
	YELLOW-BLACK 1-20GHz	SMC-12A	MITEQ	535055	21-SEP-2002
	GREEN 0.01-2000MHz	ZFL-1000-LN	MiniCircuits/ C-S	n/a	24-MAR-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: 21-Sep-01 **Company:** Agilent Technologies **Table** 1
Engineer: Evan Gould **EUT Desc:** M3813A **Work Order:** B1012
Frequency Range: 30MHz-10GHz **Measurement Distance:** 1 m
Notes: Fundamental and second through tenth harmonics; 916.5MHz and 1833.1MHz were taken at 3m **EUT Max Freq:** 916.5MHz **Analyzer:** Black

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 Limit (dBµV/m)	FCC Class B Margin (dB)	FCC Class B Result (Pass/Fail)
H 120kHz BW pk	916.5	84.5	21.6	23.6	4.1	90.6	94.0	-3.4	Pass
H 1MHz BW pk	1833.1	37.0	19.8	26.3	1.9	45.4	54.0	-8.6	Pass
H 1MHz BW pk	2749.7	37.8	20.9	29.0	2.5	48.4	63.5	-15.1	Pass
H 1MHz BW pk	3666.2	30.9	21.0	32.0	3.3	45.2	63.5	-18.3	Pass
H 1MHz BW pk	4582.8	28.5	20.7	32.5	3.7	44.0	63.5	-19.5	Pass
H 1MHz BW pk	5499.3	29.4	20.4	34.6	3.8	47.4	63.5	-16.1	Pass
H 1MHz BW pk	6415.8	27.2	19.8	34.5	3.9	45.8	63.5	-17.7	Pass
H 1MHz BW pk	7332.4	34.4	19.2	37.3	4.0	56.5	63.5	-7.0	Pass
H 1MHz BW av	8249.5	26.5	18.8	37.8	4.1	49.6	63.5	-13.9	Pass
H 1MHz BW av	9166.1	24.9	17.5	38.7	4.3	50.4	63.5	-13.1	Pass

Table Result: Pass by -3.4 dB ***Worst Freq:*** 916.5 MHz

Test Site: "A" **Pre-Amp:** Yel-Blk, Green **Cable:** 3m Microflex, 65 ft RG8A/U **Antenna:** Red, Yellow Horn

Radiated Emissions Table — *Curtis-Straus LLC*

Date: 21-Sep-01 **Company:** Agilent Technologies **Table** 2
Engineer: Evan Gould **EUT Desc:** M3813A **Work Order:** B1012
Frequency Range: 30MHz-10GHz **Measurement Distance:** 3 m
Notes: spurious emissions **EUT Max Freq:** 916.5MHz **Analyzer:** Black

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 Limit (dBµV/m)	FCC Class B Margin (dB)	FCC Class B Result (Pass/Fail)
H	379.3	23.7	21.8	15.7	2.3	19.9	46.0	-26.1	Pass
H	387.8	22.8	21.7	15.9	2.3	19.3	46.0	-26.7	Pass
H	817.1	30.0	21.3	22.8	3.9	35.4	46.0	-10.6	Pass
H	815.8	23.3	21.2	22.7	3.9	28.7	46.0	-17.3	Pass
H	818.0	23.6	21.3	22.8	3.9	29.0	46.0	-17.0	Pass
H	813.2	24.4	21.2	22.7	3.9	29.8	46.0	-16.2	Pass
H 1MHz BW pk	1374.8	31.7	18.4	26.2	1.6	41.1	54.0	-12.9	Pass
H 1MHz BW pk	1699.8	35.9	19.4	27.6	1.8	45.9	54.0	-8.1	Pass

Table Result: Pass by -8.1 dB ***Worst Freq:*** 1699.8 MHz

Test Site: "A" **Pre-Amp:** Yel-Blk, Green **Cable:** 3m Microflex, 65 ft RG8A/U **Antenna:** Red, Yellow Horn

NOTE: There were no spurious emissions from the product detected from 2-10GHz.

Emissions Plots

Fundamental